

National Development Planning Agency
The Republic of Indonesia

Review of Indonesia's Development and Japan's Cooperation: Its Past, Present and Future in the Republic of Indonesia

Final Report

June 2018

Japan International Cooperation Agency (JICA)

International Development Center of Japan Inc.
ALMEC Corporation
Koei Research & Consulting Inc.

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Abbreviation

Abbreviation	Description	English Translation
AAEHRD	Agency for Agricultural Extension and Human Resources Development	
ACDP	Analytical Capacity and Development Partnership	
ADB	Asian Development Bank	
ADD	Alokasi Dana Desa	Village Fund Allocation
AEC	ASEAN Economic Community	
AFD	Agence Française de Développement	French Development Agency
ALSI	Asosiasi Lesson Study Indonesia	Lesson Study Association of Indonesia
AOTS	Overseas Technical Cooperation and Sustainable Partnerships	
AP	Availability Payment	
APEC	Asia-Pacific Economic Cooperation	
APEX	Asian People's Exchange	
ARSDS	Arterial Road System Development Study	
ASM	Air Space Management System	
ASEAN	Association of Southeast Asian Nations	
ATFM	Air Traffic Flow Management System	
AusAID	Australian Agency for International Development	
BAHARKAM	Badan Pemeliharaan Keamanan	Department of Security Guidance
BaKTI	Busan Pengetahuan Timur Kawasan Indonesia	Eastern Indonesia Knowledge Exchange
BANGDA	Bina Pembangunan Daerah	Directorate General of Regional. Development
BAN-PT	Badan Akreditasi Nasional Pendidikan Tinggi	National Accreditation Agency for Higher Education
BAPPEDA	Badan Perencanaan Pembangunan Daerah	Regional Development Planning Agency
BAPPENAS	Badan Perencanaan Pembangunan Nasional	National Development Planning Agency
BAU	Business As Usual	
BII	Pt. Bank Internasional Indonesia Tbk	Bank International Indonesia
BIKEN	Research Foundation for Microbial Diseases of Osaka University	
BKKBN	Badan Kependudukan Keluarga Berencana Nasional	National Family Planning Coordination Board
BINMAS	Satuan Pembinaan Masyarakat	Community Guidance Unit
BKPM	Badan Koordinasi Penanaman Modal	Investment Coordinating Agency

Abbreviation	Description	English Translation
BKSDA	Balai Konservasi Sumber Daya Alam	Natural Resources Conservation Agency
BLK	Balai Latihan Kerja	Vocational Training Center
BMKG	Badan Meteorologi, Klimatologi, dan Geofisika	Meteorological, Climatological and Geophysical Agency
BNPB	Badan Nasional Penanggulangan Bencana	National Disaster Management Agency
BOS	Bantuan Operasional Sekolah	School Operational Assistance
BOO	Build-Own-Operate	
BOT	Build, Operate and Transfer	
BPBD	Badan Penanggulangan Bencana Daerah	Regional Disaster Management Agency
BPJS	Badan Penyelenggara Jaminan Sosial	Social Security and Administrating Bodies
BPJT	Badan Pengatur Jalan Tol	Toll Road Authority
BPKP	Badan Pengawas Keuangan Dan Pembangunan	Finance and Development Supervisory Agency
BPPT	Badan Pengkajian Dan Penerapan Teknologi	Agency for Assessment and Application of Technology
BPS	Badan Pusat Statistik	Central Bureau of Statistics
BPTJ	Badan Pengelola Transportasi Jabodetabek	Jabodetabek Transportation Management Agency
BRICs	Brazil, Russia, India, China and South Africa	
BRT	Bus Rapid Transit	
BSNP	Badan Standar Nasional Pendidikan	National Standardization Agency
BTN	Balai Taman Nasional	National Park Bureau
C-BEST	Project for Capacity Building in Engineering Science and Technology	
CCPL	Climate Change Program Loan	
CCS	Carbon dioxide Capture and Storage	
CCT	Clean Coal Technology	
CDM	Clean Development Mechanism	
CDP	Capacity Development Project	
CEP	Community Empowerment Program	
CESS	Center for Economic and Social Studies	
CEVEST	Center for Vocational and Extension Service Training	
CFET	Center for Forestry Education and Training	
CGI	Consultative Group for Indonesia	
CIMTROP	Center for International cooperation in Management of Tropical Peatland	

Abbreviation	Description	English Translation
COE	Center of Excellence	
COMMIT	Community Initiatives for Transformation	
COP	Conference of the Parties	
COT	Center of Technology	
CPI	Corruption Perceptions Index	
CPI	Consumer Price Index	
CSR	Corporate Social Responsibility	
DAC	Development Assistance Committee	
DCVMN	Developing Countries Vaccine Manufacturers Network	
D/D	Detailed Design	
DFAT	Department of Foreign Affairs and Trade	
DG	Directorate General	
DGR	Directorate General of Railway	
DGST	Directorate General of Sea Transportation	Port and Sea Transport Division
DHS	Demographic Health Survey	
DIC	Disease Investigation Center	
DJSN	Dewan Jaminan Sosial Nasional	National Social Security Council
DKI	Daerah Khusus Ibu Kota Jakarta	Special State Capital of Jakarta
DPL	Development Policy Lending	
DPR	Dewan Perwakilan Rakyat	House of Representatives
EEPIS	Electronic Engineering Polytechnic Institute of Surabaya	
EEZ	Exclusive Economic Zone	
EFA	Education for All	
EJIP	East Jakarta Industrial Park	
EMS	Energy Management System	
E/N	Exchange of Note	
EU	European Union	
FAO	Food and Agriculture Organization of the United Nations	
FDC	Forest Development Cooperation Co. Ltd.	
FDI	Foreign Direct Investment	
FIT	Feed In Tariff	
FKPM	Forum Kemitraan Polri dan Masyarakat	Police-Community Partnership Forum
F/S	Feasibility Study	
GDP	Gross Domestic Product	
GHG	Greenhouse Gas	
GIIC	Greenland International Industrial Center	

Abbreviation	Description	English Translation
GIS	Geographic Information System	
GMF	Garuda Maintenance Facility	
GNI	Gross National Income	
HCV	Hepatitis C Virus	
HEDS	Higher Education Development Support Project	
HOPE	Higashimatsushima Organization for Progress and Economy, Education, Energy	
HPH	Hak Pengusahaan Hutan	Logging Concessions
IABEE	Indonesia Accreditation Board for Engineering Education	
IBEKA	Institute for Business and People's Economy	
IBRD	International Bank for Reconstruction and Development	
ICAO	International Civil Aviation Organization	
ICD	International Cooperation Department	
IDA	International Development Association	
IDEP	Integrated Development Program	
IDP	Internally Displaced People	
IDT	Inpres Desa Tertinggal	Presidential Instruction. Program for Left-Behind Villages
IEC	Information, Education and Communication	
IESC	Irrigation Engineering Service Center	
IETC	Indonesia Export Trading Center	
IGCC	Integrated Gasification Combined Cycle	
IGES	Institute for Global Environmental Strategies	
IGGI	Inter-Governmental Group on Indonesia	
IIF	Indonesia Infrastructure Finance	
IIGF	Indonesia Infrastructure Guarantee Fund	
IKK	Ibu Kota Kecamatan	Subdistrict Capital
IMF	International Monetary Fund	
IMO	International Maritime Organization	
IMR	Infant Mortality Rate	
IMSTEP	Indonesian Mathematics and Science Teacher Education Project	
INAP	Indonesian National Assessment Program	
INP	Indonesian National Police	
INDC	Intended Nationally Determined Contributions	
InPres	Instruksi Presiden	Indonesian Presidential Instruction
IOM	International Organization for Migration	
IoT	Internet of Things	

Abbreviation	Description	English Translation
IPB	Institut Pertanian Bogor	Bogor Agricultural University
IPP	Independent Power Producer	
IPP	Comprehensive Infrastructure Policy Package	
ISI	Ikatan Sakura Indonesia	Indonesia Sakura Association
ISO	International Organization for Standardization	
ITB	Institut Teknologi Bandung	Bandung Institute of Technology
ITS	Institut Teknologi Surabaya	Sepuluh Nopember Institute of Technology
ITSI	Study on Integrated Transportation System Improvement by Railway and Feeder Service in JABOTABEK Area	
IUCN	International Union for Conservation of Nature	
JABEE	Japan Accreditation Board for Engineering Education	
JABODETABEK	Jakarta, Bogor, Tangerang and Bekasi	
JAPTraPIS	Jabodetabek Public Transportation Policy Implementation Strategy	
JBIC	Japan Bank for International Cooperation	
JCM	Joint Crediting Mechanism	
JFGE	Japan Fund for Global Environment	
JFI	Japan-Indonesia Public-Private Joint Investment Forum	
JICA	Japan International Cooperation Agency	
JIEPA	Japan-Indonesia Economic Partnership Agreement	
JILA	Japan-Indonesia Lawyers Association	
JJC	Jakarta Japan Club	
JMDP	Jabotabek Metropolitan Development Plan	
JOC	Joint Operation Contract	
JOCV	Japan Overseas Cooperation Volunteers	
JORR	Jakarta Outer Ring Road	
JPRI	Japan Polio Research Institute	
JTA	Jabodetabek Transportation Authority	
JUTPI	Jabodetabek Urban Transportation Policy Integration Project	
KADIN	Kamar Dagang dan Industri	Indonesia Chamber of Commerce and Industry
KanWil	Kantor Wilayah	Regional Office
KDS	Kelompok Diskusi Sektor	Sector Discussion Group
KEIN	Komite Ekonomi dan Industri Nasional Republik Indonesia	National Industry and Economic Committee

Abbreviation	Description	English Translation
KEN	Kebijakan Energi Nasional	National Energy Policy
KfW	Kreditanstalt für Wiederaufbau	Reconstruction Credit Institute
KIIC	Karawang International Industrial City	
KIMA	Kawasan Industri Makassar	Makassar Industrial Estate
KIMPRASWIL	Permukiman dan Prasarana Wilayah	Ministry of Resident's Infrastructure
KIP	Kampung Improvement Program	
KIT	Kabupaten/Kota Implementation Team	District Implementation Team
KLHK	Kementerian Lingkungan Hidup dan Kehutanan	Ministry of Environment and Forestry
KPIP	Komite Percepatan Penyediaan Infrastruktur Prioritas	Committee for Acceleration of Priority Infrastructure Delivery
KPPTJP	Kerangka Pengembangan Perguruan Tinggi Jangka Panjang	Basic framework for higher education development
KPU	Komisi Pemilihan Umum	General Elections Commission
KSK	Kawasan Strategis Kabupaten	Regency Strategic Areas
LAM-PS	Lembaga Akreditasi Mandiri-Program Studi	Independent Accreditation Body for Educational Programs
LBE	Laboratory-Based Education	
LCC	Low cost carriers	
LIPI	Lembaga Ilmu Pengetahuan Indonesia	Indonesian Institute of Sciences
LKBN	Lembaga Keluarga Berentjana Nasional	National Family Planning Institute
LKD	Lembaga Keuangan Desa	Village Financial Institution
LNG	Liquefied Natural Gas	
LPI	Logistic Performance Indicator	
LSI	Indonesia Survey Institute	
MCH	Maternal and Child Health	
MDGs	Millennium Development Goals	
MEMR	Ministry of Energy and Mineral Resources	
MGMP	Musyawahah Guru Mata Pelajaran	Subject Teacher Support Program for Secondary Schools
MIC	Mangrove Information Center	
MIDC	Development of Metal and Machinery Industries	
MIDEC	Manufacturing Industry Development Center Initiative	
MMC	Mangrove Management Centre	
MMR	Maternal Mortality Rate	
MBTC	Multi Media Training Center	
MOH	Ministry of Health	
M/P	Master Plan	

Abbreviation	Description	English Translation
MP3EI	Masterplan Percepatan Dan Perluasan Pembangunan Ekonomi Indonesia	Masterplan for Acceleration and Expansion of Indonesia's Economic Development
MPA	Metropolitan Priority Area	
MPR	Majelis Permusyawaratan Rakyat	People's Consultative Assembly
MRT	Mass Rapid Transit	
MRV	Measurement, Reporting, Verification	
Musrenbang	Musyawahar Perencanaan Pembangunan	Development Planning Meeting
NAM-CSSTC	Non-Aligned Movement, Centre for South-South and Technical Cooperation	
NASA	National Aeronautics and Space Administration	
NEDO	New Energy and Industrial Technology Development Organization	
New AID	New Asian Industries Development Plan	
NEXI	Nippon Export and Investment Insurance	
NOAA	National Oceanic and Atmospheric Administration	
NRP	National Resources Polytechnic	
NVDAL	National Veterinary Drug Assay Laboratory	
NVRC	National Vocational Rehabilitation Center	
OCR	Ordinary Capital Resources	
OCR	Optical Character Recognition	
ODA	Official Development Assistance	
OECD	Organisation for Economic Co-operation and Development	
OECF	Overseas Economic Cooperation Fund	
OJT	On the Job Training	
OPEC	Organization of the Petroleum Exporting Countries	
OPV	Oral Polio Vaccine	
PAHO	Pan American Health Organization	
PD	Pendamping Desa	Subdistrict Village Facilitator
PDAM	Perusahaan Daerah Air Minum	Regional Water Company
PDI-P	Partai Demokrasi Indonesia-Perjuangan	Indonesian Democratic Party of Struggle
PDM	Project Design Matrix	
Pelita	Program for Enhancing Quality of Junior Secondary Education	
PERSADA	Perhimpunan Alumni dari Jepang	Association of Indonesian Alumni from Japan
PES	Payment for Ecosystem Services	
PINA	Pembiayaan Investasi Non Anggaran Pemerintah	Non-Government Budget

Abbreviation	Description	English Translation
		Investment Financing
PISA	Programme for International Student Assessment	
PISP	Pembiayaan Infrastruktur Sektor Panas Bumi	Infrastructure Financing for Geothermal
PJKA	Perusahaan Jawatan Kereta Api	Indonesian State Railways
PJP	Pembangunan Jangka Panjang	Long Term Development. Plan
PKPM	Pengembangan Kemitraan Untuk Pemberdayaan Masyarakat	Community Empowerment Program with Civil Society
PLD	Pendamping Lokal Desa	Village Facilitator
PLN	Perusahaan Listrik Negara	State Electricity Company
PLSD	Participatory Local Social Development	
PMDA	Pharmaceuticals and Medical Devices Agency	
PMD	Pemberdayaan Masyarakat dan Desa	Directorate General for Community and Village Empowerment
PNPM	Program Nasional Pemberdayaan Masyarakat	National Program for Community Empowerment
POB	Pendidikan Orang Basudara	Education of Siblings
POLDA	Kepolisian Daerah	Regional Police Department
POLMAS	Perpolisian Masyarakat	Community Policing
POLRES	Kepolisian Resor	Police Resort
PPA	Power Purchase Agreement	
PPP	Public Private Partnership	
PRIMA-K	Project for Improvement of District Health Management Capacity in South Sulawesi	
PRIMA-P	Integrated Plan for Junior Secondary Education Improvement in South Sulawesi Province in the Republic of Indonesia	
PROPENAS	Program Pembangunan Nasional	National Development Program
PRSP	Poverty Reduction Strategy Paper	
PSC	Production Sharing Contract	
PSDMBP	Pusat Sumber Daya Mineral Batubara Dan Panas Bumi	Center of Mineral Resources, Coal and Geothermal
PT. JIAEC	PT Japan Indonesia Economic Center	
PU	Departemen Pekerjaan Umum	Ministry of Public Works
PUPR	Kementerian Pekerjaan Umum dan Perumahan Rakyat	Ministry of Public Works and Housing
RAD-GRK	Rencana Aksi Daerah Penurunan Emisi Gas Rumah Kaca	Provincial Action Plan to Reduce Greenhouse Gas Emissions
RAN-GRK	Rencana Aksi Nasional Penurunan Emisi Gas Rumah Kaca	National Action Plan to Reduce Greenhouse Gas Emissions
RAPIM	Rapat Pimpinan	Leadership Meeting

Abbreviation	Description	English Translation
RCB	Research Center for Biology	
REDD	Reducing Emissions from Deforestation and Forest Degradation in Developing Countries	
REDD ⁺	Reducing Emissions from Deforestation and Forest Degradation and the Role of Conservation, Sustainable Management of Forests and Enhancement of Forest Carbon Stocks in Developing Countries	
REDIP	Study on the Regional Educational Development and Improvement Project	
REL/RL	Reference Emissions Levels/ Forest Reference Levels	
RENSTRA	Strategic Plan	
REPELITA	Rencana Pembangunan Lima Tahun	Five Year Development Plan
RETPC	Regional Export Training and Promotion Center	
RIHS	Research Institute for Human Settlement	
RISE	Regional Infrastructure for Social and Economic Development	
RISKESDAS	Riset Kesehatan Dasar	Basic Health Survey
RKP	Rencana Kerja Pemerintah	Annual Government Work Plan
RPJMN	Rencana Pembangunan Jangka Menengah Nasional	Medium-term National Development Plan
RUKN	Rencana Umum Ketenagalistrikan Nasional	National Electricity General Plan
SARS	Severe Acute Respiratory Syndrome	
SATREPS	Science and Technology Research Partnership for Sustainable Development	
SCADA	Supervisory Control and Data Acquisition	
SDGs	Sustainable Development Goals	
SEED-Net	ASEAN University Network / Southeast Asia Engineering Education Development Network	
SEZ	Special Economic Zone	
SIAP	Strategic Investment Action Plan	
SISDUK	Sistem Dukungan	Local Village Community Development Support System
SISTTEMS	Strengthening In-Service Teacher Training of Mathematics and Science Education at Junior Secondary Level	
SITRAMP	Study on Integrated Transportation Master Plan for JABODETABEK	
SME	Small and medium-sized enterprise	
STC	Sabo Technical Center	
SOP	Standard Operating Procedure	

Abbreviation	Description	English Translation
SV	the Senior Volunteer	
TA	Technical Assistance	
TFR	Total Fertility Rate	
TNP2K	Tim Nasional Percepatan Penanggulangan Kemiskinan	National Team to Accelerate Poverty Reduction
TOD	Transit Oriented Development	
TPK	Tim Pengembangan Pendidikan Kecamatan	Subdistrict School Management Plan Development. Team
TT	Tetanus Toxoid	
UGM	Universitas Gadjah Mada	Gadjah Mada University
UHC	Universal Health Coverage	
UI	Universitas Indonesia	University of Indonesia
UKP 4	Unit Kerja Presiden Bidang Pengawasan Dan Pengendalian Pembangunan	Presidential Delivery Unit for Development Monitoring and Oversight
UM	Universitas Malang	State University of Malang
UNCRD	United Nations Centre for Regional Development	
UNDP	United Nations Development Programme	
UNFCCC	United Nations Framework Convention on Climate Change	
UNHAS	Universitas Negeri Hasanuddin	Hasanuddin University
UNICEF	United Nations Children's Fund	
UNY	Universitas Negeri Yogyakarta	Yogyakarta State University
UPI	Universitas Pendidikan Indonesia	Indonesia University of Education
USAID	United States Agency for International Development	
USRTJ	Urban Suburban Railway Transportation in Jabodetabek	
USU	North Sumatra University	
VGf	Viability Gap Funding	
VSTC	Volcanic Sabo Technical Center	
VTS	Vessel Traffic Service	
WALS	World Association of Lesson Studies	
WFP	World Food Programme	
WHO	World Health Organization	
WKP	Wilayah Kerja Pertambangan	Geothermal Working Area
WSESTC	Water Supply and Environmental Sanitation Training Center	
YKB	Yayasan Kusuma Buana	Kusuma Buana Foundation

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Outline of the Review

Background

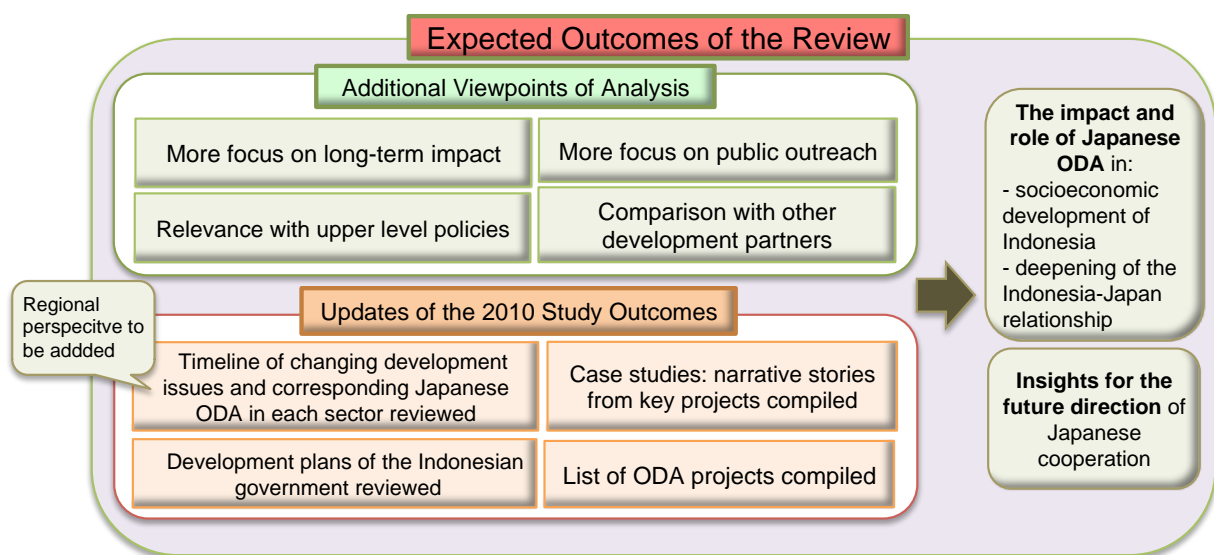
Japanese official development assistance (ODA) to the Republic of Indonesia has a long history going back more than 60 years. For Indonesia, Japan has been the largest bilateral donor. Japanese cooperation has been extended to various sectors utilizing the mixture of three schemes, namely technical cooperation, grant aid, and loan aid. In 2010, JICA conducted a study on “Indonesia’s Development and JICA’s Cooperation” to review the JICA’s cooperation in Indonesia until then. The 2010 study attempted to summarize the overall outcome of Japanese cooperation and show the degree of its contribution to socioeconomic development of Indonesia. It also compiled narrative stories from some important projects in major sectors.

The year 2018 marks the 60th anniversary of the diplomatic relationship between Indonesia and Japan. On this occasion, JICA commissioned a present review to a consultant team headed by International Development Center of Japan Inc. Based on the 2010 study, the team intends to review the Japanese cooperation (ODA and others) to Indonesia to date once again for the following purposes.

Purpose

- 1) To systematically review Japanese ODA to date by sector, timeline, and region, taking note of its changes and philosophy behind them corresponding with Indonesia’s development stages
- 2) To analyze and evaluate the impact and role of Japanese ODA in socioeconomic development of Indonesia and deepening of the relationship between the two countries
- 3) To obtain insights for the future direction of Japanese cooperation in Indonesia

Expected Outcomes



Target Sectors

(1) Economic Policy and Macro-economic Management	(6) Regional Development	(11) Climate Change and Natural Environment Conservation
(2) Transport	(7) Private Sector Development	(12) Governance
(3) Electric Power and Energy	(8) Higher Education and Highly-Skilled Human Resource Development	(13) Health and Medical Care, and Social Security
(4) Water Supply, Drainage, Sewerage and Environmental Management	(9) Basic Education	(14) Culture and Exchange
(5) Disaster Risk Reduction	(10) Food Security/ Agriculture	

Schedule

Period: from June 2017 to June 2018

June - July 2017	: 1 st Study in Japan (Literature review, interview)
June - Aug 2017	: 1 st Trip to Indonesia (Interview and discussion)
Aug - Sep 2017	: 2 nd Study in Japan (Progress Report writing)
Sep - Oct 2017	: 2 nd Trip to Indonesia (Additional interview and Video shooting)
Oct - Nov 2017	: 3 rd Study in Japan (Draft Final Report and PR materials development)
Jan - Feb 2018	: 3 rd Trip to Indonesia (Discussion on Draft Final Report and PR materials)
Feb - Apr 2018	: 4 th Study in Japan (Final Report writing and finalizing PR materials)
Apr - May 2018	: 4 th Trip to Indonesia (Preparation for the symposium)
14th May 2018	: Symposium on Indonesia-Japan Development Cooperation “Building the Future Based on Trust” (in Jakarta)

Outputs

Final report and public outreach materials (video, booklet, and collection of memoir essays)

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Part I Comprehensive Analysis

Chapter I Overview of Japan's Economic Cooperation in Indonesia

Japan's economic cooperation with the Republic of Indonesia (hereinafter referred to as "Indonesia") began in 1954, and since then it has continued to support socio-economic development of Indonesia. Indonesia occupies a geopolitically important position with the sea lane from the Andaman Sea to the Straits of Malacca and Singapore, the South China Sea, and also has abundant reserves of mineral resources. As Indonesia's stability and growth are indispensable for the peace and prosperity of the international community, Japan has provided active and multi-layered support to Indonesia. Japan's contribution, in particular, demonstrated its true value in the times of emergency such as Sukarno debt, international balance of payments crises, and the Asian Financial Crisis.

Despite the overwhelming majority of the people being Muslims, Indonesia does not dare to make Islam as the state religion and stands on the philosophy of "Unity in Diversity (*Bhinneka Tunggal Ika*)" that promotes the coexistence of various religions and ethnic groups. The success of this national model is essential for the economic integration and further development of the ASEAN region. While fully respecting the "nation-building" of Indonesia, Japan has been trying to provide support that meets the needs of each era.

Despite countless difficulties after the independence, Indonesian people, led by the first President Sukarno, worked hard on nation-building, symbolized by the slogan "*dari Sabang sampai Merauke*¹." On the other hand, Indonesia also showed its presence in international politics as a leader of Non-Aligned Movement and held the Bandung Asian-African Conference. When the reparation agreement entered into force between Japan and Indonesia in 1958, projects such as multipurpose dams, hydroelectric power plants, spinning mills, paper mills, and hotel construction were implemented.

When President Suharto took office after the "30 September Movement"² in 1965, the pressing issue of the external debt was tackled first, and then infrastructure development supporting the backbone of the national economy became the focus of cooperation. As a result, Indonesia enjoyed stable economic growth for nearly 30 years. Meanwhile, due to the slump in crude oil prices in the second half of the 1980s, Indonesia was forced to depart from resource dependence and to reform its economic structure; and Japan supported this through the provision of commodity loans.

President Suharto was forced to step down in the turmoil triggered by the Asian Financial Crisis in 1997, and the wave of democratization and decentralization came as a reaction to the centralized development dictatorship. Against this backdrop, Japan, with other development partners, supported the first free election in 1999 as well as subsequent elections in 2004, and contributed to showing the

¹ The expression used to describe the land of Indonesia, extending 5,100 kilometers east-west, from the west end in Sabang in Weh island, north of Banda Aceh in Sumatra island to the east end of Merauke in Papua.

² The coup d'état occurred on 30th September 1965 and the political change accompanying it. As a result, the army right wing led by General Suharto emerged. The Indonesian Communist Party was eliminated, and the authority of President Sukarno fell to the ground.

international community that Indonesia had become a democratic nation, the image of the country that has continued until today. The confusion caused by radically changing direction towards decentralization also calmed down, and under President Yudhoyono, Indonesia returned to the track of the steady economic growth.

From the end of 2000s, symbolic events continued, including the G20 accession (2008) and the Jakarta Commitment (2009). Indonesia's economic growth has been remarkable and income per capita has been improving year by year, while Japan has become a "mature society." As the relationship between the two countries is changing, it is expected that in the future, through a new approach of learning together for new solutions, both countries will work hand-in-hand to cope with the challenges of not only bilateral relations but also the Asian region and the international community.

Table 1: Situation in Indonesia and Direction of Japan's Cooperation

Period	1960s	1970s and early 1980s	Late 1980s	1990s	From the end of 1990s	From the end of 2000s
	Nation-State Building	Economic Development	Structural Adjustment	Growth until the Asian Financial Crisis	Democratization and Decentralization	Middle Income Countries
Historical Context	<ul style="list-style-type: none"> • Cold War • ASEAN (1967) • Green Revolution 	<ul style="list-style-type: none"> • First Oil Crisis (1973) • End of Vietnam War (1975) • Second Oil Crisis (1979) 	<ul style="list-style-type: none"> • Plaza Accord (1985) • Reverse Oil Crisis (1986) • End of Cold War (1989) 	<ul style="list-style-type: none"> • Asian Financial Crisis (1997) 	<ul style="list-style-type: none"> • Millennium Development Goals (2000) • Rise of emerging economies (BRICs) • 2008 financial crisis (2008) 	<ul style="list-style-type: none"> • G20 Accession (2008) • Sustainable Development Goals (2015) • Asian Infrastructure Investment Bank (2015) • ASEAN Economic Community (2015)
Situation in Indonesia	<ul style="list-style-type: none"> • Oil-dependent economic development • Establishment of BAPPENAS (1963) • Inter-Governmental Group of Indonesia (IGGI) (1967-) • Inauguration of President Suharto (1968) • First 5-year development plan (1969) 	<ul style="list-style-type: none"> • Improvement in international balance of payments, economic growth due to soaring crude oil prices • Investment to acquire interests related to resource development 	<ul style="list-style-type: none"> • Deterioration of real economy and international balance of payments due to decline in crude oil prices • Attempt to escape from oil-gas dependent economic structure 	<ul style="list-style-type: none"> • Consultative Group for Indonesia (CGI) (1992-) • Recovery from reverse oil crisis • Inflow of speculative private capital • Capital outflow associated with Financial Crisis • Resignation of President Suharto (1998) 	<ul style="list-style-type: none"> • Laws on local autonomy (1999) • State Finance Law (2003) • Law on National Dev. Planning System (2004) • Election of President Yudhoyono by direct election (2004) • End of CGI (2007) • Law on Capital Investment (2007) • Fiscal policy not dependent on aid 	<ul style="list-style-type: none"> • Japan-Indonesia Economic Partnership Agreement (2008) • Jakarta Commitment (2009) • Withdrawal from OPEC (2009) • Macroeconomic stability and solid economic growth • Presidential Regulation on PPP (2015) • Presidential Regulation on Synchronization of National Dev. Planning/Budgeting Processes (2017)
Reference Indicators	<ul style="list-style-type: none"> • Economic growth rate: avg. 3.5% • GDP per capita USD 70 (1969) 	<ul style="list-style-type: none"> • Economic growth rate: avg. 7.3% • GDP per capita USD 608 (1981) 	<ul style="list-style-type: none"> • Economic growth rate: avg. 5.5% • GDP per capita USD 505 (1988) 	<ul style="list-style-type: none"> • Minus 13% growth (1998) • Economic growth rate: avg. 4.2% • GDP per capita USD 700 (1995) 	<ul style="list-style-type: none"> • Economic growth rate: avg. 4.7% • GDP per capita USD 1,982 (2008) 	<ul style="list-style-type: none"> • Economic growth rate: avg. 5.6% (2008-2016) • GDP per capita USD 3,570 (2016)
Priority Development Issues in Indonesia's 5-Year Development Plans	<ul style="list-style-type: none"> • Early recovery from economic turmoil and stabilization of international balance of payments 	<ul style="list-style-type: none"> • Stable international balance of payments to promote steady economic development 	<ul style="list-style-type: none"> • Transformation of economic/ industrial structure to escape from dependence on oil and gas 	<ul style="list-style-type: none"> • Remediation of economic disparity • Overcoming economic/ financial crisis 	<ul style="list-style-type: none"> • Economic/ financial stability • Response to deterioration of fiscal balance 	<ul style="list-style-type: none"> • Accelerating economic growth • Inclusive growth and poverty reduction • Balanced growth among regions
Direction of Japan's Cooperation	<ul style="list-style-type: none"> • Postwar reparation (1958-1970) • Relief from Sukarno debt 	<ul style="list-style-type: none"> • Strengthening networks to contribute to unification of vast land • Establishment of bases for industries, universities, hospitals, etc. • Irrigation and agricultural land expansion 	<ul style="list-style-type: none"> • Support for socially vulnerable groups by structural adjustment • Infrastructure improvement in metropolitan areas • Umbrella Cooperation to increase food production 	<ul style="list-style-type: none"> • Achieving equality • Human resources development and education • Environmental conservation • Support for industrial restructuring • Industrial Infrastructure 	<ul style="list-style-type: none"> • Realize sustainable growth driven by private sector • Create a democratic and fair society • Peace and stability 	<ul style="list-style-type: none"> • Further economic growth • Correction of inequality and establishment of a safe society • Enhancement of capacity to address issues of Asian region and international society

Chapter II Socio-Economic Development in Indonesia and Japan's Efforts

2.1 Nation-State Building Period (until the 1960s)

(1) Situation in Indonesia

On 17th August 1945, Indonesia declared its independence³, and took the first step of nation-state building based on the “*Pancasila*” (five founding principles) under President Sukarno. The Sukarno administration adopted socialistic controlled economic policies such as asset acquisition and nationalization of Dutch companies, elimination of foreign capital, repression of ethnic Chinese, and import regulation and protection and promotion of local industries. Thus, diplomatic relations with the Western countries became worse, and economic assistance from the international community stopped. As a consequence, a serious shortage of food and supplies occurred, and Indonesia began to face severe inflation⁴ from 1962. The current account balance was also in deficit every year, and the cumulative debt came into a state of economic collapse where repayment of the principal and interest became difficult. Under these circumstances, President Sukarno struggled to run the administration standing on the subtle balance between the military and the leftist (the Indonesian Communist Party), and lost his control, triggered by the “30 September Movement” in 1965.

The top priority of the Suharto's new administration was to quickly settle the economic and social turmoil and accelerate economic development, and hence regaining aid from the Western countries became its basic strategy. Indonesia clarified its cooperative attitude with the Western Bloc by returning to the United Nations in 1966⁵ and participating in the establishment of ASEAN in 1967. Meanwhile, the Inter-Governmental Group on Indonesia (IGGI) was held in 1966 to solve the challenge of deferring external debt repayment. Under these circumstances, the economic system led by state-owned enterprises was shifted to the one led by the private sector, and it was made clear that Indonesia would pursue the policy to promote economic development by introducing overseas aid and foreign capital. According to the policy, the Foreign Investment Law was enacted in 1967, and foreign capital was formally introduced to the country. Also, in 1969, the first Five-year Development Plan (*Rencana Pembangunan Lima Tahun: REPELITA*) was formulated and promulgated as the presidential decree, centering on the National Development Planning Agency (*Badan Perencanaan Pembangunan Nasional: BAPPENAS*)⁶, which is directly under the President.

(2) Major efforts by Japan

Japan began accepting trainees from Indonesia in 1954 even before diplomatic relations between the

³ The Netherlands officially approved Indonesia's independence at the Hague Roundtable on 27th December 1949. The Dutch government, in 2005, came to acknowledge that Indonesia's Independence Day is 17th August 1945.

⁴ From 1962, the inflation rate in Indonesia exceeded 100% annually, which reached 592% in 1965.

⁵ In 1963, the Federation of Malaya annexed Sarawak and Sabah in North Borneo to establish Malaysia. Indonesia opposed Malaysia's accession to the UN and withdrew from the UN in 1965.

⁶ BAPPENAS was founded in 1963, by reorganizing DEPERNAS (*Dewan Perencanaan Nasional: the National Planning Committee*) established in 1958. BAPPENAS was given a mandate to allocate budget by gathering staff and information on policy planning.

two countries were established. Due to the entry into force of the Japan-Indonesia Reparation Agreement in 1958, the Japanese government was obliged to pay a total of USD 223.08 million to the Government of Indonesia in installments. Projects implemented by the reparation grant included dams, hydroelectric power plants, spinning mills, paper mills, and hotel construction. Among others, the construction of so-called “3K dams,” namely Kalangkates Dam and Kali Konto Dam (East Java) and Riam Kanan Dam (South Kalimantan), has had multipurpose functions of flood protection, irrigation, power generation, and promotion of industrialization.

Following the Suharto administration’s policy change to the economic liberalization, the Western countries including Japan agreed to defer debt repayment. IGGI, initially held as a creditor state council to discuss the accumulated debt problem, came to function as a framework of annual policy dialogue from 1967 where the Indonesian government and donor countries/ agencies gathered together to agree on the provision of required development funds.

Against this backdrop, Japan provided the very first ODA loan to Indonesia in 1968 and 1969, and supported Indonesia suffering from the shortage of foreign currency and balance of payments deficit by financing import settlement funds. This commodity loan significantly contributed to economic reconstruction by efficiently suppressing the inflation through the increase of imports of consumer goods, resuming operation of the factories which had stopped or reduced the operation due to lack of raw materials and spare parts, and bringing revenues to the national treasury with counterpart funds. Meanwhile, in line with the priority issues of the Indonesian government, Japan launched various projects including food aid, factory restoration, communication network construction and introduction of family planning. Also, in formulating REPELITA I, Dr. Saburo Okita (Former Minister of Foreign Affairs of Japan) was appointed as the adviser to the Indonesian government in response to the request of the Indonesian government, and made policy advice on planning. This became the starting point for technical cooperation to BAPPENAS started in 1971.

2.2 Development State Period (from the 1970s until the end of 1990s)

President Suharto set development as a national goal. He undertook the reform of economic policy and institutions, and promoted the increase of food production, industrialization and social development. REPELITA, which was formulated six times under the Suharto administration, has placed its development policy priorities on the central government-led economic development, and therefore greatly contributed to strengthening the power base by establishing a centralized regime.

2.2.1 Economic development sub-period (the 1970s and the early 1980s)

(1) Situation in Indonesia

The Suharto administration’s free and open-door policy was welcomed by the Western countries. As overseas aid and investment to Indonesia steadily increased, economic growth began to get on track. President Suharto conducted a general election in 1971 to show the legitimacy of the administration both domestically and abroad, which he won by a wide margin. The support of the Western countries

has brought a sense of stability to the administration, and eventually made it possible to implement continuous policies such as the development of infrastructure networks.

Soaring crude oil prices due to the two oil crises in 1973 and 1979 were “tailwind” for the economic development of Indonesia. The surging oil revenue, coupled with increased overseas development assistance, has become a source of active infrastructure investment. As the infrastructure development progressed, private investment from overseas began to increase⁷. All three sectors of agriculture, industrial and service developed visibly, and Indonesia enjoyed the annual average rate of real economic growth at 6.5%. Especially, the growth of the manufacturing industry was remarkable, reaching an annual average of 12%. Even in the agriculture sector, an increase in the yield of rice by the “Green Revolution” contributed to achieving the longstanding national goal of rice self-sufficiency in 1984.

In this sub-period, under the philosophy of eliminating the root cause of poverty by improving social infrastructure, *InPres* (presidential instruction) programs for rural social capital development was implemented mainly by BAPPENAS. As a result, education, health and rural infrastructures were improved.

Higher crude oil prices, on the other hand, resulted in excessive dependence on oil revenues and enlargement of the government sector. As the rupiah remained high, primary commodities other than oil, such as coffee and rubber, lost in international competition. Also, the manufacturing industry continued to depend on the domestic market, and its export competitiveness was weak. The strengthening of import tariff (1973) and foreign capital regulation (1974) further promoted the import substitution structure. Under these protection policies, companies with vested interests began to grow.

(2) Major efforts by Japan

Japan continued to provide commodity loans in the first half of the 1970s. As in the 1960s, these loans were used for importing industrial inputs, and the operating ratios of many factories were improved. Also, counterpart funds contributed to a more balanced national budget.

Moreover, in four years from 1973, ODA loans totaling 110 billion yen was provided for the new development studies or restoration projects of the oil and gas fields. With these funds, the repair of old oil fields as well as geophysical exploration tests and exploratory drillings in newly developed areas were carried out numerous times. Japanese companies, supported by the Japan National Oil Corporation, discovered large-scale crude oil and natural gas resources in the North Sumatra Block and East Kalimantan Block. They became the essential part of long-term production of LNG in Indonesia since then.

In addition, in order to support the Suharto administration’s policy to enhance the economic infrastructure network, Japan actively worked on the development and improvement of core infrastructure nationwide such as electric power, transport and communication. Among others, the construction of Tanjung Priok Thermal Power Plant and hydro power stations in Java and Sumatra islands, development of transmission and distribution network in eastern Java, development of the Trans-Sumatra Highway and toll roads in the

⁷ Typical examples are LNG development in Arun, North Sumatra and Badak, East Kalimantan. The former is handled by the Mitsubishi Corporation Group and the latter by the Nissho Iwai Group.

Jakarta metropolitan area, rehabilitation of the Java North Trunk Line, and development of Dumai Port are notable examples of cooperation. Furthermore, the improvement of national radio and television broadcasting network has promoted the spread of *Bahasa* Indonesia as a single official language, and thus contributed to fostering public awareness of being an “Indonesian.”

During this sub-period, foundations for industrialization and hub institutions such as universities and hospitals were intensively developed. Those included the Center for Vocational and Extension Service Training (CEVEST), Bogor Agricultural University, the Electronic Engineering Polytechnic Institute of Surabaya, Dr. Cipto Mangunkusumo Hospital, the Jakarta Central Hospital, the Volcanic Sabo Technology Center, and the Multi Media Training Center (MMTC). Meanwhile, in order to meet a pressing need of Indonesia to increase food production, Japan continued its efforts for increased production and stable supply of rice, combined with food aid and irrigation development.

The 1970s was also the time that the Japanese private sector started contributing to Indonesian economic development. The Japanese economy, triggered by the first oil crisis, shifted from the period of high economic growth to that of stable growth, and hence foreign direct investment (FDI) by Japanese companies became active. These companies were mainly in the automobile, consumer electronics and textile industries, and those in the upstream part of business, such as industrial material, started their operations in Indonesia first, followed by those in the midstream business such as production (the first Indonesia investment boom).

2.2.2 Structural adjustment sub-period (the late 1980s)

(1) Situation in Indonesia

Crude oil prices had been rising almost monotonically since 1974 and set the highest value in 1981. However, the value sharply declined from 1983, and in 1986, fell to nearly 40% of the highest value. This slump in crude oil prices heavily hit Indonesia’s current account balance as well as fiscal budget. As the external debt burden increased, the value of the rupiah declined. As a consequence, Indonesian annual economic growth rate, which recorded 9.9% in 1980, fell to 2.1% in 1986.

In view of this situation, the Indonesian government seriously sought to break away from its heavy reliance on oil and gas revenues. With the support of the World Bank and other development partners, deregulation and reform of state-owned enterprises were undertaken from 1986 to 1988, and the core of industrial capital had changed significantly from government sector to private sector. Due to the good performance of ethnic Chinese enterprises, liberalization of the financial sector, rapid increase in investment from overseas, etc., Indonesia was able to shift to less resource-dependent economy. As the manufacturing industry’s share of GDP increased, the effect of structural adjustment began to appear in the latter half of the 1980s, and the economic growth rate recovered to 5-7%.

(2) Major efforts by Japan

In order to support Indonesia’s international balance of payments and structural adjustment, Japan resumed the provision of commodity loans. In addition, Japan provided sector program loans from

1988, and supported socially vulnerable groups who were subject to the negative impact of structural adjustment policies. With these loans, development projects were carried out in such sectors as residential environment, water supply, and rural electrification. These sectors were closely tied to people's lives, and considered to play an important role in establishing a foundation for future economic growth.

In the same sub-period, a number of technical cooperation projects started including the second Umbrella Cooperation and assistance for maternal and child health, Bio Farma, the Singosari Artificial Insemination Center, and the Indonesia Export Trading Center (IETC). In 1988, the Japan Overseas Cooperation Volunteers (JOCV) Program began in Indonesia.

2.2.3 Growth until the Asian Financial Crisis sub-period (the 1990s)

(1) Situation in Indonesia

After the end of the Cold War, the integration of the world economy progressed, and cross-border capital movements became vigorous. As a result of liberalizing capital and finance in the late 1980s, a large amount of short-term funds flowed into Indonesia, and boosted the rapid economic growth of the 1990s. On the other hand, the current account deficit and external debt expanded. The gap between the rich and the poor and regional disparities became prominent, and thus REPELITA VI (1994/95- 1998/99) focused on "human resource development" and "achieving equality and addressing poverty problems."

In the meantime, at IGGI, where the Netherlands served as the chair country and a small number of participants were able to discuss policy issues, the Western values such as human rights and democracy became involved in the agenda. From the judgment of the Indonesian government that discussion on development issues became ineffective, IGGI was reorganized as the Consultative Group for Indonesia (CGI) in 1992, and co-chaired by the World Bank and the Government of Indonesia.

The Asian Financial Crisis which broke out in Thailand in 1997 spilled over to Indonesia. Investors began to transfer US dollars to overseas. The general public also withdrew assets deposited in commercial banks and converted them to US dollars. As a result, the depreciation of the rupiah accelerated further⁸, which brought management uneasiness to some banks. The prices of daily necessities rose sharply due to inflation, and this resulted in a riot against it.

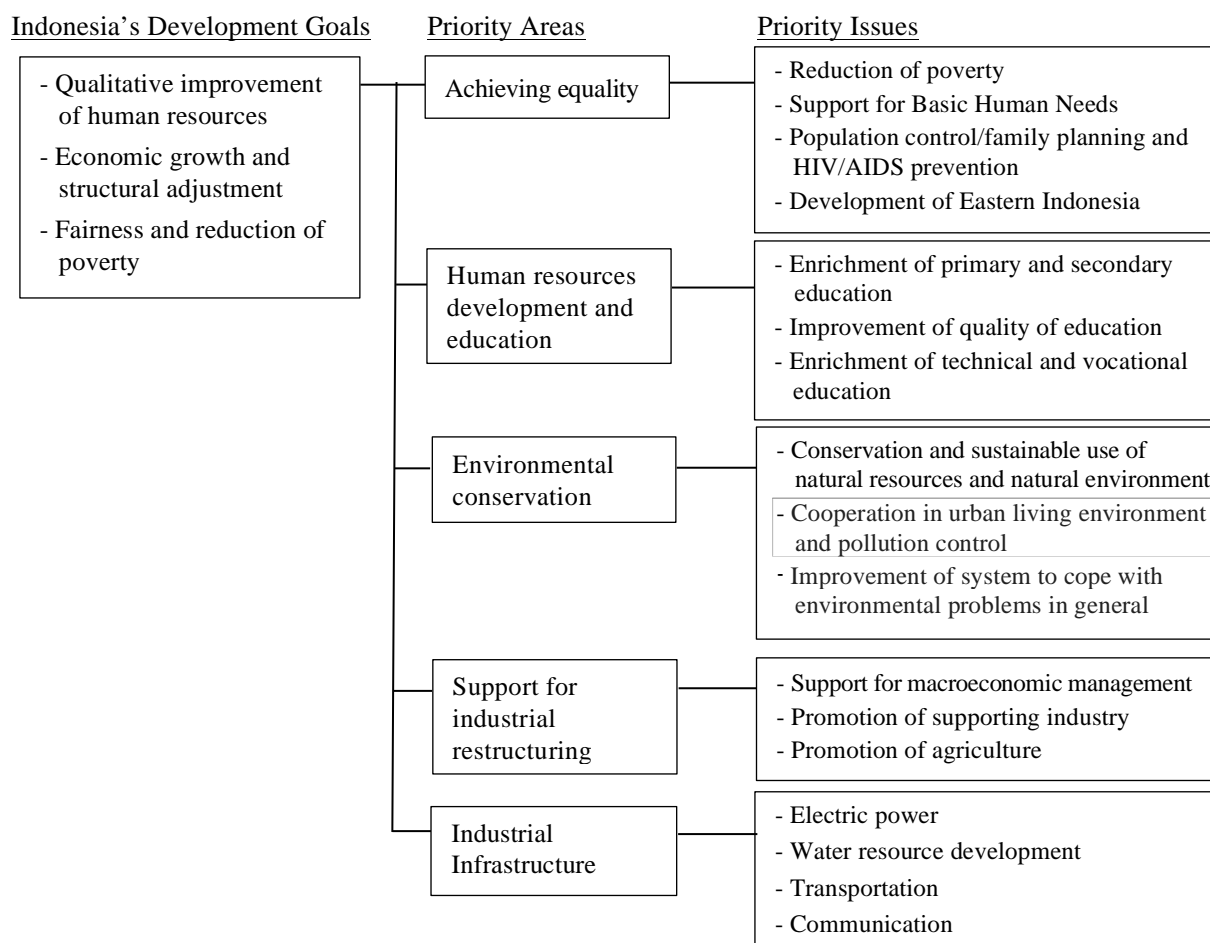
In response to this situation, the International Monetary Fund (IMF) decided to provide liquidity subject to a series of reforms such as the soundness of financial institutions. As it would compel a very large sacrifice, President Suharto was reluctant to accept imposed conditions. The distrust of the President, who could not overcome the situation, had led to criticism of illegal accumulation of wealth by his family and his personalization of politics, and the President was forced to step down. Thus, the Suharto's "development dictatorship" regime, which lasted for more than 30 years, came to an end. The economic growth rate in this year recorded minus 13%, and it took several years to recover Indonesian economy.

⁸ Indonesian Rupiah plummeted from USD 1 = about IDR 2,500 in early July 1997 to IDR 10,000 in January 1998.

(2) Major efforts by Japan

The Plaza Accord (1985) appreciated the yen, and Japanese companies' FDI in Indonesia has become aggressive (the second Indonesia investment boom). Japanese companies were mainly in the manufacturing industry, consisting of manufacturers of motorcycles and automobile (domestic demand-oriented) and consumer electronics (export-oriented). In response to this investment boom, major Japanese trading companies, establishing joint ventures with leading companies in Indonesia, opened several large-scale industrial parks in eastern Jakarta in the early 1990s.

Under such circumstances, based on the policy dialogue with the Indonesian side by the Comprehensive Economic Cooperation Study Team dispatched in February 1994, the Japan's ODA Country Policy for Indonesia was formulated. This country-specific assistance policy focused on five priority areas of "achieving equality," "human resources development and education," "environmental conservation," "support for industrial restructuring," and "industrial infrastructure," and it was consistent with REPELITA VI, which strengthened awareness of social equity. "Development of Eastern Indonesia" was raised as a priority issue to support the Indonesian government's efforts to rectify regional disparities.



Source: Japan's ODA Country Policy for Indonesia (February 1994) as cited in Ministry of Foreign Affairs of Japan. *Country Assistance Evaluation of Indonesia: Summary*. 2004.

Figure 1: The Objective Framework of Japan's ODA Country Policy for Indonesia (1994)

In response to the Asian Financial Crisis, Japan dispatched an economic policy support team consisting of academics to provide policy advices to President Suharto. As President Suharto finally accepted the IMF relief package, Japan also launched comprehensive support.

In 1998, three sector program loans were provided by Japan, and their counterpart funds were spent to alleviate poverty and rectify regional disparities by supporting areas greatly affected by economic structural reform such as education, health and sanitation, and social welfare. Financial support based on the “New Miyazawa Initiative”⁹ was also implemented aiming at relieving the socially vulnerable groups who would suffer the most, along with the drastic change in economic environment. Japan, with the World Bank, has played an important role in supporting the Indonesian economy through the large amount of financial support.

2.3 Democratization and Decentralization Period (from the end of 1990s)

(1) Situation in Indonesia

In May 1998, following the resignation of President Suharto, Vice President Habibie was appointed President and immediately set about the convergence of the financial and economic crisis. The Habibie administration promoted the democratization policy by enacting or revising the Law on Political Parties, the Law on General Election, and the Law on Representative Bodies, laying the foundation for the rule of law. The centralized governance system thrust under the Suharto administration was also changed, and the Law on Local Governance and the Law on Fiscal Balance between Central and Local Governments (laws on local autonomy) were enacted to delegate substantial authority to local governments. Meanwhile, the international support system led by IMF was set up.

On the other hand, intensified independence movement in East Timor led to a decline in the centripetal force of the administration. In the June 1999 general election, the ruling party Golkar reduced the number of seats, and the Indonesian Democratic Party of Struggle (PDI-P) became the first party. Therefore, President Habibie did not run in the presidential nomination election in October 1999, and Abdurrahman Wahid who led the National Awakening Party (PKB) was elected as the third President, and PDI-P’s party leader, Megawati became the Vice President.

Under the Wahid administration, the laws on local autonomy came into force in 2001, and full-fledged decentralization of administration and finance was initiated. President Wahid, who had shipped out with the public’s expectations, was dismissed in July 2001 due to a deep-rooted discord with the legislative body over his political attitude, and Vice President Megawati was promoted to the successor President. In the times of Presidents Wahid and Megawati, under the IMF program, responses to the fiscal and monetary system reforms and debt repayment problems were smooth, and the Indonesian economy has finally set into the trajectory of steady economic growth.

⁹ In order to restore the real economy of the Asian countries after the Asian Financial Crisis, the Government of Japan announced the “New Miyazawa Initiative,” where Japan pledged to fund USD 30 billion, of which USD 15 billion as medium and long-term funding support and USD 15 billion in support of short-term funds demand in the process of promoting economic reform.

In October 2004, the Yudhoyono administration was established by the first direct presidential election. His administration strengthened its policy foundation by ensuring a stable majority of ruling party forces, having good control over the armed forces, the national police and the National Intelligence Agency, and economic management by a new economic team led by technocrats. The administration performed well in judicial reform, eradication of corruption, infrastructure development, and the Aceh reconstruction after the Great Earthquake off the Coast of Sumatra and Tsunami in the Indian Ocean in December 2004.

Meanwhile, since the middle of the 2000s, a large amount of funds accompanying monetary easing policy of the developed countries had flowed into emerging markets, and resource demand in China and India was greatly increased. As a result, Indonesia successfully exported large amounts of coal and palm oil at high prices, which greatly contributed to economic growth. On the other hand, destruction of nature and environmental problems caused by random resource development have become a new domestic issue.

Triggered by the Asian Financial Crisis, the Indonesian government launched a policy to minimize its dependence on the overseas assistance. In order to reduce the government debt, it has revised its budget formation practices incorporating the overseas assistance and attempted to diversify the fund sources by utilizing deficit government bonds and short-term government securities. As a result, the international community's assistance to Indonesia came to a turning point. The inter-governmental meetings that had been in effect since 1966 was abolished in 2007¹⁰ due to the completion of the early repayment of the IMF debt in 2006 and the prospect of repayment of the public external debt. After Indonesia's accession to the G20 in 2008, the Jakarta Commitment on aid coordination was agreed and signed in 2009, which indicated a paradigm shift from a conventional donor-recipient relationship to a partnership with development partners. Thus, a policy to select aid by the ownership of the Indonesian side was launched.

(2) Major efforts by Japan

As "an escape from the economic crisis" and "development of the social safety net" became the priorities of the Indonesian government, Japan took a position that it is important to support small and medium-sized enterprises as an industrial policy rather than a social policy and to boost economic structural reform to promote economic growth in Indonesia. At the time, IMF along with the World Bank had sought to minimize industrial policies with excessive government intervention. Based on the recognition that an effective industrial policy is needed for nurturing supporting industries, Japan made a policy recommendation for comprehensive SMEs promotion to the ministers in charge of industrial policy through the submission of "Urata Report" in July 2000.

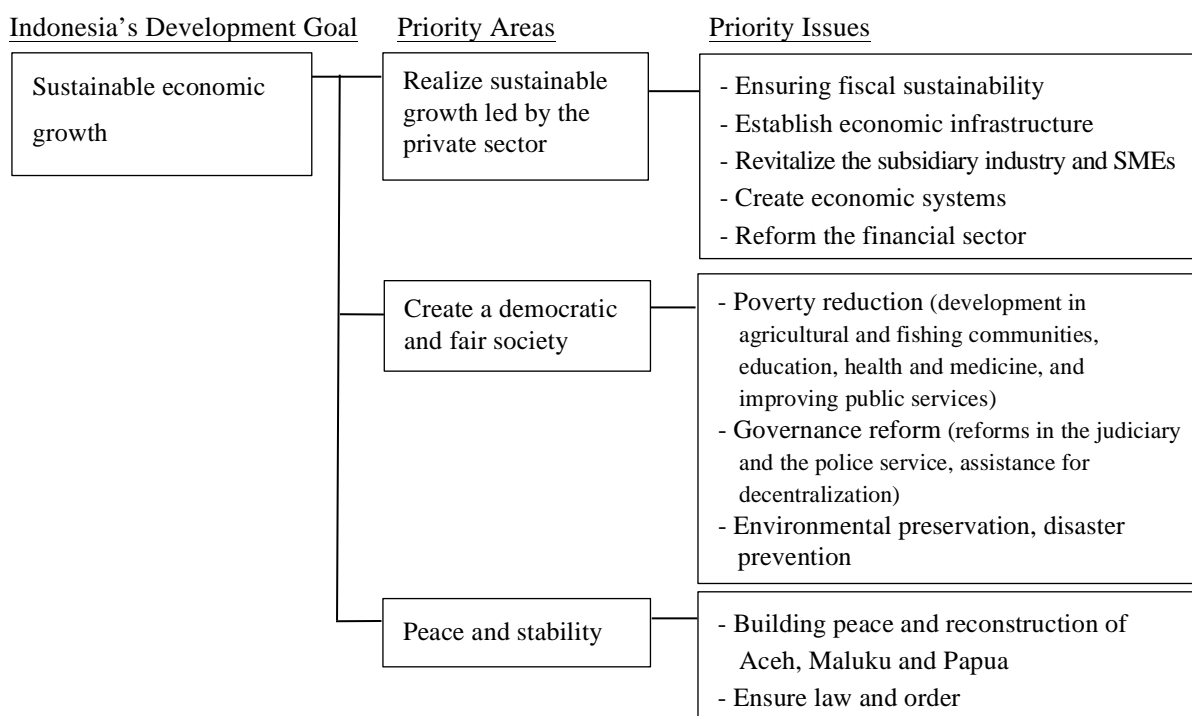
In 2001, President Megawati met with Prime Minister Koizumi, and requested the economic policy support for high-level policy dialogue. Therefore, six academics of the economic policy support team at the time of the Asian Financial Crisis were again dispatched, and policy dialogue was repeatedly held with major ministers in Indonesia. The policy dialogue ranged over a variety of fields such as macro-economic

¹⁰ Since CGI came to invite a wide range of participants including NGOs, it was no longer a place to effectively discuss policies and development assistance. Its cancellation was decided at the idea of Dr. Sri Mulyani, Minister of Finance at that time. (from an interview with Prof. Asanuma in September 2017)

management, financial sector reform, promotion of small and medium-sized enterprises, expansion of private investment, democratization, and decentralization¹¹. As in 1999, the Japan-Indonesia Policy Forum was held in 2004, which since then became a regular framework where politicians, bureaucrats, business figures, academics and other stakeholders of the two countries gathered together to discuss policy issues to be addressed by the forthcoming administration in the presidential election year of Indonesia.

The formulation of the Country Assistance Program for Indonesia (November 2004) coincided with a major turning point of Indonesia, namely the recovery from the Asian Financial Crisis and the transformation from the 30 year-long Suharto regime. For this reason, the program focused on “sustainable growth led by the private sector,” while aiming to create “a democratic and fair society” from a longer-term perspective. The support for “peace and stability” was positioned as its precondition.

Ahead of the formulation of the program, Japan had already started its assistance for Indonesia’s transition to democracy and decentralization. The assistance to the election in 1999 and the technical cooperation for the population census in 2000, which was in line with the past cooperation in the statistics subsector, were pioneering cases, followed by support for the reform of the Indonesian National Police, legal and judicial reform, the general and presidential elections in 2004, and the capacity development of local government officials. Moreover, efforts were made to recover from frequent large-scale disasters and to develop growth bases in eastern Indonesia through the Northeast Indonesia Development Program.



Source: Government of Japan. Country Assistance Program for the Republic of Indonesia. November 2004.

Figure 2: The Objective Framework of Japan’s Country Assistance Program for Indonesia (2004)

¹¹ Based on the policy dialogue held in September 2001, three pillars were added to the ODA Country Policy of 1994. They are: (1) support for macro-economic stabilization; (2) support for various reforms including a support for good governance; and (3) response to urgent needs, such as elimination of economic bottlenecks for the time being.

In coordination with the World Bank, since 2004, Japan has shifted its focus of financial assistance from conventional balance of payments and structural adjustment to budget deficits. Under these circumstances, technical cooperation projects in new fields such as finance operations, tax administration, and capital market development have become into full-scale.

Regarding the FDI, in the transition period from the Asian Financial Crisis to democratization (1998-2004), investment in Indonesia by foreign companies including Japanese companies decreased sharply. In addition to the deteriorating investment climate affected by the political, economic and social turmoil in Indonesia, Japan also suffered from economic recessions (1997-1999 and 2000-2002) so that Japanese companies lacked investment capacity. Nevertheless, the FDI in Indonesia including Japan has gradually recovered since the start of the first term of the Yudhoyono administration (2004-2009).

2.4 Toward Upper Middle Income Countries¹² Period (from the end of 2000s)

(1) Situation in Indonesia

While many countries suffered from negative economic growth due to the collapse of Lehman Brothers in 2008, Indonesian economy, led by domestic demand (mainly consumer spending) with low dependence on exports, showed steady growth.

Based on the security and diplomatic achievements of the first term, the second term of the Yudhoyono administration aimed to expand the economic growth. Although the economic growth rate remained at 5.8% on average during the second term, the unemployment rate dropped from 7.9% in 2009 to 5.9% in 2014, and the poverty ratio also decreased from 14.2% to 11.3% during the same period. In 2011, the Yudhoyono administration launched the “Masterplan for Acceleration and Expansion of Indonesia’s Economic Development 2011-2025 (MP3EI)” as a national public investment plan covering the whole Indonesia.

President Yudhoyono finished two successive terms for ten years in 2014. In the 2014 presidential election, Joko Widodo, a candidate who stressed the importance of the ideologies of the time of independence such as “*Pancasila*” and “*Trisakti*” (political sovereignty, economic independence, cultural identity), was elected as President. In 2015, the Joko administration reduced fuel subsidies which had been the cause of financial rigidity, and thereby created fiscal space for increasing the budget for infrastructure development. Besides, reduction of income disparity among regions¹³ and regional development were listed as priority issues, and thus the budget allocation to local governments has been greatly increased. Furthermore, in order to overcome the constraints on development budget, efforts have been made to actively utilize private funds for infrastructure

¹² According to the World Bank’s classification for the fiscal year 2018, upper middle-income economies are those with a GNI per capita between USD 3,956 and USD 12,235.

¹³ The subject of Independence Day’s speech in 2017 was “to fairly distribute the fruits of development to the people.” It seemed that the President felt the need to deliver the message, “return to Article 33,” which is the spirit of the Indonesian Constitution. (from an interview with Mr. Shirota in September 2017)

development. It is urgent to improve an environment for attracting FDI by promoting deregulation on foreign capital and developing the mechanism for public private partnership (PPP).

On the other hand, the Joko administration also emphasized on education and health, medical care and welfare policies for the poor. In particular, the goals are set to achieve national public insurance, as well as improve the subscription rate of labor insurance by 2019. Having in mind that the demographic bonus ends in the 2030s, the Indonesian government has been trying to enhance social security system.

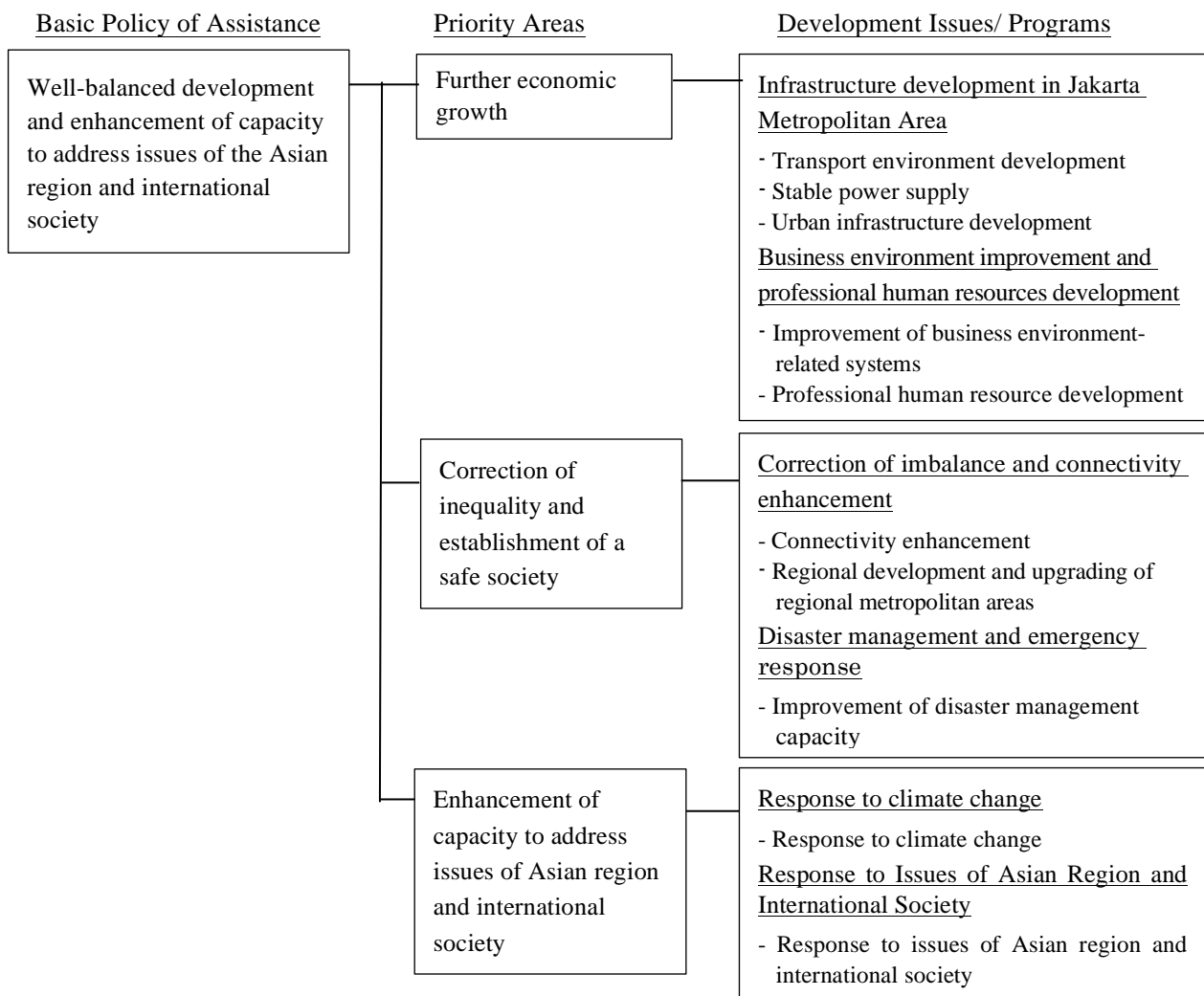
(2) Major efforts by Japan

Indonesia became the first G20 member country in Southeast Asia in 2008 and has expanded its role in the international community. Hence, the strategic partnership between Japan and Indonesia is becoming more important. In July 2008, the Japan-Indonesia Economic Partnership Agreement (JIEPA), which agreed on a wide range of cooperation including the reduction and abolition of trade barriers, ensuring consistency, rational operation and transparency of existing legal system, improvement of investment environment, and energy and mineral resources, came into force.

Due to the fiscal restraint policy adopted after the Asian Financial Crisis, Indonesia's ratio of public investment to GDP has fallen to about a half, resulting in a large infrastructure gap. In particular, the shortage of the transport infrastructure in the Jakarta metropolitan area became a serious problem. Urbanization has progressed rapidly, and the infrastructure system became unable to respond to the transport demand. As a result, prescription based on a ground design became essential rather than ad hoc intervention. In response to the MP3EI launched by the Yudhoyono administration in 2011, Japan intended to focus its infrastructure support on the Jakarta metropolitan area through the formulation of "the Masterplan for Establishing Metropolitan Priority Area (MPA) for Investment and Industry in Jabodetabek Area by 2020." Public-private partnership projects between Japan and Indonesia were also selected as flagship projects.

In the Country Assistance Policy for Indonesia (April 2012), "enhancing capacity to address issues of Asian region and international society" has been added as a new priority area. Assistance programs in this priority area include those improving Indonesia's ability to cope with global issues such as climate change and maritime security and supporting Indonesia's efforts to become a donor country.

The "Japan Indonesia Policy Forum" was also held in 2014, and policy issues to be addressed by the next administration were discussed. However, under the Joko administration, emphasis has been placed on the maritime nation and regional development, and thus the MPA that concentrated the projects in the Jakarta metropolitan area was no longer consistent with the new administration's policy direction. Currently, the Japanese government has been supporting the development of Indonesia's grand design towards an upper middle-income country in the areas of PPP mechanism, modernization of tax administration, performance-based budgeting, and social security system.



Source: Government of Japan. *Country Assistance Policy for the Republic of Indonesia*. April 2012.

Figure 3: The Objective Framework of Japan’s Country Assistance Policy for Indonesia (2012)

Japanese companies’ FDI in Indonesia turned to a sharp increase after 2010 as the negative influence of the collapse of Lehman Brothers had faded away (the third Indonesia investment boom). The role of the private sector in the developing countries has increased, and the inflowing private funds have been rapidly expanding. Against this backdrop, JICA has developed a variety of private sector partnership programs¹⁴ since 2010 and supports Japanese companies’ business development in Indonesia. Meanwhile, Japan provided a private-sector investment finance for “Supporting Human Resource Development in Indonesia along with the Business of Japanese Companies” in 2014, which was the first project in Indonesia under the scheme since it was resumed in 2012. In addition to conventional ODA schemes, promotion of private sector development is also expected to accelerate social and economic development in Indonesia.

¹⁴ In October 2008, JICA established the Office for Private Sector Partnership (currently the Private Sector Partnership and Finance Department). JICA has offered a series of proposal-based programs for Japanese private sector: From FY 2010, the “Preparatory Survey F/S”; from FY 2012 the “Small and Medium-sized Enterprise Overseas Development Support Project,” and from FY 2013 the “Collaboration program with the Private Sector for Disseminating Japanese Technology.”

Appendix: Particular Emphasis on the National Mid-term Development Plans

In Indonesia, the national mid-term development plan has been formulated ten times so far, and the development has been pursued accordingly. The summary of the national mid-term development plans is shown in the table below. The philosophy consistent throughout all these development plans is a proper balance among “stability,” “growth,” and “distribution.” It can be seen that “stability” was regarded as the most important objective especially in the process of nation-building, and when “growth” got on track, more attention was paid to “distribution.”

Table 2: Summary of Indonesian National Mid-term Plans

Title	Background	Development Policy	Priority Areas
First Five Year Development Plan (REPELITA I : 1969/70-1973/74)	<ul style="list-style-type: none"> • A need for early recovery from economic turmoil • Difficulty in international balance of payments 	<ul style="list-style-type: none"> • Liberalization of economic control framework • Economic rebuilding and stabilization 	<ul style="list-style-type: none"> • Agriculture, basic infrastructure development, basic manufacturing industry, oil and mining • Manufacturing industry’s linkage with agriculture • Infrastructure development focuses on networking (electricity, road, etc.) • Family planning
Second Five Year Development Plan (REPELITA II : 1974/75-1978/79)	<ul style="list-style-type: none"> • A need to create employment opportunities through economic growth 	<ul style="list-style-type: none"> • From stability to growth 	<ul style="list-style-type: none"> • Import of capital goods rather than consumption goods • Promotion of labor-intensive industries • Agriculture: increases food production, improves self-sufficiency rate of rice, creates rural employment • Manufacturing industry: basic consumer goods for employment absorption and export expansion • Resource development for foreign currency earnings • Infrastructure development: electricity, transportation, communication • Family planning
Third Five Year Development Plan (REPELITA III: 1979/80-1983/84)	<ul style="list-style-type: none"> • Distribution and stability as well as growth • Decrease in the weight of agriculture and mining, and rise in the weight of manufacturing, construction, transportation and communications 	<ul style="list-style-type: none"> • Three basic policies: <ol style="list-style-type: none"> 1. Achieve food self-sufficiency 2. Promote labor-intensive industry 3. Promote final product manufacturing industry • A challenge for “structural change” for sustainable growth 	<ul style="list-style-type: none"> • Promotion of import substitution industries for saving foreign currencies • Promotion of labor-intensive industries • Agriculture still plays an important role: achieves food self-sufficiency, creates employment, supplies raw materials, earns foreign currencies • Continued focus on infrastructure development
Fourth Five Year Development Plan (REPELITA IV: 1984/85-1988/89)	<ul style="list-style-type: none"> • A need to strengthen the foundation for sustainable growth • More attention needs to be paid to distribution in addition to production side • “Reverse oil crisis” (a slump in crude oil prices) 	<ul style="list-style-type: none"> • Reform of the industrial structure: to be less oil-dependent by promoting capital goods and intermediate input goods production with new employment opportunities 	<ul style="list-style-type: none"> • Agriculture contributes to: achieving food self-sufficiency, supplying raw material, creating employment, expanding export, increasing farmers’ income, and promoting regional development • Manufacturing industry: industrial machinery, urea, cement and garment • Enhanced linkage between large enterprises and SMEs • Infrastructure development: strengthens inter- regional linkages through transportation and communications
Fifth Five Year Development Plan (REPELITA V: 1989/90-1993/94)	<ul style="list-style-type: none"> • A need to form a more diversified, efficient and dynamic society for the next 25 years • Job creation is a pressing issue 	<ul style="list-style-type: none"> • Balanced economic structure • Regional development based on the “archipelago concept” that emphasizes national integration and unity (decentralization to resolve regional disparities and securing of regional development funds by central government) 	<ul style="list-style-type: none"> • Increase in the weight of the second and tertiary industries • Expansion of export by non-oil and gas sector, and expansion of domestic/ foreign investment • Manufacturing industry as the source of growth and employment: emphasizes promotion of SMEs and agricultural products processing industry • Diversification of export items and promotion of import substitution industry • Infrastructure development: focuses on expansion and maintenance • Tourism promotion: earns foreign currencies, creates employment, expands business opportunities, and develops Indonesian culture

Title	Background	Development Policy	Priority Areas
Sixth Five Year Development Plan (REPELITA VI: 1994/95-1998/99)	<ul style="list-style-type: none"> A need for qualitative improvement of human resources for realizing high economic growth The gap between the rich and the poor and regional disparities become prominent 	<ul style="list-style-type: none"> Increase GDP per capita to USD 1,000 in 1999 Reduce population growth rate to 1.51% in 1998 Expansion of exports by the industrial sector as a growth engine Enhanced linkage between agriculture and industry Enriching the service industry for the development of agriculture and industry 	<ul style="list-style-type: none"> Strengthening of non-oil and gas sector including agro-industry, mineral resources processing, machinery, capital goods, export-oriented industry Fostering competitive SMEs and local industries Infrastructure development: new development, maintenance and repair Tourism promotion for foreign currency earnings
National Development Program (PROPENAS: 2000-2004)	<ul style="list-style-type: none"> Drastic restructuring of the political and economic systems after the Suharto regime Five challenges: <ol style="list-style-type: none"> Increased social conflict and lack of national unity Weakened legal and human rights compliance Slow economic recovery Decline in level of welfare Delay in regional and community development 	<ul style="list-style-type: none"> Economic growth rate at 6-7%, unemployment rate at 5% or less, inflation rate at 3-5%, and poverty rate at 14% or less National unity under a democratic political system Establishing the rule of law and of good governance Development of “economic system for the people” Economic development in line with globalization and decentralization 	<p><u>Seven Programs</u></p> <ol style="list-style-type: none"> Poverty reduction Strengthening/ fostering micro, small and medium enterprises Financial/ economic stability and strengthening of export Expansion of export by strengthening competitiveness in non-oil and gas sector Promotion of investment through capital market development Infrastructure development Consideration for the environment and effective use of resources
National Medium Term Development Plan (RPJMN: 2005-2009)	<ul style="list-style-type: none"> Transition to democratic regime Repeated natural disasters Back to the track of economic growth Widening disparity caused by resource allocation Higher level of growth needed 	<ul style="list-style-type: none"> Improving the quality of education and life Addressing regional disparities Response to infrastructure development that has been stagnant since the Asian Financial Crisis 	<ul style="list-style-type: none"> Poverty reduction Concrete measures to expand foreign investment Expansion of export Strengthening the competitiveness of the manufacturing industry Revitalization of agriculture Macro-economic stability
National Medium Term Development Plan (RPJMN: 2010-2014)	<ul style="list-style-type: none"> Established democracy Acceleration of economic growth (employment opportunities, infrastructure development, productivity improvement) A need for giving more consideration to regional balance, the poor, and the environment A need for better synergy between central and local governments, strengthening the capacity of local governments Strengthening efforts to reform public servant system Strengthening efforts for the appropriateness of law enforcement and the prevention of corruption 	<ul style="list-style-type: none"> Vision: “Prosperous, Democratic and Fair Indonesia” Economic growth rate at 6.3-6.8% Inflation rate at 4-6% Lower unemployment rate to 5-6% in 2014 Lower poverty rate to 8-10% in 2014 	<ol style="list-style-type: none"> Bureaucracy and governance reform Education Health Poverty reduction Food security Infrastructure development Investment and business environment improvement Energy Environment and disaster risk reduction The poorest, remote and post conflict areas Culture, creativity and innovation
National Medium Term Development Plan (RPJMN: 2015-2019)	<ul style="list-style-type: none"> Domestic social instability has come to surface such as social disparities and religious diversity shaken by the Islamic State A need for actively promoting private funds for infrastructure improvement 	<ul style="list-style-type: none"> Vision: “Realization of independent state Indonesia, which is autonomous and in accordance with the spirit of <i>gotong-royong</i>” “Maritime Nation” From growth to distribution Indonesia-centered orientation 	<p><u>Three Dimensions</u></p> <ol style="list-style-type: none"> Human resources development Priority sectors (food, energy, maritime affairs, industry and tourism) Addressing income/ inter-regional disparities

In Suharto's "New Order (*Orde Baru*)" regime, development was positioned as an essential part of the national policy, and achieving development goals was given top priority. The first 25 Year Development Plan (*Pembangunan Jangka Panjang: PJP*) and the first REPELITA were formulated in 1969, and since then, REPELITA had been subsequently formulated and implemented every five years thereafter. Three basic principles of Suharto's development policy, the so-called "Development Trilogy," were:

- High enough economic growth;
- Development aiming at realizing social equity, and fair distribution of its results for the whole nation, and
- Stability of a sound and vibrant state.

Under the Suharto regime over 30 years, development policies emphasizing economic liberalization, introduction of foreign capital, oil and gas export and industrialization, and macro equilibrium policies to curb inflation, etc. were implemented. With the benefits of two-time international oil price hikes in the 1970s, Indonesia had realized high economic growth in the long term (average 7% growth per year from the 1970s to the mid-1990s), and it was once praised as the "East Asian Miracle."

After President Suharto had failed due to the Asian Financial Crisis in 1998, REPELITA was renamed to PROPENAS (*Program Pembangunan Nasional*) under the Wahid administration, and the national mid-term development plan came to be enacted by the law passed through the legislative assembly, rather than by the presidential decree. In response to a major turnaround from centralization to decentralization, a more democratic method of development planning, *Musrenbang* (Musyawarah Perencanaan Pembangunan), was introduced in order to incorporate the voices of people at all level of society and the interests of all regions and reflect them into the national development plan.

With the enactment of the National Development Planning System Law in October 2004, just before the inauguration of President Yudhoyono, both central government and local governments are to formulate development plans for long-term (20 years), mid-term (5 years), and short-term (1 year), respectively. The long-term development plan of the central government is enacted by the law, while the mid-term and short-term development plans are issued by the presidential decree. The president's election promises are first reflected in the national mid-term development plan, RPJMN (*Rencana Pembangunan Jangka Menengah Nasional*). Then, RPJMN is embodied in the annual government work plan (Rencana Kerja Pemerintah: RKP), which is approved at the cabinet meeting. RKP is a plan that sets the priority policies for the year, and shows performance indicators, their targets and budget ceiling for programs.

Chapter III Results of Japan’s Economic Cooperation and Outcomes by Sector

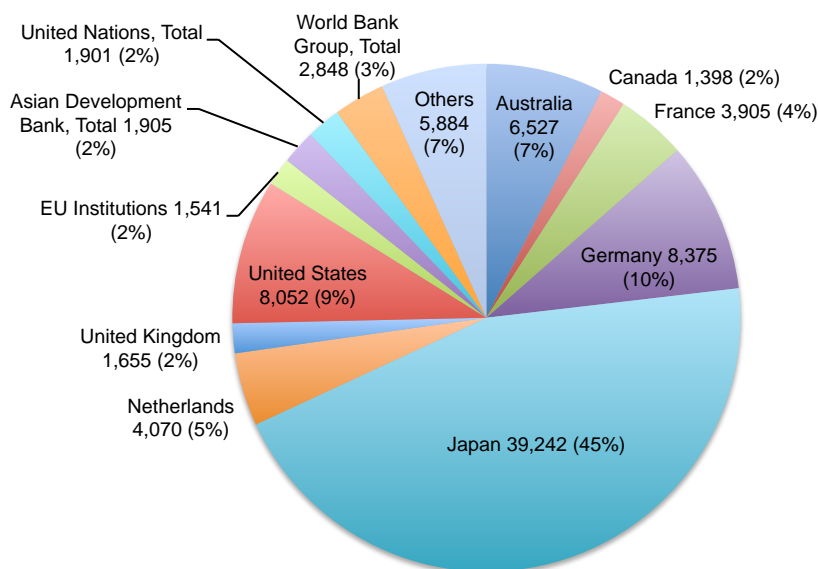
3.1 Overview of Japan’s Cooperation (ODA and Others) to Indonesia

The history of Japan’s cooperation to Indonesia dates back even before the establishment of diplomatic relations. In 1954, right after its participation in the Colombo Plan, Japan accepted 15 trainees from Indonesia for the first time. The Peace Treaty and Reparations Agreement between the two countries was signed and went into effect in 1958. Since then, Japan has consistently provided support to Indonesia until today.

3.1.1 Gross disbursement of ODA to Indonesia

The gross disbursement of ODA to Indonesia from 1960 to 2016 amounted to USD 87.34 billion (current prices). Of this, Japan contributed 45% (USD 39.24 billion), far larger than other development partners. Second was Germany (10%, USD 8.37 billion), followed by the United States (9%, USD 8.05 billion) and Australia (7%, USD 6.53 billion).

The share of international organizations is rather small. The World Bank Group (3%, USD 2.85 billion) is at the top among them, followed by the Asian Development Bank Group (2%, USD 1.95 billion), and the United Nations (2%, USD 1.91 billion).

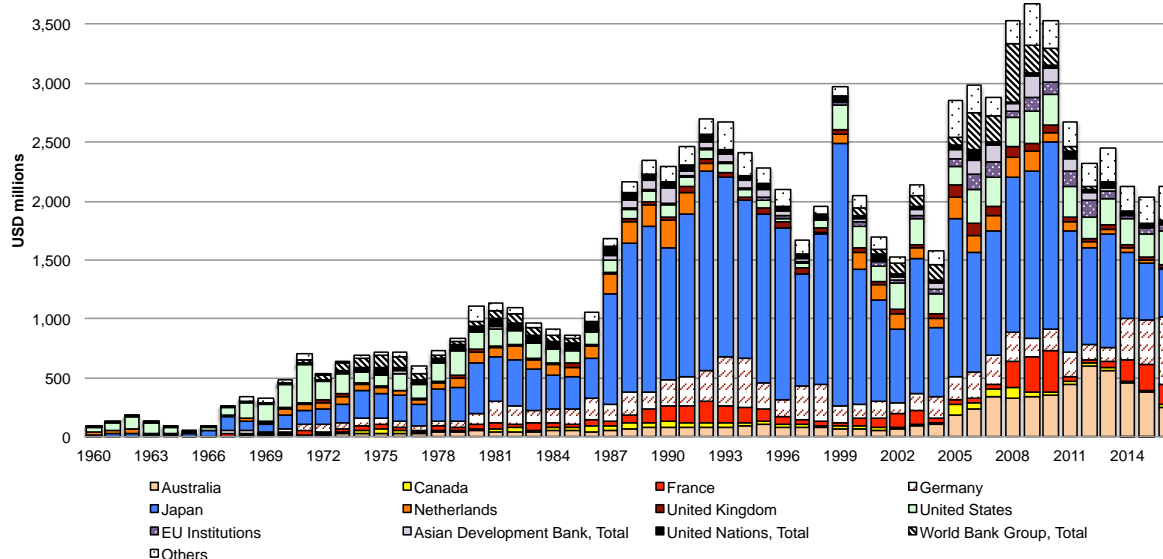


Note: The above chart does not include ordinary capital resources (OCR) financing by the World Bank (IBRD) and the Asian Development Bank (ADB). As a rough guide, if they are included, Japan, the World Bank, and ADB account for about one-third of the total each.

Source: OECD

Figure 4: Gross Disbursement of ODA to Indonesia by Development Partner (current prices from 1960 to 2016, unit: USD millions)

Looking at the trend in gross disbursement of ODA to Indonesia, Japan has consistently been the largest contributing country over 40 years since 1974. However, in recent years, the scale of Japan's support has been on a downward trend, while Australia is increasing its presence.

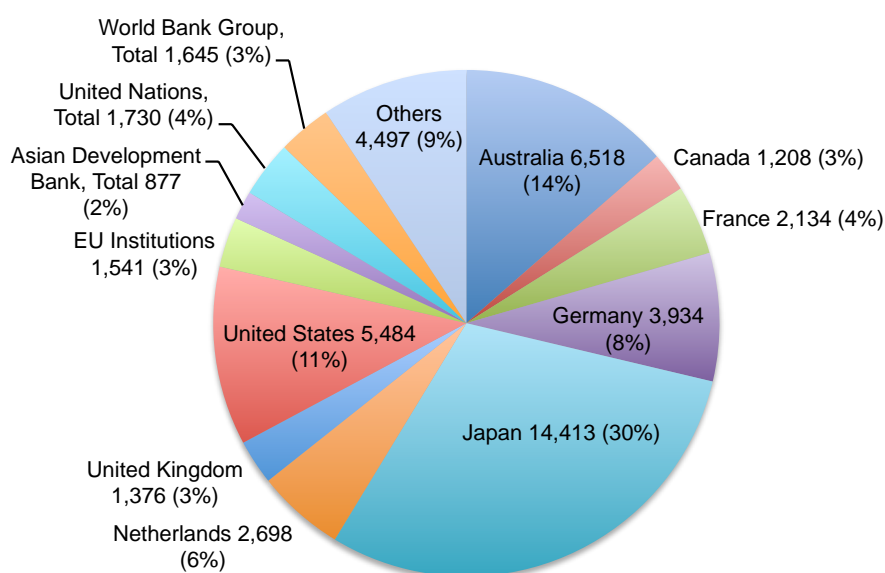


Source: OECD

Figure 5: Trend in Gross Disbursement of ODA to Indonesia (current prices from 1960 to 2016, unit: USD millions)

3.1.2 Net disbursement of ODA to Indonesia

The net disbursement of ODA from 1960 to 2016 amounted to USD 48.05 billion (current prices). Of this, Japan accounted for 30% (USD 14.41 billion), which is again far larger than other development partners, but there is no big difference as in the case of gross disbursement. This is because a large amount of past loans has been repaid by the Government of Indonesia in recent years. The second place is Australia (14%, USD 6.52 billion), followed by the United States (11%, USD 5.48 billion) and Germany (8%, USD 3.93 billion).

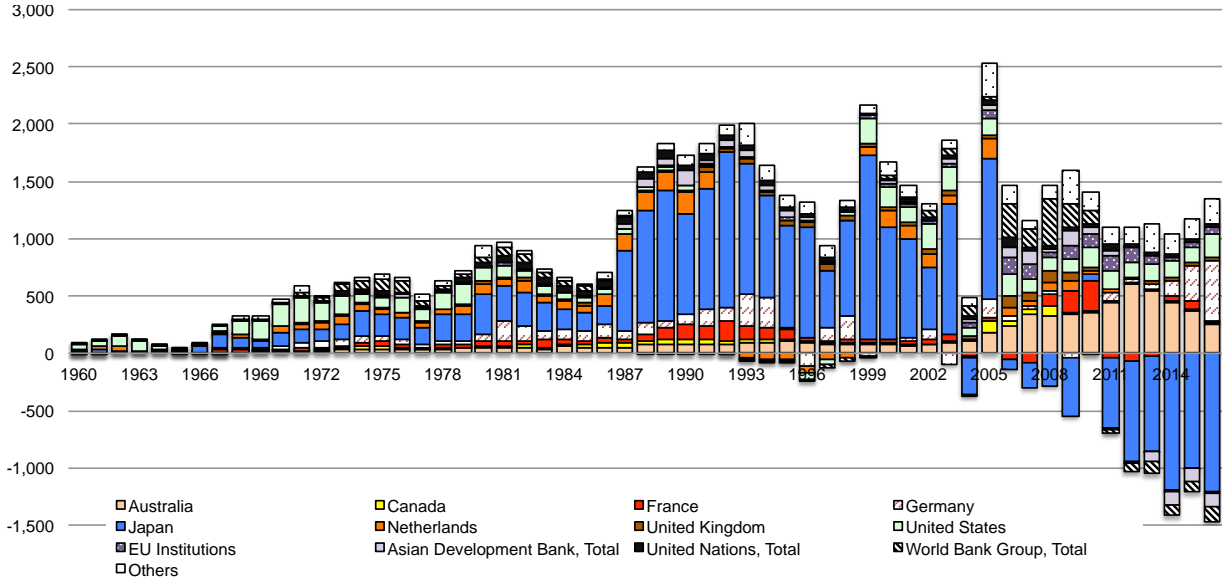


Note: The above chart does not include ordinary capital resources (OCR) financing by the World Bank (IBRD) and the Asian Development Bank (ADB).

Source: OECD

Figure 6: Net Disbursement of ODA to Indonesia by Development Partner (current prices from 1960 to 2016, unit: USD millions)

Looking at the trend in net disbursement of ODA to Indonesia, Japan’s net disbursement amount turned to negative in 2004, and after 2006 the negative amount has been increasing.



Source: OECD

Figure 7: Trend in Net Disbursement of ODA to Indonesia (current prices from 1960 to 2016, unit: USD millions)

As described above, Japan is the largest donor country in Indonesia, both in terms of total gross disbursement and total net disbursement. Meanwhile, among 190 countries and regions where Japan has provided ODA, Indonesia is the largest recipient country (1960-2015, 11.3%)¹⁵. The close ties between the two countries are absolute.

Through a flexible combination of various types of assistance methods, such as finance and investment cooperation (accounts for about 90% of Japan’s operations), technical cooperation, grant aid, and volunteer program, Japan’s ODA to Indonesia has made great impacts not only on macro-economic stability and infrastructure development, but also on social development, etc. such as education and health/ medical care.

The following shows the breakdown of Japan’s cooperation by the three schemes of technical cooperation, finance and investment cooperation and grant aid, by JICA’s field classification.

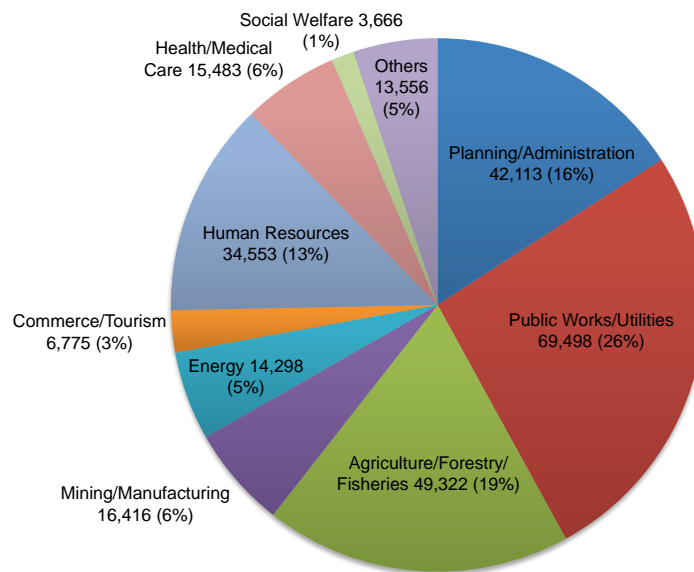
3.1.3 Japan’s technical cooperation to Indonesia

The disbursement of technical cooperation¹⁶ to Indonesia from FY1954 to FY2016 amounted to 351 billion yen. According to the disaggregated data available from FY1988, the top five subfields, or “administration” (32 billion yen, 12.0%), “human resources” (31 billion yen, 11.8%), “transport” (30

¹⁵ Estimated from International Cooperation Bureau, Ministry of Foreign Affairs of Japan. *Trajectory and Achievements of Japan’s ODA*. January 2017. <http://www.mofa.go.jp/mofaj/gaiko/oda/files/000092735.pdf> (Accessed in April 2018) Indonesia is followed by China, India and the Philippines.

¹⁶ JICA’s technical cooperation consists of dispatch of experts, acceptance of technical training participants, technical cooperation projects, and technical cooperation for development planning.

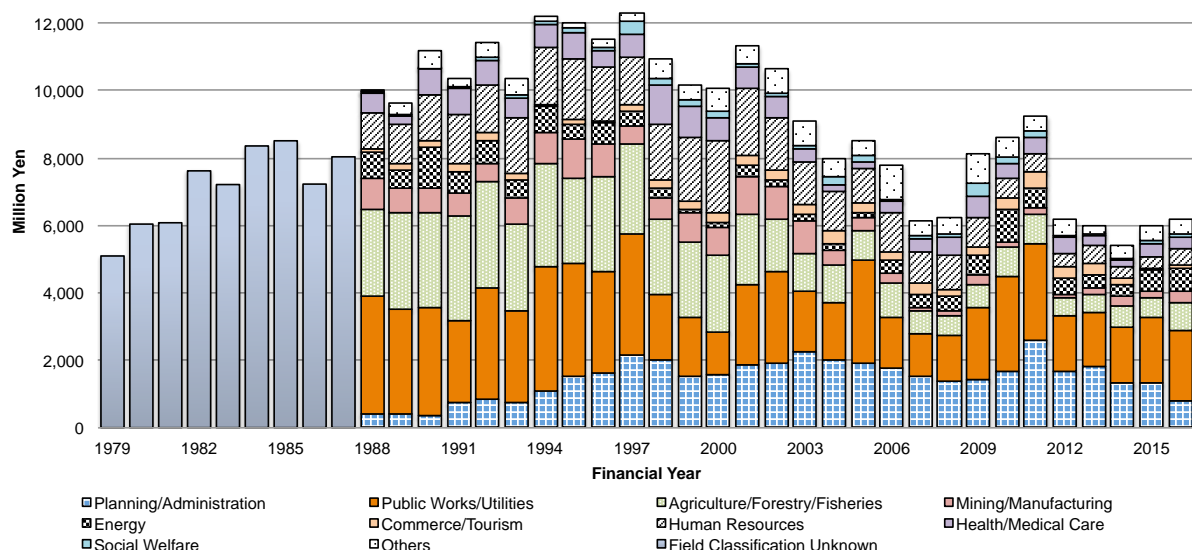
billion yen, 11.5%), “agriculture” (26 billion yen, 9.8%), and “social infrastructure” (20 billion yen, 7.4%), accounted for about half of the disbursement for technical cooperation.



Source: JICA

Figure 8: Disbursement of Japan’s Technical Cooperation to Indonesia by JICA’s Field Classification (from FY1988 to FY2016, unit: million Yen)

JICA’s technical cooperation had been on the scale of more than 10 billion yen a year in the 1990s. As the disbursements for “agriculture, forestry and fisheries,” and “human resources” started to decline after FY2000, and it is now about 6 billion yen annually.



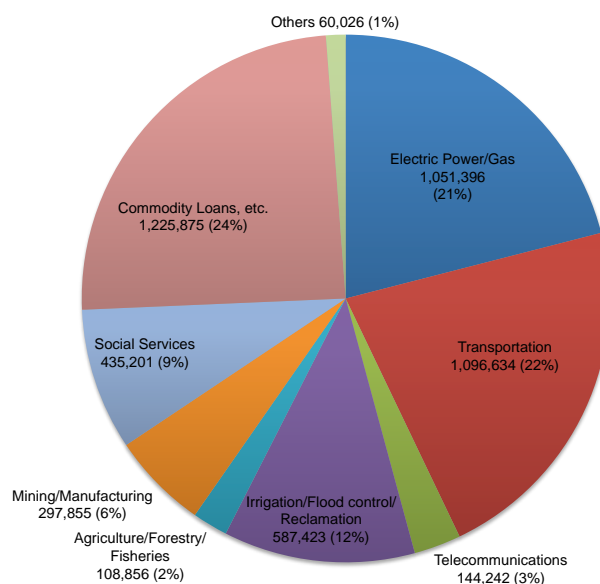
Note: From FY1979 to FY1987, only the total disbursement amount is published.

Source: JICA

Figure 9: Trend in Disbursement of Japan’s Technical Cooperation to Indonesia (from FY1979 to FY2016)

3.1.4 Japan’s finance and investment cooperation to Indonesia

The committed amount of finance and investment cooperation to Indonesia from FY1961 to FY2016 was 5,008 billion yen. It is seen that a large portion of the committed amount were allocated for the core infrastructure development projects that supports economic growth and enhances the connectivity of the vast country land, such as “power plants” (674 billion yen, 13.5%), “irrigation, flood control, land reclamation” (587 billion yen, 11.7%), “railways” (426 billion yen, 8.5%), and “roads” (357 billion yen, 7.1%).



Note: Total commitment amounts of ODA Loans and Private-Sector Investment Finance.

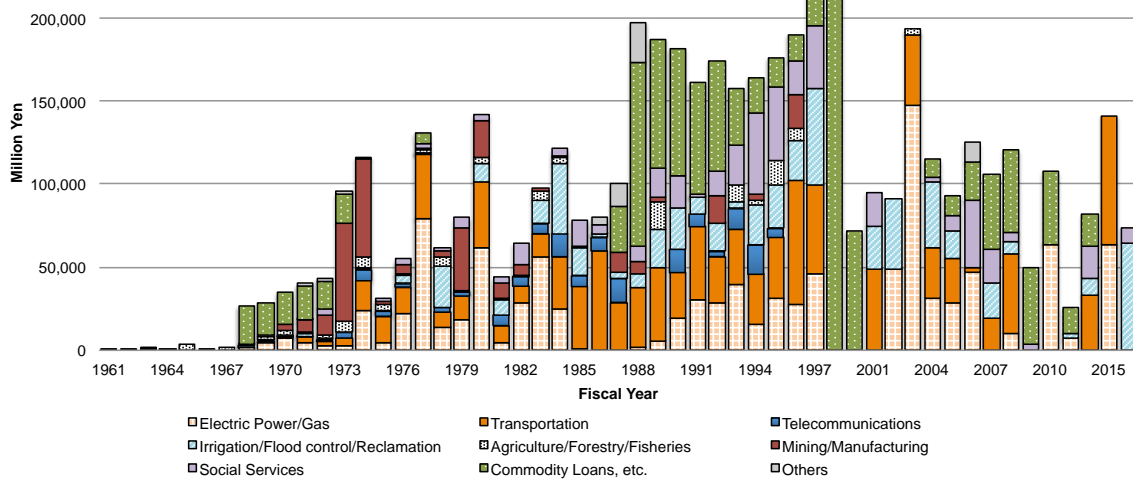
Source: JICA

Figure 10: Commitment Amounts of Japan’s Finance and Investment Cooperation to Indonesia by JICA’s Field Classification (from FY1961 to FY2016, unit: million Yen)

Non-project loans¹⁷ indicated as “commodity loans, etc.” (1,236 billion yen, 24.5%) were aimed at immediate stabilization of the Indonesian economy during the Sukarno debt (the end of the 1960s), international balance of payment crisis due to slumping international crude oil prices and the Plaza Accord (the late 1980s), and the Asian Financial Crisis (1998).

The first project for private-sector investment finance in Indonesia was investment in North Sumatra Oil Development Cooperation Co.,Ltd. (27th October 1961), and the first provision of ODA loan was the “Commodity Loan” (2nd July 1968).

¹⁷ Instead of financing specific development projects, non-project loans provide funds to improve the country’s international balance of payments and implement economic development plan/ structural adjustment plan.



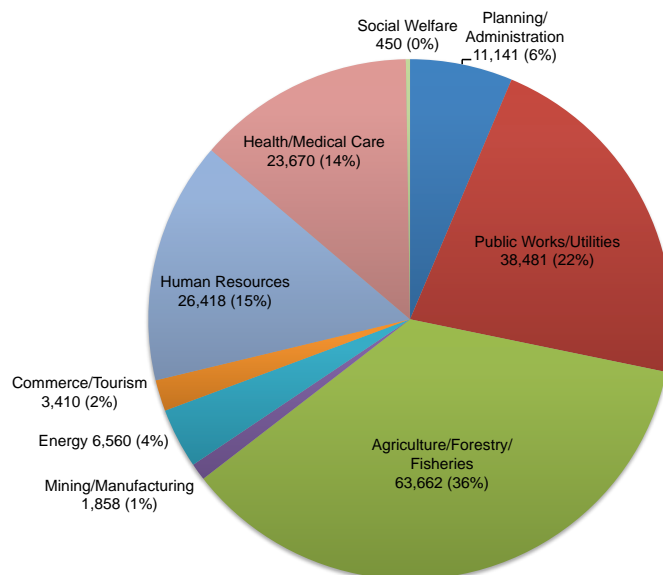
Note: Total commitment amounts of ODA Loans and Private-Sector Investment Finance.

Source: JICA

Figure 11: Trend in Commitment Amounts of Japan's Finance and Investment Cooperation to Indonesia by JICA's Field Classification (from FY1961 to FY2016, unit: million Yen)

3.1.5 Japan's grant aid to Indonesia

The provision of grant aid to Indonesia from FY1977 to FY2016 amounted to 176 billion yen. In the subfield, "agriculture" (55 billion yen, 31.2%) was prominent, followed by "health and medical care" (24 billion yen, 13.5%), "human resources" (22 billion yen, 12.7%), "transport" (18 billion yen, 10.2%), and "public utilities" (12 billion yen, 7.1%). The top five subfields accounted for about three quarters of the provision of grant aid.



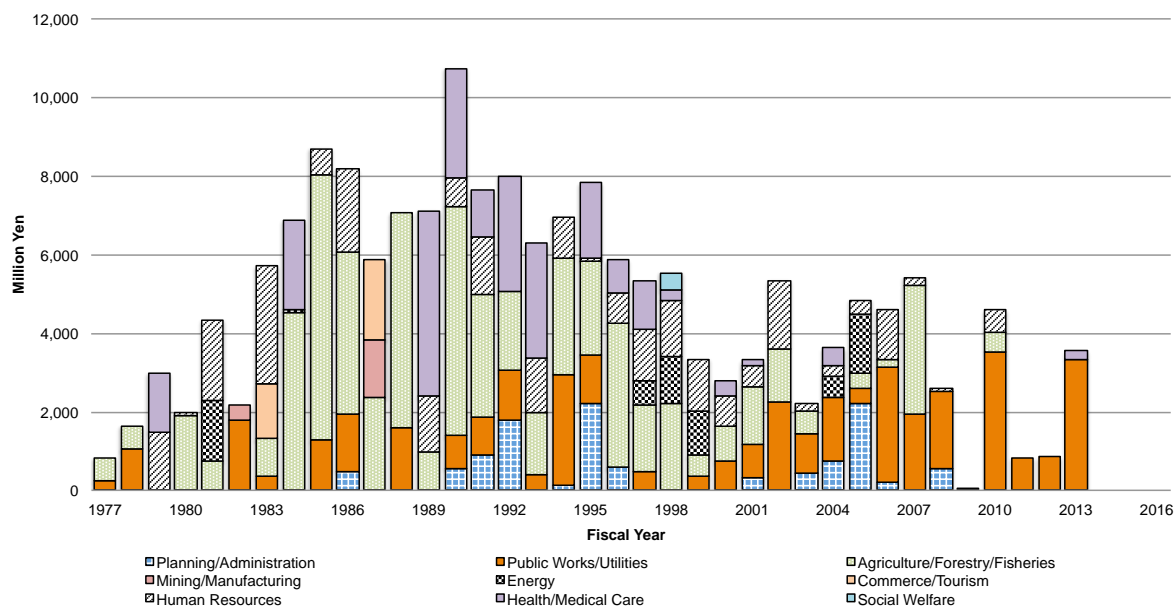
Note: Based on the amount in the Exchange of Notes or Grant Agreement.

Grant aid between FY1968 and FY1976 was not included in the JICA database.

Source: JICA

Figure 12: Commitment Amounts of Japan's Grant Aid to Indonesia by JICA's Field Classification (from FY1977 to FY2016, unit: million Yen)

The first project for grant aid in Indonesia was “Food Aid” in 1968. Due to the steady economic growth of Indonesia, the scale of support has been declining with the peak at 11 billion yen in FY1990, and there were no grant aid projects for JICA implementation during FY2014-2016. Since the latter half of the 1990s, the proportions of “agriculture, forestry and fisheries” and “health and medical care” decreased, and that of “public works and public utilities” have become prominent.



Note: Based on the amount in the Exchange of Notes or Grant Agreement.
Grant aid between FY1968 and FY1976 was not included in the JICA database.

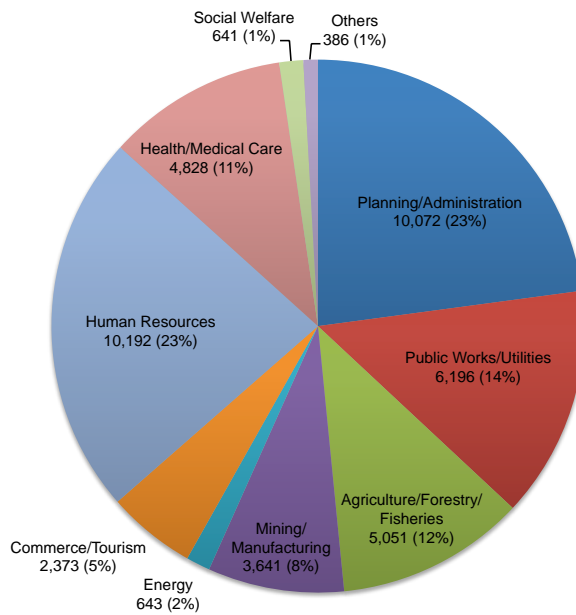
Source: JICA

Figure 13: Trend in Commitment Amounts of Japan's Grant Aid to Indonesia by JICA's Field Classification (from FY1977 to FY2016, unit: million Yen)

3.1.6 JICA training participants

The total number of JICA training participants was 44,023¹⁸. In terms of the training subfield, “human resources” (10,057 trainees, 22.8%) was the top, followed by “administration” (8,459 trainees, 19.2%), “health and medical care” (4,828 trainees, 11.0%), “industry” (3,372 trainees, 7.7%), and “agriculture” (2,705 trainees, 6.1%).

¹⁸ According to the Ministry of Foreign Affairs of Japan. *Japan's ODA Data by Country*. 2017., the cumulative number of training participants until FY2015 was 53,005 people. It is assumed that trainees outside JICA projects are included in this figure.

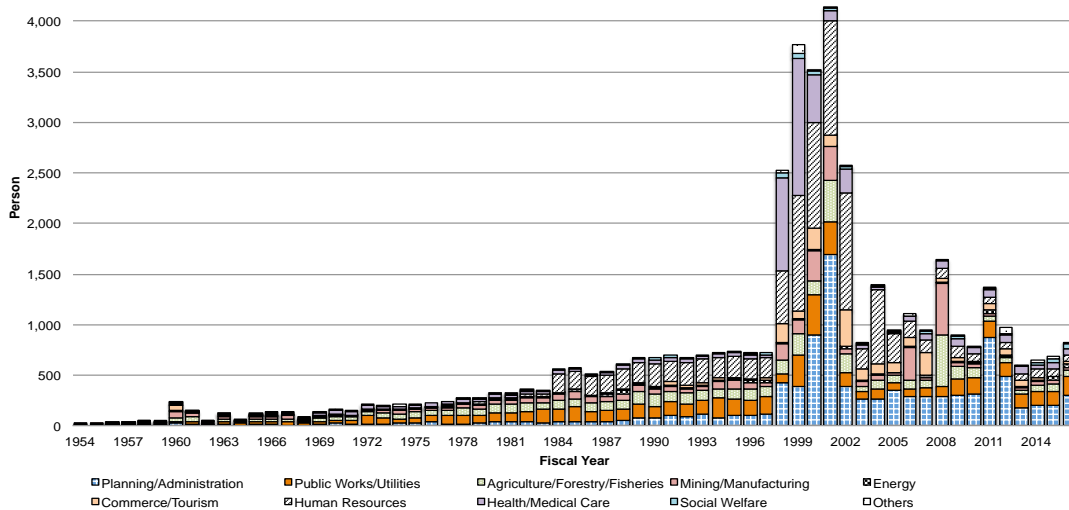


Note: The number includes third country trainees who received training in Indonesia.

Source: JICA

Figure 14: Number of JICA Training Participants by JICA's Field Classification (from FY1954 to FY2016, unit: person)

The number of JICA training participants per year reached 500 for the first time in FY1984, and it had been around 700 since the end of the 1980s. Then, in FY1998, it increased sharply to 2,522, and exceeded 2,500 in the following four fiscal years. Thereafter, although there were fluctuations depending on the fiscal year, it has been about 1,000 per fiscal year.



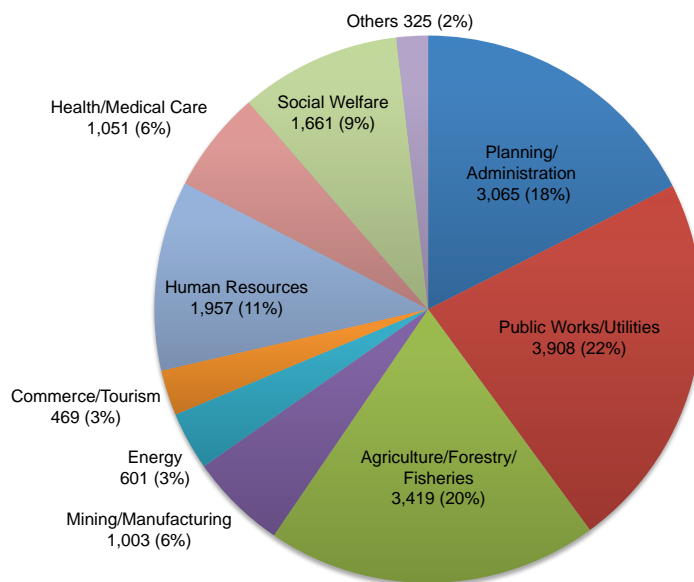
Note: The number includes third country trainees who received training in Indonesia.

Source: JICA

Figure 15: Trend in Number of JICA Training Participants Accepted by JICA's Field Classification (from FY1954 to FY2016, unit: person)

3.1.7 JICA experts dispatched to Indonesia

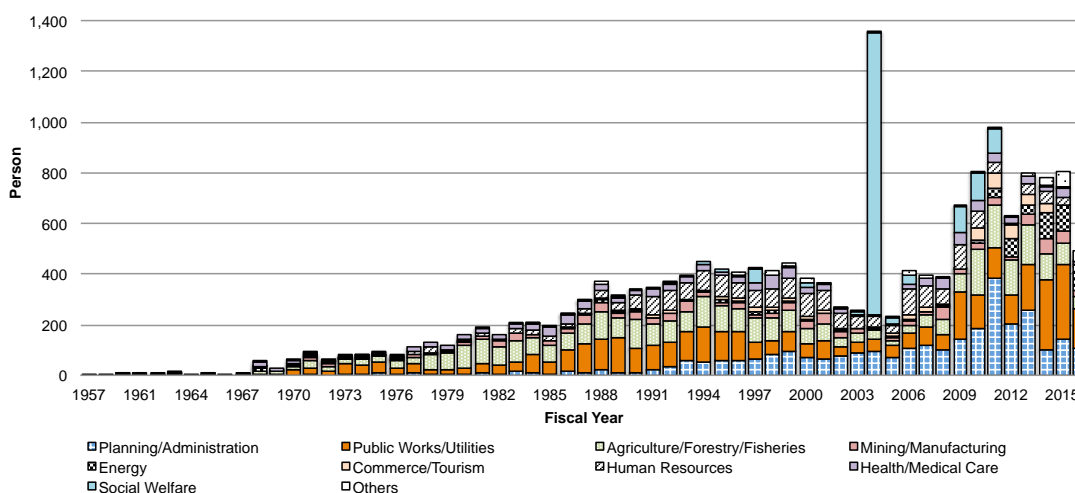
The total number of JICA experts dispatched was 17,459¹⁹. In terms of subfield, “administration” (2,561 people, 14.7%) was at the top, followed by “human resources” (1,698 people, 9.7%), “social welfare” (1,661 people, 9.5%), and “agriculture” (1,564 people, 9.0%).



Source: JICA

Figure 16: Number of JICA Experts Dispatched by JICA’s Field Classification (from FY1957 to FY2016, unit: person)

The number of social welfare experts dispatched in FY2004 was extremely high because the number included 1,111 experts of the Japan Disaster Relief Team (including members of the Japan Self-Defense Forces team) dispatched for the Indian Ocean Earthquake and Tsunami.



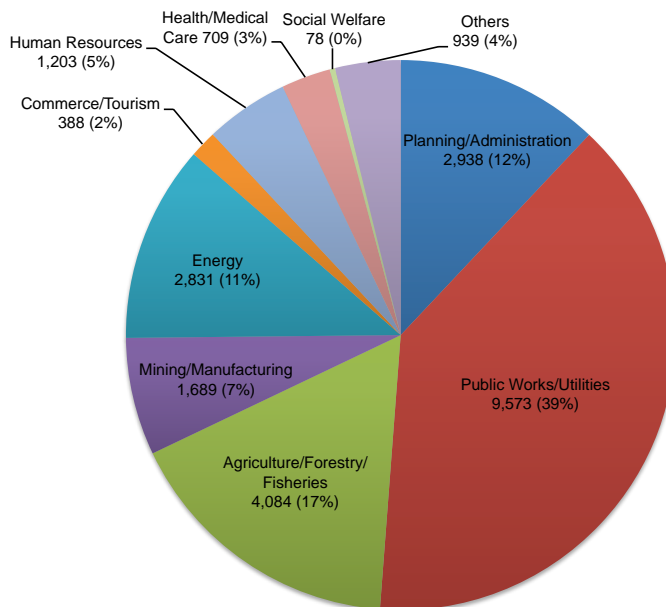
Source: JICA

Figure 17: Trend in Number of JICA Experts Dispatched by JICA’s Field Classification (from FY1957 to FY2016, unit: person)

¹⁹ According to the Ministry of Foreign Affairs of Japan. *Japan’s ODA Data by Country*. 2017., the cumulative number of experts dispatched until FY2015 was 18,247 people. It is assumed that experts outside JICA projects are included in this figure.

3.1.8 JICA study team members dispatched to Indonesia

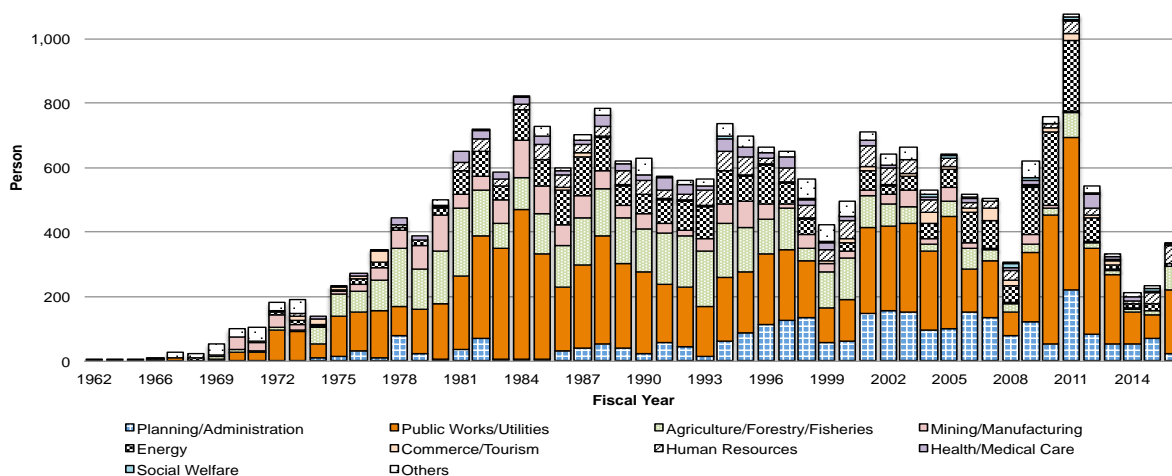
The total number of JICA study team members dispatched was 24,432. In terms of subfield, “transportation” (4,340 people, 17.8%) was at the top, followed by “social infrastructure” (2,992 people, 12.2%), “energy” (2,831 people, 11.6%), and “agriculture” (2,503 people, 10.2%).



Source: JICA

Figure 18: Number of JICA Study Team Members Dispatched by JICA’s Field Classification (from FY1962 to FY2016, unit: person)

Since its inception in FY1962, the number of JICA study team members dispatched had significantly increased year by year, and reached 800 per fiscal year in FY1984. Then, it had been around 600 per fiscal year until the middle of the 2000s, despite a decline due to the Asian Financial Crisis. After that, the fluctuation range for each fiscal year has become large: it sharply declined from above 1,000 in FY2011 to around 200 in FY2014.



Source: JICA

Figure 19: Trend in Number of JICA Study Team Members Dispatched by JICA’s Field Classification (from FY1962 to FY2016, unit: person)

3.2 Outcomes by Sector

3.2.1 Economic Policy and Macroeconomic Management

(1) Overview

Since the 1960s, Japanese ODA has contributed to macro-economic stabilization and structural adjustment in Indonesia through financial assistance and technical cooperation. Financial assistance includes program loans for balance of payments deficits and structural adjustment during periods of economic shock, such as the balance of payments crisis during the early stage of the Suharto regime (from the late 1960s to early 1970s), the reverse oil crisis (in the second half of the 1980s), and the Asian Financial Crisis (from the late 1990s to early 2000s). Moreover, it includes another type of program loans for financing budget deficits during the Yudhoyono administration (from 2004 to 2014) to facilitate policy reforms through policy dialogue in such areas as business climate, public financial management, poverty reduction, as well as infrastructure reforms and climate change mitigation and adaptation.

Japan has also implemented technical cooperation to enhance institutional capacity development at BAPPENAS since the 1960s when a policy adviser was sent to support the formulation of REPELITA I (1969-1973). For the 1997 Asian Financial Crisis, Economic Policy Support was undertaken by a Japanese academic team. The Japan Indonesia Policy Forum was also held every five years during the presidential election years since 1999 to discuss policy implications and recommendations to the new administration. Since the 2000s, Japan has started a number of technical cooperation including dispatch of experts and projects in areas such as tax administration, external debt management, monetary policy, PPP for infrastructure development, performance-based budgeting, treasury and state owned property management and social security. They have supported economic institutional reforms and capacity development to create fiscal space through resource mobilization. This helps enhance macroeconomic stabilization and sustainable economic development for Indonesia to become a higher middle-income country and beyond.

(2) Outcomes

- Japanese program loans played a significant role as a buffer for the balance of payments crisis, the reverse oil crisis, and the Asian Financial Crisis through support for macroeconomic stabilization and structural adjustment:
 - Program loans for the balance of payments crisis (116.8 billion yen) disbursed during 1968-1973 counted for about 12.6% of total current account deficits during the same period.
 - Program loans for the reverse oil crisis (513.8 billion yen) financed during 1987-1996 counted for around 12.8% of the total current account deficits for the same period. It also facilitated economic transformation towards a non-oil-based economy through structural adjustment reform.
 - Program loans for the Asian Financial Crisis (333.9 billion yen) funded during 1998-2000 approximately equaled 55.6% of current account deficits in 1997. It not only mitigated the balance of payments deficits but also provided a social safety net for vulnerable groups.

- Japanese program loans filled budget deficits as well as enhanced policy and regulation reforms through policy dialogue in the fields of macroeconomic stabilization, investment climate and trade facilitation, public financial management, poverty reduction, climate change measures, and infrastructure development reform:
 - Program loans (266.3 billion yen) disbursed for 2005-2013 filled approximately 4.5% of total budget deficits during the same period.
 - Through policy dialogue on investment climate and trade facilitation, Japan supported amendment of the Investment Negative List, introduction of the Investment One Stop Service, and issuing of transfer pricing regulation. Indonesia significantly improved the World Bank's Ease of Doing Business ranking from the 131st (out of 175 countries) in 2006 to the 72nd (out of 190 countries) in 2017.
 - FDI increased from USD 195 billion in 2011 to USD 289 billion in 2016, in which Japanese investment share also expanded from 7.7% to 18.7% during the same period.
- Japanese technical cooperation has facilitated economic institutional reforms and capacity development in areas such as the national development plan, economic policy support, tax administration, and PPP for infrastructure development.
 - Japan has enhanced infrastructure development through supporting the establishment of regulatory frameworks, such as PPP regulations (the Presidential Regulation No.38/2015, the BAPPENAS Regulation No. 4/2015 and the LKPP Regulation No.19/2015) and Availability Payment regulations (the Ministry of Finance Regulation No.190/2015 and No. 260/2016 and the Ministry of Home Affairs Regulation No.96/2016).

3.2.2 Transport

(1) Overview

The transport sector has served as one of the important foundations for the stable development of the Indonesian economy. Japan's cooperation was in line with Indonesia's development policy in each period. In the regional area, priority was given to the connection of resources and equal distribution of development benefits. On the other hand, in the metropolitan area, priority was given to promoting sustainable economic growth led by the private sector by filling the gap between increasing transport demand and supply caused by population growth and motorization.

In the past, the predominant way of development in the transport sector was to develop transport in the regional bases, but it has become necessary to consider the surrounding economies as ASEAN countries seek to enhance connectivity within the region. Consequently, anticipation has grown that Indonesia will become part of the international production and trade network. Meanwhile, since Indonesian logistics are still underdeveloped with high physical distribution costs, there is ongoing cooperation from Japan in transport infrastructure development, especially in the Jakarta metropolitan area where manufacturing industries are concentrated, to accelerate economic growth led by the private sector.

Newly formed projects have focused mainly on technical cooperation (including preparation for new ODA loan projects) in the subsectors such as road, air, port, and sea transport as the Indonesian government indicated its intention to reduce external debt for a while. Still, ODA loans have been continuously provided for large infrastructure projects such as urban railways and international harbor development. While government institutions and enterprises in Indonesia have become technically more capable, there is still need for assistance including transfer of Japanese technology for infrastructure development, which involves novel technology such as subway construction. Financial support together with Japanese technologies is an added value of Japan's ODA in the sector.

(2) Outcomes

- Since the beginning, Japanese cooperation has played a pioneering role for implementing large-scale transport infrastructure projects with high novelty, such as initial development of the toll roads in Jakarta, electrification, elevation and double tracking of railways and most recently, development of the subway system, Mass Rapid Transit (MRT).
- By strengthening Indonesia's infrastructural network, Japanese cooperation has contributed to enhancing domestic connectivity as well as the growth of the Indonesian industry, which occupies a certain position in the international production and trade network.
 - Strengthened road and ferry transport. Most notably, about 60% of the trans-Sumatra highway (ordinary road) with a total length of approximately 2,500 km was developed with Japan's ODA. The development of ferry transport between Java and Sumatra islands shortened the one-way traveling time from 5 hours to less than 2 hours.
 - Transport capacity of the Java trunk railway was enhanced.
 - Five airports (Denpasar, Balikpapan, Surabaya, Padang, and Palembang) were constructed /expanded, and safety facilities at 33 airports were developed.
 - Eight out of a total of 28 gateway ports in Indonesia, 12 non-commercial ports in eastern Indonesia, and 10 ferry ports across the country were developed.
- Based on the transport policy (master plan) integrating the regions and transport modes to alleviate transport problems caused by overconcentration of population in the Jakarta metropolitan area, Japanese cooperation has been contributing to infrastructure development in the capital region by improving urban public transport including MRT and development of other infrastructure such as toll roads that alleviate traffic congestion.
- Including maritime education and training improvement (at six schools in total), Japan has also contributed to increasing added value in each subsector of transport, namely, improved safety and security measures, improved quality of infrastructures and transport services, and capacity development of local human resources through technical cooperation and technology transfer. Especially, in the road subsector, overseas activities by Indonesian companies and South-South Cooperation have started.

3.2.3 Electric Power and Energy

(1) Overview

Since the “Brantas River Basin Development Project” in the early 1960s, Japan has been the top donor in the Indonesian power sector, and its contribution reached nearly 7.2% (20.0% by combining Japanese Independent Power Producer (IPP) participation) of the total capacity of the Indonesian power supply as of 2016.

In the 1970s, Japan strategically assisted the power system in eastern Java island by building baseload hydro and coal-fired power plans and distribution networks. In the 1980s, Japan continuously helped power system development in Java island, and also supported main power plants in other islands. In the early 1990s, Japan strengthened its engagement in the Indonesian power sector by helping to stabilize the power system in Java island by supporting a backbone transmission line network along with the World Bank and other development partners. That was one of the important facilities to promote Indonesia’s IPP investment by allowing generated power into the grid.

Moreover, in the late 1990s, in order to support the power sector suffering from insufficient funds to secure enough power supply to meet the demand of Indonesian economy recovering from the Asian Financial Crisis, particularly in the Greater Jakarta metropolitan area, Japan arranged emergency financial assistance (ODA loan) to build power plants to avoid a potential power crisis which would hinder economic recovery. Since the late 2000s, Japan has provided comprehensive assistance including human resource development to promote geothermal and hydro power development, as well as clean coal technologies, to achieve Indonesia’s policy goals towards sustainable growth and a decarbonized economy in mind.

(2) Outcomes

- Japan has contributed to Indonesia’s high economic growth by supporting capacity installation of 10,963 MW as Indonesia’s main baseload power stations (20.0% of the total national capacity) as well as extensive transmission and distribution networks around Java and Sumatra islands.
- By supporting the three major power plants in the early 2000s, Japan contributed to mitigating the frequent blackouts that used to hit the Greater Jakarta metropolitan area. In 2012, when the new gas fired power plants funded by JICA started its operation, the number of blackout days (estimates) dropped to 2 days (as of 29th October 2012), compared to 32 days in 2006.
- Japan contributed to the promotion of renewable energy development and mitigation of carbon dioxide gases in Indonesia through multiple technical cooperation projects to improve the data accuracy of surface surveys, and ODA loan projects (five projects totaling approximately 58.9 billion yen) to construct power plant as well as provide engineering services in geothermal development.
- Japan supported optimal supply planning over the vast country through formulation of several master plans which contributed to regional economic development with 92.85% rural electrification (in the first half of 2017).

3.2.4 Water and Sewerage Systems/ Environmental Management

(1) Overview

Japanese cooperation in this sector started with the water supply subsector, and it has responded to the policies of the Government of Indonesia. In water supply subsector, Japan supported the formulation of a master plan for Jakarta in the early 1960s, and based on the master plan, assistance to develop the water supply system was provided in the 1970s. Then, in the 1980s, Japan helped establish the Water Supply and Environmental Sanitation Training Center (WSESTC), and contributed to the capacity development of technical staff in the water supply system's design and maintenance. At the same time, support to develop the water supply system was extended to regional cities, and then to rural towns in the 1990s, following the Indonesian government's policy to address regional disparities. In line with decentralization in the 2000s, Japan supported operational improvement of regional waterworks public corporations (PDAMs).

Support for drainage and sewerage subsector started in the 1980s with the formulation of the "Wastewater Management Master Plan in DKI Jakarta," and drainage channels were developed in Jakarta. It was then extended to Denpasar and Yogyakarta in the 1990s, and sewerage systems were developed. In the 2010s, the master plan in DKI Jakarta was reviewed, and yen loan project for sewerage development is being formulated.

Moreover, among the support for environmental management subsector, regarding river and air pollution, Japan assisted in formulating a master plan for waste disposal targeting DKI Jakarta in 1987. In the 1990s, for solid waste management, construction of a final disposal site, installation of relay stations, and establishment of collection system were supported in Jakarta and Surabaya. Besides, the Environmental Management Center was established to provide such functions as environmental monitoring, research and training. Since then, technical cooperation has continued for over 20 years. Furthermore, laboratories and research institutes under local authorities were developed in combination with capacity development of local government officials. In the 2010s, JICA has supported the 3R initiative (reduce, reuse and recycle) activities, capacity development in waste management, and establishment of the Act on Solid Waste Management (No.18/2008) and other related rules and regulations at the national and regional levels in the pilot cities.

(2) Outcomes

- Japan supported the development of new water supply facilities to 3.4 million people, and the construction of a final disposal site, installation of relay stations, and establishment of collection system in DKI Jakarta to improve urban environment.
- Japan supported the development of water supply facilities for 60,000 households under the urban environment development program in Surabaya Municipality. Water supply facilities were also developed in other regional cities including Makassar Municipality (connection of 61,000 water faucet).

- Japanese cooperation contributed to institutional capacity building of PDAMs nationwide through the training of technical staff (4,471 members in total), which improved the management and services of PDAMs.
- Japan's cooperation for sewerage development in Denpasar and Yogyakarta contributed to improvements of the water environment.
- A network for environmental monitoring of river and air pollution centered around the Environmental Management Center was established. This contributed to the collection of air and water quality data. Japan's cooperation has also developed the foundation for environmental management led by the research, measurement and environmental monitoring institutions in local government.

3.2.5 Private Sector Development

(1) Overview

During the period from the 1960s to the 1980s, Japan had mainly supported rehabilitation or expansion of the existing state-owned factories (such as paper, yarn, textile, shipbuilding, and fertilizer industries), as well as new industry development (steel and chemical) in the areas of research study and planning. The majority of this cooperation was implemented in Java and Sumatra islands, and later shifted to Sulawesi island to develop a large-scale industrial area in the late 1970s. This built the foundation for national economic development.

Until the Asian Financial Crisis in the late 1990s, under Indonesia's national policy for foreign investment promotion, Japan supported institutional development for vocational training and industrial human resource development. It also supported the capacity development of export-oriented industries, in line with the national policy aimed at breaking away from the oil-dependent economic structure. Meanwhile, a series of policy advisory services were provided for institutional improvement in foreign investment promotion, which then encouraged Japanese companies to develop large-scale industrial estates around Jakarta.

In the 2000s, in the reform period of democratization and decentralization, the mainstream of Japanese assistance in private sector development shifted to technical cooperation programs to support industry promotion and SME promotion, to meet the national policy of strengthening the private sector nationwide. After the nation joined the middle-income countries around 2010, given the increased internationalization of its citizens' economic and consumption activities, technical cooperation for institutional improvement in such areas as intellectual property rights protection and consumer protection was implemented. In addition, JICA supports a study for strengthening value chain in three strategic fields, or automobile, electric and electronics, and food processing, to improve the international competitiveness of the manufacturing industry.

(2) Outcomes

- Industrial development was established through implementation of research study and planning (about 20 titles), and financial assistance (more than 130 billion yen in total). Consequently, the manufacturing sector was strengthened in terms of its contribution to the national GDP (less than 10% until the 1960s, lifted to around 16% in 1985).
- A large-scale industrial area was established in Sulawesi island, i.e. Ujung Pandang Industrial Estate of 200 hectares. This became an important hub for expanding economic activities to the eastern part of Indonesia.
- Key functions for vocational training and industrial human resource development were established through a series of financial assistance and technical cooperation. CEVEST, IETC and Regional Export Training Promotion Center (RETPC) are the notable cases. As of 2017, CEVEST accepts around 4,000 trainees annually.
- Effective institutional arrangements were made for foreign investment and business activity through a number of experts and public-private policy dialogue. Japan supported amendment of the Investment Negative List, introduction of the Investment One Stop Service, and issuing of transfer pricing regulation, and Indonesia's position in the World Bank's international investment climate ranking improved from the 131st in 2006 to the 72nd in 2017. An activity model was formulated for product development and marketing promotion under the initiative of the local industry (SMEs), in collaboration with the relevant stakeholders such as central/local governments and supporting institutions (the Chamber of Commerce, higher education institutions, NGOs, etc.). This model has been disseminated to the rest of the country through the initiative of the Ministry of Industry.

3.2.6 Higher Education and Highly-Skilled Human Resource Development

(1) Overview

Given Japan's comparative advantage in the field of engineering, Japan has continuously supported the development of engineering in higher education institutions that can serve as national hubs in the field, beginning with equipment provision to Bandung Institute of Technology (ITB) in 1975. JICA has also reinforced the capacities of universities in Sumatra and Kalimantan by networking the universities. Meanwhile, projects to strengthen higher education institutions in other fields such as agriculture and health have also been undertaken to develop human resources who can meet challenges in other priority areas of the Indonesian government. To this end, the Government of Japan has also provided scholarships to Indonesia through ODA loans and programs of the Ministry of Education, Culture, Sports and Technology of Japan for a long period of time, and H.E. Dr. Ir. Ginandjar Kartasasmita is one prominent alumni.

Currently, the educational and research capacity at four top engineering universities is being strengthened through the "AUN/SEED-Net Project," and these universities have also been serving as

host institutions for other ASEAN countries. In addition, a series of projects is underway at Hasanuddin University to develop the eastern part of Indonesia. A technical cooperation project to establish the Indonesian Accreditation Board for Engineering Education (IABEE) has also been implemented to raise the overall quality of engineering education in the country.

It is expected that these higher education institutions will serve as hubs for regional development, and contribute to industrial and social development by collaborating closely with industries and local agencies.

(2) Outcomes

- The number of JICA scholarship recipients is more than 3,000, who are mainly university lecturers and civil servants in central and provincial governments. For example, 16% of faculty members of Bogor Agricultural University (IPB) have studied in Japan, which is the most preferred destination for IPB faculty members to study for higher degrees.
- Construction of facilities in ITB, Gadjadara University, the University of Indonesia, the Electronic Engineering Polytechnic Institute of Surabaya (EEPIS), etc. have expanded access to functions of higher education institutions in Indonesia.
- The quality of education and research at major higher educational institutions has improved, and this has contributed to producing quality graduates. For example, among 828 innovations selected by the program of Business Innovation Center from 2008 to 2015, 323 (38%) were attributed to IPB, which is the largest number among all the universities and research institutions in Indonesia.
- The number of collaborative research and MoUs among universities has increased due to the establishment of university networks, which have enabled the continuous capacity development of lecturers/professors.
- The universities and polytechnic reinforced by Japan became resource institutions for SSTC, and contributed to strengthening higher education institutions in Asia and Africa. For example, EEPIS has accepted more than 200 trainees (lecturers of polytechnics) from about 25 countries from Asia and Africa.

3.2.7 Governance

(1) Overview

Following the end of the Suharto administration, Indonesia entered a critical turning point for democratization and decentralization. In response, Japan expanded its cooperation in the governance sector from the end of the 1990s to the 2000s in such areas as elections, police reform, and legal and judicial reform, in addition to the long-time cooperation in the statistics subsector. The cooperation in the statistics subsector included assistance in line with democratization and decentralization such as the 2000 population census, voter registration, and small area statistics. Assistance in the general elections in 1999 and 2004 included providing expert advice to the election commission and provision

of ballot boxes and voting booths. Police cooperation has supported the Indonesian National Police, which was separated from the armed forces, to mainstream the concept of community policing. In the area of legal and judicial reforms, technical cooperation was provided for court-based mediation. This series of assistance had profound historical and diplomatic significance because it supported the momentum of democratization in Indonesia. During the same period, JICA also worked on cooperation in peacebuilding such as promotion of community reconciliation through school activities in post-conflict Maluku.

Japanese cooperation to promote democratization stabilized in the 2010s. In contrast, Indonesia has come to play a role as the center of excellence in SSTC, especially in the area of statistics and community policing. Further improvements in the quality of democracy is important for the stable development of Indonesia, a country where multiple religions and ethnicities coexist. JICA continues to cooperate in the governance sector in such areas as police cooperation, intellectual property rights aimed at improving the business and investment environment, and cooperation to implement Sustainable Development Goals (SDGs).

(2) Outcomes

- Provision of 79 Optical Character Recognition (OCR) systems enabled 100% aggregation of the 2000 population census results for the first time in Indonesia. This formed the basis of effective policymaking in government offices. The OCRs were also utilized in the development of the voter registration list for the 2004 elections.
- Japanese cooperation for the elections in 1999 and 2004 amounted to 1/3 (USD 35 million) and 1/4 (USD 23 million) of overall external assistance. The latter included providing 620,000 ballot boxes and 1.2 million voting booths. These contributed to the achievement of free and fair elections. This led to a stable society and allowed democracy to take root.
- 15 police boxes were built as models. Over 700 police officers were trained in Japan. The community policing model was developed through technical cooperation, and is now reflected in the policy of the Indonesian National Police.
- Japanese cooperation has developed into SSTC in the statistics, elections and police subsectors.

3.2.8 Regional Development

(1) Overview

From the 1960s up to the 1980s, Japan's cooperation in this sector mainly focused on the development of integrated regional master plans targeting Java, Bali and Sumatra islands.

In the 1990s, the eastern part of Indonesia including Sulawesi island became a priority area for Japan's cooperation, where regional development studies and participatory development projects at village level were implemented. Improvement of the rural infrastructure was carried out through ODA loans

targeting a large area of the eastern part of Indonesia. Regarding housing development, several cooperation projects on planning low-cost housing were implemented.

After the Asian Financial Crisis in 1997, in response to decentralization, JICA focused on the capacity building of local governments, and reinforced coordination between local governments and local communities. Following the international agenda in the 2000s, such as improving aid effectiveness and poverty reduction, JICA promoted a program approach combining several supporting schemes, in order to generate synergistic effects in regional development.

In 2014, the Village Fund was launched under the new law. This showed that Indonesia entered into a new phase of regional development. As emphasized in RPJMN (2015-2019), how to provide balanced support between regional/ local development and urban area development is a critical issue that needs to be addressed.

(2) Outcomes

- Cooperation to develop integrated regional master plans that started in the East Java Province was extended to 40% of the overall 27 provinces (at that time) before the 1980s. Through this cooperation process, planners of central and local governments deepened their understanding on regional development. Their planning methodology was utilized in the Provincial Spatial Design Structure Plan based on the Spatial Planning Law in 1992.
- The regional development approach based on regional needs contributed to the development of well-balanced National Five-Year Development Plans.
- Capacity building projects for local administrations contributed to human resource development in both the public and private sectors. For example, about 6,000 administrative staff members and 4,700 facilitators, including 1,800 subdistrict heads (*Camat*) which account for 35% of the total subdistricts, participated in the training programs given by these projects. The Research Institute for Human Settlement (RIHS) was established and developed through successive cooperation in the housing subsector since the 1970s. This contributed to the development of low-cost housing and seismic-resistant design.

3.2.9 Agriculture and Food Security

(1) Overview

Japanese cooperation in the agriculture and food security sector has responded to the priority and needs of the times, reading the changing situations of the country and its people.

Irrigation projects were closely related to increased rice production, and their effects were enormous from the viewpoint of agriculture and food security. From the “Brantas Delta Irrigation Rehabilitation Project” in the 1970s, more than 50 ODA loan projects, and approximately 300 billion yen support for irrigation facilities have been implemented. Also, a comprehensive agricultural project, “Umbrella Cooperation,” was carried out three times in total. In the livestock subsector, technical cooperation has

mainly targeted hub institutions, which has steadily produced results. In particular, the artificial insemination technology was used in SSTC after the completion of technical cooperation. Cooperation in the fisheries subsector has aimed at improving protein intake from the aquaculture cooperation. In the development of fishing ports, most notably, Jakarta Fishing Port has a 40-years history of support since the 1970s which totaled approximately 16 billion yen, including design and construction.

The administration of President Joko Widodo continues to prioritize food security and reduction of disparities. It focuses on the development of agribusiness, sustainable agriculture and benefits to farmers. In addition, it has set up the “National Sea Policy,” and positioned economic development based on sustainable marine fishery resources and increased international presence as a maritime nation, as important strategies. Thus, it is expected that Japan will contribute to achieving these policy objectives by applying advanced technologies, where Japan has comparative advantage, and experience in public-private partnerships in this prioritized sector.

(2) Outcomes

- More than 50 ODA loan projects for irrigation facilities have been implemented. As a result, the irrigated areas have been expanded by approximately 370 thousand hectares, which is 5.2% of the irrigated areas of 2014 (7.14 million hectares), contributing to the rice paddy production of more than 2 million tons per year.
- Japanese cooperation including Umbrella Cooperation contributed to increased production of rice (from approximately 30 million tons (1981) to 52 million tons (2002)) and major crops such as potato (approximately 200 thousand tons (1981) to 1 million tons (2002)).
- In the livestock subsector, the production of frozen semen increased drastically from 200 thousand doses (1985) to 3.5 million doses (2015), which contributed to an increase in the national cattle population from 8 million to 13 million.
- Jakarta Fishing Port contributed to job creation for more than 50,000 employees by private seafood processing companies, and it earns foreign currency equivalent to 100 million yen a day.
- In the subsectors of rice crop and animal husbandry, Japanese cooperation has developed into SSTC. Its target has expanded to Africa, Central Asia, etc.

3.2.10 Disaster Risk Reduction

(1) Overview

In this sector, Japan has provided support in “disaster prevention/ risk reduction,” “advance preparation/ emergency response,” and “rehabilitation/ reconstruction.”

In the 1970s, Japan has constructed Sabo²⁰ facilities to minimize damages by volcanic mudflow for Mt. Merapi and Mt. Semeru. In response to the recent eruptions of Mt. Merapi, Japan has also

²⁰ Sabo, in Japanese, is a structural facility to minimize damages by volcanic mudflow, pyroclastic flow and lave flow as

supported revisions of erosion control plans and construction of new Sabo facilities by ODA loans. Japan contributed human resource development by establishing the Sabo Technical Centre. As for flood control, Japan has supported comprehensive river basin development as well as flood protection in major regional cities.

In the 2000s, Indonesia was hit by a series of large-scale natural disasters including the Great Earthquake off the Coast of Sumatra and Tsunami in the Indian Ocean in December 2004, the Earthquake Disaster in Central Java in May 2006, and the Earthquake in Offshore Padang in September 2009. Starting with a dispatch of Japan Disaster Relief Team, Japan made timely and diverse support from emergency response in humanitarian and technical aspects to recovery/reconstruction.

After the experiences of those catastrophic damages and in response to UN World Conference on Disaster Risk Reduction (WCDRR), the Indonesian government has shifted its focus from emergency response to pre-disaster measures. Japan has implemented cooperation in this area even prior to the establishment of the National Disaster Management Agency (BNPB) in 2008. JICA assisted in preparing disaster risk reduction measures both at national and local levels such as formulation of disaster risk reduction plans and utilization of risk indicators. Moreover, Japan also supported development of the early warning system and institutional capacity building for anti-seismic buildings. In recent years, joint research projects are implemented by universities and research institutes of the two countries under the Science and Technology Research Partnership for Sustainable Development (SATREPS) Program²¹ for enhancing tsunami and volcanoes observation system, developing disaster education method/ materials, formulating disaster risk reduction plans, etc.

(2) Outcomes

- In times of major disasters, Japan contributed to quick recovery by dispatching the Japan Disaster Relief Team. The relief team has been dispatched 28 times since 2001.
- Japanese cooperation in volcanic disaster management at Mt. Merapi, Mt. Semeru, Mt. Galunggung and Mt. Kelud has contributed to strengthening disaster risk reduction technology and capacity of Indonesia. Around 250 Sabo facilities were built, including the ones constructed by the Indonesian government.
- Over 300 engineers became “work-ready” through the capacity development at the Sabo Technical Centre and SATREPS joint research projects.
- The flood control projects in major regional cities supported by ODA loans significantly reduced the frequency and scale of flood damage in Medan, Padang, Bandung and Banda Aceh.

well as sediment-related disasters caused by rainfall.

²¹ SATREPS is a Japanese government program that promotes joint research (a period of three to five years) by researchers from Japan and developing countries to address global issues. The program is structured as collaboration between the Japan Science and Technology Agency (JST), the Japan Agency for Medical Research and Development (AMED), and JICA. Since April 2008, a total of 125 projects commenced in 47 countries. A total of 53 international joint research projects in 32 countries are currently in progress in environment and energy, bioresources, and disaster prevention and mitigation (as of 11th May 2017).

- BNPB was established through Japan's cooperation, and pre-disaster measures were devised. In addition, local governments' capacity in preparing regional disaster risk reduction plans, hazard-risk maps and community disaster management was enhanced in two provinces and 25 municipalities/ districts.

3.2.11 Climate Change Measures and Natural Environment Conservation

(1) Overview

Indonesia, which boasts rich tropical rainforest and biodiversity, is a key country in resolving global climate change and biodiversity issues. While Japan's cooperation in this sector in the 1970s and 1980s included many projects related to forestry development for timber supply, a biological development research center was built in Bogor District, West Java Province in the mid-1990s in response to increased international concern about biodiversity issues. Meanwhile, as Indonesia contains 25% of the world's mangrove forests, which not only foster a rich ecosystem and mitigate climate change as a sink for carbon dioxide, but also contribute to disaster prevention as a natural breakwater, Japan has supported mangrove conservation for over 20 years since the 1990s. Japan has also provided assistance in coastal conservation in Bali island and forest fire prevention.

As international concern for climate change increased, Japan's climate change cooperation in Indonesia began in earnest in the 2000s. Indonesia was the first country in the world to implement the ODA loan project for climate change measures. JICA also assisted mechanisms such as Joint Crediting Mechanism (JCM), Reducing Emissions from Deforestation and Forest Degradation in Developing Countries (REDD+). It is expected that Indonesia will continue to be a Japan's important partner in the area of climate change measures.

(2) Outcomes

- Assistance for climate change measures such as the Climate Change Program Loans contributed to mainstreaming climate change within the Indonesian government and improving the capacity to cope with climate change issues.
- A biological development research center was constructed and contributed greatly to research on biodiversity in the country. The center's animal, plant and microbial collections are being used for research and conservation. Before the project (as of 2003), the number of dry plant specimens was 20,000 but after project completion (as of 2010), the number increased to more than 730,000.
- A strategy was launched for the government to manage forest protection and conservation areas together with local residents, and this contributed to the development of prevention and extinguishing with residents' participation. *Manggala Agni* (firefighting brigade) rooted in the local community and modeled on the Japanese volunteer fire corps was established.

- The Mangrove Information Centre (MIC) was established and activities such as mangrove-related training, environmental education and ecotourism were widely popularized. As a result of planting by training participants, an area of 4,000 hectares was reforested nationwide. Knowledge and skills were also shared among ASEAN countries in subsequent projects.
- In the popular tourist destination, the island of Bali, adaptation measures were taken for coastal conservation such as reducing coastal erosion damage and restoration of the Kuta, Sanur, and Nusa Dua beach, and quay wall reinforcement work at the Tanah Lot Temple. Those projects also contributed to the promotion of tourism.

3.2.12 Health and Medical Care/ Social Security

(1) Overview

From the late 1960s, Japan focused its cooperation on improving medical service delivery through rehabilitation of hospitals and strengthening the educational systems of the health workforce. The focus was then shifted to thematic cooperation from the 1980s, in such areas as family planning, mother and child health, community health, infectious disease control, and drug and food safety. In addition, a Japan Disaster Relief Team was dispatched soon after the first human case of Avian Influenza in 2005. The cooperation turned into technical cooperation and then to SATREPS projects today that deal with measures against emerging/re-emerging infectious diseases.

In the area of social security, Japanese assistance contributed to promoting employment of disabled youths through the establishment and development of the National Vocational Rehabilitation Center in the 1990s. Soon after the national social insurance system started operating in 2014, Japan shared its experiences in the social insurance system with Indonesia. As the system drew a high level of interest among counterpart organizations, JICA started a technical cooperation project to establish and operate the system of labor and social insurance attorneys in 2017.

The volume of Japanese cooperation in health, medical care and social security subsector is gradually decreasing since some of the related indicators have been improved. However, it is expected that Japan will utilize its experiences to cope with issues common to Indonesia and Japan, such as the double burden of infectious and non-infectious diseases, increased chronic diseases and an aging population.

(2) Outcomes

- Infrastructure of 5 A-Class national hospitals and 13 B-Class and C-Class hospitals were improved mainly in the 1960s and 1970s that has built the foundation of medical service provision in the country. In addition, the educational systems of nursing education centers and the faculty of medicine at 4 universities were strengthened, which contributed to the enhancement of the health workforce.

- Maternal and Child Health (MCH) Handbook was institutionalized and disseminated to more than 80% of expectant and nursing mothers in all the 34 provinces (2016, Ministry of Health). Utilization of the MCH Handbook contributed to increasing mothers' knowledge and use of MCH services.
- Domestic vaccine production was achieved for oral polio vaccine (OPV) and measles vaccine, providing 43 million doses for the OPV and 32.8 million doses for the measles vaccine in Indonesia (2016). Moreover, after the completion of the project, 1.6 billion doses for the OPV and 21 million doses for the measles vaccine were exported to 136 countries in 2015 (including those through UNICEF procurements).
- The National Vocational Rehabilitation Center for Persons with Disabilities was established. The center has produced 1,943 alumni, of which 64% are employed/self-employed (2016). They have contributed to promoting employment of disabled youths.
- Japanese cooperation has developed into SSTC in Asian and African countries in the area of family planning, utilization of the MCH handbook, vaccine production, and vocational rehabilitation for disabled youths.

3.2.13 Basic Education

(1) Overview

The nine-year compulsory education, which comprises primary and lower secondary education, was set as a policy objective by the Government of Indonesia in 1994. In response, Japan started a loan project, the "Junior Secondary School Building Construction Project," in 1995. In addition, a project to strengthen teacher training universities started in 1998 to improve the capacities of junior secondary teachers, and "Lesson Study," which is a unique method in Japan to develop teaching capacities through mutual teacher learning based on planning, conducting and reflecting actual lessons, was introduced in 2003 to improve the teaching process. Moreover, based on the decentralization policy of Indonesia, a survey/project to improve school-based management was started in 1999. The participatory model developed by the project, where school improvement plans are developed, implemented and evaluated involving schools, communities and local authorities, was adopted by the Government of Indonesia and other similar projects. Following the success of this model, a school block grant system (BOS) was introduced by the government in 2005. Through these projects, JICA supported the achievement of a nine-year compulsory education in terms of both quantity and quality.

In the 2010s, a project to improve the quality of basic education including e-learning was implemented by a Japanese private company collaborating with JICA. In addition, training in Japan on Lesson Study has been underway since 2013, and this has contributed to the dissemination of Lesson Study in Indonesia.

There still remain challenges such as improving learning achievement and educational disparities, and the demands of industries are growing for further improvement of basic academic skills, which form the basis of high-quality industrial human resources. Therefore, further support is required.

(2) Outcomes

- The “Junior Secondary School Building Construction Project” increased the average enrollment rate of junior secondary school from 56.5% in 1995 to 67.9% in 2000 in the 12 target provinces (then) by constructing 596 junior secondary schools, which contributed to achieving nine-year compulsory education.
- Lesson Study introduced by the “Indonesian Mathematics and Science Teacher Education Project (IMSTEP)” and disseminated by a series of subsequent projects is widely practiced in Indonesia including 67 teacher training universities.
- The school-based management model developed by the “Regional Educational Development and Improvement Program (REDIP)” was adopted by the government and other development partners. School-based management with community participation is now integrated into daily practices at school.
- A teacher training university strengthened by Japan’s projects became a resource institution for SSTC and it has provided training on Lesson Study for Asia and Africa.

3.2.14 River Basin Development and Management

(1) Overview

Japanese cooperation for river basin development and management can be largely divided into the following three periods.

During the 1950s and 1960s, Indonesia pursued food production increase and rapid development of its electric power sector for industrialization. Accordingly, Japan assisted in the development of three representative multipurpose dams—the Karangates Dam and Kali Konto Dam in the Brantas River basin and the Riam Kanan Dam in South Kalimantan.

During the 1970s to 1990s, serious flood damage occurred nearly every year in many major river basins of Indonesia. Japan responded by conducting studies for comprehensive river basin development that included flood control, hydropower generation, and development of irrigation and domestic, municipal and industrial water, targeting three river basins (the Brantas River, Solo River and Jeneberang River). In river basin development, the first step involved formulating a comprehensive master plan. Then, based on this plan, long-term projects were systematically implemented to build multipurpose dams, develop irrigation, generate hydroelectric power, and river improvement among other activities. In the area of flood control, Japan has continuously provided ODA loans for flood prevention in major regional cities since the 1970s.

Entering the 2000s, Japanese cooperation began to place priority on rehabilitating existing flood-control and water resource facilities and strengthening the capabilities of government agencies and community organizations concerned with river basin management. In addition, Japanese

cooperation in this sector began incorporating new issues such as integrated water resources management, measures for land subsidence and climate change adaptation since 2008.

(2) Outcomes

- As a result of comprehensive river basin development at the Brantas River, Solo River, and Jeneberang River, flood damage was significantly reduced in the targeted river basins, which stabilized living conditions of the residents. Moreover, power and water supplied by the multipurpose dams and irrigation facilities development brought about industrial development and better livelihood in the regions..
- The flood control projects in major regional cities supported by ODA loans significantly reduced the frequency and scale of flood damage in Medan, Padang, Bandung and Banda Aceh.
- Collaboration by Indonesian engineers and Japanese experts resulted in technical transfer through JICA's long-term cooperation ranging from the formulation of master plans to the implementation of each project. (Example: PWS Bengawan Solo (Design) and PT. Brantas Abipraya (Construction Work)).
- The concept of integrated water resources management was promoted through strengthening practical watershed management capacity.

3.2.15 Telecommunications

(1) Overview

Cooperation in the telecommunications sector has been implemented in the communications and the broadcasting fields. In the communications subsector, Japan was the first development partner to assist the improvement of the inter-islands communications lines with the "Communication Network Development Project" in 1969. At the same time, Japan also supported improvement of the microwave network, and renewal of the aging telephone network. In 1979, Japan provided assistance in formulating the first master plan in the Indonesian telecommunications sector. From the late 1980s, to expand the telephone network, Japan supported the laying of Indonesia's first optical fiber submarine cables between Surabaya and Banjarmasin with a total length of 410 km. In the 1990s, Japan began supporting human resource development in the field of telephone line maintenance by establishing the Telephone Outside Plant Maintenance Center, and contributed to building the backbone of the state-owned enterprise PT. Telkom Indonesia.

In the broadcasting subsector, Japan supported the establishment of public radio stations and TV stations in the 1970s. From the 1980s, Japan actively worked on human resource development in institutions including MMTC in Yogyakarta.

As participation of the private sector in the telecommunication sector was allowed from the late 1980s, Japan shifted its focus from financial assistance for infrastructure development to technical cooperation and policy recommendations. Against this backdrop, MMTC, initially established as a

training institute for public servants, changed its role according to the times: it started receiving trainees from the private sector, and then from the late 1990s developed into an international training institute.

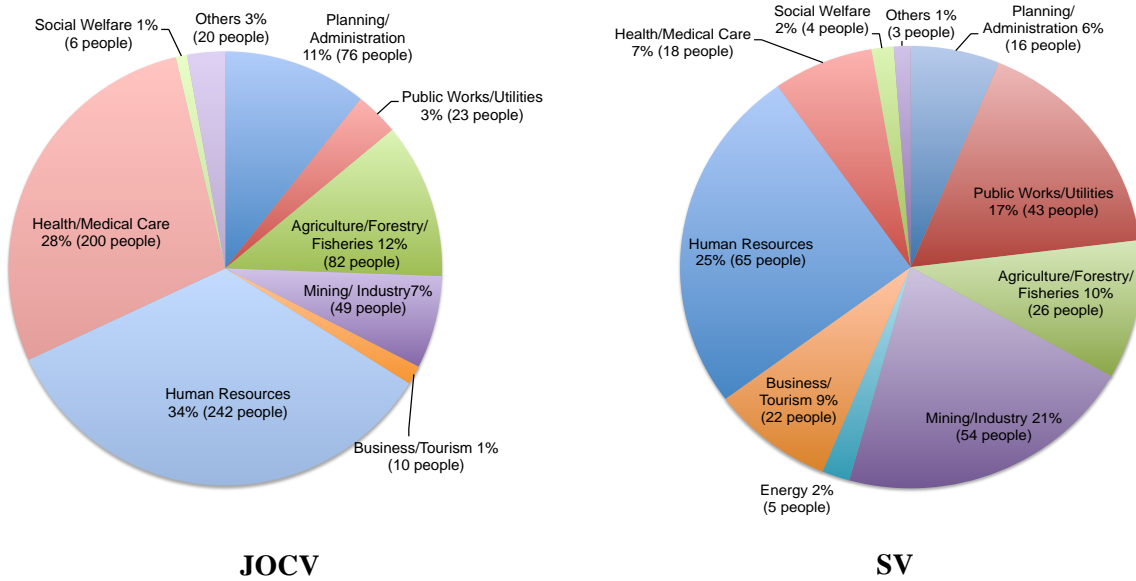
Recently, to cope with the international issue of vulnerable cyberspace security in the ASEAN Region, JICA has started human resource development and capacity building of government agencies in the information security field in Indonesia, along with neighboring ASEAN countries.

(2) Outcomes

- Japan assisted the improvement of inter-island communication lines and telephone network, as exemplified by the 410 km long distance optical fiber submarine cables connecting Java and Kalimantan. These contributed to connecting the Indonesian archipelago, and facilitating economic activities.
- Through the establishment of public radio stations and TV stations, and improvement of broadcasting skills, Japanese cooperation contributed to the social integration of Indonesia, which is home to numerous ethnic groups, languages and religions.
- MMTC has provided training programs to more than 2,700 technicians at both public and private broadcasting stations including RCTI and Trans TV. With a high reputation for its practical, hands-on training program utilizing the latest facilities and equipment in Southeast Asia at that time, it has grown into a training institute, which serves as a resource for South-South and Triangular Cooperation (SSTC) to accept trainees from other countries.

3.2.16 Japan Overseas Cooperation Volunteers (JOCV) Program

The JOCV Program was initiated by the Japanese government in April 1965. In Indonesia, a dispatch agreement was concluded as the 43rd country in 1987, and three junior experts (two nurses and one judo teacher) were dispatched in 1988. Since then, the total number of dispatched junior experts until FY2016 reached 708 in more than 90 job areas including agriculture/forestry/fisheries (such as vegetable cultivation and livestock breeding), education (such as Japanese language education and environmental education), health and medical care (such as nurse and midwife), culture (such as cooking and youth activity) and judo and physical education. In 1998, the dispatch of silver experts under the Senior Volunteer (SV) Program also started, and as of FY2016, a total of 256 silver experts have been dispatched to many types of jobs such as nursing education, shipping engines, aquaculture, quality control, metal processing, educational administration, and school management.



Source: JICA

Figure 20: Junior and Silver Experts Dispatched by Program and Field

These experts have lived with the local people and taken action to resolve problems with the same point of view of the local people. In addition, mutual understanding was promoted through communication to learn about each other while experiencing the culture of Indonesia.. The JOCV program, by providing many exchanges, aims to build a strong bond between Indonesia and Japan; and after returning home, they are also expected to use their experience in development of and problem solving in local communities in Japan.

Chapter IV The Role of Japan's Economic Cooperation in Socio-Economic Development of Indonesia and Its Future Prospects

4.1 Outcomes/Impacts of Japan's Economic Cooperation to Date

4.1.1 A bridge across the two countries

Indonesia and Japan have been “special countries” for each other. Since the period of turmoil following Indonesia's independence, Japan has consistently provided support according to the stages of socio-economic development in Indonesia, and the two countries have worked together to the point where Indonesia will soon become an upper middle-income country.

As Japan's economic cooperation began with post-war reparation as a defeated nation, the “request-basis principle” to avoid interference with domestic affairs as much as possible had been strictly adopted. This principle brought flexibility in responding to requests from the Indonesian side, and as a result, Japan's ODA has played an important role in supporting the Indonesian government's own initiative for “nation-building.”

However, bilateral relations have not always been smooth. A large-scale anti-Japanese demonstration in 1974 showed that the consideration to the country was insufficient while promoting overseas expansion rapidly. This event became an opportunity for the Japanese side to continue the steady efforts to understand and respect Indonesian custom. As a result, Japan's economic cooperation was able to contribute to the development of bilateral relations based on human relationship without changing contents of support affected by random interests of the times. Benefitting from the good sentiment towards Japan in Indonesia and building on the economic cooperation, Japanese private companies also became more familiar with the economic situation of Indonesia and increased investment. Thus, the ideal sequence of “economic cooperation - investment by Japanese private enterprises - further development of Indonesian economy” has been realized.

Some data imply that the outcomes of Japan's economic cooperation have gained the understanding and support of the Indonesian people. According to the Opinion Poll on Japan in Ten ASEAN Countries by the IPSOS Hong Kong in 2017²², 93% of respondents in Indonesia answered that “friendship exists between the two countries and Japan is a reliable friend.” In addition, 90% said that “Japan's economic and technical cooperation has helped develop Indonesia.” This would be a proof that economic cooperation between Japan and Indonesia, which began with post-war reparations, has born fruit owing to tireless efforts of the relevant stakeholders in the two countries.

As a proof of good sentiments between the two countries, the number of foreign students from Indonesia to Japan has increased from 1,996 (8th largest, composition ratio 1.4%) in 2008 to 4,630 (6th, 1.9%) in 2015. In the Technical Intern Training Program supported by IM Japan, 5,000 alumni have become company presidents in Indonesia, and the alumni network, including a local company

²² Ministry of Foreign Affairs of Japan. *Opinion Poll on Japan in Ten ASEAN Countries*. November 2017. http://www.mofa.go.jp/press/release/press4e_001780.html (Accessed in April 2018)

presidents' association, has been formed. In addition, the number of Japanese learners in Indonesia exceeded that of Korea in 2012 and became second place behind China²³. The number of learners, which was 85,221 in 2003, has rapidly increased to 745,125 in 2015.

Meanwhile, due to the relaxation of visa requirements and the expansion of air routes by low cost carriers (LCC), the number of Indonesians who have visited Japan has been increasing. Some travelers choose to stay in private homes rather than hotels through the internet brokering services such as Airbnb, and share their experiences on social networking sites (SNS), which draw a big attention among Indonesian people. Also, Waku Waku Japan, which broadcasts Japanese television programs locally, has been effective in attracting interests in Japan as well as maintaining interests of students who have studied in and returned from Japan. Japanese universities have also increased opportunities to send students abroad through short-term dispatch programs aiming at international exchange, and therefore the number of students interested in Indonesia has been increasing.

JIEPA, which came into force on 1st July 2008, envisages cooperation in a wide range of fields such as liberalization and facilitation of trade and investment, movement of natural persons, improvement of business environment, etc. Hence, it can be estimated that JIEPA has been effective in promoting and deepening the grassroots exchanges between the two countries as mentioned above.

4.1.2 New initiatives from Indonesia

Japan's ODA to Indonesia is a microcosm of Japan's ODA in general. Various types of Japan's cooperation schemes have been implemented in Indonesia, and the total amount of assistance accounts for more than 10% of the total disbursement of Japanese ODA. The central ministries and agencies in Japan have dispatched their staff to the Embassy of Japan in Indonesia as well as related ministries and agencies in Indonesia as long-term experts. Various stakeholders including these officials and experts have worked together to identify issues in sectors of their respective concern and formulated projects to address these issues.

It is also in Indonesia that Japan's ODA has changed most. At the last stage of Suharto's administration, the request-basis principle has shifted to the "joint formulation principle," where the contents of support are decided through consultations based on the request form. Also, in 1999, an aid matrix was introduced in the process of preparing the Country Assistance Program. The new form of ODA, where projects are formulated by policy dialogue based on a comprehensive aid needs assessment, was possible because in Indonesia, Japanese experts had been dispatched across major sectors who carefully grasped what were the major issues in each sector. Besides, Indonesia was a front runner in introducing new schemes and initiatives of Japanese ODA such as the Community Empowerment Program²⁴(1998), the SV Program (1998) and the Country-based

²³ Based on the results of The Japan Foundation. *Survey Report On Japanese-Language Education Abroad*. conducted and published every three years.

²⁴ In collaboration with local NGOs, 62 projects were implemented from 1998 to 2008 by JICA with two objectives: (1) to prevent low-income households from falling below the poverty line after the Asian Financial Crisis, and (2) to promote reconstruction from natural disasters in Aceh and Yogyakarta.

ODA Task Force (2003).

The economic policy support, realized at the request of President Megawati after the Asian Financial Crisis, was a groundbreaking effort, showing the future direction of ODA. As the networks of both countries were firmly built through cooperation for many years, policy needs analysis and policy dialogue on basic policy were conducted at a high level. The Japan Indonesia Policy Forum, which took over the economic policy support, has contributed to further closeness of the two countries as a place where politicians, bureaucrats, business figures, academics and other stakeholders gathered together to discuss freely before conducting a needs survey.

The “Jabodetabek MPA Strategic Plan” (2012) was the fruit of these long-standing policy dialogues between the two countries. The MPA was a comprehensive approach: establishing a vision first, formulating a master plan, identifying priority infrastructure projects, selecting early implementation projects, then putting them on the request form. The Indonesian government is promoting deregulation on foreign capital and developing the mechanism for PPP in order to actively utilize private funds for infrastructure development. Japan has provided support in developing and managing the government financial support mechanism for PPP projects, as well as designing systems and policies related to infrastructure development.

Cooperation with Indonesia has also provided valuable opportunities for Japan to refine the tools of international cooperation. Many pioneering efforts have been initiated in Indonesia with the intention of disseminating them to other countries if they are proved effective in Indonesia. Indonesia has been selected for such a role because the multi-layered and thorough approach has made achievements in many sectors through long-time cooperation.

The Umbrella Cooperation implemented three times from 1981 to 2000 in the agriculture and food security sector was one of those pioneering efforts. It was a comprehensive support, currently known as the program approach, which organically combined technical cooperation, ODA loan, and grant aid to achieve the set overall goal of the whole sector from its formulation stage. The first Umbrella Cooperation contributed to the increase of rice production by distributing quality seeds, strengthening crop protection, developing irrigation facilities and improving post-harvest processing. In the subsequent cooperation, target crops were expanded, and it contributed to an increase in potato and soybean production, technical transfer and dissemination of cultivation technology, and improved living standard of farmers.

The “Sector Program Loan” was also devised in Japan’s cooperation with Indonesia, and later adopted by the World Bank and ADB. In the sector program loan, the counterpart funds received through the commodity loan are utilized to reinvest in the development of agreed sectors. As it could cover small-scale projects in rural areas, targeting less-developed areas and socially vulnerable groups, the sector program loan had contributed to addressing income/regional disparities, and the approach was taken over by the Social Safety Net Loan at the time of the Asian Financial Crisis.

The “Climate Change Program Loans (CCPL)” (2008-2010) was the first program loan project in the world to address the problem of climate change. Japan played a central role in formulating the policy matrix, and the World Bank and the French Development Agency (AFD) co-financed the initiative. The CCPL contributed to mainstreaming climate change among Indonesian government agencies and improving capacity for climate change measures.

The Maternal and Child Health (MCH) Handbook, widely used in community health centers (*puskesmas*) and integrated health service posts (*posyandu*) nationwide today, was introduced in Indonesia more than 20 years ago. With its success in Indonesia, Japan was able to confidently disseminate it to other countries, and the MCH Handbook is currently used in more than 40 countries around the world.

“Lesson Study²⁵,” which has become well-known in Indonesia, was also introduced by a Japanese technical cooperation project in the early 2000s where faculty members of teacher training universities conducted model lessons at pilot schools and improved teaching methods through Lesson Study. Lesson Study was disseminated by a project of the World Bank and the induction program of newly hired teachers by the Ministry of Education and Culture and adopted in teacher training universities as a method of teacher’s capacity building. Partner universities of Japanese technical cooperation played a central role in establishing the Lesson Study Association of Indonesia (ALSI) in 2012. ALSI actively participated in the World Association of Lesson Studies (WALS) and hosted the WALS International Conference in 2015 in Bandung.

4.1.3 Impact and spillover effects of Japan’s economic cooperation

The impact and spillover effects of Japan’s economic cooperation can be summarized as follows: 1) enhancing the national unity; 2) laying the foundation for stable development; 3) developing Indonesian business and human resources; 4) introducing innovative concepts and assisting their localization, and 5) fostering partnership through SSTC.

(1) Enhanced national unity

Indonesia is the world’s largest archipelago. Japan’s economic cooperation has played an important role in enhancing national unity. Through support to develop the fundamental infrastructure such as transport, electricity, energy and communication throughout the country, Japan assisted in physically connecting the Indonesian archipelago, and this led to the growth of the Indonesian industry. Road and ferry transport were strengthened, notably the Trans-Sumatra Highway (about 60% of the total length of approximately 2,500 km constructed by Japan); transport capacity of the Java trunk railway was enhanced; five airports were constructed /expanded, and safety facilities at 33 airports were developed, and eight out of a total of 28 gateway ports, 12 non-commercial ports, and 10 ferry ports were developed. Meanwhile, Japan strategically supported the main power plants in both Java and outer islands, and its

²⁵ Lesson Study is a unique method in Japan to develop teaching capacities through case analysis of teaching practice. It consists of three activities, planning, observation/practice, and reflection.

contribution reached 7.2% (20.0% by combining Japanese Independent Power Producer (IPP) participation) of the total capacity of the Indonesian power supply as of 2016.

In addition, Japan contributed to promoting the national language and fostering national identity through its support to develop public radio and TV broadcasting capacities from the 1960s. Besides, Japan constructed 596 junior secondary schools (5,364 classrooms) in 12 provinces in the early 1990s in response to the new initiative of nine-year compulsory education. As a result, the average enrollment rate of junior secondary school in the target provinces was improved by more than 10%, and more educational opportunities were offered for children who would be responsible for the future of the country.

(2) Foundation for steady socio-economic development

There are noteworthy achievements that have influenced the socio-economic development of Indonesia beyond the boundaries of the sector. During the “Green Revolution” in the 1960s and 1970s, Japan supported improvement of the agricultural infrastructure and technical transfer; and with introduction of high yield varieties, development of irrigation facilities and introduction of chemical fertilizer, the national rice yield greatly improved. This not only helped Indonesia avoid concerns about a food crisis, but also brought about a series of outcomes not limited to agriculture: reducing the income gap due to increase in farmers’ income; contributing to regional development during the Suharto regime, and shifting the labor force from the traditional sectors to the modern sectors.

Whenever Indonesia faced difficult times, Japan has provided prompt and timely support to relieve socially vulnerable groups. Japan contributed to Indonesia’s efforts to overcome the economic crises by providing non-project loans when Indonesia suffered from the balance of payment crisis, the oil shock in reverse, and the Asian Financial Crisis. In addition, in the 2000s, Japan provided seamless assistance to natural disasters such as the Indian Ocean Earthquake and Tsunami (December 2004), the Central Java Earthquake Disaster (May 2006) and the earthquake offshore of Padang (September 2009). The multi-layered cooperation included a wide range of areas from the dispatch of Japan Disaster Relief Teams to recovery and reconstruction projects.

Furthermore, when the 32 year-long authoritarian regime collapsed in 1998 and Indonesia underwent major reforms, Japan provided broad support in the governance sector, and thus contributed to the establishment of a democratic system, which was the foundation of the country’s economic growth to date. In particular, the significance of support to the first free and fair election based on the multi-party system in 1999 cannot be overstated. Among others, support for establishing an independent institution to conduct reliable public opinion surveys made the people realize the restoration of freedom of speech by visually showing the long-lost “voices of the people.” By doing so, this influenced the form of post-Suharto society. In the first ever direct presidential election in 2004, its free and fair implementation process gave a vivid impression to the international community, and the confidence in the legitimacy of the Yudhoyono administration led to the stable economic growth thereafter. Similarly, Japanese support for mainstreaming the concept of community policing in the

national police, which was separated from the armed forces, and building a solid foundation for decentralization that benefits residents had a broader political and economic significance in Indonesia's democratization process.

(3) Development of Indonesian business and human resources

Many state-owned enterprises in Indonesia have developed themselves through government projects. Japan started implementing large-scale projects in numerous sectors before the growth of local capital, and thus contributed to the development of many state-owned enterprises and their engineers. In the Brantas River Basin Development Project in East Java, which consisted of diversion tunnels, multi-purpose dams, and power plants, nearly 7,000 people were trained over a period of 40 years. Moreover, three types of companies (consulting firm, construction company, and water resources development corporation) were born in Indonesia, as well as the Faculty of Engineering at Brawijaya University in Malang City, which has been contributing to the development of human resources in the field of water resources development afterwards. The continuing practice of institutional innovation in this project was called "Brantas Spirit," and this spirit was handed over to subsequently large-scale projects.

In addition, through the successive regional development projects from the end of the 1990s, Japan has provided trainings for about 6,000 administrative staff members and 4,700 facilitators mainly from NGOs. Japan's multi-layered approach to work with a wide range of stakeholders of regional development such as decision makers, planning officers, community members, and NGOs would certainly contribute to the more balanced and sustainable development of Indonesia.

At the same time, through the long-term scholarship provision to study in Japan, Japan has been engaged in human resources development at universities and national/local governments. The number of scholarships provided by yen loan and other JICA programs has reached over 3,000. For example, 16% of faculty members of IPB have studied in Japan, which is the most preferred destination for IPB faculty members to pursue doctoral degrees. Returnees have contributed significantly to the socio-economic development of Indonesia and strengthened ties between the two countries.

(4) Introduction of innovative concepts and their localization

Cooperation to develop integrated regional master plans that started in the East Java Province was extended to 40% of the all 27 provinces (at that time) before the 1980s. Through this cooperation process, planners of central and local governments deepened their understanding about the importance of formulating "medium- to long-term macro development plan covering multi-sectors targeting specific areas." As a consequence, this methodology was widely recognized within the Indonesian government and utilized in the formulation of the Provincial Spatial Designing and Structure Plan based on the Spatial Planning Law in 1992. Moreover, from RPJMN (2010-2014), the national mid-term development plan started accommodating regional development plans as "Part 3 Regional Development" by dividing the whole country into seven areas, following "Part 1 General" and "Part 2 Sector."

In such sectors as basic education and health and medical care, innovative concepts such as the school operational grant program, Lesson Study, and MCH Handbook were introduced through Japanese cooperation and then institutionalized as policies of the Government of Indonesia. Nowadays, these programs have shown their own development, and are no longer simply a copy from Japanese cooperation. REDIP has produced a synergetic effect in junior secondary education by improving school management, promoting collaboration among schools at the subdistrict level, and inviting community participation in school activities. The REDIP model was highly regarded among development partners and spread across Indonesia by the subsequent programs of the Australian Agency for International Development (AusAID) and the United States Agency for International Development (USAID). The philosophy of REDIP is handed over to the program of the Ministry of Education and Culture called REDIP-G (G stands for government), which has been implemented in such areas as South Tangerang City and Bekasi District. The MCH Handbook was introduced by Japan in 1994 and is used by more than 80% of expectant and nursing mothers as of 2016. This has promoted sequential maternal and child health services including safe deliveries attended by skilled birth attendants and child immunization.

(5) Partnership through SSTC

As a leader of the non-alliance movement, Indonesia has a long history of conducting South-South Cooperation with the Asia-Africa region. On the other hand, Japan began Triangular Cooperation through the Third Country Training Program²⁶ in 1981. These efforts, mainly carried out on a project basis, have given the Indonesian side confidence, and they have become a place for interactive learning. Counterpart institutions of Japan's technical cooperation have grown and developed in agriculture, health, education and many other sectors, and accumulated SSTC experiences to work with Asian and African countries²⁷. As Indonesia becomes a donor country, it is highly anticipated that these institutions would increase their presence as Centers of Excellence.

²⁶ Accepting trainees from other developing countries to Indonesia by Indonesian institutions that received Japanese technical assistance in the past.

²⁷ From 1994 to 2016, the Government of Indonesia, in collaboration with Japan, implemented 57 Triangular Cooperation projects utilizing the knowledge gained from 31 Japanese cooperation projects.

Table 3: Partner Institutions for Implementing SSTC

Sector	Name of Institutions
Transport	· Education and Training Center, Min. of Public Works and Housing
Economic Policy and Macro-Economic Management	· Agency for Finance Education and Training, Min. of Finance · Directorate General of Customs and Excise, Min. of Finance · Non-Aligned Movement, Centre for South-South Technical Cooperation (NAM-CSSTC)
Electric Power and Energy	· Institute for Business and People's Economy (IBEKA)
Water Supply, Drainage, Sewerage and Environmental Management	· Water Supply Training Center, Min. of Public Works and Housing
Telecommunications	· Multi Media Training Center (MMTC), Min. of Communication and Information Technology · PT. Telkom
Private Sector Development	· IETC, Min. of Trade · Institute for Research and Development of Metal and Machinery Industries (MIDC), Min. of Industry
Higher Education and Highly-Skilled Human Resource Development	· Electronic Engineering Polytechnic Institute of Surabaya (EEPIS)
Governance	· Indonesian National Police
Regional Development	· Center for Economic and Social Studies (CESS) · PLSD Indonesia Institute · Research Institute for Human Settlement (RIHS), Min. of Public Works and Housing
Agriculture and Food Security	· Agency for Agricultural Extension and Human Resources Development (AAEHRD), Min. of Agriculture · Center for Research on Engineering Applications in Tropical Agriculture (CREARA), Bogor Agricultural Institute (IPB) · Central Research Institute for Aquaculture, Gondol Research Institute for Mariculture, Min. of Maritime Affairs and Fisheries · Irrigation Engineering Service Center (IESC), Min. of Public Works and Housing · National Training Center for Livestock, Min. of Agriculture · National Veterinary Drug Assay Laboratory (NVDAL), Min. of Agriculture · Singosari National Artificial Insemination Center, Min. of Agriculture
Disaster Risk Reduction	· Sabo Technical Centre (STC), Min. of Public Works and Housing
Climate Change and Natural Environment Conservation	· Environmental Training Center, Environmental Management Center, Min. of Environment and Forestry · Center for Forestry Education and Training (CFET), Min. of Environment and Forestry · Center for International Cooperation in Management of Tropical Peatland (CIMTROP), University of Palangkaraya · Center for Plantation Forest Research and Development, Min. of Environment and Forestry
Health and Medical Care/ Social Security	· Min. of Health · Faculty of Community Health, University of Indonesia · Kusuma Buana Foundation (YKB) · National Family Planning and Population Board (BKKBN) · PT Bio Farma · National Vocational Rehabilitation Center (NVRC), Min. of Social Affairs
Basic Education	· Faculty of Math and Science, Indonesia University of Education (UPI)

Source: JICA Review Team based on JICA. *Indonesia-Japan: Fostering Global Development through South-South and Triangular Cooperation*. 2013.

4.2 Implications for Future Cooperation

Indonesia's stability has a special importance to the international community and Japan. Indonesia is a great regional power, currently accounting for about 40% of ASEAN's population, economy, and land area²⁸, and the only G20 member among the ASEAN countries. In addition, for Japan, Indonesia has geopolitical importance which occupies a key position for free maritime transport and trade, as well as international political importance as the partner country sharing fundamental values such as freedom, democracy, and rule of law. Therefore, it is highly necessary for Japan to continue to be involved in the development of Indonesia with a longer-term perspective.

For its sustainable socio-economic development, Indonesia needs a tailor-made development model to tackle issues caused by rapid development, such as reducing disparities, disaster risk reduction, environmental conservation, improving the quality of democracy, maritime security and remote area development. In order to address these issues, medium to long-term policies are indispensable, as well as multi-layered efforts such as capacity development of local governments and mechanisms for allocating development funds to the social sectors. There are many common challenges that Indonesia and Japan share, including the ones that Japan have not yet found solutions to. Hence, a "collaborative thinking" approach that both countries think together and explore solutions together might be effective. While Japan's traditional cooperation approaches have applied the experience of Japan to the context of Indonesia, in this approach Japan and Indonesia will share experiences of each other and try to find solutions together to address common issues. In the future, it is expected that many more achievements will be produced through this collaborative thinking approach, including feedback of useful programs/ initiatives tried and proved effective in Indonesia to Japan.

Moreover, the two countries' partnership in the international community may generate high added value. Indonesia, which has held the Asia-Africa Conference, has a long history of implementing South-South Cooperation, and many Japanese cooperation projects in Indonesia have developed into SSTC. In addition, Indonesia is demonstrating its strong leadership in the implementation of the SDGs, for which developed countries also need to work on action plans, monitoring and evaluation. Public-private partnership at various levels through the SDGs might produce a large added value.

Indonesia is expected to be an upper middle-income country in the near future, and hence Japan is required to continuously provide development cooperation with high added value in line with the changing situation of Indonesia. With Japanese development cooperation, new technologies and concepts were brought to Indonesia: comprehensive watershed development, three-dimensional crossing of roads and railroads, introduction of the MCH Handbook, full-scale public opinion survey in line with democratization, and construction of the first subway. These technologies and concepts have had a great impact in the development of Indonesian society and played an important role in solving the development issues of each era in Indonesia. In the future, Japan is expected to continue its

²⁸ As of 2016, Indonesia accounted for 40.9% of the ASEAN population, 36.5% of GDP and 42.5% of land area. Asian and Oceanian Affairs Bureau, Ministry of Foreign Affairs of Japan. *Me de miru ASEAN. [ASEAN Outlook]*. August 2017. <http://www.mofa.go.jp/mofaj/files/000127169.pdf> (Accessed in April 2018)

cooperation to introduce new technologies and concepts to Indonesia in a way that fits to its unique context and help Indonesia to utilize and further develop such ideas on its own. In doing so, Japan should not hesitate to adopt innovations such as satellite imagery and artificial intelligence. Besides, not only ODA loans to the Indonesian government, but also promotion of further utilization of private funds are needed by leveraging public funds as a catalyst. Utilization of JICA's private-sector investment finance is a valuable option.

Since the Fukuda Doctrine²⁹, development cooperation has been provided even at several major turning points of Indonesian society and has contributed to strengthening the relationship of the two countries based on trust. It is more important than ever to maintain and develop such relationship by continuing development cooperation with higher added value to Indonesia, a soon-to-be upper middle-income country. It is hoped that Japan will continue its support for sustainable socio-economic development of Indonesia, and Japan and Indonesia will “work together and move forward together (*bekerja bersama demi kemajuan bersama*)³⁰” as a partner to tackle the challenges of the international community.

²⁹ Three basic principles of Japan's foreign policy in Southeast Asia, expressed in a speech by Japanese Prime Minister Takeo Fukuda in August 1977, while on a tour of the ASEAN member states. They are: 1) Japan, a nation committed to peace, rejects the role of a military power; 2) Japan, as a true friend of the countries of Southeast Asia will do its best for consolidating the relationship of mutual confidence and trust based on “heart-to-heart” understanding with these countries, and 3) Japan will be an equal partner of ASEAN and its member countries, and cooperate positively with them in their own efforts to strengthen their solidarity and resilience.

³⁰ Congratulatory Message of the President of the Republic of Indonesia on the 60th Anniversary of Indonesia- Japan Diplomatic Relations
<http://www.mofa.go.jp/mofaj/files/000326715.pdf> (English), <https://www.60jpid.com/id/pesan-presiden.php> (Indonesian)
(Accessed in April 2018)

On the cover page of the booklet published in November 2001, commemorating the 40th anniversary of the Brantas River Development Project, the phrase “thinking together, walking together (*berpikir bersama, berjalan bersama*)” was added as subtitle.

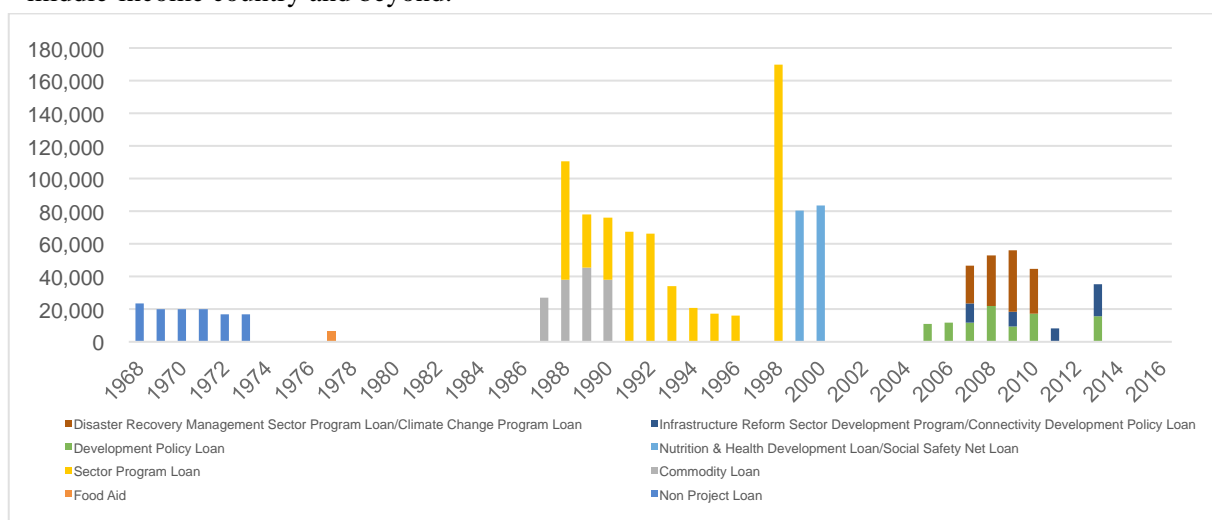
Part II Sector Analysis

Chapter I Economic Policy and Macroeconomic Management

1.1 Summary

Since the 1960s, Japanese ODA has contributed to macroeconomic stabilization and structural adjustment in Indonesia through financial assistance and technical cooperation. Financial assistance includes program loans for balance of payments deficits and structural adjustment during periods of economic shock, such as the balance of payments crisis during the early stage of the Suharto regime from the late 1960s to the early 1970s, the reverse oil crisis in the second half of the 1980s, and the Asian Financial Crisis from the late 1990s to the early 2000s. Moreover, it includes another type of program loans for financing budget deficits during the Yudhoyono administration from 2004 to 2014 to facilitate reforms through policy dialogue in such areas as investment climate, public financial management, poverty reduction, infrastructure reforms, climate change mitigation and adaptation (See Figure 1-1).

Japan has also implemented technical cooperation to enhance institutional capacity development at the National Development Planning Agency (BAPPENAS) since the late 1960s when a policy adviser was sent to support the formulation of the First Five-Year Development Plan (REPELITA I) 1969-1973. For the 1997 Asian Financial Crisis, the Economic Policy Support was undertaken by a Japanese academic team. The Japan Indonesia Policy Forums were also held every five years during the presidential election years since 1999 to discuss policy implications and make recommendations for the new administration. Since the 2000s, Japan has started a number of technical cooperation projects in the field of tax administration, external debt management, monetary policy, Public Private Partnership (PPP) for infrastructure development, performance-based budgeting, treasury, state-owned property management and social security. They have supported economic institutional reforms and capacity development to create fiscal space through resource mobilization. This helps enhance macroeconomic stabilization and sustainable economic development for Indonesia to become a higher middle-income country and beyond.



Source: JICA

Figure 1-1: Japanese Program Loans in Indonesia, 1968-2016 (JPY in Million)

Table 1-1: Overview of the Economic Policy and Macroeconomic Management Sector in Japan's ODA

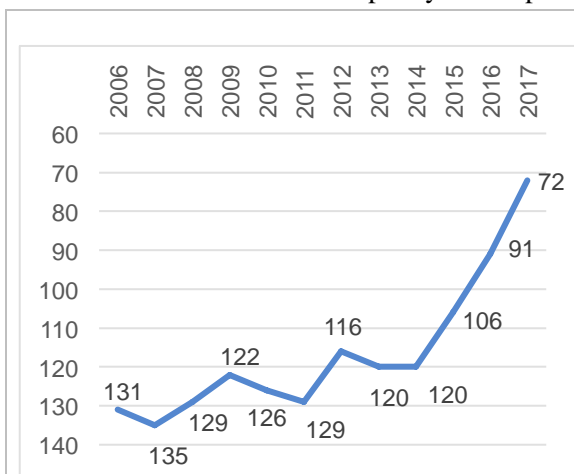
Period	1960s	1970s and early 1980s	Late 1980s	1990s	From the end of 1990s	From the end of 2000s
	Nation-State Building	Economic Development	Structural Adjustment	Growth until the Asian Financial Crisis	Democratization and Decentralization	Middle Income Countries
Historical Context	<ul style="list-style-type: none"> • Cold War • ASEAN (1967) • Green Revolution 	<ul style="list-style-type: none"> • First Oil Crisis (1973) • End of Vietnam War (1975) • Second Oil Crisis (1979) 	<ul style="list-style-type: none"> • Plaza Accord (1985) • Reverse Oil Crisis (1986) • End of Cold War (1989) 	<ul style="list-style-type: none"> • Asian Financial Crisis (1997) 	<ul style="list-style-type: none"> • Millennium Development Goals (2000) • Rise of emerging economies (BRICs) • 2008 Financial Crisis 	<ul style="list-style-type: none"> • G20 Accession (2008) • Sustainable Development Goals (2015) • Asian Infrastructure Investment Bank (2015) • ASEAN Economic Community (2015)
Situation of the Sector	<ul style="list-style-type: none"> • Oil-dependent economic development • BAPPENAS (1963) • Inter-Governmental Group of Indonesia (IGGI) (1967) • Inauguration of President Suharto (1968) • First 5-year development plan (REPELITA) (1969) 	<ul style="list-style-type: none"> • Pertamina Crisis (1975) • Improvement in balance of payments & economic growth due to soaring crude oil prices • Surge in Investment in resource development 	<ul style="list-style-type: none"> • Deterioration of economy & balance of payments due to decline in crude oil prices (1986) • Transforming from oil-gas dependent economy 	<ul style="list-style-type: none"> • Consultative Group for Indonesia (CGI) (1992) • Overcoming reverse oil crisis and returning to growth trajectory • Inflow of speculative private capital • Capital outflow associated with Asian Financial Crisis • Resignation of President Suharto (1998) 	<ul style="list-style-type: none"> • Political stability and economic recovery • Laws on local autonomy (1999) • State Finance Law (2003) • Law on National Dev. Planning System (2004) • Election of President Yudhoyono by direct election (2004) • End of CGI (2007) • Law on Capital Investment (2007) • Fiscal policy not dependent on aid 	<ul style="list-style-type: none"> • Macroeconomic stability and solid economic growth • Japan-Indonesia Economic Partnership Agreement (2008) • Jakarta Commitment (2009) • Withdrawal from OPEC (2009) • Presidential Regulation on PPP (2015) • Presidential Regulation on Synchronization of Planning & Budgeting Processes (2017)
Priority Development Issues in the 5-Year Development Plan	<ul style="list-style-type: none"> • Early recovery from economic turmoil and stabilization of international balance of payments 	<ul style="list-style-type: none"> • Stable international balance of payments to promote steady economic development 	<ul style="list-style-type: none"> • Transformation of economic/ industrial structure to escape from dependence on oil and gas 	<ul style="list-style-type: none"> • Remediation of economic disparity • Overcoming economic/ financial crisis 	<ul style="list-style-type: none"> • Economic/ financial stability • Response to deterioration of fiscal balance 	<ul style="list-style-type: none"> • Accelerating economic growth • Inclusive growth and poverty reduction • Balanced growth among regions
Direction of Japan's Cooperation	<ul style="list-style-type: none"> • Economic stabilization support 	<ul style="list-style-type: none"> • Economic stabilization support • National development plan support 	<ul style="list-style-type: none"> • Economic stabilization support • National development plan support 	<ul style="list-style-type: none"> • Emergency support for Asian Financial Crisis • National development plan support 	<ul style="list-style-type: none"> • Budget support for economic institutional reforms • Technical cooperation for fiscal space • Economic policy support through policy dialogue 	<ul style="list-style-type: none"> • Budget support for economic institutional reforms • Technical cooperation for fiscal space • Economic policy support through policy dialogue

Period	1960s	1970s and early 1980s	Late 1980s	1990s	From the end of 1990s	From the end of 2000s
	Nation-State Building	Economic Development	Structural Adjustment	Growth until the Asian Financial Crisis	Democratization and Decentralization	Middle Income Countries
Outcomes						

Note: Dashed lines in the section of outcomes indicate the impact/spillover effect from the previous period.

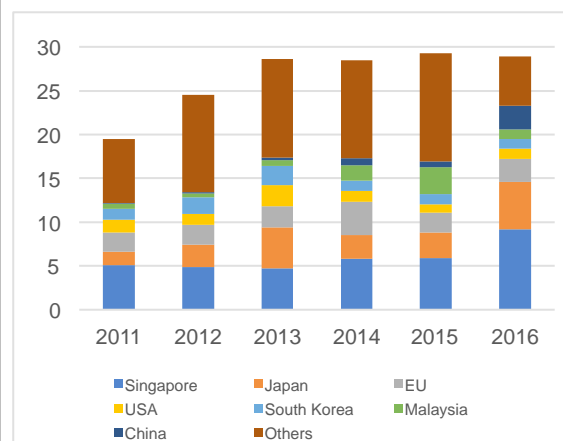
The contribution of Japan’s economic cooperation to the Indonesian economy over the last 50 years can be summarized as follows. Please also refer to Figures 1-4 to 1-11 for macroeconomic trends in Indonesia as the background.

- 1) Japanese program loans played a significant role as a buffer for the balance of payments crisis, the reverse oil crisis, and the Asian Financial Crisis in Indonesia from the late 1960s to the 1990s through support for macroeconomic stabilization and structural adjustment.
- 2) Through financing budget deficits and enhancing policy dialogue, Japanese program loans supported policy reforms in the areas of macroeconomic stabilization, investment climate, public financial management, poverty reduction, climate change measures, and infrastructure development from the second half of the 2000s to the first half of the 2010s.
- 3) Japanese technical cooperation in national development planning, economic policy support, tax administration, PPP for infrastructure development and others has facilitated economic institutional reforms and capacity development for the last 50 years.



Source: World Bank

Figure 1-2: World Bank Doing Business Ranking, Indonesia, 2006-2017



Source: BKPM

Figure 1-3: Foreign Direct Investment in Indonesia, 2011-2016

Regarding the investment climate mentioned above, it should be underlined that Indonesia has significantly improved the World Bank’s Ease of Doing Business ranking from 131st (out of 175 countries) to 72nd (out of 190 countries) between 2006 and 2017 (See Figure 1-2). While Foreign Direct Investment (FDI) increased from USD 195 billion in 2011 to USD 289 billion in 2016, the share of the Japanese FDI also expanded from 7.7% to 18.7% during the same period (See Figure 1-3). Policy dialogue and technical cooperation for the investment climate are some of the contributing factors to the better business environment.

For the next decades, Indonesia is expected to experience dynamic demographic and economic transformation. On one hand, according to PwC, Indonesia will become one of the next economic giants, achieving the fifth largest economy in 2030 and further the fourth largest economy in 2050¹. On the other hand, in this process, Indonesia is likely to face greater challenges with the middle-income trap in the 2020s and the end of the demographic bonus in the 2030s.

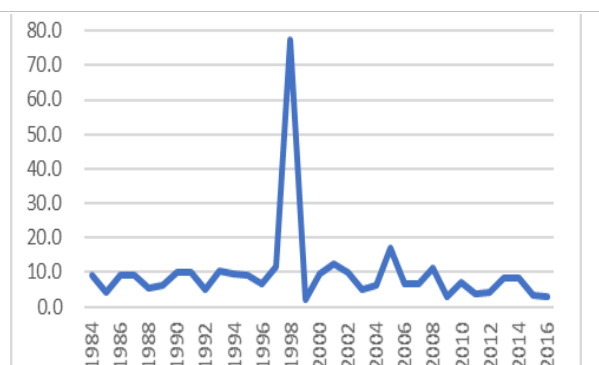
In order to deal with the forthcoming challenges, Japan and Indonesia will be able to strengthen cooperation on the common agenda through sharing knowledge, exchanging experiences and exploring technologies for collective actions. In this context, the current bilateral partnership needs to be transformed into a more equal learning partnership. Currently, Japan has comparative advantages in the fields of tax administration, PPP for infrastructure development and social security². In this regard, Japan is able to commit itself to supporting these areas through creating fiscal space and enhancing domestic resource mobilization for sustainable development in Indonesia.

Selected Macroeconomic Indicators in Indonesia



Source: Ministry of Finance, Indonesia

Figure 1-4: Real Gross Domestic Product (GDP), 1961-2016 (%)

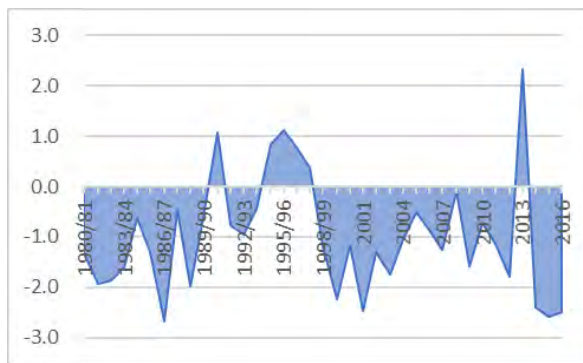


Source: Ministry of Finance, Indonesia

Figure 1-5: Consumer Price Index (CPI), 1984-2016 (%)

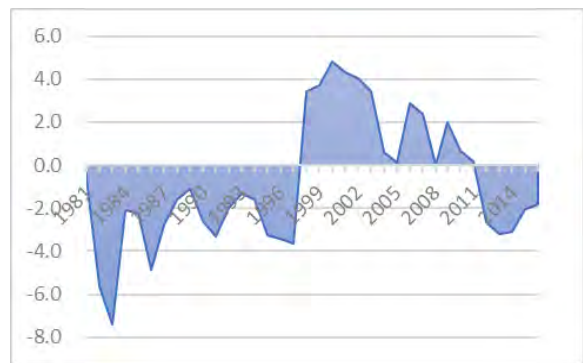
¹ PwC. *The Long View: How will the global economic order change by 2050?* 2017.

² Japan has the system of tax accountant and labor and social security attorney who are non-civil services legalized to facilitate tax or premium collection through partnership between the government and the private sector. Moreover, Japan is one of the largest investors, who accumulate knowledge and experiences in investment climate.



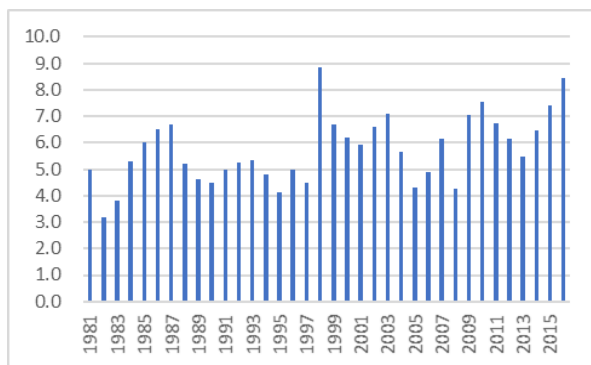
Source: Ministry of Finance, Indonesia

Figure 1-6: Fiscal Balance as GDP Ratio, 1980-2016 (%)



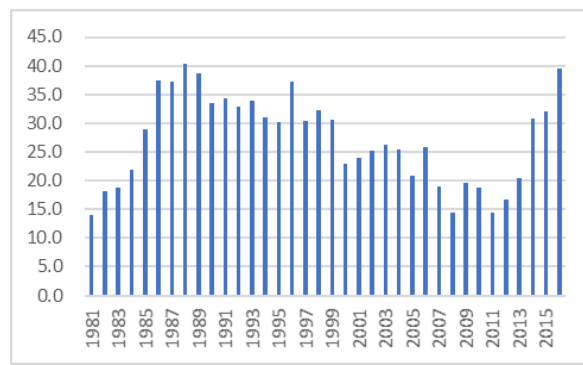
Source: Bank Indonesia

Figure 1-7: Current Account Balance as GDP Ratio, 1981-2016 (%)



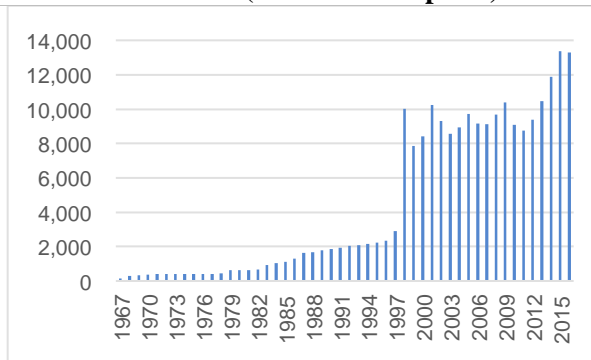
Source: Bank Indonesia

Figure 1-8: Foreign Exchange Reserves, 1981-2016 (Months of Imports)



Source: World Bank

Figure 1-9: Debt Service Ratio, 1981-2016 (% of Exports)



Source: World Bank

Figure 1-10: Foreign Exchange Rate, 1967-2016 (USD to IDR)



Source: World Bank

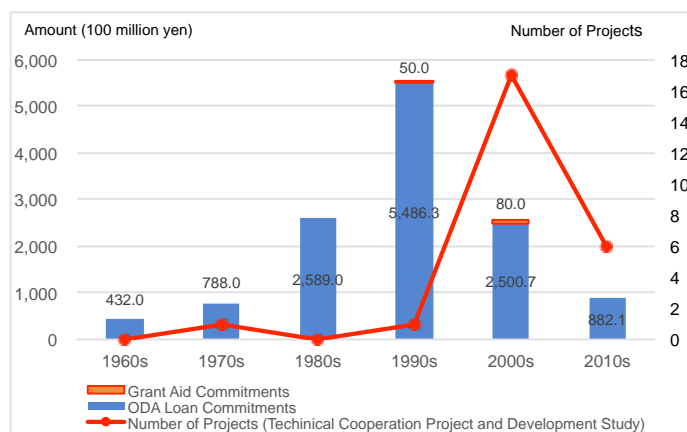
Figure 1-11: Real Interest Rate, 1986-2016 (%)

1.2 Historical Context and Japan's Cooperation

1.2.1 Number of projects and commitment amounts

In Indonesia, Japanese cooperation for economic policy and macroeconomic management began with non-project loans or program loans for supporting the balance of payments deficit crisis in 1968. There have been 80 projects implemented in the sector as of December 2017, which can be broken down into 50 ODA loans or concessional loans, 5 grant aid projects, 22 technical cooperation projects and 3 development studies. The amount of financial assistance, such as concessional loans and grant aid, has reached approximately 1.3 trillion yen (commitment basis) in total.

During the last 50 years of assistance in the sector, there was a peak in the amount of financial assistance in the 1990s followed by another peak in the number of technical cooperation in the 2000s (See Figure 1-12). During the Asian Financial Crisis, the program loans were intensively mobilized to support the balance of payments deficits and structural adjustment under the “New Miyazawa Initiative” in the late 1990s. Once the macroeconomy was stabilized in the 2000s, a number of technical cooperation projects were implemented to support the implementation of the economic institutional frameworks in the post-crisis era.



Source: JICA Review Team

Figure 1-12: Commitment Amounts of ODA Loans, Grant Aid (E/N basis), and the Number of Technical Cooperation (Technical Cooperation Project and Development Study) by Decade

1.2.2 Period-specific characteristics of Japan's economic cooperation for Indonesia in the economic policy and macroeconomic management sector

In this section, the situation of Japan's economic cooperation in economic policy and macroeconomic management in Indonesia and support of the Japanese government for Indonesia are summarized by period.

- The 1960s: Toward market economy and balance of payments assistance
- The 1970s and the first half of the 1980s: Oil boom and economic development
- The second half of the 1980s: Oil crisis in reverse and structural adjustment
- The 1990s: Asian Financial Crisis and New Miyazawa Initiative
- From the end of the 1990s: Economic institutional reforms and Development Policy Loans
- From the end of the 2000s: Beyond middle-income trap

(1) The 1960s: Toward market economy and balance of payments assistance

1) Situation of the sector

The Sukarno regime had adopted “Guided Democracy” in the post-independence era. He attempted to shift a colonial economy to a self-sustained economy under the Guided Democracy while undertaking the expropriation of Dutch assets, the exclusion of foreign investments, the suppression of the Chinese Indonesians and the implementation of import substitution industrialization. However, his foreign and economic policies negatively affected the Indonesian economy. ODA was suspended from the Western countries after President Sukarno refused to accept aid from the USA and seceded from the UN due to Malaysia’s admission to the UN. It brought great uncertainty and instability in the process of economic transformation. Due to declining in exports and raising in debt and inflation, the Indonesian economy deteriorated drastically. Foreign exchange earnings from the plantation sector fell drastically, affecting the expansion of the current account deficits. The Guided Democracy administration dealt with the deficit spending covered by the printing of money. Consequently, Indonesia experienced above 100% of hyperinflation from 1962 to 1964 and further 592% in 1965. It led to food shortage and supplies seriously affecting the vulnerable people.

Following the downfall of President Sukarno, the “New Order” administration was installed by President Suharto. Nonetheless, the Suharto administration had initially struggled with economic depression inherited from the previous administration. Policy change was made for enhancing the market-oriented economy. The so-called developmental autocrat was established to promote the new economic policy through a top-down approach. The Paris Club creditor meetings with Indonesia were held in Tokyo and Paris in 1966 and in Amsterdam in 1967 to support the Suharto administration through debt relief. The Amsterdam meeting became the Inter-Governmental Group on Indonesia (IGGI) that expanded its functions for not only debt relief but also aid coordination under an international consortium of development partners. Since then, the IGGI had been annually held as the joint policy dialogue framework on financing for development with the Western countries. As a result, the Suharto administration enjoyed massive inflows of ODA and FDI from the Western countries to mobilize foreign resources for economic recovery and growth.

2) Major efforts by Japan

In this context, Japan, as its first assistance in this sector, provided a total of 43.2 billion yen through two commodity loans, in the form of non-project loans or program loans in the years of 1968 and 1969 to support the balance of payment crisis. Indonesia utilized the resources to import capital goods and raw materials for economic recovery, according to the list of import goods agreed in advance. These commodity loans largely contributed to the suppression of cost inflations caused by rises in production costs due to a shortage of goods and services and generated additional government revenues under the counterpart fund system. It also contributed to restoring the productions that had stopped or reduced operations at factories due to a shortage of capital goods and raw materials.

When REPELITA I (1969/70-1973/74) was formulated under the Suharto administration, Dr. Okita, the former Foreign Minister, was invited to provide policy advices to the Government of Indonesia in the formulation process of REPELITA I. He had an intimate relationship with Dr. Widjojo, the BAPPENAS Minister, who was the foremost member of the “Berkeley Mafia” of the economist who was influential to economic policy under the New Order administration. Hence, Dr. Okita asked the Economic Planning Agency of Japan to send economists to support compiling statistics to allow officials to analyze the economy for policy formulation. At that time, he was the President of the Japan Research for Economic Policy after having transferred from the Director General of the Economic Planning Agency. Dr. Okita also engaged with the “Partners in Development” (1969) and “The Limits to Growth” (1972) when he was the official members of the Pearson Commission on International Development and the Rome Club, respectively. His contributions to REPELITA I, and BAPPENAS were considered as the first technical cooperation of Japan in this sector.

(2) The 1970s and the first half of the 1980s: Oil boom and economic development

1) Situation of the sector

Under the economic policy of the Suharto’s New Order administration, Indonesia successfully generated the economic foundation for macroeconomic stabilization and growth in the long term. The Indonesian economy benefited significantly from the first oil boom in 1973 and the second one in 1979, raising export earnings and the government revenues steeply. This enabled the government to play a greater role in the economy by undertaking substantial public investments as well as establishing large-scaled import substitution industries in the country. Despite the surge in oil revenues, the balance of payments remained a challenge especially in the first half of this period. This was because capital goods and raw materials were expandingly imported due to increased foreign exchange earnings, giving rise to a developing manufacturing sector. Moreover, PT Pertamina, the Indonesia state oil monopoly, fell into a debt crisis in 1975, severely affecting the balance of payments. Nevertheless, the Suharto administration achieved nearly 7.0% of the average annual economic growth during the period from 1968 to the Asian Financial Crisis.

2) Major efforts by Japan

Japan provided a total of 73.6 billion yen through five commodity loans from 1970 to 1974. It was utilized for the imports of capital goods and raw materials to continuously support the balance of payments. It contributed to raising operation rates of the factories and generating additional government revenues under the counterpart funds. Of these, the 1971 commodity loan was exceptionally earmarked for the development of the financial sector. Furthermore, Japan provided food aid loans totaling 6.5 billion yen in 1977 to ensure immediate food security for vulnerable people.

As explained above, these program loans were provided during the period when the New Order administration struggled with the balance of payment crisis in the second half of the 1960s and the early 1970s. The total amount of the program loans between 1968 and 1973 was 116.8 billion yen,

which was equivalent to approximately 12.6% of the current account deficits during the same period. Naturally, the needs for the program loans were reduced once the Indonesian economy improved foreign exchange earnings from oil since its boom in 1973. Meanwhile, it is considered that the New Order administration might have sought for relevant policy implications of development path from Japan that had experienced dynamic economic transformation from recovery to high growth between 1945 and 1972.

Since 1971, Japan had conducted development studies or technical cooperation on economic development planning for BAPPENAS. The quality of statistics was one of the technical concerns for BAPPENAS to make modeling and planning for evidence-based policy making which had guided the development of the Japanese economy. Therefore, technical cooperation initially focused on the improvement of statistics, including the simplified version of the input-output table. Then, it shifted to econometric modeling, such as the fiscal strategy model, the monetary and financial model, the balance of payments model, the input-output table model and others. Among them, the 1983 Medium-Term Econometric Modeling for Economic Planning was one of the outcomes of the joint modeling works, and covered by the local mass media. During this period, Japan dispatched four long-term experts and 16 short-term experts to BAPPENAS³.

In addition to ODA, the Japanese FDI started to play an important role for economic transformation in Indonesia. The oil boom and the import substitution industrialization under the open economic policy attracted the Western FDI to the mining sector and the manufacturing sector in Indonesia. Japan expanded FDI to Indonesia since the Oil Crisis in 1973 when the Japanese high economic growth era (1954-1973) ended. In the manufacturing sector, the Japanese FDI initially took place in the areas of vehicles, home appliances and textile, and followingly parts supply for vehicles and home appliances, and dyeing and spinning for textile. This was called as the first Japanese FDI boom to Indonesia in the 1970s.

(3) The second half of the 1980s: Oil crisis in reverse and structural adjustment

1) Situation of the sector

Following the global economic recession after the second oil crisis in 1979, the crude oil price drastically fell from around USD 30 to USD 10 per barrel in 1986. This was known as the oil crisis in reverse, which severely affected the Indonesian economy having benefitted from the oil price hike since 1973. The Indonesia economic growth rate dropped from around 8% to 2% in 1986, and the unemployment rate also rose. Bank Indonesia devaluated rupiah in 1983 to ease the rising current account deficit, and in 1986 to improve the competitiveness of the non-oil economy under the structural adjustment program. Yet, the reduction of the oil earnings significantly deteriorated the external debt and the government revenues, 60% of which came from oil.

³ Professor Kobayashi, Kyoto University, Professor Sugiura, Wakayama University, and an expert Mr. Kuribayashi, the Economic Planning Agency of Japan, and other experts were dispatched. BAPPENAS's "Medium-Term Econometric Model for Economic Planning" was proposed by Mr. Kuribayashi.

In response to this economic crisis, the New Order administration undertook deregulation and reformation to transform the oil economy through implementing the structural adjustment program with support from the World Bank and other development partners. The main measures undertaken included devaluation, taxation reforms (to increase non-oil tax revenues), financial reforms (to remove interest rate controls), import tariff deregulation, retail and wholesale deregulation, and export and foreign direct investment promotion. The government set high priority in industrial development on intermediate and capital goods, such as machineries, cement, ready-made garments, and urea. It should be underlined that the Indonesian economy was successfully transformed to the non-oil economy through promoting the private sector development, attracting FDI and even the improvement of several state-owned enterprises. The economic growth rate recovered to 5% to 7% in the second half of the 1980s. Consequently, the economic structure was also transformed; the share of the manufacturing sector in GDP increased while that of the mining sector declined.

2) Major efforts by Japan

Japan resumed the provision of the commodity loans to support the balance of payments and structural adjustment during the reversed oil crisis. Through four commodity loans, a total of 148.8 billion yen was provided in the period of 1986 to 1990. Moreover, Japan started to provide the sector program loans which the counterpart funds from the commodity loans can be utilized for sector development. Totalling 104.9 billion yen was given in 1988 and 1989. For instance, the 1988 sector program loan was earmarked to 32 development programs in eight sectors which were expected to lay the foundation for economic growth. It included the slum upgrading program under the “Kampung Improvement Program,” water supply program and rural electrification program in Kambangan Village and Taro Golejo Village in East Java Province. It functioned as the social safety net program targeting the vulnerable groups who suffered from the structural adjustment program.

Japan continued to support capacity development in the economic modeling through dispatching three long-term experts to BAPPENAS. Technical cooperation focused on the revision of the economic modeling in line with the economic structure changes under the structural adjustment program.

(4) The 1990s: Asian Financial Crisis and New Miyazawa Initiative

1) Situation of the sector

The Indonesian economy performed impressively in the post-structural adjustment. The average annual economic growth achieved around 8% between 1990 and 1996. This is attributed to the deregulation and reformation in the financial sector under the structural adjustment. New banks were allowed to be established, existing banks could open up branches across the country and foreign banks were free to operate outside Jakarta. The banking deregulation had a positive impact on the Indonesian economy that attracted the magnitude of capital inflows. Simultaneously, the Indonesian economy was rapidly integrated with the international financial and capital markets through such rigorous measures in the banking sector. On the other hand, it had begun to run out of controlling and monitoring the

money flows within the Indonesian banking system. The weak financial regulatory and legal frameworks were also one of the factors for the failure to capture the financial data and the money flows. The external debt increasingly deteriorated to about USD 136 billion while the external debt service ratio reached 37%, which is considerably high.

The Asian Financial Crisis started in Thailand in July 1997 with the collapse of the Thai baht after Thai floated the baht after failing to protect the currency from speculative attack. It rapidly spread to Indonesia where the floating exchange rate system was just introduced in August 1997. The rupiah began depreciating significantly. By January 1998, it dropped to around IDR 10,000 to USD 1 from around IDR 2,500 in July 1997. The private sector, including the banking sector, which had obtained unhedged short-term offshore loans in US dollars, faced serious pressures from the sharp devaluation in debt management. Moreover, it led to a sharp rise in prices of tradable goods and shrinking consumer demands in domestic markets. It also resulted in the decline of the external creditworthiness in the banking sector and thus the country faced great difficulties to import intermediate and capital goods for exports. In this process, the inflation rate reached 77.5% in 1998, and the real interest rate dropped to minus 24.6%. Consequently, the Indonesian economy experienced unprecedented negative economic growth with minus 13.4%.

Due to the loss of control over the rupiah, the government decided to seek financial assistance from the IMF in October 1997. The IMF agreed to provide approximately USD 40 billion of the “Three-Year Stand-by Arrangement” with a conditionality which Indonesia was required to undertake. It included the closure of 16 private banks, the removal of food and energy subsidies, and raising interest rates. However, it turned out to be a failure. The closure of the 16 banks triggered a panic run on other banks. The large amounts of rupiah were withdrawn from banking accounts beyond the 16 banks. Although the Bank Indonesia injected large credits to the remaining banks, their abilities to lend were restricted, and the banking system of the country became dysfunctional. Furthermore, the fiscal austerity and the monetary tightening brought the severe economic recession. Additionally, a serious El-Nino drought brought price hikes of essentials from 1997 to 1998.

In January 1998, the government announced the Fiscal Year 1998/99 Budget, which emphasized the social safety net and the banking sector relief through the fiscal expansion by 32.1% compared with the previous budget. Nonetheless, it seriously hindered the negotiation process with the IMF that was seeking for the fiscal reduction policy⁴. It also sent a negative signal to the market where the rupiah drastically fell as explained earlier. Finally, President Suharto agreed to implement the second IMF bailout package in January and the third one in April 1998. Nonetheless, massive riots broke out in Jakarta, Medan, and Solo after the government cut subsidies on fuel and electricity in May in line with the IMF’s conditionality. Due to these riots, over one thousand people had lost their lives and

⁴ In January 1998, Indonesia fully accepted the IMF’s economic reform proposal. This proposal requested substantial economic rationalization and deregulation, and significant modifications in the 1998/99 Budget. The economic outlook was also revised downward, such as the economic growth rate from 4% to 0%, the inflation rate from 9% to 0%, and the US dollar exchange rate from IDR 4,000 to IDR 5,000 per dollar.

thousands of buildings were destroyed. As a result, President Suharto stepped down from the presidency in May 1998 to end his 30-year administration of the New Order⁵.

2) Major efforts by Japan

Japan announced the Country Assistance Policy for the Republic of Indonesia in 1994. It aligned with the REPELITA VI and the Second 25-Year Development Plan. It focused on “sound macroeconomic management and industrial structure reforms for broad-based economic development” as one of the five priority areas. Before the Asian Financial Crisis, from 1990 to 1996, Japan provided a total of 260 billion yen through the sector program loans for supporting the balance of payments and the structural adjustment.

For the Asian region affected by the Asian Financial Crisis, Japan announced the New Miyazawa Initiative, a package of support measures, which included USD 30 billion of bilateral assistance, of which USD 15 billion was allocated for the medium to long term financial needs for economic recovery and another USD 15 billion for the short-term capital needs during the process of implementing economic reform.

For Indonesia, the sector program loans of 170 billion yen were given for the social safety net in 1998. It was used for education, health and social welfare for the vulnerable groups, including the construction of vocational high schools, the equipment of regional public health centers, and the construction of vocational training centers for the physically handicapped. Under the New Miyazawa Initiative, moreover, Japan provided 164 billion yen through the Social Safety Net Loans and Health and Nutrition Sector Development Program Loan in three disbursements in 1999 and 2000. These measures provided relief for the vulnerable groups who suffered from the economic crisis.

The precondition for the Japanese loan disbursements was an undertaking of the conditionality under the IMF agreement. However, President Suharto was reluctant to faithfully implement the IMF support program. In March 1998, Prime Minister Hashimoto visited President Suharto to encourage him to take actions accordingly through working together with the international community. Moreover, Japan sent a professional team of the Economic Policy Support to make policy recommendations to the Suharto administration through aligning with the IMF agreement⁶. Finally, President Suharto agreed to conduct the full package of the IMF agreement, enabling Japan to disburse the program loans.

Japan also offered debt relief under the Paris Club in order to support the Indonesian economic recovery in the post Asian Financial Crisis. It included three debt rescheduling: 1) approximately USD 2.1 billion out of a total of USD 4.2 billion during a period of August 1998 to March 2000; 2) around USD 2.9 billion out of a total of USD 5.8 billion during of April 2000 to March 2002; and 3) about

⁵ In later years, the IMF's prescription for the Asian Financial Crisis received many criticisms. One of the reasons was that the amount of the loans was too small to solve the crisis of liquidity such as sharp outflows of foreign currency, and the structural reform which was not directly related to the solution of the crisis was required as the loan conditionality, affecting further economic deterioration. There were many lessons learnt from this crisis that influenced the latter IMF programs and others.

⁶ The members of the economic policy support team included Professor Shiraishi, Kyoto University, Professor Asanuma, Hitotsubashi University, Professor Ito, Hitotsubashi University, Professor Kinoshita, Waseda University, Professor Urata, Waseda University and Professor Komatsu, Hiroshima University.

USD 2.7 billion out of a total of USD 5.4 billion for April 2002 to December 2003. The Japanese debt relief accounted for approximately 50% of the total debt relief of Indonesia conducted during the post Asian Financial Crisis era.

Japan continued to commit capacity development in the econometric modeling at BAPPENAS by dispatching 17 long-term experts and 93 short-term experts. Technical cooperation targeted national income accounting, trade unit value indices, fiscal data, wage and labor cost data, macroeconomic indexes, and simulation system. In response to these assistance, BAPPENAS developed the dynamic input-output analysis model and the computable general equilibrium model in the second half of the 1990s. They also attempted to develop risk management and crisis response policy using the econometric modeling during the Asian Financial Crisis in 1998.

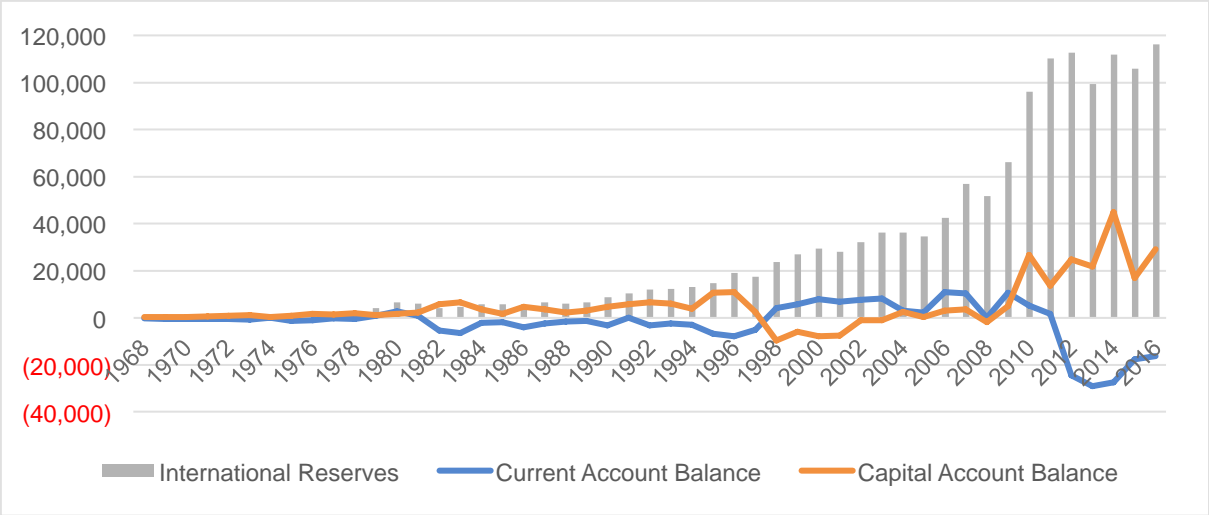
In the 1990s, the Japanese private sector played a greater role for economic development in Indonesia. In the Japanese market, Japanese companies had faced a number of challenges since the middle of the 1980s, such as the Plaza Accord in 1985, the collapse of the bubble economy in 1991, and intensified international competitiveness under globalization. In this context, many Japanese firms shifted a part of their production bases to overseas where they could access cheaper labors in order to maintain their business competitiveness in the world market. In fact, after the 1985 Plaza Accord, significant volumes of the Japanese FDI flowed into ASEAN countries, especially Malaysia and Thailand, to establish export production bases; however, it didn't happen in Indonesia until the 1990s. In fact, the marketing strategies, which most of the Japanese companies took, focused on potentials of the Indonesian large market rather than an export production base. The investors were also confident of Indonesian political stability and economic performance under the New Order administration. In the 1990s, the majority of the FDI concentrated on the expansion of the existing production facilities mainly in the home appliance and vehicle sectors. Following the significant volumes of the Japanese FDI inflows into Indonesia, there was a rush of opening new industrial parks in the eastern part of Jakarta in the early 1990s. It included the MM 2100 in 1990, the Surya Cipta in 1990, the Delta Silicon in 1991, the KIIC in 1992 and others. In addition, many Japanese companies were also involved with management of these industrial parks. This FDI movement in the 1990s is known as the second Japanese investment boom in Indonesia.

(5) From the end of the 1990s: Economic institutional reforms and Development Policy Loans

1) Situation of the sector

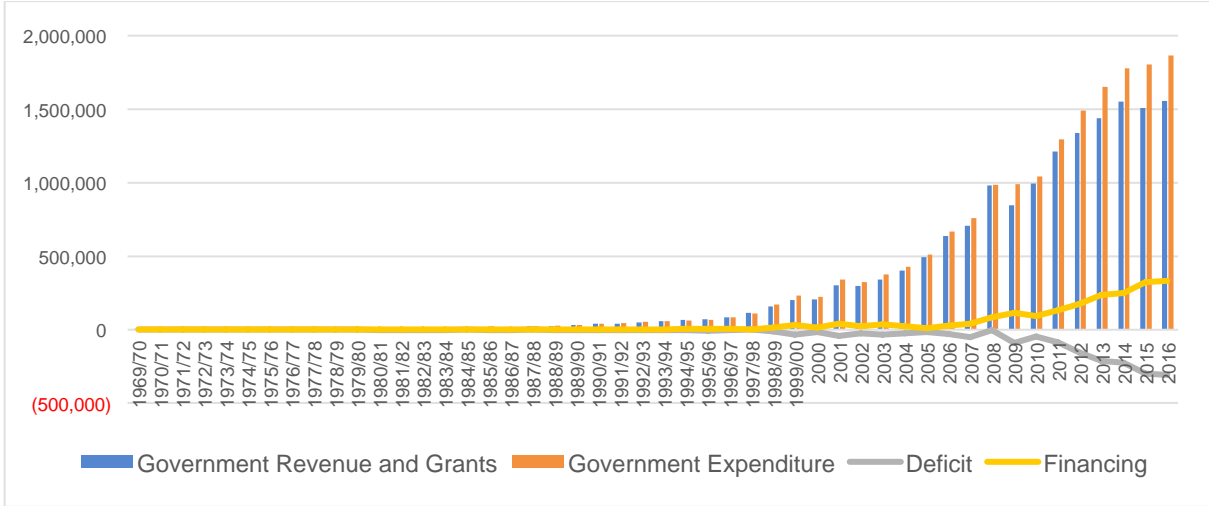
Since the end of the Asian Financial Crisis, Indonesia had made prudent financial and economic measures to ensure macroeconomic stabilization. Indonesia also graduated from the IMF support program in 2003. During this post-Asian Financial Crisis, Indonesia had experienced dynamic reformation of politics, economy, and administration as a transition period. There were three presidential changes, including Habibie, Wahid and Megawati, and four amendments to the Constitution of Indonesia were made during this period. In this process, Indonesia successfully introduced democratization and decentralization as the national foundation. Then, the Yudhoyono

administration inaugurated in 2004 through the first direct presidential election under the amended Constitution. The government continued to implement sound economic policies. As a result, the economic growth rate achieved around 5 to 6%. The current account balance to GDP ratio shifted to positive since 1998 although the fiscal balance to GDP ratio turned to negative (See Figure 1-13 and 1-14). The poverty ratio improved from 23.4% in 1998 to 14.2% in 2009. The unemployment rate deteriorated from 5.5% in 1998 to 11.2% in 2005, then turned to improve to 7.9% in 2009. Nevertheless, it took a decade to recover the volume of the FDI to the pre-crisis level.



Source: Bank Indonesia, BPS

Figure 1-13: Balance of Payments, 1968-2016 (USD in Million)



Source: Ministry of Finance, Indonesia

Figure 1-14: Fiscal Balance in Indonesia, 1969-2016 (IDR in Billion)

During the reformation era, financial and economic regulations and institutions were firmly established to make sure to prevent a similar crisis in the future. The 1999 Bank Indonesia Act granted the independence status for the Bank Indonesia to undertake financial and monetary policies without having any political influences. The foreign exchange transaction regulation and the inflation targeting within 3 to 5% were also introduced to create sound financial and monetary foundations. Moreover, the 2003 State Finance Act was enacted to introduce the unified budget system through transferring

the development budgetary authority from BAPPENAS to the Ministry of Finance. The Act defined the budget deficit maximum of 3% of GDP and the government debt maximum of 60% of GDP to ensure budget control and public debt management for sustainable economic management. The public financial management reform was pursued while the medium-term expenditure framework and the performance-based budgeting were introduced. The 2004 National Development Planning System Act was also enacted to define the scope and the process of planning, monitoring, and evaluation in the national development plan.

Under these new legal frameworks, the government intended to reduce aid dependency for financing the state budget. While having made early repayments to the IMF in 2006 through rescheduling the original repayment due date in 2010, Indonesia announced the abolition of the Consultative Group on Indonesia (CGI) in 2007. Furthermore, to facilitate Indonesia's ownership of aid, the government launched the Jakarta Commitment in 2009 which was localized from the concept of the OECD/DAC Paris Declaration on Aid Effectiveness in 2005.

While having reduced the aid dependency, Indonesia created the government debt market to finance the state budget. In fact, the debt market showed significant growth with the issuance of the government recap bonds in 1999 and the commencement of ones in the secondary market in 2000. The 2002 Government Securities Act allowed Indonesia to issue different types of government debt securities as well as *Sukuk* (Islamic bonds) to meet domestic market preference. For foreign denominated bonds, the government also launched the US dollar global conventional, the US dollar global *Sukuk*, the Japanese yen-denominated bonds, namely the Samurai bonds, and the Euro-denominated bonds.

2) Major efforts by Japan

In 2004, Japan formulated the Country Assistance Program for the Republic of Indonesia, which consisted of three pillars, including "the private sector-led sustainable growth." This pillar consisted of five priorities, including securing fiscal sustainability, building economic infrastructure, developing small-medium enterprises as supporting industries, generating economic legal frameworks and its enforcement, and financial sector reform.

As soon as the Yudhoyono administration inaugurated, the 2004 Indian Ocean earthquake and tsunami struck the province of Aceh and other areas severely. The Paris Club took urgent action to hold an emergency creditor meeting to grant debt rescheduling for Indonesia. Japan undertook debt rescheduling on approximately 147.7 billion yen of ODA loans and other loans in 2005 accordingly.

Following the World Bank's financial instrument change globally from the Structural Adjustment Loans (balance of payments support) to the Development Policy Loans (budget support) in 2004, Japan and other development partners also reflected the modality change in co-financing. This was because the World Bank has global policy change from macroeconomic stabilization and structural adjustment in the 1980s and the 1990s toward poverty reduction and growth in the 2000s and the 2010s. Indonesia was one of the first countries to introduce the World Bank's Development Policy Loans in 2004.

Japan provided the Development Policy Loans totaling 65.7 billion yen from 2005 to 2009 through co-financing with the World Bank and the ADB. Furthermore, Japan gave the Sector Development Policy Loans, which included a total of 21.1 billion yen through the Infrastructure Reform Sector Development Program in 2007 and 2009 co-financing with the ADB, and 91.4 billion yen through the Disaster Recovery Management Sector Program Loans and the Climate Change Program Loans (CCPL) co-financing with the French Development Agency (AFD).

When President Megawati and Prime Minister Koizumi met in 2001, she requested the assistance of the Economic Policy Support through high-level policy dialogue. While Japan dispatched six academic professors who were the members of the Asian Financial Crisis team, Mr. Laksamana, State-Owned Enterprises Minister, Dr. Dorodjatun, Coordinating Minister of Economic Affairs, Dr. Boediono, Minister of Finance and other ministers were appointed as its counterparts. The agenda of the policy dialogue covered macroeconomic management, financial sector reforms, small and medium enterprises development, private investment promotion, democratization, and decentralization. Japan made policy recommendations to Indonesia that it must focus on strengthening international competitiveness in urban-based production sector with fiscal discipline rather than pork-barrel spending for rural areas under the social policy. Moreover, the Japan Indonesia Policy Forum was held in 1999 and 2004, or every presidential change, among stakeholders such as policymakers, bureaucrats, academicians, and businessmen to discuss policy implications and recommendations for the new administrations.

Regarding the econometric modeling for BAPPENAS, Japan sent two long-term experts and 13 short-term experts in 2002. Despite having committed a three-decade support in national development planning, statistics and econometric modeling for BAPPENAS, Japan ended this assistance after the 2003 State Finance Act was enacted. In other words, REPELITA and BAPPENAS had played a central role in economic development under the Suharto's New Order administration until the Asian Financial Crisis. Japan had made great contribution to capacity development in economic policy and planning through support to BAPPENAS which continued over 40 years in total.

Japan expanded a scope of technical cooperation beyond BAPPENAS since 2003. In the financial sector, Japan conducted the "External Debt Management Improvement Project" (2004-2006) and the "Monetary Policy Improvement Project" (2007-2009) with Bank Indonesia. The former focused on the establishment of the reporting system on corporate external debt, which was one of the bottlenecks in relation to the Asian Financial Crisis. The latter promoted capacity development on analysis of the real economy and financial policymaking to improve the prudent financial and monetary policy.

In the tax administration sector, Japan worked with the Ministry of Finance through implementing the "Tax Administration Improvement Project" (2003-2007), the "Customs Administration Improvement Project" (2004-2006) and the "Technical Cooperation Project for Modernization of Tax Administration" (2006-2009). They aimed to improve tax administration and tax compliance at the Directorate General of Tax through facilitating human resource management, public relations, and tax accountant system as well as the improvement of customs efficiency and transparency at the Directorate General of Customs and Excise through efficient operations of customs system and capacity development.

In the capital market sector, the “Capital Market Development Project” (2006-2009) was implemented with the Ministry of Finance to strengthen administration capacity on regulatory oversight for capital market through the improvement of the corporate information disclosures, unfair trading regulations, and new financial products regulations.

Regarding FDI, Indonesia had experienced a sharp decline during the reformation era (1998-2004) after the Asian Financial Crisis. The investment market cooled down due to the political, economic and social confusions in the transition period of democratization and decentralization. Japan had also suffered from the economic recessions between 1997 and 1999 and between 2000 and 2002, cooling down Japanese investors’ minds. Nevertheless, FDI recovered gradually in Indonesia since the launch of the Yudhoyono administration in 2004.

(6) From the end of the 2000s: Beyond middle-income trap

1) Situation of the sector

While many industrial and middle-income countries experienced negative growth in the 2008 Global Financial Crisis, Indonesia showed outstanding performance with the economic growth rate of 4.7% in 2009. This was due to the fact that Indonesia had implemented prudent macroeconomic policies since the Asian Financial Crisis. On the other hand, the Indonesian economy was a domestic demand driven-economy led by strong consumer spending rather than an export-dependent economy.

The Yudhoyono administration performed well in security and diplomacy in the first phase 2004-2009. Accordingly, an expansion of the economy was set as a high priority issue during the second phase 2009-2014. Consequently, the average economic growth rate achieved around 5.8% during the second phase. The unemployment rate dropped from 7.9% in 2009 to 5.9% in 2014. The poverty ratio also decreased from 14.2% to 11.3%. The human development index improved from 0.656 to 0.686. On the contrary, the Gini coefficient deteriorated from 0.37 to 0.41. Income inequality remained as one of the main challenges to forward to the next administration (See Figure 1-15 to Figure 1-18).

In 2011, the Yudhoyono administration launched the Masterplan for Acceleration and Expansion of Indonesia’s Economic Development (MP3EI). As one of the important parts, the MP3EI covered the development of economic corridors linked between regions where there were comparative advantages and potentials. In response to this, the Masterplan for Establishing Metropolitan Priority Area (MPA) for Investment and Industry in Jabodetabek Area was produced in 2012 with support from Japan. The MPA recommended concentrating resources on the metropolitan infrastructure development to be functioned as a hub for the economic corridors over the country. Nevertheless, the plan was shelved due to policy change following a step down of President Yudhoyono.

The Joko administration inaugurated in 2014 has shifted policy priority from growth to distribution, emphasizing the importance of local development outside Java, especially the eastern part of Indonesia. Due to a great limitation of fiscal space, the government has promoted private financing for infrastructure development, including FDI, domestic direct investment, PPP and Non-Government Budget Investment

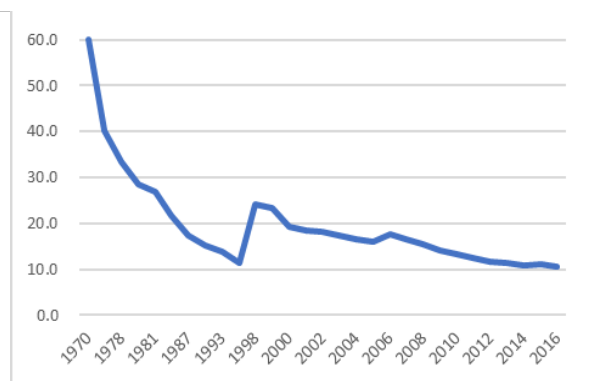
Financing (PINA). Simultaneously, the government set out a vision to create fiscal space through taking drastic measures to reduce fuel subsidies from 20% to 7% of total government expenditures and to reallocate 15% of total expenditures for infrastructure (See Table 1-2). In the 2017 Budget, allocation to infrastructure further increased to 18.6%. Moreover, showing political commitments to local development, the government made a significant rise in the budget transfer to regions which became larger than budget allocation to the central government ministries and agencies. The Joko administration also increased budget allocation to health and social security. Under the National Social Security System, BPJS Health was established in 2014 to achieve the universal healthcare coverage to all Indonesian by 2019. Additionally, BPJS Employment also set ambitious targets to made labor insurance, including pension, old-age savings, work accident and death benefits, to cover 80% of all formal sector workers and 5% of all informal sector workers. The government has radically changed the social protection program to prepare for the post-demographic bonus era in the 2030s.

Selected Socio-Economic Indicators in Indonesia



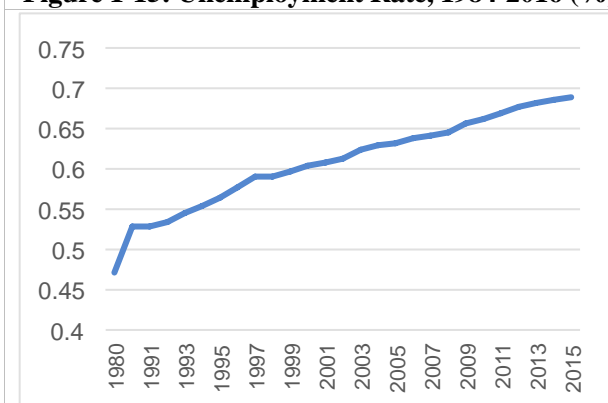
Source: BPS

Figure 1-15: Unemployment Rate, 1984-2016 (%)



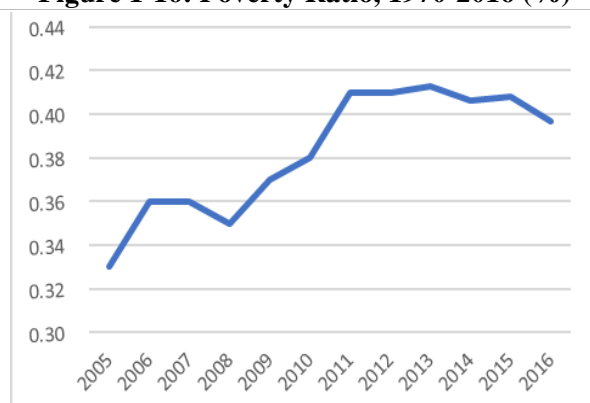
Source: BPS

Figure 1-16: Poverty Ratio, 1970-2016 (%)



Source: UNDP

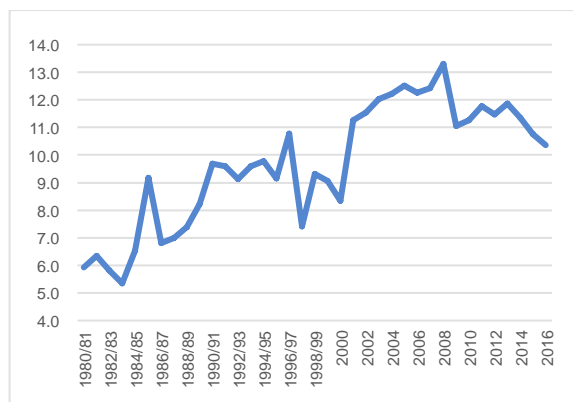
Figure 1-17: Human Development Index, 1980-2015 (%)



Source: Ministry of Finance, Indonesia

Figure 1-18: Gini Index, 2005-2016 (%)

In 2016, the Indonesian macroeconomy performed well. Due to low commodity prices in the international market, Indonesia's economic growth rate was limited to 5%. Yet, the inflation rate recorded 3.5% which scoped within the government inflation target of 3 to 5%. The international reserves equaled 10.3 months of imports in April 2017. Following the 2003 State Finance Act, the budget deficit to GDP ratio in 2016 was 2.5% against the legal provision of 3%, and the public debt to GDP ratio in the same year was 27.9% against the legal provision of 60%. On the other hand, the tax to GDP ratio was limited to 10.4% in 2016 which was extremely low compared with the other ASEAN countries. This indicates that the expansion of the tax base will be one of the most urgent priorities in macroeconomic management to generate the fiscal space and sustainable debt management in the long term (See Figure 1-19).



Source: Ministry of Finance, Indonesia

Figure 1-19: Tax to GDP Ratio, 1980-2016 (%)

Table 1-2: Government Expenditures in Indonesia 2005-2016

Unit: IDR in Billion

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Expenditure	509,632	667,129	757,650	985,731	937,382	1,042,117	1,294,999	1,491,410	1,650,564	1,777,183	1,806,515	1,864,275
Central Government	361,155	440,032	504,623	693,356	628,812	697,406	883,722	1,010,558	1,137,163	1,203,577	1,183,304	1,154,018
Education	74,750	121,406	139,142	152,798	199,549	216,500	258,356	297,365	-	332,413	353,368	390,133
Health	8,567	16,565	21,266	23,017	25,630	29,894	36,094	40,619	46,093	59,718	65,872	92,766
Infrastructure	27,920	46,676	51,578	67,543	76,306	86,050	114,200	145,452	155,871	154,658	256,146	269,119
Personnel	-	-	90,425	112,830	127,670	148,078	175,738	197,864	221,689	243,720	281,143	-
Goods & Services	-	-	54,551	55,963	80,668	97,597	124,640	140,885	169,723	176,622	233,281	-
Capital Expenditure	-	-	64,289	72,773	75,871	80,287	117,855	145,104	180,864	147,348	215,434	-
Interest Payment	-	-	79,806	88,430	93,782	88,383	93,262	100,516	113,035	133,441	156,010	182,761
Subsidies	-	-	150,215	275,291	138,082	192,707	295,358	346,420	355,045	391,963	185,971	174,227
Transfer to Region	150,464	226,180	253,263	292,434	308,585	344,728	411,325	480,645	513,260	573,703	623,140	710,257

Source: Ministry of Finance, Indonesia

2) Major efforts by Japan

In 2012, Japan formulated the Country Assistance Policy for the Republic of Indonesia. Under the basic policy of “assistance for well-balanced development and enhancement of capacity to address issues of the Asian region and international society,” “assistance for further economic growth” was set as one of the three pillars. In order to accelerate economic growth led by the private sector, efforts were made to improve the business and investment environment by providing assistance for infrastructure development especially in the Jakarta metropolitan area, the improvement of various regulations and systems, and professional human resource development.

In line with the above policy, Japan co-financed a total of 32.9 billion yen of the Development Policy Loans with the World Bank and the ADB to facilitate investment climate, public financial management and poverty reduction. The Infrastructure Reform Sector Development Loans and the Connectivity Development Policy Loans totaling 28.1 billion yen were given through co-financing

with the ADB and the World Bank to promote infrastructure development, investment climate, access to infrastructure and connectivity. Japan also provided 27.2 billion yen through CCPL with AFD and the World Bank to enhance climate change mitigation and adaptation.

The third and fourth Japan Indonesia Policy Forums were held in 2009 and 2014 respectively. The fourth Policy Forum focused on policy implications and recommendations for the forthcoming Joko administration through reviewing the second term of the Yudhoyono administration as well as Japanese administration. The main agenda covered following issues: (1) the forthcoming National Medium-Term Development Plan (RPJMN) 2015-2019; (2) macroeconomic policy and sector policies; (3) issues related to Japan such as its economic policy, politics, national security, diplomacy, social security, poverty, labor and unemployment; (4) science and technology and innovation; (5) the ASEAN Community, and (6) the bilateral relation. The participants included Mr. Kishida, Foreign Minister, Mr. Fukada, President of the Japan Indonesia Association and the former Prime Minister, Dr. Tanaka, President of JICA, Dr. Ginandjar, Member of the Presidential Advisory Board of Indonesia, Dr. Yusron, Ambassador of the Embassy of Indonesia in Japan and other distinguish guests, including the member of parliament, the executives of government and the private sector, academic professionals and others.

During this period, Japan covered PPP, tax administration, performance based-budgeting, and other economic fields through technical cooperation. First of all, the “Project for Public-Private Partnership Network Enhancement” (2011-2014) and the “KPIIP Support Facility” (2014-2019) have been implemented with KPIIP, BAPPENAS and the Ministry of Finance to promote the PPP frameworks on infrastructure development. According to the Medium-Term National Development Plan (RPJMN) 2010-2014 and the RPJMN 2015-2019, USD 143 billion and USD 370 billion were estimated to meet the needs of infrastructure development during each period, and nearly 60 % of these financial requirements were expected to be financed by non-government resources from the private sector and the state owned enterprises. In this context, Japan supports to build and operationalize the government guarantee and financial support mechanism for PPP projects, such as the Indonesia Infrastructure Guarantee Fund, the Viability Gap Funding, and the Availability Payment. Japan also promotes project formulation by improving investment coordination mechanism between ministries and agencies through the Project Development Facility and the Transaction Advisory.

Secondly, Japan has continuously worked on the modernization of tax administration with the Ministry of Finance through the “Project on Modernization of Tax Administration Phase 2” (2009-2014) and the “Project for Enhancing Tax Monitoring and Enforcement through the Prevention of Tax Dispute and Improvement in the Management of Human Resources and Organization” (2014-2017). As explained above, Indonesia has underperformed at 10.4% of the tax to GDP ratio in 2016, compared with 19.1% in Viet Nam and 16.1% in Thailand. Indonesia has conducted the tax reform to target 16% of the tax to GDP ratio by 2019. Japan has supported capacity development on tax administration, such as international taxation, e-commerce, risk management and human resource management to meet internationalized and diversified tax risk and opportunities. The Ministry of Finance is currently planning to introduce the tax accountant system with support from Japan to

enhance domestic revenue mobilization.

Thirdly, the Phase 1 of the “Planning and Budgeting Reform for the Performance-Based Budgeting System Implementation” (2010-2014) and its Phase 2 (2014-2017) were undertaken with BAPPENAS and the Ministry of Finance. Since the 2003 State Finance Act and the 2004 National Development Planning System Act were enacted, the development budget authority was transferred from BAPPENAS to the Ministry of Finance to establish the unified budget system. Indonesia, moreover, introduced the medium-term expenditure framework and the performance-based budgeting to pursue strategic budget allocation and spending in line with national policy priority and performance evaluation. As the 2003 Act has defined the budget deficit maximum of 3% of GDP and the government debt maximum of 60% of GDP, it is important for the government to ensure value for money in public spending through efficient resource control. Japan supported the establishment of the quality of result-chain and key performance indicators, budget formatting and budget assessment for strategic budget allocation to utilize the fiscal space more efficiently and effectively.

Furthermore, Japan dispatched the “Advisor for Economic, Fiscal and Financial Affairs” (2008-2010, 2011-2014) to the Ministry of Finance to improve macroeconomic policy formulation and implementation. The “Maximizing State Asset Management through Strengthening Institutional Capacity” (2009-2011) was another technical cooperation project for the Ministry of Finance to improve management of state-owned lands, assets and its utilization. It contributed to economic development and improving budget balance through facilitating economic infrastructure utilization and non-tax revenues. Finally, Japan supported the National Public Procurement Agency through the “Strengthening of Public Procurement System in the Government of Indonesia” (2016-2017) to promote capacity development in public procurement in general and procurement procedures for the Japanese concessional loan projects in particular. Indonesia faced a great challenge of underperformance in budget execution due to its capacity limitation on public procurement. This project contributed not only speeding up the concessional loan projects but also improving efficiency and transparency in public procurement.

Japan provided the private sector investment finance⁷ for the “Supporting Human Resource Development in Indonesia along with the Business of Japanese Companies” in 2014, which was the first project implemented under the scheme after it was resumed in 2012. It was financed for PT Japan Indonesia Economic Center (PT JIAEC) through PT. Bank International Indonesia for business expansion, including the construction of school buildings to foster human resources. Since a shortage of human resources, especially skilled labors, has been considered as one of the major challenges for economic development, the government is proactively promoting technical training by dispatching laborers overseas. PT. JIAEC provides language and vocational training for those who will migrate to

⁷ The private sector investment finance aims at promoting private sector development through financing the private sector either Japanese or local enterprises, in developing countries. This scheme was fully utilized to finance Japanese companies through the 1970s to the 1990s but suspended in 2001 as part of the administration reform. However, since 2012 Japan has resumed the private sector investment finance, reflecting the expansion of the role of the private sector in economic development.

Japan as technical interns for two to three years. This is expected to contribute to the improvement of the investment climate through creating a pool of skilled human resources in Indonesia.

Foreign Direct Investment

After the 2008 Financial Crisis, Indonesia has benefited from the so-called third Japanese FDI boom since 2010. According to the Japanese FDI outstanding by industry in Indonesia in 2015, there were three major industries, including transportation equipment (27.6%), finance and insurance (24.9%), and chemical and medicine (7.0%). In fact, transportation equipment industry, such as two and four-wheeled vehicle industries, has attracted significant investment inflows from Japan, associated with a surge of another investment flow from its supporting industries, namely finance and insurance services. According to the JBIC survey on FDI, Indonesia was awarded the top FDI destination in 2015, impressively improved from the sixth place in 2010. Although having fallen to the third place in 2016, following China and India, Indonesia is still considered as one of the most attractive FDI destinations. The survey indicated that growing market potential in Indonesia, the largest economy in Southeast Asia, was the main reason for keeping the Japanese investors interested, and the major factor of the third Japanese investment boom in Indonesia.

According to the Ministry of Finance of Japan, Japan invested the total amount of approximately 5 trillion yen in Indonesia from 1995 to 2008. The FDI was led by about 1,000 Japanese companies and created around 320 thousand job opportunities in Indonesia. Regarding the trend of the Japanese FDI by industry, mining was the most popular sector which attracted 1.9 trillion yen of FDI, counting 42.4% of the total Japanese FDI shares during the period of 1951 and 2004. However, the latest trend between 2005 and 2010 showed significant changes. Transport equipment replaced mining as the first place, totaling 160.2 billion yen (17.8%), followed by finance and insurance totaling 105.9 billion yen (10.6%) and mining dropping to 70.4 billion yen (7.8%). The Japanese private sector is increasingly expected to play a critical role as an engine for sustainable economic growth in Indonesia.

Debt Management Strategy and Concessional Loans

The trends of the public financing and debt management strategy of Indonesia show some implications for the Japanese concessional loans. In the post-Asian Financial Crisis, Indonesia experienced the unsustainable debt level, recording 77.3% of public debt to GDP ratio and 82.6% of external debt to GDP ratio in 2001 (See Figure 1-20). Having introduced a couple of measures on debt management and recovered economic growth, Indonesia successfully reduced the public debt to GDP ratio to 23.1% and external debt to GDP ratio to 25.0% in 2011. The recent economic slowdown and an upward trend of government borrowing slightly deteriorated the positions of debt to 27.9% for public debt to GDP ratio and 34.3% for external debt to GDP ratio in 2016, but it has remained at a sustainable level.

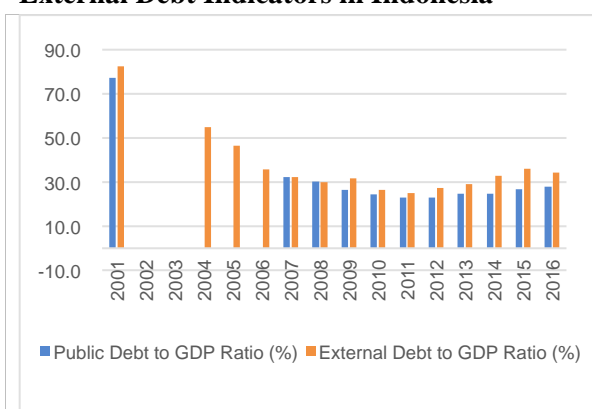
Indonesia has diversified budget financing through shifting from government borrowings to government debt securities since the post-Asian Financial Crisis (See Figure 1-21). The government also has expanded the debt securities in local and foreign currency denominated bonds, such as Indonesian rupiah,

US dollars, Japanese yen, and euro. As a result, an outstanding debt of the government borrowing has significantly declined from USD 80.1 billion in 2004 to USD 54.4 billion in 2016. On the other hand, an outstanding of the government debt securities has sharply increased from USD 3.2 billion to USD 100.8 billion during the same period, doubling the amount of the government borrowing in 2016. Regarding the outstanding of currency-wise external debts, Japanese yen used to be a top denominated foreign currency, accounting for 36.7% of its share in 2004, but has sharply dropped to 11.2% in 2016. By contrast, US dollar has raised from 31.6% to 47.6%, and Indonesia rupiah has significantly increased from 2.4% to 31.4% during the same period. The Government of Indonesia has undertaken the public debt management strategy through reducing the share of Japanese yen to adjust the government debt structure in the post-Asian Financial Crisis (See Figure 1-22).

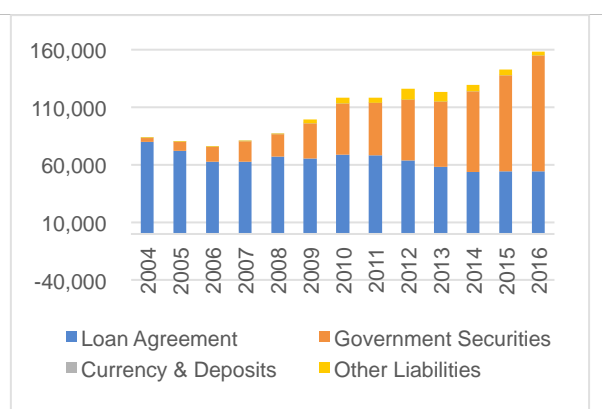
With respect to the outstanding external debt of the purpose-wise government borrowing, the share of project loans has decreased from USD 64.8 billion to USD 28.4 billion during the period of 2004 and 2016. On the other hand, the share of program loans has risen from USD 3.8 billion to USD 25.8 billion, reaching almost the same level as the project loans in 2016 (See Figure 1-23). As to the position of the external debt of the country/organization-wise government borrowing, Japan has dropped project loans from USD 28.6 billion in 2004 to USD 10.4 billion in 2016 although it has remained as a top development partner (See Figure 1-24). In contrast, the World Bank has expanded the volumes of program loans from USD 1.2 billion to USD 13.3 billion during the same period (See Figure 1-25).

In relation to the net disbursement performance of the Japanese concessional loans, it sharply dropped to 65.5 billion yen in 2011 and further declined to 35.8 billion yen in 2016 while its gross disbursements remained between 100 billion yen and 120 billion yen during 2006 to 2010 (See Figure 1-26). On the other hand, the loan recoveries maintained over 100 billion yen since 2006 and constantly increased to 170 billion yen in 2016. As a result, the net disbursements of the Japanese concessional loans have turned to negative since 2008, leading to a minus 135.1 billion yen in 2016.

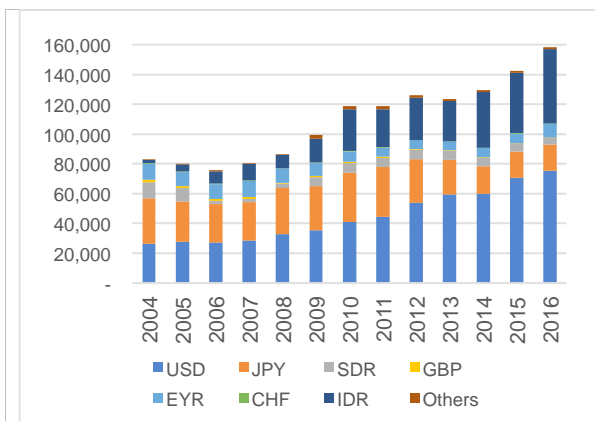
External Debt Indicators in Indonesia



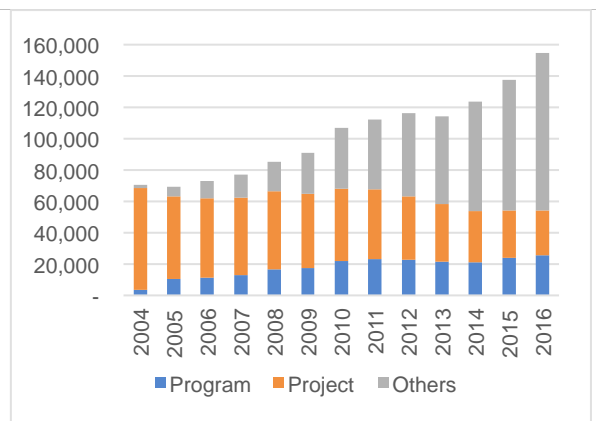
Source: Bank Indonesia, Ministry of Finance, Indonesia
Figure 1-20: Public Debt & External Debt to GDP Ratio, 2001-2016 (%)



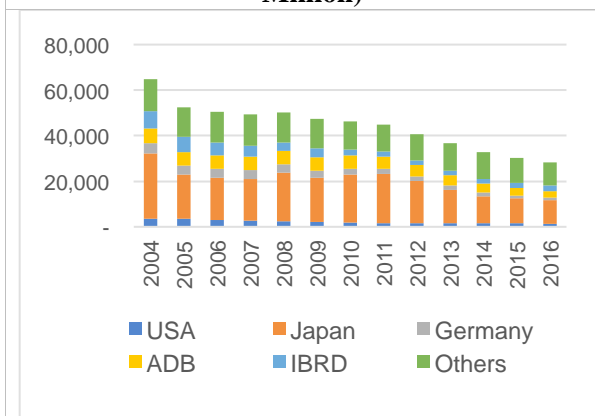
Source: Bank Indonesia, Ministry of Finance, Indonesia
Figure 1-21: Government External Debt Position, 2004-2016 (USD in Million)



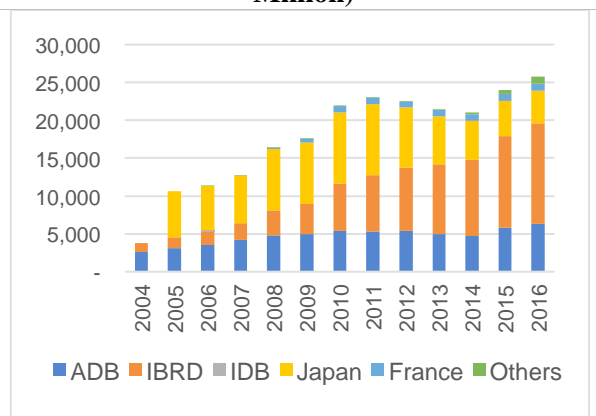
Source: Bank Indonesia, Ministry of Finance, Indonesia
Figure 1-22: Government External Debt Position (Currency), 2004-2016 (USD in Million)



Source: Bank Indonesia, Ministry of Finance, Indonesia
Figure 1-23: Government External Debt Position (Purpose), 2004-2016 (USD in Million)

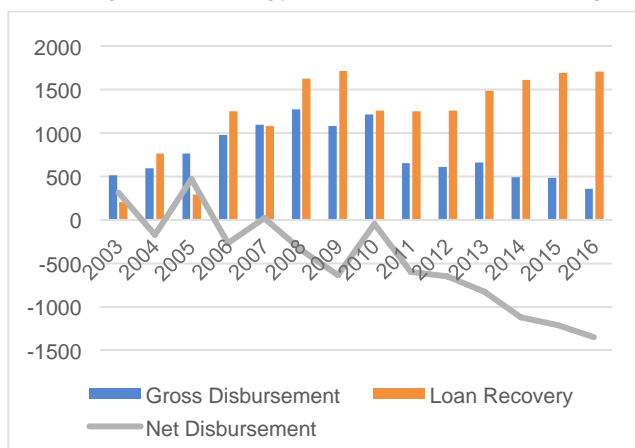


Source: Bank Indonesia, Ministry of Finance, Indonesia
Figure 1-24: Government External Debt Position (Project Loan by DPs), 2004-2016 (USD in Million)



Source: Bank Indonesia, Ministry of Finance, Indonesia
Figure 1-25: Government External Debt Position (Program Loan by DPs), 2004-2016 (USD in Million)

With consideration for the trends of the public debt management strategy overviewed above, it might be justified for the Government of Indonesia to continue to borrow the Japanese ODA project loans for infrastructure development in the short and medium-term. However, it must be noted that the government has increasingly depended on the government debt securities rather than the government borrowing in line with their debt management strategy. As for the government borrowing, the government has reduced the project loans while having increased the program loans. Hence, Japan may have an option to resume the program loans besides the project loans in line with the



Source: JICA
Figure 1-26: Net Disbursement of ODA Loans in Indonesia (JPY in 100 Million)

government debt strategy and its needs. Nevertheless, Indonesia is expected to become a higher middle-income country in near future, which entails greater limitation for Japan to provide the concessional loans. Furthermore, the government increasingly relies on the private investments, the Non-Government Budget Investment Financing (PINA) and PPP for infrastructure development, rather than the government borrowing. In this context, it is expected that there will be a downward trend in needs for the concessional loans in the medium and long term. Japan may therefore consider expanding the private sector investment finance scheme for facilitating the private sector-oriented infrastructure development and growth in Indonesia.

1.3 Noteworthy Achievements in Cooperation

The Development Policy Loan (DPL) is selected as one of the representative Japanese cooperation in economic policy and macroeconomic management in Indonesia. This is known as a program loan for budget support associated with policy dialogue over policy action (formerly known as conditionality) in concerned theme/sector policy reforms designed as prerequisites for financing. From the 1960s to the 1990s, Japan provided program loans, including non-project loans, sector program loans and others, to support balance of payments and structural adjustment. Since the 2000s, Japan shifted its focus to budget support and policy reforms through the Development Policy Loans and the Sector Development Policy Loans. It is an effective framework that the Development Policy Loans link its disbursements directly to the delivery of defined prior actions, facilitating the initial steps for policy and institutional reforms.

Table 1-3: Japanese Program Loans (DPL and Sector DPL) in Indonesia, 2005-2013

Unit: JPY in Million

Program Loan	Budget Support	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
Development Policy Loan	General	10,794	11,729	11,777	22,080	9,293	17,388	0	0	15,490	98,551
Infrastructure Reform Sector Development Program	Sector	0	0	11,777	0	9,293	0	8,291	0	0	29,361
Connectivity Development Policy Loan	Sector	0	0	0	0	0	0	0	0	19,848	19,848
Disaster Recovery Management Sector Program Loan	Sector	0	0	23,182	0	0	0	0	0	0	23,182
Climate Change Program Loan	Sector	0	0	0	30,768	37,444	27,195	0	0	0	95,407
Total		10,794	11,729	46,736	52,848	56,030	44,583	8,291	0	35,338	266,349

Source: JICA

1.3.1 Development Policy Loans

Japan provided a total of 266.3 billion yen of the Development Policy Loans and four types of the Sector Development Policy Loans during the period of 2005 to 2013. It included 98.6 billion yen of the Development Policy Loans, 29.4 billion yen of the Infrastructure Reform Sector Development Program, 19.8 billion yen of the Connectivity Development Policy Loans, 23.2 billion yen of the Disaster Recovery Management Sector Program Loan, and 95.4 billion yen of CCPL (See Table 1-3).

In Indonesia, the World Bank initiated the Development Policy Loans from 2004 to 2012 under co-financing framework with Japan and ADB. It was classified as general budget support, unearmarked funds to facilitate economic policy and institutional reforms. It was just introduced when the IMF support program for the Asian Financial Crisis was completed, and the political stabilization was installed under the Yudhoyono regime that shifted policy priority from economic recovery to growth.

The Development Policy Loan program was divided into three series in line with the steps of the policy and institutional reforms undertaken through the policy actions: the first series (the first to fourth DPLs, 2004-2007), the second series (the fifth to sixth DPLs, 2008-2009) and the third series (the seventh to eighth DPLs, 2010-2012). The policy matrixes in all series shared the common agenda, including 1)

investment climate, 2) public finance management, and 3) poverty alleviation and service delivery, except the first series which also focused on macroeconomic stabilities and creditworthiness succeeded from the IMF support program (See Table 1-4). Through policy dialogue with the Government of Indonesia, monitoring and evaluation on policy matrix and key performance indicators were conducted to ensure undertaking policy actions and achieving targeted outcomes of the financing.

The formulation of the policy actions was initiated by the World Bank through reflecting their findings of numerous policy researches carried out with the Government of Indonesia. Japan also made valuable inputs to formulate policy actions in the investment climate. As one of the major FDI countries in Indonesia, Japan was able to reflect voices from Japanese investors to the policy matrix design. For example, Indonesia undertook the following policy actions in the investment climate which Japan addressed as policy recommendations: 1) the amendment of the Investment Negative List, 2) the introduction of the Investment One Stop Service, 3) issuing of transfer pricing regulation, 4) investment permission procedures in the Investment Law, 5) detailed rules in intellectual property rights protection regulation, 6) unification of export and import procedure window, 7) simplification of tax payment documents and others.

Table 1-4: Japanese Development Policy Loans in Indonesia, 2005-2013

Unit: USD in Million

Development Policy Loan (DPL)		WB	ADB	JICA	Total	Policy Matrix
First DPL Series (2004-2007)	DPL1	300	-	100 (JPY10.8 Billion, 2005)	400	1) Maceo-Economic Stabilities and Creditworthiness 2) Investment Climate 3) Financial Management and Anti-Corruption
	DPL2	400	200	100 (JPY11.7 Billion, 2006)	700	1) Maceo-Economic Stabilities and Creditworthiness 2) Investment Climate 3) Financial Management and Anti-Corruption
	DPL3	600	200	100 (JPY11.8 Billion, 2007)	900	1) Maceo-Economic Stabilities and Creditworthiness 2) Investment Climate 3) Financial Management and Anti-Corruption 4) Service Delivery
	DPL4	600	200	200 (JPY22.1 Billion, 2008)	1,000	1) Maceo-Economic Stabilities and Creditworthiness 2) Investment Climate 3) Financial Management and Anti-Corruption 4) Service Delivery
Second DPL Series (2008-2009)	DPL5	750	200	100 (JPY18.6 Billion, 2009)	1,050	1) Investment Climate 2) Public Finance Management 3) Poverty Alleviation and Service Delivery
	DPL6	750	200	100 (JPY9.0 Billion, 2010)	1,050	1) Investment Climate 2) Public Finance Management 3) Poverty Alleviation and Service Delivery
Third DPL Series (2010-2012)	DPL7	600	200	100 (JPY8.4 Billion, 2010)	900	1) Investment Climate 2) Public Finance Management 3) Poverty Alleviation and Service Delivery
	DPL8	400	-	100 (JPY15.5 Billion, 2013)	500	1) Investment Climate 2) Public Finance Management 3) Poverty Alleviation and Service Delivery
Total		4,400	1,200	900	6,500	

Source: World Bank. *IBRD Program Document on A Proposed Loan for DPL8*. 2011. and JICA

With respect to its contributions, the Japanese Development Policy Loans, including the Sector Development Policy Loans, totaling 266.3 billion yen, financed approximately 4.5% of the state budget deficits during the period of 2005 to 2013. Furthermore, they enhanced the economic policy and institutional reforms through the policy dialogue over the policy actions in macroeconomic stabilization, investment climate, public financial management, and poverty reduction. As shown above, Japan contributed to formulating the policy matrix in the investment climate.

Having undertaken the investment reforms in line with the policy dialogue, Indonesia successfully improved the World Bank's Ease of Doing Business ranking from 131st (out of 175 countries) to 72nd (out of 190 countries) between 2006 and 2017. With the better investment climate, FDI drastically increased from USD 195 billion in 2011 to USD 289 billion in 2016 while the share of the Japanese FDI also expanded from 7.7% to 18.7% during the same period. The policy dialogue under the Development Policy Loans played a crucial role as a catalyst to facilitate a better business environment through undertaking policy actions in the investment climate.

Nevertheless, Japan decided to suspend all program loans in 2013 while other development partners, including the World Bank, the ADB, AFD and KfW, have continued to provide program loans until today. Consequently, Japan has shifted all resources of concessional loans to projects mainly for infrastructure development since 2014. There were some lessons learnt from the Japanese Development Policy Loans as follows.

According to the Ministry of Finance, there were significant risks of exchange rate fluctuations and transaction costs associated with the Japanese Development Policy Loans, unlike other development partners' program loans. Following the Japanese loan regulation, the Ministry of Finance were strictly required to exchange borrowed Japanese yen to local currency during a certain period after its loan disbursement. As a result, they failed to conduct the exchange rate risk management with the Japanese program loans. Furthermore, they needed to submit all financial documents required by the Japanese loan regulation, such as cost estimates, contracts, receipts and others for all spending despite budgets support. Hence, they had to collect required financial documents from spending ministries/agencies, leading to high transaction costs among the Government of Indonesia.

In response to these issues, Japan took an action in 2015 through amending the program loans regulation to improve its alignment with the country system; the rules of foreign exchange and financial documents for the program loans were removed. As a result, it has allowed the Ministry of Finance to freely conduct the exchange rate risk management over the program loans and to submit the annual national financial report to Japan instead of submitting a large volume of financial documents required. Moreover, Japan enacted the currency conversion option scheme for the concessional loans for both project and program that offers borrowers an option to convert the currency denomination of the loan from Japanese yen to US dollar for its loan repayment. Furthermore, Japan introduced the US dollar concessional loan scheme in 2017 which has been under operation in Latin America. It is expected to expand this scheme to other regions, like the Middle East and Asia. Japan has been making efforts to enhance mobility and flexibility of the concessional loans through undertaking such loan regulation reforms.

1.3.2 Sector Development Policy Loans

Japan provided four types of Sector Development Policy Loans from 2007 to 2013, which can be classified into two sectors, disaster recovery and climate change sector, and infrastructure reform and connectivity sector (See Table 1-5). The former included the Disaster Recovery and Management Sector Program Loan (2007) and the first to third CCPL (2008-2010), co-financed with AFD or the

World Bank. The latter included the Infrastructure Reform Sector Development Loans (2007-2011) and the Connectivity Development Policy Loan (2013), co-financed with the ADB or the World Bank. The Sector Development Policy Loans were also required to undertake policy dialogue over policy actions in the concerned sector as preconditions for financing.

Table 1-5: Japanese Sector Development Policy Loans in Indonesia, 2007-2013

Unit: JPY in Million

Disaster Recovery and Climate Change DPL				Infrastructure Reform and Connectivity DPL			
Program	Amount	Co-Financing	Policy Matrix	Program	Amount	Co-Financing	Policy Matrix
Disaster Recovery and Management Sector Program Loan (2007)	23,182	-	1) Strengthening legal and regulatory framework for disaster management 2) Organizational strengthening for disaster management 3) Improving fund channeling and fund management for disaster 4) Improving disaster management planning, implementation, and evaluation	Infrastructure Reform Sector Development Loan (2007)	11,777	ADB	1) Promoting infrastructure development 2) Improving the investment climate 3) Improving access to infrastructure
Climate Change Program Loan (2008)	30,768	AFD	1) Reduction in GHG emissions 2) Adaptation to climate change 3) Cross-cutting issues	Infrastructure Reform Sector Development Loan II (2009)	9,293	ADB	1) Promoting infrastructure development 2) Improving the investment climate 3) Improving access to infrastructure
Climate Change Program Loan II (2009)	37,444	AFD	1) Reduction in GHG emissions 2) Adaptation to climate change 3) Cross-cutting issues	Infrastructure Reform Sector Development Loan III (2011)	8,291	ADB	1) Promoting infrastructure development 2) Improving the investment climate 3) Improving access to infrastructure
Climate Change Program Loan III (2010)	27,195	AFD, WB	1) Key Policy Issues (Upstream Strategy) 2) Mitigation 3) Adaptation	Connectivity Development Policy Loan (2013)	19,848	WB, ADB	1) Strengthening National Coordination and Regulation 2) Strengthening Intra-island Connectivity (rail and road) 3) Improving Inter-island Connectivity 4) Improving International Connectivity (port decongestion and trade facilitation)

Source: JICA

In disaster recovery and climate change sector, it should be underscored that Japan took the main responsibility for conducting the policy dialogue, formulating the policy matrix and monitoring the policy actions with the Government of Indonesia. The policy matrix in the Disaster Recovery and Management Sector Program Loan scoped 1) strengthening the legal and regulatory framework for disaster management, 2) organizational strengthening for disaster management, 3) improving fund channeling and fund management for disaster, and 4) improving disaster management planning, implementation, and evaluation. Under CCPL, its policy matrix covered 1) reduction in greenhouse gas emissions or mitigation, 2) adaptation to climate change, and 3) cross-cutting issues or key policy issues (upstream strategy). It also included to develop the coordination framework, mainstream climate change measures into the national development plan, establish the Clean Development Mechanism and strengthen the meteorological observation system. Through policy dialogue, CCPL successfully promoted the mainstreaming of climate change in the existing development policies and plans, and generated the coordination mechanisms among government agencies, state-owned enterprises, the private sectors and other actors.

Regarding the Infrastructure Reform Sector Development Loan and the Connectivity Development Policy Loan, these loans aimed to enhance sustainable growth and reduce regional disparities through infrastructure development, better investment climate, strengthening domestic and international connectivity. Having been one of the largest providers for project loans in infrastructure and FDI, Japan had great incentives to improve infrastructure development, especially the MPA, through policy and institutional reforms under the program loans. In the Policy Matrix, the Infrastructure Reform Sector

Development Loans covered 1) promoting infrastructure development, 2) improving the investment climate, and 3) improving access to infrastructure. The Connectivity Development Policy Loans engaged in 1) strengthening national coordination and regulation, 2) strengthening intra-island connectivity (rail and road), 3) improving inter-island connectivity, and 4) improving international connectivity (port decongestion and trade facilitation). Both sector program loans contributed to the improvement of land acquisition system, the mobilization of private funds for infrastructure development, like the Viability Gap Funding for the PPP infrastructure projects, and trade facilitation and transparency.

Finally, there was another lesson learnt from one of the Sector Development Policy Loan, CCPL, which was eventually suspended in 2010. Following the thirteenth Conference of the Parties (COP13) of the United Nation Framework Convention on Climate Change (UNFCCC) in Bali in 2007 successfully hosted by the Government of Indonesia, CCPL was introduced with great expectations in the following year.

According to the Ministry of Finance, when the BAPPENAS Minister made a presentation on the CCPL at the international conference, the international community raised a question concerning its financing modality for climate change response. After the Indonesia mass media covered the response of the international community in the above conference, some Members of Parliaments strongly responded to the concerns raised at the international conference and undertook a political campaign against the financing modality of the program loans for climate change response. Consequently, the Government of Indonesia had no choice but had to suspend CCPL. This has suggested some implications for future programs concerning how important inclusive consultations should be undertaken in all process of the program.

1.4 Outcomes/Impacts of Japan's Economic Cooperation and Future Prospects

1.4.1 Outcomes/impacts of Japan's economic cooperation to date

Based on the review of period-specific characteristics and noteworthy achievements of Japan's economic cooperation in economic policy and macroeconomic management, major issues, direction of cooperation, implementation areas and project groups are summarized as below.

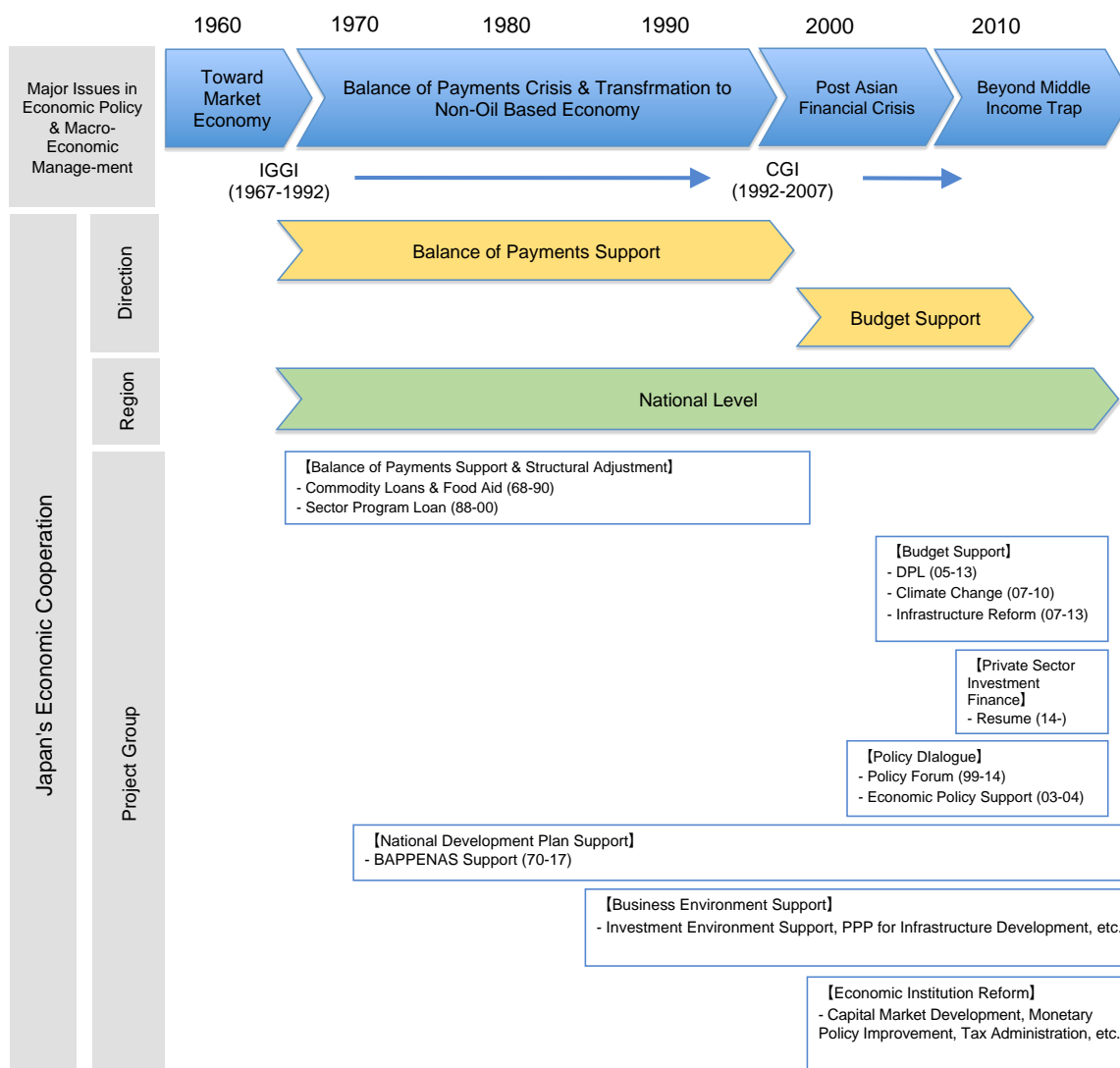


Figure 1-27: Characteristics of Japan's Cooperation in Economic Policy and Macroeconomic Management

Since the 1960s Japan has supported economic policy and macroeconomic management in Indonesia through financial assistance and technical cooperation. There were three main areas: 1) macroeconomic stabilization and structural adjustment through financial assistance for the balance of payments and social safety net from the 1960s to the 1990s; 2) economic policy and institutional reforms through budget support from the 2000s to the 2010s, and 3) capacity development in economic institutions through technical cooperation for the last 50 years.

1) Macroeconomic Stabilization and Structural Adjustment

- The Indonesian economy faced serious challenges with hyperinflation and balance of payments deficit inherited from the previous administration during the initial period of the Suharto's New Order regime from the second half of the 1960s to the first half of the 1970s. As a result, international reserves fell to a critical level of less than one-month import, and serious food and supplier shortages occurred. Japan provided a total of 116.8 billion yen through the non-project loans or the program loans equivalent to approximately 12.6% of the current account deficit during the period of 1968 to 1973. It helped to import capital and intermediate goods indispensable for economic growth and securing daily necessities.
- In 1986, the Oil Crisis in Reverse accelerated transformation of the Indonesian economy toward non-oil dependent economy. Under the structural adjustment program of the World Bank, Indonesia undertook monetary and financial deregulation, taxation reform, direct investment deregulation, currency devaluation and export promotion. Japan supported the balance of payments deficit and social safety net under the structural adjustment through the provision of a total of 513.8 billion yen through the sector program loans equivalent to approximately 12.8% of the current account deficit during the period of 1987 to 1996. Under the structural adjustment, the Indonesian economy succeeded to transform toward manufacturing and export-oriented industrialization through minimizing the negative impact of the reforms on the vulnerable people.
- In the 1997 Asian Financial Crisis, Indonesia accepted the IMF support program through undertaking the conditionality, including the closures of 16 underperformed banks, the fiscal reduction policy, and the tight monetary policy. Co-financing with the IMF and other development partners, Japan provided a total of 333.9 billion yen through the Sector Program Loan, the Nutrition and Health Sector Development Loan, and the Social Safety Net Loan under the New Miyazawa Initiative. It was equivalent to about 55.6% of the current account deficit in 1997 and contributed to mitigating the impact of the financial crisis on the vulnerable people⁸.

2) Economic Policy and Institutional Reforms

- Japan provided a total of 266.3 billion yen through the Development Policy Loans and the Sector Development Policy Loans between 2005 and 2013 to support budget deficit, economic policy and sector reforms. This was equivalent to approximately 4.5% of the total budget deficit for the same period. The Development Policy Loans had the advantage of undertaking structural reforms in longer-term through policy actions, compared with the balance of payments assistance conducted until the 1990s.
- The Development Policy Loans were co-financed with the World Bank and the ADB. It facilitated economic policy and institutional reforms through policy dialogue on macroeconomic stability, investment climate, public finance management and poverty alleviation. For the investment climate,

⁸ The current account balance began to turn to positive since 1998 due to the collapse of the rupiah in the Asian Financial Crisis (see Figure 1-7).

Japan supported economic policy and institutional reforms, such as the amendment of the Investment Negative List, the introduction of the Investment One Stop Service, and the issuing of the transfer pricing regulation. Indonesia made a significant improvement on the World Bank's Ease of Doing Business ranking from 131st (out of 175 countries) in 2006 to 72nd (out of 190 countries) in 2017. FDI increased from USD 195 billion in 2011 to USD 289 billion in 2016 while the Japanese FDI share also expanded from 7.7% to 18.7% during the same period. Policy dialogue for the investment climate has helped create a better business environment as one of the attributional factors.

- The Sector Development Policy Loans, co-financed with the World Bank, the ADB or AFD, were utilized for infrastructure reforms and connectivity improvement as well as disaster recovery and climate change. The former covered infrastructure development, investment climate, accessibility to infrastructure, and connectivity. The latter concerned organizational capacity of disaster countermeasures, disaster risk management, climate change mitigation and adaptation. For CCPL, it should be underlined that Japan played a central role as a lead donor through supporting the formulation of the policy matrix in climate change response. In this process, the government enacted various laws and regulations on climate change, especially mitigation. Furthermore, the government encouraged related ministries and agencies, state-owned enterprises, the private sector and other actors to be actively involved in the climate change mainstreaming process under the program.

3) Capacity Development in Economic Institutions

- Japan has facilitated capacity development on national development planning, statistics and economic modeling in BAPPENAS through development studies or technical cooperation from the 1970s to the 1990s. As BAPPENAS had authority on development budget until 2003, technical cooperation was strategically concentrated on enhancing their capacity development in economic policies and development planning for three decades.
- Japan has expanded its coverage of technical cooperation to other ministries and agencies, such as the Ministry of Finance and Bank Indonesia, in the post-Asian Financial Crisis. It has covered monetary management, debt management, taxation administration, capital market development, investment climate, treasury management, state asset management, performance-based budgeting, social security and others. Technical cooperation has facilitated human resource development and institutional capacity development to create fiscal space for further economic development. It has also facilitated policy actions under the Development Policy Loans through supporting PPP regulations and performance-based budgeting⁹.
- Under the agreement of the two leaders of Japan and Indonesia in 2001, both countries conducted policy dialogue under the economic policy support between concerned Indonesian Ministers and

⁹ In regard to PPP, technical cooperation supported the PPP legislation such as the Presidential Regulation No. 38/2015, the National Development Planning Agency Regulation No. 4/2015, and the National Procurement Agency Regulation No. 19/2015 as well as the availability payment, such as the Ministry of Finance Regulation No. 190/2015, its revision of No. 260/2016, the Ministry of Home Affairs Regulation No. 96/2016 to promote the PPP oriented infrastructure development.

Japanese academic team. The main policy agenda covered macroeconomic management, financial sector reform, small and medium-sized enterprise promotion, private investment expansion, democratization, and decentralization. The Japanese academic team made policy recommendations that Indonesia should concentrate on fiscal discipline and international competitiveness in urban production sector rather than implementing pork-barrel projects in rural areas. In addition to this policy dialogue framework, the Japan Indonesia Policy Forums were also held every five years during the presidential election years since 1999 to discuss policy implications and make recommendations for the new administration.

1.4.2 Implications for future cooperation

In considering future cooperation, it should be remembered that Indonesia's GDP (PPP) is the eighth largest economy (USD 3.0 trillion) in the world in 2016 (See Table 1-6). According to PwC (2017), Indonesia is expected to be one of the next giants, growing to the fifth largest economy (USD 5.4 trillion) in 2030 and the fourth largest economy (USD 10.5 trillion) in 2050. On the other hand, Japan is projected to drop the ranking from the fourth (USD 5.6 trillion) in 2030 to the eighth (USD 6.8 trillion) in 2050. In this context, it is essential to take into consideration how a new partnership between Japan and Indonesia should be evolved under such forthcoming paradigm shift of the international economy in the long term.

Table 1-6: Projected Rankings of Economies Based on GDP at PPPs in 2030 and 2050

Unit: USD in Billion (in constant 2016)

2016*			2030			2050		
1	China	21,269	1	China	38,008	1	China	58,499
2	USA	18,562	2	USA	23,475	2	India	44,128
3	India	8,721	3	India	19,511	3	USA	34,102
4	Japan	4,932	4	Japan	5,606	4	Indonesia	10,502
5	Germany	3,979	5	Indonesia	5,424	5	Brazil	7,540
6	Rossia	3,745	6	Rossia	4,736	6	Rossia	7,131
7	Brazil	3,135	7	Germany	4,707	7	Mexico	6,863
8	Indonesia	3,028	8	Brazil	4,439	8	Japan	6,779
9	UK	2,788	9	Mexico	3,661	9	Germany	6,138
10	France	2,737	10	UK	3,638	10	UK	5,369

Source: PwC. *The Long View: How will the global economic order change by 2050?* 2017.

Note: * IMF's Estimations

Indonesia has recently obtained an international reputation for sound economic policy and macroeconomic management. In fact, Indonesia won sovereign rating upgrades to BBB with a stable outlook (Fitch), BBB- with a stable outlook (S&P), and Baa3 with a positive outlook (Moody's). According to HSBC, it is expected that the global investment funds of up to USD 6 billion are likely to flow into the Indonesia bond market due to its creditworthiness and relatively high yields projected.

On the other hand, the shortage of infrastructure is the greatest bottleneck to growth. This has resulted from a prudent fiscal discipline which the government has prioritized through tightening expenditures in infrastructure since the Asian Financial Crisis. According to the Medium-Term National

Development Plan (RPJMN) 2015-2019, USD 370 billion is projected to meet the needs of infrastructure development during this period. While the government budget covers USD 155 billion (41.3%), the state-owned enterprises and the private sector are expected to fill in USD 80 billion (22.2%) and USD 135 billion (36.5%), respectively. Hence, it is necessary to mobilize the private funds to bridge infrastructure fund gaps through enhancing private investments, PPP and PINA (Non-Government Budget for Investment Financing).

In addition, Indonesia has plenty of room to improve domestic resource mobilization, especially tax revenue collection. In fact, 10.4% of Indonesia's tax to GDP ratio (2016) is extremely low compared with ASEAN countries, such as 19.1% in Viet Nam and 16.1% in Thailand. Although the government introduced the tax amnesty program in 2016-2017, it seems to have limited contribution to achieving the target of 16% tax to GDP ratio by 2019. For the attainment of this ambitious target, it is required for the government to undertake the tax modernization through improvement of tax compliance, an expansion of the tax base, an enlargement of local resources, and capacity development on tax administration.

Indonesia is likely to face greater challenges with the middle-income trap in the 2020s and the end of the demographic bonus in the 2030s. In this context, the government is urged to prepare for the demographic bonus, which offers a significant opportunity for economic growth if the productive age group, especially the youth, can fully access employment opportunities. To this end, infrastructure development must be one of the high priorities to provide economic foundations for promoting labor-intensive industrial development through absorbing the demographic bonus. Therefore, it is essential to maximize the mobilization of domestic resources and private investments for a realization of infrastructure development. After the end of the demographic bonus, Indonesia is likely to face risks of a rapid aging population, leading to increasing budgetary pressures for social security. Through ensuring inclusive growth for the next few decades, Indonesia needs to prepare for the forthcoming aging society to establish the sustainable public finance and social security frameworks in the long term.

In this context, Japan has been supporting the modernization of tax administration and PPP for infrastructure development through technical cooperation. Moreover, Japan has recently started assistance of premium collection for social security. Japan has committed these assistances which are expected to contribute to creating fiscal space for sustainable resource mobilization in the long term.

Regarding Japan's concessional loans, the amount of the net disbursements dropped to minus 130 billion yen in 2016 while the external debt to GDP ratio significantly improved to 34.3% and the share of Japanese yen in the external debt declined to 9.4% in 2016. This implies that there will be enough space to increase borrowing of Japan's concessional loans. Until Indonesia gains the status of the higher middle-income country, it may be rationalized that Japan continues to provide the concessional loans for infrastructure projects. Japan may also consider the possibility of resuming the program loans as the project loans are increasingly replaced by private financing.

Nevertheless, it is obvious that the government has shifted deficit spending from loans to bonds and infrastructure spending from public to private financing through enhancing private investments, PPP and PINA. As there is a downward trend in demand for loans, Japan may consider promoting the private sector investment finance as one of the strategic options for economic development in Indonesia.

Finally, it should be highlighted that the Indonesian economy will rise as a next giant, which will overtake Japanese economy, in the global paradigm shift in the long term as seen above. In this context, the bilateral partnership between Japan and Indonesia should be also evolved to increasingly seek more mutual cooperation to tackle common agenda in development challenges through sharing knowledge, exchange experiences, exploring technologies and formulating policy for collective actions. Tax administration, PPP for infrastructure development and social security could be a focal point to work together to find solutions to common development challenges under the long-term partnership.

Chapter II Transport

2.1 Summary

The Indonesian economy has been developing steadily except for some periods of economic stagnation, and the transport sector served as one of the foundations for economic development. Japan's cooperation was in line with Indonesia's development policy in each period. In the regional transport infrastructure development, priority was given to the connection of resources for equal distribution of development benefit. In metropolitan areas, priority was given to the promotion of sustainable economic growth led by the private sector through filling the gap between increasing transport demand and supply that had been caused by population growth and motorization.

In the 2000s, owing in part to the above-mentioned cooperation, Indonesia gradually attained growth so that they could implement projects with their own funds and resources, though there were still many issues left such as planning and implementation capabilities, bottlenecks of land expropriation difficulties, insufficient legal framework for the implementation of PPP (Public Private Partnership), and poor quality and safety of developed infrastructure. In addition, the bilateral economic relationship between Indonesia and Japan has grown further and Indonesia has become one of the key business hubs for Japanese companies.

Furthermore, while in the past, the mainstream transport sector development cooperation was to develop regional hubs as outlined by the master plan (M/P), paying attention to the neighboring economies became necessary as ASEAN countries sought to enhance connectivity within the region. Consequently, anticipation has grown that Indonesia will serve as a part of the international production and trade network. Meanwhile, since Indonesian logistics are still underdeveloped with high physical distribution cost, there is ongoing cooperation from Japan in transport infrastructure development, especially in the Jakarta metropolitan area where manufacturing industries are concentrated, to accelerate economic growth led by the private sector.

The Joko administration has come up with a policy of reducing government debt, and newly formed projects focused mainly on technical cooperation (including preparation for new ODA loan projects) in the subsectors such as road, air, port, and sea transport. However, ODA loans are expected to continue playing a role as there is still a high need for infrastructure financing.

Table 2-1: Overview of the Transport Sector in Japan's ODA

Period	1960s	1970s and early 1980s	Late 1980s	1990s	From the end of 1990s	From the end of 2000s
	Nation-State Building	Economic Development	Structural Adjustment	Growth until the Asian Financial Crisis	Democratization and Decentralization	Middle Income Countries
Historical Context	<ul style="list-style-type: none"> • Cold War • Founding of ASEAN (1967) • Inauguration of President Suharto (1968) • Green revolution 	<ul style="list-style-type: none"> • First Oil Crisis (1973) • End of Vietnam War (1975) • Second Oil Crisis (1979) 	<ul style="list-style-type: none"> • Plaza Accord (1985) • Reverse Oil Crisis • End of Cold War 	<ul style="list-style-type: none"> • Asian Financial Crisis (1997) 	<ul style="list-style-type: none"> • Laws on local autonomy (1999) • Millennium Development Goals (2000) • Election of President Yudhoyono by direct election (2004) 	<ul style="list-style-type: none"> • Japan-Indonesia Economic Partnership Agreement (2008) • G20 accession (2008) • Jakarta Commitment (2009) • Sustainable Development Goals (2015)
Situation of the Sector	<ul style="list-style-type: none"> • Seriously damaged transport infrastructure • Limited domestic budget 	<ul style="list-style-type: none"> • Development of various transport infrastructure supporting economic growth • Bluebook as a candidate project list for external cooperation 	<ul style="list-style-type: none"> • Policy changeover toward private sector involvement and investment • Road development through BOT scheme 	<ul style="list-style-type: none"> • Increasing budget of transport infrastructure development (before Asian Financial Crisis) • Difficulty in coordination among local governments as a result of decentralization • Establishment of Ministry of Settlements and Regional Infrastructure • Difficulty in land acquisition 	<ul style="list-style-type: none"> • Blank period of development projects due to Asian Financial Crisis • State-owned company reform and private & local government participation in infrastructure development due to legal revision of road, land, railway, air, and sea transport • Development within decentralization framework 	<ul style="list-style-type: none"> • Expectation to be part of international production and trade • Economic growth led by private sector
Priority Development issues in the 5-year Development Plan	<ul style="list-style-type: none"> • National security and rehabilitation of dilapidated infrastructure 	<ul style="list-style-type: none"> • Equal distribution of development and resulting benefits by connecting national resources 	<ul style="list-style-type: none"> • Transport infrastructure development utilizing private fund (under BOT scheme) 	<ul style="list-style-type: none"> • Regional transport infrastructure development • Development of eastern Indonesia 	<ul style="list-style-type: none"> • Transport infrastructure development by PPP scheme • Enhancement of transport safety and security 	<ul style="list-style-type: none"> • Expansion of mass transit services • Strengthening connectivity of nation
Direction of Japan's Cooperation 9.3.1	<ul style="list-style-type: none"> • Start of ODA loan projects • Technical cooperation from basics 	<ul style="list-style-type: none"> • Development of basic transport infrastructure as a national framework 	<ul style="list-style-type: none"> • ODA support of implementation of plans and projects proposed in M/P 	<ul style="list-style-type: none"> • Development study and ODA loan targeting regional areas 	<ul style="list-style-type: none"> • Strengthening safety and security system • Integrated urban transport in Jakarta metropolitan area 	<ul style="list-style-type: none"> • Support infrastructure development with a focus on Jakarta metropolitan area where Japanese companies concentrate
Outcomes						

Note: Dashed lines in the section of outcomes indicate the impact/spillover effect from the previous period.

2.2 Historical Context and Japan's Cooperation

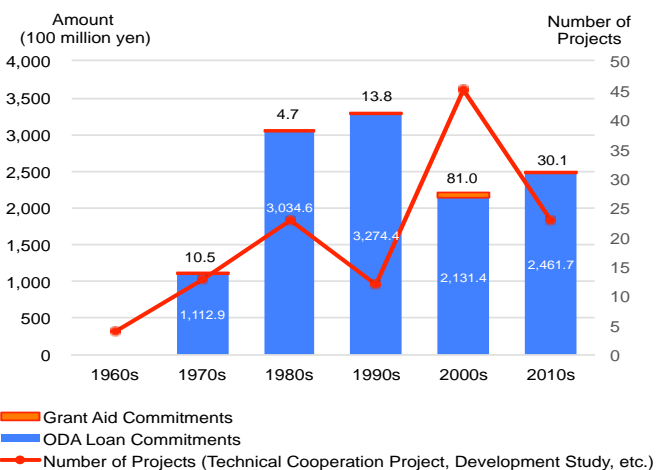
2.2.1 Number of projects and commitment amounts

Japan's assistance in the transport sector started in the 1960s in the form of rehabilitation of roads, railways, and ports, and it continued for about 50 years under different schemes, namely, technical cooperation, loan, and grant aid. Japan assisted Indonesia mostly by combining various types of support such as the provision of equipment and development of small-scale infrastructure through grant aid, dispatch of experts, technical cooperation projects, as well as master plan studies and feasibility studies (F/S), and subsequent infrastructure development using ODA loans.

There have been 309 projects in the transport sector until the end of 2017, including 29 technical cooperation projects, 91 development studies, etc., 162 ODA loans and 27 grant aid projects.

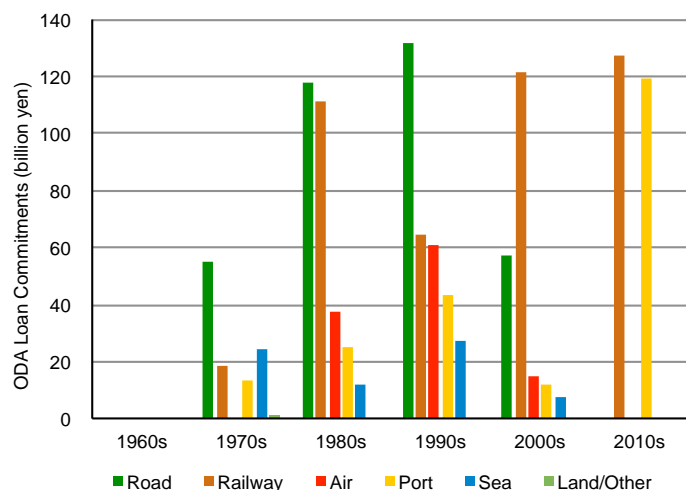
Figure 2-1 shows the amount of cooperation funds for the transportation sector for each decade, and the number of other ODA schemes.

Figure 2-2, shows the loan aid for the Indonesian transportation sector from the 1970s to the 2010s, and in recent years most have been in the railway and port sectors. Furthermore, focusing on the subsectors, there was a peak in aid for the road and aviation sectors in the 1990s. Meanwhile, under current president Joko administration, despite government efforts to reduce government debt, the need for infrastructure development financing remains high and the role of ODA loan is also expected to continue.



Source: JICA Review Team

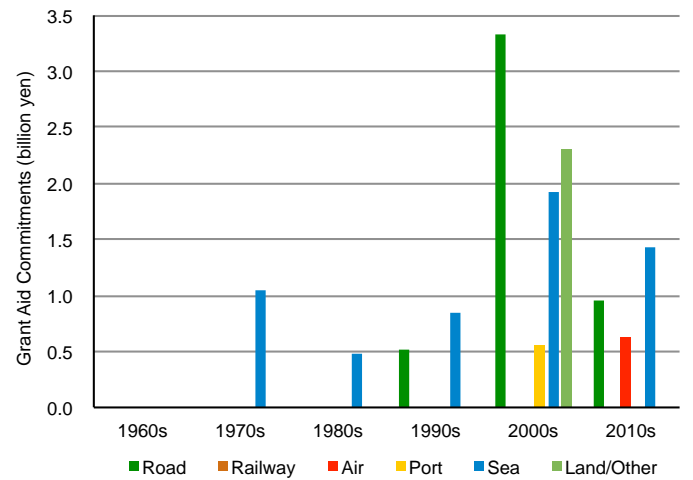
Figure 2-1: Commitment Amounts of ODA loans and Grant Aid (E/N basis), and the Number of Technical Cooperation (Technical Cooperation Project and Development Study) by Decade



Source: JICA Review Team

Figure 2-2: Trend in Loans Committed to the Transport Sector

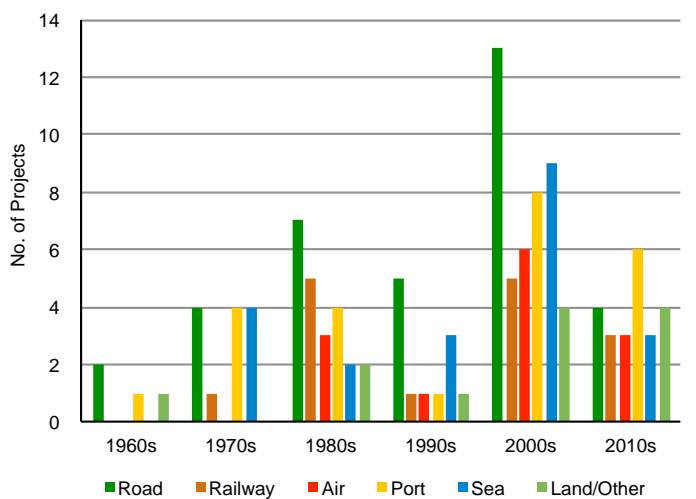
As shown in Figure 2-3, grant aid was provided for the Indonesian transport sector from the 1970s to the 2010s, peaking during the 2000s, with the trend continuing into the 2010s. In terms of subsector, while grant aid for the roads began in the 1990s and peaked in the 2000s, grant aid for sea transport sector has been steadily provided over the decades, indicating Japan's substantial assistance to Indonesia, a seafaring nation. Meanwhile, although the amount of grant aid to the railway, aviation, and port sectors are smaller, these have been ongoing since the 2000s. It should be noted that, while grant aid projects such as provision of construction equipment and vehicles for road and railway sectors, and rehabilitation of vessels and facilities for port and sea transport sectors were implemented prior to the ODA loan projects of the 1960s, the amount committed was not recorded for some of the old grant aid projects.



Source: JICA Review Team

Figure 2-3: Trend of the Committed Grant Amount in the Transport Sector

As for technical cooperation (i.e., technical corporation projects and development studies), feasibility studies (F/S) were implemented in each subsector from the 1960s, as shown in Figure 2-4. Furthermore, in the 1980s, master plan study projects were added and technical cooperation increased in number. While a temporary decrease was observed in the 1990s, more technical cooperation projects were implemented, leading to its peak in the 2000s. The number of projects has been stable since then. In terms of subsector, though road projects are conspicuous across the decades, the total number of projects for the port and sea transport sectors combined is greater than those for roads. This indicates the greater role of port and sea transport sectors in Indonesia, being a seafaring nation, and the bigger Japanese assistance. As these figures show, Japan's assistance for the transport sector has been provided continuously since the 1960s.

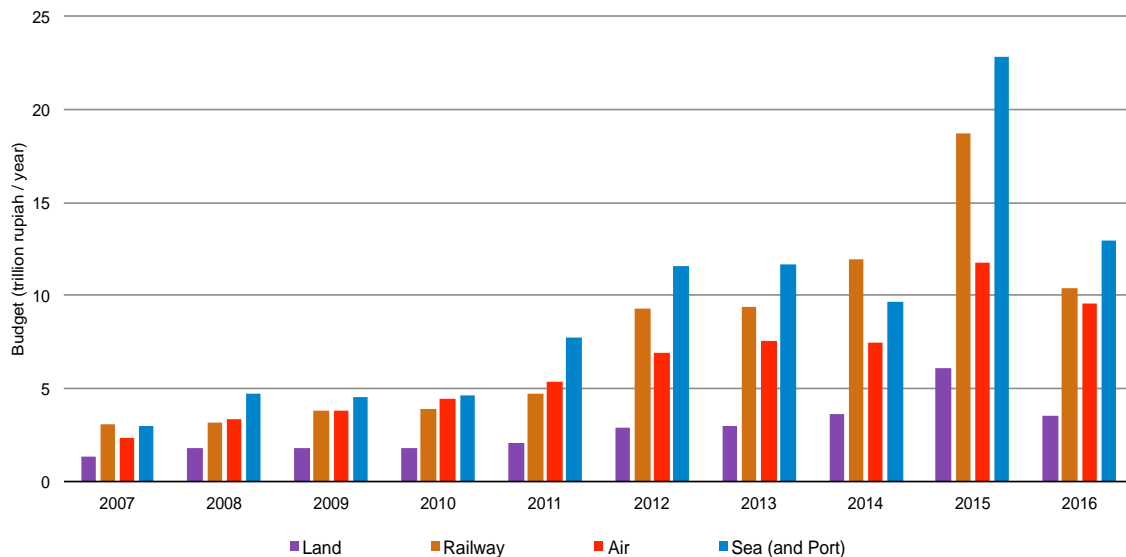


Source: JICA Review Team

Figure 2-4: Trend in Number of Projects for Technical Cooperation (Technical Project, Development Study, etc.) in the Transport Sector

2.2.2 Recent trend of budget for the transport sector

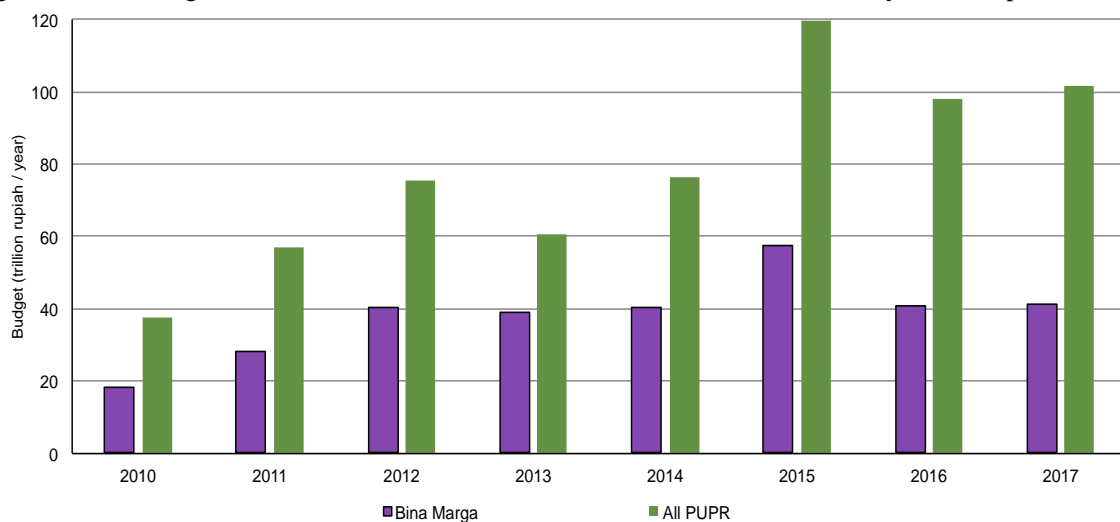
The annual budget of each Directorate General of the Ministry of Transport in recent years has increased about three to four times over the nine-year period from 2007 to 2016, as shown in the following figure. In terms of general allocation, the budget for the port and sea transport division (Directorate General of Sea Transport: DGST) has grown the most, and constitutes the largest share of total budget in the Ministry of Transport.



Source: Ministry of Transport

Figure 2-5: Budget of Each Directorate General in the Ministry of Transport

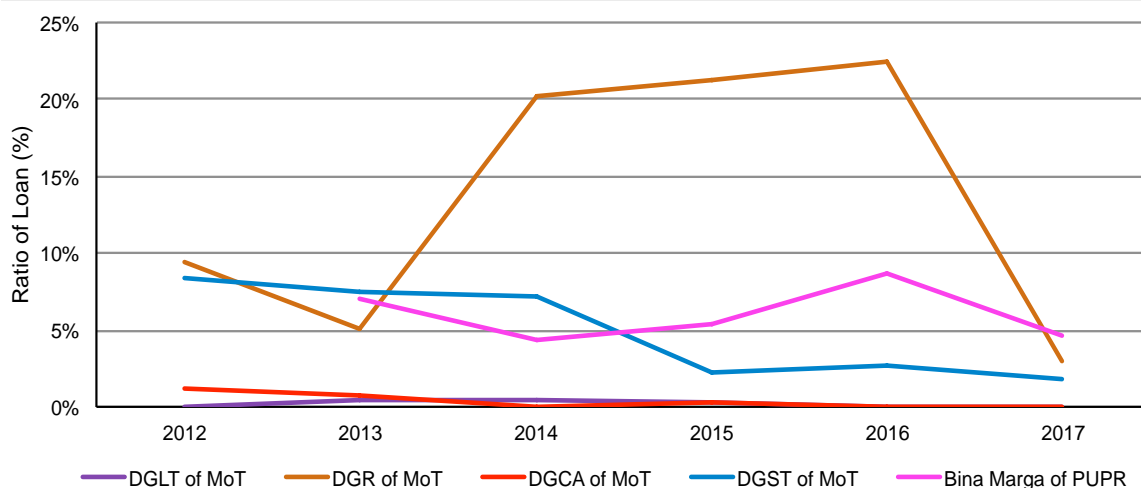
The recent annual budget of the Directorate General of Highways (Bina Marga) of the Ministry of Public Works and Housing (PUPR) also shows an increase of more than double over the seven years from 2010 to 2017, as shown in the following figure. Moreover, the budget size is overwhelmingly larger than the budget of each of the above Directorates General of the Ministry of Transport.



Source: Ministry of Public Works and Housing

Figure 2-6: Budget of Bina Marga in the Ministry of Public Works and Housing

The following figure shows the ratio of foreign loan to state budget for the Transport-related agencies in recent years. The Government of Indonesia strives to reduce its dependency on loans from international donors in their yearly budget. The number of ODA loan projects in each agency has been decreasing accordingly; as a result, the ratio of loan has been below 10% since 2010 except for the railway sector. Meanwhile, in the railway sector with its large-scale ODA projects such as the Bekasi line electrification and double-double tracking as well as the mass rapid transit (MRT) projects, the ratio of loan to the total annual budget of the Directorate General of Railway (DGR) of the Ministry of Transport temporarily reached almost 25%, which stood out from the rest.



Source: JICA Review Team based on the following data
 RKAKL/Budget Working Plan of the Ministry of Transport: year 2010-2016 from Finance Bureau, Secretariat General, Ministry of Transport; RKAKL/Budget Working Plan of the Ministry of Transport: year 2017 from Planning Bureau, Ministry of Transport
 Ministry of Public Works and Housing (www.pu.go.id/content/show/228/informasi-anggaran-kementerian-pupr)

Figure 2-7: Ratio of Loan to the Total Budget of Each Directorate General in the Transport Sector

2.2.3 Period-specific characteristics of Japan's economic cooperation for Indonesia in the transport sector

This section gives an overview and a summary of the transport sector in Indonesia and Japan's cooperation for the periods below:

- The 1960s: Rehabilitation of existing infrastructure
- The 1970s until the first half of the 1980s: Development of economic infrastructure
- The second half of the 1980s: Introduction of master plans
- The 1990s: Development of regional infrastructure
- From the end of the 1990s: Increasing role of the private sector
- From the end of the 2000s: From Jakarta metropolitan area to the whole country

(1) The 1960s: Rehabilitation of existing infrastructure

1) Situation of the sector

In Indonesia, during the Dutch colonial rule, development of national and provincial roads was vigorously promoted and paved roads were well developed. However, during the Second World War, the subsequent war of independence, and the Sukarno administration, the limited budget was allocated for military expansion, and investment needed for road maintenance and repair was left neglected. Furthermore, there were many damaged roads and bridges because of pavement design lacked the strength to handle the increasingly heavy traffic. It was thus difficult to secure sufficient funds for even the repair and maintenance of roads from the national budget.

As for the economic development plan, after the first Long-Term 25-year Plan (PJP-I) was formulated under the Suharto administration in 1969, a succession of five-year development plans (REPELITA) was implemented. REPELITA I (1969/70-1973/74) identified national stability and the rehabilitation, maintenance and repair of infrastructure such as dilapidated roads and bridges as being urgent issues. In this period, rehabilitation of the transport infrastructure was carried out using mainly loans and grants from the West such as USAID. There was also active investment in basic transport infrastructure which would expand transport capacity thereby allowing a certain level of economic stability.

On the other hand, railway infrastructure in this period was also dilapidated. Facilities from 40 years ago were still being used and about 70% of the railway bridges remained untouched as it was built during the Dutch colonial era. For the rolling stock as well, roughly 40% of the locomotives were from the Dutch period. A tremendous number of spare parts needed for rehabilitation of the railway, and the roughly 80,000 staff (in 1968) employed by the then Indonesian National Railway (PJKA) had further impacted railway management and operations. In REPELITA I, top priority was given to the rehabilitation of tracks and bridges as well as improvement of rolling stock while the expansion of the railway network was postponed. In addition, local railway lines that could be substituted by other means of transport were discontinued except for the Java trunk lines.

Furthermore, under REPELITA I, rehabilitation and improvement of the port facilities were listed as priorities in the port and sea transport sector, as the development of the ports was deemed to be a prerequisite for sea transport. Improvement of river routes, development of jetties (piers) for ferry services, etc. were also listed as priorities.

2) Major efforts by Japan

Japan's cooperation to Indonesia started in the 1960s as a form of postwar reparations. Some of the major transport infrastructure projects were the Ampera bridge in Palembang, South Sumatra Province; Java trunk railway line (rehabilitation) connecting Jakarta with Surabaya, East Java Province; and Surabaya graving dock. Furthermore, grant projects related to sea and railway transport began in the second half of 1960s. Project-type ODA loans intended to develop economic infrastructure, which was integral to growth of the Indonesian economy, started in 1968 as well.

Between the 1960s and 1970s, the transport sector, consisting of port/sea transport projects (coastal radio transmission, harbor dredging, etc.), road construction, and railway rehabilitation, received 18% of Japanese ODA, just below the power (27%), and mining and manufacturing (25%) sectors.

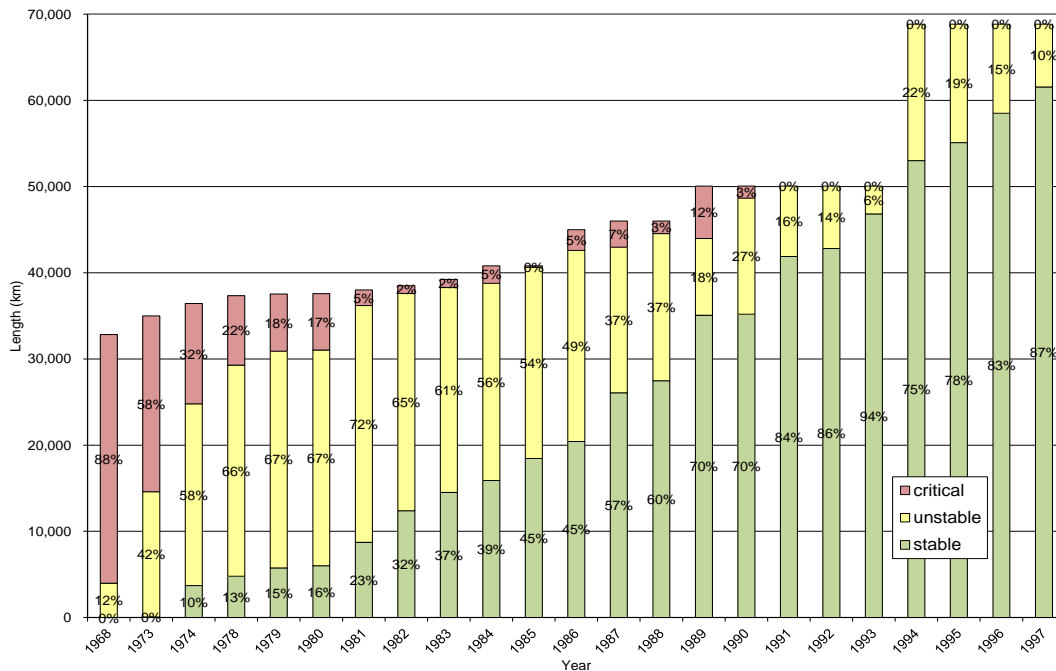
(2) The 1970s until the first half of 1980s: Development of economic infrastructure

1) Situation of the sector

As mentioned above, under the Suharto administration from 1968 to 1998 five-year development plans (REPELITA) were formulated and implemented successively, and development policy that emphasized economic liberalization, utilization of foreign capital, export of oil and gas, and industrialization was implemented as well as macro-economy equilibrium policy to suppress inflation. In addition, partly owing to the rise of world oil prices that happened twice in the 1970s, notable long-term economic growth (average annual economic growth of 7% from the 1970s to the mid-1990s) was achieved during this period, and the nation was referred at one time as the “miracle of East Asia.”

This economic growth was supported by various economic infrastructures including the transport sector. REPELITA III (1979/80-1983/84), set forth as its basic objectives the connection of various resources found across the country, fair distribution of development and the resulting benefits, and improvement of the welfare for all citizens. At the same time, it is believed that these have contributed to the reduction of poverty. In reality although about 40% (about 50 million) of the population was living in poverty in 1976, the number had drastically decreased to about 11% (about 20 million) in 1996.

As the traffic volume of trucks and other vehicles increased due to the steady economic growth, the need to improve and upgrade roads became high, especially for provincial and district roads. In light of this, REPELITA III and REPELITA IV (1984/85-1988/89) provided a budget for implementing “road and bridge improvement support program” as a Presidential Instruction (InPres). Improvement of the roads was implemented in accordance with the condition category of each road (i.e., Stable, Unstable, Critical). Figure 2-8 below shows the trend of the road condition categories for national and provincial roads. In this period, the condition of roads in the country improved steadily.



Source: REPELITA I, II, III, IV, V, VI; Statistics Indonesia 1996, 2000

Figure 2-8: Length of Total National and Provincial Road by Road Condition and Its Shares (1968-1997)

On the other hand, with regard to external assistance, the Indonesian Government needed to supplement the shortage of funds in the national budget and improve management and technical capacity in order to achieve the development goals and plans outlined by REPELITA. As Japan had continuously provided development assistance from the early 1970s, the Indonesian government hoped for Japanese support. Furthermore, in order to realize a more systematic foreign assistance, the Indonesian government began working on the so-called Blue Book (medium- to long-term project list) in the 1980s, as a “List of Candidate Projects for External Assistance,” and began asking for foreign assistance that integrated financial and technical support.

2) Major efforts by Japan

Out of the belief that infrastructure assistance was indispensable for developing nations which did not have an economic foundation in place, since the 1970s Japan had provided assistance to Indonesia that focused on developing industrial and economic infrastructure. In the 1980s, Japan’s ODA towards the transport sector was the greatest at 29% and exceeded the power sector (17%). Assistance in the area of airport infrastructure also began, and coupled with the Suharto administration’s economic infrastructure enhancement policy, this was a period of intensive support by Japan in transport infrastructure which was the backbone of a nation. In this period, Japan became the leading donor in the railway sector, participating in a series of trans-Sumatra road developments which contributed to the improvement of national and provincial road conditions referred to in the previous figure as well as the toll road developments in Jakarta metropolitan area, and the rehabilitation of the Java north trunk railway and modernization of Jabotabek Railway.

(3) The second half of the 1980s: Introduction of master plans

1) Situation of the sector

With the slump in crude oil prices in the mid-1980s, the Government of Indonesia implemented a switch in policy as one of the economic structural reforms which included greater private sector involvement and investment in the non-petroleum sector. One of the characteristics of this period for the transport sector was the introduction of BOT (Build, Operate and Transfer) system especially for toll road development. Previously, construction of toll roads was financed using national budget, external assistance, toll revenue, and road bonds (from 1983). However, the arterial road development policy from Bina Marga of the Ministry of Public Works in the late 1980s shifted to the idea that arterial roads should basically be developed as toll roads through full utilization of private capital for the development. To promote the construction of toll roads, in 1985 under Government Regulation No. 26, BOT scheme, which allows private enterprises to participate in the construction and management of toll roads was introduced. The first such project was the North-South link (Ir. Wiyoto Wiyono Toll Road) constructed by the Indonesian investor group (including construction companies), part of the city ring (intra urban) toll road designed under a Japan's ODA loan project through the "Jakarta Intra Urban Toll Road Project" (1978 to 1985). The whole road section (Cawang-Tanjung Priok) opened in 1990.

Furthermore, the aforementioned national project "Jabotabek Area Railway Project" (1982-2001), which was underway using an ODA loan, faced difficulty in securing funding because of the international economic fluctuation in 1985. As a result, it was reformulated as a master plan so that the project could be implemented effectively and efficiently in order to gain maximum benefit from minimal investment. Specifically, the improvement projects in the master plan were divided into those that enhanced transportation capacity through modernization and those that improved and expanded the railway system including the infrastructure. By prioritizing investment toward the former, the policy was redesigned to obtain maximum results in terms of improved transport capacity with minimal investment and in a short period of time.

2) Major efforts by Japan

With the aim of executing effective and well planned investment in the transport sector, master plans were created for the road sector such as the "Urban Arterial Road System Development Study in Jakarta Metropolitan Area" (1984-1987) and the "Urban Development Planning Study on GERBANGKERTOSUSILA Region (Surabaya Metropolitan Area)" (1981-1983) with the idea that individual projects would be implemented using various schemes such as ODA loan, technical cooperation, and grant aid. Since then the master plan has served as a guide for the development of each transport subsector and has been long used by the Indonesian side. Furthermore, the contents were updated or adopted as law through subsequent surveys by Indonesia or JICA development studies, and contributed toward transport infrastructure development.

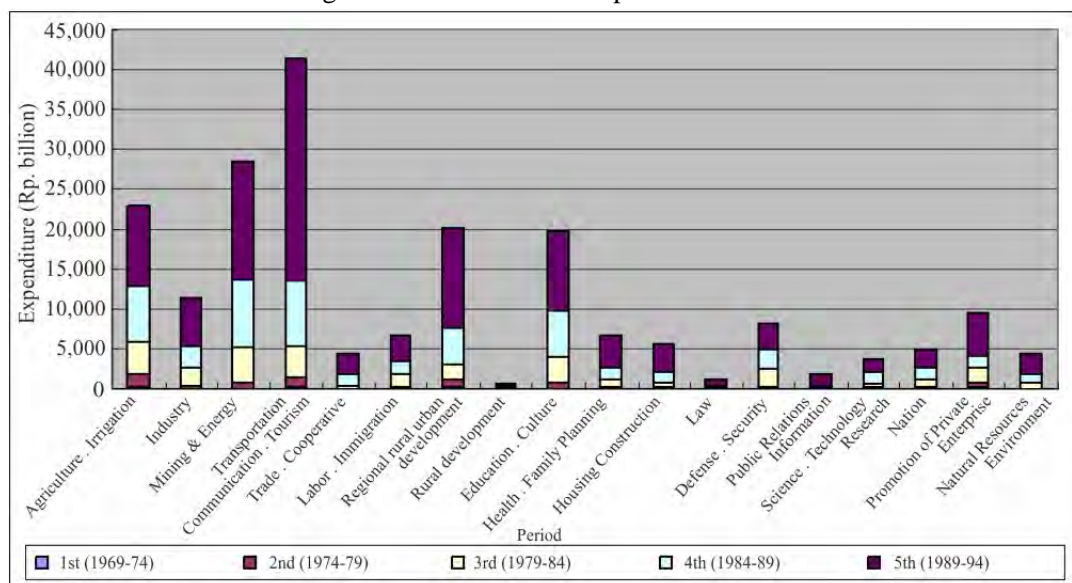
In the aviation sector, the extension project of the Balikpapan airport, including runway construction, started in 1985. In the port sector, the same development policy as the previous period was adopted;

that is, port and ferry transport facilities development project were given priority to establish basic infrastructure necessary for economic growth. However, in order to also encourage assistance that would promote effective industrial development in the regional ports, the method of creating master plans and then implementing projects using Japanese ODA has been adopted.

(4) The 1990s: Development of rural infrastructure

1) Situation of the sector

The figure below shows the trend in development expenditure (based on nominal price) by the Indonesian government during the so-called basic growth period before the Asian Financial Crisis in August 1997. Over this 30-year period, the industrial sectors with a high expenditure ratio were transport, communication and tourism (20.4%), mining and energy (14.1%), agriculture and irrigation (11.3%), and regional/rural/urban development (10.0%). In the 1990s, transport, communications and tourism accounted for about 28% of the total expenditure, showing greater emphasis than in the previous era (Third: 13%, Fourth: 17%). Thus, development expenditure for transport, communication and tourism was on an increasing trend in the 1990s compared to other sectors.



Source: JICA. *Socioeconomic Study for Assisting Formulation of New JICA's Country Assistance Strategy for Indonesia*. 2008, p.7

Figure 2-9: Development Expenditure by Sector (1969-1994)

Meanwhile, under REPELITA VI (1994/95-1998/99), based on PJP-II that began in FY1994, the goal was not only infrastructure development as a basis for economy and industry as in the past but also correction of regional disparities and poverty reduction. A more balanced national land policy was put together that promoted development of regional transport infrastructure especially in eastern Indonesia. There was progress in the improvement of roads and as Figure 2-8 shows, there were no more roads categorized as “critical” in the 1990s and the proportion of “unstable” roads also decreased significantly.

While the above trend was basically observed in all transport subsectors, in the field of port and sea transport, focus was placed on strengthening maritime transport and ferry transport in order to promote export of non-petroleum products and infrastructure that would contribute to the development of eastern Indonesia. Furthermore, in contrast to the earlier focus of creating ports that were regional hubs, the aim now was to create hubs for a larger economic zone incorporating the economies of neighboring countries. For example, Bitung Port (North Sulawesi Province) began to emphasize the economic zone with the Philippines, and Kupang Port (East Nusa Tenggara Province) with Australia. Especially after the Asian Financial Crisis, as international competition intensified, ports were no longer considered to be only for one's own country.

However, when the Asian Financial Crisis struck in 1997, tax revenue dropped sharply and it became impossible to secure sufficient domestic budget. Budget allocation also focused on social safety net and financial revitalization. As a result, budget for transport infrastructure was greatly reduced. As for REPELITA VI, it was extended until 2000 due to the Asian Financial Crisis amongst other reasons.

The remarkable feature of road development during this period, firstly with regard to toll roads, was how under Law No. 8 of 1990 the toll road corporation (PT. Jasa Marga) was required to have equity participation in private companies. Since then, most of the toll road development projects were implemented as a joint venture BOT scheme with PT. Jasa Marga. On the other hand, it became increasingly difficult to acquire land from the beginning of 1990s and since the private sector was responsible for land acquisition costs, BOT projects slowed down. Furthermore, with the Asian Financial Crisis cash management at private enterprises became difficult, and under the 1997 presidential decree, all BOT concessions were frozen except for those already in the midst of construction.

Another feature was the change in government organizations in the latter 1990s. The Ministry of Public Works (name at the time) became Kimpraswil (Ministry of Residents' Infrastructure at the time), and road development became just one part of regional infrastructure development (it is today back under the Ministry of Public Works and Housing), and with decentralization of power planning and budget implementation which had been under the central government became the responsibility of local governments. As a result, the role of KanWil PU (local agency of then PU), which used to coordinate with local governments and have road projects implemented by the public works agency of the local government, became unclear, and it became difficult to implement arterial road development projects.

2) Major efforts by Japan

In the 1990s, the share of ODA loan for the transport sector was 23% of the total, a decline from the 1980s, but the amount of non-project type loan was the biggest at 25%. In accordance with the Indonesia government's development policy of prioritizing regional transport infrastructure, Japanese assistance for all transport subsectors was mainly targeted in that direction such as eastern Indonesia and development of regional transport infrastructure. Assistance from the World Bank and the Asian Development Bank also increased especially in the port sector, and co-financing with the World Bank for the road sector was also seen.

(5) From the end of the 1990s: Increasing role of the private sector

1) Situation of the sector

Infrastructure investment in the 1990s was 6-7% of GDP but subsequently it was on the decline prior to the Asian Financial Crisis, and continued toward post-crisis to around the 2% level. This was a result of cutbacks in spending due to the deterioration of the fiscal balance of the Indonesian government coupled with increased expenses such as interest payments and fuel subsidies. Infrastructure development using public funds and donors also temporarily decreased until the early 2000s in the aftermath of the 1997 Asian Financial Crisis. However, since then private sector investment in infrastructure development were on the rise again.

The Yudhoyono administration came into power in October 2004, and, through the Presidential Decree No. 7 of 2005, the National Medium-Term Development Plan (RPJMN: 2005-2009) was formulated in 2005, following in the wake of the National Development Program (PROPENAS: 2000-2004), which was set out as an overall framework for national development under the former Megawati administration. However, there was no longer any generous government budget as during the Suharto administration, and the amount of infrastructure investment was curbed and there was a limited number of new infrastructure projects. In addition, there were cuts in expenditures for the maintenance and management of existing infrastructure, and there was a concern that the quality of existing infrastructure would deteriorate. Hence, in RPJMN (2005-2009), the Government of Indonesia's goals with regard to transport infrastructure development were outlined as below:

- Coordinate roles of relevant agencies including state owned enterprise reforms, and participation of private sector and local governments through amendments to Road Traffic and Transport Act (2009) and Railway Act (2007);
- Increase road and railway transport capacity; maintain and improve existing roads and railways;
- Reduce overloading, traffic violations, and traffic accidents in road transport; and ensure safe operation of railways;
- Coordinate roles of relevant agencies including state owned enterprise reforms, and participation of private sector and local government, through amendments to Maritime Act (2008) and Aviation Act (2009);
- Expand sea and air transport capacity; maintain and improve existing airports and ports;
- Comply and meet international standards such as International Civil Aviation Organization (ICAO) and International Maritime Organization (IMO), and enhance safety capabilities of navigation aid facilities, etc., and
- Develop and expand urban transport sector including mass transit.

Furthermore, the Government of Indonesia clarified the amount of external funds needed as well as the priority sectors for the above RPJMN in Government Regulation No. 2 of 2006, and formulated a policy that projects not listed in the Blue Book (medium- and long-term project list) could not be

considered for foreign loans. The Indonesian Blue Book at the time, “2006-2009 Foreign Cooperation Candidate List (DRPHKN-JM 2006-2009),” listed 194 loan projects (USD 11.48 billion) and 228 technical assistance (TA) projects (USD1.71 billion), totaling 422 projects (USD 13.19 billion). Of these, there were 69 loan projects (35.6% of the total number of projects) and 82 TA projects (36.0% of the total) for infrastructure development. Unlike the Blue Book of the past which was simply a list of priority projects, projects were narrowed down by taking the loan conditions and limiting the size of borrowing and only those which had fulfilled conditions for implementation, such as conditions of land acquisition and environmental impact assessment were short-listed.

Trends seen in the road sector in the 2000s were enhancement of urban arterial road network that would contribute to economic growth, importance of building and improving regional roads and maintenance of existing roads through asset management, and utilization of private funds through PPP. For national roads, the Road Traffic and Transport Act (UU 22) was revised in June 2009 in order to secure funds for maintenance and outlined the establishment of the Road Preservation Fund Unit to cover the maintenance cost by charging road users. The Directorate General of Bina Marga of the Ministry of Public Works (at the time) introduced asset management in some areas and embarked on minimizing lifecycle cost and introducing preventive maintenance methods, and it was to also outsource maintenance works based on performance specifications.

Meanwhile, as for development of toll roads, post-Asian Financial Crisis since the original BOT scheme in which 100% of the funds was raised by the private sector became unpopular in the 2000s and efforts were made to promote public-private collaboration through various combinations such as financial support for construction of road sections that were not financially viable provided using PPP, or construction done by the government and operation and maintenance by the private sector. The Indonesian Toll Road Authority (BPJT) through the amendment of the Road Act (UU 38/2004) and a Government Decree (PP 15/2005), made development of toll roads purely by private investment possible. In particular, the plan was to prioritize the development the Java toll road network by utilizing PPP.

Furthermore, the “Public Private Partnership Scheme (PPP) Candidate Development Project List” (so-called PPP book) was created not only for the road sector but for infrastructure development of other subsectors under Presidential Decree No. 67 of 2005. Although private sector investment in infrastructure development also decreased sharply after the Asian Financial Crisis, it was once again on the rise after that. The Government of Indonesia held an infrastructure summit in January 2005 with the cooperation of the Indonesian Chamber of Commerce and Industry (KADIN) to promote infrastructure investment especially by the private sector, and announced 91 specific infrastructure development projects (38 toll roads, 1 railway, 5 airports, 4 ports, 12 power plants, 24 water supply, 6 gas pipeline, 1 communication) with a total value of USD 22.5 billion as infrastructure projects to be implemented through tender. After that, the National Infrastructure Development Promotion Committee (KPPIP) was established, and measures such as the establishment of a Risk Management Committee to examine government risk were implemented. In February 2006, KPPIP summarized and announced a comprehensive Infrastructure Package (IPP) which put together 156 actions. However,

due to the immaturity of the projects and an investment environment that had not been improved, few projects were implemented.

In the port and sea transport sector, the need for further improvement was also emphasized in RPJMN (2005-2009), as it pointed out inadequate port facilities as the cause of the bottleneck impeding smooth sea transport. Specifically, while maintenance and management of maritime transport safety, such as navigation dredging and development of navigational safety facilities, and regional port development should be led by the government, for the sake of cost efficiency private sector PPP scheme should be adopted to develop terminals and related facilities for passenger transport and develop and operate port infrastructure and facilities for cargo transport, especially container terminals. Meanwhile, the World Bank and ADB shifted priority from the earlier port development to support privatization of the port sector and provided technical cooperation.

2) Major efforts by Japan

After the Asian Financial Crisis, there was a trend for international aid to focus on public sector reform, policy support, or humanitarian support, etc. rather than transport, energy, communication, agriculture sectors, etc. for reasons of shrinking budget for development assistance, and emphasis on environmental preservation. On the other hand, in the 2000s, the share of ODA loan amount to the transport sector remained high (19%), after the power (34%) and irrigation and water control sectors (21%).

In particular, the possibility of serious accidents remained in aviation, maritime, and railway sectors resulting in casualties as a serious threat. To decrease these accidents, reinforcement of law and institutions related to transport security, improvement of traffic control systems, development of human resources, enhancement of inspection capabilities, and capacity building for accident investigation were carried out as part of a transport operation safety program. Furthermore, it was decided that continuous attention would be paid to the transport sector discussions in the Strategic Investment Action Plan (SIAP) mentioned later.

Over the years Japan has tackled the urban transport problems of the Jakarta metropolitan area together with the Government of Indonesia. From 2000 to 2004, JICA conducted a development study called “The Study on Integrated Transportation Master Plan for JABODETABEK (SITRAMP)” with BAPPENAS as the counterpart, and formulated an urban transport master plan for the Jakarta metropolitan area. The SITRAMP master plan proposed a bus rapid transit (BRT) currently operating in DKI Jakarta and MRT which is now under construction as an ODA loan project.

(6) From the end of the 2000s: From Jakarta metropolitan area to the whole country

1) Situation of the sector

In recent years, the Indonesian economy has been growing steadily, and maintaining a solid economic growth of more than 5% every year. The Jakarta metropolitan area has about 10% of the total population of Indonesia, and in terms of the economic scale, it has about 30% of GDP, and about 40%

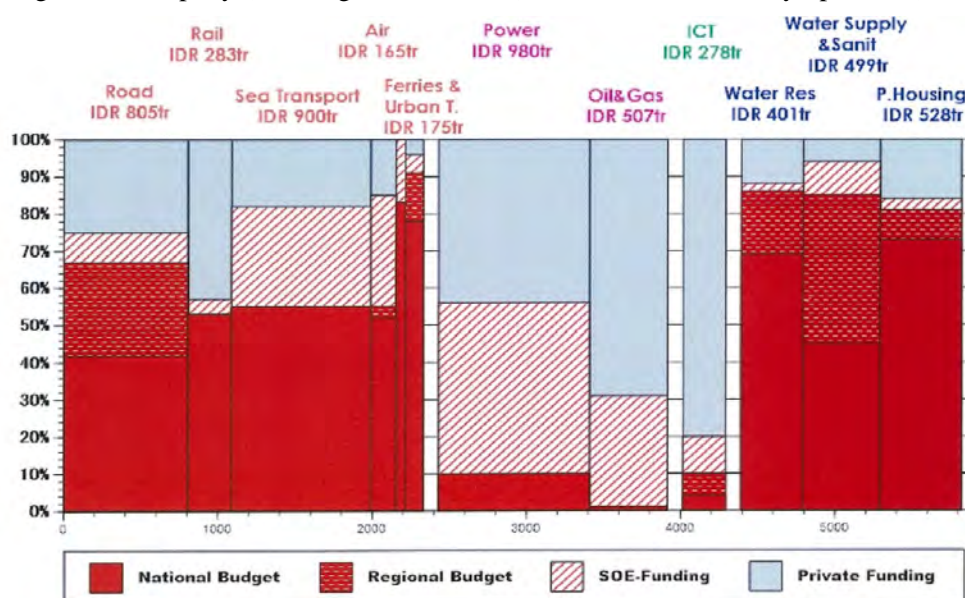
of foreign investment to the country. Supported by such steady economic and population growth, the number of registered motorcycles and automobiles in the region has increased sharply in recent years and those in the metropolitan area increased 4.64 times and 2.01 times, respectively, from 2000 to 2010. On the other hand, transportation in the area relies heavily on road (98%), causing an increase in private modes such as motorcycles and automobiles and a decline in the utilization of public transport (mode share of buses and other public transport decreasing from 57% in 2002 to 19.7% in 2010) as well as an increase in commuter inflow from surrounding areas to Jakarta (number of commuters increased about 1.5 times from 2002 to 2010). Due to these situations, there is chronic traffic congestion in the Jakarta metropolitan area, causing a great economic loss.

Therefore, along with the widespread use of public transport, it is necessary to plan and implement an integrated transportation policy among local governments and transport modes to reduce the overconcentration in Jakarta. The Indonesian government, which was concerned about this problem as a national issue, announced an action plan to alleviate congestion in the Jakarta metropolitan area in September 2010 through the Vice Presidential Office in order to tackle congestion alleviation in the Jakarta metropolitan area. This was a comprehensive and cross-sectional approach to improve traffic in the metropolitan area, with relevant ministries and agencies cooperating with each other. The overall monitoring of this policy was done by the President's Development and Management Coordinating Working Unit (UKP 4) under orders from the Vice President, but in December 2014, UKP 4 was dissolved with the termination of the president's term, and the National Finance and Development Supervision Agency (BPKP) took over the task.

The delay in infrastructure development was recognized as a serious problem even within the Government of Indonesia. In May 2011, as a concrete measure to settle the problem, the government announced the Medium-Term Development Plan until 2025, known as the Master Plan for Acceleration and Expansion of Indonesia's Economic Development (MP3EI). Out of the total investment of IDR 4,000 trillion in this basic plan, IDR 1,900 trillion or about 50% was allocated for infrastructure development. With an emphasis placed on infrastructure development as the foundation of economic development, the transport sector was positioned as one of the seven sectors covered by the economic development policy and a strategic direction. However, under the Joko Widodo administration, not much attention has been paid to MP3EI.

Meanwhile, RPJMN (2010-2014) formulated by BAPPENAS listed the following as development goals for the transport sector in the metropolitan areas: (1) expansion of transport infrastructure and transport capacity, (2) improvement of access to transport infrastructure, (3) enhancement of safety related to transport infrastructure, (4) restructuring the system related to transport services, and (5) response to climate change (mitigation measures, adaptation measures). Furthermore, the current new RPJMN (2015-2019) presents the policies of the Joko Widodo administration such as "strengthening the identity of Indonesia as a seafaring country" and "realizing Indonesia as a seafaring country that is founded on the national interests," which focuses on the seafaring nation aspect. In addition, to strengthen productivity and competitiveness in the international market as a national priority, policies

and strategies such as “strengthening national land connectivity for balanced development,” “development of mass transit system in the metropolitan area,” “improvement of financial efficiency and effectiveness of infrastructure development,” and “encouragement of infrastructure improvement through state-owned enterprises” have been set out. The investment needs and the allocation of funds for infrastructure under the current RPJMN are shown in the following figure, and, for the transport sector, port and sea transport sector has the largest share, followed by the road sector. Of this, roughly half is to be covered by the national budget, and for road sector in particular, the proportion borne by local government budget accounts is about a quarter of the total. The remainder is to be financed through investment by the private sector, and in some subsectors much is covered by state-owned enterprises such as the state-owned port management company (PT. Pelindo I, II, III, IV), state-owned airport management company (PT. Angkasa Pura I, II), and state-owned ferry operator (PT. ASDP).



Source: BAPPENAS

Figure 2-10: Infrastructure Investment Needed and Its Source as Outlined by the National Medium Term Development Plan (2015-2019)

Regarding infrastructure development by PPP, the above-mentioned Presidential Decree No. 67 of 2005 which is related to the PPP book has been revised several times, but, under Presidential Decree No.38 of 2015, some new sectors such as public housing have been added to the PPP book in addition to the key infrastructure projects such as transportation, water supply and sewerage, communication, electricity, and gas. Especially for toll road development an Availability Payment scheme has been introduced where service fee is to be paid with public resources according to the operation and management performance of the private operator.

The “External Cooperation Candidate Project List (DRPHKN-JM 2015-2019),” which is Indonesia’s current Blue Book, lists 38 loan projects (totaling USD 40.13 billion). Among them, 21 are in the infrastructure sector with a total amount of USD13.99 billion or 34.8% of the total. Technical assistance (TA) projects have not been posted in the Blue Book since the period of 2006-2009.

2) Major efforts by Japan

Regarding the measures taken to tackle urban transport problems in the Jakarta metropolitan area, the “JABODETABEK Urban Transportation Policy Integration Project (JUTPI)” was implemented as a technical cooperation project succeeding the above-mentioned SITRAMP with CMEA as the main counterpart from July 2009 to March 2012. It supported the establishment of “Jabodetabek Transportation Authority (JTA)” which would review and update the master plan created by SITRAMP and deal with urban transport problems in the Jakarta metropolitan area from cross-sectoral and cross-regional viewpoints. Based on the results of the above technical cooperation projects, the Jabodetabek Transportation Administration (BPTJ), which should be the prototype of JTA, was established in September 2015 based on the Presidential Decree No. 103 of 2015 and the Regulation of the Ministry of Transportation No. 3 of 2016. The master plan updated by JUTPI has also been further modified by BPTJ by adding new projects with a view to legalization through presidential decree. In addition, since the progress of projects proposed in the master plan is behind schedule, it is necessary to strengthen the implementation capacity of the executing agency on the Indonesian side.

In addition, the Government of Japan and the Government of Indonesia (in the second term of the Yudhoyono administration), signed a Memorandum of Cooperation for “Jakarta Metropolitan Priority Area (MPA) Concept” in December 2010, aiming to evolve the Jakarta metropolitan area into an attractive investment destination that is suitable for industrial development and friendly to the environment and people. Based on this, JICA conducted the MPA master plan study from May 2011, and first set up the MPA 2030 Vision after high-level coordination between Japan and Indonesian sides. Then, taking the above mentioned MP3EI and RPJMN (2010 – 2014) as well as the master plans for each subsector into consideration, they identified 45 priority projects to be completed by 2020 and 18 early implementation projects that should start by 2013. It was a groundbreaking approach of first identifying priority infrastructure projects, selecting early implementation projects, and then putting a call out for assistance. MRT construction, Cilamaya new international port development, and Soekarno-Hatta international airport expansion project are listed for the transport sector as symbolic MPA flagship projects to be implemented through cooperation between Japan and Indonesia.

Meanwhile, since it is necessary to support the formation of PPP projects with proper risk sharing between the public and private sectors in light of the excessive number of PPP projects and few PPP large-scale projects so far, a technical cooperation project, “MPA Support Facility” (2014) was launched after the MPA master plan study. Thereafter, because there was also a policy change focusing on the regional development and seafaring country concept under the Joko Widodo administration, the MPA was not continued as originally planned; however, the MPA support facility readjusted its target to cover the entire Indonesia and it continues to exist as a support facility for KPPIP (Project Acceleration Committee for the Priority Infrastructure).

In addition to this technical cooperation project, JICA also has been implementing ODA loan projects such as the “Construction of Jakarta Mass Rapid Transit (MRT) Project” (MRT North-South Line), which is scheduled to open in March 2019, and the “Tanjung Priok Port Access Road Project”

(completed March 2017). Particularly for MRT, in order to break away from the urban structure that is excessively dependent on road traffic, it is necessary to promote urban development based on public transport systems including MRT. From this point of view, for the integration/cooperation between the regions and transport modes or land use, it is necessary to support BPTJ as the main counterpart and help improve the implementation capacity of TOD projects centered around MRT stations and other projects for improving urban transportation.

In order to assist the Government of Indonesia to develop transport infrastructure, Japan's "Country Assistance Policy for Indonesia" published in April 2009 identified the following as being issues in assisting Indonesia in the transport sector:

- Formation of a transport network to promote economic development, construction of roads/ports/airports to improve transport capacity, infrastructure development to increase competitiveness;
- Enhance safety such as accident avoidance action, accident investigation, etc., in light of frequent serious accidents in recent years;
- Shift over to railway transport including introduction of relevant policy and institution for the urban transport sector to reduce overdependence on road transport which results in considerable traffic congestion, and
- Formulate and enforce suitable legal system and detailed regulation, e.g., new road traffic and transport act, new railway act, new aviation act, and new maritime transport act, as well as the realization of individual PPP projects.

Furthermore, the Japanese government's Country Assistance Policy for Indonesia, formulated in April 2012, mentioned "support for further economic growth" as one of the priorities (medium-term target). It mentions that, in order to accelerate economic growth led by the private sector, the business/investment environment needs to be improved by supporting infrastructure development mainly in the Jakarta metropolitan area and formulation of various regulations/systems aimed at strengthening economic partnership with the Asian region. At the same time, it also mentioned that higher-level human resource development should be supported. Likewise, in the JICA Country Analysis Paper for Indonesia, "support for further economic growth" is also mentioned as a priority sector. Meanwhile, as stated earlier, the Joko administration has taken a policy to reduce the government debt, and because Indonesia in principle is no longer eligible for general project grant since 2011, new projects in recent years have focused on technical cooperation (including preparation for forming new ODA loan projects) in the subsectors such as road, air, port, and sea transport. However, there continues to be a strong need for infrastructure project funding, and ODA loans are expected to continue playing an important role.

2.3 Noteworthy Achievements in Cooperation

2.3.1 Road

Until around the first half of the 1970s, the focus of Japan's assistance in the road sector concentrated on road rehabilitation/repair projects in Sumatra, Kalimantan, and Sulawesi islands rather than those on Java island. It was considered important to establish the basic infrastructure of the whole nation in order to reinforce national unity in the aftermath of the civil unrest in the post-war and post-independence period. Another reason was because in those days, the World Bank and European consultants had already taken the initiative to provide assistance in the Jakarta metropolitan area. The Ministry of Construction (current day Ministry of Land, Infrastructure and Transport) and then the Infrastructure Development Institute of Japan took initiatives to lead cooperation which often combined grant and ODA loan projects. That is, they first provided construction machines as a grant aid and transferred knowledge on how to use the machines by dispatching engineers from Japan. Furthermore, they implemented an ODA loan project consisting of road design and construction with the machines.

BOX 2-1 Trans-Sumatra Highway Development and Merak-Bakauheni Ferry Terminal Construction Project

Cooperation period: From 1970 to 1977 (Trans-Sumatra highway development),

From 1976 to 2002 (Merak-Bakauheni Ferry Terminal Construction)

A series of road development projects in Sumatra island in the early period of development, that is, the "North Sumatra/Central Java Road Rehabilitation Project" (1970-1972), the "Lampung-Merak Road-Ferry Terminal Construction Project" (1972-1976), the "Sumatran Road Rehabilitation Project" (1973-1976), the "Muarobungo-Lubuklinggau Road Construction Project" (1977), and the "Jambi-Muarobungo Road Construction Project" (1977) were of great significance for the arterial road development of the trans-Sumatra highway. Those projects are treated as a case study of this era in the sense that it improved the basic infrastructure that would become the framework of the nation.

Although these regional road projects were improvement and rehabilitation projects, in many places there were no existing roads such as the Lampung bypass and Bakauheni direction, and even if there were existing roads most were horse carriageways built using the Telford or McAdam method. It was thus essentially a new road development project including road widening and paving for automobiles. The soil quality of Sumatra island was calcareous earth in the mountains and leaf mold in the plains. South Sumatra is close to Krakatau volcano with tuffaceous soil, so road construction was difficult requiring procurement of gravel, etc. from other areas.

Of the major arterial road (total length of approximately 2,500 km) traversing longitudinally through Sumatra island from the southernmost tip of Sumatra island, namely, Bakauheni in Lampung Province to the northernmost tip, namely, Banda Aceh in Nanggroe Aceh Darussalam Province (then), the section that Japan developed is about 60%, mainly in the southern part of Sumatra island, playing a significant role as a basic infrastructure that supports key Sumatran industrial activities such as coal, crude oil, natural gas, palm oil, cement, agriculture, forestry and fisheries products. At present, daily traffic volume of the section between Lampung and Bakauheni which is the only access road to Java island averages at 70,000 vehicles, of which 70% are heavy vehicles such as trucks and buses.

In Japan's assistance in the road development, technology transfer to the local engineers through "on the job training" was primarily carried out by increasing the proportion of local engineers; at the same time project costs could be kept low. Therefore, the Indonesian side also welcomed the project, which is also said to have led to the request for subsequent road projects after the completion. Thus, it is worth mentioning that the Trans-Sumatra Highway Development Project contributed to the growth of local contractors and consultants. In the early road development projects, while Japanese contractors were mainly involved, local contractors were subcontractors. However, thanks to the grant aid to provide construction equipment and the following technology transfer,

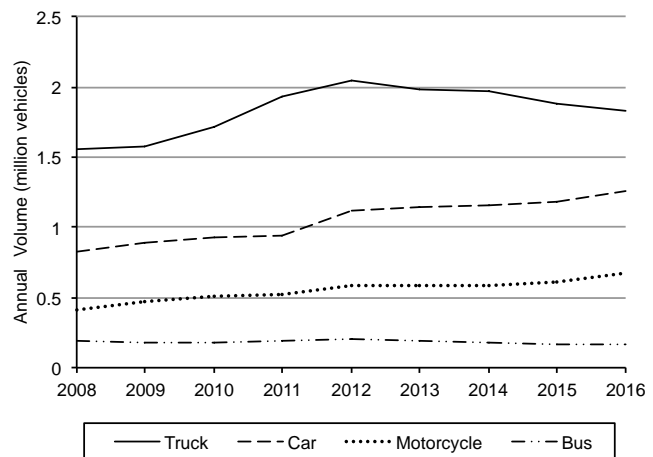
growth of local contractors including in the fields of design and construction management was observed. Local road engineers who grew up on this project as well as the construction machinery that was provided went on to contribute to the subsequent road development of Sumatra island such as the “Road Maintenance Improvement Project” (1991, 1996) and the “Sumatra East Coast Highways Project” (1992, 1998).

As for ferry transport connecting Java and Sumatra islands, the ferry transport managed by the DGR used to serve Merak in Java island and Panjang in Sumatra island until the opening of the Merak-Bakauheni ferry transport in 1981; however, there was only one service per day and it took about 5 hours one way. Moreover, railway cargo from the station used to be transshipped to trucks at the pier and then to ships at the port; thus, it was very inefficient and expensive.

In the ODA loan project, “Merak-Bakauheni Ferry Terminal Construction Project,” which started from 1976, the Japanese side conducted a survey on introducing a cross-strait ferry as part of Sumatra-Java highway development, and in 1981 the first berth and other ferry facilities were developed and connected Merak and Bakauheni in just under two hours, allowing vehicles to board and disembark from the ferry and introducing technology innovation that enabled land and sea transport without transshipment. As a result, Java island and Sumatra islands, which account for about 70% of Indonesia’s GDP, have been connected by a national sea route. The road connecting the industrial estates in the Jakarta metropolitan area and its surroundings and Sumatra island with abundant mineral, agricultural, forestry, and fishery resources began to function as part of the arterial road, greatly furthered freight and passenger transport, and contributed tremendously to economic growth through the industrialization of Indonesia and export of non-petroleum products.

Utilization rate of the ferry terminal exceeded the initial forecast. Even with 24-hour full operation, there was a long line waiting for the ferry in the terminal, which quickly led to talk of expanding the ferry terminal. In response to this, Japan provided the ODA loan project of “Merak-Bakauheni Ferry Terminal Extension Project” (1985) and in 1988 the second berth was completed. Furthermore, as further economic trade between the Java and Sumatra islands was anticipated, in order to keep up with the development of the toll road between Jakarta and Merak and the development of the road network in the southern part of Sumatra island, and in order to increase passenger and freight transport by constructing a third berth at both Merak and Bakauheni Ferry Terminals that could accommodate large ferries (5,000 GT class) capable of mass transport of passengers, vehicles and cargos, the ODA loan of “Merak-Bakauheni Ferry Terminal Expansion Project (2)” (1993) was also implemented, and in 2000 the third berth with ODA loan was completed. In addition, at the same time, the fourth berth which was constructed and operated by the private company (PT. Infiniti Indosakti) in the form of a concession has also been completed at both terminals.

After that, more berths have been added with Indonesian government’s funds (partly that of PT. ASDP, state-owned operating company). At present, while there are other ferry lines run by the private sector (Bojonegara-Bandar Bakau Jaya, Tanjung Priok-Panjang), fifth and sixth berths and fifth, sixth and seventh berths have been developed at Bakauheni and Merak, respectively, and 58 ferries of 2,000 GT to 16,000 GT class are in service with an average of 96 round trips per day. It is one of the largest ferry terminals in Asia that transports 3.1 million passengers, 3.25 million 4-wheel vehicles, 680,000 motorcycles, and 11 million tons of freight annually (as of 2016). The first to third berths developed by Japan’s ODA are maintained and operated without any problems, while the fourth berth developed by the private sector has severely deteriorated, and the one in Bakauheni is no longer in use. In recent years, due in part to the influence of other ferry lines run by the private sector (Bojonegara-Bandar Bakau Jaya, Tanjung Priok-Panjang), the annual transport volume is leveling off; however, in line with the 2018 Asian Games, Sumatra Toll Road (Palembang-Bakauheni) is scheduled to open, and it will be directly connected with the Bakauheni Ferry Terminal and further increase in the number of vehicles is expected. So, premium ferry service and terminals connecting Java and Sumatra islands with a shorter travel time are now under construction at both ferry terminals.



Source: PT. ASDP

Figure 2-11: Trend of Vehicle Transport Volume of Merak-Bakauheni Ferry



Bakauheni Ferry Terminal

Vehicle Entrance

Merak Ferry Terminal

While a series of trans-Sumatra trunk road development and Bakauheni (Sumatra island)-Merak (Java island) ferry terminal development projects were implemented up till the 1970s, the “Jakarta-Merak Toll Road Development Project” (1975, 1977), which was started in the second half of 1970s, triggered the shift of Japan’s ODA focus in the field of road development to the Jakarta metropolitan area as represented by the “Jakarta Intra-Urban Toll Road Development Project” (1978-1985). Of the total of 274 km toll roads in Jakarta metropolitan area, about 60% were developed with Japanese assistance (of which 98 km were only for designing). The flyover projects such as Slipi, Tomang, Cawang (1984), Semangi, Taman Ria (1987), etc. in the Jakarta metropolitan area were mostly implemented by Japan’s ODA loan in this period. Furthermore, these projects contributed to the technology transfer in areas such as road development and operation and maintenance of toll roads as well as to the guidance in urban development.

Japan began providing assistance in major road projects in the Jakarta metropolitan area partly because of the change of process for determination of allocation of assistance among the donor countries. Until then, the World Bank and International Development Association (IDA) used to take the initiative; however, IGGI (Inter-Governmental Group on Indonesia) meetings started to serve the determination. It was a period when projects were promoted by working together through consistent cooperation among the road experts dispatched to PU Bina Marga by JICA, the Embassy of Japan, and Japanese consulting firms.

Then, following the Indonesian government’s policy that toll roads should be developed basically through the BOT (Build Operate Transfer) scheme, Japan’s assistance in the road sector in the second half of the 1980s shifted back to development of ordinary trunk roads and bridges, as represented by the “South Sumatra Roads Rehabilitation Project” (1987), the “Local Road Development Project (II)” (1988), the “Road Network Rehabilitation Project (I) (II)” (1988, 1989), etc. ODA loan In addition, as mentioned earlier, the method of assistance was stepwise. A master plan is prepared in the beginning and then the individual contents of the plan formulated by the master plan would be implemented with schemes such as ODA loans, technical cooperation and grant aid.

In the road sector in the 1990s, the main objective of ODA loans was maintenance and restoration of arterial roads in urban and rural areas (Java, Sumatra, Kalimantan, and Sulawesi islands), as represented by “Local and Urban Road Development Project” (1990), the “Heavy Loaded Road Improvement

Project (I, II)” (1991, 1996), the “Road Maintenance Improvement Project (I, II)” (1991, 1996), the “Road Network Rehabilitation Project (III)” (1993), and the “Metropolitan Arterial Road Improvement Project” (1998). There are several reasons behind the increase in maintenance and maintenance projects: the intention of the development policy of BAPPENAS as mentioned above, organization change from PU (Ministry of Public Works) to Kimpraswil (Ministry of Residential Infrastructure) at that time; the effective result of previous cooperation as the improvement of the national highway and the state road or as the improvement of capacity of the local contractor who transferred the technology; BOT scheme which had been the mainstream of Toll road construction; and so on.

However, as land acquisition became more and more difficult, assistance in construction of some road sections had to be stopped such as the “Heavy Loaded Road Improvement Project.” The “Local Road Improvement Project (III)” was started in 1996 in Sulawesi and Kalimantan islands as part of the eastern Indonesia development. In the following period, that is, in the 2000s, road projects contributing to eastern Indonesia development such as the “Bridge Rehabilitation Program in Central and North Sulawesi Provinces” (2002-2005), the “Bridge Rehabilitation Program in East Nusa Tenggara Province” (2005-2007), and the “Bridge Rehabilitation Program in West Nusa Tenggara Province” (2006, 2007, 2009) were implemented.

There were some blank periods observed between 1999 and 2001 shortly after Asian Financial Crisis, and the proportion of Japan’s ODA to rural area grew, for instance, the “Bridge Construction Project in East Nusa Tenggara Province,” a bridge construction/repair project under ODA grant scheme. Following the trend from the 1990s, the Master Plan of “Road Improvement Plan for Regional Development in Sulawesi” was established in 2008 as part of the poverty eradication program. Thus, Japan’s ODA to east Indonesia has continued with the aim of revitalizing the economy and regional development through efficient transport and goods distribution system.

On the other hand, Japan’s ODA supported new construction, expansion/repair/rehabilitation, asset management of general roads and expressways as well in order to cope with increasing traffic congestion and transport demand on major arterial roads, as represented by the “Java North Trunk Road Traffic Congestion Alleviation Project” and the “Tanjung Priok Port Access Road Construction Project.” Furthermore, the “Capacity Development Project on Asset Management of Road and Bridge Construction,” a technical cooperation, has started since 2010.

Following the Indonesian government’s policy of developing toll roads using PPP, JICA conducted “The Study on Formulation of a PPP Scheme for Development of the Trans-Java Expressway” (2006-2007), which selected the most financially viable PPP scheme for the section of Yogyakarta-Solo-Kertosono (total length: 219 km) that had also been announced as part of the arterial toll road network of Java island in the RPJMN (2005-2009). While no ODA loan was applied to the toll road development of this section in the end, the subsequent “Preliminary Study on Infrastructure Development under PPP Scheme” (2009), proposed priority infrastructure (toll road and water supply) development to be carried out with the PPP scheme with a view to supporting the development with Japan’s ODA loan. Thus, PPP technical cooperation projects continued.

2.3.2 Railway

Partly due to the view of the World Bank and the U.S. that the road sector should be the focus of infrastructure development, railway development was lower in priority than roads in the 1960s. On the other hand, Germany provided full scale assistance, formulating a railway master plan, which was followed with the provision of 40 train cars as a reconstruction loan from KfW or the German Reconstruction Credit Institute, dispatch of an expert to the Indonesian National Railway Company headquarters, planning of new railways in the Jakarta metropolitan area, and so on. Starting with war reparations, Japan has also actively provided assistance for the railway sector since this period, such as the repair and improvement of tracks and bridges on the Java North Line, reinforcement of the diesel car fleet, and so on. As with the road sector, railway projects were implemented through a combination of grant and ODA loans.

Japan's assistance to the Indonesian railway sector was in the form of ODA loan or technical cooperation. In the 1980s, the renovation project of Java North Line was also continuously carried out by Japan's ODA loan. Travel time between Jakarta and Surabaya was shortened by 4 hours from 16 hours in the 1960s (i.e., before the implementation of the railway track rehabilitation project supported by Japan) to 12 hours in the 1980s. It was further shortened to 9 hours in July 1995 owing to the initiation of a limited express train called "Argo Angrek" manufactured by the state-owned company, PT. INKA.

Furthermore, in the 1980s, ODA loan projects were intensively implemented also for railway in the Jakarta metropolitan area such as track elevation, electrification, double tracking, and station improvement projects. Starting with the provision of secondhand passenger trains, the "Jabodetabek Area Railway Project" included ODA loan projects of track elevation, electrification, double tracking, station improvement, and so on; as a consequence, a suburban railway network was established in the Jakarta metropolitan area.

Since this period, Japan's ODA for the transport sector has taken on a new form consisting of two phases; the first phase formulates a master plan covering the specific sector and area as an output of the development study, followed by the second phase when individual projects set out in the master plan are implemented using Japanese ODA loan, technical cooperation, grant aid, etc. As an example of this period, each phase of the "Jabodetabek Area Railway Project" was successively implemented over a period of 20 years based on the master plan from "Urban Suburban Railway Transportation in JABOTABEK (USRTJ)." Japan continuously assisted railway development in the Jakarta metropolitan area where population increased rapidly. This project was an example of the novel development assistance by Japan covering a series of urban railway development projects of novelty.

Mainly in the first half of the 1990s, ODA loan projects for the rehabilitation and partial double tracking of the Java North Line was continually implemented. From right before the Asian Financial Crisis, Japan's ODA emphasized railway infrastructure development in the regional area as represented by the "Railway Double Tracking of Cikampek-Cirebon Project" (1994, 1998) and the "Railway Double Tracking on Java South Line Project" (1996, 2004, 2007). Meanwhile, railway modernization projects in the Jakarta metropolitan area were continuously implemented under Japan's ODA loan scheme.

BOX 2-2: Construction of Railway Double Tracking of Cikampek-Cirebon

Cooperation period: From 1994 to 2011

Transportation sector in Java island was heavily dependent on road transport, resulting in increasing road congestion, environmental burden, etc. Thus, the issue was how to reduce the reliance on road transport and shift people to the railway. Major trunk lines in Java island consist of the north trunk line (Jakarta-Cirebon-Semarang-Surabaya), the south trunk line (Jakarta-Cirebon-Yogyakarta-Surabaya) and Bandung line (Jakarta-Bandung). In addition, there are about 160 km of urban railways in Jabodetabek and about 20 km of railways in the Surabaya metropolitan area. According to the Ministry of Transport, the emphasis in railway infrastructure development was on the development of mass transportation connecting cities such as Jakarta and Surabaya. For this reason, it was necessary to strengthen the railway transport capacity of particularly the north trunk line which connects Jakarta and Surabaya.

On the Java North Line, although the section between Bekasi and Cikampek (57 km) which is close to Jakarta had been developed as a double track, the other sections were single tracks. The 74 train services per day and 89 services during a peak period were exceeding the line's capacity of 70 services between Cikampek and Cirebon (135 km) as of 1996. Thus, congestion became severe and the expansion of railway capacity was an urgent task. Furthermore, maintenance and management of railway facilities were not sufficiently performed. As a result, rehabilitation of tracks, bridges, etc., modernization of security facilities such as signal communication facilities, procurement of the rolling stock and double tracking to enhance the transport capacity, and train operation with safety, high speed, and punctuality were also urgent tasks. With this backdrop, this project was a large scale project that Japan provided for the improvement of railway system in the 1990s and 2000s and it was one of the major routes for passenger and cargo transport in Java island, connecting Jakarta-Cikampek-Cirebon (total length 135 km) to Surabaya. The project was implemented mainly to improve the investment environment by enhancing the railway transport capacity and contribute to regional economic development.

The north line (Cikampek-Cirebon) was divided into three segments, and design work started in 1996 for Segment 1 and Segment 3 with ODA loan. In Segment 1 (Cikampek-Haurgeulis), double tracking work was carried out with ODA loan from 2002 to 2004. Double-tracking of Segment 2 (Haurgeulis-Kadokangabus) was advanced by a presidential decree, and it was developed as a double track using Indonesia's domestic budget in 2001. Segment 3 (Kadokangabus-Cirebon) was an ODA loan and the construction of the double track was completed in 2007. However, with regard to the automatic signaling facilities, the Japanese side assisted all the segments including segment 2 with an ODA loan and support was provided in order to maximize the effect of double tracking, including the installation of station wiring and establishment of an operation management center (in Cirebon station).



Figure 2-12: Double-Tracked Sections on the Java Lines

The double tracking has contributed not only to the expansion of transport capacity but also to improved safety. Among others, the section between Cikampek and Cirebon where trains of the north and south lines join together, there were frequent human error accidents every year when it was a single track. Moreover, the travel speed of the train also improved, and the time required for the Cirebon Express Train connecting Jakarta and Cirebon was

shortened from 4 hours to 2.75 hours, and the number of operations was increased from 3 round trips per day to 5 round trips. Reduction in train service delays has also been reported and the operation has greatly improved.

Regarding double-tracking projects, the pool of local consultants has increased and double-tracking works without signal improvement have been progressing steadily utilizing domestic budget. The DGR, the executing agency of the project, completed the double tracking up to Semarang on the north trunk line using domestic budget at the end of 2013. Then, two years later, they completed the double tracking to Surabaya in 2015. Furthermore, they are planning to promote double tracking throughout Java island by 2030. As for the Java north trunk Line (Jakarta-Cirebon-Semarang-Surabaya), JICA has begun a study on faster train service through further improvement of the existing lines through grade separation of the railway crossings, etc.

In the 2000s, in order to cope with the increasing transport demand and the shift in demand from road to railway, Japan's ODA has supported new railway construction and railway capacity enhancements (double tracking, etc.) such as: the "Railway Double Tracking on Java South Line Project" (2004, 2007), which continued from the 1990s; and the "Railway Electrification and Double-double Tracking of Java Main (Bekasi) Line Project" (2001) in the Jakarta metropolitan area implemented through Japan's ODA loan.

Furthermore, the "Construction of Jakarta Mass Rapid Transit Project in Jakarta" (2006, 2009), which includes the construction of the first subway line in Indonesia, was also implemented with Japan's ODA loan. This project aims to increase the passenger transport capacity in the Jakarta metropolitan area by constructing a mass rapid transit (MRT) system (15.7 km) including the first subway line in Indonesia. It will help improve the investment climate of the country including better logistics efficiency and reduce air pollution by alleviating the traffic congestion in the metropolitan area. Improvement of urban transport services is indispensable for the entire transportation in the Jakarta metropolitan area. Through the synergetic effect with the above-mentioned "Jabotabek Railway Modernization Project," which was funded by Japan's ODA loan, this MRT project is expected to accelerate shift of middle- or high-income people to railway transport and alleviate the road traffic congestion by shifting from automobiles even for travel within the central area, with the benefit of improved environmental quality. In addition, in terms of the novelty of this project, new technologies are also being transferred to the Indonesian side such as the shield construction method and underground continuous wall construction method for the tunnel section and balanced cantilever method in the elevated section.

In addition, a project entitled "Improvement of Railway Safety Management" (2004, 2005) was implemented as a technical cooperation, with secondhand Japanese train cars provided through grant aid in order to replace the aging fleet and increase railway transport capacity, and experts dispatched to improve safety in light of the frequent railway accidents and to ensure safe transportation. In recent years, East Japan Railway Company (JR-East) has started assistance to Jabotabek Commuter Rail Company (PT. KCJ) since 2013 by dispatching engineers for the purpose of enhancing safety and maintenance skills including checking at the start of work, employee awareness on safety, procurement of necessary spare parts from Japan, etc. Furthermore, introduction of Japan's FeliCa system is also being studied; thus, software support is in progress as well.

2.3.3 Aviation

From the 1970s, the transport needs of not only sea transport but also air transport increased greatly as a key transport mode connecting the islands of Indonesia, an archipelago. In light of this, Japan started assistance in the aviation sector mainly with ODA loan projects for the development of airport infrastructure such as the “Bali International Airport Construction Project” which was preceded by a feasibility study (F/S) and the “Engineering Services for Padang Airport Development Project” in Sumatra. Bali International Airport is a gateway to Bali island, which rapidly grew as a world-famous tourism destination due to the Indonesian government’s tourism development policy since the 1970s of earning foreign currency, and ODA loan projects for the expansion of the runway and construction of terminal buildings and other facilities were implemented twice, that is, in 1987 (for Phase I) and in 1994 (for Phase II), following the F/S conducted in this period.

BOX 2-3: Bali International Airport Development Project

Cooperation period: From 1981 to 2001

Bali International Airport is the gateway to Bali island, the largest tourist destination in Indonesia, and it is the only air access route there for travelers from overseas. According to the master plan formulated by the Indonesian side in 1975 (with a target year of 1995), DC-8 and DC-10 classes are assumed to be the targeted aircraft, but B-747 which started services in the 1980s was not included. For this reason, the Indonesian side was aware of the urgent need for airport development to accommodate large aircraft and maintain safety. For Phase 1 of the project using ODA loan (including raising the bank of existing runway, runway extension from 2,700 m to 3,000 m, apron expansion, construction of a new international departure building, expansion of the existing domestic departure building, construction of a new cargo terminal building, construction of a new control tower, etc.), the F/S began in 1981, followed by the D/D, and construction began in 1989. Since the existing international airport was still operating, this project had to be carried out without disturbing the safety and operation of the scheduled flights by coordinating efficiently with the related contractors to carry out the complicated work. Maximum consideration was given to maintaining the safety of passengers and aircraft. Though there were some problems in the course of the project, Phase 1 project was completed in October 1992.



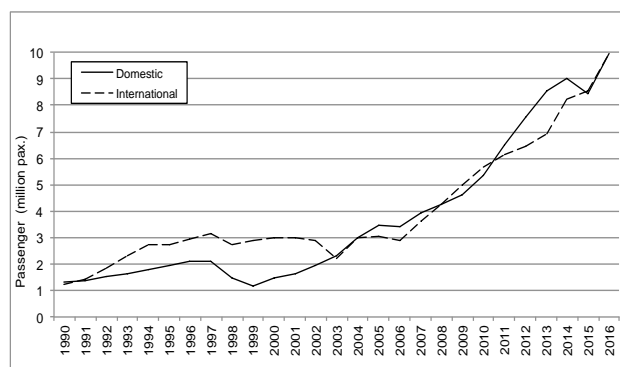
**Newly Constructed International Terminal Building
(Presently Domestic Terminal)**



Looking from the West toward the International Apron and Terminal

However, in 1992, when Phase 1 was completed, the airport showed an increase in air passenger demand, which exceeded the annual number of passengers targeted in 1995. Accordingly, there were problems such as shortage of parking space, infringement of safety zone around parked aircraft, and capacity shortage of terminal buildings and various supply facilities. The Indonesian side decided to revise the existing master plan because it was feared that unless further work was not carried out immediately, the air transport demand would significantly exceed capacity very soon. Decision was made to launch Phase 2 development project targeting 2005 for completion. Including development of a taxiway, expansion of the aprons, expansion of the international and domestic passenger terminal buildings, etc., Phase 2 project was implemented using ODA loan. Similar to Phase 1, the airport operation continued during the construction. The work schedule was formulated and implemented

very carefully, and each airport facility was handed over to PT. Angkasa Pura I immediately after completion and was used for airport operation. Although Phase 2 was completed in 2001, air passenger demand dropped in the meantime, due to the Asian Financial Crisis that occurred in 1997 and the political instability following the collapse of the Suharto regime in 1998. In addition, even after completion, the Bali bombing incident in 2002 and the severe acute respiratory syndrome (SARS) epidemic of 2003 also had a negative impact on passenger numbers and other indicators.



Source: PT. Angkasa Pura I

Figure 2-13: Number of Passengers at Bali International Airport

However, since the Bali airport has had the largest number of foreign visitors to Indonesia since 1998, the need to expand its functions as an international airport has consistently been high. Furthermore, the five-year regional development plan for Bali Province (RENSTRA) focused on revitalizing the economy through tourism development and narrowing the disparity in the region, and this also matched with the direction of regional development. Since 2004, passenger demand at the Bali airport has continued to grow steadily along with the development of economy and air transport in Indonesia, and in 2009 the number of passengers exceeded 9.25 million which was the airport capacity targeted by the Phase 2 project. The project’s purpose of “responding to future air transport demand” had been achieved.

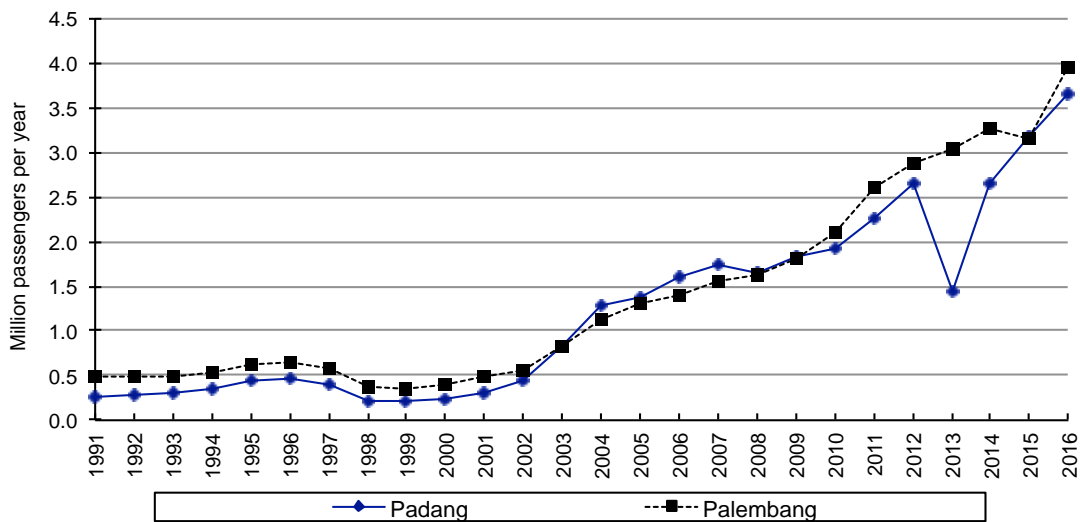
In parallel with the Phase 2 development project, work on Phase 3 and the Phase 4 development was also carried out. The Phase 3 development project, which included the construction of an international passenger terminal building, started in 2011 funded by the current state-owned airport management company (PT. Angkasa Pura I) and it was completed in 2013 before the 2013 Asia-Pacific Economic Cooperation (APEC) Summit at Bali. Although the annual airport capacity was raised to 20 million passengers, the growing passenger demand is about to exceed 20 million. In Phase 4, the plan is to extend the runway to 4,000 m.

Furthermore, in the second half of the 1980s, the “Balikpapan Airport Construction Project” including runway construction d began in 1985.

Since then air transport demand in Indonesia continued to record remarkable growth in tandem with the economic development, and upgrading and capacity expansion to cope with increasing air transport demand became an urgent issue, especially for regional airports the with passenger and freight volumes increasing by 43% and 170% respectively in the ten-year period from 1988 to 1997. However, Indonesia still had limited financial resources and technologies for developing airports by themselves. Hence, based on the development needs of the Indonesian government, Japan continuously provided ODA loans for the expansion of Bali and Balikpapan airports as well as new ODA loan projects such as the “Surabaya Airport Construction Project” (1996), the “New Padang Airport Construction Project” (1996), and the “Palembang Airport Development Project” (1998). Due to the shortage of local funds caused mainly by the Asian Financial Crisis, all the ODA loan projects were delayed; as a result, construction for those projects started in early 2000s and was completed in the mid -2000s.

The figure below shows the trend of annual number of passengers at the airports of Padang and Palembang, which were developed with Japanese ODA. The number of passengers showed a high increase before and after the start of service in 2005. Although there are various factors for the growth of passengers at the airport such as the growth of the Indonesian economy and increase of low cost

carriers, at the very least, one can say that Japan’s economic cooperation has made great achievements in filling and improving the demand-supply gap in the airport sector.



Source: PT. Angkasa Pura II

Figure 2-14: Trend of the Number of Passengers at Padang and Palembang Airports

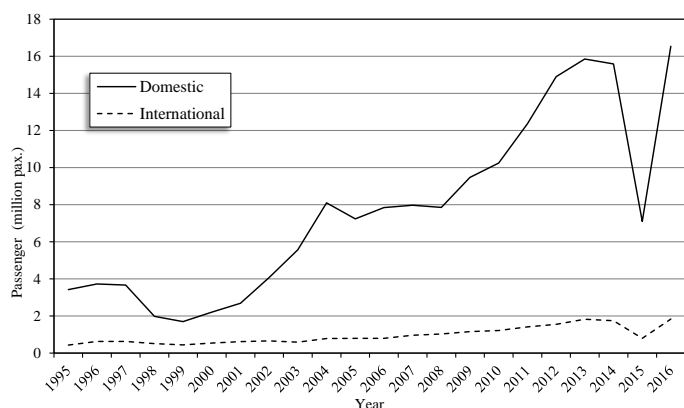
Indonesia’s technical level in the aviation sector also advanced. Construction of the third terminal at Soekarno-Hatta Airport in Jakarta, the new terminal of Makassar Airport, the new Lombok airport, etc., were carried out without relying on external assistance including financing. Also, construction of the new Medan airport and Bali International Airport development project Phase 3 are also under way by the Indonesian side. Due to the economic growth in Indonesia and liberalization of the aviation market, Indonesia has already become a “great power in aviation,” and its growth is expected to continue in the future.

Regarding airport development, the ODA loan project for the development of Surabaya Airport as a hub airport was implemented in the 1990s. Meanwhile, comprehensive technical support for the entire aviation sector has been implemented since the 2000s.

BOX 2-4: Surabaya Airport Construction Project

Cooperation period: From 1992 to 2006

Surabaya is the second largest city in Indonesia and the Surabaya International Airport is highlighted here as an example of hub airport project that Japan assisted in. Between Surabaya and the capital city of Jakarta there are about 70 flights are currently operated daily, and it is among the top ten busiest air sections in the world. Terminal and other facilities used to be shared with the Indonesian Navy. By constructing a new terminal on the north side of the airport and expanding the apron etc., it was able to respond to the increasing air passenger demand.



Source: PT. Angkasa Pura I

Figure 2-15: Number of Passengers at Surabaya International Airport

For Surabaya Airport, the airport terminal facility (51,500 m²) was developed with ODA loan. The first study was completed in 1994, and the terminal capacity 1 was assumed to be 6 million a year. Actual construction started in 2002, and it was completed and commenced operations in 2006. However, the growth in the number of passengers using the airports exceeded the initial forecast and the annual number of passengers in 2007 exceeded the designed capacity and reached 7 million. The pace in recent years has been such that it is about to reach 20 million passengers. For this reason, re-expansion of the terminal building is planned by the state-owned airport management company (PT. Angkasa Pura I), and construction of the second terminal began in 2011, and completed and commenced service in 2014. In addition, the airport access toll road that connects the terminal with the existing toll road is also in service. Airport railway lines are also planned, and a second runway is being studied; thus, further development is expected in the future.



To be more specific, in terms of safety measures, Japan focused on capacity building in legal system reinforcement, air traffic control system, human resource development, accident investigation and so on. Also, from the aspect of security enforcement for peace and stability, “The Study on Security Improvement at Major Airports” was conducted as a development study. Meanwhile, grant aid and technical cooperation projects focusing on aviation safety and airport security were conducted in the wake of a series of concurrent terrorist attacks in the U.S.

Furthermore, as the first step, “The Study on Long-term Aviation Sector Policy” (2004-2003) was implemented to establish a comprehensive framework for long-term aviation policy, an aviation development master plan as well as an assistance program was formulated using Japanese ODA. Above all, for the development of the airports in the Jakarta metropolitan area, the “Project for the Master Plan Study on Multiple-Airport Development for Greater Jakarta Metropolitan Area” (2010-2012) was conducted. Meanwhile, “The Project for Improvement on Aviation Safety Policy” (2010-2015) as a technical cooperation project and “The Project for Improvement of Aviation Safety and Efficiency in the Republic of Indonesia” (2015-2019) as its second phase have been conducted for the purpose of capacity building in applying Air Traffic Flow Management System (ATFM) and Air Space Management System (ASM), capacity building in formulating modernization plans of next-generation aviation security system, and development of a spontaneous reporting system in terms of airworthiness and operation of aircraft. Furthermore, a long-term expert has been dispatched as an “Airport Development Planning Advisor” for the purpose of technical cooperation in airport development in the Jakarta metropolitan area and its PPP scheme since 2013.

As one of the outcomes of the above series of supports for enhancing aviation safety and efficiency, Soekarno-Hatta Airport in the Jakarta metropolitan area, recorded as many as 400,000 landings and takeoffs in 2013 forcing air traffic control to direct aircraft maintain holding pattern for over an hour during busy periods has been able to slightly expand its passenger and flight capacity, and is now functioning with 447,000 landings and takeoffs annually as one of the largest airports in Asia in terms of the number of passengers (about 63 million passengers as of 2017) . Meanwhile, these efforts are still being continued with the aim to decrease the total accumulated holding hours in the air at Soekarno-Hatta Airport by 20% and to reduce the accident rate in Indonesia to less than three for every million flight cycles.

2.3.4 Port

Japan's first ODA projects purely in the port sector focused on supporting economic infrastructure development, promoting oil and gas export, and industrialization that Indonesian government regarded as important in the national development policy as represented by "The Rehabilitation And Improvement Of Palembang Oil Harbour" (1973) and "Dredging at the Mouth of Barito River Project" (1974,1975) in South Kalimantan, as well as the "Lampung Roads and Bakauheni-Merak Ferry Terminal Project" (1972 – 1976), which developed ferry service between Sumatra and Java islands as a project under the Directorate of Land Transport in the Ministry of Transport.

Furthermore, in the 1980s, Japanese ODA in the port sector targeted port development projects in Java, Sumatra, Kalimantan, and Sulawesi islands, covering various contents such as port development, port repair, and dredging. These included not only general port development as basic infrastructure for economic growth but also port development with a specially designated purpose through ODA loan such as the Ache port (fertilizer embarkation), Dumai Port (oil embarkation), and Asahan Port (Aluminum embarkation). Meanwhile, development of international ports, namely, Jakarta, Surabaya, and Medan, which are ranked in the top three in terms of annual container throughput in Indonesia, has been supported by other donors. Japan's largest ODA loan project of a gate port development was the "Semarang Port Development Project," which is ranked in fourth place in terms of annual container throughput.

BOX 2-5: Dumai Port Development Project

Cooperation period: From 1983 to 2008

As an example of regional port development, the development project of Dumai Port, which is the largest port in Riau Province in central part of Sumatra island, is highlighted. Dumai Port contributed to Indonesia's industrial development as a port for shipping out petroleum. First, in the "Dumai Port Development Study" (1982-1983), the master plan of Dumai Port was formulated. Along with the development of the palm oil industry in Riau Province, the volume of cargo handled at Dumai Port was expected to increase rapidly, and the ODA loan of "Dumai Port Development Project" (1984, 1989, 1998) which was divided into three phases was implemented. Particularly in Phase 2 (1989), a berth with a length of 400m and a water depth of 10m was added, and Phase 3 constructed a palm oil storage tank yard as well as a studying further on port development and management plan through a PPP scheme.

Due to delays in bidding procedures and construction delay due to unpredictable rainfall, the 400m-long berth and related facilities of Phase 2 were completed in 1996. Before and after the completion of the project, the cargo volume at Dumai Port increased from 617 thousand tons (1989) to 3.53 million tons (1999) at a rate higher than the original forecast. In addition, the volume of palm oil handled, which as an export product was an important earner of foreign exchange, increased particularly sharply from 234 thousand tons (1989) to 2,441 thousand tons (1999), and work continued under Phase 3, such as the development of palm oil dedicated berths. Phase 3 (1998) was affected by the Asian Financial Crisis, and as a result construction started in 2005 and was completed in 2008.



CPO Private Berth

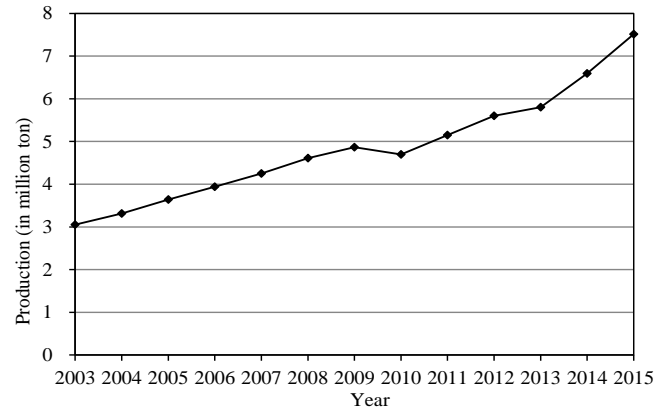


CPO Pipeline (31 units)



Container Yard (Phase 3)

In addition, the “Port Development Long-term Strategy Study” (1997-1998), proposed to revitalize trade by exporting non-oil products directly from the trunk ports and not just from the hub ports (Medan, Jakarta, Surabaya, Makassar) as proposed by the World Bank in the 1960s under the gate port system. In response to this, in Phase 3 of the Dumai Port development project, a terminal for palm oil was developed, making it possible to export directly to Japanese detergent manufacturers, etc. Recently, the amendment of the Maritime Act (2008) was enacted, and Dumai Port is expected to be a main gateway port for palm oil export, and it is a lead example of regional port being developed and operated by the private sector or through PPP.



Source: PT. Pelindo I

Figure 2-16: Trend of Palm Oil Transport Volume at Dumai Port

Following the 1980s, another ODA loan project was implemented for the development of Semarang Port into a major international port in the 1990s. Likewise, for the purpose of coping with the increasing demand for sea transport in Indonesia, export of non-oil products, and developing eastern Indonesia, development of various collector ports such as the “Ujung Pandang Port Urgent Rehabilitation Project” (1990), the “Kupang and Bitung Port Development Project” (1996), and the “Dumai Port Development Project (II)” (1998) as well as the “Ferry Terminals in East Java and Bali Islands Urgent Rehabilitation Project” (1990) were conducted through ODA loan. Sea transport demand and cargo handling at ports increased steadily during this period as well and one can surmise that there was a certain amount of benefit toward economic infrastructure development.

In the 1990s, three major master plans were formulated, and then the projects proposed by them were implemented. One was the “Comprehensive Master Plan on Modernization of Sea Transport in Eastern Indonesia” (1991-1993); the feasibility study proposed by this master plan included 17 transshipment ports and 85 small-medium ports development plans. Development of the above-mentioned ports such as Ujung Pandang (Makassar), Kupang and Bitung were lined up as Phase 1 projects in the master plan with the aim of developing regional economy through port developments in eastern Indonesia.

In addition, following the “National Ferry Network Development Plan (M/P) (F/S)” (1990-1992), ferry terminals consisting of 8 ferry routes (including 6 routes in eastern Indonesia) were developed through an ODA loan, the “Bajoe-Kolaka and Palembang-Muntok Ferry Terminals Development Project.” The above-mentioned “Merak-Bakauheni Ferry Terminal Extension Project (II)” (1993) was

also implemented; thus, the main artery of freight and passenger transport between Java and Sumatra islands was further reinforced.

The third master plan was the “Study on Long-term Port Development Policy” (1998). It reviewed the previous long-term development plan which incorporated the gate-port system (which divided the territory covered by each port) that had been proposed by the World Bank, and formulated a strategic development plan for the port and ferry based on the premise of creating a port that would be a hub for the economic block covering neighboring countries.

As for Japan’s economic cooperation in the 2000s, a development study for the Jakarta metropolitan area, “The Study on Port Development Plan in Jakarta Metropolitan Area” (2001-2003) including Tanjung Priok port was conducted as a port development project in a metropolitan area to promote exports. Then, it was followed by an ODA loan project, “Urgent Rehabilitation Project of Tanjung Priok Port” (2004), and Japan has continuously supported the trade gateway port development, taking the development of new ports in the Jakarta metropolitan area into consideration. In addition, a development study targeting the Surabaya metropolitan area was also conducted, namely, “The Study for Development of the Greater Surabaya Metropolitan Ports” (2006-2007).

In the 2010s, movement toward new port development in the Jakarta metropolitan area has been further accelerated; thus, an ODA loan agreement of the “Patimban Port Development Project” was signed in November 2017 after going through several development studies such as the “Project for Master Plan Study on Port Development and Logistics in Greater Jakarta Metropolitan Area” (2010-2012), the “Preparatory Study on Cilamaya New Port Development Project” (2012-2016), and the “Preparatory Study on Patimban Port Development Project” (2016-). In addition, a long-term expert has also been dispatched as an “Advisor on Port Development Policy” since 2012.

2.3.5 Sea transport

For many years the sea transport sector in Indonesia suffered from the shortage of vessels as well as from the distorted reliance on foreign-registered vessels for both domestic and international sea transport. Hence, there have been many ODA projects from Japan since the beginning starting with the “Surabaya Graving Dock Project” (1971), which originally began as war reparation and was taken over by an ODA loan, followed by various ODA loan projects such as dredge boat building, ferry boat building, and shipyard expansion from the 1960s to the 1970s. The number of sea transport-related projects peaked in the 1970s and 1980s; in this period, there were a variety of ODA loan projects related to navigation facility development such as shipbuilding projects which was also thriving in Japan in those days. In the 1990s, seamen’s capacity building project, and procurement of disaster prevention boats were implemented using ODA loan such as the “Maritime Transportation Sector Loan in Eastern Indonesia” (1991, 1992).

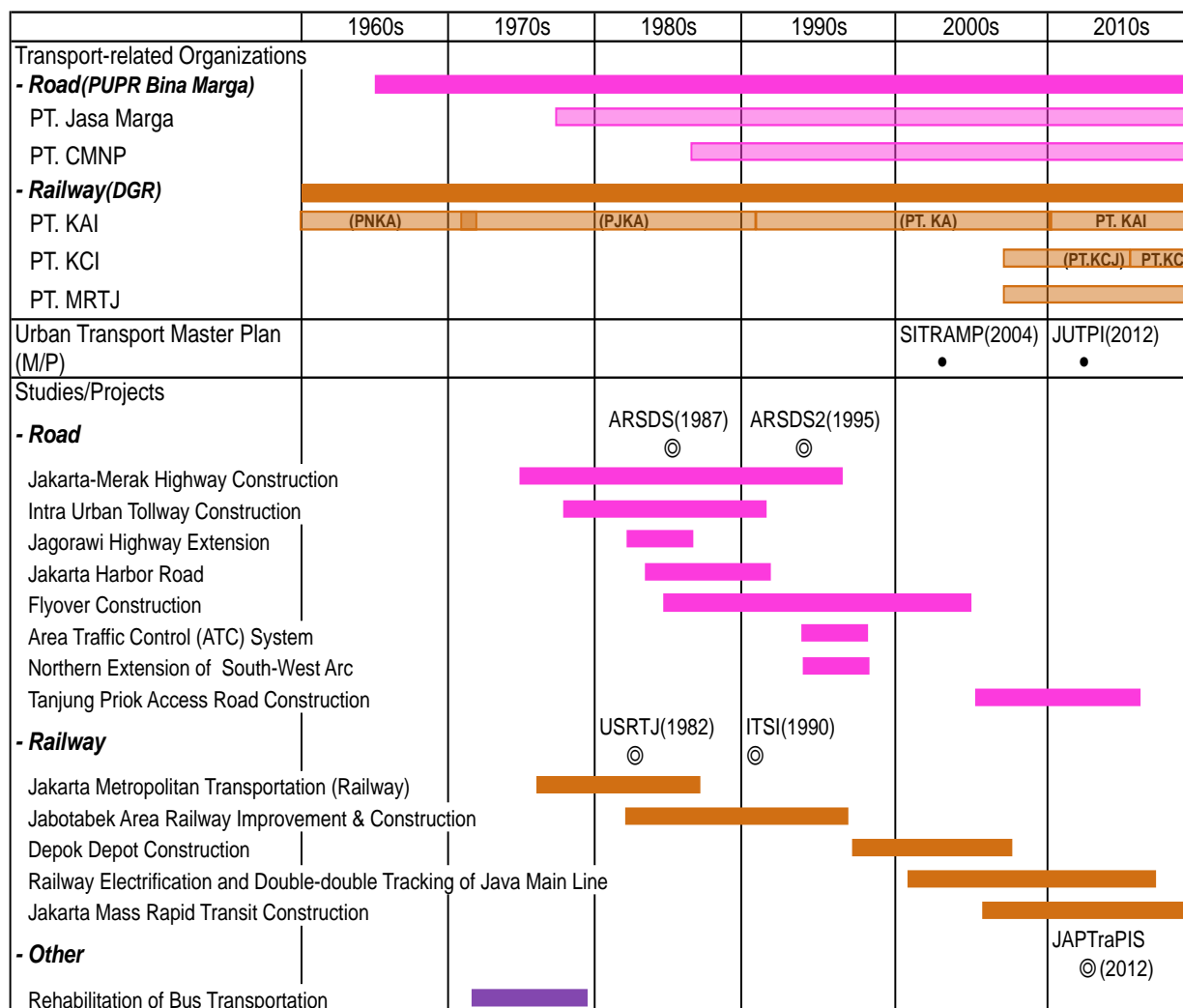
As for Japan’s assistance in domestic sea transport, while there were ODA projects such as the “Sea Transport Rehabilitation Project” (the 1970s) and the “Maritime Transportation Sector Loan in

Eastern Indonesia” (1991, 1992), those were just bundles of individual supporting measures in the field of port development, maritime safety, etc. No ODA focusing on the maritime industry was provided for a long time since a few experts had been dispatched in the 1970s. Then, a development study, the “Study on the Development of Domestic Sea Transportation and Maritime Industry” (2002-2004) was conducted with a comprehensive approach to promote the domestic maritime industry including container berth development and extension at the 25 strategic domestic ports. Based on the recommendations of this study, the Indonesian government promulgated the Presidential Instruction on Promotion of National Maritime Industry Development (No.5/2005). As an effort to turn its contents into reality, a technical cooperation, the “Project on Promotion of National Maritime Industry Development” (2006-2008) was conducted for the purpose of introducing a public vessel loan system to promote the national maritime industry, enhancing the vessel management system to ensure quality vessel, as well as a vessel loan system. Furthermore, “The Study on Port Management under PPP Scheme” was conducted in 2009 as the maritime law reform in 2008 enabled port development and management to be carried out by the private sector or through PPP. Since 2011, this maritime law reform has also led to full implementation of a so-called cabotage regulation which requires all vessels for domestic sea transport to be registered with Indonesia; as a result, nearly 100% of domestic sea transport is now operated by Indonesian-registered vessels.

On the other hand, many development studies, grant aid, and technical cooperation focusing on navigation safety, port security, port maintenance technology, etc. have been conducted with the aim of reinforcing security of ports/sea transport through anti-piracy and anti-terrorism measures. For example, “The Study on Reinforcing Security Measures at Major Trading Ports” (2006) recommended the introduction of cameras and x-ray equipment not only at the four gateway ports in Indonesia but also at trunk ports such as Dumai, Palembang, and Sorong. These were then provided under the grant aid, “The project for Improvement of Port Security System.” Likewise, in an ODA loan project, the “Maritime Telecommunication System Development Project (IV),” wireless stations were installed at several key spots for sea transport along the Indonesian coast, with the aim to preventing maritime distress, establishing a marine rescue system, and taking anti-piracy and anti-terrorism measures. Furthermore, as for “The Project for Enhancement of Vessel Traffic System in Malacca and Singapore Straits” (2008), the Malacca-Singapore Straits is one of the busiest sea-lanes with many shallow areas, reefs, sunken ships, etc., and large vessels such as tankers and container ships sail in a dense traffic on the narrow waterways; thus, marine accidents and piracy incidents occurred frequently. To improve the safety of vessels navigating in the Malacca-Singapore Strait, the development of a vessel navigation safety system, or in this case Vessel Traffic Service (VTS) System was undertaken through a grant aid with a view to improving surveillance of vessel navigation on the sea and at the ports. In addition, the “Technical Cooperation Project on Enhancing of Vessel Traffic Service System Management Capacity” has been implemented for the purpose of training VTS operators since 2015.

2.3.6 Jakarta metropolitan area

The following figure shows the transport projects in the Jakarta metropolitan area that were implemented as Japan's ODA. It was in the 1970s that Jakarta began to explore growth management by metropolitan area rather than in city units. Jakarta could not withstand the rapid population influx, and declared the city closed to shut out further urban influx in 1970; however, the aimed result was not fulfilled. Then, by means of the Presidential Decree of 1976, the concept of a metropolitan area called JABOTABEK was successfully established as a framework of wide-area administration. The first Jakarta Metropolitan Area Development Plan (JMDP) was formulated in 1980 with aid from the World Bank. It was intended to develop the metropolitan area with a multipolar structure promoting east-west urbanization in addition to the then observed southward expansion. The road sector master plan by JICA, the "Arterial Road System Development Study (ARSDDS)" in 1987, mainly followed the same concept; for example, Jakarta Outer Ring Road (JORR), for which a feasibility study was conducted by JICA as one of the arterial roads, was meant to be a limit to restrict further southward development. Even the interchanges on the Jagorawi toll road (opened in 1978) that connects Jakarta and Bogor was limited in number in the southern section of JORR. Instead of southward development, Serpong was planned as a new city and the pressure of southern development was intended to be diverted toward Tangerang (westward) and Bekasi (eastward). In this sense, Jakarta-Merak toll road (Jakarta-Tangerang section opened in 1984) which was developed with Japan's ODA loan and Cikampek toll road (opened in 1988) which was developed by the World Bank and Kuwait Fund played an important role of inducing development to the east-west direction.



Note: CMNP: Citra Marga Nusantara Persada, PNKA: Perusahaan Nasional Kereta Api, PJKA: Perusahaan Jawatan Kereta Api, PT. KA: PT. Kereta Api, PT. KAI: PT. Kereta Api Indonesia, PT. KCI: PT. Kereta Commuter Indonesia

●: Urban Transportation Master Plan Study, ⊙: Master Plan Study in a Subsector

SITRAMP: The Study on Integrated Transportation Master Plan for JABODETABEK

JUTPI: JABODETABEK Urban Transportation Policy Integration

ARSDS: Arterial Road System Development Study

USRTJ: Urban Suburban Railway Transportation in JABOTABEK

ITSI: Integrated Transportation System Improvement by Railway and Feeder Service in Jabotabek Area

JAPTRaPIS: Project for the study on JABODETABEK Public Transportation Policy Implementation Strategy

Source: JICA Review Team

Figure 2-17: Transport Projects in Jakarta Metropolitan Area Implemented by Japan's ODA

BOX 2-6: Transportation Network Development in Jakarta Metropolitan Area

Assistance Period: 1978 to present (road sector), 1979 to present (railway sector)

While the first toll road in the Jakarta metropolitan area, Jagorawi Toll Road connecting Jakarta and Bogor, opened in 1978, there were no toll roads yet in Jakarta that directly connected the radial toll roads such as the Jagorawi and Jakarta-Merak Toll Road, which was constructed with Japan's ODA loan (Jakarta-Tangerang section opened in 1984), and Cikampek Toll Road, developed by the World Bank and the Kuwait Fund and opened in 1988. From 1978, Japan's ODA funded a study of an inner ring toll road that would connect all the above-mentioned radial toll roads. Development of some sections, namely, South-West Arc (Cawang-Pluit) was further implemented including construction of several base flyovers composing the inner ring toll road using Japan's ODA loan; and the sections of Cawang-Grogol and Grogol-Pluit were opened to traffic in 1989 and 1996, respectively. Of the total 274 km-long toll roads in the Jakarta metropolitan area, about 60% were developed with Japanese assistance (of which 98 km were for toll road design).

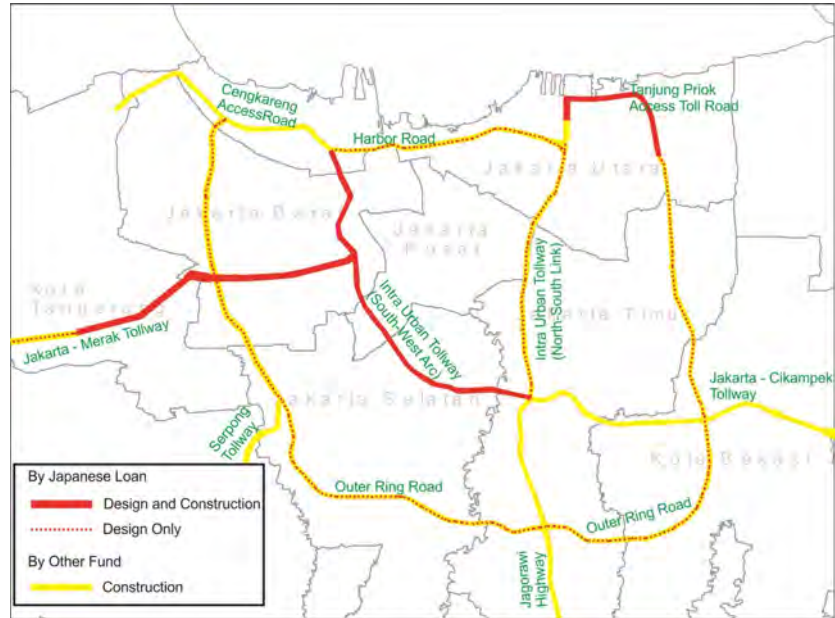


Figure 2-18: Toll Roads as a Target of Japan's ODA in Jakarta Metropolitan Area

Also in recent years, another ODA loan project, the "Tanjung Priok Access Road Construction Project" (2005, 2006) was implemented as part of the support for the industrial parks located in east Jakarta, and was completed for service in March 2017. Furthermore, the development of Patimban Port and its access road is under way as another ODA loan project.

South-West Arc (Cawang-Pluit) Toll road



Angrek Neli Murni Flyover



Taman Ria Senayan Flyover



Semanggi Flyover



Kuningan Flyover



Pancoran Flyover



Cawang Flyover

Meanwhile, the railway ridership demand in Java island at the time showed an average annual growth of 7%; thus, the railway sector was under pressure to develop and improve the rolling stock and infrastructure. The “Jabotabek Area Railway Project” (1982-2001) was a national project designated by a Presidential Decree and was started with the objective of providing a fully-functioning railway system for commuters in the Jakarta metropolitan area. Since the commencement of ODA loan, as many as 18 projects have been carried out such as rolling stock procurement, track improvement, communication facility installation, electrification, railway depot and workshop development, station improvement, automatic signaling system, double tracking, and track elevation on the central line, the majority funded through ODA loan for about 20 years. Implementation of the 26 improvements of the existing railway facilities was in accordance with the recommendations from the master plan that was formulated in the development study, “Urban Suburban Railway Transportation in JABOTABEK (1979-81),” conducted by JICA in 1981.



Manggarai-Gambir-Jakarta Kota Elevated Track



Elevated Juanda Station

For example, the elevation of the Central Line was implemented in accordance with the master plan and was completed in the early 1990s. As a result, congestions and accidents at railway crossings were reduced, bringing considerable benefit to road traffic and the environment. As for Bogor Line, which was quite well developed as an extension of the Central Line, the number of services reached 85 trips/day (one way) in 2002 and as for Bekasi Line it was about 30 trips/day. Considering these facts, Bogor, Bekasi, and Central Lines proved to be effective as an urban train in terms of transport volume. Focusing on commuting morning peak hours, the target of operating at intervals of around 12 to 20 minutes was achieved; in fact, it is operated at even shorter intervals every day.

At present, in order to alleviate the deteriorating traffic congestion caused by the economic growth and population increase as well as to promote the use of public transport, Indonesia’s first subway (MRT) development project is under way in addition to the modernization of the Jabodetabek railway which has been supported by Japan since the 1980s.

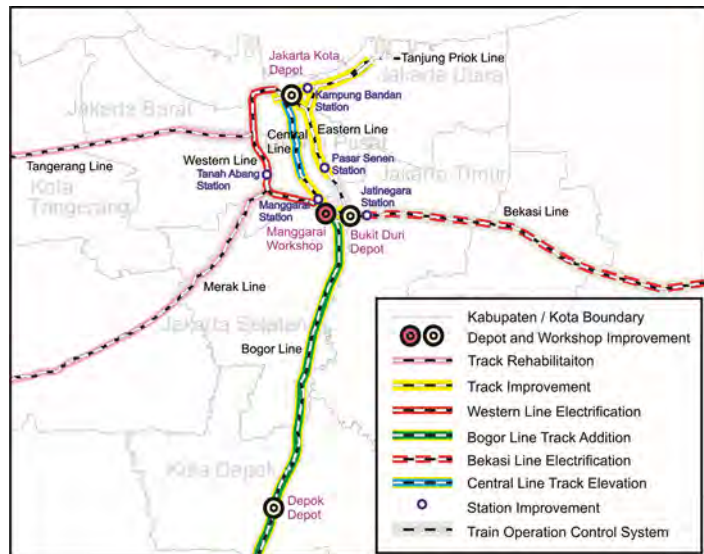


Figure 2-19: Railway Development in Jakarta Metropolitan Area by ODA loan

Until 2000, the transport plans in the metropolitan area were formulated separately: namely, those in the railway sector and those in the road sector. However, deteriorating traffic congestion in the Jakarta metropolitan was causing enormous economic loss, and it was considered important to select projects that would promptly solve the serious congestion problems. Thus, the above idea was replaced by a comprehensive urban transport approach through the formulation of integrated transportation policies across regions and transport modes to alleviate the overconcentration in Jakarta, and a new master plan study was conducted by “The Study on Integrated Transportation Master Plan for Jabodetabek (SITRAMP) Phase 2 (2001-2004).” SITRAMP was not only a comprehensive transportation master plan, but it was also supported by a large-scale transportation database. SITRAMP has been followed by various assistance projects: for example, development of a public transport system such as MRT, development of road infrastructure such as flyovers to reduce traffic congestion, introduction of relevant policies and institutions such as transportation demand management, etc. Assistance in flyover development which started since the 1980s was continued until the 2000s; consequently, at present, 23 flyovers out of total 76 flyovers (or about 30%) in the Jakarta metropolitan area have been developed by Japan ODA.

Furthermore, a follow-up study in the form of a technical cooperation project, the “Jabodetabek Urban Transportation Policy Integration (JUTPI) Project (2009-2012)” was conducted for the purpose of updating the SITRAMP master plan. Currently, based on this urban transportation master plan, the Jabodetabek Transportation Administration (BPTJ) is in the midst of a revision process, adding new projects and plans from the central government agencies as well as the local governments in order to legislating the master plan as a presidential decree.

Meanwhile, Japan’s assistance is not limited to planning. For construction of transport infrastructure as well, Japan addressed the problems of slow speed of toll road development through the conventional BOT scheme and hence supporting operation of toll roads under PPP scheme. Moreover, the recommendations to improve the investment environment based on the issues faced by Japanese companies raised in the Strategic Investment Action Plan (SIAP) put together by the Jakarta Japan Club led to the implementation of the “Tanjung Priok Access Road Construction Project” using ODA loan to support industrial parks in the east Jakarta, and was completed for service in March 2017. Furthermore, as an outcome of the activities in SIAP, increase of traffic capacity on the toll roads (e.g., widening to six to eight lanes, relocation and increase of toll gates, etc.) that connect industrial parks in east Jakarta and upgrading of the road around the industrial park (e.g., widening to four lanes, constructing flyovers, etc.) were agreed upon after discussion with PUPR at that time. Japan has continually supported transport projects in the Jakarta metropolitan area including the above-mentioned port development, because about 40% of foreign investment to Indonesia is directed to the Jakarta metropolitan area and thus improvement of the investment environment in Indonesia is considered to be a highest-priority issue.

Priority infrastructure projects and early implementation projects that have been identified by the MPA Master Plan Study (2011-2012) were included in the request for external assistance, and Japan is

proceeding with the implementation of those projects. Among these projects, the MRT development project is an example that showed a move in the right direction. In Jakarta, where the average travel speed could be as low as 7 km/h during traffic congestion, MPA projects were understood and accepted by the citizens, and implementation was accelerated. Currently, in addition to the MRT development project (North-South Line) (scheduled for service in March 2019), consulting services for subsequent extension of MRT North-South Line and project (E/S) (Phase I) for MRT East-West Line are also being implemented with ODA loan and it is also assumed that Japan would support further need to for strengthen mass public transportation network including a MRT 3rd line as well.

Meanwhile, development study for the “Cilamaya New Port Development Project” to build a new port in Karawang which was selected by the same MPA Master Plan had proceeded as a JICA’s cooperation preparation study from January 2012. However, various problems arose due to decentralization of power and privatization. First, the Ministry of Agriculture objected to the construction of access roads as the area was a “rice-producing area.” In addition, with the objection from the state-owned oil corporation (Pertamina) due to safety concerns about offshore oil and gas facilities and vessel navigation, the Indonesian government nullified the candidate site for the new port despite the fact that it had been a high-level decision. Subsequently the Ministry of Transport of Indonesia conducted a study for an alternative site, and Patimban in Subang District, West Java province was selected. The ODA loan was signed in November 2017 and development of Patimban New Port is currently under way.

2.4 Outcomes/Impacts of Japan's Economic Cooperation and Future Prospects

2.4.1 Outcomes/impacts of Japan's economic cooperation to date

Based on the review of period-specific characteristics and noteworthy achievements of Japan's economic cooperation in the governance sector, major issues, direction of cooperation, implementation areas and project groups are summarized as below. In addition, while a simple comparison of the mode shares of road, railway, air, and sea transport in Indonesia may be quite difficult due to the availability and characteristics of the data, the trend of annual passenger and freight transport volume for each transport mode in recent years is shown in Figures 2-21 and 2-22, respectively.

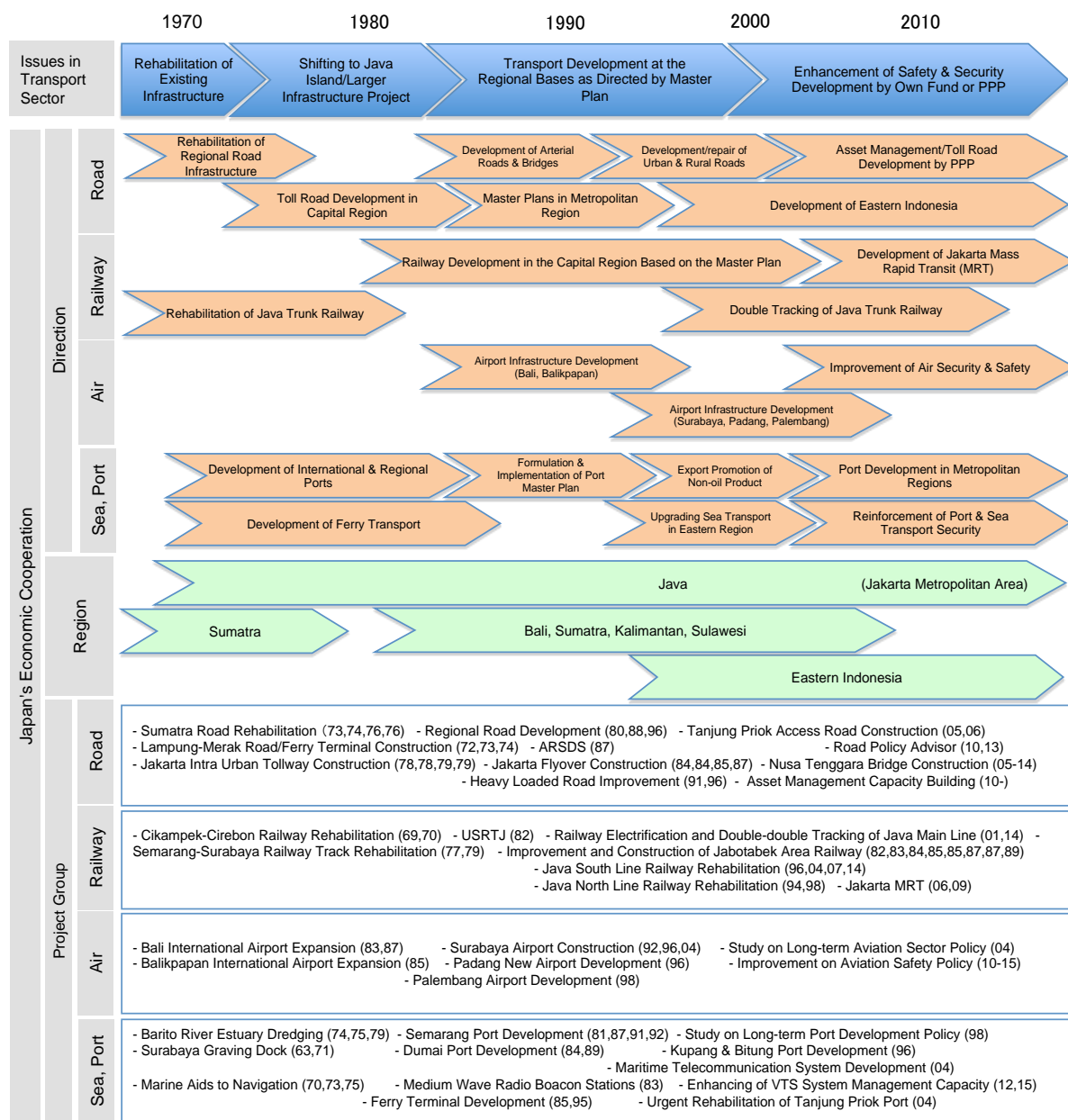
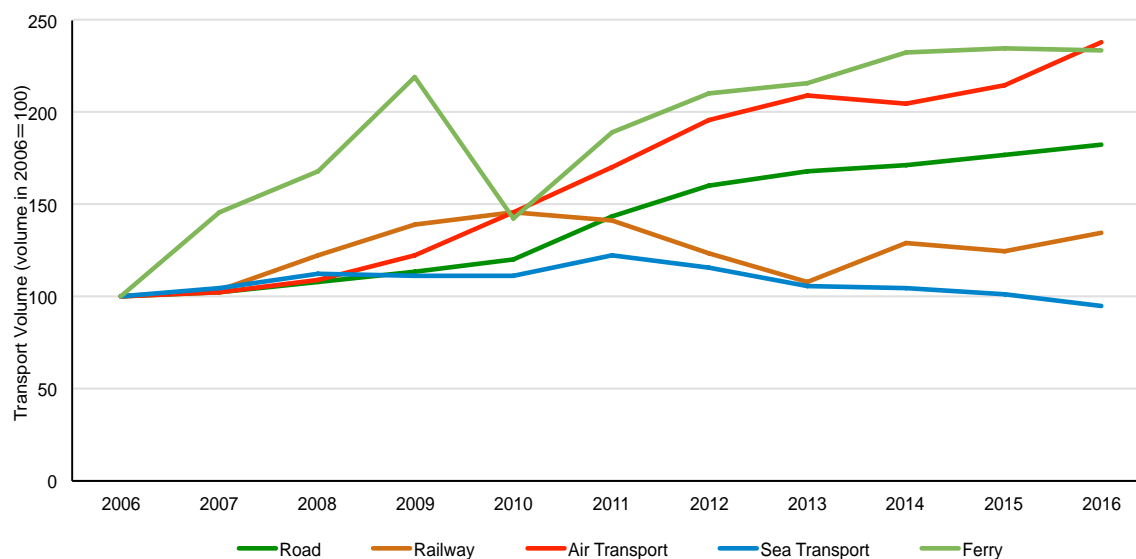


Figure 2-20: Characteristics of Japan's Transport Cooperation



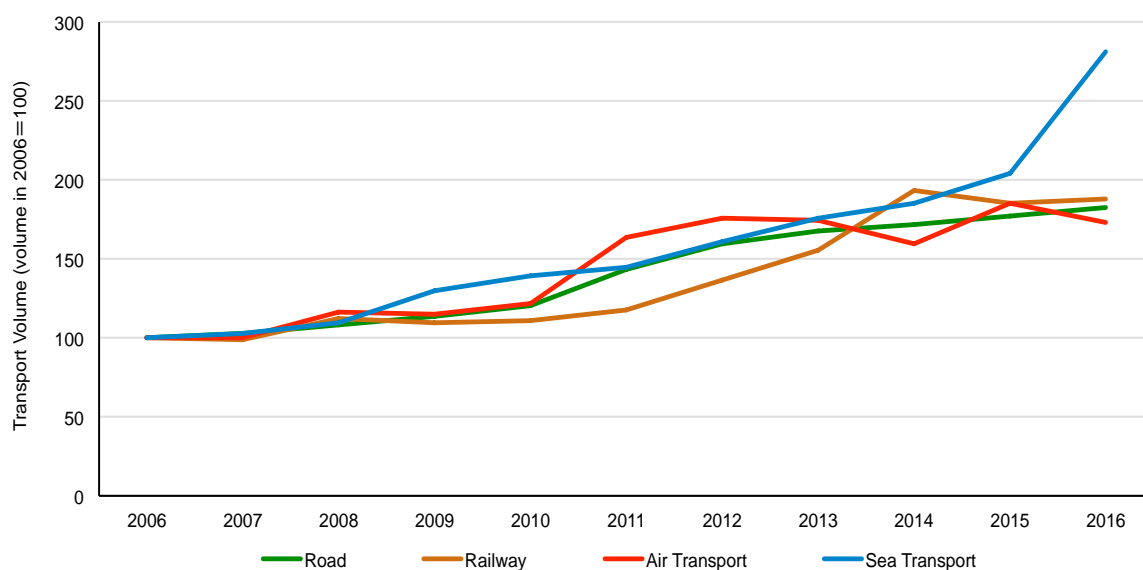
	Unit	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Road ¹	million veh	379	388	409	432	455	547	607	638	650	673	691
Railway ²	million pax	55	57	67	76	80	78	68	59	71	68	74
Air Transport	million pax	67	69	73	83	98	115	132	141	138	145	160
Sea Transport ³	million pax	15	16	17	17	17	19	18	16	16	15	14
Ferry ⁴	million pax	28	41	47	61	40	53	59	60	65	65	65

Note: *1 Total traffic on the major intercity toll roads (Jagorawi, Jakarta-Cikampek, Purbaleunyi, Surabaya-Gempol, Semarang, Palikanci, Belmera); *2 Excluding urban commuter railway; *3 Excluding ferry transport; *4 Short-haul boat service transporting vehicles and passengers under the jurisdiction of the Directorate of Land Transport in the Ministry of Transport

Source: JICA Review Team based on data from PT. Jasa Marga (for road), Indonesia Transportation Statistics (for others)

Figure 2-21: Trend of Domestic Passenger Transport Volume in Indonesia

In terms of domestic passenger traffic volume, except for road transport where quantitative comparison is difficult, air transport has increased sharply in the past 10 years even though it was at nearly the same level as railway transport in 2006, as and is now the major transport mode. Regarding the increase in transport volume, the growth of ferry transport which is considered to be the national highway on the sea has been as remarkable as air transport. On the other hand, the growth of railway transport (excluding commuter railway transport) has been moderate in recent years, and sea transport has achieved a certain level of volume even though it is susceptible to impact from the competing air transport.



	Unit	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Road*1	million veh	379	388	409	432	455	547	607	638	650	673	691
Railway	million pax	17	17	19	19	19	20	24	27	33	32	32
Air Transport	million pax	0.56	0.55	0.65	0.64	0.68	0.91	0.97	0.97	0.88	1.03	0.96
Sea Transport	million pax	221	228	243	286	309	320	355	388	409	450	621

Note: *1 Total traffic on the major intercity toll roads (Jagorawi, Jakarta-Cikampek, Purbaleunyi, Surabaya-Gempol, Semarang, Palikanci, Belmera)

Source: JICA Review Team based on data from PT. Jasa Marga (for road), Indonesia Transportation Statistics (for others)

Figure 2-22: Trend of Domestic Freight Transport Volume in Indonesia

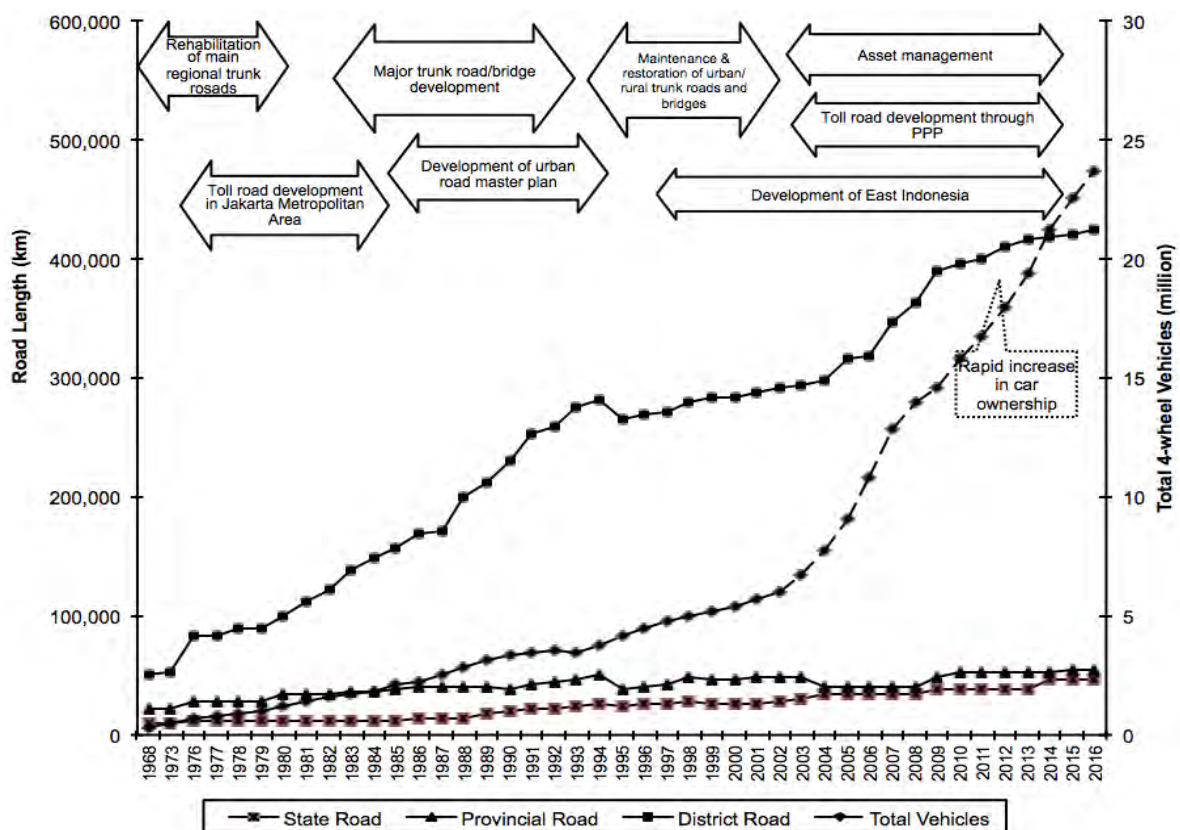
As for domestic cargo transport volume, in contrast to passenger transport, sea transport has surpassed other modes except for road transport, and the transport volume growth has also been the most prominent in recent years. In addition, thanks to the solid economic growth of Indonesia, the transport volume of each mode, road, railway, and air has increased steadily.

The section below presents the trend of the key indicators in each subsector of transport (i.e., road, railway, aviation, and port/sea transport) since Japan began its ODA along with a detailed description of the flow in each subsector.

(1) Road

It is specifically in the road sector from transport that the highest priority and the largest budget was given in PJP-I (1969-1994). Since the beginning of economic cooperation in the 1960s, Japan also continuously assisted Indonesia with the rehabilitation of major regional roads, development of toll roads in the Jakarta metropolitan area, and improvement of roads and bridges, in accordance with the conditions and development policies of Indonesia in each period. In response to the situation in the 1990s, by which time a quarter century had passed since the initial road sector development, the focus was on new issues such as motorization or rapid increase in auto ownership, integrated transport planning with various transport modes, formulation of master plans, and involvement of the private sector in road development. Meanwhile, as the existing road stock had been increasing since the 2000s,

capacity building in asset management and road development in eastern Indonesia have continuously been implemented in order to narrow the economic disparities. Thus, Japan has also been assisting Indonesia in accordance with their above-mentioned needs and priority issues. On the other hand, there were already some cases of South-South Cooperation with PT. Jasa Marga, a state-owned enterprise for road projects, who expanded their business overseas, and PUPR of Indonesia assisting Timor-Leste in capacity building of road maintenance and management.



Note: Upper arrow (\Leftrightarrow) indicates priority field for Japan's cooperation in each period.

Source: Statistics Indonesia 1997, 2002, 2007, 2008, 2017

Figure 2-23: Trend of Road Length by Jurisdiction and the Number of Registered 4-Wheel Vehicles

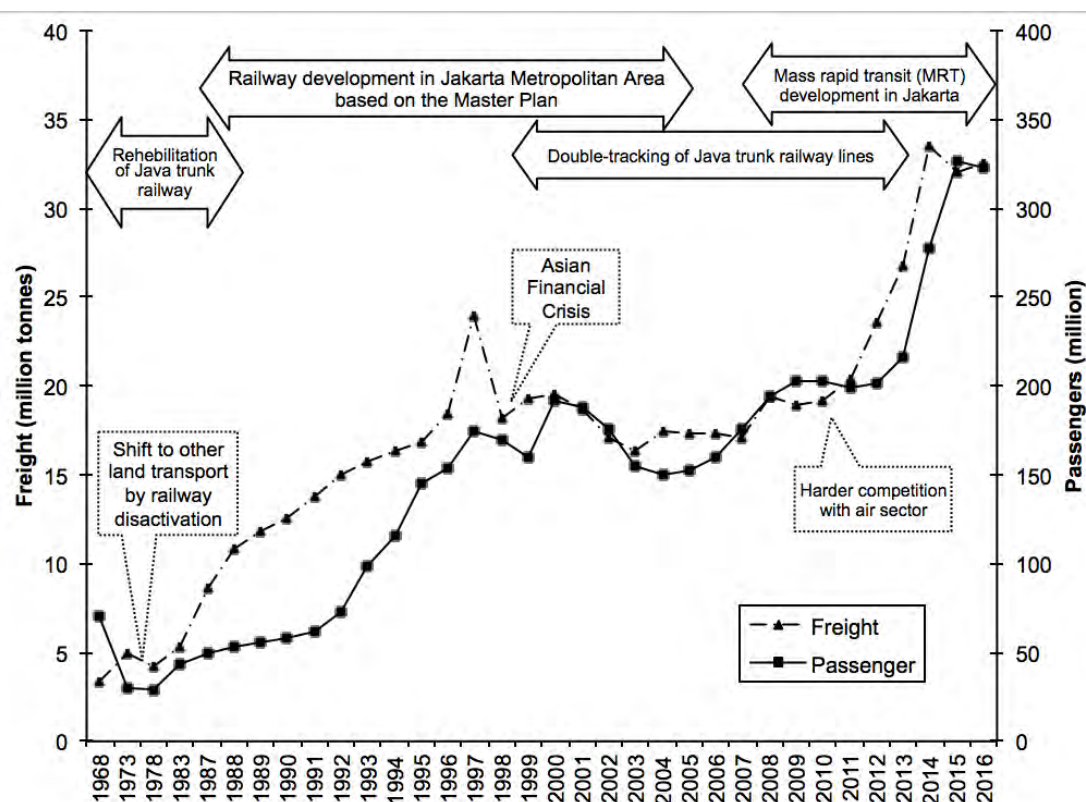
(2) Railway

Development in the railway sector was slow compared to the road sector. The subsequent graph shows the trend of railway freight and passenger volumes. The condition of the railway transportation had been very poor since the beginning of PJP-I in the 1960s. In those days, many railway network sections still utilized 40-year old facilities. A similar situation was observed with the railway bridges, about 70% of which were erected by the Dutch colonial government. Some railway lines were deactivated and substituted by other land transport such as buses. In order to fill in this gap, Japan assisted this sector with many projects, from the rehabilitation of the Java trunk railway track to railway development in the Jakarta metropolitan area in accordance with the master plan. Above all, in the “JABOTABEK Railway Modernization Project” that was conducted by Japan from the 1980s to

the 1990s, Japan contributed greatly to the development of the commuter railway system and increase in ridership. The assistance has continued even till now; the railway electrification project on the Bekasi Line was completed in 2017, and the Jakarta Mass Rapid Transit (MRT) project is underway aiming to start operation in March 2019.

On the other hand, in the commuter railway, the double-tracking and electrification project of the Serpong Line primarily for the commuter service was conducted in 2005 with domestic budget starting at the Tanah Abang and Serpong section. Then, double-tracking and electrification up to Maja was also completed using domestic budget, and currently electrification (single track) up to Rangkasbitung has been completed. In addition, there are plans to electrify up to Merak using domestic budget. Meanwhile, the currently operational Soekarno-Hatta International Airport Access Railway (southbound) was developed with PT. KAI's own fund.

For regional transport infrastructure development, the double-tracking project of the Java trunk line started from the mid-1990s. Moreover, as for the north trunk line (Jakarta – Cirebon – Semarang – Surabaya), a project to further improve the existing line has also started for medium-speed railway service with Japan's ODA.



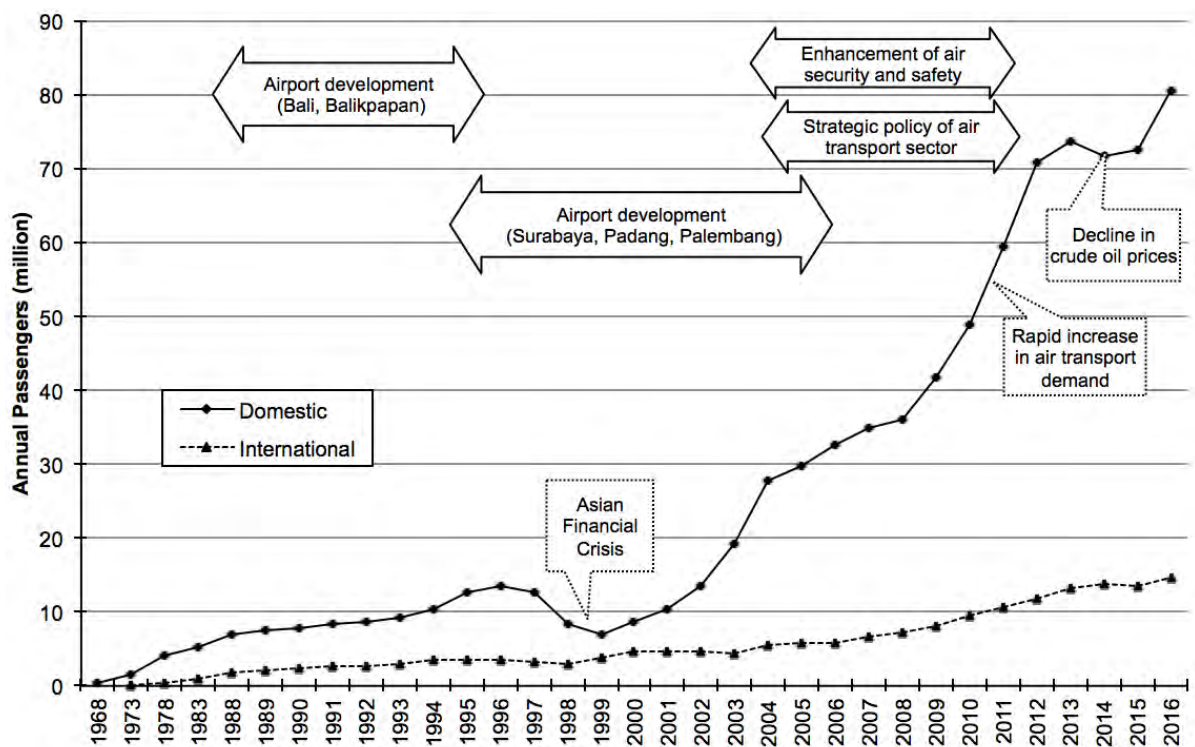
Note: Upper arrow (\Leftrightarrow) indicates priority field for Japan's cooperation in each period.

Source: PT. KERETA API (Persero)

Figure 2-24: Trend of Freight (left axis) and Passenger (right axis) Volumes by Railway in Indonesia

(3) Aviation

Aviation sector has undergone the most change in recent years due to market deregulation and the accompanying sharp drop in airfare. This graph below shows the trend in domestic and international air passenger volumes. In Indonesia where multiple islands exist over a wide territory, the aviation sector has a great potential to be an essential mode of transport, and air passengers have increased rapidly especially on domestic airlines. Japan's assistance to Indonesia in the aviation sector shifted into high gear with the airport development of Bali and Balikpapan in the 1980s. New Padang Airport, and new terminals of Palembang Airport and Surabaya Airport, as a result of Japan's ODA, started operations one after another in accordance with recent rapid growth of air transport demand in the 2000s. In recent years, ODA grant and technical cooperation projects have been implemented for air security and safety system development. Furthermore, the master plan study on the strategic policy for the air transport sector has been completed. As for examples of network development using Japan's ODA, five airports (i.e., Bali, Balikpapan, Surabaya, Padang, and Palembang) were constructed or expanded, and safety facilities were installed at 33 airports.



Note: Upper arrow (⇔) indicates priority field for Japan's cooperation in each period.
 Source: Directorate General of Civil Aviation (DGCA), the Ministry of Transport

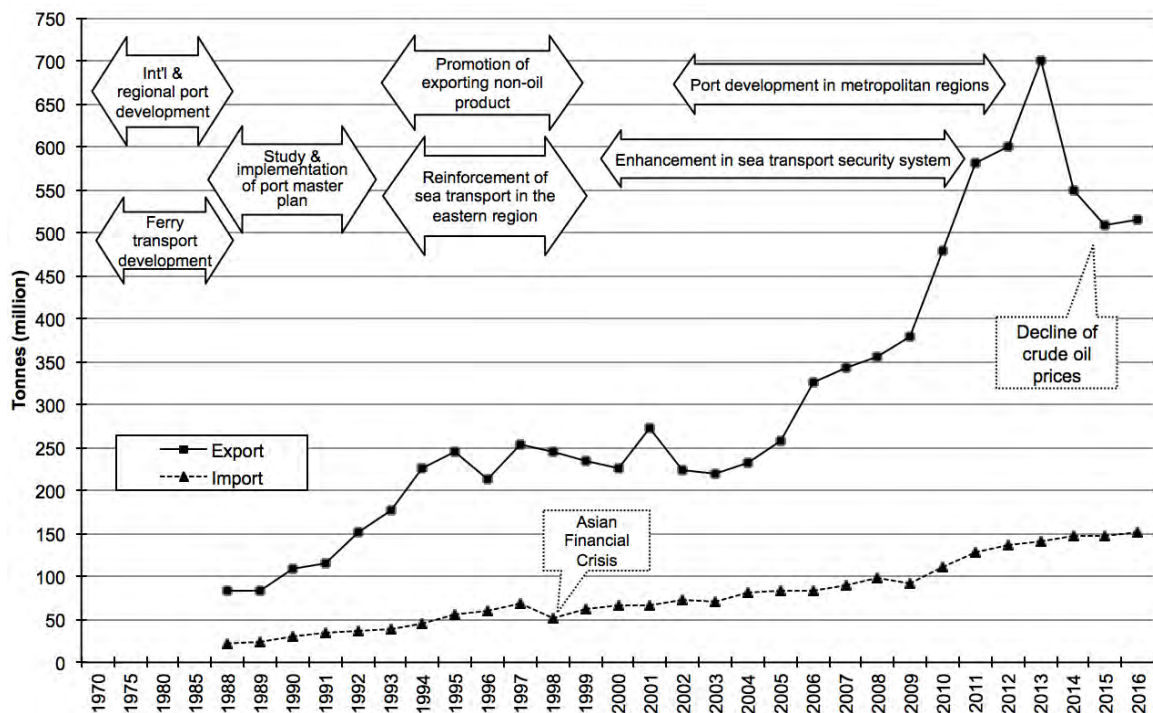
Figure 2-25: Trend in Domestic and International Air Passenger Volumes in Indonesia

(4) Port/Sea Transport

For Indonesia, which is an island nation, sea transport is a vital transportation mode and the market size of both passenger and freight transport is large. Lack of port and sea transport facilities was the largest problem in sea transport since the start of economic cooperation, resulting in poor sea transport

services. The graph below shows the trend in sea transport cargo volumes by import and export. Since the 1960s, Japan assisted Indonesia in basic sea transport infrastructure development such as rehabilitation of sea transport infrastructure, development of navigation facilities, development of ferry transport, and development of international and regional ports, while at the same time contributed to industrialization and export of oil and gas. In addition, since the 1990s, Japan has also assisted in efficient industrial development such as promoting export of non-oil products through the development of regional ports, strengthening sea transport in the eastern region, developing metropolitan ports, and promoting the development of the domestic shipping industry.

As a concrete example of network enhancement, 8 ports out of the 28 gateway ports nationwide, 12 non-commercial ports in eastern Indonesia, and 10 ferry ports nationwide were developed with Japan's assistance. In addition, marine accidents and piracy incidents frequently occurred in Indonesian waters including the Malacca-Singapore Straits. Above all, since 2000, Japan has also assisted in the development of coast stations (coastal radio stations) and installation of Vessel Traffic Service (VTS) for the purpose of improving the navigation safety, faster response in the event of an emergency distress, as well as fulfilling the role of maintaining international vessel traffic safety.



Note: Upper arrow (⇔) indicates priority field for Japan's cooperation in each period.

Source: DGST, the Ministry of Transport

Figure 2-26: Trend in Sea Transport Cargo Volumes by Import and Export

2.4.2 Implications for future cooperation

The World Bank evaluates the international logistics services of each country every two years since 2007. There are 6 evaluation index, such as 1) efficiency in customs and border clearance, 2) quality of trade and transport infrastructure, 3) arranging competitively priced shipments, 4) competence and quality of logistic service, 5) ability to track and trace consignments, and 6) frequency with which shipments reach consignees within schedule or expected delivery times. By comprehensively evaluating those indicators, “logistic performance indicator (LPI)” is calculated and comparison is made by country. As a result, as of 2016, out of about 160 countries and regions in total, Indonesia has placed 63rd (Singapore: 5th, Malaysia: 32nd, Viet Nam: 64th), which is low compared to the neighboring nations. Indonesia is ranked even lower at 73rd for “2) quality of trade and transport infrastructure” (Singapore: 6th, Malaysia: 33rd, Viet Nam: 70th). Since Indonesia is an island country, logistic costs in Indonesia tend to be higher than those not only in neighboring Singapore and Malaysia but also in Vietnam and Thailand. For this reason, strengthening connectivity is vital for Indonesia and Japan regards it as one of the pillars of support for Indonesia.

The current RPJMN (2015-2019) sets the following performance indicators as targets:

- Reduce average handling time of cargo at major ports from the current 7-8 hours to 3-4 hours,
- Reduce total logistics cost from the current 26% of GDP to 19.2%, and
- Reduce travel time in major corridors from the current 2.6 hours per 100 km to 2.2 hours.

Also, the infrastructure development required to achieve this target in the next five years is follows:

- 2,650 km of new arterial roads and 1,000 km of new toll roads,
- 15 new airports and 9 new cargo airports,
- 3,258 km of new railways, and
- Capacity expansion of five hub ports, 19 feeder ports, and 163 ferry ports.

To achieve these infrastructure developments, needs of the necessary investment and its allocation to achieve these infrastructure development targets are estimated in Figure 2-10. As mentioned above, in the transport sector, the investment required is the largest for the port and sea transport sector, followed by the road sector. Of this, about half is expected to be borne by the national budget, and, for the road sector in particular the share borne by the local government is about a quarter of the total. The plan is for the rest to be borne by the private sector and state-owned enterprises. However, in reality even the domestic budget is expected to be insufficient, and that is why Indonesia still must rely on the private sector and development partners.

In the keynote speech at the “Future Perspectives for High-Quality Infrastructure Projects through Public-Private Partnership in the Asian Region” seminar held jointly by JBIC and ADB in May 2017, Indonesian Minister of Finance, Ms. Sri Mulyani Indrawati, explained the measures to encourage

private sector participation categorizing development projects into one for the public sector and the other for the private sector according to profitability and the importance of infrastructure development to achieve regional connectivity.

One can say that for Indonesia, which is composed of large and small islands, its future economic development is highly dependent on the connectivity within and between islands as well as with ASEAN. The government continues to have a major role in transport infrastructure development which is essential for better connectivity. In tandem with that, acquisition of a higher level of technology and skill for maintenance and repair for the completed infrastructure is an urgent issue. For these issues, it is believed that the central government continues to look forward to Japan's cooperation in both soft and hard aspects. Examples of cooperation sectors include regional arterial road construction to reduce economic disparity, upgrading Java north railway line (Jakarta-Cirebon-Semarang-Surabaya), port and access road development in the capital region, and support for aviation security, to name a few. There is also room to consider using ODA loan funds as a direct loan scheme to state-owned enterprises that play a major role in infrastructure development.

In addition, as mentioned above, it is difficult for the public sector and development partners to satisfy the required demand, resulting in importance to reinvigorate infrastructure investment by the private sector. The establishment of PPP related system including a Presidential Decree on PPP (No. 48 of 2005) has been steadily promoted and a framework of government support has already been in place such as guarantee from IIGF (Indonesia Infrastructure Guarantee Fund), VGF (Viability Gap Funding), and AP (Availability Payment). In fact, in the toll road sector, there are already examples of PPP projects using IIGF guarantee. Meanwhile, investment in the transport sector especially by foreign companies is limited, and project finance-based long-term funds are also in a short supply. In order to expand the base of private investment and accelerate infrastructure development, it is necessary to reduce the investment risk for private enterprises by further improving the PPP related system through technical cooperation, and to utilize fund supply through JICA's private collaboration scheme, etc.

Concerning the land acquisition which is listed as one of the major causes of delay in infrastructure projects, a technical cooperation project to strengthen the capacity of the National Land Agency started in fiscal year 2017 and it is expected to effectively tackle the bottlenecks of infrastructure development from multiple levels in the future.

Chapter III Electric Power & Energy

3.1 Summary

Electric Power Sector

The Electric power sector has been one of the key sectors pulling the economic growth of Indonesia. Since the Brantas River Basin Development Project in the early 1960s, Japan has been the top donor in the Indonesian electric power sector, and its average contribution between 1965 and 2016 reached 15.5% of the total capacity of the PLN's power supply (by adding Japanese IPP (Independent Power Producer) participations, it reaches 20.0% of total of Indonesian power supply). This contribution is rather high in comparison with other donor partners (the World Bank accounts for 12.4% and ADB for 3.8%, respectively).

In the 1970s, Japan strategically assisted the electric power system in East Java by building baseload hydro and coal-fired power stations and distribution networks in response to the request from the Government of Indonesia (GOI), whereas France supported West Java, and the USA supported Central Java. In the 1980s, encouraged by the budget surplus from surged oil price, GOI set an ambitious target to increase electric supply capacity to achieve rapid economic growth. Along with the GOI policy, Japan assisted Java electric power system development, and also supported main electric power plants in other islands. In the 1990s, Japan strengthened its engagement in the Indonesian electric power sector by helping to stabilize the entire power system in Java by supporting its main 500kV transmission line (south route) along with the World Bank and other donors, which helped to decrease frequent blackouts. As a side effect, the stabilized network system allowed doubling the capacity of power plant (the upper limit was increased from 300MW to 600MW), and facilitated an acquisition of a construction permission of the Gresik Combined Cycle Power Plant (526.26MW x three units), the first large scale power plant in Indonesia. It enhanced economic activities of Japanese companies in the country.

In addition, in the early 2000s, in order to support the electric power sector suffering from insufficient funds to establish enough supply to the Indonesian economy recovering from the Asian Financial Crisis, Japan arranged emergency assistance to build power plants to avoid a potential electric power crisis which would hinder economic recovery (see 3.3.2). Since the late 2000s, the GOI has shifted its policy towards sustainable growth and decoupling economic growth from carbon emissions by promoting strategic use of clean coal technology, increasing rural electrification, and promoting renewable energy resources with enhancing private sector involvement in power generation. To this end, Japan has provided assistance in policy and institutional improvement in promoting private sector participation, geothermal power development and advanced technologies introduction.

Table 3-1: Overview of the Electric Power and Energy Sector in Japan's ODA

Period	1960s	1970s and early 1980s	Late 1980s	1990s	From the end of 1990s	From the end of 2000s
	Nation-State Building	Economic Development	Structural Adjustment	Growth until the Asian Financial Crisis	Democratization and Decentralization	Middle Income Countries
Historical Context	<ul style="list-style-type: none"> • Cold War • ASEAN (1967) • Inauguration of President Suharto (1968) • Green Revolution 	<ul style="list-style-type: none"> • First Oil Crisis (1973) • End of Vietnam War (1975) • Second Oil Crisis (1979) 	<ul style="list-style-type: none"> • Plaza Accord (1985) • Reverse Oil Crisis (1986) • End of Cold War (1989) 	<ul style="list-style-type: none"> • Asian Financial Crisis (1997) 	<ul style="list-style-type: none"> • Laws on local autonomy (1999) • Millennium Development Goals (2000) • Election of President Yudhoyono by direct election (2004) 	<ul style="list-style-type: none"> • Japan-Indonesia Economic Partnership Agreement (2008) • G20 Accession (2008) • Jakarta Commitment (2009) • Sustainable Development Goals (2015)
Situation of the Sector	<ul style="list-style-type: none"> • Directorate of Oil and Gas established (1961) • Pertamina established (1968) 	<ul style="list-style-type: none"> • PLN established (1972) • Pertamina Crisis (1975) • LNG export to Japan (1977) • Directorate of Energy established (1978) 	<ul style="list-style-type: none"> • Increase of domestic power demand • Electric Power Law (1985) 	<ul style="list-style-type: none"> • Privatization of PLN (1992) • IPP introduction (1992) 	<ul style="list-style-type: none"> • Series of changes on law of oil and gas • Net oil importer (2004) • Geothermal Law (2003) • Crash Program I (2006) • Privatization of Pertamina (2006) • Left OPEC (2008) • Rise of resource nationalism • Energy Law (2006) • Electricity Law (2009) 	<ul style="list-style-type: none"> • Crash Program 2 (2010) • 35GW target • Growing out of oil-dependent economy • GHG reduction • Coal export restriction (2009)
Priority Development Issues in the 5-Year Development Plan	<ul style="list-style-type: none"> • Realization of Indonesian socialism 	<ul style="list-style-type: none"> • Promotion of natural resource development • Utilization of foreign investment and technology (oil&gas) • Oil&gas production increase • Prep. of infrastructure for economic stability 	<ul style="list-style-type: none"> • Prep. of energy infrastructure for domestic supply • Restructuring of Energy related organizations 	<ul style="list-style-type: none"> • Improvement of efficiency of energy use • Electric power supply development to support increasing demand • Enhanced electrification of rural villages 	<ul style="list-style-type: none"> • Urgent power supply after Asian Financial Crisis • HR development • Structuring institutions for public services • Environmental consideration • Sustainable development • Electrification ratio at 67.9% (2009) • Expansion of gas, coal and renewable energy resources 	<ul style="list-style-type: none"> • Introduction and promotion of high technology and environmental technology • Promotion of investment communication • Increase in energy self-sufficiency rate • Electrification ratio at 91.16% (2016)

Direction of Japan's Cooperation	<ul style="list-style-type: none"> • Supply development 	<ul style="list-style-type: none"> • Oil field research • Expansion of supply 	<ul style="list-style-type: none"> • Supply development 	<ul style="list-style-type: none"> • Energy efficiency improvement 	<ul style="list-style-type: none"> • Emergency assistance on electric supply of Java-Bali • Renewable energy • Policy advisory 	<ul style="list-style-type: none"> • Geothermal development • Main transmission line development • Introduction of high efficiency coal fired plant
Outcomes in the Electric Power Subsector						
Outcomes in the Energy Subsector						

Note: Dashed lines in the section of outcomes indicate the impact/spillover effect from the previous period.

Energy Sector

Same as the electric power sector, the energy (natural resource) sector represented by oil and gas has been a main driving force of the Indonesian economic growth. Although oil and gas sector development was highly dependent on the investment and technology brought by multinational oil giants, it significantly contributed to the growth of Indonesian economy by bringing millions from the profit sharing scheme. The Japanese involvement in the oil and gas sector has been driven forward by the private sector by using investing and lending scheme or loan guarantee by the then Export-Import Bank of Japan.

The first oil field development by Japan dates back to 1919. However, it was only after the commercial exploitation by the North Sumatra Marine Oil Development Cooperation Company, established in 1966 as the first investment project by Overseas Economic Cooperation Fund of Japan (then OECF) that the export of oil and gas to Japan was officially operated. Since 1966, oil exploitation operation in North Sumatra, Mahakam and Bunye in East Kalimantan¹ started by signing the production sharing contract between the government owned oil company PT Permina (now PT Pertamina) and Japanese companies. It was the first acquisition of interests by Japanese entities (in 1974, then OECF provided yen loan to the gas pipeline construction between a gas field and the Bontang liquefied natural gas (LNG) production base², and LNG export from the base in Bontang to Japan began in 1977). In the 1970s, as a result of a bilateral conversation, Japan started cooperation in oil and gas field development and rehabilitation. Since then until the export restriction in the late 2000s, Japan had been the number one export country of Indonesian LNG with active participation of

¹ Both projects were implemented as investment projects of “Japan National Oil Corporation (JNOC).”

² Signed on 20th September 1974, “Badak LNG Development Project (24.2 billion yen)” and “Arun LNG Development Project (31.8 billion yen)” according to JBIC. *Kaigai Keizai kyoryoku kikin shi. [History of Overseas Economic Cooperation Fund of Japan.]* Article 3, Section 2. 2003.

Japanese companies. Indonesia is still an important country for Japan from strategic energy supply point of view, even after 2013 when the long-term purchase contract of LNG was aborted by a sudden change in Indonesian energy policy. Still, Japanese companies have been actively creating business opportunities to play major roles in LNG production, such as Donggi Senoro LNG production project³ (with capacity of two million tons per year).

As summarized above, Indonesia and Japan have forged an amicable relationship over years. However, since the late 2000s the shift in Indonesian energy policy to prioritize supply to domestic energy demand for oil and gas brought some changes in the relationship. However, the case is different for coal, which Indonesia recently pays an increased attention to as a stable and rich reserve energy resource. Japan has provided technical supports in coal mining industry by multiple aspects since Japanese companies entered the Indonesian coal mining operation in the 1990s. JICA and some other public institutions supported human resource development as well as technical transfer in test coal mining and development. Having cutting edge clean coal technology (CCT), Japan has provided cooperation in this sector with consideration for the environment and climate change.

³ The first LNG project developed and operated under a Japanese corporation's initiative in the world with JBIC's Project Finance.

3.2 Historical Context and Japan’s Cooperation

3.2.1 Number of projects and commitment amounts

Japan’s cooperation in the electric power and the energy sector started with a hydro power development, which was a project as postwar reparations at first and turned into an ODA loan in the late 1960s. Japan strengthened its engagement in the sector with the ODA loan pledge on the Tanjung Priok Power Plant in 1969. Since then, over 60 years of long period, Japan has provided a large amount of ODA loan, with combination of development study, grant aid, technical cooperation, and scientific cooperation (SATREPS) as supplemental support.

There have been 251 projects implemented under the sector as of December 2017, which can be broken down into seven technical cooperation projects, 78 development studies, 153 finance and investment cooperation (both ODA loans and private-sector investment finance), 10 grant aid projects and three SATREPS projects. 153 finance and investment cooperation projects consist of 108 projects are in the electric power subsector and 45 are in the energy subsector, including seven private-sector investment finance⁴ projects, two in the electric power sector and five in the energy sector. In addition, there are seven projects implemented as Partnerships with Private-Sector Activities and another seven projects under cooperation with the Ministry of Environment and the Ministry of Economy, Transport and Industry.

Table 3-2: Number of Japan’s Cooperation Project by Decade (by scheme)

Electric Power	1960s	1970s	1980s	1990s	2000s	2010s	TOTAL
Finance and Investment Cooperation	1	43	20	23	14	7	108
Grant Aids	0	1	0	3	2	0	6
Technical Cooperation (tc projects and studies)	2	6	18	10	15	8	59
SATREPS	0	0	0	0	0	1	1
TOTAL	3	50	38	36	31	16	174
Energy	1960s	1970s	1980s	1990s	2000s	2010s	TOTAL
Finance and Investment Cooperation	1	41	2	0	1	0	45
Grant Aids	0	0	4	0	0	0	4
Technical Cooperation (tc projects and studies)	0	10	9	3	4	0	26
SATREPS	0	0	0	0	0	2	2
TOTAL	1	51	15	3	5	2	77

Source: JICA Review Team

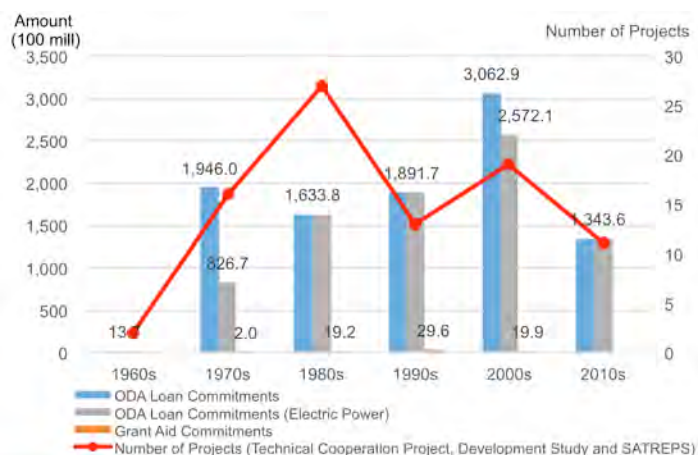
Note: Technical Cooperation includes the number of “Technical Cooperation for Development Planning” introduced from October 1998.

The amount of ODA loan and number of projects by each scheme by decade are presented in Table 3-2. The table shows that cooperation in the energy sector was implemented in the 1970s and 2000s only; in the 1970s, 41 oil and gas field development cooperation projects were concentrated, and in the 2000s, only one project, “South Sumatra and West Java Pipeline Project” (2003-2015) was implemented. The number of projects in schemes other than ODA loan (red line) throughout the

⁴ The projects were: an oil field development project in the 1960s; a hydro power development study, an oil field exploitation project, and a coal mining project in the 1970s; two LNG production plant construction projects in the 1980s, and the Private Sector Investment Finance (Corporate Finance) Loan, “Renewable Energy and Infrastructure Acceleration Facilities” with PT. Indonesia Infrastructure Finance signed in December 2017.

period shows ups and downs, and there is no trace of correlation between ODA loan and the number of projects. Looking only at the electric power sector, the ODA loan has been scaling up since the beginning of the 1970s until the early 2000s.

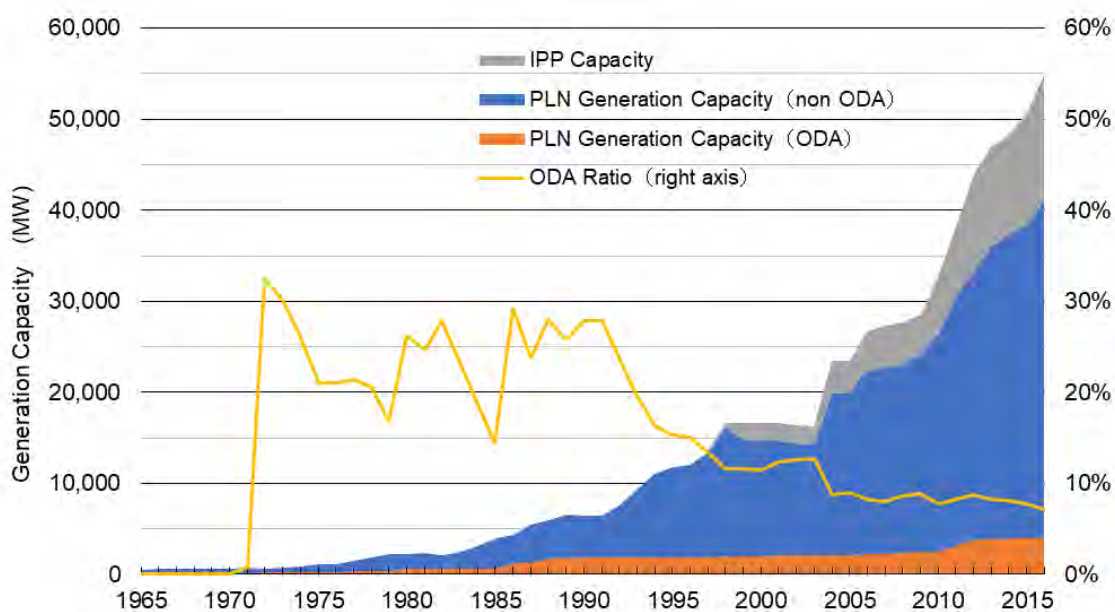
With a closer look at the electric power sector, it is notable that the loan amount per project is increasing by year. The average loan per project was 4.2 billion yen in the 1970s, 7.4 billion yen in the 1980s and 8.2 billion yen in the 1990s, then hiked up around 22.4 billion yen in the 2010s. It can be said that this increase in per-project loan amount is related to the change in project scale at each decade; in the 1970s, the ODA loan was provided for many small scale projects, whereas large scale selected projects were implemented in the 2000s. The change in Japanese ODA loan policy has reflected the prioritized Indonesian energy policies at each decade, such as opening market to the private sector by IPP scheme and promoting Foreign Direct Investment by reducing dependency on ODA loan which requires parliament approval, as well as multiple other factors such as Indonesian financial status.



Source: JICA Review Team

Figure 3-1: Commitment Amounts of ODA Loans and Grant Aid (E/N basis), and the Number of Technical Cooperation (Technical Cooperation Project and Development Study) and SATREPS by Decade

Based on the statistics data until 2016, Japan's ODA loan contribution to the state owned company Perusahaan Listrik Negara (PLN)'s electric power supply capacity peaked at 33% in 1972, then fell down to 17% over the next 10 years. Although the contribution recovered around 25% in the early 1980s, and around 30% in the late 1980s, it showed again gradual decline trend since 1991. As a snapshot of 2016, the average ratio of the total capacity installed by ODA loan against total supply capacity of PLN between 1965-2016 accounts for 15.5% (see figure 3-2), which is relatively significant contribution compared to that of the World Bank (12.4%) and the Asian Development Bank (3.8%). Apart from ODA, IPP with Japanese involvement (through Japanese companies) occupies around 50.9% of total IPP capacity of 13,782 MW in Indonesia. The aggregated electric power supply capacities funded by both ODA loan and Japanese IPP reached 20.0% of total generation capacity of Indonesia as of 2016. Thus, it can be concluded that Japan has significantly contributed to the electric power sector through over 50 years of support.



Source: JICA Review Team based on PLN data and other news reports

Figure 3-2: Indonesian Electricity Supply Development and Japanese Cooperation

3.2.2 Period-specific characteristics of Japan’s economic cooperation for Indonesia in the electric power and energy sector

In this section, the situation of the electric power and energy sector in Indonesia and support of the Japanese government for Indonesia are summarized by period.

- The 1960s: Hydro base power supply development started as postwar reparations
- The 1970s and the first half of the 1980s: Oil field development, and electric power supply and network development in East Java
- The second half of the 1980s and the 1990s: Electric power supply development and restructuring of the sector for planned economic growth
- From the end of the 1990s: Emergency assistance on electric supply and participation of the private sector in the geothermal sector
- From the end of the 2000s: Electric power supply development with environmental considerations and sustainability

(1) The 1960s: Hydro based power supply development started as postwar reparations

1) Situation of the sector

During this period, Indonesia still kept operating old infrastructures for oil and gas exploitation to drive economic growth. In 1960, the Government of Indonesia enacted the “Law of oil and gas drilling”

to introduce an oil business structure under the Profit Share Agreement⁵ with oil majors. This period was under the regime when all oil and gas resources were nationalized. In 1968, three state owned companies were merged into one company “PT Pertamina,” which has since monopolized all the oil- and gas-related business including test drilling, development, refining, and sales over decades.

In the electric power sector, electricity demand was about to grow rapidly due to the steady economic growth. However, the country back then was deeply suffering from lack of electricity supply from its deteriorating system due to insufficient budget for maintenance of electric power generation plants after the independence. One of the typical cases was the Tonsealama hydro power plant in North Sulawesi, where an old generator brought by the Imperial Japan Army during World War II was used as a temporal solution to increase electricity power supply. In 1960, Indonesia was able to supply electricity only around 3W per person⁶.

2) Major efforts by Japan

With acknowledgement of the Indonesian difficulties, in 1968, Japan decided not only to turn its “postwar reparations” hydro project into an ODA loan, but also to provide ODA loan to Tanjung Priok coal fired power plant, which accelerated economic cooperation in the electricity power sector. The power plants built during this period could supply only about 160MW, but its contribution to Indonesia was rather large by equaling to nearly a quarter of Indonesia’s total generation capacity of about 670MW.

(2) The 1970s and the first half of the 1980s: Oil field development, and electric power supply and network development in East Java

1) Situation of the sector

The 1970s was the period when Indonesian energy resource development such as oil rapidly progressed. The first Oil Crisis in 1973 slammed economy of Japan and other developed countries but it gave Indonesia a big leap in its gain from oil export. In the 1970s, the share of oil export in the national revenue (excluding ODA loan from foreign governments) reached around 55%, then peaked at 71% in 1980. Indonesia wisely reinvested revenues from oil and gas export to achieve economic growth.

On the other hand, in the electric power sector, the top priority of the country was to resolve its absolute shortage in electric power supply, and Indonesia urgently developed many hydro power plants as base load plants, and constructed transmission and distribution lines. The commissioning of the Tanjung Priok coal fired power plant (#3 and #4) under the ODA loan received a special attention from the entire nation, which was suffering from a shortage of power supply due to the historic severer drought in 1972 which dried up major hydro power plants.

⁵ “Production Sharing Contract (PSC)” was proposed for the first time in the 1960s over the treatment of the profit of large-scale oil production by Caltech (USA) in central Sumatra.

⁶ According to BPS. *Statistic Pocketbook of Indonesia 1968*, the total electric power supply in 1960 was about 319MW, whereas the population was around 94 million, thus the power supply per capita was about 3.4 W. In 2015, the power supply capacity of Indonesia improved significantly with 216.8W per capita (total supply capacity of 55,394.67GW for the population of 255 million).

In the 1980s, the transmission network in Java Island, which used to be separated into three parts⁷, (west, central and east) was finally integrated by improving the relay system. Due to the better integrated network system in Java, the inefficiency of old power plant fueled by residual oil built by the Crash Program in the 1970s became apparent⁸. Based on the World Bank's proposal, Indonesia built a new oil fired power plant, while slashing the old ones. As a result, the supply margin in Java Island reached 79%.

2) Major efforts by Japan

As a result of a bilateral political talk, apart from regular ODA scheme, Japan promised Indonesia to support oil and gas field development⁹. Between 1973 and 1976, Japan provided loan amount of 110 billion yen for more than 10 oil and gas field development studies and 23 oil and gas field recovery projects, all of which were top listed by the oil and gas state company Pertamina. With the Japanese loan, rehabilitation of oil exploitation facilities, physical survey and test drilling in the new development areas were initiated in Java, Sumatra and Kalimantan. The new oil and gas field development was highly risky but Japanese companies backed Indonesia by supports from Japan National Oil Corporation (then), and succeeded in large-scale oil and gas resource development in North Sumatra and East Kalimantan. Since then, Japanese companies started establishing project companies in Indonesia such as Japan Indonesia Oil Cooperation Company.

In the Alum area in Aceh Province and the Badak area in Bontang (East Kalimantan Province), LNG plants were built by using advance payment to LNG from Japanese companies. Also, the Oil Crisis (October 1973) urged Japan to prioritize Indonesian LNG project and to provide ODA loan though OECF on pipeline construction to supply gas to the two LNG production plants. The two LNG plants had been the strategic infrastructure of Indonesia LNG production



Source: Mitsubishi Co. HP

Tangguh LNG Plant

over 30 years until the construction of Tangguh LNG Plant in Papua in July 2009. Japan also advised Indonesia on finance sourcing. In Baduk LNG project, the Export Import Bank of Japan (then) proposed a “trustee borrowing” scheme to PT Pertamina suffering from short in operation cash. Consequently, Japan enjoyed large amount of oil and gas import from Indonesia (estimated around 27.5% of total oil and gas production of Indonesia were imported to Japan)¹⁰, which became the foundation of skyrocketing economic growth in the Showa era.

⁷ East, Central, and West Java were supported by Japan, the USA and France, respectively, for network construction and operation.

⁸ According to the World Bank's document for Muara Karang#4 & #5, about 600MW of gas turbine plant installed as a crash program was uneconomical to run except for peak hours, and caused the high ratio of the installed capacity to peak demand, which creates system inefficiency.

<http://documents.worldbank.org/curated/en/920321468267039933/pdf/multi-page.pdf> (Accessed in April 2018)

⁹ The ODA loans dedicated to oil and gas field development in the 1970s were based on the bilateral agreement which was outside of the IGGI (Inter-Governmental Group on Indonesia) framework, and it was quite exceptional in the history of Japanese ODA to Indonesia. Since 1992 when the official name of the dialogue was changed from IGGI to CGI (Consultative Group on Indonesia), there has been no ODA loan provided outside the CGI framework.

¹⁰ According to the statistics issued by BPS, the Ministry of Finance of Japan, and BP Statistics, between 1965 and 2016, total oil and LNG produced in Indonesia was 5.1 billion tons (oil equivalent), of which 1.4 billion tons were exported to Japan.

During this period, in the electric power sector, Japan supported Gresik power (100MW, commissioned in 1981), Sagulin hydro power (700MW commissioned in 1986), and East Java transmission line construction project (between 1971-1985), which were network enhancement project connecting total of 800km with construction of nine new substations in East Java, resulted in increasing electrification and stability of electricity supply.

(3) The second half of the 1980s and the 1990s: Electric power supply development and restructuring of the sector for planned economic growth

The situation of the sector and major efforts by Japan

In the 1980s, Indonesia's electric power sector had undergone a rapid expansion period. In order to keep the high pace of economic growth leveraged by the two oil shocks in the 1970s, Indonesia targeted an ambitious 22% growth of electricity supply. Also, in 1985, Indonesia changed its coal mining policy to invite foreign investment, and launched a financial structural reform such as deregulation of investment rules and M&A of banks as an attempt to get out of oil dependent economy. This policy change led a rapid electricity demand increase. On the other hand, the government was in short of budget to finance electricity power supply projects¹¹. Hence, the government amended the law in 1992¹² to introduce IPP scheme for the purpose of promoting private sector investment in the electric power sector and utilizing private investment for electric supply development¹³.

IPP scheme was expected to push down generation cost and conserve fossil fuels by introducing competitive principle into the electric power sector. The government projected a long term high rate of economic growth and started development of an electric power supply system with private fund to expand PLN capacity by five times within 10 years¹⁴. Between 1994 and 1996, PLN signed on 27 power purchase agreements (PPA) of 11,260MW, equivalent to USD 16.5 billion. Among them, there were some large-scale projects originated by Japanese companies such as Piton and Tanjung Jati B power plans. However, due to the Asian Financial Crisis in 1997, many of PPAs were forced to renegotiate with the government.



Source: JERAHP HP

Piton 1 Power Plant

In order to attract foreign investors and to expand IPP scheme, Indonesia needed to promote institutional reform such as privatization and deregulation to increase the degree of financial

¹¹ In the REPELITA VI (1994-1999), the PLN budget was decreased to one third of its conventional yearly budget.

¹² The Presidential Decree No.37/1992 stipulated promotion of the BOO (Build-Own-Operate) model, prohibiting issuing of governmental guarantee, and all payment to be made in Indonesian Rupiah. However, in reality, GOI has issued support letters to IPP projects and PLN has made payments in US dollar in most IPP projects.

¹³ However, from the 1970s PLN has been purchasing surplus electricity from private power generations.

¹⁴ PLN mainly invested as its self-finance projects in rural electrification with diesel generation, gas combined cycle power and coal fired power plant.

liberalization. Japan and other international organizations played an important role in this promotion of liberalization of the industry. Meanwhile, it was necessary to prepare an incentive mechanism in order to invite companies from OECD countries to projects in developing countries because they often entail higher risks. It was during this period when international financial institutions started providing financial, crediting and insurance support on investment and export.

In the electric power sector, IPP scheme started functioning well, but such practice was limited only in the area with large demand such as Java Island, as the private sector was reluctant to take risks and preferred to stay in fossil power plants connected to a large network. This was the main reason why Japanese ODA loan continued to support electric power supply capacity enhancement in East Java (Gresik power and rehabilitation, and Tanjung Priok rehabilitation), and relatively high risk projects like a large hydro power plant construction (Bakar hydro (South Sulawesi), Nurung hydro (North Sumatra), and Pusangan hydro (Aceh) or new electric power supply development in rural area. In 1995, Japan decided to support the 500kV transmission line enhancement in Java which was going to connect between the western and the eastern parts of the island through a new south route. The project enabled efficient supply of electric power from power plants with surplus in the east to the greater Jakarta with the biggest demand in the west. Also, the enhancement of the line between eastern and western Java allowed the government to issue permission on large-scale power plant (600MW class) which taps into the network system. This government decree opened an opportunity to Japanese companies which held competitive advantage on large scale power generation technology. Also, Japan supported Sumatra and Kalimantan in installing large-scale coal fired power plants in the middle of the 1990s.

(4) From the end of the 1990s: Emergency assistance on electric supply and private entry into geothermal sector

1) Situation of the sector

Indonesia experienced relatively smooth growth, but the Asian Financial Crisis slammed it down badly in 1997. Especially, the fall in foreign investment in the electric power sector was significant; after the Crisis, the foreign investment dropped to less than 5% of that of the pre-Crisis period. PLN used to sign an agreement to pay by US dollar for generated electricity. Since PLN revenue was made by the Indonesian currency, PLN suffered from great losses due to the depreciation of the currency, and its financial performance deteriorated significantly. In October 1997, Indonesia bitterly accepted IMF's macro economy program in return of USD 4.6 billion support. The electric power sector, a main industry of the country, was regarded as the most important program of IFM, and Indonesia needed to start a reform of the electricity sector based on a reform policy in 1998. However, due to the Crisis, its power demand went down sharply, thus the need of new electricity supply development was underestimated by both the government and IMF, unfortunately. This way, Indonesia lost opportunities to prepare for future energy shortage.

Along with the recovery of domestic economy, electricity power demand showed increase year by year, and electricity demand and supply balance worsened. This imbalance of demand and supply was

significant in Java-Bali network, the center of politics, economy, and industry. In August 2005, the emergency shutdown of Suralaya power plant operation due to the short circuit in the west Java line caused a shortage of electricity supply, which eventually led a large-scale blackout in Java Island. In Java-Bali network, then, the electricity demand was estimated to increase at a rate of between 6 to 8% annually, and development of new electricity power supply of 1,500MW was deemed necessary. To solve near future electricity shortage, Indonesia set out the first Crash Program of 10,000MW to develop a coal fired power plant (“Fast Track Program” often mentioned as the “Crash Program”), and to increase share of coal to reduce that of oil in its fuel structure¹⁵.

During this period, Indonesian electricity regulation became quite complicated. In 2002, under the enactment of the New Electricity Law, concepts such as “competitive market,” “privatization of electricity industry,” and “deregulation on electricity generation and retail” were introduced toward liberalization of the sector. However, in 2004, the Constitutional Court sentenced the ineffectiveness of the New Electricity Law, and many development projects with private investment faced difficulties to continue. Thus, some temporal solutions were taken. The only one good news to private investors was the enactment of the Geothermal Law in 2003 which opened a door to the private sector in geothermal development.

2) Major efforts by Japan

In line with Japan’s three new ODA strategies to support Indonesia, which are “support for stabilizing economy,” “support for promoting restructuring,” and “support on response to urgent needs such as solution for bottlenecks in economy,” Japan immediately responded to the request from Indonesia on emergency assistance for electric power development in Java-Bali network. Hence construction of four power plants, rehabilitation, as well as South Sumatra–West Java gas pipeline construction to stabilize gas supply to power plants in Java, were urgently undertaken. The ODA loans for Muara Tawar #2 expansion and Muara Karang gasification were a part of the four power plants development projects, and the emergency assistance contributed a lot to Indonesia to survive the medium to long term power shortage. In particular, together with the completion of the 600kV Java-Bali Transmission Line in 2006, the power supply to the greater Jakarta recovered drastically by 2008. Also, Japan supported efficient power generation through the study on optimal electric power supply development (in Java, Bali, Sumatra, Sulawesi), and master plan studies for geothermal development and for small scale hydro power development as well as capacity development for PLN by providing consulting service on efficient operation and technology transfer. In addition, as a part of climate change mitigation measure, Japan supported geothermal development on Lahendong and Ulubelu for promoting its rich geothermal energy as well as improvement of energy policy and institutional arrangement for renewable energy promotion.

¹⁵ Indonesia is suffering from decline in oil and gas production. In 2005, Indonesia became a net oil importer, and since 2000 gas supply to power plants had been decreasing.



Source: JICA website (<https://www.jica.go.jp/oda/index.html>)

Lahendong Geothermal Power Plant

(5) From the end of the 2000s: Electricity power supply development with environmental considerations and sustainability

1) Situation of the sector

While many ASEAN countries suffered negative economic growth right after the Lehman Shock in 2008, Indonesia grew with strong domestic demand supported by stable individual consumption, by keeping approximately 5-6% GDP growth rate. In 2010, GDP per capita exceeded USD 3,000, staying on the right track towards middle-income country. However, since 2011, GDP growth has slowed down. In 2014, GDP growth slowed further due to the drop of prices of oil and other natural resources.

Under such economic circumstances, in July 2014, the newly established Joko Administration put the first priority on economic and social policy to improve social infrastructures such as railway, port, electric power, and started running the country with an emphasis on effectiveness. As a part of efforts for fiscal consolidation, stringent financial policies were taken¹⁶. In 2013, the administration increased the electricity price. In November 2014, the parliament approved the decrease in fuel price subsidy to PLN.

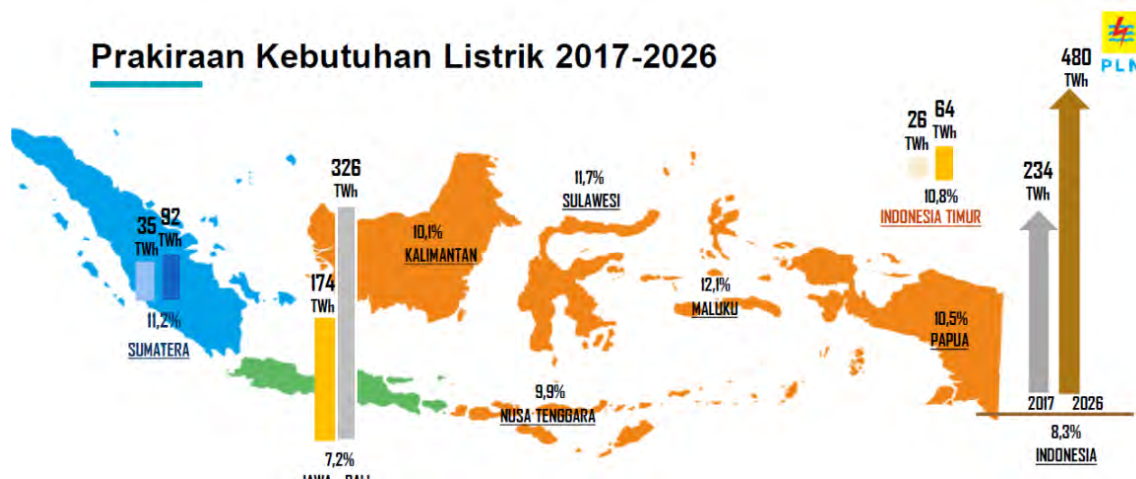
In the area of the electricity legislation, the Electricity Law in 2009 stipulated the supply responsibility of the country, but at the same time business opportunities were created by letting the private sector play some roles in electric power development. In addition, planning of the Energy White Paper (RUKN) and electricity price change used to be under the authority of the President or Minister of Energy and Natural Resources (MEMR), but they came to require parliament approval. Also, in 2009, the decree on energy efficiency was issued to mandate energy monitoring and other obligations for large-scale energy users (consumed more than 6,000 oil equivalent tons per year). In the same year, the system of energy saving labeling certification started.

During this period, Indonesian national budget worsened due to the fluctuation of global oil price,

¹⁶ The cost of oil procurement came to account for 70% of the total fuel procurement costs for power generation due to the global surge of crude oil price since 2005. The subsidies for fuel oil became a heavy burden on financial status of the Government of Indonesia.

which made Indonesia acknowledge its urgent need to promote alternative energy to oil and efficient use of energy. In January 2014, the government approved the presidential proposal on “National Energy Policy (KEN)” to reduce dependency on fossil fuel and promote renewable energy and energy efficiency improvement. The target was set to reduce the share of oil in the entire energy source from 49% to 22% by 2025¹⁷. In case of renewable energy, in 2010, the Second Crash Program started to install total of 9,522MW of geothermal, hydro and other renewable resource within five years by the presidential decree.

Regarding the First Crash Program, China played key roles with its strong price competitiveness by winning majority of projects. However, many projects ended up with postponing the completion of construction until 2014 due to delay or insufficiency in construction¹⁸. Apart from the Crash Program, KEN stipulated the target of 9,500MW geothermal development, which attributes to 7% of total energy supply by 2025. To achieve this target, the key institutional arrangement was made such as the New Geothermal Law (2014), and the Ministerial order on benchmark pricing on renewable energy. Also, the development program on coal utilization in a form of electricity, which is easy to transport, by increasing installation capacity from 44GW to 115GW by 2025 started¹⁹. Under annual average 6% of GDP growth, PLN estimated the supply margin capacity to drop to 5,000MW by 2022 in Java Island, implying that supply margin drop from the current level of 35% to about 13%. Based on its estimation, PLN issued even higher supply capacity target with installation of 125GW by 2025 in its latest RUPTL (2017-2026)²⁰. Regarding nuclear energy, discussions once proceeded to the site selection stage, but currently there are no further discussions on its installation.



Source: PLN Presentation. 2017.

Figure 3-3: RUPTL (2017-2026)

¹⁷ As a part of Indonesia’s policy to grow out of oil-dependency economy, the share of natural gas increased from 20% to 22%, and that of renewable energy from 6% to 23%.

¹⁸ As of September 2017, approximately 2.5GW of 10GW was not yet completed for commercial operation.

¹⁹ MEMR presentation material based on RUKN (2015-2034)

²⁰ PLN’s Director of Corporate Planning suggested a possible review on power demand projection for the next RUPTL (2018-2027).

Other key energy policies are: improvement on energy efficiency (1% increase by 2025²¹); rural electrification improvement (99.35% by 2020 and 100% by 2024²²), and increase of renewable energy share in the primary energy source (23% by 2025). In rural electrification, the government promotes it partially funded by Germany and Korea²³. In renewable energy development, the government is promoting by using private finance scheme, but many projects are said to face difficulties of delay or sometimes cancelation of project. Some of the causes of the delays are related to issuance of governmental guarantee, financing, unprepared plan on geothermal development, issues related to land acquisition process or business license process conducted by local government. In 2017, the government issued the decree to cancel its “Feed in Tariff” system on renewable energy price which used to incentivize private sector participation. Instead, the same decree introduced a ceiling price system, which set a benchmark price based on the fossil fuel generation cost. The two decrees issued by MEMR in February and August 2017 seemed to discourage the private sector to continue to participate in renewable energy development due to the less attractive incentive which introduced regional reference price for negotiation with PLN. This raised concerns among players in the private sector.

2) Major efforts by Japan

In the face of this policy trend, Japan supported the “Master Plan Study on Geothermal Development” (2006-2007) and the “Master Plan Study on Hydro Power Development” (2009-2011) through JICA. Also, in 2017, Japan signed an agreement on corporate finance, “Renewable Energy Infrastructure Facility” which was planned to promote private sector involvement in renewable energy and infrastructure development, as supplement to the existing contribution to geothermal development and low impact technology such as small hydro and run of river technology. Shifting its weight to the promotion of private involvement in renewable energy field, Japan is supporting Indonesia to achieve clean coal utilization and implement climate change measures by transferring latest technology via technical cooperation, the “Clean Coal Technology Introduction Promotion Project,” which supports introduction of IGCC (Integrated Gasification Combined Cycle), super critical and/or ultra super critical power generation technologies.

In Indonesia, where primary energy supply is three times of that of Japan, potential effects to be produced by improved energy efficiency is considerably large. In this area, Japan has introduced an energy manager system and energy labeling through development studies such as the “Study on Energy Efficiency Promotion” (2007-2009), the “Study on Demand Side Management Promotion” (2010-2011) and a road map action plan. In the area of smart community, Japan, through NEDO, has undertaken the first pilot project in Asia since 2013. In the area of clean coal technology and climate change measure, Japan supported a new technology development through a SATREPS project, the “Pilot Study for Carbon Sequestration and Monitoring in Gundih Area, Central Java Province, Indonesia,” a joint research between Kyoto University and Bandung Institute of Technology.

²¹ The definition of “electrification” by the government is electric supply via independent home system with small scale PV, whereas the definition by PLN is an establishment of grid connection to its distribution network system.

²² RUKN (2015-2034)

²³ Both Korean and German governments support their own “Thousand Islands’ Project” to electrify islands other than Java.

BOX 3-1: Support on Japanese companies' activities by other institutions

Financial and insurance services by JBIC and Nippon Export and Investment Insurance (NEXI) have been giving Japanese companies a big push in highly competitive Indonesian electric power market since the introduction of IPP scheme. JBIC, through its "Buyer's Credit" scheme, has provided a loan for PLN funded projects, and since 2012 JBIC has started a direct finance to PLN with government guarantee. In 2016, JBIC ventured to provide a direct finance to PLN without governmental guarantee ("sub sovereign finance"), as a part of strategic support on fiscal soundness of Indonesia. JBIC responded to PLN's request on sub-sovereign finance and showed its determination on continuous support to Indonesia.

3.3 Noteworthy Achievements in Cooperation

In this section, three noteworthy achievements are presented: 1) the Gresik Power Plant in East Java running over 40 years with repeated expansion, rehabilitation, and repowering construction as an example of long term bilateral cooperation; 2) urgent support on electric power supply in Java which sustained the Indonesian economy after the Asian Financial Crisis, and 3) support on geothermal development, which combines the state-of-the-art technology and practical system.

Some of the three achievements might look as an independent ODA loan project or technical cooperation, however, if seen in a bigger framework, all of them were implemented in combination with other cooperation such as a combination of development study and ODA loan, a combination of research and technical cooperation, and a part of a series of technical cooperation.

3.3.1 Gresik Power Plant in East Java

The Gresik Power Plant has a total generation capacity of 2,100MW, the biggest output in Indonesia. It was built to stabilize electric power supply to eastern Java and functioned as a main power supply base for about 32 million people around Surabaya city. In 1997, the total power generation reached around 13% of the total Java- Bali electric network and 66% of the total generation in eastern Java.

Gresik #1 and #2 were built by ODA loan in 1975 and 1977, and started a commercial operation in 1980 and 1981, respectively. Following the Indonesian regulations, it received proper maintenance with full overhaul check every four years, and operated without major problems for 17 years. However, it was found out in 1999 that major parts such as steam turbine blade and nozzles were degraded by the long-term use. The biggest concern was on the efficiency drop (3-9%) due to the damage on the last stage of turbine blade. Gresik #3 and #4



Source: JICA

Gresik Power Plant

were built by ODA loan and grant aid in the late 1980s, and they were reformed by ODA loan so that gas could be used as a fuel in order to meet the latest environmental policy and energy policy of 1991. Indonesia (PLN) tried to modify heavily deteriorated #1 and #2 as a self-finance project, but gave up in the middle of gasification reform due to the lack of finance. Due to this, the Gresik Power Plant operation ratio dropped down from 77% as initially planned to 28-29% in 1997. Under such condition, the Government of Japan provided grand aid to replace damaged turbine blade and nozzles with new ones and to repair a boiler equipped with gas burner, in response to the request from the Government of Indonesia. As a result of the repair works, the maximum output of the power plant recovered to 93-96% and contributed to improvement of environment, which received high repute from Indonesia.

In 2004, 15 years after the construction, a turbine blade dispersal accident was reported on the #3 and #4 turbines. PLN as an operator made necessary and temporary repairs but the output dropped from

200MW to 175MW. There was a possibility of long-term shutdown of the plants if left without proper actions. Back then, in Indonesia the electric power demand was expected to increase annually by 9%. However, construction of new power plants was delayed due to the weak financial status after the Asian Financial Crisis. Serious power shortage therefore was expected in Java. Under such circumstances, the Government of Indonesia acknowledged the need for immediate recovery of the output of Gresik Power Plant and sent an official request to improve #3 and #4 turbines to Japan. The Government of Japan provided grant aid to conduct research for detailed planning and improvement construction work.

Now, 40 years have passed since the construction of the Gresik power plant. Planning of power plant closure has been conducted by Japanese consulting company as the expiration time of the plant is approaching. As mentioned, Japanese support on Gresik Power Plant has been provided throughout its lifespan, from planning to the first construction, reform, and improvement until the shutdown of the plant. It is one of the ideal cases of official support on power plant.

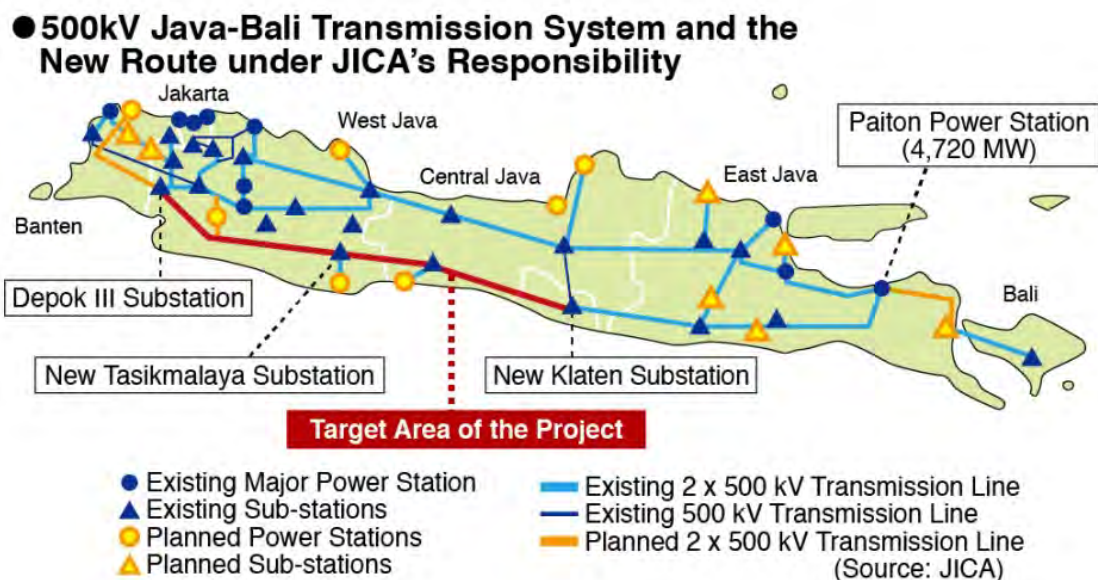
3.3.2 Java-Bali Transmission Line and emergency assistance on electric power supply in Java

In 1995, the Java -Bali electric network system, which provides electric power to the islands of Java and Bali, recorded more than 10% increase in the electric power demand due to the rapid economic growth, and it accounted for more than 80% of the national power demand. To meet such hike in the power demand, Indonesia planned power plant construction programs to newly accommodate 20,000 MW capacity by 2005. Among the electric power demand in Java-Bali, about 50% came from the greater Jakarta in the western part of Java. However, the power supply capacity in the area was not enough to meet such demand, whereas the east side of Java had abundant supply. Since it was expected that such geographic imbalance of electric power supply and demand would remain or rather expand in the future, it was an urgent matter to maintain and expand efficient transmission network between the west and the east.

The “Transmission Line Construction Project in Java-Bali” was planned to construct a new 500kV transmission line between Piton substation in the east, the power supply area, and Depok III substation in the west, the center of demand, running through the southern part of the island and substations (total length was 5,053km, 52 new sub stations by total loan of 20,563million yen (1995-2005)). With this project, the Java Island power network was to be looped together with a 500kV north line, which would enhance the reliability of network system and allow smooth transmission from the eastern part of Java, which has relatively high power supply, to western Java, which frequently has power shortages.

The urgent support on power supply consisting of four power plant projects and a gas pipeline project greatly contributed to the stabilization of power supply in recent years. The four power generation plants were Muara Karang, expansion of Muara Tawar, Semarang rehabilitation and the expansion of Tanjung Priok. These four generation plants with aggregated generation capacity of 1,800MW, which were constructed with 140 billion ODA loan, started operation between 2003 and 2012. Until 2017, all the four plants have been operating without major problems and supplying electricity to the greater

Jakarta steadily. Because the coal fired power plants built as part of the first Crash Program caused loads of unexpected problems, Indonesia increased its interests in Japanese technology by observing smooth operation of gas fired power plant built with Japanese technology. In recent years, Japan has been accepting Indonesian missions consisting of government officers, PLN managers and engineers, and Indonesia academia, and organizes observation visits for them to several facilities of the sector.



Source: JICA Review Team based on JICA. *Golden Year of Friendship 2008 Indonesia-Japan, Japanese ODA Loans to Indonesia*. 2008.

Figure 3-4: Outline of Java-Bali Transmission Line

Expansion Project at Muara Tawar Power Plant, Jakarta
ODA loan approved 18.2billion yen, signed in July 2003

The objective of the project was to enhance the power supply capacity of Java-Bali power network system. The project site was Muara Tawar, located north of Jakarta, which has the biggest energy demand. The most efficient combined cycle power plant was added to the existing capacity. The added capacity was 225MW. It started operation in 2011.



Construction of Muara Karang Power Plant, Jakarta
ODA loan approved 55.8 billion yen, signed in July 2003

The objective of the project was to enhance the power supply capacity, which had decreased since 2000, of Java-Bali power network system. The project changed the existing diesel fired plant to a gas fired one to achieve less CO2emission by increased efficiency. The capacity increased from 300MW to 700MW. It started operation in 2011.



Expansion Project at Tanjung Priok, Jakarta
ODA loan approved 58.7 billion yen, signed in March 2004

The objective of the project was to enhance the power supply capacity of Java-Bali power network system. The project site was Muara Tawar, located north of Jakarta, which has the biggest energy demand. The plan was to build the most efficient combined cycle power plant, as added capacity on the existing plant. The added capacity was 720MW. It started operation in 2012.



3.3.3 Cooperation on geothermal development

With many volcanoes, Indonesia is often reported to have about 40% of the world's potential geothermal resources with estimation of 29,000MW²⁴, and to be the second largest reserve in the world, only after the U.S. The notable feature of Indonesian geothermal resource is the property of steam with high pressure and temperature, thus it is expected that it will play an important role in implementing the renewable energy policy, which aims to reduce Greenhouse Gas (GHGs) emission as well as decarbonization of economy²⁵. The history of geothermal development in Indonesia dates back to the 1980s, when the government held a very positive policy towards geothermal development. With stagnation of geothermal resource development from the repercussion of the Asian Financial Crisis, the Government of Indonesia renewed its geothermal development policy by enacting a new geothermal law to activate private participation. Under this new legislation, the geothermal development by the public and the private sectors was promoted by sharing tasks; resource survey by the government and geothermal energy development by private through bidding process of the regulated Geothermal Working Area (WKP). Also, for the further acceleration of the development, the new Geothermal Law was enacted in 2014 to open the door for surface survey for geothermal purpose in the conservation forest area. The law also shifted the control right on bidding process from local government to the central government, and introduced a new electric tariff. In the past 10 years since the introduction of the Geothermal Law system, there were more than 60 WKP held a bidding process for promoting development activities by state companies and private companies.

It was in the 1980s when Japan started to provide support for the geothermal development in Indonesia. JICA assisted development studies in Lampon and in Kerinci in Sumatra. In case of Kerinci, NEDO provided equipment for test drilling. However, it was after the enactment of the first Geothermal Law in 2003 that Japan strengthened its support on geothermal development with ODA loan on the Lahendong expansion project in Sulawesi (2004) and Ulubelu project in Sumatra (2005). Since then, Japan has supported five geothermal projects with about 58.9 billion yen ODA loan, one development study and two technical cooperation projects. It is worth mentioning that a development study, "The Project for Formulating Master Plan on Development of Geothermal Energy in Indonesia" (2006) played an important role to pave the road for a series of JICA support on the geothermal development. Below is the summary of Japanese support on geothermal development in the past.

(1) The Project for Formulating Master Plan on Development of Geothermal Energy in Indonesia

This project confirmed that the development target in "the Geothermal Development Road Map" prepared by the Government of Indonesia was achievable under some conditions. The conclusion drawn by this project was granted as the green light by the government for inviting the private sector in geothermal development, resulted in encouraging many participations of private companies in the bidding to obtain development license. As a consequence, this project was highly commended by the

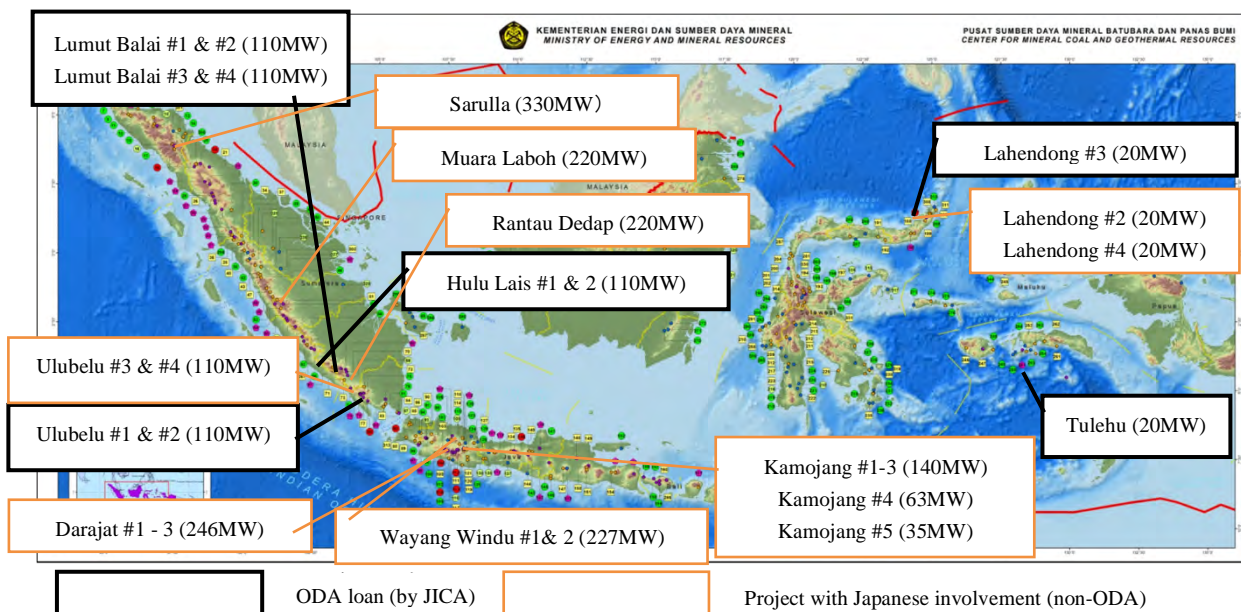
²⁴ MEMR. *Road Map for Accelerated Development of New and Renewable Energy 2015-2025*. 2015.

²⁵ The Government of Indonesia announced its policy to increase the renewable energy target to 23% (9.5 million kW) by 2025 in RUEN.

General Directors of Ministry of Energy and Mineral Resources (MEMR) and the Head of Geothermal Agency. Also, in accordance with the priority list of geothermal development area, prepared as a result of a study conducted by this project, a feasibility study for ODA loan, the “Feasibility Study of Lumut Balai Geothermal Power Plant Project” (2009-2010), was conducted.

(2) Capacity Building for Enhancement of the Geothermal Development

The abovementioned project for developing master plans proposed two basic conditions to achieve goals set by the Government of Indonesia. The two conditions were: minimizing risks associated with the initial investment, and appropriate pricing of generated electricity to justify the investment. As an attempt to minimize risks associated with initial development, a technical cooperation project called “Capacity Building for Enhancement of the Geothermal Development” was implemented between 2010 and 2013 for capacity development in research on natural resource and on identifying reserve. The counterpart of this technical cooperation was the Center for Mineral, Coal and Geothermal Resources (PSDMBP) under MEMR. Through the cooperation, the center received many measurement equipment and resource exploitation technology for enhancing the surface research activities. Especially, the introduction of the electro magnet field exploitation analysis technology, which allowed 3D analysis of the research well, was the state-of-the-art technology in the geothermal industry. As a result, an increase in the number of surface survey per year (from four areas to seven) and issuance of the official “WKP” for geothermal development (70 WKPS as of August 2017), as well as the dramatic improvement in data accuracy and reliability, were confirmed as successful outcomes of the technical cooperation. The improved quality of geothermal resource data disclosed to public by PSDMBP were requested and seen by a number of private companies and encouraged them to actively participate in the bid for development license.



Source: JICA Review Team

Figure 3-5: Major Geothermal Project Funded by JICA or Supplied by Japanese Companies

(3) The Project to Develop Medium and Long Term Geothermal Development Policy in Indonesia

The Government of Indonesia, who evaluated highly the above mentioned technical cooperation, requested the second phase of geothermal technical cooperation. Thus, Japan started implementing “The Project to Develop Medium and Long Term Geothermal Development Policy in Indonesia” since 2014. The technical cooperation was provided: a) to the PDMBP to support reform of geothermal related policy; b) to arrange appropriate structure for “Geothermal Fund Facility (PISP)” (see Box 3-2) operation to the Ministry of Finance, and c) to enhance survey capacity of PDMBP on geothermal resource exploration by using data of resource survey (surface survey) and test well research (targeting, exploitation, layer check, investigation). On the activity over the improvement of PISP, the technical cooperation team has been providing technical advice on the imbalance of risk share in the development phase between the government and private investor, which has been a long-felt concern, and on solution for challenges in fund operation. The further contribution to the actual risk mitigation in the initial stage of development has been one of the highly expected outcomes of this technical cooperation.

BOX 3-2 : Operation of the “Geothermal Fund Facility”

“Geothermal Fund Facility (hereinafter called “the Fund”)” was established in 2011 as an institutional measure to mitigate risks associated with test drillings to check steam conditions at the initial development stage of geothermal project. The size of the fund is equivalent to about 30 billion yen. Since the establishment, no test drill was supported by the Fund yet (as of October 2017). The Fund provided: 1) a finance scheme on test drilling for license holders (both state company and private companies), and 2) a cost recovering scheme for the successful bidder who obtained license after governmental test drilling. Under the current Indonesian regulations, the bid will be opened after the surface survey by PSDMBP, then the successful bidder must conduct a feasibility study with a couple of test drilling. It is said that the cost of test drilling is around 250 million yen per small well, and 700-1000 million yen per standard well. Currently, successful bidders need to take the risk of paying all of the cost. The Fund seeks to improve imbalanced risk share system between the government and private companies, which would help resuming activities in the development region by the existing license holders (brown field development), and to minimize development risks at new development regions. The figure 3-6 shows the schematic image of risk mitigation proposed by the JICA technical cooperation team.

Note: In June 2017, the Indonesian Government prepared a budget of USD 224 million for the Fund. The government made an announcement that its operation could be done with total of USD 280 million budget, by receiving a USD 55.25 million loan from the World Bank.

Image of risk sharing without the Fund

All the bidders develop a possible scenario without knowing the availability of steam, potential power generation capacity nor generation period. The private developers, after obtaining IUP (license for geothermal develop in a certain region), sometimes face difficulties to keep the original power price as the development cost exceeds the original estimation. Also, such developer needs to take a risk of knowing that long-term operation is difficult only after test drilling.

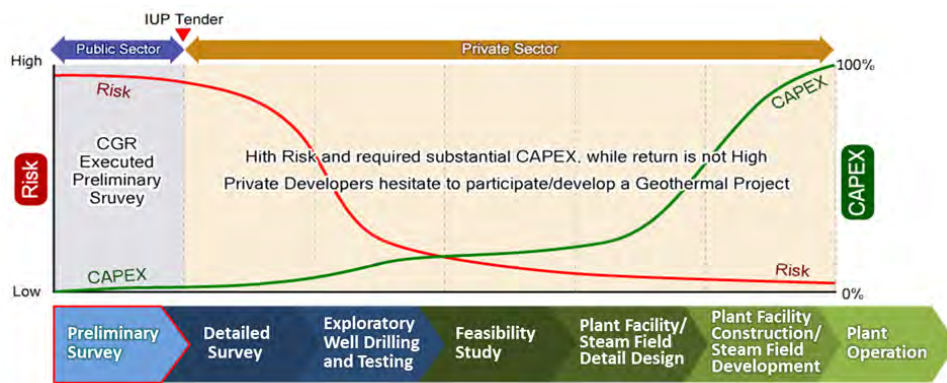
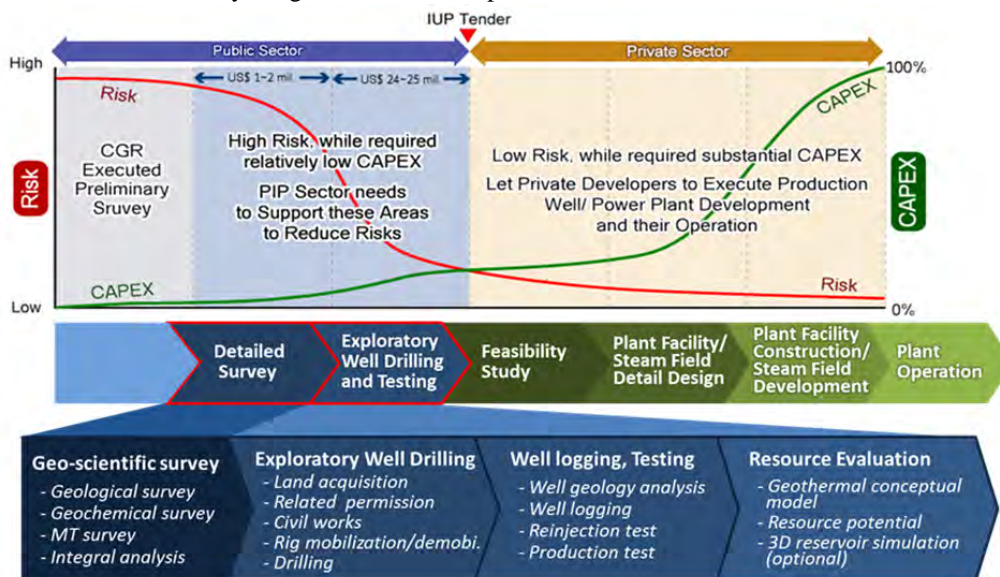


Image of risk sharing with the Fund

Before bidding, the Fund will conduct a test drilling and make steam data available. This way, bidders will have access to better information, which allows them to develop a feasible business model beforehand. Taking the information and feasibility into consideration, they can decide to or not to participate in the bidding process, which would be much less risky for geothermal development.



Source: JICA Project Team for “The Project to develop medium and long term geothermal development policy in Indonesia”

Figure 3-6: Schematic Fund Operation Proposed by the JICA Study Team

3.4 Outcomes/Impacts of Japan’s Economic Cooperation and Future Prospects

3.4.1 Outcomes/impacts of Japan’s economic cooperation to date

Based on the review of period-specific characteristics and noteworthy achievements of Japan’s economic cooperation in the electric power and energy sector, major issues, direction of cooperation, implementation areas and project groups are summarized as below.

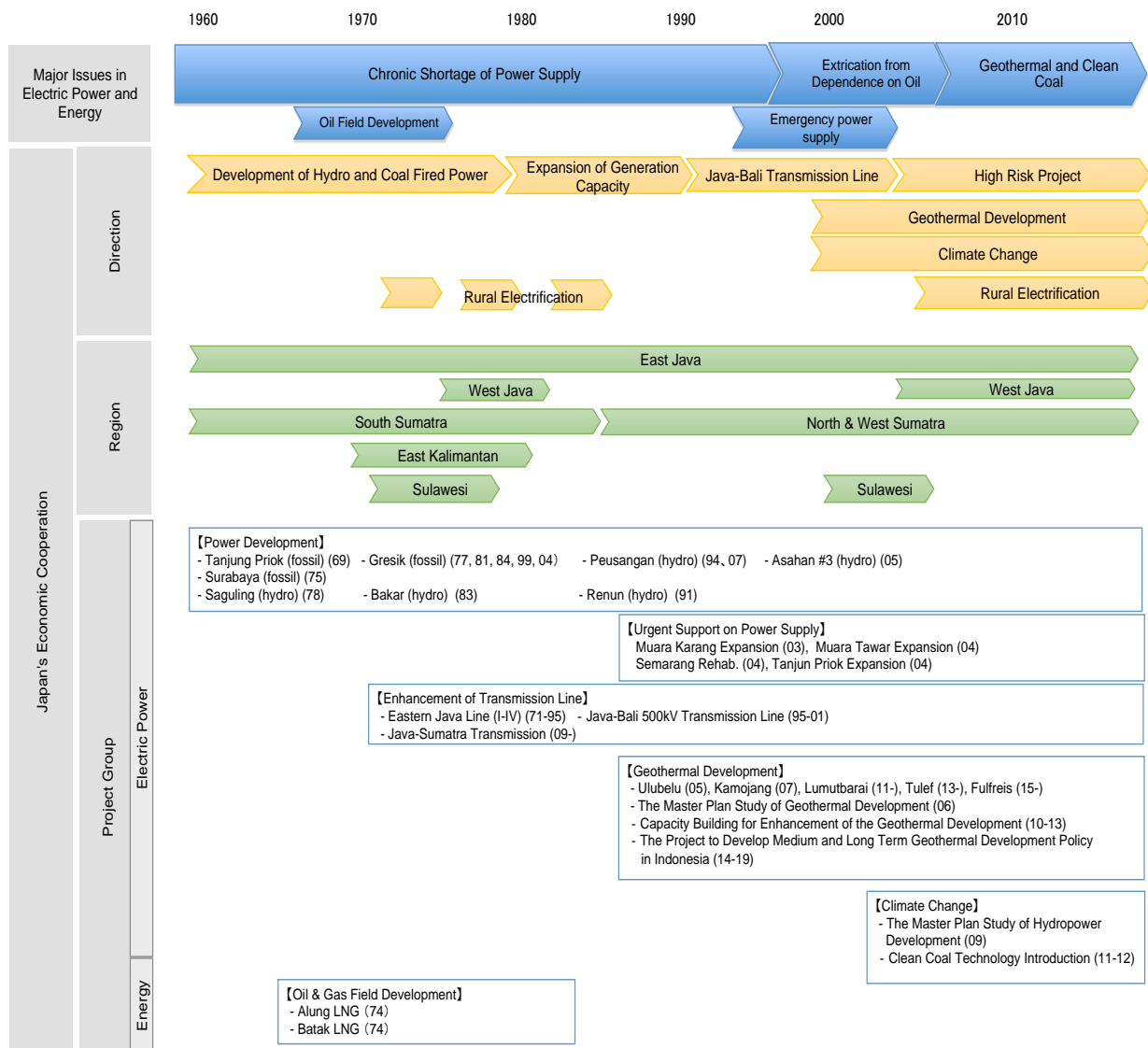


Figure 3-7: Characteristics of Japan’s Cooperation in Electric Power and Energy Sector

Support for the Indonesian electricity power sector from Japan has been undertaken for over many years typically as a set of a development study to check feasibility and an ODA loan to support the construction to build key power infrastructures for the economic growth. Notable contribution of Japanese support is listed below.

- (1) Japan greatly contributed to the stable electric power supply in Indonesia with total generation capacity of 3,948MW by Japanese ODA loans (power plants under operation in 2016). This

capacity accounts for about 9.6% of total capacity of PLN. Total generation capacity including Japanese IPP capacities, which are currently under operation, accounts for 10,963MW, which is about 20.0% of Indonesian total generation capacity.

- (2) The “Java-Bali 500kV Transmission Line Construction Project” completed in 2006 constructed a part of new Java-Bali Transmission south route line, the remaining part of which was financed by the World Bank²⁶. Japan supported the eastern part from Bandon to the eastern end of the Java Island. As a result of the project, the new transmission line was connected to the existing network, and the total electricity transmitted from eastern and central Java to the west became 16,153GWh per year, which accounts for about 23% of total all electricity running through the Java-Bali network. The stabilized network system allowed to reduce the reserve margin from 50% to 34%. Also, the number of blackouts in the entire Java-Bali network system was decreased and achieved the PLN annual target. In summary, the project greatly contributed to correcting geologic system imbalance, increasing supply efficiency and improving response to demand by allowing large quantity of electricity to run from eastern and central Java to western Java.
- (3) After the start of construction of the Java-Bali 500kV transmission line, having estimated the future reinforcement and stabilization of the network, MEMR issued a decree to increase the maximum capacity of a new power plant to connect to the existing network from 300MW to 600MW. Soon after the issuance of the decree, the proposal to install three units of 526MW each with the most advanced Japanese technology at that time and combined with “buyer’s credit” scheme of JBIC won the bid for the PLN self-financed project of the Gresik #5 to #7 (East Java). Since 1992, Gresik Power Plant started its commercial operation.
- (4) The “Java-Bali 500kV Transmission Line Construction Project” has supported the stable power supply to the greater Jakarta, in combination with the four urgent support projects on power supply, which are “Tanjung Priok Power Plant,” “Muara Tawar Power Plant,” “Muara Karang Power Plant,” and “Gas Pipeline between South Sumatra and West Java.” In the 2000s, while power demand increased by 9% annually, large-scale blackouts occurred frequently in Jakarta due to the imbalance in power supply and demand in the greater Jakarta. In August 2005, the circuit shortcut between Cilegon and Saguling caused a sudden shortage of about 2,700MW power supply, which was almost a half of the network capacity. This seven-hour long blackout hit the entire Java Island and affected over 100 million people’s living. The 1,645MW of the urgent support on supply system by Japan contributed a lot to realizing the stabilized power supply to Jakarta and to reducing blackouts²⁷. It is notable that both Muara Tawar and Muara Karang Power

²⁶ The Government of Japan and the World Bank individually signed the loan agreement with Indonesia. Therefore, it is not officially counted as a syndicated loan with the World Bank.

²⁷ As a reference, hours of blackout in Indonesia are shown in the table below. Drastic improvement can be seen since 2011.

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
SAIDI	27.01	28.94	80.9	16.7	7	4.71	3.85	5.76	5.81	5.31	5.85
SAIFI	13.85	12.77	13.33	10.78	6.85	4.9	4.22	7.26	5.58	5.97	4.8

Source: PLN Statistics

Note: SAIDI is hours of blackouts per customer per year (min/year); SAIFI means blackout frequency per customer per year.

Plants were connected the network system from the commissioning stage in response to a request from PLN to stabilize supply by providing generated electricity as soon as possible.

- (5) As one of the results of continuous efforts by Japanese ODA, Japan won the trust of Indonesia on its technology and quality. In particular, the stable operation of the three gas-fired power plants in West Java, which was implemented soon after the difficult first Crash Program, convinced the Indonesian government and PLN of reliability and raised their interests in Japanese technology. As a result, Indonesia sends technical missions consisting of government and PLN officers to Japan almost every year.
- (6) Continuous efforts by Japanese ODA contributed to the capacity development of related Indonesian companies and engineers to maintain Indonesian power supply system. Indonesian companies and engineers accumulated experiences in the latest technology and operation system of power plant through Japanese ODA projects together with IPP scheme introduced in 1992. Technological capabilities of these Indonesian engineering companies have been advanced as evidenced by the increased portion of construction works ordered to those companies. By the 2000s, almost all standard works related to hydro and fossil fueled power plants construction can now be carried out by the local contractors (consulting and construction companies). In particular, in the transmission line construction, since around 2015, the local contractors started undertaking the whole process of works, except supply of special equipment (such as direct current technology etc.) after having experienced Japanese projects in East Java, Sumatra, Kalimantan, and Java-Bali main 500kV line.

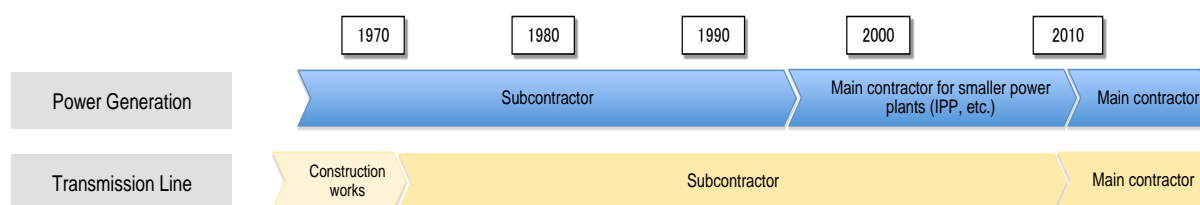


Figure 3-8: Image of Transition of Technical Advancement of Indonesian Companies

- (7) Japan contributed to capacity building of human resources in PLN through its support to prepare master plans. Through many development studies such as the “Study on the Optimal Electric Power Development in Sumatra” (2005-2006), “The Study on Optimal Electric Power Development in Sulawesi in the Republic of Indonesia” (2007-2008), and “The Master Plan Study of Hydropower Development in Republic of Indonesia” (2009-2011), it is confirmed that JICA’s technical cooperation achieved capacity building in power development within the local government, total system planning and manual preparation for the optimal power development planning at PLN, as well as operation and maintenance of PLN and its subsidiary companies.
- (8) Based on 30 ex-post evaluation reports of the past ODA loan projects, there are several lessons learned beneficial for the future ODA project implementation. At the project preparation/development stage, there are three lessons: “it is effective to create new cooperation opportunities by following up the existing power plant O&M (operation & maintenance)

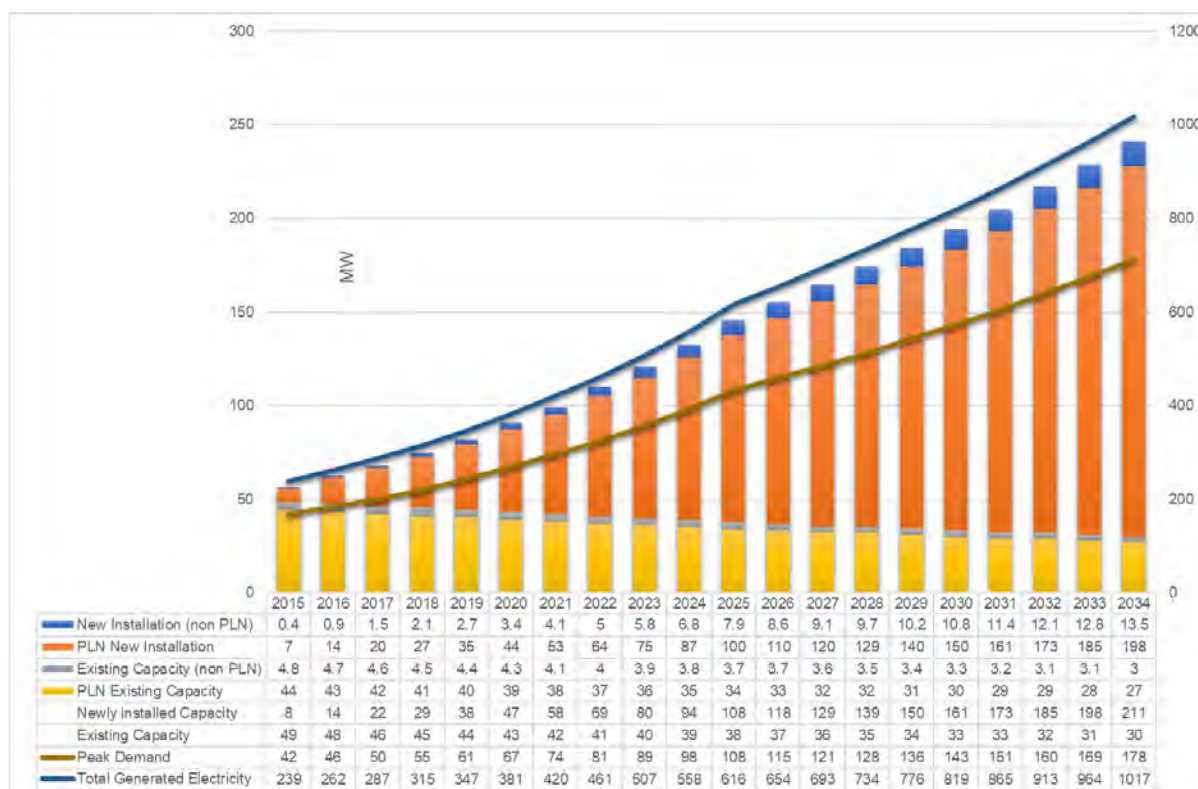
conditions”; “comprehensive risk analysis (especially risks associated with fuel supply) would avoid project cancelation or suspension”, and “it is necessary to contemplate project feasibility for smooth land acquisition.” In addition, there are two lessons for improvement in sustainability of ODA loan projects: “it is important to establish a follow-up system after new technology introduction,” and “it is necessary to make continuous efforts on environmental conservation for achieving amicable relation with local stakeholders and NGOs.”

3.4.2 Implications for future cooperation

In Indonesia, it is planned to increase its power generation capacity to 82GW by 2019 and 155GW by 2026 with expectation of annual 8.3% increase in power demand between 2017 and 2026 (see Figure 3-9)²⁸. The Government of Indonesia is planning to develop nearly 75% of new power plants under IPP scheme. Regarding the primary energy supply, the government plans to increase the share of renewable energy from 12% to 23% by 2025. In case of geothermal resource, the installation target by 2025 is set at 7,200MW. Also, the target for energy efficiency is set at 1% increase by 2025, and electrification ratio is set at 100% by 2020.

There are several reasons to depend on IPP scheme for new installations. First of all, the new installation plan is too big for PLN itself to finance them all. Both the Government of Indonesia and PLN are confident that utilization of private sector investment under IPP scheme is functioning well. PLN seems to be shifting its resource on reinforcing their existing network system. Also, having accumulated enough self-financing experiences, PLN is actively promoting diversification of its source of funding. In addition, since the Government of Indonesia was given an “investment grade” by the third party, PLN has gained increased creditworthiness in the market. Thus, JBIC and other export credit agencies started providing “sub sovereign” finance to PLN. Under such circumstances, it is expected that the dependency on ODA and other public financial institutions in the area of power infrastructure investment will decrease in the future. On the other hand, there is an increasing demand for public financial support in the area where it is too risky for the private sector to play in, such as geothermal development with unforeseeable success rate under the frequent change on electricity tariff.

²⁸ However, in 2017, the Minister of Energy and Natural Resources made an announcement that installing additional 15GW by 2019 should be sufficient for the country, instead of planned target of 35GW (total capacity shall be 82GW). This comment was released based on the current 5% economic growth of the country, instead of 8% growth used for an assumption for the governmental target of 35GW by 2019.



Source: RUPTL (2015-2034)

Figure 3-9: Energy Outlook by MEMR

Considering above mentioned sector environment and politically important agenda, the possible future cooperation areas in the electricity and power sector are as follows:

(1) Support in the area where private investment is not conducted

There are three areas where private participation seems to be highly risky: a) transmission line construction to enhance electricity network system, including trans-island connection; b) power plant construction with relatively higher degree of difficulties, and c) rural electrification and energy efficiency improvement project.

The maintenance and enhancement of electric networks enable to reduce supply margin of the network (in Java-Bali system, supply margin is 27% as of 2017, but in RUPTL (2017-2026) it is estimated to reach at 55% in 2019 and 41% in 2026.) and to curb the investment on electric power generation infrastructure in long term. The World Bank and the ADB have been providing support in this area, but additional support from Japan would boost the IPP installation by ensuring steady electricity sales for an earlier achievement of the governmental supply target. In the area of rural electrification and energy efficiency, several JICA's schemes utilizing high efficiency technologies and know-hows of Japanese companies (such as Public-Private Partnerships), as well as introduction of hybrid power supply (PV and diesel engine) would be useful for the government and PLN for their early achievement of its targets. In the areas where high effects are expected but difficult to deal with only by the government of Indonesia or the private sector, it is anticipated to create a pioneer ODA loan

project in Indonesia by introducing the best available technology of Japan and the world with detailed environmental and social consideration.

(2) Support on renewable energy promotion

While many industry players are paying attention to targets set by the Indonesian government regarding renewable energy especially on geothermal market, the actual business environment may struggle to attract investment under unstable tariff and confusing bidding system. To maintain the interests and active participation of the private sector in renewable energy development, Japan can provide: a) support to minimize risks associated with test drilling by the public sector; b) support in capacity building of local government for smoother issuance of construction permission; c) technical advice on appropriate pricing to achieve targets regarding renewable energy, and d) technical and monetary support on potential users of “Geothermal Fund Facility.” As a new monetary support, JICA’s Private Sector Investment Finance (Corporate Finance) Loan, a well functioned scheme for activating private sector activities in infrastructure business, will be suitable. In December 2017, JICA signed a Corporate Finance Agreement with PT. Indonesia Infrastructure Finance (IIF), which financially supports IIF’s investment and loan projects for infrastructure development in the renewable energy field such as small hydro.

(3) Support on new technology development

In the electric power sector, many key technologies are at their matured stage, hence the opportunity of technology transfer to Indonesia would be selective or limited. However, there are still some innovative technology options expected to be transferred to Indonesia. In the upstream of electric power industry, there are opportunities for cooperation in the area of electricity storage, and Carbon Capture and Storage (CCS). In the downstream of the industry, there are opportunities for energy efficiency program of the “smart city” with energy management system (EMS) by IoT or renewable energy promotion with introduction of micro grid system. In case of CCS, which is expected to bring a breakthrough on GHGs emission reductions together with cleaner development of untapped oil and gas, technical cooperation under SATREPS has already conducted in Central Java. Further cooperation in a form of joint technology development via SATREPS or technical assistance, or a form of Partnership with Private-Sector Activities by using innovative technology is expected to promote decoupling growth of society from carbon emissions.

(4) Support on policy and institutional arrangement

As mentioned, the Government of Indonesia has a policy to develop its electric power supply system by IPP scheme as a main driver. It is therefore beneficial to provide well-programed support, utilizing experiences and lessons learnt from Japanese ODA projects as well as requests from the Japanese private sector, for developing policy and a system to make positive investment climate by minimizing operational risks for IPP investors. Expected areas of cooperation are: a) policy and institutional support for partial sector restructuring or privatization; b) accelerating policy and institutional development for further promotion of IPP scheme for renewable energy, and c) capacity development for the government and PLN to plan IPP bidding and contracting.

Chapter IV Water Supply, Drainage, Sewerage and Environmental Management

4.1 Summary¹

Water Supply

The Japanese cooperation for increasing coverage of water supply began with an ODA loan for the preparation of a master plan of the Special Capital Region of Jakarta (DKI Jakarta) in the 1960s. A number of water supply facilities in the area were constructed by the cooperation of Japan. From the 1980s, the assistance expanded to several cities, and then to rural areas. In parallel with the financial cooperation, training programs for senior engineers, who were the core human resources for the management of regional water company (PDAM)s, started from the 1970s as technical cooperation. In the late 1980s, the Water Supply and Environmental Sanitation Training Center (WSESTC) was established, and capacity development of technical staff in PDAMs was implemented at the center. From the late 1990s, however, policies of Japan's cooperation in the water supply sector in Jakarta changed due to the progress of privatization of waterworks and decentralization. Since the 2000s, no cooperation has been provided for infrastructure development of privatized water services, therefore the water supply capability in Jakarta has not been changed since then. As for technical cooperation, a special focus was placed on training human resources for local PDAMs after decentralization. Through the training, role-sharing among private water service entities, ministries, and water associations was clarified. The cooperation also has sought to standardize specifications and develop a product certification system aiming to strengthen institutional capacity of the water association. The coverage of water supply remained at 62% (2015) with the capacity of 1.55 million m³/day even in Jakarta. Of these, infrastructures with a total capability of 770 thousand m³/day (equivalent to 60% of the supply rate) were developed by Japan's ODA loan projects². At the national level, the coverage of water supply in urban area is 33% while that in the local area it is 9% (the percentage of population with improved drinking water sources in urban area is 94%, while it is 79% in local area, according to the report of UNICEF, 2015³). In the areas without water supply facilities, land subsidence occurs because of the excessive pumping of underground water.

Sewerage and Drainage

Projects related to sewerage and drainage in cities such as Yogyakarta and Denpasar were implemented by Japanese cooperation in the 1990s after the implementation of projects on sewerage and drainage in DKI Jakarta in the late 1980s. After 2010, by the "Capacity Development of Wastewater Sector through Reviewing the Wastewater Management Master Plan in DKI Jakarta," reviews on waste water treatment

¹ The projects of this sector consist of three subsectors, namely, 1) water supply, 2) drainage and sewerage, and 3) environmental management. The subsector of "housing, urban and regional planning" will be described in Chapter VIII "Regional Development"

² JBIC. *What is Yen loan?* Brochure. September 2002.

³ UNICEF, WHO. *Progress on Sanitation and Drinking Water: 2015 Update and MDG Assessment*. http://files.unicef.org/publications/files/Progress_on_Sanitation_and_Drinking_Water_2015_Update_.pdf (Accessed in April 2018)

systems and capacity development of related organizations were implemented. In addition, an ODA loan project to design sewerage facilities was started on the assumption that the facilities would be constructed based on the above mentioned revised master plan. However, the sewerage coverage remained as low as 2%⁴ in DKI Jakarta in 2013. Currently as only 12 local municipalities⁵ are equipped with modern sewerage facilities, demand for facility development is high.

Environmental Management

Japan provided cooperation with urban environment improvement in Jakarta, Surabaya, Makassar and other cities in the 1980s. Especially, in Jakarta and Surabaya where ODA loan projects were implemented, waste treatment systems from collection to disposal were established. However, due to the economic development and increase in population, it is considered that new disposal facilities and intermediate treatment were required in Jakarta. Roles and objectives of local governments were clarified by the Government Decree No. 38/2007 on Demarcation of Roles Between National and Local Government, the amendment of the Waste Management Law of 2008 (No.18/2008) and the Environmental Protection and Management Law (No.32/2009). Accordingly, in the 2010s, ODA activities began to focus on introducing the 3R concept (Reduce, Reuse, Recycle) and related treatment system in major municipalities. Needs for cooperation in local municipalities seem to be high because similar kinds of challenges are observed.

In addition, the Environmental Management Center (EMC) was established and has been in operation since the 1990s. The objective of this center was to provide training related to implementation of environmental monitoring. After decentralization in 2001, the environmental management (i.e. monitoring) system has been continuously reinforced, and the capacity development of related staff has been implemented. However, most local governments still face problems of limited human and financial resources.

⁴ The World Bank, AUSAID. *East Asia Pacific Region Urban Sanitation Review: Indonesia Country Study*. 2013. http://www.worldbank.org/content/dam/Worldbank/document/EAP/Indonesia/indonesia_sanitation_report.pdf (Accessed in April 2018)

⁵ Medan, Prapat, DKI Jakarta, Bandung, Cirebon, Yogyakarta, Surakarta, Bali, Banjarmasin, Balikpapan, Tangerang, and Batam. Other four cities are under planning.
The World Bank, AUSAID. *East Asia Pacific Region Urban Sanitation Review: Indonesia Country Study*. 2013.

Table 4-1: Overview of the Water Supply, Drainage, Sewerage and Environmental Management in Japan's ODA

Period	1960s	1970s and early 1980s	Late 1980s	1990s	From the end of 1990s	From the end of 2000s
	Nation-State Building	Economic Development	Structural Adjustment	Growth until the Asian Financial Crisis	Democratization and Decentralization	Middle Income Countries
Historical Context	<ul style="list-style-type: none"> • Cold War • ASEAN (1967) • Inauguration of President Suharto (1968) • Oil-dependent economic development • Green Revolution 	<ul style="list-style-type: none"> • First Oil Crisis (1973) • End of Vietnam War (1975) • Second Oil Shock (1979) 	<ul style="list-style-type: none"> • Plaza Accord (1985) • Reverse Oil Shock (1986) • End of Cold War (1989) 	<ul style="list-style-type: none"> • Asian Financial Crisis (1997) 	<ul style="list-style-type: none"> • Laws on local autonomy (1999) • Millennium Development Goals (2000) • Election of President Yudhoyono by direct election (2004) • Lehman Shock · Slump in resource price (2008) 	<ul style="list-style-type: none"> • Japan-Indonesia Economic Partnership Agreement (2008) • G20 Accession (2008) • Jakarta Commitment (2009) • Sustainable Development Goals (2015) • Paris Agreement (2015)
Situation of the sector	<ul style="list-style-type: none"> • Challenges of Water supply infrastructure development, especially in Jakarta 	<ul style="list-style-type: none"> • Challenges of Water supply infrastructure development in Jakarta and other municipalities • Challenges of rainwater drainage system improvement for city flood-control 	<ul style="list-style-type: none"> • Water supply infrastructure development • Local government authority reinforcement over local PDAM due to decentralization • Privatization of water supply operations in Jakarta (1998) • Aggravated urban environmental problems such as waste and wastewater • Challenges of rainwater drainage system improvement for city flood-control 	<ul style="list-style-type: none"> • Challenges of comprehensive improvement of infrastructures in urban and rural residential areas by local government • Challenges of environment conservation and management by local governments • Decree No.38 on demarcation of roles between national and local government (2007) • Waste management law (2008) • Environmental protection and management law (2009) 	<ul style="list-style-type: none"> • Goal set for 100% access to safe water by 2019 • Focus on water supply and sewerage infrastructure development in Jakarta • Reinforcement on local infrastructure improvement and maintenance management • Challenges of environment conservation and management by local governments 	

Period	1960s	1970s and early 1980s	Late 1980s	1990s	From the end of 1990s	From the end of 2000s
	Nation-State Building	Economic Development	Structural Adjustment	Growth until the Asian Financial Crisis	Democratization and Decentralization	Middle Income Countries
Priority Development Issues in the 5-Year Development Plan.	<ul style="list-style-type: none"> Increasing of drinking water supply capacity 	<ul style="list-style-type: none"> Control of large-city over-expansion, development of middle and small cities Improvement of drinking water supply Rainwater drainage system development Improvement of solid waste management 	<ul style="list-style-type: none"> Water supply infrastructure development in main urban areas and rural areas Training/re-training of waterworks technicians Rainwater drainage system improvement Sewerage improvement Improvement of solid waste management Actions for environment problems 	<ul style="list-style-type: none"> Improvement of infrastructures in urban and rural residential area by local government Environment conservation and management 	<ul style="list-style-type: none"> Improvement of infrastructures in urban and rural residential area by local government Environment conservation and management 	
Directions of Japan's Cooperation	<ul style="list-style-type: none"> Water supply improvement in Jakarta 	<ul style="list-style-type: none"> From improvement of water supply and drainage of capital to that of several cities 	<ul style="list-style-type: none"> Improvement of water supply, sewerage, and solid waste for urban environment improvement, and rural residential area environment improvement 	<ul style="list-style-type: none"> Consideration for local areas and environments 	<ul style="list-style-type: none"> Implementation of circumstances improvement related to water supply Improvement of drainage and sewerage in capital Improvements of solid waste management in local towns 	
Outcomes	<p>The diagram illustrates the following flow of outcomes:</p> <ul style="list-style-type: none"> 1960s: Water supply infrastructure development 1970s and early 1980s: Expansion of water supply to local towns and human resource development 1990s: Human resource development in local water supply services Late 1980s: Drainage development in the capital 1990s: Drainage development in local towns Late 1980s: Sewerage treatment in local towns 1970s and early 1980s: Improvement of solid waste management system in the capital 1990s: Solid Waste management via 3R <p>Dashed lines indicate spillover effects from the previous period to the next.</p>					

Note: Dashed lines in the section of outcomes indicate the impact/ spillover effect from the previous period.

4.2 Historical Context and Japan's Cooperation

4.2.1 Number of projects and commitment amounts

Japan's ODA in the sector of water supply, drainage, sewerage and environmental management began with the subsector of water supply in the 1960s. In the mid-1980s when the infrastructure development of water supply progressed in local towns, Japan started cooperation with drainage improvement. In the 1990s, cooperation with sewerage and solid waste management began. Experts dispatch and training program were also implemented.

There have been 81 projects in this sector, which can be broken down into 12 technical cooperation projects, 20 development studies,

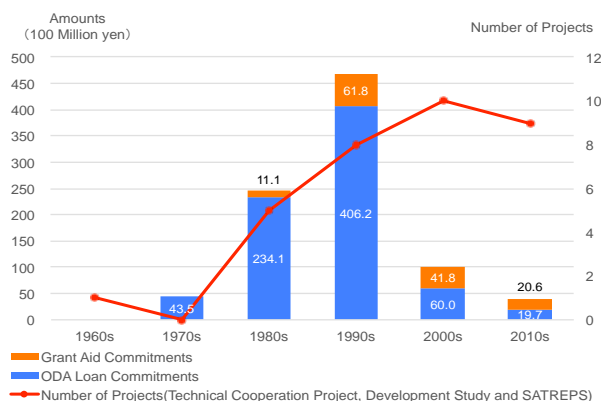
29 ODA loans, and 20 grant aid projects. If categorized by subsector, 24 of them are related to sewerage and drainage⁶, 13 are related to environmental management, and 44 are related to water supply.

The commitment amounts of financial assistance and the number of projects by decade are shown in Figure 4-1. The ODA loan in this sector reached a peak in the 1990s but reduced afterwards, while the number of the technical cooperation (both technical cooperation projects and development studies) reached a peak in the 2000s but slightly decreased afterwards.

4.2.2 Period-specific characteristics of Japan's economic cooperation for Indonesia in the water supply, sewerage and environmental management sector

In this section, the situation of the water supply, sewerage and environmental management sector in Indonesia and support of the Japanese government for Indonesia are summarized by period.

- The 1960s: Beginning of the cooperation with water supply improvement in DKI Jakarta
- The 1970s and the first half of the 1980s: Water supply infrastructure development in DKI Jakarta and several cities
- The second half of the 1980s and the 1990s: Water supply infrastructure expansion in DKI Jakarta, establishment of WSESTC, beginning of the cooperation with the subsector of drainage, sewerage and environmental improvement
- From the end of the 1990s: Improvement of water supply and sewerage in local small cities and rural areas



Source : JICA Review Team

Figure 4-1: Commitment Amounts of ODA Loans and Grant Aid (E/N basis), and the Number of Technical Cooperation (Technical Cooperation Project and Development Study) and SATREPS by Decade

⁶ The field of sewerage and drainage includes inundation due to interior runoff for flood-control measures. On the other hand, flood-control measures are also implemented in the river basin management sector. It means that the comprehensive flood-control measures are implemented in both sectors.

- From the end of the 2000s: Capacity development of water supply operation and maintenance for local governments, improvement of environment in water supply projects cooperated by the waterworks industry, sewerage/drainage improvement, capacity development of local governments and facility improvement on environment managements

(1) The 1960s: Beginning of the cooperation with water supply improvement in DKI Jakarta

Situation of the sector and major efforts by Japan

The First Five-Year Development Plan (REPELITA I: 1969/70-1973/74) prioritized an increase in the supply of drinking water. In 1963, the first master plan of Jakarta's water supply system targeted 1971 was prepared with Japan's cooperation. In addition, the first technical cooperation, which is a training program for senior technicians, was implemented over three years from 1973 to 1975, in which 43 experts from Japan were dispatched.

(2) The 1970s and the first second of the 1980s: Water supply infrastructure development in DKI Jakarta and several cities

Situation of the sector and major efforts by Japan

REPELITA II (1974/75-1978/79) continuously prioritized an increase in supply of drinking water. In 1970, DKI Jakarta had low coverage of water supply (only 25%), which indicated that the water supply infrastructure development was an urgent issue. Against this background, ODA loan projects to construct water supply facilities were implemented.

In the 1980s, REPELITA III (1979/80-1983/84) planned to control the expansion of large-scale cities and to develop middle- and small-scale cities. According to the plan, Japan's ODA loan on water supply infrastructure development expanded to cities such as Ujung Pandang (known as Makassar at present), small cities in Sulawesi island, and Surabaya and the surrounding areas. Furthermore, long-term experts had been dispatched to the Agency for Assessment and Application of Technology (BPPT) since 1984, and to the then Ministry of Public Works since 1986⁷.

(3) The second half of the 1980s and the 1990s: Water supply infrastructure expansion in DKI Jakarta, establishment of WSESTC, beginning of the cooperation with the subsector of drainage, sewerage and environmental improvement

Situation of the sector and major efforts by Japan

Technical cooperation with WSESTC in Jakarta and water supply improvement in local small-scale cities

REPELITA IV (1984/85-1988/89), REPELITA V (1989/90-1993/94), and REPELITA VI (1994/95-1998/99) focused on issues of water supply improvement in both urban and rural areas, and training for waterworks technicians.

In response, the Water Supply and Environmental Sanitation Training Center (WSESTC) was

⁷ Japan Water Works Association (JWWA). *Suido kyokai zasshi [JWWA magazine]*. 1994 March.

established in the outskirts of Jakarta in 1988, and cooperation with human resource development including training/re-training of water technicians was started. In this center, the “Water Supply and Environmental Sanitation Training Center Project” was implemented from 1991 to 1997.

From the 1990s, the “Jakarta Water Supply Distribution Pipeline Project” (1990) was implemented in order to respond to the rapid increase of water demand. In local areas, water supply systems were developed in Ujung Pandang (known as Makassar at present) and in small cities on Sulawesi island through the “Ujung Pandang Water Supply Rehabilitation Project” (1988) and the “Project for the Improvement of IKK's Rural Water Supply (1), (2)” (1991, 1992). Furthermore, improvement of small scale water supply and sanitation facilities in rural areas were conducted by the ODA loan projects related to urban and rural residential environment improvement, and projects such as the “Human Settlements Improvement Project for Urban and Rural Areas” (1993), the “Human Settlements Improvement Project (2)” (1995) and “Rural Areas Infrastructure Development (1), (2), (3)” (1994, 1998, 2001).

In 1997, although “The Study on the Revise of Jakarta Water Supply Development Project” was implemented, no ODA loan projects for the facility development were implemented after that because the operation and maintenance management of water supply in DKI Jakarta was privatized in 1998.

Start of the cooperation with drainage, sewerage and environmental management sector

Since before the 1970s, floods occurred frequently in western Jakarta area, causing serious damage⁸. The Indonesian government acknowledged the seriousness, and prepared the Jakarta Flood Protection Master Plan in 1973 with technical support from the Government of Netherlands. Due to the difficulty of the land acquisition for the west drainage plan proposed in the master plan, an alternative plan was prepared. Accordingly, the “West Jakarta Flood Control System Project (1)” was commenced in 1983. This was a start of cooperation in the drainage subsector. In 1991, the project of “the Study on Urban Drainage and Waste Water Disposal Project in the City of Jakarta” was implemented, targeting 2010 as the goal. Although the “Jakarta Sewerage Improvement Project (1)” (1992) started and developed a detailed design, the facility development was not undertaken. In local towns, “Project for the Construction of Yogyakarta Sewage Treatment Plant (1), (2), (3)” (1993, 1994, 1995) and “The development study on wastewater disposal for Denpasar” were implemented in 1992. Then, the “Denpasar Sewerage Development Project (Phase I)” was conducted followed by an ODA loan project in 1994. These projects contributed to improving the water environment on the island.

As prioritized in the REPELITA V, comprehensive urban infrastructure improvement plans in the subsector of waste management were implemented mainly by the Directorate General of Human Settlement in the Ministry of Public Works in collaboration with local governments.

Based on the result of “The Study on Solid Waste Management System Improvement Project in the City of Jakarta” in 1986. After the “Engineering Service for Jakarta Solid Waste Management System

⁸ There were 6 floods from 1972 to 1981. The average flooded area was 28 km²; the average number of flooded houses was 46 thousand, and the average damage amount was 5.3 billion yen. JICA. *Ex-post Evaluation Report for the “West Jakarta Flood Control System Project (1) (II).”* 2000.

Improvement Project,” the “Jakarta Solid Waste Management System Improvement Project” was implemented in 1993. The basic system of the waste collection and treatment was established by the construction of final disposal facility, the installation of intermediate collection stations, and ensuring the measures of waste transportation.

In the second biggest city, Surabaya, waste disposal facility was installed to handle the increasing urban wastes. Nevertheless, problems such as drainage disposal, or insanitary open-dumping still existed. Under the circumstances, “The Study on the Solid Waste Management Improvement for Surabaya City” was implemented in 1992, in order to prepare the master plan of the waste management in Surabaya and to decide projects to be prioritized. In 1993, the “Surabaya Urban Development Project (1)” was implemented to improve the infrastructures comprehensively by the construction of waste collecting site, the securing of transportation trucks and the installation of equipment for landfill disposal sites. As a result of developing these temporal collecting spaces and waste disposal facilities, the capacity for waste collection and processing increased by 1,120 m³ a day and 34,000 m³ a month, which equals to the capacity to provide the service to additional 461,000 citizens⁹. Surabaya and Kitakyusy City have a collaborative relationship in the environmental sector. Those are brought by the projects such as “Asian Environmental Cooperation Cities Network Construction” (1997) and “JICA Trainee Reception” (2000-). Further, projects such as the “Study on Appropriate Disposal and Exploitation of Waste” (JBIC, 2002), the “Project on Organic Waste Composting Technology Transfer” (2004: Japan Fund for Global Environment (JFGE) and “The Improvement of Water Quality Management Capacity in City of Surabaya” (JICA Partnership Program, 2007) were implemented. Both cities signed “Green Sister City” agreement in 2012.

In parallel, EMC was established by the “Project for the Construction of the Environmental Management Center” (1991, 1992), aiming at establishing environmental monitoring methods and the training of human resources in environmental administration sector. Thereafter, the project entitled “the Environmental Management Center Project” (1992-2000) was implemented to equip the center with functions of laboratory, monitoring, and environment information collection and analysis, and training. Meanwhile, “The Bapedal Regional Monitoring Capacity Development Project” (1994-2001) was implemented to install laboratory equipment to local government offices of the Ministry of Health, Public Works, and Human Settlements. It contributed to human resource development in environmental research and monitoring.

(4) From the end of the 1990s: Improvement of water supply and sewerage in local small cities and rural areas

Situation of the sector and major initiatives by Japan

Responding to the progress of privatization and decentralization, Japan’s ODA shifted from the water supply development in Jakarta to local small-scale cities and rural areas such as Sulawesi Island,

⁹ JICA. *Ex-post Evaluation Report for the “Surabaya Urban Development Project (1).”* 2007.

Provinces of West Nusa Tenggara Barat and East Nusa Tenggara, and Gunung Kidul District (South of Yogyakarta Special Region). There were two main reasons behind this shift: a) after the Asian Financial Crisis in 1997, economic recovery and the stabilization of people's livelihood were prioritized by the Government of Indonesia, and especially, reduction of labor for water fetching and improvement of public health were regarded important, and b) Japan placed "ensuring equity" as a priority and included the improvement of basic infrastructure related to daily living (residential environment, healthcare) and the development of eastern Indonesia (redressing regional disparities). Targets of the water supply development shifted from large-scale cities such as Jakarta and its surrounding areas to small-scale cities and rural areas (especially in Eastern Indonesia).

From 2004 to 2006, the "Regional Water Supply Project" targeting six districts in West Java Province and the "Project for Water Supply Service Improvement in the Mamminasata Metropolitan Area" were started in 2009. Since decentralization progressed rapidly after 1998, management by local governments on PDAMs was strengthened and assistance from central government scaled down, which resulted in capacity shortage and worsened financial status of many PDAMs. The projects mentioned above were implemented to develop those local PDAMs' capacities of water supply facility maintenance, and improve financial managements and administration. Specifically, the projects strengthened capacities of financial management, non-revenue water reduction, GIS database application and water quality control¹⁰, and produced targeted outcomes in many PDAMs. The outcomes of the "Water Supply and Environmental Sanitation Training Center Project" (1991-1997) were utilized in the 2000s to disseminate know-hows of facility maintenance and financial management to local PDAMs.

In the subsector of environmental management, "The project for Strengthening Decentralized Environmental Management System" (2001-2006) was implemented to improve the cooperation between EMC and the local (province level) governments on environment management system. This project established environment laboratories in province-level environment management offices, and then improved the cooperation between the local and the central administration. In technical aspect, activities such as water quality monitoring and reporting in representative rivers, management of environment laboratories, preparations of ocean water monitoring guidelines were implemented. In Medan (North Sumatra), one of the target areas, a project to purify water of Deli river was formulated and implemented. The "Medan Flood Control Project" (1998) also targeted the river, and implemented countermeasures against illegal waste disposal in the river in collaboration with USAID (USA-Japan Water Cooperation: Partnership for Security and Prosperity). Moreover, cooperation in the sector of water management was implemented as the project of "Solid Waste Management Improvement Project" (JICA Partnership Program, 2013).

¹⁰ Improvement in water collection rate, ratio of non-revenue water, cost-recovery rate, number of connections is observed in three out of four public water companies. JICA. *Anken betsu jigo hyoka (naibu hyoka) hyoka kekka you: minami Sulawesi shu mamminasata koiki toshiken josuido service kaizen purojekuto. [Ex-post evaluation report on "Project for Water Supply Service Improvement in the Mamminasata Metropolitan Area"]*. 2017.
https://www2.jica.go.jp/ja/evaluation/pdf/2015_0800063_4_f.pdf

(5) From the end of the 2000s: Capacity development of water supply operation and maintenance for local governments, improvement of environment in water supply projects cooperated by the waterworks industry, sewerage/drainage improvement, capacity development of local governments and facility improvement on environment managements

Situation of the sector and major efforts by Japan

The access to safe water remained at a low level of 66.8% in 2013 against the target of 100% in 2019¹¹, indicating the existence of various problems such as institutional capacities, financing, water source management, and efficiency of water services. JICA continued assistance by making successful practices such as 1) cascade-style training for PDAM across the nation, 2) clarification of roles in water administration and enhancement of roles of waterworks association, and 3) creating good practices through direct cooperation with local PDAMs via proposal-based schemes such as JICA Partnership Program (JPP) and private sector partnership programs.

There exists more than 400 PDAMs across Indonesia, and it is difficult to support all of them. Therefore, by making the most of the outcomes of the above-mentioned “Project for Water Supply Service Improvement in the Mamminasata Metropolitan Area,” cascade-style assistance was provided focusing on developing trainers, who would train local PDAMs in WSESTC through “The Project on Strengthening COE (Center of Excellence) Program for PDAMs” (2015-2018). In addition, because technical specifications did not exist in PDAM, which caused efficient and low performance, capacity development for Indonesia waterworks association was implemented to prepare the environment for more efficient project implementation. Moreover, some PDAMs were able to learn practical examples from Japanese local municipalities which implemented JPPs and the projects under the JICA PPP program. Currently, information is being collected regarding the water supply system of Jakarta, which has been privatized but to be public again in 2022, in order to consider the cooperation direction after 2022.

As for the sewerage sector, the Ministry of Public Works (then) set the goal of the sewerage coverage rate to 5%¹² in 16 main municipalities before 2014. In 2009, JICA implemented “Development of Basic Design of Draft Management Criteria for Sewerage Service Providers.” From 2010 to 2012, the “Project for Capacity Development of Wastewater Sector through reviewing the Wastewater Management Master Plan in DKI Jakarta” was implemented to improve laws related to sanitation and to review the master plan related to waste water treatment. Based on the plan, the preparation of the “DKI Jakarta Sewerage Development Project” started, and the engineering service is being implemented as of 2017. Outside of Jakarta, the “Denpasar Sewerage Development Project (II)” was implemented from 2008 to 2016.

The deterioration of the pump station of Pluit, which processed drainage in the center of Jakarta, progressed due to piping¹³. Urgent reconstruction assistance (pup station buildings, drainage pipes and

¹¹ ADB. *Indonesia: Country Water Assessment*. 2016.

¹² JICA. *Terminal Evaluation Report on “Project for Capacity Development of Wastewater Sector through reviewing the Wastewater Management Master Plan in DKI Jakarta.”*

¹³ A phenomenon occurs when silt or sand particles in the foundation are lost due to the pipe-shaped paths formed by the

tide embankment) was implemented, and completed in 2015.

As for the waste management subsector, “The Project for Capacity Development of Central and Local Governments for 3R and Domestic Solid Waste Management System” (2013-2016) was implemented, aiming at promoting the environment friendly waste treatment in local areas as indicated in the National Medium Term Development Plan (RPJMN: 2010-2014).

As for the environment management subsector, “The Strengthening of Environment Management Capacity of Local Governments in Indonesia Project” was implemented from 2009 to 2011. Compared to the previous projects, this technical cooperation project targeted district/municipality level administration for capacity development instead of the province level administration, targeted by “The project for Strengthening Decentralized Environmental Management System.” Suburban districts and cities in Provinces of West Java and Banten near Jakarta were chosen to be the target areas, while water quality management and water pollution control were chosen to be the target fields.

Furthermore, multi-sector projects that include small scale water supply, drainage, wastewater treatment, waste management and environment management (especially in local area developments) were also implemented.

accumulation of water by osmotic force. The progress could be enhanced if it is already partially happened, because the hydraulic gradient increases the osmotic force. This phenomenon could be the reason of the damage/destruction in filled grounds or excavated foundations.

4.3 Noteworthy Achievements in Cooperation

In this sector, the following projects/programs are indicated as representative examples of this sector.

1) The water supply improvement in Jakarta, a large-scale program started in the 1960s, in which more than ten ODA loan projects (E/N agreed amount of 37.683 billion yen in total) were implemented, contributed to the reduction of epidemics, improvement of sanitation and living environment. The cooperation with WSESTC to address the issue of training/retraining of water/sanitation technicians can also be mentioned here, which contributed to the improvement of maintenance techniques and institutional reform through grant aid and technical cooperation; 2) The flood-control/drainage improvement in Jakarta which contributed to the reduction of flood damage from the stage of the master plan development to the construction of drainage and urgent rehabilitation of pump station; 3) Cooperation in the sewerage subsector which contributed greatly to the improvement of several cities and where more cooperation is expected in the future; 4) Solid waste management in DKI Jakarta which established solid waste treatment/collection systems through construction of facilities, and disseminated and promoted “3R” to local municipalities, and 5) cooperation through JPP and other proposal-based schemes by various Japanese organizations and private companies.

4.3.1 Water supply improvement in DKI Jakarta and nation-wide human resource development in the water supply subsector

(1) History of the Water Supply Improvement in DKI Jakarta

The foundation of the water supply in Jakarta was established in 1922 by the Government of the Netherlands, taking the spring water in Bogor that was 60 km south from Jakarta as the water source. In 1957, the first purification plant was constructed in Peiompongan, and the second one was constructed in 1970 both by the ODA of France. After 1962, Japan started assistance for the expansion of water supply in DKI Jakarta and decided the first master plan that set 1971 as the target year. Another master plan was developed in 1972 that set 2000 for the target year. Based on these plans, the construction of the purification plant in Pulo Gadung (4,000 l/s) and the expansion of the Second Peiompongan purification plant constructed by France (600 l/s, 550 km) were implemented from 1971 to 1986 as well as the construction of their pipelines.

The master plan of 1972 estimated that the population of Jakarta would reach 8.3 million in 2000. However, the population increased more rapidly than the estimation, having reached 6.5 million in 1980. The government re-estimated that the population would be 12 million in 2005. Accordingly, the estimation of demands including transportation and housing were revised. In 1985, a new master plan was developed by Japan’s cooperation in order to deal with the problems in the water supply subsector in response to the new estimation. This plan, which targeted the population of 12 million of 2005 estimated by the Jakarta Development Plan (1985-2005), aimed at developing a water supply system that would cover 60% of the population.

According to this plan, the first water purification plant of Buaran was constructed during 1986 to

1993 by an ODA loan to deal with the problems of chronic water shortage, low water pressure and low water quality. The second purification plant of Buaran was constructed during 1987 to 1995 by another ODA loan project to provide water supply to eastern area of DKI Jakarta.

In the meantime, the importance of training waterworks technicians was recognized. Thus, the technical cooperation projects were implemented from 1973 to 1975. Training of technicians had remained a challenge since the 1980. The human resources development in the water supply/sanitation sector was emphasized as an urgent issue in REPELITA IV and REPELITA V, in which re-training of 12 thousand to 15 thousand technicians was targeted for the improvement of safe water access.

Therefore, the Ministry of Public Works (then) planned to build one central training center and several local training centers in the water supply and sanitation subsector and requested cooperation to Japan. The Japanese Government decided to implement a grant aid project to establish WSESTC at the suburban area of Jakarta in 1986. To assist the training center, technical cooperation project was implemented from 1990 to 1997, which had trained 3,948 technicians in a period of 19 years from 1991 to 2009.

To fill the gap between the water supply improvement plan of 1985 and the reality, a development study, “The Study on the revise of Jakarta Water Supply Development Project” was implemented in 1997. Besides the situation of water supply, this study also included the management analysis on Jakarta Water Company (PAM JAYA), and assessed the feasibility of the private sector involvement. However, no further assistance was implemented after the study because the operation and maintenance management of the water company in DKI Jakarta was privatized by concession contract. The right of the operation and maintenance management in the water supply sector was transferred to PT Garuda Dipta Semesta (a joint enterprise composed of local companies and a French company, Suez Lyonnaise) in the western area, while to the PT Kekar Thames Airindo (a joint enterprise composed of local companies and a British company Thames Water) in the eastern area, in 1998. Moreover, PAM JAYA was transformed into an organization that manages the water supply projects implemented by the private sector. The 35-years long cooperation to the water supply subsector in DKI Jakarta was brought to an end after the privatization, and no cooperation has been provided since then.

Due to the 27-year efforts of the cooperation between the Government of Indonesia and Japan, the water supply coverage in DKI Jakarta increased from 25% (1.2 million) in 1970 to 53% (4.6 million) in 1997. After 1997, the coverage remained at 62% as of 2015.¹⁴

The privatization will end in 2022 with the termination of the concession contract, and the right of operation and maintenance management will be returned to PAM JAYA. After a proper assessment of the privatized period, the new needs of the waterworks improvement will be identified. Information collection and selection of subsectors might be required to confirm needs such as replacement of deteriorated pipelines, development of a new water supply network and re-training of staff.

¹⁴ According to the World Bank, the population of DKI Jakarta has increased from 8,362 thousand in 1997 to 103.21 million in 2015.

(2) Cooperation with Human Resource Development in WSESTC

The WSESTC was constructed in Bekasi, a suburban area of Jakarta in 1989 by grant aid of Japan. From 1990 to 2002, training courses, curriculum, and teaching materials were developed by a technical cooperation project, and training courses aimed at reinforcing capacities of water supply and environmental sanitation technicians at local municipalities were provided. As of 2017, the environmental sanitation-related training was transferred to a new training center in Surabaya, while the training related to water supply is still being implemented in the center.

After a 25-years application, the existing center is generally in good condition, except some problems of facility/equipment deterioration. A water treatment plant for teaching purposes was newly constructed due to the expiration of the lifetime of the old one. In addition, the Government of Indonesia established a COE (Center of Excellence) in order to provide not only usual technical training, but also training on countermeasures for non-revenue water, customer services, financial analysis, basic accounting, and energy targeting PDAM. Moreover, the center also accepted 15 trainees from Timor-Leste. Meanwhile, though subjects such as UV-light treatment, membrane treatment, advanced treatment, SCADA (Supervisory Control and Data Acquisition) system management, and asset management by GIS are some of the new subjects in the water supply subsector, the center is not yet prepared for these training needs.



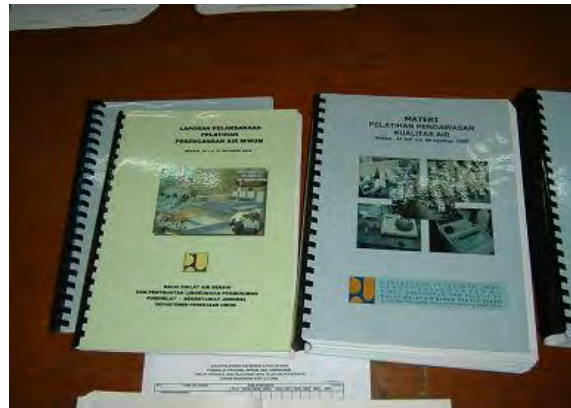
Office Building/ Lecture Building and Court



Accommodation for trainees



Lecture in training course



Teaching materials revised by Indonesian technicians

To date, 4,471 trainees (1990-2016)¹⁵ in the water supply sector and 2,471 trainees (1991-2009) in the environment sector were trained. However, considering the fact that the average number of trainees per year is only 425 after 2011, there exist about 400 PDAMs, and it is required to train the experts who can cover multiple sectors, it is necessary to increase the capacity of the center to provide training for more people in increased number of fields.

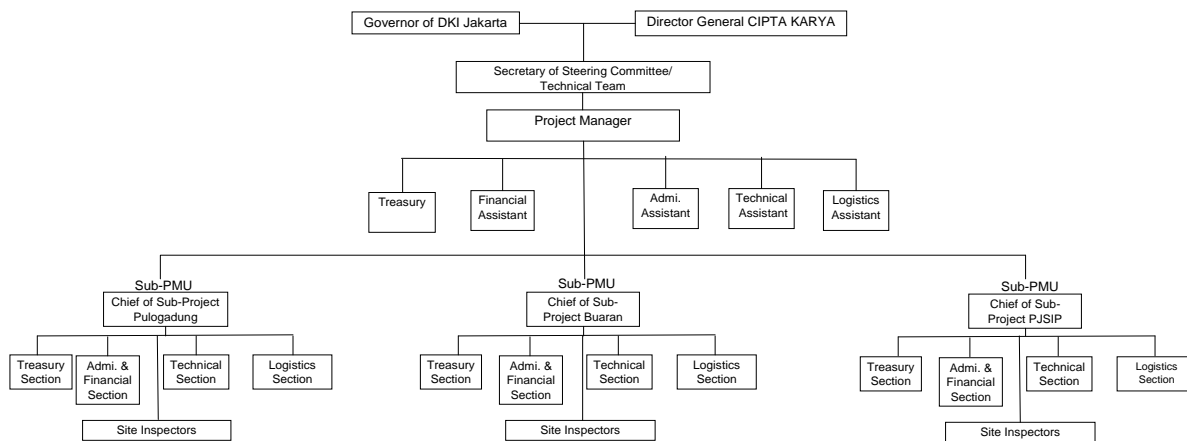
(3) Technology Transfer and Human Resource Development during Project Implementation

Japan's ODA in the water supply subsector in Jakarta is unique in that it continued as for as long as 35 years, and strengthened capacities of a number of technicians. Assistance in human resource development was not limited to WSESTC, but expanded to the Directorate General of Human Settlements of the then Ministry of Public Works, PAM JAYA, local consultants, staff and technicians of local construction companies who worked with Japanese experts and consultants. Japan's projects involved 1) foreign (Japanese) consultants and local consultants, 2) equipment suppliers, and 3) local construction companies. Three types of technique transfer were implemented, namely 1) On-the-Job-Training, 2) Training in Japan implemented by Japanese consultants, and 3) Hands-on Training (Training implemented based on the manual for maintenance and management upon completion of the facility). By these training, practical experiences were passed over to local technicians and it contributed to human resource development of technicians in Indonesia.

(4) Cooperation with institutional and system development

Until the 1980s, the Directorate General of Human Settlements of the then Ministry of Public Works established an office in each project site. However, due to the increasing number of related organizations (CIPTA KARYA, BAPENAS, Jakarta Capital Office, Ministry of Finance, etc.), a necessity to establish a coordination agency was recognized. Therefore, the "Jakarta Project Office" was established as a PMU (Project Management Unit) in 1991, assigning the governor of the capital Jakarta and the director of the Directorate General of Human Settlements as leaders. Project offices which had been placed under the Directorate General of Human Settlements was integrated in the PMU as sub-PMUs (Pulogadung Water Purification Construction Sub-PMU, Buaran Water Purification Construction Sub-PMU, etc.). Due to the establishment of the Jakarta Project Offices (PMUs), coordination was enhanced among related organizations, and collaboration was promoted between the Directorate General of Human Settlements of the Ministry of Public Works that is in charge of water supply constructions, and the Jakarta Capital Office that is in charge of the waterworks management.

¹⁵ Brochure of the Water Supply Training Center. 2016.



Source: JBIC Institute. *Aid Effectiveness to Infrastructure: A Comparative Study of East Asia and Sub-Saharan Africa. Case Studies of East Asia*. 2008.

Figure 4-2: Organization Chart of the Jakarta Project Office (PMU)

Due to the cooperation, the Directorate General of Human Settlements of the then Ministry of Public Works became responsible for development planning/design and construction of each project in the water supply subsector. After construction, PAM JAYA is responsible for the operation and maintenance of water supply facilities.

As mentioned above, Japanese experts advised and contributed not only to the improvement of technical aspects, but also to the reform of related organizations/systems.

(5) Effect of the assistance for water supply in Jakarta

Various kinds of impacts were brought about by the 35-year long cooperation of Japan on the water supply subsector in Jakarta. The assistance enabled the provision of water supply newly for 34 millions of people (increase of 1.08 million m³/day) during 27 years. Firstly, the water supply system freed citizens from water drawing labor, improving public convenience. Secondly, due to the improved accessibility to clean water, citizens' sanitation environment and health conditions were improved, and the water-borne epidemics were reduced. Thirdly, the progress of the land subsidence was reduced because the usage of water from the water supply system prevented people from taking underground water. It is said that there are approximately 4,000 wells over Jakarta for both living and industry proposes, and it was considered as a cause for the subsidence, as well as the aggravation of water quality (salt mixture). Fourthly, development of basic infrastructure brought the increase in the number of foreign enterprises including Japan, and the number of tourists, indirectly contributing to the economic development. Fifthly, human resources were developed by training started in 1973 by cooperation on the establishment and training of WSESTC. In addition, training in Japan, training of maintenance and management implemented when the facility construction was completed, and OJTs also contributed to human resources development. Targets of the training were expanded to the Directorate General of Human Settlements of Ministry of Public Works (then), Jakarta water agency, local consultants, staff and technicians of local construction companies that worked with Japanese experts and consultants. Finally, Japan's assistance contributed to the development of new institutional

arrangement for effective cooperation between the Directorate General of Human Settlements of the Ministry of Public Works that is in charge of the water supply constructions and the Jakarta Capital Office that is in charge of the water supply management.

4.3.2 Flood-control and drainage improvement in DKI Jakarta

Flood damage frequently occurs in DKI Jakarta because of multiple reasons such as topographical conditions that make rivers easily flow over, increasing storm water run-off due to urbanization, intensive rainfall, and land subsidence caused by excessive usage of underground water.

In recent years, land subsidence and contamination of groundwater due to increased groundwater pumping are increasingly regarded as challenges. Underground water is used in daily life in the Jakarta metropolitan area¹⁶. According to the World Bank's report, "Jabodetabek Urban Development 2," it was reported that 70% of the living and industrial water usage was from underground water. Especially, in the coastal area in the north of DKI Jakarta, there are places with subsidence of over 1m from 1974 to 1990. Critical issues related to flood are not limited to material (such as houses, shops, factories, transportations and infrastructures damages) damages but also non-material damages such as decrease in income caused by the material damages. Therefore, in order to physically protect these assets, the improvement of flood-control facilities such as embankment, drainage and pump station are considered to be important to reduce flood damage.

To drastically enhance the safety against flood disaster, the Government of Indonesian under the cooperation of the Government of Netherland prepared the master plan of drainage and flood-control in 1973. The plan envisioned to expand the pre-existing western canal, to construct eastern canal, and to improve the urban drainage systems in the areas around the canals. In 1997, JICA implemented "Comprehensive River Water Management Plan of JABOTABEK," which was a feasibility study for a prioritized project in the plan. Based on this study, a flood-control/drainage project was implemented under the assistance of the Japanese government.

The "West Jakarta Flood Control System Project" targeted the northwest of DKI Jakarta in the west side of the Ciliwung River, the "Engineering Services for East Jakarta Flood-Control Project" targeted the northeastern area in the east side of the river, while the "Ancol Drainage Improvement Project" targeted the northern area in the east side of the river, where flood occurs frequently.

These projects developed a flood protection system which can endure a 25-year flood. The components of the projects included repairing drainage and regulating reservoir, and constructing new canals, closing dyke, sluice gate and pump stations. The cooperation contributed to the decrease in the frequency of flood and flood damages. In addition, a considerable number of local engineers were trained by working with Japanese engineers during the construction period.

The construction of the eastern canal, which was proposed in the Master Plan in 1973, started in 2004

¹⁶ The Jakarta metropolitan area includes outskirts of Jakarta, such as Bogor, Depok, Tangerang and Bekasi, and called Jabodetabek.

with the budget of the Government of Indonesia, and it started functioning since 2010. It is expected that it will further reduce the flood damage in eastern Jakarta in the future.



Redeveloped Western Canal



Pump station constructed at Western Canal

Furthermore, from the point of view of the comprehensive water management in Jakarta, Japan implemented a development study, “Comprehensive River Water Management Plan of JABOTABEK” from 1995 to 1997. Another project, “Urgent Flood Damage study of Jabodetabek” was implemented in 2002, the importance of countermeasures by infrastructure such as the repairing of flood control facilities and the construction of retarded basin as well as those of non-structure countermeasures were proposed. Based on this, “The Institutional Revitalization Project for Flood Management in JABODETABEK” was implemented from 2007 to 2010. The project developed the capacity of the related organizations for river control, improved the capacity of information collection/analysis on flood control, developed a system to collect and analyze information for residents’ evacuation, and presented the situation and challenges on run-off water control in watersheds.

Moreover, a rehabilitation of Pluit pump station, located in the coastal line of Jakarta, was urgently conducted from 2009. The station is located in the low ground of the Ciliwung River, and was draining rainwater and wasting water off from the urban area of Jakarta. After a 45-year service (at that time), the basic structure was collapsed by piping in the rainy season of 2008 due to the deterioration of the concrete, and seawater flowed into the reservoir. To prevent the collapse of the whole facility, the project constructed/rehabilitated pump station buildings, drainage pipes and tide embankment, which were completed in 2015.



Source: JICA Website

Pluit pump station

4.3.3 Sewerage

The cooperation in the sewerage subsector was implemented in Jakarta and in local municipalities in Yogyakarta and Denpasar.

In Jakarta, the project of “Master Plan of Urban Drainage/Sewerage Improvement in Jakarta” was implemented and formulated in 1991. Then, the “Project for Capacity Development of Wastewater Sector through reviewing the Wastewater Management Master Plan in DKI Jakarta” was implemented from 2010 to 2012, and laws related to sanitation were developed, and the master plan of wastewater treatment was reviewed. An ODA loan project, “Improvement Plan for the Sewerage in the Special Capital Region of Jakarta” is currently under preparation, and engineering service including detailed design and tender assistance is under implementation in 2017.

Assistance for the improvement of sewerage was also provided in several cities like Yogyakarta and Denpasar. In Denpasar, a development study started in 1992, followed by the Phase I improvement project in 1994, and then the Phase II project in 2008. In Yogyakarta, a wastewater treatment facility was installed by a grant aid project in 1992.

It is worth mentioning that in Indonesia, there are 12 cities (by 2013) with sewerage, and 3 of them were developed under cooperation with Japan.



Source: JICA Review Team

Waste Water Treatment Facility in Yogyakarta



Source: JICA Website

Waste Water Treatment Facility in Denpasar

4.3.4 Solid Waste management /urban environment

(1) Solid Waste management in DKI Jakarta

In 1985, Jakarta faced an influx of population from surrounding regions such as Bogor, Tangerang and Bekasi. DKI Jakarta had a large population of 73 million, which became 99.5 million in 1995, and was expected to reach 120 million in 2005. Although urban development was progressing to deal with the inflowing population, there were areas with insufficient urban infrastructure, and a number of minor streets which hindered waste collection. Moreover, the city lacked intermediate waste collecting stations, and the number of waste collection truck was not enough. As a result, it was difficult to maintain the sanitation and aesthetics demands.

Therefore, to deal with the solid waste management problem, the necessity was described in REPELITA IV, the Capital (Jabodetabek) Development Plan, and the Jakarta Special Capital Region Basic Plan (2005). Previously, several studies had already been implemented for the improvement of the solid waste management by the World Bank and ADB. However, these studies were conducted targeting a part of the city, and no studies were implemented targeted the whole area of DKI Jakarta. Thus the “Study on Solid Waste Management System Improvement Project in the City of Jakarta (M/P, F/S)” was implemented under the cooperation of Japan from 1985 to 1987.

Based on the plan, the “Jakarta Urban Waste Management Project” was started in 1993, and following activities were implemented: 1) construction of final landfill site in Bekasi; 2) construction of intermediate collection stations; 3) provision of 193 waste collection trucks, 140 containers and 7 road cleaning vehicles, and 4) construction of vehicle repair workshop. Previously, the municipality collected 80% of the total waste output of Jakarta, 23,708 m³/day. The project increased the collection ratio up to 85.7% even the waste amount was increased to 25,600m³ a day. This result contributed to the improvement of the sanitation of citizens’ life as well as the aesthetics in the urban area.

After 2015, the final dumping site constructed in Bekasi is dealing with bigger amount of waste than planned, which was broadcasted as a problem at that time. However, since it is difficult to develop a new landfill site, they changed the operation plan for extending life of the site. The project responded the increasing demand for a proper waste management at that time, though it is true that new countermeasures, new landfill site and intermediate treatments are required.

As for human resource development for waste management, training on solid waste treatment and domestic wastewater treatment in the area of environment sanitation was implemented in the above-mentioned WSESTC. From 1991 to 2009, Japan contributed to human resource development by implementing the training for 2,471 trainees on environment sanitation.

(2) Solid Waste Management & 3R implementation

The law related to solid waste management was amended in 2008, which clarified the role of local authorities. Meanwhile, the “Regional Solid Waste Management for Mamminasata, South Sulawesi” and the “Regional Solid Waste Management Plan for Mamminasata, South Sulawesi” started in 2012. The main concept was regional waste management by cooperation among local authorities in the area. However, it was aborted because the agreement could not be reached among the local governments. The cooperation on waste management was continuously carried on and “The Project for Capacity Development of Central and Local Governments for 3R and Domestic Solid Waste Management System” started in 2013. This project corresponded to the amended waste management law in 2008 and the RPJMN (2015-2019) that showed the goal related to 3R. The project implemented pilot projects in Balikpapan and Palembang. In addition, for enforcement of the above-mentioned law, this project included a component related to the preparation of a draft of ministerial decree, which was the first step to disseminate 3R.

(3) Environmental Management Center

The EMC was established by a grant aid project in 1992. The center focused on the establishment of environment monitoring methods and human resource development in the area of environment administration. From 1992 to 2000, the “Environmental Management Center Project” equipped the center with laboratory function, monitoring planning implementation function, environment information collection/analysis function and training function. Besides, the “Environment Monitoring Improvement Project (1994-2001)” was implemented to install laboratory equipment in local offices of central ministries such as the Ministry of Human Health, the Ministry of Public Works, and the Ministry of Housing.

Through the center, the “Local Environment Management System Enhancement Project” (2001-2006) was implemented to develop an environment management system in local areas at the province level.

4.3.5 Participation of municipalities and private enterprises

(1) JICA Partnership Program (JPP)

JPP Projects are implemented based on the proposals of municipalities and NGOs. In the water supply, drainage, sewerage and environmental management sector in Indonesia, 20 projects were implemented in total shown in Table 4-2. The implementation teams involved Japanese local authorities, NGOs and research institutions, indicating the high interest of Japanese side in the sector. Projects which successfully produced outputs/outcomes have been horizontally spread across local authorities by using other funds.

Table 4-2: List of JPP Implemented in Indonesia in the Sector of Water Supply, Drainage, Sewerage and Environmental Management

Fiscal Year	Project Name	Corporation Name (Applier, Implementer)
2004	Development of a Model System for Participatory Community Waste Water Treatment in Densely Populated Area of Yogyakarta Special Province	Asian People’s Exchange (APEX)
2004	Training for sewerage maintenance and management technicians	Bureau of Sewerage, Tokyo Metropolitan Government
2004	Promotion of resource recycling	Bureau of Environment, Tokyo Metropolitan Government
2007	The Improvement of Water Quality Management Capacity in City of Surabaya	Kitakyushu, Fukuoka Prefecture Kitakyushu City Dep. of Environment
2007	Training for water business management and pipeline management	Tokyo Metropolis, Bureau of Waterworks of Tokyo Metropolitan Government
2009	Community-Based Solid Waste Management System Development Project in Makassar City	Kitakyushu, Fukuoka Prefecture, Kitakyushu City Dep. of Environment, Division of Environment and Economics, Office of International Cooperation
2010	Project for Diffusion of Enhanced Participatory Communal Waste Water Treatment System in Urban Densely Populated Area in Indonesia	Asian People’s Exchange (APEX)
2012	Project for Strengthening of Non-Incineration Type Waste Disposal Technology Development and Transfer	Ozakicho, Kagoshima Prefecture
2013	Project for efficiency of waste management in West Nusa Tenggara Province, Republic of Indonesia	Kitakyushu, Fukuoka Prefecture, Kitakyushu City Environmental Preservation Association

Fiscal Year	Project Name	Corporation Name (Applier, Implementer)
2013	Promote for efficiency of waste management in Medan City	Kitakyushu, Fukuoka Prefecture Shinryo Corporation
2014	The project on establishment of the sustainable community network to enhance self-supporting environmental improvement focusing on a community river in south Jakarta area	Nagasaki City, Nagasaki Prefecture Nagasaki University, etc.
2014	Research on Safe Drinking Water Supply and Quality Improvement for Citizen of Surabaya	Kitakyushu, Fukuoka Prefecture Institute for Global Environmental Strategies
2015	Aqua-environment improvement in North Sumatra by environmental education enhancement and technical training	University of Kitakyushu
2015	Project for improvement of water purification technology in Solok	Waterworks & Sewerage Bureau, Toyohashi City
2015	Project of domestic waste treatment improvement in Bogor	Hiroshima Prefecture Hiroshima Environmental Business Promotion Conference
2015	Potable water quality improvement in typical tropical peat land at Bengkalis	Ube City, Yamaguchi Prefecture Ube International Environmental Cooperative Association
2016	Technical assistance project for the construction of resource recycling city in Denpasar, Bali	Osakicho, Kagoshima Prefecture
2016	Support to develop waste separation and reduction system under a public-private partnership by the application of “waste bank” in the Special Capital Region of Jakarta	Clean Authority of TOKYO, Waste Disposal of TOKYO 23 cities
2016	Project of waste management assistance for the construction of sustainable resource recycling community in Bandung City	Kawasaki City, Kanagawa Prefecture Institute for Global Environmental Strategies
2016	Skills Support Regarding Leak Prevention Initiatives in Bandung City, Indonesia	Hamamatsu city, Shizuoka Prefecture Hamamatsu City, Division of Water Supply and Sewerage

Source: JICA Review Team based on the information on JICA website.

(2) Projects implemented under partnership with the private sector

In the fiscal year 2009, JICA launched a cooperation scheme that is implemented in partnership with the private sector and expanded the framework to include various sub-schemes depending on the size of companies and maturity of their business plans. So far, 32 projects have been implemented through this scheme in Indonesia as shown in Table 4-3. Some projects aimed at disseminating specific technologies and products and others aimed at spreading not only products but also systems operated with the products. According to the interviews conducted with several enterprises participated in the projects, they responded that the projects enabled them to show distinct features of their technologies, and the degree of recognition of their technologies and products has been raised in Indonesia. In addition, these technologies and products were tested in a new environment, and it led further product development/sophistication, which improved their competitiveness. However, they also found new challenges; it was necessary to improve their institutional arrangement in Indonesia and make more marketing efforts (the necessity to participate in bidding by making a joint venture with local enterprises, and technical description in bidding documents, etc.) in order to obtain more orders.

Table 4-3: List of Projects through JICA's Programs in Partnership with the Private Sector Implemented in the Sector of Water Supply, Drainage, Sewerage and Environmental Management

Fiscal Year	Field	Project Name	Company Name
2009	Water supply/ Sewerage	The preparatory study on application of wastewater reclaiming in southern Bali water supply system	Toyota Tsusho Co., Ltd. Nihon Suido Consultants Co., Ltd Metawater Co., Ltd
2009	Waste management	The Preparatory Survey on the Project for West Java Regional Solid Waste Treatment and Final Disposal	Padeco Co., Ltd, Kajima Corporation, Kyudenko Corporation, Shimizu Corporation, Taisei Corporation, Chodai Co., Ltd, JGC Corporation, Maeda Corporation, Mitsui Engineering & Shipbuilding Co. Ltd, Yachiyo Engineering Co., Ltd
2010	Sewerage	Preparatory survey on central sewerage treatment system in Jakarta	ORIX Co., Ltd, Oriental Consultants Co., Ltd, Nihon Suido Consultants Co., Ltd, Nippon Koei Co., Ltd, Nippon Health Industry Co., Ltd, Yokohama Water Co., Ltd, Padeco Co., Ltd
2011	Water supply	Preparatory Survey on BOP Business on Portable Water Supply with Solar Power System and Small Water Desalination Units	Suido Kiko Kaisha, Ltd., Toray Industries Inc., Kitakyushu City, Kitakyushu International, Techno-Cooperative Association (KITA)
2012	Water supply	Deployment of small-scale water treatment units for an expansion of water supply in urban fringe and scattered settlement areas	Pacific Consultants Co., Ltd Metawater Co., Ltd
2012	Sewerage	Feasibility survey for introduction and localization of pipe jacking technologies for sewage works in Indonesia	Yasuda Engineering Co., Ltd Iseki Poly-Tech, Inc, Nippon Koei Co., Ltd
2012	Sewerage	Pilot survey for disseminating SMEs technologies on pipe jacking for sewage works	Iseki Poly-Tech, Inc
2012	Waste management	Pilot Project on Intermediate Waste Treatment/ Recycling in Surabaya, Indonesia	Nishihara Corporation NTT Data Institute of Management Consulting, Inc.
2012	Waste management	Pilot Survey for Disseminating SME's Technologies for Recycling, Processing and Composting of Waste in Surabaya	Nishihara Corporation
2013	Sewerage	Dissemination of Industrial waste water treatment with the use of automatically regenerating activated carbon effluents purification system	J Top Co., Ltd Mitsubishi UFJ Research and Consulting Co., Ltd
2013	Water supply/ Sewerage	Verification survey with the private sector for disseminating Japanese technologies for automatic regenerating activated carbon wastewater purification system	J Top Co., Ltd
2013	Water supply	Verification survey for countermeasures to the non-revenue water by the application of a water leakage detector specific to resin pipes and for the supply pipe network maintenance management	GOODMAN Co., Ltd
2013	Waste management	Project Formulation Survey on Compost and Biogas from Organic Waste in Denpasar, Bali, Indonesia	Midori Sangyou Co., Ltd. NTT Data Institute of Management Consulting, Inc.
2014	Sewerage	Feasibility survey for introduction of efficient water environmental improvement system	TBR Corporation
2014	Water supply/ Sewerage	Feasibility survey for water recycling project by the application of UV sterilization devices in the special capital region of Jakarta	Chiyoda Kohan Co., Ltd. ASJ Co., Ltd. Dentsu Inc.
2014	Waste management	Feasibility study for establishment of a manufacturing and sales business for crushing separators in Jakarta, Indonesia	M-DIA Co., Ltd.
2014	Waste management	Feasibility survey for project formulation on the dissemination of compact environmentally friendly incinerators	Thomas Technology Institute Co., Ltd.
2014	Waste management	Verification study for normal waste recycling and dispersed treatment project in Denpasar, Bali	GREEN Industry Corporation

Fiscal Year	Field	Project Name	Company Name
2014	Waste management	Verification survey for non-incineration waste treatment system by multi- category division/reduction with resident participation	SO Recycle center Co., Ltd.
2015	Water supply	Feasibility survey for the private sector for utilizing Japanese technologies in ODA projects Indonesia, an application of dehydrator for an pre-treatment of septage to the existing waste water treatment plant in Batam	JASTEC Co., Ltd.
2015	Sewerage	Introducing decentralized domestic wastewater treatment system of Johkasou for public building	Daie Industry Co., Ltd.
2015	Water supply	Feasibility survey with the private sector for utilizing Japanese technologies in ODA projects for water supply management improvement through the introduction of water infrastructure management system	Pipe Design Inc.
2015	Sewerage	Feasibility survey for an application of microbial treatment equipment "BIOALSI" to sewage treatment and excreta disposal	JAPAN ALSI Co., Ltd.
2015	Sewerage	Feasibility Survey for introduction of efficient water environmental improvement system	TBR Corporation
2015	Waste management	Verification survey for project formulation on the dissemination of compact environmentally friendly incinerators	Thomas Technology Institute Co., Ltd.
2016	Water supply	Feasibility survey for improving service of drinking-water in Surabaya	Ishikawa Engineering Corporation
2016	Sewerage	Feasibility Survey for improving water environment in Bali with Holistic Maintenance System for Septic Tank of Wastewater Treatment	Earth Creative Co., Ltd.
2017	Water supply	Feasibility Survey for Non-Revenue Water Reduction Technology Using TS Leak Checker in Water Supply Sector	Tokyo Water Co., Ltd.
2017	Sewerage	Verification survey for Introducing decentralized domestic wastewater treatment system of Johkasou for public building	Daie Industry Co., Ltd.
2017	Sewerage	Verification survey for an application of microbial treatment equipment "BIOALSI" to sewage treatment and excreta disposal (150 million yen)	Japan ALSI Co., Ltd.
2017	Water supply	Basic investigation for the manufacturing and marketing of light, small-scale, and energy saving RO membrane filtering equipment in the areas without waterworks	Kansui Co., Ltd.
2017	Waste management	Basic investigation for waste reduction by the installation of crusher.	Niihama Iron Works Co., Ltd.

Source: JICA Review Team based on the information on JICA website

4.4 Outcomes/Impacts of Japan's Economic Cooperation and Future Prospects

4.4.1 Outcomes/impacts of Japan's economic cooperation to date

Based on the review of period-specific characteristics and noteworthy achievements of Japan's economic cooperation in the sector of water supply, sewerage/drainage and environmental management, major issues, direction of cooperation, implementation areas and project groups are summarized as below.

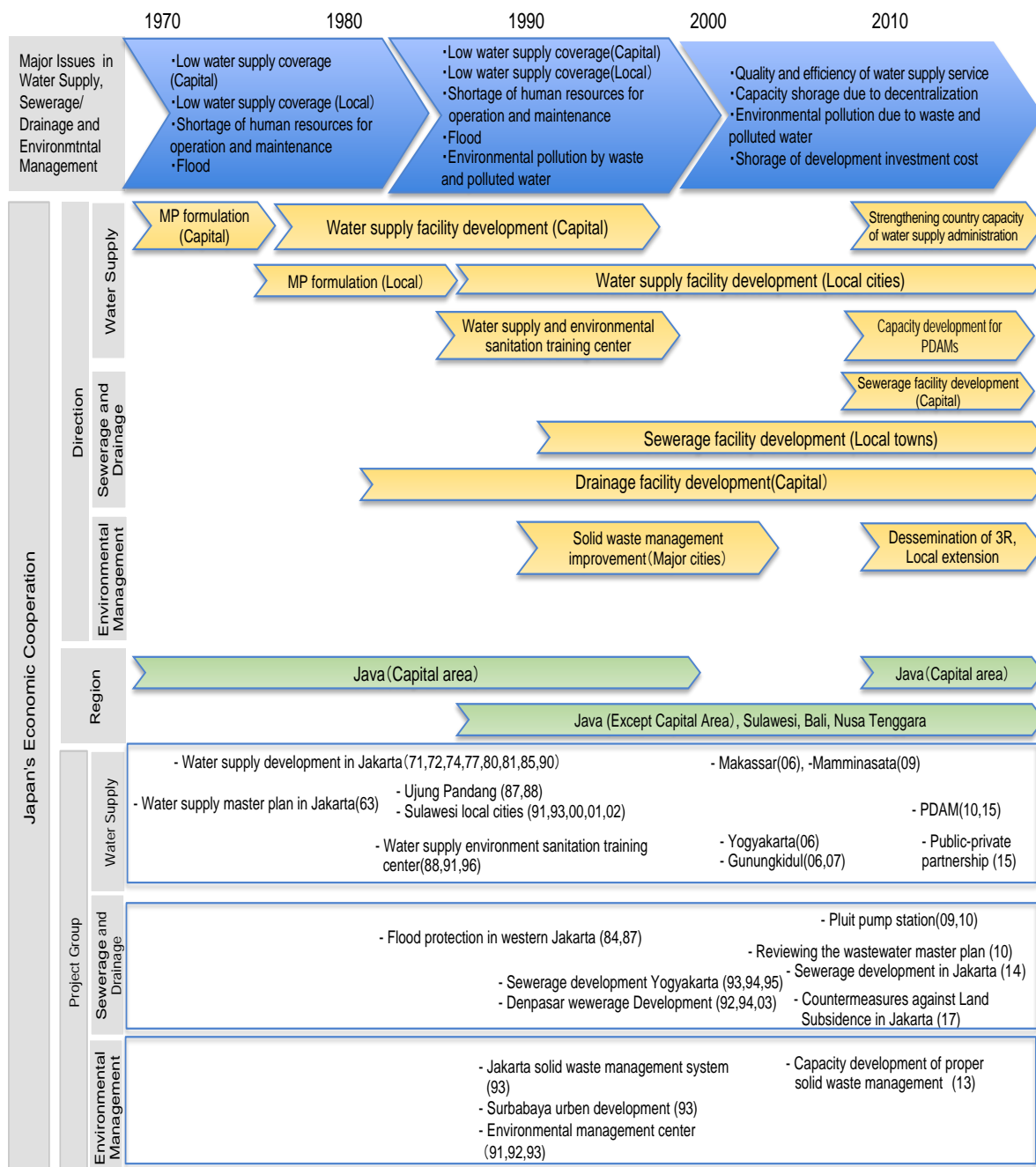


Figure 4-3: Characteristics of Japan's ODA in Water Supply, Drainage, Sewerage and Environmental Management

(1) Innovation

Japan started the cooperation for development of water supply in the 1960s. As the coverage of water supply increased in local towns in the mid-1980s, drainage development as flood-control measures was started. The cooperation with the sewerage and solid waste management subsectors started in the 1990s.

Along with the development of facilities, challenges in maintenance and management had also been recognized at the early stage. In response to the need, JICA started training programs by dispatching experts since 1973. The WSESTC was established in the late 1980s to sustain the outputs achieved in the training program. The center deals with issues of water supply, sewerage/drainage and solid waste management. In general, Japanese cooperation develops a master plan first, then grant aid projects and/or ODA loan projects to improve facilities follow. With technical cooperation for WSESTC including training program and dispatch of experts being added, an approach to combine various inputs as a package emerged, and it was considered to be innovative to the Japan's cooperation in the water supply subsector.

The needs for the environmental infrastructure such as sewerage and solid waste management facilities are usually recognized at later stages compared to those for electricity or water supply. Hence, the cooperation in this subsector started in the 1990s after the water supply subsector. At that time, Indonesia still utilized the sewerage/drainage system developed by the Netherlands in the colonial period, and there was no modern treatment system being operated. Therefore, it was considered to be a new challenge to build a modern system for the first time in the country.

(2) Added value

The WSESTC established 30 years ago has been operating as the Water Supply Training Center after the Environment and Sanitation Training Center was separately established. The center still serves well for capacity development of staff/technicians related to the water supply sector across the nation. Especially, after the decentralization, in addition to training on facility maintenance, training on financial management is also offered as it is indicated as a major challenge of local PDAMs. Higher values are being produced by expanding the curriculum that fits emerging needs.

A number of international cooperation projects were also implemented by Japanese local governments. For example, Kitakyushu City and Surabaya City have implemented not only JPP projects but also projects utilizing other sources of fund. Consequently, both city concluded "Green Sister City" agreement. In addition, proposals for JICA's programs for partnership with the private sector submitted by some experienced enterprises in Kitakyushu City were selected, and there are cases which may grow into a business. These ODA schemes have provided chances for various Japanese parties to start a relationship with Indonesia.

4.4.2 Implications for future cooperation

Water Supply

In the water supply subsector, JICA's cooperation is currently implemented focusing on the following three directions: 1) cascade-style training targeting PDAM across the nation; 2) clarification of roles of each institution in water administration, and strengthening the role of water association, and 3) implementing proposal-based projects in collaboration with Japanese SMEs under JICA PPP framework and JPP aiming at utilizing knowledge and technology of Japanese municipalities and companies.

The Government of Indonesia set a goal to achieve the safe water access rate of 100% in 2019 the RPJMN (2015-2019). In order to achieve the goal, it is necessary to invest more in infrastructure development in urban and local areas, but investment funds and human resources are not sufficient. For the capital investment, utilization of private sector capitals is planned to be 6% in the plan. In order to introduce private fund, human resources who have expertise in private accounting, and the basic information and documents on asset management need to be ready. Thus, the needs of human resource development on asset/finance management are high, and experiences of the implementation of training programs in the training center can be fully utilized. High demands for human resource development in the water supply subsector will be continued, and identifying more effective approaches and accelerating capacity development are expected in order to achieve the goal. Efficient approaches for cooperation with local governments will be particularly important since local governments have unilateral responsibility for the supply of social services.

In some of the proposal-based projects, cooperative relationships are developed between local governments in Japan and Indonesia, and Japanese companies' technologies and know-how are utilized effectively. Of these examples, effective technologies and approaches can be included in the contents of training of the Water Supply Training Center. It will be more effective to provide such inputs to the center through strengthening collaboration among the related projects.

On the other hand, it is expected that policy actions to address structural challenges between PDAMs and local governments/the central government, such as the governance of PDAMs, water tariff setting and subsidies will be required in the future.

In addition, as mentioned above, although Japan provided cooperation for the facility development in Jakarta for many years, no further cooperation was provided after the concession. In 2022, the contract of water supply concession will be terminated, and the right of operation and maintenance will be returned to PAM JAYA. It is necessary to observe the trend and movement including possible collaboration with sewerage development.

Sewerage/Sanitation

As the results of the water monitoring, deterioration of water qualities of both underground and surface water including river and oceans was confirmed. The problem can be attributed to the delay of the development of sewerage facilities. According to the annual report of the Ministry of Environment

of Indonesia, 80% of Monitoring Type II rivers (used for recreation, fresh-water aqua-culture, agriculture/plantation irrigation¹⁷) exceeded standards in 2013, and the rate is worse in urban area¹⁸. It is concerned that residents' health might get worse because most of them are using the surface water. As for the underground water in Jakarta, it is reported that all the 150 sites exceeded the *E.coli* standard in 2014¹⁹. It was estimated that among the consumed water in Indonesia, only 5% was properly treated²⁰. According to the fact mentioned above, especially the necessity and priority of sewerage development is high in Jakarta.

For the sewerage development, there are other challenges, which include how to promote house connection effectively, how to set tariffs for sustaining financial sustainability of sewerage service, and how to collect tariff in reliable way. Those challenges need to be addressed in the future.

Because there are many organizations that do not operate wastewater treatment facilities, not only facilities development but also capacity development of human resources will be prioritized issues. It is therefore expected that both facility development and capacity development will be enhanced through ODA loan projects. Furthermore, similar to the case of waste management explained below, sewerage service is a field where people are not willing to pay for. Therefore, public awareness campaign will be necessary to gain understandings from users.

Environmental Management

Despite of dissemination of 3R based on the amendment of Waste Management Law, terminal treatment facilities in Jakarta is going to exceed its capacity soon. Therefore, Jakarta is installing intermediate treatment facilities for reducing the volume of final waste. The introduction of incineration facilities, and preparation of technical standards and environmental measures for the facilities are expected to be supported by Japanese cooperation. In addition, intermediate treatment and collection services by private enterprises also require the support. To this end, cooperation for policy development by the government as well as establishment of management structure is also an important field for better solid waste management administration.

Assistance on environment management will be increasingly required along with the accelerated industry and economic development in Indonesia. In the areas where environment monitoring is not performed, it is imperative to make efforts to conduct monitoring. The items of the monitoring should include not only water quality but also air quality and soil.

¹⁷ Article 8 Government Regulation No. 82/2001 dated 14th December 2001. Class II.

¹⁸ Ministry of Environment of Japan. *Indonesia ni okeru taiki osen tou no genjo. [The situation of air and other pollutions in Indonesia.]*

<https://www.env.go.jp/air/tech/ine/asia/indonesia/files/pollution/files/pollution2016.pdf> (Accessed in April 2018)

¹⁹ SLHD Provinsi DKI Jakarta Tahun 2014,

<https://www.env.go.jp/air/tech/ine/asia/indonesia/files/pollution/files/pollution2016.pdf> (Accessed in April 2018)

²⁰ The World Bank, AUSAID. *East Asia Pacific Region Urban Sanitation Review: Indonesia Country Study*. 2013.

Multi-sector issues

This chapter addressed water supply, sewerage and environmental management, which are related to each other as shown in the problems on surface water quality and river waste disposal. Moreover, the problem of land subsidence, which is related to water source development, is observed. Local governments will be responsible for these issues, therefore, comprehensive approach for municipality will be necessary. In other words, by target municipalities, reinforcing their capacities in multiple sectors including planning, implementation, operation and coordination will be an approach for coming cooperation instead of implementing cooperation in individual sector.

The Water Supply Training Center and EMC, to which Japan has been cooperated for a long time since its establishment, produced significant achievements in capacity development for local organizations (PDAMs and environment management offices). The Water Supply Training Center had already received trainees from Timor-Leste, and has a huge potential to accelerate Third Country Training and South-South Cooperation.

Chapter V Private Sector Development

5.1 Summary¹

For the purpose of supporting private sector development, various projects have been carried out so far, covering areas such as 1) Promotion of manufacturing industries including supporting industries, 2) Development of industrial bases including industrial estate construction, 3) Vocational training and industrial human resources development, 4) Small and medium-sized enterprise (SME) promotion and export promotion, 5) Improvement of business environment (fair competition environment, customs clearance, measurement system, etc.), 6) Promotion and development of tourism industry, in the forms of research and planning and financial cooperation (grant or loan) as well as technical cooperation. Since the establishment of diplomatic relations between Indonesia and Japan under the bilateral peace treaty concluded in 1958, Japan has supported Indonesia in various forms to meet the nation's changing needs in political system and social economy.

From the 1960s to the 1980s, in the period of national building and economic development after independence, a lot of planning support and financial cooperation were provided for “development of key industries and industrial bases” In addition to renovation and expansion of the existing state-owned factories (paper production, spinning, textile processing, ship building, fertilizer processing. etc.), Japan supported in research and planning on new industry development such as steel industry and chemical industry. In the Asahan development aiming at development of industrial bases in North Sumatra Province, a series of ODA loans were provided from the 1970s to the first half of the 1980s. As a result, a regional base for the aluminum smelting business was established combined with the construction of hydropower generation dam. Also, this time, the Ujung Pandang Industrial Estate was constructed, which is regarded as a model of an industrial park in the eastern Indonesia.

From the middle of the 1980s to the Asian Financial Crisis in the late 1990s, “vocational training and industrial human resources” was focused on. This was in response to the aggressive foreign-capital introduction policy (including Japanese investment), resulting in establishment of national/ regional training centers which train vocational training instructors and industrial extension officers. At the same time, financial assistance and technical cooperation were provided for establishment of export training centers, which was urgently required to break away from Indonesia's crude-oil dependent economic structure. Those assistances comprehensively supported acceleration of industrial human resources development in Indonesia.

Shifting to the period of reformation of democratization and decentralization after the Asian Financial Crisis, Japan's priority in bilateral cooperation shifted from the support of manufacturing industry

¹ In private sector development, it is necessary to promote domestic/ foreign investment for strengthening the competitiveness of industries and companies, while many factors such as political and economic stability, economic infrastructure (transportation and energy), quality and quantity of workers, and related laws and regulations are considered for judgment of private investment. According to the sector classification by JICA, institutional strengthening and capacity development related to infrastructure development may also be classified as private sector development projects. However, in this review study, technical cooperation or financial cooperation implemented directly for infrastructure development support are not included as those for the private sector development. Only those directly contributing to industrial development and promotion are reviewed in this Chapter.

promotion, the establishment of industrial bases and vocational training to the creation of mechanisms for “improvement of the competitiveness of the private sector.” Based on the so-called Urata proposal made in 2000, technical cooperation related to promotion of supporting industries, industrial clusters, and SMEs became the focus. Support for intellectual property rights protection to protect producers and consumers started since the 1990s ahead of other countries. Furthermore, as Indonesia joined middle-income countries around 2010, technical assistances for institutional development related to areas such as food safety from the aspects of consumer protection are also being implemented in the era of globalization.

Table 5-1: Overview of the Private Sector Development Sector in Japan’s ODA

Period	1960s	1970s and early 1980s	Late 1980s	1990s	From the end of 1990s	From the end of 2000s
	Nation-State Building	Economic Development	Structural Adjustment	Growth until the Asian Financial Crisis	Democratization and Decentralization	Middle-Income Countries
Historical Context	<ul style="list-style-type: none"> • Cold War • ASEAN (1967) • Inauguration of President Suharto (1968) • Oil-dependent economic development • Green Revolution 	<ul style="list-style-type: none"> • First Oil Crisis (1973) • End of Vietnam War (1975) • Second Oil Crisis (1979) 	<ul style="list-style-type: none"> • Plaza Accord (1985) • Reversed Oil Crisis (1986) • End of Cold War (1989) 	<ul style="list-style-type: none"> • Asian Financial Crisis (1997) 	<ul style="list-style-type: none"> • Laws on Local Autonomy (1999) • Millennium Development Goals (2000) • Election of President Yudhoyono by direct election (2004) 	<ul style="list-style-type: none"> • Japan Indonesia Economic Partnership Agreement (2008) • G20 Accession (2008) • Jakarta Commitment (2009) • Sustainable Development Goals (2015) • FDI promotion (MP3EI)
Situation of the Sector	<ul style="list-style-type: none"> • Monopolization of Plantation-type business (industry, estate, sea transport, insurance, finance, etc.) • Monopolization of Imports by state-owned enterprises • Decline of FDI due to investment permission system (during period of President Sukarno) • Foreign Investment Law enacted after President Suharto (1967) 	<ul style="list-style-type: none"> • National-led Industry Promotion • Maintaining state-owned enterprises in textile, fertilizer and paper processing • Expansion of Japanese companies’ investment in Indonesia • Percentage of manufacturing products in national exports 2.6% (1980) 	<ul style="list-style-type: none"> • Economic Stagnation due to sluggish crude-oil price • Appreciation of Japan Yen after Plaza Accord and acceleration of Japanese companies in entering Indonesia • Percentage of manufacturing products in national exports 9.7% (1985) 	<ul style="list-style-type: none"> • Revision of Foreign Investment Law: Approval of company establishment with 100% foreign capital (with negative list) (1994) • Economic recovery with oil price recovery • Withdrawal of foreign capital mainly European and American entities, due to Asian Financial Crisis (1997) • Percentage of manufacturing products in national exports 23.6% (1995) 	<ul style="list-style-type: none"> • Promote privatization of state-owned enterprises • Revision of negative list for FDI (2000) • Unification of enterprise establishment procedure in BKPM (2004) • Percentage of manufacturing products in national exports= 16.8% (2005) 	<ul style="list-style-type: none"> • Presidential decree for mandating use of domestic products (2009) • Strengthening mandatory compliance with SNI (2009) • Increase in Japanese investment in Indonesia • Stable private consumption growth • Export decline due to sluggish commodity price • Export reduction due to policy prohibiting export of raw minerals (2013) • Increase of direct investment in fields of metal, machinery, electric machinery, chemicals and pharmaceuticals

Ref. Index: Manufacturing Contribution to GDP	7.6% (1965)	11.6% (1980)	16.0% (1985)	24.1% (1995)	27.4% (2005)	21.0% (2014)
Priority development issues in the 5-year development plan	<ul style="list-style-type: none"> • Decolonization of economic structure • Emphasis of basic manufacturing industry, and petroleum and mining • Linkage between agriculture and manufacturing industry 	<ul style="list-style-type: none"> • Manufacturing industry has employment absorption capability and contributes to export expansion, Focusing on basic consumer goods • Promotion of labor-intensive industry 	<ul style="list-style-type: none"> • Change of Industrial Structure: Break away from dependence on oil • Promotion of production sector of capital goods and intermediate input goods, and employment creation • Promotion of manufacturing (Industrial machinery, urea, cement, clothing, etc.) • Enhancement of linkage between large enterprises and SMEs 	<ul style="list-style-type: none"> • Balanced economic structure: Expansion of secondary and tertiary industries • Strengthening of non-oil gas sector for export (agricultural processing, metal, chemical, machine) • Expansion of domestic and foreign investment • Enhancement of service supporting agriculture and industry • Increase of competitive SMEs and local industries 	<ul style="list-style-type: none"> • Stabilization of finance and economy, and strengthening of export • Export promotion by strengthening of non-oil gas sector • Capital market development and investment promotion • Strengthening and fostering SMEs • Two challenges in economic development: Globalization and Decentralization 	<ul style="list-style-type: none"> • Enhancement of safeguard for inferior goods (ineligible items, smuggled goods, etc.) • Promotion of resource processing industries/ import substitute industries • Promotion of R&D, knowledge and technology intensive industry (science and techno park development) • Protection of intellectual property rights
Direction of Japan's cooperation	<ul style="list-style-type: none"> • Supporting key industries 	<ul style="list-style-type: none"> • Supporting key industries • Industrial development support • Infrastructure development for industrial promotion 	<ul style="list-style-type: none"> • Support for export promotion • Improvement of foundation for foreign direct investment promotion 	<ul style="list-style-type: none"> • Support for export promotion • Support for supporting industry promotion • Infrastructure development for private sector promotion 	<ul style="list-style-type: none"> • Support for sustainable growth by private sector initiative • Infrastructure development for private sector promotion 	<ul style="list-style-type: none"> • Improvement of business investment environment • Supporting industrial human resources development for enhancement of industrial competitiveness • Support for industry and business promotion
Outcomes	<p>Development of Large-scaled Industrial Base (research and planning, Asahan Development, Ujung Pandang Industrial Estate)</p> <p>Establishment of Central Functions for Vocational Training and Industrial Human Resources Development</p> <p>(Industrial Park Development by Japanese Enterprises)</p> <p>Institutional Development related to Investment and Business Environment</p> <p>Strengthening of Mechanism for SME Promotion and Supporting Industry Promotion</p>					

Note: Dashed lines in the section of outcomes indicate the impact/ spillover effect from the previous period.

5.2 Historical Context and Japan's Cooperation

5.2.1 Number of projects and commitment amounts

There have been 137 projects implemented under the sector as of December 2017, which can be broken down into 40 technical cooperation projects, 49 development studies, and 48 instances of financial cooperation (43 loans and 5 grants).

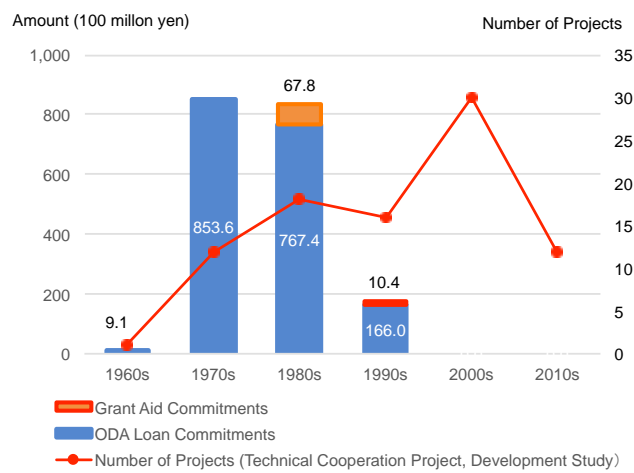
The amount of financial cooperation and the number of technical cooperation projects for private sector development by decade from the 1960s to the 2010s is shown in Figure 5-1. The financial cooperation in this sector was provided on a scale exceeding 80 billion yen in the 1970s and the 1980s respectively, and then further down to 20 billion yen in the 1990s. After the 2000s no new financial cooperation has been rendered.

On the other hand, the number of technical cooperation projects and development studies increased from one in the 1960s to 12 in the 1970s to 18 in the 1980s, to 16 in the 1990s, and to over 30 in the 2000s. Since then 21 cases have been implemented from the beginning of the 2010s to the present. The background to this record is explained as follows. Until the 1980s, many research and planning support projects related to manufacturing promotion and industrial bases development were implemented. Since the 1990s, however, researches and studies as well as technical cooperation for promoting SMEs, export promotion and business environment improvement became the mainstream of cooperation.

5.2.2 Period-specific characteristics of Japan's economic cooperation for Indonesia in private sector development

In this section, the private sector development in Indonesia and support of the Japanese government for Indonesia are summarized by period.

- The 1960s: Support for rebuilding economic and industrial activities of the nation focusing on restoration of the state-owned factories.
- The 1970s: Support for economic development through cooperation on manufacturing promotion and large-scaled industrial base development.
- The 1980s: Support for strengthening the manufacturing sector through development of vocational training and industrial human resources, as well as promotion of SMEs.



Source : JICA Review Team

Figure 5-1: Commitment Amounts of Financial Assistance (E/N base) and the Number of Technical Cooperation (Technical Cooperation Project and Development Study) by Decade

- The 1990s: Support for industrial upgrading in the era of global competition, through institutional development.
- From the end of 1990s: Support for improvement of the private sector's competitiveness under the democratization and decentralization, through development of appropriate mechanisms for SME promotion and improvement of business environment.
- From the end of 2000s: Support for further improvement of business environment and supporting industry development.

(1) The 1960s: Support for rebuilding economic and industrial activities of the nation with focus on restoration of the state-owned factories.

1) Situation of the sector

The Indonesian Government, achieving successful independence, promoted trade monopolies by state-owned enterprises under a series of industrialization policies to nationalize major industries such as mining, farming, shipping, insurance, finance. It also introduced investment permission system and import substitution policy. As a result, industries such as textile, shipbuilding, steel, cement and fertilizer expanded, but foreign direct investment had declined. In response to this, a foreign investment law (Act No. 1 of 1967) was enacted in order to open markets to foreign investment. The first Five-Year Development Plan (REPELITA I: 1969/70-1974/75) clarified the direction of economic development introducing foreign investment and foreign aid, which led the economic development during the 1970s.

2) Major efforts by Japan

Japan's cooperation during this period was mainly related to the restoration of state-owned factories such as caustic soda, paper and textiles processing. Of the six fields, manufacturing industry promotion was the focus during this period, implementing one unit of research and planning, and three packages of financial assistances.

(2) The 1970s: Support for economic development through cooperation on manufacturing promotion and large-scaled industrial base development

1) Situation of the sector

The 1970s, economic development at an early stage, was when the nation had the main responsibility for industrial promotion. The state-owned enterprises played an important role in the major industrial fields of textiles, fertilizer and paper.

2) Major efforts by Japan

Financial assistances were provided for the repair and expansion of the state-owned enterprises for the purpose of manufacturing promotion. In particular construction/ refurbishment of Jakarta and Medan casting centers, etc. were undertaken to strengthen them as centers for manufacturing machinery parts. In

addition, support was also made for development of large-scale industrial bases. Notable examples include the development of aluminum smelting business making use of Asahan Hydropower in North Sumatra Province, and the planning of the Ujung Pandang Industrial Estate in the suburbs of Makassar in South Sulawesi Province. In this period of cooperation, there were many research, planning and financial cooperation projects rendered for manufacturing promotion and industrial base development. The scale of financial cooperation totaled over 85 billion yen with approximately 18 billion yen for the promotion of manufacturing industry, approximately 64 billion yen for the improvement of industrial base (aluminum smelting business and urea business), and development finance.

In addition, during this period, tourism development in the Toba Lake around Asahan Hydroelectric Power Development Area and the promotion of tourism industry in Yogyakarta Province and Central Java Province with historic temples recognized as World Heritage sites in recent years were carried out in terms of research and planning and tourism park development. Prior to the construction of the Ujung Pandang Industrial Estate, technical cooperation was also conducted with the aim of strengthening the vocational training center in Makassar for promoting local employment.

(3) The 1980s: Support for strengthening the manufacturing sector through development of vocational training and industrial human resources, as well as promotion of SMEs

1) Situation of the sector

In the 1980s, industrial promotion and industrial base development was continuously prioritized, centering on the state-owned enterprises. However, in the latter half of the 1980s, Indonesia entered serious economic stagnation due to the slump in crude oil prices, and it became an urgent task to restructure economy too dependent on oil. Specifically, capital and technology from foreign countries including Japan was introduced with the aim of further industrialization and strengthening of exports. In addition, following the trend of the yen appreciation after the Plaza Accord and the acceleration of Japanese companies entering ASEAN countries, Indonesia was encouraged to promote SMEs and supporting industries.

2) Major efforts by Japan

While continuing to provide support for renovation of state-owned enterprises, Japan supported promotion of SME manufacturers and supporting industries in projects such as the “Small and Medium Industry Promotion and Development Plan” (1984-1986) and “Metal Processing Industry Development Center Establishment Plan” (1988). In addition, in 1981, under the “ASEAN Cooperation Initiative for Human Resources Development” proposed by former Prime Minister Zenko Suzuki on his visit to ASEAN Membership States, Japan’s cooperation began to establish the Center for Vocational and Extension Service Training (CEVEST) in the industrial zone near Jakarta city, as a human resources development center to be established in each ASEAN country.

Japan provided a grant aid project to construct facility and procure necessary equipment for CEVEST, followed by a technical cooperation project which was implemented from 1983 to 1990 aiming at

training quality instructors and small industry extension officers in the fields of machinery, automobile welding, sheet metal, electronics, electric machinery and training techniques. Through a series of technical cooperation projects, three-year trainings were provided to the vocational training staff working at 153 regional vocational training centers (BLK) under the jurisdiction of the Ministry of Labor for attaining Diploma III (three-year system). It also supported capacity building programs in terms of skills and knowledge in the fields of machinery, electricity and electronics, for improvement of the technicians of the enterprises.

From 1986, a series of cooperation projects at the Indonesia Export Training Center (IETC) were also implemented. Buildings and equipment related to the center development were provided by grant aid, together with technical cooperation to provide necessary knowledge and know-how to IETC, so that they could plan and manage practical training services to private sector firms in terms of export business and simulation of trade practices.

In this period, all the six fields of Japan's cooperation were covered. In the promotion of the manufacturing industry and the industrial bases development, following the trend from the 1970s, research, planning and financial cooperation continued. In addition, for the vocational training, industrial human resources development, SME promotion and export promotion, financial cooperation and technical cooperation were implemented in packages for developing the above two centers.

Also, during this period, as the yen appreciated due to the influence of the Plaza Accord in 1985, the export-oriented industries in Japan expanded their businesses into the ASEAN countries. Japan announced the "New Aid Plan" (New-AID) in 1987 and showed its intention to promote export-oriented industries in ASEAN countries by conducting "trinity cooperation" for combination of trade, investment and economic cooperation. In this context, Japan conducted a study called "Industry Sector Promotion Development Plan Study" (1988-1991) and formulated relevant strategies for the promotion of promising export industries such as handicrafts, rubber products, electrical equipment, plastic products, aluminum products, and ceramic products. Subsequently, several recommendations were given to Indonesia, such as establishment of promotion center for specific industries, training of engineers, training for metal processing industry, projects related to export promotion, etc., leading to cooperation implemented in the following period.

(4) The 1990s: Support for industrial upgrade in the era of global competition, through institutional strengthening

1) Situation of the sector

In the 1990s, a global trend of foreign companies entering the ASEAN countries faced a turning point. In addition to rising wages and lack of technicians, problems such as deterioration in trade balance became apparent, and other countries including China grew rapidly in the labor-intensive industrial sector. Thus, Indonesia realized the need to upgrade its industrial sector.

2) Major efforts by Japan

In Japan, the ASEAN Industry Upgrade Vision was advocated in 1993 by the then called Ministry of International Trade and Industry, and Japan's cooperation to Indonesia shifted to the promotion of supporting industries which is one of the priority issues focused in the Vision. During the period when the Suharto administration was aiming at introducing foreign capital and promoting exports, the policy of strengthening supporting industries and attracting manufacturing companies were consistent goals in the Indonesian policies. Under such circumstances, the "Industrial Promotion Development Plan (Supporting Industry)" (1994-1997) and the "Supporting Industry Promotion Plan in Casting Technology Field" (1999-2004)" were implemented. In addition to the above survey and plan concerning the promotion of the manufacturing industry, supports for CEVEST² and IETC established in the 1980s were continued or followed-up. Other cooperation programs were also conducted for formulating basic legal systems (industrial standards, weighing systems, industrial safety and health, etc.) to promote industrial upgrading.

(5) From the end of 1990s: Support for improvement of the private sector's competitiveness under the democratization and decentralization, through development of appropriate mechanisms for SME promotion and improvement of business environment

1) Situation of the sector

Economic activities in Indonesia stagnated due to the Asian Financial Crisis that occurred in late 1997. On the political side, the Suharto administration came to an end and the nation shifted into a period when the administration system quickly transitioned to democratization and decentralization. Privatization of state-owned enterprises reached full-scale in the fields of electric power, communication, highway, etc., while public corporations had been made in the fields of railway, port management, shipbuilding and the like. Industrial development that the nation had been promoting for many years entered the stage where it could be led by people in the private sector.

2) Major efforts by Japan

Regarding private sector development, in response to the request of President Wahid in November 1999, Professor Shujiro Urata from Waseda University was dispatched as a SME policy advisor for the Minister for Economic, Fiscal and Industry Coordination at the time of Kwik Kian Gie, and compiled "Policy Recommendation for SME Promotion in the Republic of Indonesia" (so-called Urata Report) in July 2000.

In the policy recommendation, the importance of SME promotion in economic activities was reaffirmed, and based on this, "SME Cluster Strengthening Plan in Indonesia" (2001-2003) aiming at promoting industrial clusters with focus on micro enterprises, "SME Human Resources Development

² From 1992 to 1997, training was conducted for vocational training instructors and skill improvement training for private company workers in the fields of machinery, electrical machinery and electronics was provided as the secondary technical cooperation (including a grant aid project for procuring equipment).

Plan” (2003-2004, 2006-2008) and “SME Human Resources Development Support Project” (2005-2008) for developing human resources necessary for SME promotion were implemented. As one of the results of these cooperation projects, under the jurisdiction of the Ministry of Industry in Indonesia, SME management consulting system was introduced and more than 450 SME consultants (so-called SME diagnosticians or *Shindanshi*) were produced by training³.

In the field of business environment improvement, the ministries and agencies of Japan dispatched long-term experts to the relevant ministries and agencies in Indonesia to support various legal system development in parallel with undertaking technical cooperation projects. Investment promotion supports have been implemented since the 1990s, and supporting areas increased since the beginning of the 2000s. Examples are: Support for fair competition framework (Fair Trade Commission), support for legal system formulation related to industrial property rights and intellectual property rights (Ministry of Economy, Trade and Industry), support for improvement of customs administration and customs procedures (Ministry of Finance), and institutional building support for industrial safety and health (Ministry of Health, Labor and Welfare). At the same time, privatization and corporatization of state-owned enterprises became full-fledged, and industrial production facilities owned by former companies ceased to be state-owned property, so financial cooperation for renovation and expansion of them became no longer implemented. On the other hand, further transformation was made for the SME promotion policy recommended aforementioned in terms of research study, planning and technical cooperation.

Under the decentralization regime, an issue for the central government agencies was to formulate a proper mechanism to realize regional industry promotion while coordinating with the local government agencies. The “Regional Trade Training and Promotion Center Project (RETPC)” (2002-2006), a regional version of the IETC established in Jakarta in the 1990s, responded to the challenge. Under the Ministry of Trade, the RETPCs were established in four places: Surabaya, Medan, Makassar and Banjarmasin. In addition to trade practices, training services related to product development and marketing promotion were provided to local producers/ business players in the RETPCs. After the project completion, additional center was established in the form of technical cooperation by the Ministry of Trade, in response to the request of the West Nusa Tenggara Provincial Government in the early 2010s. This movement suggests that the training needs for trade practices are rising in other areas than the above four places.

The “Local Industry Promotion Support Project in South Sulawesi Province” (2009-2012) is a case of technical cooperation for local SME promotion, which was implemented in cooperation with a direct counterpart of local government. This project was supported by various local government agencies

³ Among them, 255 diagnosticians are trained by JICA’s cooperation, and the rest by the Ministry of Industry’s own budget. Under the decentralized regime, nor a few cases were reported that the trained diagnosticians were influenced by the restructuring of the local government organization system causing difficulties in continuation of their duties as diagnostician. Consequently, the cost effectiveness of the diagnostic training program was considered to be a problem in the Ministry, resulting in that the diagnostic training program have not been implemented since FY 2013 (Source: Industrial Development Advisor Completion Report, May 2013).

(provincial, district/ municipal development planning agency (BAPPEDA), office for commerce and industry, office for SME and cooperatives, etc.) in cooperation with the Chamber of Commerce and Industry, and Higher Education Institutions (Hasanuddin University), for analyzing market potential of local products such as cacao and silk, identifying strategic priority products, carrying out product development and market testing repeatedly by involving local producers and businesses. Through the implementation of this project, a model for product development and marketing promotion was formulated and its effectiveness was evaluated positive by the Ministry of Industry, which was in the position of supervising and advising the projects. Subsequently, in the 2010s, the model has been applied under the Ministry to the other regions in Indonesia as a participatory production development and marketing promotion model.

(6) From the end of 2000s: Support for further improvement of business environment and supporting industry development

1) Situation of the sector

The motivation to invest in Indonesia for foreign companies including Japanese ones increased as the middle class grew and personal consumption increased after the nominal GDP per capita exceeded US\$ 3,000. . Given such circumstances, the Government of Indonesia formulated national policies to protect the interests of the citizens and the domestic industry, for enhancement of safeguards to eliminate inferior goods and bad products including smuggled goods and forbidding raw mineral resources export.

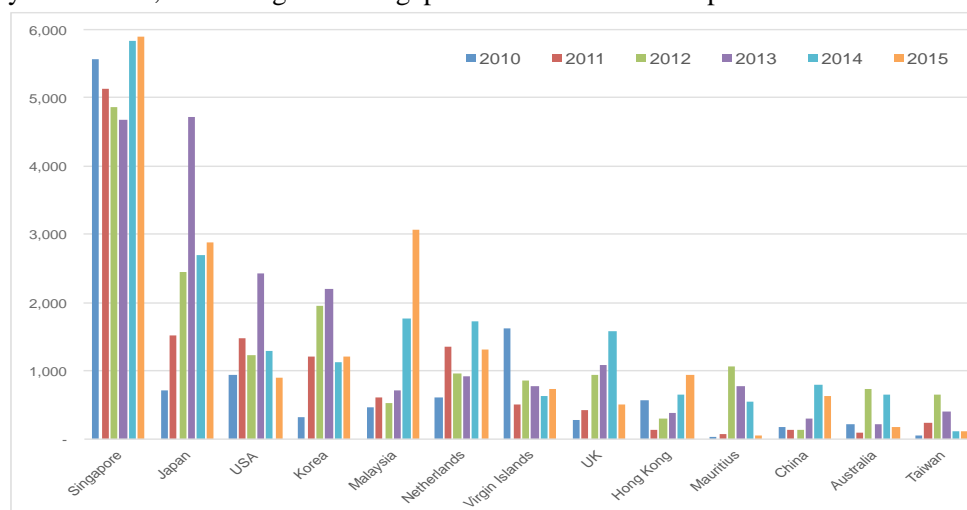
2) Major efforts by Japan

Many of the cooperation implemented during this period was technical cooperation. The majority of them were those related to the Japan-Indonesia Economic Partnership Agreement (JIEPA) that came into effect in July 2008, and the “Project for Strengthening Utilization of the Japan-Indonesia Economic Partnership Agreement” (2010-2014) was implemented as one of them in cooperation with the Ministry of Trade. JIEPA is not only seeking to reduce tariffs in trade procedures, but also to promote mutual economic development through promoting supporting industries of both countries. Manufacturing Development Center Initiative (MIDEC) was formulated under JIEPA, as one of the priority programs covering 13 areas⁴ with 26 projects, among which the “Project on Enhancement of Metalworking Capacity for Supporting Industries of Construction Machinery 2” (2014-2017) was a technical cooperation project related to metal processing and production process management centered on steel casting technology. This project was implemented in cooperation with the Ministry of Industry for industrial clusters and supporting industries of casting and metal processing in three provinces in Java: West Java, Central Java and East Java.

⁴ 13 areas are i) metal work, ii) molding, iii) welding, iv) energy saving, v) promotion of investment and export, vi) promotion of SMEs, one village one product (OVOP) and industrial clusters, vii) automobile, viii) electric and electronic, ix) steel, x) textile, xi) fatty chemistry and petrochemical, xii) nonferrous metals, and xiii) food and beverages.

Also as part of MIDEK, the “Project on Small and Medium Industry (SMI) Development based on Improved Service Delivery in Indonesia” (2013-2016) was conducted during this period. This project was implemented based on the activity model (participatory product development and marketing promotion) which had been verified in the local industrial promotion support project implemented in South Sulawesi Province in the late 2000s, as well as based on the legal system formulated until that time, aiming at establishing a platform which can effectively deliver supporting services to SMEs. Starting with strengthening partnerships with local governments (province, district/ municipality) in Java-Bali, Sumatra, Kalimantan and Eastern Indonesia selected as the pilot area, the project’s overall goal was set to expand the scope of the project to the rest of the country.

In addition to the above, as the result of activities of the investment promotion policy advisors dispatched over nine generations to date, the Investment Coordinating Agency (BKPM) established a single window service system called Japan Desk or Japan Team, and the investment application/ licensing procedure for Japanese companies was efficiently improved. This also affected, coupled with the economic situation of the country then, and Japanese investment in Indonesia increased remarkably from 2010, exceeding even Singapore in 2013 for a short period of time.



Source: JICA Review Team based on the data from BKPM

Note: In the BKPM data, mining does not include oil and gas, and service industry does not include finance.

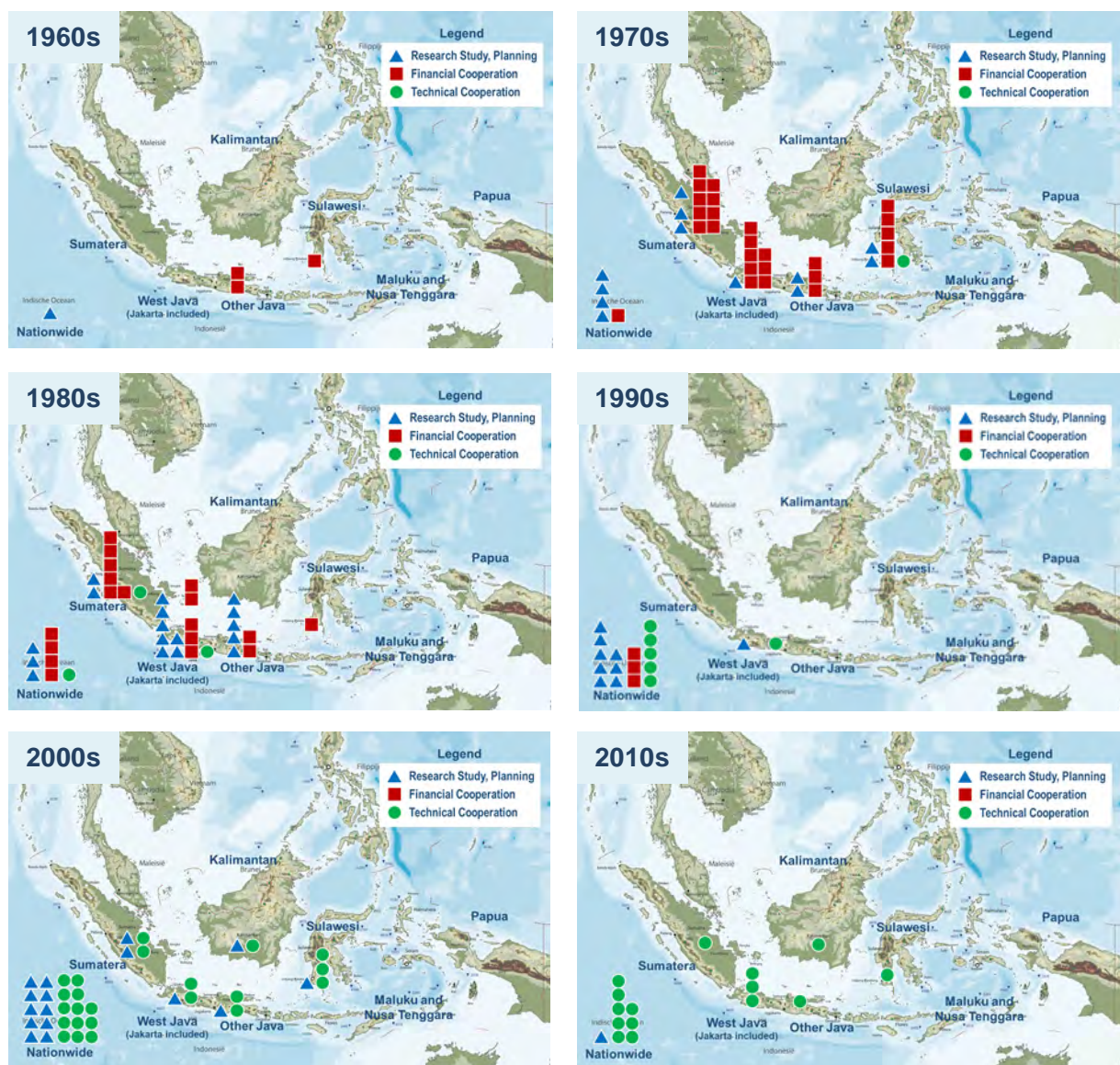
Figure 5-2: Changes in Major Countries’ Foreign Investment Amount to Indonesia (2010 - 2015) (Unit: Million USD)

5.2.3 Tendency of Japan’s assistance by geographical area

Based on how Japan’s cooperation had been implemented in the six periods in the past, much financial cooperation centering on the Java area was implemented in the early years, and subsequently the scope of cooperation activities expanded to areas other than Java. Also, technical cooperation became the main subject rather than financial cooperation. This is apparent from Figure 5-3 which shows the following:

- For about 30 years from the 1960s through the 1970s to the 1980s (Structural Adjustment Period), financial cooperation and related research study and planning were the subjects of cooperation, mainly in the two fields of manufacturing promotion and industrial base development. During this period, most cooperation was implemented in Java and Sumatra.

- From the 1980s to the first half of the 1990s (the Asian Financial Crisis), assistance was conducted to establish the centers for industrial human resources development in the Java region (Jakarta) in the form of combination of financial cooperation and technical cooperation. In the 1990s, it can be seen the Japan's cooperation was in a transition period from "financial cooperation centered on Java and Sumatra" to "technical cooperation covering various regions of the whole country including Eastern Indonesia."
- Since the 2000s, financial cooperation has decreased while technical cooperation became mainstream. In terms of area, the number of projects targeting Sulawesi and Kalimantan have increased, not centered in Java and Sumatra, for supporting development of local industry promotion mechanism in response to decentralization.



Source: JICA Review Team

Figure 5-3: Change in Japan's Cooperation Type by Target Area

5.3 Noteworthy Achievements in Cooperation

Typical cooperation achievements by Japan's ODA and notable cooperation by Japanese private sector are presented in this section.

5.3.1 Cases of Japan's ODA

Representative examples of the 1970s when financial cooperation became full-scale are the followings: (1) Asahan Hydropower Aluminum Smelting and (2) Construction of Ujung Pandang Industrial Estate. For vocational training/ industrial human resources development support from the 1980s, (3) CEVEST and (4) IETC and RETPC are worth mentioning. For industrial promotion support under the decentralized regime since the 2000s, (5) projects for promoting local industries in South Sulawesi Province and projects for improving service delivery to promote SMEs. The cases introduced here involve relatively long-term cooperation in the form of combination of financial cooperation and technical cooperation, combination of research, planning and financial cooperation, or technical cooperation over several stages, not a single-shot financial cooperation or technical cooperation. Outline of each of them are as follows.

(1) Asahan Hydropower Aluminum Smelting

The "Asahan Hydropower Aluminum Refining Project" was planned to utilize abundant hydroelectric power generated in the Asahan River flowing out of Lake Toba (altitude 905m, lake water area 1,260 km²) in North Sumatra Province, as the first aluminum smelting plant (planned production capacity: 225,000 tons per annum) in Southeast Asia.

For realization of this project, the Government of Indonesia and the Japanese Federation of Enterprises established a joint venture company⁵ (named Indonesia Asahan Aluminum Co., Ltd. (PT. INALUM)) in 1976 and conducted a series of surveys and planning works related to hydroelectric power development, while having ODA loans and foreign investment supports in various stages. Consequently, the first stage construction of the aluminum smelting plant was completed in January 1982 (annual production of 75,000 tons). At that time, in the presence of President Suharto and his wife, a grand opening ceremony took place at a smelting plant



Asahan Hydroelectric Power Dam



**Aluminum smelting plant
(PT. INALUM)**

⁵ PT. INALUM was established with the contribution of 90% by the Japanese side and 10% by the Indonesian government. The shareholding ration changed to 75% in Japanese side and 25% in Indonesia side in December 1976 as the Indonesian Government's capital increase. At the stage of 2012 where the Japanese side decided to transfer all the shares to the Indonesian government following the expiration of the contract, the share was 58.8% in Japanese side and 41.2% in the Indonesian government.

where about 1,200 people from both countries attended. This plant also contributed to local job creation, and the number of employees in the late 1990s was over 2,000⁶.

PT. INALUM had been operated as Indonesia's sole aluminum smelting plant and the Japanese investors transferred all its shares to the Indonesian side upon the expiration of the contract in September 2013. Since then PT. INALUM has been in operation as a state-owned company.

(2) Construction of the Ujung Pandang Industrial Estate

The Ujung Pandang Industrial Estate (called KIMA) is located in the suburbs of Makassar the capital city of South Sulawesi Province, 15 km from the port and 10 minutes by car from Hasanuddin International Airport. It is an industrial estate on about 200 ha. For constructing this estate, surveys and planning works were conducted in 1977, and the construction was implemented until 1979 under the financial assistance. As it was completed in the economic development period and opened in the disadvantageous condition in the beginning stage of the structural adjustment in the 1980s, the project faced difficulties for attracting companies to enter. Due to this situation, there were 20 companies applying for entering and the total area sold was only 16 ha as of 1986. The occupancy rate did not rise for a long time afterwards, but since the mid-1990s, nearly the entire site has come to be occupied with the tailwind of the national economic recovery and relaxation policy of foreign capital deregulation.



Aerial view of PT. KIMA (source: Homepage of PT. KIMA)

The estate is equipped with a fresh water reservoir of 2,300 m³, electricity supply system, waste water treatment facility, communication facility and road transport network, and security and emergency system are laid, with acquiring ISO 9002 certification. Approximately 220 companies⁷ are now in operation and the occupancy rate is about 90% thanks to the effective rainwater drainage lowering flooding risk. Many of the tenant enterprises are active in agricultural processing, fishery processing and distribution services, most of which are local companies.



PT. Bomar's frozen food processing factory in KIMA

In the 1990s, though several Japanese enterprises in frozen shrimp export business were active, many

⁶ 2,171 employees as of June 1997, according to the record of PT. Indonesia Asahan Aluminium (PT. INALUM).

⁷ Based on the information published in the homepage of PT. KIMA.

withdrew being influenced by the Asian Financial Crisis and the changes in political and economic policies in the late 1990s. For a while, no Japanese companies opened operation, but there have been new arrivals in the form of spare parts warehouses and assembling factories for motorcycle and car industries since the late 2000s. A technical cooperation related to the Sulawesi Industrial Vocational Training Center was implemented (1974-1980) due to the need to train workers at the planning stage of the industrial estate. Nearly 600 trainees (semi-skilled and unskilled workers) finished trainings in the project covering both theory and practice.



Sample of PT. Bomar's quality products for Japanese market

(3) Center for Vocational and Extension Service Training (CEVEST)

CEVEST Bekasi school located in Bekasi city near Jakarta city is one of the main training institutes under the Ministry of Labor. Its official name now is BBPLK-Bekasi. As a state-owned vocational training institution for the manufacturing industry, it provided a Four-month training program free of charge (work clothes, work shoes, lunch, etc. are granted to trainees) focusing on automobile maintenance, machining, wood processing, electrical engineering and CAD/ CAM operation. In the past, about 1,500 trainees were regularly enrolled, mainly from high school graduates in the Bekasi district, but now it also accepts students from industrial high schools and colleges from all over the country. In addition, in response to requests from companies, it also conducts entrusted training for in-service workers. Based on the data since 2015, the number of trainees at the center is about 4,000 a year⁸.

Skilled instructors who were dispatched to CEVEST as a technical cooperation expert from Japan introduced “Practical guidance based on practical skills” and “Methods for acquiring skills in stages” to Indonesia. It is evaluated that the training system changed to practical content from theoretical ones. Also, CEVEST changed the concept of work attitude and arrangement (close to 5S), and altered measurement standard from the inch to the international standard of millimeter.



BBPLK in Bekasi

Initial purpose of establishment of CEVEST was to play a central role of training of vocational training instructors who work in BLKs, which were transferred to local governments (district/ city) through decentralization. However, after the training, the instructors who returned to the original local

⁸ In addition to about 4,000 trainees trained by the Ministry of Labor or dispatched by companies, about 2,000 young people who would be dispatched to companies in Japan for foreign skills internship programs are also trained in the facility supported by a Japanese public interest incorporated foundation (International Manpower Development Organization, Japan).

area was not necessarily assigned to the vocational training center, or though once assigned, was moved to another different position. This was a negative influence of the decentralization regime, and there was concern about the decline of BLK's training and teaching ability.

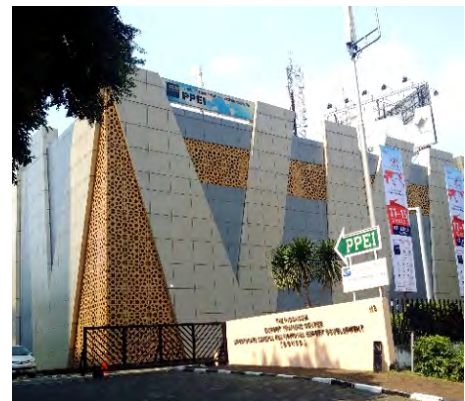
Under such circumstances, following the fact that industrial human resources development was largely raised as one of the pillars of the present national development policy of President Joko Widodo, currently five schools directly under the Ministry of Labor including the CEVEST Bekasi are rearranged and efforts are being made to improve vocational training services. Until now, all five schools have provided skill training courses in a wide range of fields, but now they are in the process of narrowing the training courses according to industry characteristics and the labor demand in each location. To be specific, the Bekasi school is focusing on electronics/ electric machinery and IT, Bandung on general manufacturing and automobiles; Serang on welding and electricity; Semarang on clothing and agricultural processing; and Medan is specialized for construction and tourism.

(4) Indonesia Export Training Center (IETC) and Regional Export Training and Promotion Center (RETPC)

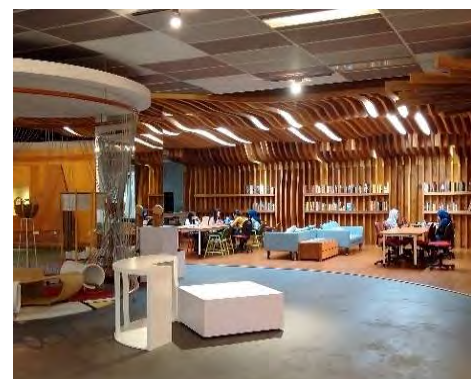
IETC was established in 1989 as an institution attached to the General Directorate for Export Promotion, Ministry of Trade to provide training and product testing services⁹ to exporters. Currently, training programs are being implemented in four categories: trade training program, SME development program, training development program, and support for promotion program.

Regarding the trade training program, at present 8 direct instructors and 120 external lecturers are organized in IETC. The number of trainees is increasing every year. It started with about 850 people in 1990 and increased to about 2,500 people in 2010. For 2017, 50 training sessions in IETC and 74 sessions in RETPC and others are scheduled to be implemented, covering about 3,500 trainees.

The SME development program has been implemented since 2012. Approximately 30 export-oriented SMEs are selected from all over the country, and IETC dispatches specialized instructors to teach technical aspects such as product development and marketing promotion, aiming at realization of export within a year. So far 94 companies in total have been supported during the five years from 2012 to 2016.



Building façade of IETC



Design Development Center

⁹ After that, through the "Project on Service Improvement of NAFED" (2010-2015), the space for product testing was abolished and replaced by Design Development Center (product design related library and providing data retrieval service function).

The training development program is an activity to design the content of the training (curriculum, syllabus) based on a training needs survey. The certification of ISO 9001 (2015) has been updated recently.

The promotion support program is a specific activity consisting of product exhibition, business matching with domestic and/ or foreign companies, and SMEs supports related to corporate social responsibility (CSR) activities of the state enterprises, etc. South-South Cooperation implemented by JICA in relation to technical cooperation implemented in other countries (e.g. Laos and Myanmar) for export promotion or practical capacity building on trade procedure is also included in this program.

Based on the result of IETC, which had been established in the 1990s, it was developed as the RETPCs in the four major cities of Surabaya, Medan, Makassar and Banjarmasin during decentralization in the 2000s. Practical training for product development and marketing methods etc. are being implemented for local SMEs in each region of RETPC¹⁰ by utilizing the experience and know-how of the IETC. This effort is continuing even after the end of Japan's cooperation, and under the initiative and request from a local government (Mataram City in Nusa Tenggara Province), another RETPC has been recently established with technically supported by the Ministry of Trade and IETC.

(5) The Project for Development of Industry Based on Local Resources in South Sulawesi Province and the Small and Medium Enterprise Development Promotion Service Delivery Improvement Project

The “Project for Development of Industry based on Local Resources in South Sulawesi Province” (2009-2012) was implemented as a technical cooperation project to support industrial sector promotion under the South Sulawesi Regional Development Program, which had been formulated by the ODA Task Force¹¹. The project supported quality improvement and marketing promotion of the selected special products in South Sulawesi (passion fruit juice, cacao processing product, marble processed product, silk product and seaweed processed product).



**KUB DUO SAYANG
(business unit name) which
ever participated in the
working group activity for
cacao processing**

Provincial governmental agencies (BAPPEDA, Office for Industry and Trade (including RETPC), Office for SME and cooperative, etc.) worked with the Chamber of Industry and Commerce and Higher Education Institution (Hasanuddin University) to analyze market potential of target products, then practiced activities involving local SMEs by repeating product development and market testing. Through a series of activities,

¹⁰ According to the interview at IETC conducted during this review study, it is reported that the Surabaya Center is actively involved in export promotion activities and the Makassar center has undergone renovation in the beginning of 2017. Both of them are relatively good in performance. Meanwhile, as for the center of Medan and Banjarmasin, it seems that all or some of the facilities are diverted to other uses by the local government agencies.

¹¹ Embassy of Japan in Indonesia, JICA Indonesia office, etc. were the members of the ODA task force in Indonesia to undertake collectively planning Japan's aid policies for the partner country, and policy consultation with the partner country's government. The task forces were established in all ODA target counties for the principle purpose of strengthening cooperation with other donors and related institutions, Japanese companies and NGOs active in each country.

effectiveness of the activity model for product development and marketing involving stakeholders concerned was verified. Afterwards, the results were adopted in the “Project on Small and Medium Industry Development Based on Improved Service Delivery” (2013-2016) which was implemented under the General Directorate for Small and Medium Enterprise, Ministry of Industry, aiming at applying the activity model to the other regions in Indonesia.



Chocolate products using cacao beans from Sulawesi

The “Project for Delivery Improvement of Small and Medium Enterprise Promotion Service” focused on the handicrafts of North Sumatra, the ship components of Central Java, the rattan furniture and cacao processing products of Central Sulawesi, the leather processing products of East Java, and the aloe vera products of West Kalimantan. The activity of product improvement and marketing tests as well as business matching and exhibition was carried out repeatedly until 2016 by involving local SMEs, local government agencies, chamber of commerce and industry, higher education institutions, etc., in a similar way taken in the above mentioned South Sulawesi project. According to the General Directorate for Small and Medium Enterprise (as of July 2017), the General Directorate plan to resume the same type of activities for local SME promotion targeting East Java Province, Papua Province, Bangka Belitung Province and South Sulawesi Province in the fiscal year 2018.

5.3.2 Cases of private sector’s cooperation

Three cooperation cases are discussed in this section. First is the Jakarta Japan Club (JJC)¹². JJC has been engaged in various activities, since its foundation in November 1970, and has been contributing to the development of trade and economic cooperation between the two countries, in addition to activities related to friendship and cultural exchange between Japan and Indonesia. Secondly, the industrial parks developed in the eastern Jakarta area in the early 1990s are good examples. They were developed when Japanese yen sharply appreciated after the Plaza Accord made in 1985 and Japanese companies increasingly entered Indonesia. Thirdly, the JICA program to support Japanese SMEs’ overseas business development (especially verification surveys) is reviewed. This program was institutionalized as an ODA scheme in 2012 for the purpose of supporting Japanese SMEs deploy their businesses in overseas including Indonesia.

¹² As of the end of July 2017, the number of corporate members is 652 (according to JJC website data) are enrolled, which is nearly 40% of approximately 1,500 enterprises entering Indonesia (according to the JETRO survey in 2015).

(1) Investment climate dialogues initiated by Jakarta Japan Club (JJC)

For dialogue on the investment climate, which is one of the priority areas in private sector development, JJC has had an important role among the stakeholders concerned from both countries, in particular about improvement of business environment. The JJC Investment Climate Dialogue was launched when former President Megawati was actively showing her interest in the ten recommendation items¹³ made in cooperation with the then called Japan Bank for International Cooperation at the time she visited Japan in September 2001.

The JJC Investment Environment Dialogue efforts included the following subcommittees to discuss the following five issues: 1) customs clearance and tariffs, 2) taxation, 3) labor, 4) investment promotion and supporting industries, and 5) electricity. The dialogue consisted of a general meeting to report on the progress of consultation at the meeting and to coordinate for resolving problems across the relevant governmental agencies, etc. Since the first general meeting in January 2002, the meeting was held about once every three months.

In the process of the above efforts, most of the items proposed in July 2003 (recommendations for creating a sound business environment) were reflected in the Presidential Instruction No. 5¹⁴ issued in September 2003. These efforts were transferred in the form of “Japan-Indonesia Public-Private Joint Investment Forum (JFI)” since 2004. In the forum, four working groups were established (tax and customs clearance, labor, infrastructure, industrial competitiveness and SMEs) and activities had been made continuously up to 2008¹⁵, putting priority on “Strategic Investment Action Plan (SIAP)” announced in June 2005.



THE JAKARTA JAPAN CLUB

Design logo of The Jakarta Japan Club (JJC Homepage)

Even after that, JJC continued to compile the requests of Japanese companies and make recommendations for improving the business investment environment. In January 2010, a proposal entitled “Towards Golden Five Years - Recommendations of Japanese Companies for Improved Business Environment” was announced. In the proposal, JJC expressed the belief that Indonesia would achieve economic growth appropriate for its potential towards the future and will play a major role in the international community. Towards that realization, JJC will focus to resolve the lack of economic infrastructure and necessary improvement concerning the institutionalization and operation of the legal system.

¹³ Ten items are: i) Maintain security and justice, ii) Taxation (surcharge) and optimization of taxation affairs, iii) Speed-up of customs and customs procedures, and mandatory disclosure of information on legal and operational rules, iv) Labor problem solution, v) Enhancement of various preferential treatment systems and promotion measures to encourage FDI, vi) Promotion of supporting industries, vii) Stable supply of energy including electricity, viii) Industrial infrastructure development, ix) Moderate settlement of the four major projects (2 power plants and 2 petrochemicals), x) Human resources development to support the development of the country

¹⁴ *Instruksi Presiden Republik Indonesia, Nomor 5 Tahun 2003, tentang Paket Kebijakan Ekonomi menjelang dan sesudah Berakhirnya Program Kerjasama dengan IMF* (Economic policy package towards the end of the International Monetary Fund Support Program).

¹⁵ JICA cooperated and contributed in the implementation of secretariat functions, advice from experts, implementation of the SIAP related projects.

JJC has been undertaking similar efforts continuously in infrastructure development and improvement of investment environment linked to the Metropolitan Priority Area for Investment and Industry (MPA) in JABODETABEK Area, as well as working on unification of SME information¹⁶ between the two countries in cooperation with the Chamber of Commerce and Industry (KADIN), the National Economic and Industrial Committee (KEIN) and related ministries (investment coordination agency, Ministry of Industry, Ministry of Trade, etc.) in partnership with JETRO, JICA, Organization for Small & Medium Enterprises and Regional Innovation, and National Federation of Small Business Associations.

(2) Industrial area development by private sector investment

Industrial park development using Japanese private capital is linked with the trend of Japanese companies entering Indonesia. The growth of Japanese companies advanced from the 1970s in the period of economic development. At that time, many inroads were made by textile and home electronics manufacturers. Since the mid-1980s after the Plaza Accord, direct investment centered on manufacturing industries, such as motorcycles and automobile manufacturers targeting the domestic demand. Export oriented home appliance manufacturers became aggressive and this led to demand for an industrial park which would provide a site for Japanese companies.

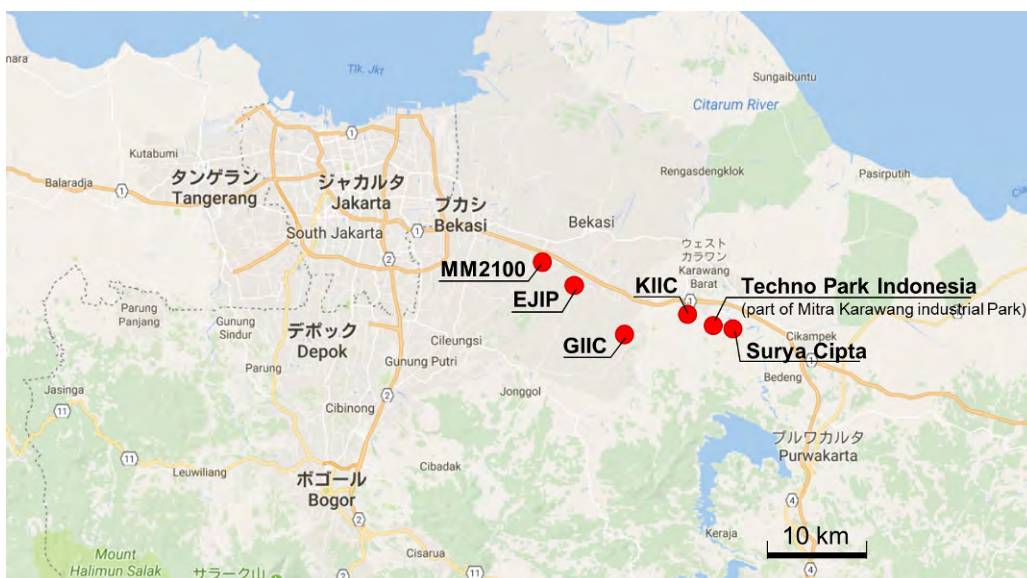
In the early 1990s, major trading companies and others collaborated with major companies in Indonesia and jointly developed large-scale industrial parks around the Bekasi area in eastern Jakarta. Their operation dates are listed in the table below. Although those industrial parks had been occupied with the major manufacturers and their affiliated companies for many years, recently some parks started providing rental factories to SMEs with lower investment risk in response to the increased demand of SMEs from Japan.

Table 5-2: Major Japanese Industrial Estates around Jakarta

Name of Industrial Estate	Year of Development	Developer	Remarks
MM2100 Industrial Town	1990	Joint venture of Marubeni Corporation and Indonesian companies	820 ha, approx. 170 enterprises 30 km from the central Jakarta
East Jakarta Industrial Park (EJIP)	1990	Joint venture of Sumitomo Corporation and Indonesian companies	320 ha, approx. 100 enterprises (80% from Japan) 35 km from the central Jakarta
Surya Cipta City of Industry	1990	Indonesian Developer ※Sales representation by Sumitomo Corporation	1,400 ha, approx. 140 enterprises (50% from Japan) 37 km from the central Jakarta
Karawang International Industrial City (KIIC)	1992	Joint venture of Itochu Corporation and Indonesian companies	1,400 ha, approx. 140 enterprises (85% from Japan) 56 km from the central Jakarta
Greenland International Industrial Center (GIIC)	1993	Joint venture of Sojitz Corporation and Indonesian companies ※Industrial estate and rental factory	1,350 ha, approx. 90 enterprises (80% from Japan) 37 km from the central Jakarta
Techno-Park Indonesia	2012	Indonesian Developer ※Rental factory area created by Toyota Tsusho Corporation in Mitra Karawang Industrial Estate of approx. 500 ha)	15 ha for max. 20 enterprises 60 km from the central Jakarta

Source: JICA Review Team based on public information

¹⁶ TTPP (Trade Tie-up Promotion Program), a database for business matching, operated by JETRO, is an example of centralized information system on SMEs. In the TTPP, 410 companies in Indonesia (approximately 5% of all) are registered (as of October 2017), expecting to further increase the number of registered companies thereby to promote business matching (comment by Japanese stakeholder).



Source: JICA Review Team

Figure 5-4: Location Map of Japanese Industrial Park around Jakarta

(3) JICA’s support for Japanese SMEs overseas business development

From 2012, JICA started its support for SMEs’ overseas business development as a new ODA scheme¹⁷ for the purpose of supporting SMEs to deploy their excellent technologies/ products overseas and thereby to contribute to the solution of development issues in the developing countries. There are three types of supporting schemes which are provided to SMEs according to the maturity of business ideas: namely, i) the SME Partnership Promotion Survey, ii) the Feasibility Survey with the Private Sector for Utilizing Japanese Technologies in ODA Projects, and iii) the Verification Survey with the Private Sector for Disseminating Japanese Technologies. By 2016, 64 surveys¹⁸ have been implemented in Indonesia.

Table 5-3: Number of SMEs Overseas Business Development Surveys Conducted in Indonesia by Scheme

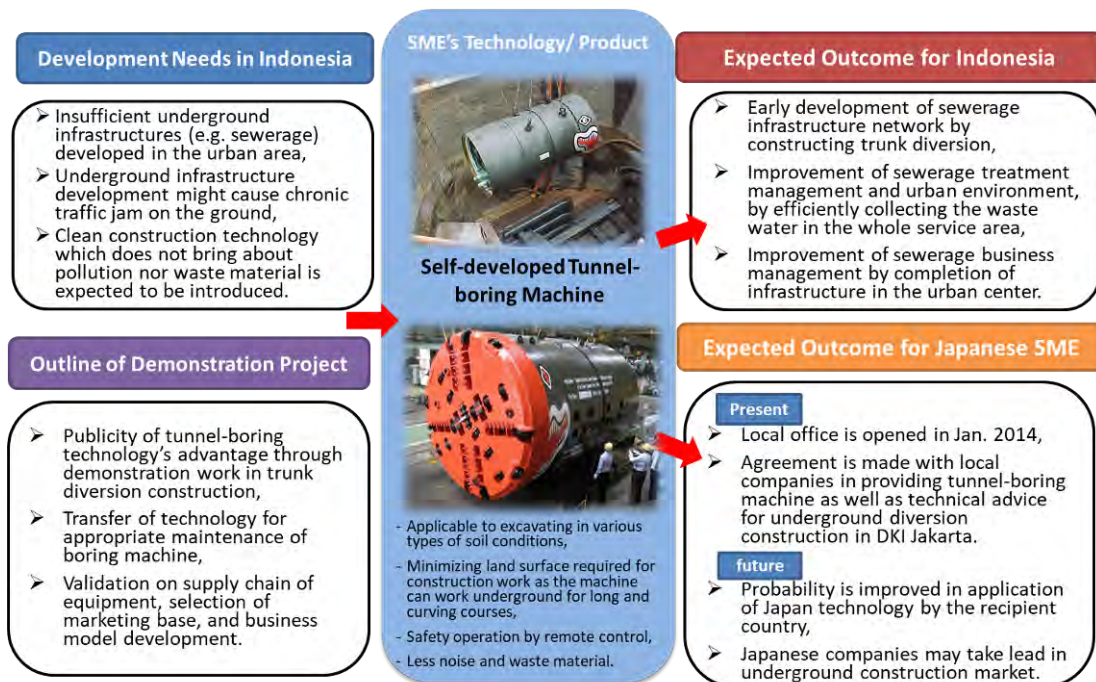
	FY2012	FY2013	FY2014	FY2015	FY2016	Total
Small and Medium-sized Enterprise Partnership Promotion Survey (SME PP Survey)	-	-	2	1	2	5
Feasibility Survey with the Private Sector for Utilizing Japanese Technologies in ODA Projects (SME ODA F/S)	4	9	7	8	9	37
Verification Survey with the Private Sector for Disseminating Japanese Technologies (SME Verification Survey)	3	6	7	3	3	22
Total	7	15	16	12	14	64

Source: JICA Review Team based on data provided by Domestic Strategy and Partnership Department, JICA

¹⁷ JETRO, the Organization for SMEs and Regional Innovation and Development Bank of Japan, etc., have been providing supporting programs/ schemes respectively for SMEs in overseas business development. In March 2012, upon the revision of the Outline of Support for Overseas Business Development of Small and Medium Enterprises, JICA also joined the SME overseas deployment support system.

¹⁸ According to materials provided by JICA Domestic Strategy and Partnership Department (as of 1st June 2017).

Of the 28 companies that implemented the SME ODA F/S from 2012 to 2015, 16 companies proceeded to the next stage of the SME Verification Survey (case are outlined in Figure 5-5). In the future, as they move to launching their own businesses, it is expected that Japanese SMEs will work together with Indonesian companies to run joint businesses or establish joint venture companies, so that their businesses could contribute to growth of Indonesia’s private sector development, i.e., “promotion of manufacturing industry including supporting industries” and “promotion of SMEs and export.”



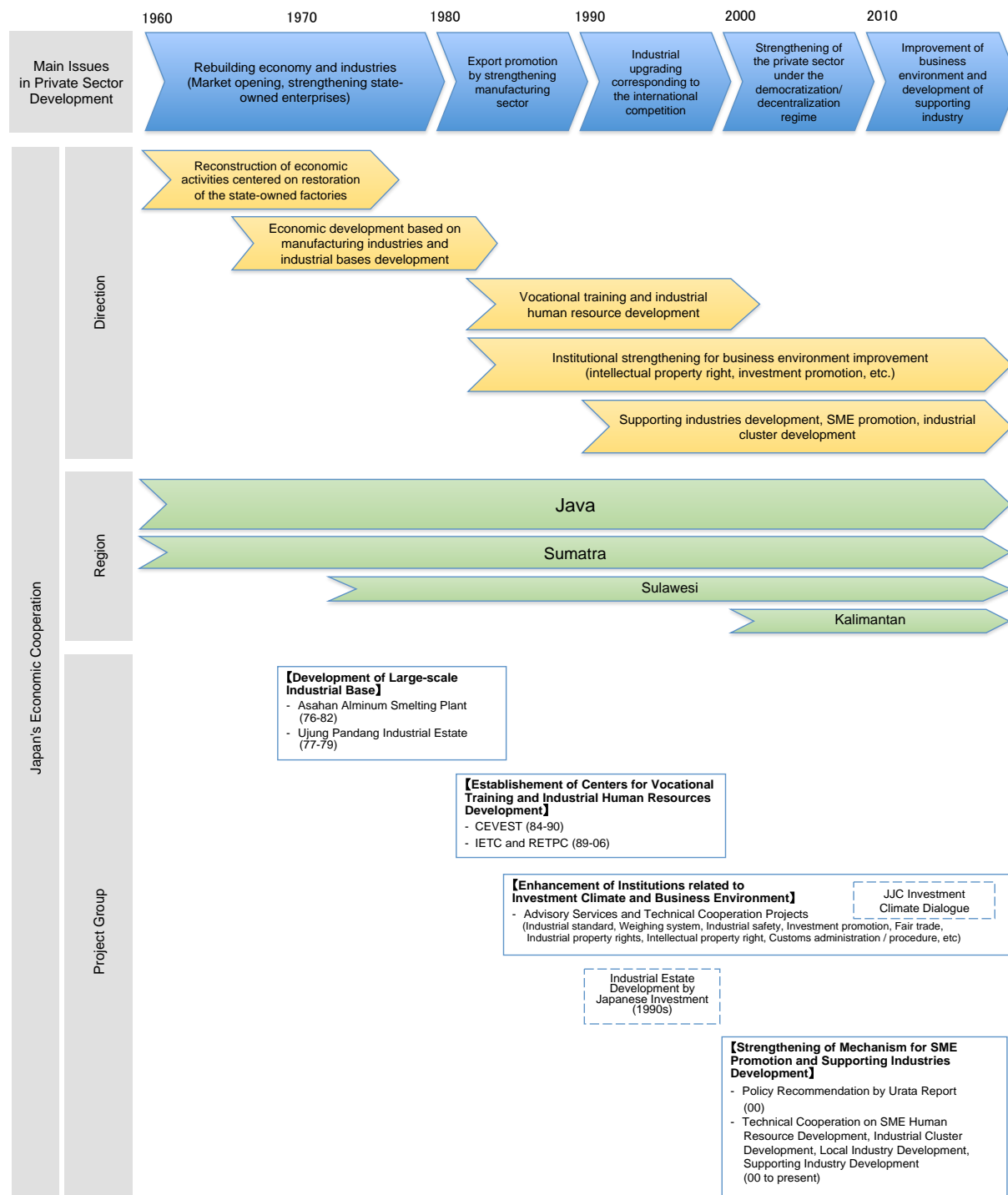
“SME Verification Survey on Propulsion Method Technology in Sewage Pipeline Construction (2012)”
Source: ISEKI Poly-Tech, Inc.

Figure 5-5: Sample Case of JICA’s Partnership with Japanese Private Sector

5.4 Outcomes/Impacts of Japan’s Economic Cooperation and Future Prospects

5.4.1 Outcomes/impacts of Japan’s economic cooperation to date

Based on the review of period-specific characteristics and noteworthy achievements of Japan’s economic cooperation in the private sector development, main issues, direction of cooperation, implementation areas and project groups are summarized as below.



Source: JICA Review Team

Figure 5-6: Features of Japan’s Cooperation in Private Sector Development

Japan's cooperation had been implemented in response to the change of the development issues in the private sector in Indonesia: namely, "reconstruction of economic activities centered on restoration of the state-owned factories," "economic development based on manufacturing industries and industrial bases development," "vocational training and industrial human resources development," "institutional development for business environment improvement," and "supporting industries development, SME promotion, industrial clusters development." As a result, achievements have been made in four major outcomes: "development of large-scale industrial base," "establishment of centers for vocational training and industrial human resources development," "enhancement of institutions related to investment climate and business environments," and "strengthening of mechanisms for SME promotion and supporting industries development." The following sections summarize these four outcomes respectively.

Development of large-scale industrial base

Through financial cooperation implemented by the 1980s, bases for manufacturing promotion and industrial development were established mainly in the Java-Sumatra region. Asahan Hydropower Aluminum Smelting Plant and Ujung Pandang industrial Estate were selected in the representative case introduction (section 5.3). Regarding the former, the Japanese investors withdrew from the aluminum smelting business after 30 years upon the expiration of the business contract. In the Ujung Pandang industrial Estate, recently local capital enterprises in manufacturing and exporting goods to Japanese market are moving in. Although both businesses faced some issues from the beginning to the present, both have supported economic industrial activities in Indonesia even after nearly 40 years.

Establishment of centers for vocational training and industrial human resources development

It is also worth noting that the combination of financial cooperation and technical cooperation implemented from the 1980s to the early 1990s provided core functions for vocational training and industrial human resources development. CEVEST and IETC have been used as centers for industrial human resources development for about 30 years until now. As the reorganization, consolidation and elimination of ministries and agencies have occurred upon the change of administration, and training needs were transformed in response to the progress of industry, some of the facility functions and service activity contents have changed from their original ones. These have also been established and utilized as assets of Indonesia.

Enhancement of institutions related to investment climate and business environment

A series of policy advisory services, such as investment promotion policy support and intellectual property rights protection support and others, have been implemented since the 1980s combined with the Japanese industrial park development in the 1990s. These supported the growth of Japanese companies to Indonesia. Furthermore, after 2000, during the phase of democratization and decentralization, it was significant that the mechanism was created for reflecting private sector views in the field of ODA (JJC Investment Climate Dialogue). Even if the political and economic system changes, Japan can maintain its position as a strong partner to support the Indonesian economy and

industry, then actively participate in improving legal institutions and operational rules by suggestions and opinions, resulting in further strengthening of the relationship of the two countries.

Strengthening of mechanism for SME promotion and supporting industries development

Following policy recommendations of the Urata report in 2000, technical cooperation on policy design and human resources development were conducted at the central government level, contributing to formulation of the industrial cluster development plan, SME promotion plan, supporting industries development plan, etc. In parallel, technical cooperation program was implemented aiming at strengthening of mechanisms for SME promotion/ supporting industry development in the regions in line with the national policy of industrial cluster development. Activities verified through the technical cooperation implemented in regions such as South Sulawesi Province (model of product development and marketing promotion involving various stakeholders) became the model of the central government (Ministry of Industry), and it was applied further to other areas. It is expected that this activity model may be expanded nationwide to positively impact in a long-term on the regional economy. In addition, it is expected that the development of economic impact will be further accelerated as the result of making efforts to support overseas deployment of Japanese SMEs, assuming joint business development and/ or establishment of joint venture companies with Indonesian enterprises increase.

5.4.2 Implications for future cooperation

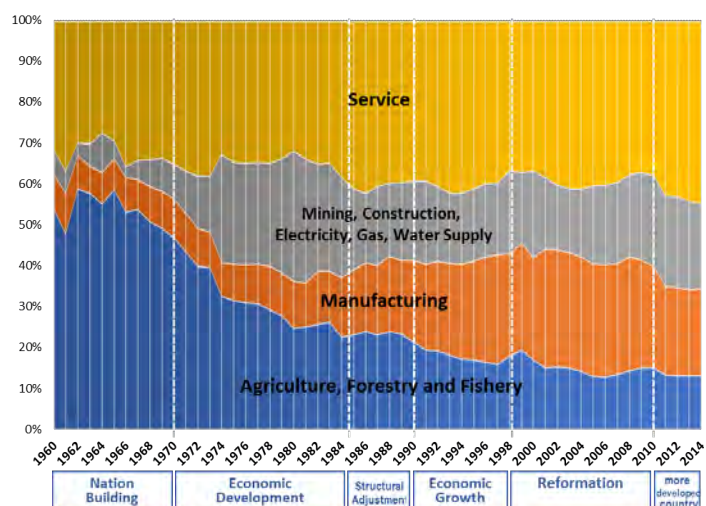
(1) Current status of industrial structure and foreign/ domestic investment in Indonesia

Prior to considering the specific ideas of cooperation, outline of the industrial structure of Indonesia and the current situation of domestic and foreign investment are summarized below.

Industrial Structure

Looking at the composition of GDP by industry (Figure 5-7), agriculture, forestry and fishery industries (primary industry) formed half of the national economy until the 1960s; thereafter the share of secondary industry has experienced much growth including the manufacturing industry from the 1970s to the 1980s, economic development period after the national administration shifted to the Suharto regime. It also can be seen that the share of the mining, construction, electricity, gas and water expanded during this period. In 1990, the ratio of manufacturing industry was over 20%, exceeding the share of the primary industry which has continuously declined since then, and it remained at around 13% to 15% in the 2000s.

Regarding the service industry of the tertiary industry, it was in the range of 30% to 40% for a long time, but increased to nearly 45% since around 2010. It is estimated that the per capita GDP reached US\$ 3,000 thus allowing Indonesia to join the ranks of middle-income countries. Accordingly, the purchasing power of people improved leading to development of the merchandising service industry and the food-service industry. On the other hand, growth in the manufacturing industry slowed down, and its share declined from around 30% to 20% after 2010.



Source: JICA Review Team based on the data from BKPM

Note: In the BKPM data, mining does not include oil and gas, and service industry does not include finance.

Figure 5-7: Changes in Nominal GDP Composition by Industry (1960-2014)

Foreign and Domestic Investment

Table 5-4 summarizes the accumulated amount of foreign and domestic investment in the decade from 2000 to 2009 (the reformation period) and the in the six years from 2010 to 2015 (the more developed economy period). In total, the foreign investment amount was nearly three times the amount of domestic investment in the reform period, while foreign investment decreased to twice as much as the domestic one in the more developed economic period. Domestic investment became very active in the six years of the more developed economy period compared to the ten years of the reformation period.

Table 5-4: Comparison of Accumulated Foreign and Domestic Investment

	2000-2009: Reformation Period			2010-2015: More Developed Period			Total (2000-2015)		
	Foreign (mil. USD)	Domestic (mil. USD)	Total (mil. USD)	Foreign (mil. USD)	Domestic (mil. USD)	Total (mil. USD)	Foreign (mil. USD)	Domestic (mil. USD)	Total (mil. USD)
Investment Amount									
Agriculture, Forest and Fishery	3,189	2,753	5,942	9,142	5,688	14,831	12,332	8,441	20,772
Mining	1,203	825	2,028	21,373	4,265	25,638	22,576	5,090	27,666
Manufacturing	52,056	31,606	83,662	59,201	27,656	86,857	111,257	59,261	170,519
Construction, Electricity, Gas and Water Supply	6,192	3,249	9,441	13,337	11,836	25,173	19,529	15,085	34,614
Trade and Service	52,034	4,419	56,452	27,409	11,286	38,695	79,442	15,705	95,147
Total	114,674	42,851	157,525	130,462	60,731	191,193	245,137	103,582	348,718
Share									
Agriculture, Forest and Fishery	2.8 %	6.4 %	3.8 %	7.0 %	9.4 %	7.8 %	5.0 %	8.1 %	6.0 %
Mining	1.0 %	1.9 %	1.3 %	16.4 %	7.0 %	13.4 %	9.2 %	4.9 %	7.9 %
Manufacturing	45.4 %	73.8 %	53.1 %	45.4 %	45.5 %	45.4 %	45.4 %	57.2 %	48.9 %
Construction, Electricity, Gas and Water Supply	5.4 %	7.6 %	6.0 %	10.2 %	19.5 %	13.2 %	8.0 %	14.6 %	9.9 %
Trade and Service	45.4 %	10.3 %	35.8 %	21.0 %	18.6 %	20.2 %	32.4 %	15.2 %	27.3 %
Total	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %

Source: JICA Review Team based on the data from BKPM

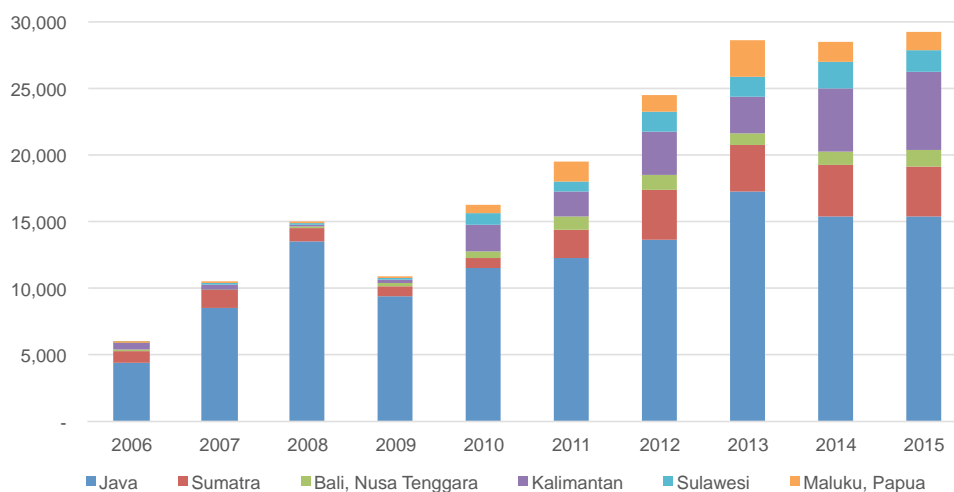
Note: In the BKPM data, mining does not include oil and gas, and service industry does not include finance.

The following points cover the amount and share of the sector investments by comparing the two periods:

- Through the two periods, investment in the manufacturing industry is the largest. However, changes between the two periods are less noticeable in manufacturing if compared to those in other sectors. Foreign investment increased slightly, while domestic investment declined.
- Foreign investment in the commercial and service sector decreased, while domestic investment more than doubled.

- Domestic and foreign investment in the mining sector (excluding oil and gas) in the reform period was the smallest among the five sectors, but it increased greatly during the more developed economic period to become the third biggest sector following manufacturing, and commerce and services. This may be because of the increase in investment in other islands than Java-Bali area from 2010 onwards.
- Investment in the construction industry, electric, gas and water supply, and agriculture, forestry and fisheries also nearly tripled. Investment growth in construction may have been stimulated by the demand of commercial facilities such as shopping facilities and dining/ drinking facilities and collective housing due to the improvement of the purchasing power of people. On the other hand, it is assumed that the diversification of people's eating habits influenced the agriculture, forestry and fishery industries.

Figure 5-8 shows the amount of foreign investment by region from 2006 to 2015.



Source: JICA Review Team based on the data from BKPM

Note: In the BKPM data, mining does not include oil and gas, and service industry does not include finance.

Figure 5-8: Trends in Foreign Investment by Region (2006-2015)

Until 2009, most foreign investment was concentrated in the Java-Sumatra region. It showed a temporary decline in 2009 due to the influence of Lehman Shock that occurred in 2008, but after that it steadily grew, with increase in investment in regions other than Java and Sumatra in particular. With the effect of the master plan for Acceleration and Expansion of Indonesia's Economic Development (MP3EI) that the then President Yudhoyono announced in his second Presidential term, foreign investment in the outlying islands increased mainly in Kalimantan (coal mining and related industries). As a result, in 2014, the ratio of investment in the Java-Sumatra region compared to other regions turned to be 2:1.

Since two-thirds of economic and industrial activities in Indonesia are still concentrated in the Java-Sumatra region that is not desirable from the viewpoint of equilibrium, the current policy calls for necessity to diversify from the Java-Sumatra region, and to develop other areas. To realize this, development of Special Economic Zones (SEZ)¹⁹ has been envisioned and planned nationwide.

¹⁹ As of May 2017, 11 SEZs are designated officially under the authority of the National Council for SEZ in Indonesia. They

(2) Issues for Future Cooperation

In reference to the above section, which examined the current status of economy and industry in Indonesia, addressing the following two issues should become the focus for considering possible future direction of Japan's cooperation.

Issue 1: As the international competitiveness of the manufacturing industry in the Indonesian economy is relatively stagnant, there is a concern about a decline in Indonesia's comparative advantage in the export market, while foreign capital aiming at the domestic market surpasses. In order to avoid the middle-income country trap and achieve the government policy aiming to join high-income countries, it is necessary to improve the productivity and competitiveness of the industry. For this, it is essential to formulate a comprehensive strategy based on the industrial value chain in a regional view under the AEC (ASEAN Economic Community) and execute it under an optimal resource management (human resources, technology, and capital).

Issue 2: Natural resources (agriculture, forestry and fisheries resources, and mineral resources) are abundant outside the Java area, especially in the eastern part of Indonesia which attracts investors wanting those resources. However, insufficient infrastructure (transportation, electricity, etc.) and human resources as well have hindered business expansion and investment promotion in general. Under such circumstances, among the eleven SEZs planned nationwide, five places i.e., North Sulawesi Province, Central Sulawesi Province, West Papua Province, West Nusa Tenggara Province and North Maluku Province are expected to be developed so that they could lead the economic development in the Eastern Indonesia and thus the balanced development of the Nation. At the same time, it is also important to improve connectivity among the islands so that people and goods are able to spread to every corner of the region including remote island areas.

In summary, Issue 1 refers to the necessity of improving international competitiveness by reorganizing and reinforcing the industrial value chain. On the other hand, Issue 2 is about the realization of the balanced national development through the promotion of local industries in the regions. In the following paragraphs, these two issues are further discussed to provide implications for Japan's future cooperation policy.

Issue 1: Improve international competitiveness by reorganizing and reinforcing industrial value chain

With a view to improving international competitiveness, JICA has been implementing a study on the possibility and challenges of industrial promotion with high international competitiveness (2017-2018), in which three sub-sectors of automobile, electric/ electronic and food processing are studied to strengthen the value chains. With reference to the results of this study, it is suggested to specify challenges and plan necessary actions for reorganizing and reinforcing the value chains from viewpoints such as 1) Improvement of local procurement rate through strengthening supporting

are i) Arun Lhokseumawe SEZ in Aceh (oil and gas, agricultural product, paper, petrochemical, logistics), ii) Sei Mangke SEZ in North Sumatra (palm oil, rubber), iii) Tanjung Api-api SEZ in South Sumatra (rubber, palm oil, petrochemical), iv) Maloy Batuta Trans Kalimantan SEZ in East Kalimantan (palm oil, wood), v) Bitung SEZ in North Sulawesi (fishery, coconut, pharmacy, logistics), vi) Palu SEZ in Central Sulawesi (nickel and iron ore, cacao processing, sea weed, rattan), vii) Sorong SEZ in West Papua (ship building, logistics, agricultural-forest-fishery product, mining), viii) Tanjung Kelayang SEZ in Bangka Belitung (tourism), ix) Tanjung Lesung SEZ in Banten (tourism), x) Mandalika SEZ in West Nusa Tenggara (tourism) and xi) Morotai SEZ in North Maluku (tourism, fishery, logistics).

industries including industrial human resources development, 2) human resources development and R&D investment promotion for strengthening domestic product development and design, and 3) productivity improvement by making use of IoT (Internet of Things) technology.

As for strengthening supporting industries including industrial human resources in item 1) above, it is advisable to focus on expanding use of existing assets that had been formulated through the past cooperation. In other words, based on Indonesia's vocational training system centered on CEVEST, it is possible to support the training of human resources necessary for strengthening supporting industries in the target sub-sectors. Under the reorganization of vocational training system currently being undertaken by the Ministry of Labor, Bekasi school (supported by Japan) is in the process to become specialized for electric/electronics and IT, Bandung school for automobile and manufacturing in general, Semarang school for clothing and food processing, respectively. For these three schools, it is recommended to implement technical cooperation covering research and analysis of industrial human resources development needs in the target sub-sectors, and design and implementation of relevant training programs.

In connection with item 2) above, under the situation where Indonesian companies are relatively less positive to conduct R&D activity, it is expected that public institutions such as the Ministry of Industry, Indonesian Institute of Sciences (LIPI), and Technology Evaluation and Application Agency (BPPT) will play an important role in the area. In addition, the Ministry of Research, Technology and Higher Education (RISTEKDIKTI) reorganized recently under the current administration provides institutional and financial support to universities across the country in terms of promoting R&D activities and entrepreneurship based on the R&D results. Since Japan has cooperated (facility construction, equipment procurement, and technical cooperation) with major universities such as University of Indonesia, Bandung Institute of Technology, Bogor Agricultural University, Gajah Mada University, Hasanuddin University, and so on, it will be possible to identify and produce highly skilled human resources who are able to undertake R&D required in the three target sub-sectors on the basis of the personal/ organizational relationship which have formed to date. In recent years, under the circumstances that universities in Indonesia become positive in developing business and establishing companies based on their R&D results, promoting business matching or joint ventures with Japanese private companies may promote cross-border industry-university business collaboration. Coupling highly-skilled human resources of Indonesia with rich technology and capital of Japan, may bring a possibility to create new types of products/ services that could be marketed in both Indonesia and Japan, or in one of those countries.

Utilization of IoT technology is expected to promote "visualization" of the production line. It is widely used in Japan as a technology for improving quality and cost competitiveness. However, while the technology was introduced in already automated production lines in Japan, it is not the case in Indonesia; it is considered that a labor-intensive production system is still dominant among the Indonesian companies (e.g. local food processing). It is therefore necessary to devise a new way, which is different from the case in Japan, in order to introduce and effectively practice the system in Indonesia. In this case as well, it is possible to utilize highly-skilled human resources from universities

or related agencies as mentioned in the section R&D above. In addition, it may be helpful to share examples of Japanese companies which had a labor-intensive production line in the past, but enhanced productivity as a result of adopting IoT technology.

Issue 2: Realization of balanced national development through promotion of local industry promotion

Regarding some of the SEZs which are under the planning phase, it is reported that China has been actively intervening to support SEZ under the vision of “One Belt, One Road”. In this situation, the Ministry of Industry and Investment Coordinating Agency (BKPM) has been carrying out PR activities for attracting the private sector in Japan to support development of SEZs as well as business expansion. However, it is unlikely so far that the private sector in Japan, which is engaged in economic activities mainly in industrial areas in Java, will make large-scale investment and business expansion outside the Java area, because of the insufficient infrastructure and human resources.

Meanwhile, some Japanese companies have been in the Sulawesi region for years since they established business bases there. For example, there is a company that created a supply chain of Toraja coffee, which has unique bitterness and scent, covering from production of beans through processing to marketing abroad. Other company manufactures and sells Buddhist altars for the Japanese market using high-quality timber produced in the area. And the other processes and sells buttons for clothes from beautiful shells collected in coastal areas. Though the business scale is rather limited, each has established its roots in the region and contributed to the regional economy in terms of improvement of added value, employment creation, etc.

The above companies have a common thread that they started from a small business by processing and selling the region’s unique resources to niche markets seeking for luxury/ rare items. As there are possibilities that such companies may increase even in non-SEZ regions and industrial areas, it is worth introducing such cases to Japanese SMEs by making use of JICA’s framework for partnership with Japanese private sector. To companies being interested, it is advised to provide supporting facilitation such as collecting information and analysis for start-up business, dissemination and demonstration of products and services, searching and fostering human resources including local business partners, and so on. Also it is possible to devise new measures to support Japanese companies by utilizing the human networks developed to date through the technical cooperation in the industrial cluster promotion and the local development facilitator trainings which were implemented in various locations in Indonesia.

In addition, considering the promotion of local industries outside the Java area, harbors developed through the past ODA projects (Eastern Indonesia small and medium port development project etc.) are also valuable assets to utilize. The current administration places great emphasis on the promotion of fisheries and fish processing in rural areas including remote islands. Given this priority, it is possible for Japan, a maritime nation, to support local industry promotion in such areas by combining the past assets such as organizational/ human networks, port related facilities, and overseas business promotion of Japanese SMEs.

Chapter VI Higher Education and Highly-Skilled Human Resource Development

6.1 Summary

Beginning with a scholarship program in the 1960s as post-war reparations, the Japanese government has supported higher education and highly-skilled human resource development in Indonesia over six decades by combining various types of support such as technical cooperation, ODA loan and grant aid.

Until the mid-1980s, equipment provision to higher education institutions had been a main feature of Japan's cooperation. A new type of cooperation emerged in the late 1980s, and the comprehensive and long-term assistance to the Electronic Engineering Polytechnic Institute of Surabaya (EEPIS) started in response to a priority in the Fourth Five-Year Development Plan (REPELITA IV: 1984/85-1988/89) in order to secure qualified mid-level technicians. The continuous and extensive support started in 1986 not only enabled EEPIS to produce quality graduates who are able to undertake "*monodzukuri* (product development)" but also to grow as a resource institution nationally and internationally. The approach to develop a national resource engineering institution with long-term and holistic cooperation was later applied to Bandung Institute of Technology (ITB), Gadjah Mada University (UGM) and Sepuluh Nopember Institute of Technology (ITS).

In the 1990s, JICA provided comprehensive support to engineering faculties in major universities in Sumatra and Kalimantan through the "HEDS (Higher Education Development Support) Project" to respond to the emerging human resource needs of industries in the region. The project established a network among the universities, and provided lecturers with scholarships to study for higher degrees, opportunities for collaborative research and equipment and facilities. As a result, the capacities of the target universities were strengthened and the universities have grown to be comparable to those of Java.

After the remarkable economic growth from the 1980s to the early 1990s, the country suffered a serious economic downturn due to the Asian Financial Crisis in 1997. The root of the "ASEAN University Network/Southeast Asia Engineering Education Development Network Project (AUN/SEED-Net)," which started in 2003 to strengthen capacities of top engineering universities in ASEAN, lies in Japan's initiatives to help the region bounce back from the crisis by developing engineers who can support sustainable economic development in the area. The project has been implemented to date, participated by 26 universities including four from Indonesia. The Indonesian universities have not only benefited from the scholarship program and various types of collaborative research, but also served as host institutions which accept lectures of other member institutions to their graduate programs.

At the moment, a series of projects is underway at Hasanuddin University so that it will serve as a hub for the eastern part of Indonesia. In addition, a technical cooperation project to establish the "Indonesian Accreditation Board for Engineering Education (IABEE)" is implemented based on Japan's experience in "Japan Accreditation Board for Engineering Education (JABEE)" and the trust cultivated between the two countries through the long-term support in the field. The assistance to improve the quality of

engineering education entered a new stage by this cooperation.

Besides engineering, Japan has supported Bogor Agricultural University (IPB) and the University of Indonesia (UI) to strengthen human resources in the fields of agriculture and health which also have been priority areas of the government. Japan has also continuously provided scholarships through various channels to develop highly-skilled human resources in Indonesia who can meet challenges of the country.

It is expected that these higher education institutions will function as hubs for regional development. It is also hoped that their research seeds will grow to create new innovation and business by collaborating with industries and local agencies. The collaboration will also contribute to producing quality graduates that meet the needs of industries and society.

Table 6-1: Overview of the Higher Education and Highly-Skilled Human Resource Development Sector in Japan's ODA

Period	1960s	1970s and early 1980s	Late 1980s	1990s	From the end of 1990s	From the end of 2000s
	Nation-State Building	Economic Development	Structural Adjustment	Growth until the Asian Financial Crisis	Democratization and Decentralization	Middle Income Countries
Historical Context	<ul style="list-style-type: none"> • Cold War • ASEAN (1967) • Inauguration of President Suharto (1968) • Green Revolution 	<ul style="list-style-type: none"> • First Oil Crisis (1973) • End of Vietnam War (1975) • Second Oil Crisis (1979) 	<ul style="list-style-type: none"> • Plaza Accord (1985) • Reverse Oil Crisis (1986) • End of Cold War (1989) 	<ul style="list-style-type: none"> • Asian Financial Crisis (1997) • Education For All (1990) 	<ul style="list-style-type: none"> • Laws on local autonomy (1999) • Millennium Development Goals (2000) • Election of President Yudhoyono by direct election (2004) 	<ul style="list-style-type: none"> • Japan-Indonesia Economic Partnership Agreement (2008) • G20 Accession (2008) • Jakarta Commitment (2009) • Sustainable Development Goals (2015)
Situation of the Sector	<ul style="list-style-type: none"> • Law on Higher Education enacted (1961) • Ministry of Higher Education Institution and Science established (1961) • National university established in each province (1965) 	<ul style="list-style-type: none"> • Ministry of Higher Education Institution and Science integrated into Ministry of Education and Culture (1974) • First polytechnic established (1976) • Open University with distance education system established (1984) 	<ul style="list-style-type: none"> • National Education System Law enacted (1989) 	<ul style="list-style-type: none"> • BAN-PT (National Accreditation Board for Higher Education) established (1994) 	<ul style="list-style-type: none"> • Law to grant autonomous status to national universities enacted (1999) • Some teacher training institutions transformed into universities (1999) • Ministry of Education and Culture changed into Ministry of National Education (1999) • National Education System Law amended (2003) • New paradigm implemented (2003) • Competitive and performance-based grants introduced for national and private university management (2003) • National Standards of Education issued (2005) • Teacher/Lecturer Law enacted (2005) 	<ul style="list-style-type: none"> • Ministry of National Education changed into Ministry of Education and Culture (2011) • Law on Higher Education enacted (2012) • Ministry of Research, Technology and Higher Education established (2014)

Period	1960s	1970s and early 1980s	Late 1980s	1990s	From the end of 1990s	From the end of 2000s
	Nation-State Building	Economic Development	Structural Adjustment	Growth until the Asian Financial Crisis	Democratization and Decentralization	Middle Income Countries
Priority Development Issues in the 5-Year Development Plan	<ul style="list-style-type: none"> • Prioritization of higher education to develop leaders for national development • Strengthening foundation of higher education development 	<ul style="list-style-type: none"> • Expansion of educational opportunities and improvement of education quality • Strengthening of relevance of higher education to national/ regional development needs 	<ul style="list-style-type: none"> • Expansion of educational opportunities and improvement of education quality • Development of mid-level technicians for light and heavy industries • Strengthening of higher education for promotion of science and technology 	<ul style="list-style-type: none"> • Improvement of quality, relevance and disparities in higher education • Strengthening of linkages between higher education and industry and agricultural sectors 	<ul style="list-style-type: none"> • Strengthening of global competitiveness of higher education institutions • Promotion of decentralization and autonomous management of higher education institutions • Strengthening of institutional capacities • Strengthening of science and technology 	<ul style="list-style-type: none"> • Improvement of access, relevance, competitive-ness and governance of higher education • Promotion of innovation
Direction of Japan's Cooperation	<ul style="list-style-type: none"> • Provision of scholarship to study in Japan 	<ul style="list-style-type: none"> • Improvement of facilities and equipment of higher education institutions 	<ul style="list-style-type: none"> • Improvement of facilities and equipment of higher education institutions • Strengthening of polytechnic by construction and technical assistance projects 	<ul style="list-style-type: none"> • Improvement of facilities and equipment of higher education institutions which can serve as resource institutions • Strengthening of local engineering universities (Sumatra and Kalimantan) • Strengthening of polytechnic by construction and technical assistance projects • South-South Cooperation (provision of training for third countries) 	<ul style="list-style-type: none"> • Improvement of resource higher education institutions (improvement of facilities and equipment, strengthening of capacities of institution and faculty members, strengthening of university-industry linkages) • South-South Cooperation (provision of training for third countries, dispatch of experts, regional cooperation within AUN/SEED-Net) • Strengthening of polytechnic by construction and technical assistance projects • Provision of scholarship to study in Japan 	<ul style="list-style-type: none"> • Improvement of resource higher education institutions (improvement of facilities and equipment, strengthening of capacities of institution and faculty members, strengthening of university-industry linkages) • South-South Cooperation (provision of training for third countries, dispatch of experts, regional cooperation within AUN/SEED-Net) • Establishment of engineering education accreditation board
Outcomes	<p>Highly-skilled human resource development through provision of scholarship to study in Japan</p> <p>Expansion of facilities of higher education institutions</p> <p>Expansion of facilities and improvement of education and research capacities of resource higher education institutions</p> <p>Development of mid-level technicians through support to polytechnic South-South Cooperation through the polytechnic</p> <p>Strengthening of universities outside of Java through establishment of national network</p> <p>Strengthening of resource higher education institutions and South-South Cooperation through AUN/SEED-Net</p>					

Note: Dashed lines in the section of outcomes indicate the impact/ spillover effect from the previous period.

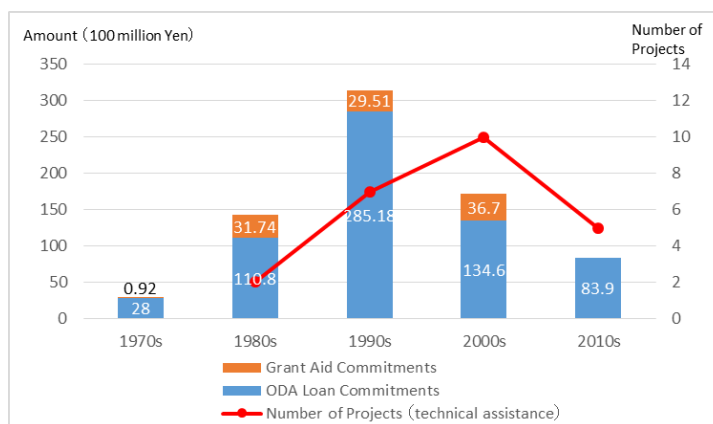
6.2 Historical Context and Japan's Cooperation

6.2.1 Number of projects and commitment amounts

Japan strengthened its engagement in the sector of higher education and highly-skilled human resource development in the 1970s, and provided assistance in the form of equipment provision to individual universities through grant aid. Japan gradually began to take a more comprehensive and long-term approach in the 1980s, combining various types of support utilizing grant aid, loan and technical cooperation. This section overviews a trend of the sector by examining the number of implemented projects and the amount of approved funds.

There are 74 projects implemented under the sector as of December 2017, which can be broken down into 24 technical cooperation projects, 13 ODA loans and 37 grant aid projects. Figure 6-1 summarizes the development of the assistance in the sector. The total loan and grant budget approved for the sector peaked in the 1990s because of the increase of loans during the decade. After that, the amounts decreased gradually, and there were no new grant and loans in the early 2010s. This is mainly because of the second Yudhoyono administration's policy not to agree on new foreign borrowings in the sector. The policy ended after the administration, and a new loan for UGM, "Development of World Class University with Socio Entrepreneurial Spirit at Universitas Gadjah Mada" was signed in 2017. Regarding technical cooperation, the number of projects increased gradually from two in the 1980s to seven in the 1990s, and peaked in the 2000s with ten projects.

In summary, the assistance of Japan which started in the 1970s gradually increased over the 1980s, the total budget for loan and grant peaked in the 1990s, and technical cooperation peaked in the 2000s. Though there are no new loan and grant agreements in the early 2010s, and the number of technical cooperation projects is decreasing, assistance has been continuously provided, and one loan and three technical cooperation projects are underway as of December 2017.



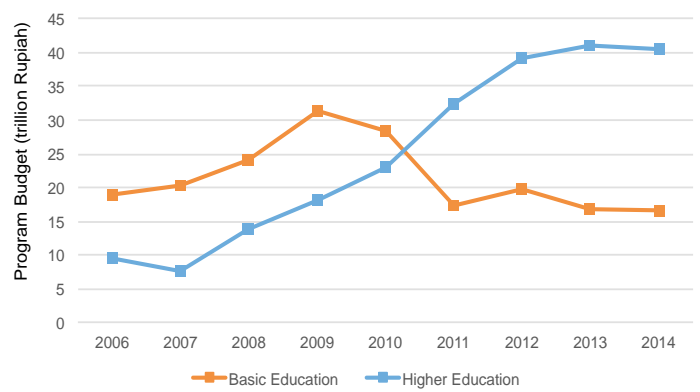
Source: JICA Review Team

Figure 6-1: Commitment Amounts of ODA Loans and Grant Aid (E/N basis) and the Number of Technical Cooperation Project by Decade

6.2.2 Budget for higher education and highly-skilled human resource development

The Ministry of Research, Technology and Higher Education was established in 2014 by a merger of the Directorate General of Higher Education, which used to be a part of the Ministry of Education and Culture, and the Ministry of Research and Technology. Since the ministry is new, meaningful analysis on the trend of budget of the ministry cannot be conducted. Instead, Figure 6-2 presents the trend of budget allocated to the higher education program within the Ministry of Education and Culture from 2006 until 2014.

The figure shows that the budget for higher education is increasing steadily while that of basic education is decreasing. The higher education budget surpassed that of basic education in 2011, and more than double was allocated to higher education in 2014.



Source: JICA Review Team

Figure 6-2: Development of Program Budget for Basic Education and Higher Education of the Ministry of Education and Culture, Indonesia (2006-2014)

The total budget of the Ministry of Research, Technology and higher Education in 2015 was IDR 46.638 trillion and that of 2016 was IDR 44.182 trillion. By establishing a ministry specializing for research, technology and higher education, the Government of Indonesia seeks to accelerate the development of high-tech innovations by reinforcing higher education institutions.

6.2.3 Period-specific characteristics of Japan’s economic cooperation for Indonesia in the sector of higher education and highly-skilled human resource development

In this section, the situation of the sector of higher education and highly-skilled human resource development in Indonesia and support of the Japanese government for Indonesia are summarized by period.

- The 1960s: Development of human resources to lead the national development through scholarship provision
- The 1970s and the first half of the 1980s: Improvement of equipment and facilities of higher education institutions
- The second half of the 1980s: Improvement of equipment and facilities of higher education institutions, Strengthening of polytechnic through comprehensive assistance
- The 1990s: Strengthening of resource higher education institutions, Strengthening of local universities outside of Java, Strengthening of polytechnic through comprehensive assistance
- From the end of the 1990s: Strengthening of resource higher education institutions including the eastern part of Indonesia, Establishing of ASEAN network, Strengthening of polytechnic as resource institution
- From the end of the 2000s: Strengthening of resource higher education institutions including the eastern part of Indonesia, Establishing/Strengthening of ASEAN network, Enhancement of quality of engineering education through development of IABEE

(1) The 1960s: Development of human resources to lead the national development through scholarship provision

1) Situation of the sector

Sukarno's regime prioritized the sector of higher education to develop national leaders for the new country, and enacted the Law on Higher Education in 1961. This law laid the foundation of higher education, clarifying basic concepts and structure of the sector. The regime also established one university in each province as a mean not only to develop human resources nationwide but also to achieve "unity in diversity" with a political intent. While the higher education sector started to expand through these policies, the low quality of higher education became a problem because the speed of facility expansion and the quality of lecturers could not meet the growing demand of society. At the same time, the quality of students was also insufficient.

2) Major efforts by Japan

The Government of Japan accepted 385 students (undergraduate level) and 238 trainees from Indonesia from 1960 to 1965 based on the "Reparations Agreement between Japan and the Republic of Indonesia¹" signed in 1958. Approximately half of the returnees became civil servants, and the rest pursued career in the private sector. Having finished accepting students/trainees as reparations in 1965, the Ministry of Education of Japan started the Japanese Government Scholarship in 1966, focusing on accepting students at postgraduate levels. More than 70% of the Indonesian scholarship recipients from 1966 to 1979 were university lecturers. The approach to develop highly-skilled human resources through provision of scholarship was highly pertinent to the situations of Indonesia, which sought to develop leaders for national development but had a problem in the quality of higher education institutions.

(2) The 1970s and the first half of the 1980s: Improvement of equipment and facilities of higher education institutions

1) Situation of the sector

While the Suharto regime restricted the establishment of new national universities by placing an emphasis on quality rather than quantity, the demand for higher education continued to increase. The establishment of the Open University² in 1984 accelerated the tendency to go on to university. The framework for the long-term higher education development (KPPTJP) (1975-1986), which was formulated as the first national higher education development plan, prioritized issues such as increasing opportunities for higher education, improving education quality and improving the relevance of higher education.

¹ Agreement detailed on the compensation by the Japanese government for the damages suffered by Indonesia due to the occupation by the Japanese Army during World War II. Indonesian students and trainees were accepted within the framework of the agreement, and 3.08 billion yen was disbursed for it.

² It is a public university which employs open and distance learning system to widen access to higher education.

2) Major efforts by Japan

While the Ministry of Education of Japan continued the Japanese Government Scholarship targeting university lecturers, JICA started to provide equipment to universities in 1975. Through the provision of scholarships and equipment, Japan addressed two main issues of Indonesian higher education institutions, which were shortages of quality lecturers and equipment. The combination of two assistance programs contributed to the enhancement of education and research capacities of Indonesian higher education institutions.

The first technical cooperation project and the first construction project targeting higher education institution began at IPB in 1977 and 1984 respectively. These projects were the beginning of a series of assistance for IPB, which was regarded as the most important agricultural higher education institution for the country's agricultural development. These projects therefore contributed to the improvement of the relevance of higher education to the development needs of society.

(3) The second half of the 1980s: Improvement of equipment and facilities of higher education institutions, Strengthening of polytechnic through comprehensive assistance

1) Situation of the sector

The Suharto regime placed particular emphasis on industrial development by attracting foreign capital in order to build the foundation for economic development and address the issue of unemployment. While the base for industrial development was laid in the 1980s, REPELITA IV (1984/85-1988/89) aimed at reinforcement of the education sector in order to produce quality skilled workers as a driving force for the development of heavy and light industries. Regarding mid-level technicians, the plan sought to increase the number of students at technical high schools and polytechnics as well as the number of engineering departments at higher education institutions. The plan also articulated the necessity to strengthen higher education in order to promote science and technology.

2) Major efforts by Japan

In response to the aforementioned needs, a facility construction project and a technical cooperation project were started targeting EEPIS to develop mid-level technicians. This was the first case to provide comprehensive assistance in the area of engineering education to develop one institution multi-dimensionally, which can later serve as a resource institution.

Meanwhile, IPB was expected to strengthen its research capacities for the development of sustainable agricultural system in the country. In response to the needs, projects to strengthen education and research capacities of the graduate school were implemented from infrastructural as well as human resource development aspects. This was an example for realizing "strengthening higher education to promote science and technology," which was one of the priority issues of the government.

(4) The 1990s: Strengthening of resource higher education institutions, Strengthening of local universities outside of Java, Strengthening of polytechnic through comprehensive assistance

Situation of the sector and major efforts by Japan

Taking into account the needs for regional development articulated in REPELITA V (1989/90-1993/94), a technical cooperation project “Higher Education Development Support Project in Indonesia (HEDS)” started in 1990 in order to improve the quality of engineering education of 11 universities in Kalimantan and Sumatra with a view to developing human resources who can contribute to the regional development. The project strengthened the capacity of the target universities by providing scholarships for the lecturers to study domestically for higher degrees, providing competitive research grants and providing research advice/instruction from Japanese professors. In addition, JICA started a loan project in 1993 targeting Syiah Kuala University in Banda Aceh, which was one of the target universities of HEDS. It was a loan project consisting of constructing university buildings, providing equipment, and providing scholarships for lecturers in order to develop human resources who can develop and process rich natural and agricultural resources in the area. Although the independence movement by the Free Aceh Movement was not yet intensified at that time, the area had a feeling of dissatisfaction with the central government holding the interests of oil and natural gas resources and not sufficiently returning the profits to the area. Therefore, implementing a project in Aceh was important not only to develop the area but also to stabilize the political situation.

The network developed by HEDS has been maintained to date. Toyohashi University of Technology, which was one of the supporting universities in Japan, still maintains close relationships with the target universities such as University of North Sumatra, Syiah Kuala University and Lampung University by exchanging professors and conducting collaborative research projects. In addition, the network has been scaled up and now includes fields of economics, law, education and arts, promoting academic exchanges in various fields. Moreover, some universities launched graduate schools as a result of improved education and research capacities. Through the project, ITB, which was a resource institution in the project, also benefitted from the project because the project enabled ITB graduate school to accommodate students from other universities, and also to improve research capacities through collaborative research with Japanese supporting universities. Furthermore, as shown in Table 6-2, the evaluation by the National Accreditation Board for Higher Education (BAN-PT) of the 11 target universities was improved, showing that the universities have grown to be comparable to those of Java. Based on the success of the network-type project, “ASEAN University Network/Southeast Asia Engineering Education Development Network Project (AUN/SEED-Net),” which expanded the network to the regional level, was conceived.

Table 6-2: BAN-PT Ratings of Research Programs of Target Universities of HEDS

	Rating A	Rating B	Rating C
Year 2002	7.69%	34.62%	57.62%
Year 2005	14.63%	50.09%	29.27%

Note: There were 40 research programs in 2002, but the number increased to 41 in 2005.
Source: Ex-post Evaluation Report

In line with REPELITA VI (1994/95-1998/99), which prioritized expansion of the industrial sector, projects to construct facilities and provide equipment for faculties of engineering continued to be implemented. Construction projects for universities were rare in the 1980s, but they increased during this period, targeting local universities such as Mulawarman University in Kalimantan, University of Pattimura in Maluku, and the aforementioned Syiah Kuala University. These projects contributed to increasing the number of students and improving the quality of education. Construction projects were also undertaken for top universities such as ITB and UGM, enabling these universities to increase accommodation capacity, improve internal efficiency, and increase the number of lecturers with master's and doctoral degrees. Upgrading their capacities in terms of both quantity and quality made them well-prepared to serve as resource institutions in AUN/SEED-Net.



Building No. 5 constructed by “Development Project of Bandung Institute of Technology (I)”

According to the policy of REPELITA VI, strengthening of EEPIS continued. In addition, a Third Country Training Program started in 1993, utilizing knowledge and experiences accumulated at EEPIS. The first training program “Electronic Engineering Education” implemented from 1993 to 2002 received a total of 149 trainees from 11 countries of the Asia-Pacific region.

Based on the policy of REPELITA VI, which emphasized strengthening the linkage between the industry and the agricultural sectors, a loan project, “The Bogor Agricultural University (IPB) Development Project (II)” started. The project constructed facilities for the Faculty of Agriculture, Faculty of Veterinary Medicine, and the Veterinary Teaching Hospital, provided scholarships for 22 lecturers to study for higher degrees, provided equipment for the two faculties and the Faculty of Mathematics and Natural Sciences, and provided technical support to utilize equipment effectively. The ex-post evaluation identified a number of positive outcomes such as an improvement of internal efficiency, a two-fold increase of graduate students, and an increase of the percentage of lecturers with master's and doctoral degrees. It also shows that the number of research activities increased from 276 in 1994 to 410 in 2013, and collaborative/consignment research projects were conducted with more than 30 private companies. The evaluation confirmed that the university is now able to conduct applied research and service provision, which can directly benefits society.

In the fields other than science and engineering, a grant aid project to establish the Center for Japanese Studies at the University of Indonesia started in 1993. Following this cooperation, three technical cooperation projects were implemented consecutively from 1997 to 2008 for strengthening research capacities of the center. A number of research was implemented by the center with Japanese researchers, and research capacities of lecturers at the University of Indonesia were reinforced. It was hoped that the

center would become the central institution of Japanese studies in Indonesia, but currently research activities of the center are very limited due to the difficulty to secure sustainable research funds. Meanwhile, the center holds some events such as public lectures co-organized with the Japanese Embassy, and international seminars collaborating with other partners. The center is also seeking funding and collaborative researchers to reactivate research. The professors whose research capacities were strengthened through the projects are now teaching not only in the university but also in other universities.

A loan project, “Professional Human Resource Development Project (PHRDP)” started in 1990 to provide scholarships for civil servants, and has been implemented up until present. The project aims to develop civil servants with advanced knowledge and skills in the areas such as public policy, environment and development, economics/financial policy, industrial development and science and technology through provision of opportunities to be trained or to study at universities in Indonesia or abroad including Japan. The project has contributed to the acquisition of skills and higher degrees especially among local civil servants.

(5) From the end of the 1990s: Strengthening of resource higher education institutions including the eastern part of Indonesia, Establishing of ASEAN network, Strengthening of polytechnic as resource institution

Situation of the sector and major efforts by Japan

Although Indonesia achieved remarkable economic growth from the 1980s to the early 1990s, the Asian Financial Crisis of 1997 hit the country hard and caused a serious economic crisis. Due to growing awareness towards needs for sustainable and stable economic development and human resource development to support the growth, the Government of Japan started a technical cooperation project AUN/SEED-Net in 2003 to improve educational and research capacities of top engineering universities in ASEAN. The third phase is being implemented as of December 2017, and four universities, which are ITB, UGM, UI and ITS, are participating from Indonesia. In total 227 lecturers from the four universities studied abroad and obtained higher degrees and 62 research grants were provided to the universities, which contributed to the continuous and multidimensional capacity development of the lecturers. Moreover, the four universities also serve as host institutions, having accepted 236 lecturers from other ASEAN countries in their graduate programs. The four universities also benefitted from accepting students from other ASEAN countries because it enabled the universities to set up and improve international programs, increase international students outside of the project, and develop instructional capacities of Indonesian professors by co-advising the doctoral students with Japanese professors.

Tangible outputs and outcomes have been produced by research activities conducted under the project. The dental surgery product developed with AUN/SEED-Net collaborative research grant was commercialized in Indonesia. In addition, an early warning system for landslide hazards was developed by localizing Japanese technology, and when a landslide occurred in Central Java in 2007, the system saved the lives of over 30 families.

Moreover, collaborative relationships between Indonesian member universities and Japanese supporting universities have been enhanced through advisor-advisee relationships developed by the provision of scholarships, regional conferences and exchange of lecturers. As a result, Kyushu University has signed a double degree master's program with UGM, and Kyoto University also established the same program with

Article: Participation in the Japan Antarctic Research Expedition by AUN/SEED-Net Alumni

Dr. Nugroho Imam Setiawan, geologist at UGM, applied for an accompanied member of the 58th Japan Antarctic Research Expedition with recommendations of professors of Kyushu University and National Institute of Polar Research. In Antarctica there are rocks about 500 million years ago and they will be valuable materials for studying the separation and movement of the "Gondwana continent," which was once connected to the continent of Africa and India. Dr. Nugroho successfully went through a written exam, an interview and health examination in 2015, and boarded the "Shirase" expedition ship. Dr. Nuguroho landed in Antarctic in December 2016, collected mountain rocks located in the northeastern part of Antarctica and carried out research on the structure of the rocks in collaboration with Japanese researchers, trying to unravel the process of evolution of the earth. Dr. Nuguroho said "Based on this experience I would like to engage in the development of Indonesian researchers not only in the field of geology but also in wider range of fields so that Antarctic observation and research can attract more attention and researchers in Indonesia."

ITB. Meanwhile, Hokkaido University and Kyushu University have separately signed a student exchange program with UGM, and the University of Technology Malaysia also established a student exchange program with the University of Indonesia. In addition, Nagoya University and ITS signed an academic exchange agreement. Moreover, collaborative curriculum development and research are being conducted between ITB and Hanoi University of Science of Technology. In the field of material engineering, UGM, the University of Science Malaysia, Chulalongkorn University, and King Mongkut's Institute of Technology Ladkrabang continuously conduct collaborative research. Furthermore, Dr. Nugroho Imam Setiawan at UGM, who studied at Kyushu University and obtained Ph.D. under AUN/SEED-Net, and whose

research outputs are well recognized, was selected as a member for Japanese Antarctic Research Expedition for the first time as Indonesian geologist and joined an expedition in 2016.

Based on the policy issued in 1999 to grant autonomy to public higher education institutions, UI, UGM, IPB and ITB obtained autonomous status in 2000, followed by North Sumatra University in 2003, Indonesia Education University in 2004 and Airlangga University in 2006. Higher Education Long-Term Strategy (2003-2010) also launched the "new paradigm" policy in order to promote autonomy of higher education institutions. After the universities received autonomous status, JICA implemented a loan project for ITB ("Development Project of ITB III") and UI ("Development of World Class University at the University of Indonesia"), and a technical cooperation project for UGM ("The Project for Improving Higher Education Institutions through University-Industry-Community Links"). These projects contributed to the improvement of the institutional capacities of these new autonomous universities.

Responding to the growing awareness of the roles universities can play in the development of the eastern part of Indonesia, a loan project and a technical cooperation project started targeting UNHAS located in South Sulawesi. The loan project constructed a new campus of the Faculty of Engineering by relocating the faculty, and also provided scholarships to lecturers to study abroad for higher degrees. The technical cooperation project introduced the “Laboratory-based Education (LBE),” and the curriculum was revised based on the LBE. Lectures at UNHAS evaluate these assistance highly as they were combined effectively so that synergetic effects would be produced, and enabled the faculty to enhance its educational and research capacity dramatically. As a result, a number

Article: The roles Syiah Kuala University played for reconstruction from the earthquake and the Tsunami

The ex-post evaluation of JICA confirmed that lecturers of the Faculty of Engineering at Syiah Kuala University, which was a target of HEDS project and a loan project for facility construction, contributed remarkably to the reconstruction of Aceh after the Sumatra-Andaman Earthquake occurred in 2004. For example, the lecturers developed cement suitable for Aceh’s climate for house rebuilding. They also conducted awareness raising/educational activities regarding compliance with building regulations. Moreover, Academic Activity Center constructed by the loan project accommodated several related organizations, and served as the base for reconstruction activities. As the large hall of the center was the only big hall which escaped a serious damage, it was used for many activities and large meetings related to the reconstruction.

of students increased, the percentage of lecturers with doctoral degrees increased, and ratings of BAN-PT were improved. Having achieved these improvements, the faculty is now better prepared to serve as a resource university of the eastern part of Indonesia.

Indonesia has strengthened its polytechnics in order to develop mid-level technicians required for industrialization. As the government planned to further expand and improve polytechnics, securing sufficient number of lecturers was an urgent issue. Therefore, the government decided to select one National Resource Polytechnic (NPR) per field, giving the polytechnics a role to train lectures of other polytechnics. As for the field of electronic engineering, EEPIS was selected as NPR, and the Government of Indonesia requested JICA to assist EEPIS to strengthen its function as a teacher training institution. Responding to the request, a technical cooperation, “The Project for Strengthening of Polytechnic Education in Electric-related Technology” and a grant aid project, “The Project for Expansion of Electronic Engineering Polytechnic Institute of Surabaya” started. With these assistance EEPIS has grown into a resource institution in the country. In addition, EEPIS started to play a role as a resource institution for South-South Cooperation, sending EEPIS lecturers to Tumba College of Technology in Rwanda, where JICA cooperation has also been provided.

Six months prior to the end of the support for EEPIS in 2006, a project to improve education and research capacity of ITS in the field of information and technology was started. Though enhancement of information and technology is indispensable for the development of the archipelagic nation, a shortage of researchers and engineers in the field is a serious problem. Based on the Presidential Decree “Information and Communication Technology Policy” issued in 2001, the linkage between

education and information and technology was raised as one of the emerging priorities. In the same year, the Directorate General of Higher Education formulated “Higher Education Strategy on Information and Communication Technology,” and human resource development in the area was made as a priority. In response, assistance for ITS, which is one of the resource institutions in the field of information technology, started. By developing not only middle-level technicians at polytechnic but also engineers at university, it was aimed that human resources in the field would be more complete. The project produced outputs such as promotion of LBE, enhancement of research activities, establishment of consortium with four universities, and implementation of collaborative research and seminars with 11 universities. As a result, the university has grown into a stronger resource institution in the field. LBE is now included as one of the development strategies of ITS, and it is disseminated to other faculties as well. In addition, the consortium was scaled up, and the number of member universities increased to 35 as of October 2017. The consortium continuously implements activities related to enhancement of collaborative research, promotion of internationalization, and reinforcement of quality assurance of the member universities.

SATREPS program, which provides opportunities for Japanese and developing countries’ universities/research institutions to conduct joint research in order to solve global problems, started in 2008. The program also aims to support developing countries’ independent and sustainable development by strengthening their research capacity. Sixteen research projects have been adopted from Indonesia by 2017, counting the most adopted number among 134 target countries. The universities that have conducted joint research under SATREPS include Indonesian universities JICA has supported and Japanese universities which have participated in JICA projects to support the Indonesian universities. The outcomes of JICA assistance therefore are well utilized in solving global problems in SATREPS. Since institutions such as the Ministry of Marine Affairs and Fisheries, Indonesian Institute of Sciences (LIPI) and Agency for the Assessment and Application of Technology (BPPT) have been also selected as counterpart agencies for joint research, the project has also contributed to the capacity development of these government institutions.

(6) From the end of the 2000s: Strengthening of resource higher education institutions including the eastern part of Indonesia, Establishing/Strengthening of ASEAN network, Enhancement of quality of engineering education through development of IABEE

1) Situation of the sector

“Masterplan for Acceleration and Expansion of Indonesia’s Economic Development (MP3EI),” in which the second term of the Yudhoyono administration raised becoming one of the developed countries by 2025 as a goal, and “National Medium Term Development Plan (2015-2019),” which was formulated by the current Joko administration, place great emphasis on human resource development in the field of science and technology for the industrial development in the country. Meanwhile, though 65,000 engineers are newly required annually to realize infrastructure development planned by the present administration, higher education institutions in Indonesia can only produce 35,000 engineers every year, resulting in a shortfall of 30,000 engineers annually.

For the quality assurance of higher education, the National Education System Law (2003) mandates all educational programs to be approved by BAN-PT. However, because BAN-PT evaluates all the educational fields based on a single set of accreditation standard, there is criticism that it does not contribute enough to the improvement of the quality of education, and many programs have not been assessed due to the shortage of manpower in BAN-PT. Therefore, it was decided by the newly established Law on Higher Education (2012) to set up an independent accreditation body (LAM-PS) for each field so that educational programs are assessed and accredited appropriately by experts in respective fields.

2) Major efforts by Japan

Due to the above situation, the Government of Indonesia requested JICA to support the establishment of the Indonesia Accreditation Board for Engineering Education (IABEE) as LAM-PS in the field of engineering as well as the accession of IABEE to the Washington Accord in order to realize quantitative expansion of quality engineers. Following the request, JICA dispatched an expert in 2013 to prepare for the establishment of IABEE based on the experience of the Japan Accreditation Board for Engineering Education (JABEE) in Japan. As of October 2017, IABEE has already been established, and activities such as establishment of accreditation standard documents, establishment of online application system, and seminars for universities and training for evaluators are being implemented. Two educational programs are already accredited as of August 2017, and the project aims to accredit 25 programs by the end of 2019 and to apply for a provisional membership of Washington Accord. This type of support was requested by Indonesia ahead of other countries. Requesting Japan to assist the establishment of an accreditation board can imply that the higher education sector in Indonesia places high trust in engineering education in Japan. This was made possible by the relationship cultivated and outcomes produced by the long-term cooperation in the field between the two countries. It is expected that the establishment of IABEE, the accession of universities to IABEE and the accession of IABEE to the Washington Accord can improve the overall quality of engineering higher education in the country, and that Indonesian engineers will be more sought after by foreign companies by its educational programs being recognized internationally.

Regarding UNHAS, a new technical cooperation project, “Project for Capacity Building in Engineering, Science and Technology” started in 2015 to strengthen institutional capacity of the Center of Technology (COT) which was constructed by the loan project. The COT will serve as a center not only for UNHAS but also for other universities, industries and local agencies in the eastern part of Indonesia. The project aims to strengthen COT-centered research and university-industry-community collaboration by utilizing educational and research capacities reinforced by the past loan and technical cooperation projects.

In addition, though it was not made into a project, a preparatory survey for public-private partnership was conducted by JICA in 2013 targeting IPB, ITB and BPPT. The preparatory survey aimed at developing a loan project to establish a technology science park by making a research and development cluster with the three institutions and strengthen linkages with industries. However, due

to the change of the regime in Indonesia, the policy of the government changed and the project was not realized. Meanwhile, IPB, that gained ideas and knowledge on the details of the project through the preparation survey and consultation with JICA, established a technology science park in a small scale with the budget of the Indonesian government and IPB. Currently, more than ten companies related to food, rice, seeds and machinery have moved into the park, discussing ideas on innovation with IPB, and developing various new products. The products are sold online and also at shops in shopping malls, and the profit last year reached IDR 18 billion. As a result, IPB won an award of the Ministry of Law and Human Rights in 2015 as the university with the most number of commercialized patents in the country. According to IPB, one of the factors for winning the award was that the park enabled IPB to conduct organized and systemized university-industry collaboration. Moreover, from 2008 to 2016, 828 innovations³ have been developed in Indonesia, of which 323 (38%) were attributed to IPB. As a result, IPB won an innovative university award in 2017. Based on these achievements, IPB's innovation ability is widely recognized in the country. It is considered that the long-term cooperation by JICA has also contributed to the development of such impact.

³ The number of innovations developed under the "100 plus Innovation Program" led by the Business Innovation Center and the Ministry of Research and Technology.

6.3 Noteworthy Achievements in Cooperation

Three projects are taken as representative examples. The first case is cooperation for EEPIS, which contributed to the development of human resources who can undertake “*monodzukuri* (product development) through comprehensive and long-term assistance. The second case is cooperation for UNHAS, which is growing rapidly as a hub for the development of the eastern part of Indonesia. The third case is provision of scholarships, which has been implemented since the 1960s utilizing various channels.

6.3.1 Electronic Engineering Polytechnic Institute of Surabaya (EEPIS) ⁴

In the 1980s, the Government of Indonesia aimed at industrial development by attracting foreign capital. In order to achieve this goal, introducing practical engineering education was prioritized. At the same time, there were strong needs from industries to increase mid-level technicians. Responding to the needs, JICA started a construction of EEPIS in 1987, and EEPIS opened three departments, which are Department of Electrical Engineering, Department of Electronical Engineering and Department of Communication Engineering, in 1988. The support over 25 years is summarized in Figure 6-3 below.

	1985-1989	1990-1994	1995-1999	2000-2004	2005-2009	2010-2014
Grant Aid	Construction Project of EEPIS (1986-)			The Project for Expansion of EEPIS (2001-2004)		
Technical Cooperation Project	Project for EEPIS (1987-1994)			The Project for Strengthening of Polytechnic Education in Electric-related Technology (1999-2006)		
Third Country Training Program			Electronic Engineering Education (1993-2002)	Information Technology Education (2002-2006)	Application of IT Technology to Electrical Engineering Education (2007-2009)	Educational Method on Industrial Automation Using Electronic Computer (2010-2012)

Source: JICA Review Team based on JICA. *Comprehensive Analysis of Evaluation Result: Technical Cooperation Implemented Over a Long Period of Time – In the Field of Technical Education*. 2009.

Figure 6-3: JICA Project for EEPIS

Two grant aid projects to construct facilities, two technical cooperation projects and four Third Country Training Programs were implemented as shown in Figure 6-3. A grant aid project and a technical cooperation project were implemented almost at the same time twice, indicating that the projects sought to comprehensively strengthen EEPIS by producing synergetic effects of the two types of projects. The first two projects, which are “Construction Project of the Electronic Engineering Polytechnic Institute in Surabaya” (grant aid) and “Project for Electronic Engineering Polytechnic Institute of Surabaya” (technical cooperation) aimed to lay a foundation of EEPIS by facility construction, equipment provision, revision of the curriculum based on that of Japanese polytechnics, and capacity development of lecturers through technical transfer from Japanese experts. The following projects, which are “The Project for Expansion of Electronic Engineering Polytechnic Institute of Surabaya” (grant aid) and “The Project for Strengthening of Polytechnic Education in Electric-related Technology” (technical cooperation) sought to develop lectures for polytechnics through establishing a D4 course in addition to the existing D3 course. Education programs of EEPIS were enriched through these cooperation projects by stepping up the contents of assistance according to the changing needs⁵.

⁴ Indonesian acronym for EEPIS is PENS (*Politeknik Elektronika Negeri Surabaya*).

⁵ As the minimum qualification for lecturers of polytechnics in Indonesia was upgraded to master’s degree afterwards, the

In addition, the “Project for Electronic Engineering Polytechnic Institute of Surabaya” introduced employment support activities as a part of school activities as found in Japanese polytechnics. As a result of the efforts, the rate of new graduates who found employment at the time of graduation reached 80% for the first graduates. The support system has been updated and utilized up until present. EEPIS also received assistance from the Directorate General of Higher Education in 2006, and the system was enriched by (1) creation of statistical data on graduates, (2) creation of databases on vacancy information of companies, and (3) development of company information catalogs.

As a result of these projects, EEPIS produced 11,506 mid-level technicians as of 2016. Graduates of EEPIS are sought after by many large companies including Garuda Maintenance Facility (GMF)⁶ and Telekom Indonesia⁷, and not only their technical skills and knowledge but also their soft skills such as teamwork and diligence are highly evaluated by these companies. According to the both companies, they will continue to hire graduates of EEPIS in the future, and expect other polytechnics to reach the same level as EEPIS.

Currently, EEPIS has four departments, which are Department of Electrical Engineering, Department of Information Computer Engineering, Department of Mechanical and Energy Engineering, and Department of Creative Multimedia Engineering. A master course was established in 2014, which was the first master course among Indonesian polytechnics. In addition, GMF and State Electricity Company (PLN), which evaluate EEPIS graduates highly, established their own D3 courses at EEPIS specialized in aircraft maintenance and electricity/electric power in 2016. Since employment at GMF and PLN is promised after graduation, the competition rate of the courses is 13 times for that of the GMF course and 17 times for that of the PLN course, and best students are selected among them. In 2016 there were 12,727 applicants overall, of which 1,322 were accepted.

One of the reasons for the high popularity of EEPIS is that EEPIS has won the first place in the domestic polytechnic rankings continuously since 2015, when the ranking system was established. Moreover, EEPIS participates in many domestic and international robot contests⁸ every year, and has won the first places. These achievements contributed to the establishment of the current position as a best polytechnic in the country.

As a resource institution for South-South Cooperation, a series of Third Country Training Program was implemented since 1993 to 2009 as shown in Table 6-3, and EEPIS had accepted trainees from many countries including Asia, Pacific Islands Countries and Africa. EEPIS also dispatched lecturers to Tumba College of Technology in Rwanda from 2009 to 2015, and contributed to strengthening polytechnics in other countries.

D4 course is currently positioned as a course to train technicians equivalent to college graduate.

⁶ An Indonesian company that specializes in aircraft maintenance repair and overhaul.

⁷ The largest telecommunications services company in Indonesia.

⁸ Many robot contests are organized by various organizers such as dancing robot contest, football robot contest and firefighting robot contest.

Table 6-3: Third Country Training Program conducted by EEPIS

Third Country Training Program	Summary
Electronic Engineering Education (1993-2002)	The target countries are Malaysia, Philippines, Thailand, Laos, Bangladesh, Nepal, Pakistan, Papua New Guinea, Brunei, Vietnam, and Sri Lanka. The number of trainees attended was 149, including 21 from Indonesia.
Information Technology Education (2002-2006)	The target Countries are Timor-Leste, Myanmar, Vietnam, Laos, Cambodia, Mongolia, Uzbekistan, Bangladesh, Nepal, Pakistan, Fiji, UAE, Ethiopia, Kenya, Tanzania, Uganda, and Zambia. The number of trainees attended was 59, including a participant from Indonesia.
Application of IT Technology to Electrical Engineering Education (2007-2009)	The target countries include Indonesia, Uzbekistan, Bangladesh, Nepal, Timor-Leste, Kenya, Tanzania, and Zambia. (The number of trainees is unknown as the data could not be obtained).
Educational Method on Industrial Automation Using Electronic Computer (2010-2012)	The target countries include Cambodia, Vietnam, Tanzania, Rwanda, Kenya, Palestine, Bangladesh, Nepal, and Myanmar. (The number of trainees is unknown as the data could not be obtained).

Source: JICA. *Comprehensive Analysis of Evaluation Result: Technical Cooperation Implemented Over a Long Period of Time – In the Field of Technical Education*. 2009.

BOX 6-1 Outcomes Produced by AUN/SEED-Net

Project period: From 2003 to present

AUN/SEED-Net has established a network among 14 Japanese universities and 26 member universities in ten ASEAN countries through various programs such as sending/accepting lecturers to study for higher degrees, conducting collaborative research and organizing regional conferences. The project started in 2003 and the third phase is being implemented as of October 2017.

In 2011, Dr. Ika Dewi Ana, a professor and now a vice rector at UGM, was awarded a collaborative research grant from AUN/SEED-Net along with her industry partner and her Japanese co-researcher under the topic of bone substitution. The dental surgery product is now being commercialized through a venture company of UGM under the collaboration with a large pharmaceutical company in Indonesia. “AUN/SEED-Net helps us to link our research with the community and to transform the research from lab scale to industry scale,” said Dr. Ika Dewi Ana.

In addition, AUN/SEED-Net is continuously strengthening capacity of lecturers after returning home from studying abroad by providing research grants, conducting regular regional conferences, and publishing regional engineering journal. The cooperative and friendly relationships forged through these activities are one of the biggest outcomes produced by the project. Previously Indonesian universities were rarely acknowledged as a partner for collaborative research from universities in the developed countries, but “Japanese universities have collaborated with AUN/SEED-Net member universities continuously and built a heart-to-heart relationship with us; they helped us to accumulate research experiences and achievements together” said Dr. Dwikorita Karnawati, professor and former rector of UGM. Other professors also appreciate support from Japanese universities, mentioning that there are no other countries with which such long-term cooperative relationships were established, and this network is an irreplaceable asset. In addition, the enhanced capacities enabled the universities to conduct research to solve national problems. According to UGM, these research activities and achievements as well as being a member of AUN/SEED-Net are highly valued by other countries, and collaborative research with other developed countries is also increasing.



Bone substitute material developed under AUN/SEED-Net and commercialized by Indonesian company

6.3.2 Hasanuddin University (UNHAS)

While the development of the western region of Indonesia is advanced, that of the eastern region lags behind. Although the eastern part has rich agricultural, fishery and ocean resources, many areas lack technology, information, infrastructure network and human resources. For improving processing capacity of natural resources and producing high value-added products, training of human resources in this area has become an urgent issue. Founded in 1956 in Makassar, South Sulawesi, UNHAS is the largest university in the eastern part of Indonesia. Approximately 4,000 students were enrolled in six departments in the Faculty of Engineering when JICA started its assistance, but education and research facilities, laboratory equipment and linkages with industries were limited. Since approximately 70% of national universities are located in the western region and 50 % of them, including UI, UGM, ITB and IPB with high reputations, are located in Java, disparities between universities in the western and eastern regions were remarkable. It was considered therefore necessary to develop and expand the Faculty of Engineering of UNHAS as a base for developing highly-skilled human resources and capacities for research and development for the regional industrial development.

Assistance for UNHAS started in 2007 with a loan project, “Hasanuddin University Engineering Faculty Development Project,” which consists of construction of a new campus, provision of equipment and grant of scholarships for lecturers to study for higher degrees. In 2009, the “Technical Cooperation Project for the Development of the Engineering Faculty of the Hasanuddin University” started to introduce LBE. Currently new technical cooperation, the “Project for Capacity Building in Engineering, Science and Technology (C-BEST)” is being implemented in order to strengthen linkages with industries and local agencies. Capacities of UNHAS have been intensively strengthened through these projects.

The following table provides outputs produced by UNHAS as of 2017. Not only the accommodation capacity but also GPA and BAN-PT ratings have improved.

Table 6-4: Outputs Produced at UNHAS

		2005	2017
Number of Students	Bachelor	3,871	4,245
	Master	298	454
	Doctor	20	272
Percentage of lecturers with doctoral degree		12.7%	63.7%
GPA		3.04	3.30
Number of Departments		6	13
BAN-PT Rating		Rating A: 2 programs Rating B: 5 programs Rating C: 4 programs	Rating A: 9 programs Rating B: 4 programs

Source: JICA Review Team based on information from UNHAS

In addition, these projects are highly appreciated by the lectures of UNHAS from various points. For example, obtaining government scholarships was difficult for UNHAS lecturers before because they needed to compete with other universities. The percentage of lecturers with doctoral degrees therefore remained low. However, by obtaining a JICA scholarship program targeting UNHAS faculty members only, the percentage of lecturers with Ph.D. has dramatically increased in a short period of time. Also, various types of support, such as facility construction, equipment provision and provision of scholarship and technical cooperation were combined effectively and have produced synergetic effects. For example, faculty members who have returned from studying in Japan are familiar with facilities and equipment provided by Japan, and therefore the equipment is used and research outcomes are produced efficiently and effectively. Moreover, as those faculty members became familiar with LBE during their stay in Japan, it is practiced in UNHAS effectively and sustainably. Due to these synergetic effects, educational and research capacities have dramatically improved, and the number of publications by the faculty, which is 80-90 per year, is much larger than other faculties.



Water tank at hydrodynamic laboratory provided by the “Hasanuddin University Engineering Faculty Development Project”

As a result, other universities started to pay more attention to UNHAS. For example, ITB requested UNHAS to accept a study tour of their facilities, and ITS started a joint research with UNHAS. In addition, as the education and research environment of UNHAS has improved, the number of applicants for lecturer posts at UNHAS is increasing.

Furthermore, as a major achievement that cannot be measured quantitatively, many lectures highlighted the fact that the atmosphere of the faculty has become more academic. In the past, students were keen on conducting demonstrations and making conflicts with other universities, and lectures used to go home as soon as their lectures were finished. However, currently teachers remain at the university and conduct research as the environment has become conducive to research activities. Students also has become enthusiastically involved in research activities together with the lecturers. Also, the fact that UNHAS is now able to host international seminars inviting Japanese professors also helps the university to create academic atmosphere. Learning global research trends and methods from Japanese professors is stimulating to lecturers and students at UNHAS, and it raises their motivations to continue research and education. Students are therefore enthusiastically involved in the preparation of the seminars. In addition, learning how Japanese universities conduct education and research activities help UNHAS to clearly visualize their future.

UNHAS is now working on strengthening their COT. By conducting seminars with other universities and industries in the area the university seeks to be a center for university-industry collaboration in the eastern part of Indonesia. It is expected that UNHAS will become an institution that will further impact social and economic development of the eastern part of Indonesia.

6.3.3 Provision of scholarships to study in Japan

After World War II, the Government of Japan started accepting Indonesian students and trainees at Japanese universities in 1960 as post-war reparations, and in total 385 students and 238 trainees were accepted from 1960 to 1965. After this project, many channels were created to accept international students in Japan including those who are from Indonesia. As presented in Table 6-5, the number of students accepted in the field of social sciences is quite large as large-scale loan projects targeting civil servants have been implemented for a long period of time. However, generally speaking, as Japanese universities have high reputations in science and engineering fields in Indonesia, the majority of applicants for the Japanese Government Scholarship opt for science and engineering. The high recognition in science and engineering is attributable to JICA's long-term assistance in the fields. In addition, because of such support, there are many professors in major universities in Indonesia who graduated from Japanese universities, and therefore students of these professors also tend to choose Japan as a destination to study for higher degrees.

Table 6-5: Scholarship Provision to Study in Japan

ODA Loan		
1988-1995	Science and Technology Manpower Development Program	This was a co-financed program with the World Bank to develop science and technology knowledge and skills of the personnel of six government agencies by provision of scholarships. In total 608 personnel studied in the United States, the United Kingdom, Canada, Germany, France, the Netherlands, Australia, the Philippines and Japan for degrees (doctoral, master's and bachelor's) and short-term training by the part financed by Japan. Among 608, 256 studied in Japan.
1990-1998	PHRDP 1	This was a co-financed program with the World Bank to develop (local) civil servants in the area of science and technology, finance and public administration and lectures at local universities. The target agencies were BAPPENAS, the Ministry of Finance, BPPT, and the Directorate General of Higher Education at the Ministry of Education and Culture. In total 1,298 personnel studied for degrees (doctoral, master's and bachelor's) and 10,198 personnel participated in short-term training. Among them 610 studied in Japan.
1995-2004	PHRDP 2	The World Bank withdrew from the project and it has become Japan's project. The target agencies were the same as the Phase 1. In total 848 personnel studied for degrees (doctoral, master's and bachelor's) and 2,412 personnel participated in short-term training. Among 848 personnel, 592 studied in Japan.
2005-2015	PHRDP 3	The target agencies for the Phase 3 were BAPPENAS and the Ministry of Finance. In total 943 personnel went to Japan to study for master's and doctoral degrees, and 812 personnel participated in non-degree programs, including short-term training, academic exchange and sabbatical. A program called "Linkage Program" started in this phase, in which students can earn a master's double degree by studying for one year in a university in Indonesia and for another year in a Japanese university.
2014-present	PHRDP 4	The target agency for the Phase 3 is BAPPENAS. As of October 2017, 361 personnel went to Japan to study for master's or doctoral degrees, and 316 personnel participated in non-degree programs.

Long-term Training		
2000-present	Long-term Training	This is a scheme to be used for a component of technical cooperation project. In total 233 people came to Japan to study for degrees within this scheme. In total 55 studied the areas of arts and social science and 178 studied the area of science and engineering.
Grant Aid		
2003-2006	The Project for Human Resource Development Scholarship (JDS)	JDS is a scholarship provision project for civil servants to study for master's degree in Japan. Indonesia was a target country from 2003 to 2006, and 120 personnel received scholarships.
The Government of Japan/Ministry of Education, Culture, Sports and Technology		
1960-1965	Scholarship Provision as Post-war Reparations	The Government of Japan accepted 385 students (undergraduate level) and 238 trainees from Indonesia from 1960 to 1965 based on the Reparations Agreement between Japan and the Republic of Indonesia signed in 1958. Approximately half of the returnees became civil servants, and the rest pursued career in the private sector.
1966-Present	Japanese Government Scholarship	The cumulative number of students accepted since 1966 is unknown due to the lack of data ⁹ . The number of the Japanese Government Scholarship students enrolled at Japanese universities from Indonesia as of May 1 2016 is 914, which is the second largest number after China. Approximately half of the applicants apply for engineering, 20% for agriculture, 10% for science, and the rest of 20% for Japanese language and Japanese culture or social sciences.
2001-Present	Young Leaders Program	The program offers scholarships for master's study in Japan to civil servants in target countries, including Indonesia. The areas of study include local governance, healthcare administration, business and law. In total 42 Indonesian personnel received the scholarship as of October 2017.

Source: JICA Review Team

As a result of these assistance, the returnees of scholarship programs during World War II and post-war reparations were given important positions as policy makers or as liaison with Japanese political and business world during the Sukarno regime and the economic development period of the Suharto regime, and they played significant roles in social and economic development of Indonesia. In addition, there are many returnees working as civil servants in Indonesia at the moment, communication between JICA/the Japanese embassy and Indonesian government institutions therefore goes smoothly with assistance of these returnees. Prominent returnees who contributed to deepening the relationship between Indonesia and Japan include H.E. Dr. Ginandjar Kartasmita (member of Presidential Advisory Council from 2010 to 2015 and currently Indonesia Japan Friendship Association), H.E. Mr. Rahmat Gobel (currently a Special Envoy for Japan), Mr. Nurdin Abdullah (currently the governor of Bantaeng Province), and Prof. Dr. Julian Aldrin Pasha (presidential spokesman for home affairs for the Yudhoyono administration, currently a professor at University of Indonesia). In the fields of engineering and agriculture, returnees engage in the development of human resources and technology in the sectors of higher education and industry. Meanwhile, host universities

⁹ There are 2,309 Indonesian students accepted by the program as of 2000, according to Yuriko Sato. "Impact Study of the Japanese Government Scholarship Policy toward Indonesian Students from the Perspective of Fostering Pro-Japanese Leaders." *Japanese Journal of Evaluation Studies* Vol.2, No.2. 2002.

in Japan also benefitted from these programs because they enabled the universities to establish and improve international programs, cultivate new research topics by strengthening linkages with Indonesian universities and government agencies, and promote international understandings among Japanese students.

In addition, the establishment of Darma Persada University can be highlighted as one of the impacts of these programs. The university is a private university established in 1986 in cooperation with Indonesia Japan Friendship Association and Japan Graduate's Association of Indonesia (PERSADA) to show their gratitude to both Japan and Indonesia. It is said that there are no universities worldwide which a group of former international students who went to one country has established to make use of their experiences for the development of their home countries. Due to this



Darma Persada University

background the university is highly pro-Japanese, and the Department of Japanese Language is famous especially among Japanese companies in Indonesia. Many graduates of the department are therefore employed by these companies. Moreover, the Faculty of Engineering is collaborating with TOYOTA Indonesia through the Association for Overseas Technical Cooperation and Sustainable Partnerships (AOTS) with a view to developing human resources who can undertake “*monodzukuri* (product development).” The university has set up a consortium with 11 Japanese universities in January 2017 and is planning to implement various programs to strengthen the university’s “*monodzukuri*,” “human resource development” and “Japanese language education.” As of October 2017 the university is preparing detailed plans for the programs. It is expected that the graduates of these universities will further contribute to Indonesia’s social and economic development.

As shown in Table 6-5, Japan has contributed to the capacity development of civil servants in the field of social sciences as well as university lectures in the field of science. However, studying in Japan for higher degrees in the field of social sciences is not very common in Indonesia. This is partly because most of the scholarship programs in the field of social sciences target civil servants, and there are no JICA projects at the moment which targets the field. Thus information on Japanese social science universities has not been disseminated to the general public including young people. At the moment, there are many cabinet members who have studied in countries such as the United States, Europe and Australia but only one in the health sector studied in Japan. As experiences of accepting Indonesian students in the field of social sciences are accumulating by the long-term cooperation through PHRDP, it is expected that more Indonesian people seek opportunities to study social sciences in Japan by disseminating the outcomes/impacts to the general public.

Table 6-6: Top 20 Destination Countries of Indonesian Citizens who Study at Tertiary-Level Education Institution Abroad

	Destination	
1	Australia	10,168
2	United States	8,922
3	Malaysia	5,700
4	Japan	2,387
5	Egypt	2,262
6	United Kingdom	2,164
7	Germany	1,938
8	Saudi Arabia	1,491
9	Netherlands	1,098
10	Korea, Rep.	841
11	Canada	684
12	Turkey	670
13	France	668
14	Italy	592
15	New Zealand	567
16	Thailand	274
17	China, Hong Kong	266
18	India	134
19	Sweden	109
20	Jordan	85

Source: UNESCO. "Global Flow of Tertiary-Level Students." <http://uis.unesco.org/en/uis-student-flow>
(Accessed on 13th February 2018)

6.4 Outcomes/Impacts of Japan's Economic Cooperation and Future Prospects

6.4.1 Outcomes/impacts of Japan's economic cooperation to date

Based on the review of period-specific characteristics and noteworthy achievements of Japan's economic cooperation in the sector of higher education and highly-skilled human resource development, major issues, direction of cooperation, implementation areas and project groups are summarized as below.

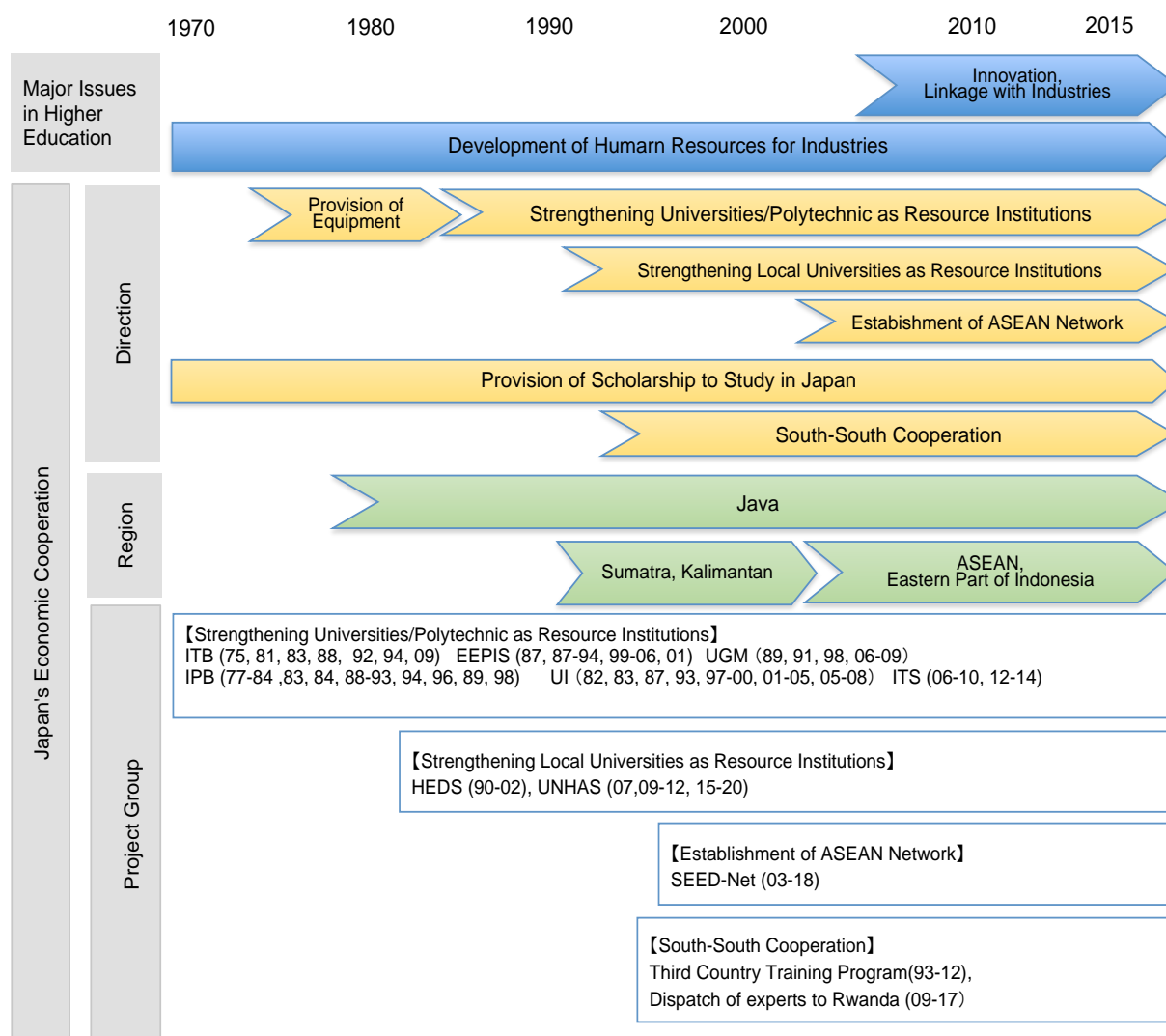


Figure 6-4: Characteristics of Japan's Cooperation in Higher Education

(1) Strengthening of higher education institutions

As shown above, Japan has provided long-term support in the Indonesian higher education sector. In particular, Japan has focused on the field of engineering as a driving force for development of a nation based on its own experiences of reconstruction after World War II. Though engineering education requires comparatively large inputs such as facilities, equipment and lectures with higher degrees, and also regular updates of these inputs are needed, JICA has responded to these needs and upgraded the

contents of support step by step by fine-tuning the assistance by combining technical cooperation, loans and grant aid. The continuous support by Japan in the field contributed to the development of education and research of engineering higher education institutions in Indonesia, and thereby indirectly contributed to the production of quality human resources for industries. The support also fostered trust between higher education institutions of Indonesia and Japan, resulting in high popularity of studying engineering in Japan and a technical cooperation project to establish IABEE.

Besides engineering, JICA has also supported universities in other fields such as IPB and UI to improve relevance of universities to the development needs of the country. These projects have contributed to human resource and institutional development, which can meet challenges in the areas of agriculture and health.

Higher education institutions that have been strengthened have grown into resource institutions domestically as well as internationally, and they contributed to developing capacities of other institutions. Moreover, the enhanced research capabilities are also used for research to solve problems of Indonesia and ASEAN through SATREPS and AUN/SEED-Net.

(2) Strengthening of network among higher education institutions

The network and friendship forged among universities in Indonesia, Japan and ASEAN through HEDS and AUN/SEED-Net have become important assets for Indonesian universities, enabling sustainable capacity development of university lecturers in Indonesia.

Moreover, Indonesian universities can envision their future by learning education and research methods of Japanese universities. The academic exchange further motivates them to improve their abilities. In addition, Japanese universities are also benefiting by collaborating with Indonesian universities as the collaboration enables Japanese universities to increase international students and explore new research topics.

(3) Highly-skilled human resource development by provision of scholarship

Beginning with a scholarship program as post-war reparations in the 1960s, human resource development by scholarship provision has been continuously undertaken through various channels. The number of scholarships provided by JICA to university lecturers and civil servants is more than 3,000. These programs have contributed to highly-skilled human resource development in Indonesian governmental agencies and universities, who would develop the nation and would be a bridge between Indonesia and Japan. Moreover, incorporating provision of scholarship into loan and technical cooperation projects enabled the universities to improve the quality of education and research drastically within a short period of time. For example, as much as 16% of lecturers at IPB obtained higher degrees in Japan, which is the most preferred destination for IPB faculty members to pursue higher degrees. Japanese universities also benefitted from accepting Indonesian students as it promoted international environment on campus, and prompted them to establish and improve their international programs.

6.4.2 Implications for future cooperation

(1) Strengthening of higher education institutions

It is hoped that the higher education institutions strengthened by the cooperation serve as hubs for the regional development by collaborating closely with industries and local agencies. In addition, the enhanced research capabilities are expected to be used for creating innovations and new business, which can contribute to developing industries and society. In particular, in the era when acquisition and commercialization of technical patents by university venture companies and open innovation research are progressing worldwide, top-ranking universities in Indonesia such as ITB and UGM are also strengthening these efforts, trying to transform themselves from “Research University” into “Entrepreneurial University.” In the meantime, JICA signed a new loan project with UGM in 2017 to strengthen functions of the university to become a regional development hub by improving education and research facilities, which are needed to reinforce linkages with industries. It is expected, by utilizing experiences of Japanese universities in university-industry collaboration and incubation business, that this type of support is further promoted.

In addition, it will be possible to assist other countries in establishing an organization like IABEE based on Indonesia’s experience.

Moreover, it is also useful to promote further research cooperation that will contribute to solving problems of Indonesia and ASEAN based on the assets produced so far. It is also beneficial to utilize university human resources that JICA has strengthened as experts of other JICA projects.

(2) Strengthening networks among universities

AUN/SEED-Net is positioned as one of the projects that will contribute to the improvement of innovation capacities under the “Industrial Human Resource Development Cooperation Initiative” announced by the Government of Japan in 2015. It is expected, through the network developed, that education and research capacities are further strengthened to foster human resources in the area of research and development, who will lead innovations in Indonesia and ASEAN.

It is hoped by Indonesian as well as Japanese universities that AUN/SEED-Net would become a network like Erasmus Mundus¹⁰, in which lecturers and students can freely move around the region. As exchange of ideas and incorporation of new knowledge and experiences are indispensable elements for the improvement of international competitiveness of higher education institutions, creating the environment in which lecturers can teach and students can learn at any institutions in the network is anticipated. Based on this expectation, the next phase of AUN/SEED-Net, which will start in 2018, will focus on the development of collaborative education programs among the universities in the network.

¹⁰ A program of the European Union which aims to enhance the quality of higher education through scholarships and academic co-operation between the EU and the rest of the world.

(3) Highly-skilled human resource development by provision of scholarship to study in Japan

Increasing engineers has become an urgent issue in Indonesia due to the policy of expanding infrastructure. Based on this situation, ITB is planning to construct two new campuses, and increase lecturers and students. As it is likely that most of the newly recruited lecturers for the new campuses will be master's holders, the needs for scholarships to study in Japan for doctoral degree is high. Moreover, many universities mentioned expectations for short-term training or academic exchange opportunities for post-doctoral research or sabbatical leave. In addition, a new project called "Innovative Asia," which provides scholarships and internship opportunities in the field of science and technology in Japan, has started in 2017. In total 43 people were selected from Indonesia as the first batch, and this is the largest number among the 12 target countries. It is hoped that returnees of this project will promote innovation of Indonesian industries by utilizing knowledge, experiences and connections obtained in Japan.

The needs for capacity development of civil servants remain high because it is widely recognized in Indonesia that a doctoral degree is required to promote to a position higher than director, and the Government of Indonesia seeks to increase the number of civil servants with master's and doctoral degrees. According to the Ministry of Research, Technology and Higher Education, though the number of universities with doctor courses have increased in Indonesia, there are needs for scholarship to study in Japan because there are experiences which can be obtained only by being in Japan such as being surrounded by an excellent academic environment, knowing about diligence of Japanese people, and getting stimulations and inspirations by the environment and people. In particular, a doctoral program in which one can study in Indonesia for a couple of years and in Japan for the rest is expected.

Moreover, there are several Japan alumni organizations in Indonesia including PERSADA with more than 1,500 members, and Ikatan Alumni JICA Indonesia with more than 9,023 members as of 2012. There are alumni members who have promoted to high positions at universities, government agencies and private companies. It is considered important to make use of such networks for activities such as promotion of studying in Japan, research activities with Japanese affiliated companies in Indonesia, and academic and cultural exchange programs between Indonesia and Japan for deepening the relationship.

(4) Industrial human resource development

The current administration prioritizes vocational training, planning to establish polytechnics and community colleges in industrial areas by 2019. The Ministry of Research, Technology and Higher Education and BAPPENAS mentioned the needs for assistance in this area especially in strengthening linkages between polytechnics and industries. In addition, companies interviewed for this review mentioned the needs to upgrade polytechnics other than EEPIS because of the large disparity in the quality of graduates between EEPIS and other polytechnics. Because JICA has experiences in strengthening EEPIS, which is now ranked top in the domestic polytechnic ranking, and EEPIS has good relationships with industries, it may be possible to assist other polytechnics by setting EEPIS as a resource institution.

Chapter VII Governance

7.1 Summary

Japanese cooperation in the governance sector had focused on cooperation in the statistics subsector until the end of the Suharto administration. However, the cooperation expanded after 1998 and throughout the 2000s following democratization and decentralization in Indonesia. There have been mainly five areas in the governance assistance¹.

Firstly, there is “Assistance on capacity development for policy planning.” Under this area, the projects in the statistics subsector were designed in a way that benefits the overall context of democratization and decentralization. For example, the assistance for the 2000 population census and the following cooperation to develop the voter registration list for the 2004 elections were notable because it formed the basis of the administrative work and development planning both at the central and local governments. The second area is the “Assistance for decentralization.” This is discussed in the chapter for “Regional Development” in this report.

The third area, “Assistance for political reform” is represented by the assistance for general elections in 1999 and 2004. This had profound significance in supporting the momentum of democratization. Another notable area of assistance related to democratization is the fourth area, “Security-related assistance.” JICA has continuously focused its effort on the Support Program for Reform of Indonesian National Police (INP) since 2001. This program is historically significant because it has supported the INP, which was separated from the armed forces in 2000, to mainstream the concept of community policing. The program has produced many notable outcomes including the establishment of the model of community policing, capacity development on the field, capacity development of senior officer candidates through trainings in Japan, support for institutionalization of community policing, and the development of mechanisms for nationwide dissemination. Now, the program is entering the finishing stage to ensure that community policing takes root in Indonesia.

Fifthly, there was also “Assistance for legal and judicial reform” in the 2000s. Under this subsector, legal professionals of both countries have nurtured a good relationship, and this has been continued even after the termination of cooperation through ODA in 2009. Since 2015, JICA has resumed cooperation in this subsector through technical cooperation for intellectual property rights protection.

¹ JICA categorizes its activities in the governance sector by three themes: 1) improving public administration, 2) developing democratic systems, and 3) supporting legal and judicial frameworks (JICA. *JICA ni okeru gabanansu shien- minshu teki na seido dsukuri, gyosei kinou no jojo, ho seibi shien- chosa kenkyu hokokusho [Study Report on the Governance Assistance of JICA: Developing Democratic Systems, Improving Public Administration, and Supporting Legal and Judicial Frameworks]*. 2007). Then, “improving public administration” is further categorized in three sub-themes: administrative foundation, local administration, and statistics. “Developing democratic systems” is also divided into two sub-themes: public safety and improved policy process. Therefore, there are six sub-themes in total, including “supporting legal and judicial frameworks.” Of these, this chapter takes up four sub-themes: statistics, improved policy process (elections), public safety (police reform), and legal and judicial frameworks, as the first, third, fourth and fifth points mentioned in this section, respectively. The remaining “local administration” (the second point mentioned in this section) and “administrative foundation” are mentioned in Chapter VIII “Regional Development” and Chapter I “Economic Policy and Macro-Economic Management,” respectively. Individual projects in the education and health sectors have also addressed “improving public administration,” but these projects are mentioned in the relevant chapters and outside the scope of this chapter.

With a series of free and peaceful elections in 2009 and 2014, democracy in Indonesia is said to be firmly established without any setbacks. As a result, the volume of Japanese cooperation for democratization became reduced in the 2010s. On the other hand, Indonesia has come to play the role of the center of excellence in South-South Cooperation. For example, it has hosted Third Country Training for Timor-Leste and other countries in such areas as statistics and community policing. JICA still regards the governance sector as one of the important sectors from the viewpoint of improving the business and investment environment. It should be noted that in this case, the major cooperation will consist of projects classified under the sectors of “Economic Policy and Macro-Economic Management” and “Private Sector Development” in this study, such as those in the area of tax affairs, performance-based budgeting, and competition policy².

At the same time, a new type of cooperation has emerged recently in the first area of “Assistance on capacity development for policy planning.” JICA has cooperation with BAPPENAS on implementation of Sustainable Development Goals (SDGs) through developing national target/indicator, National and Sub-National Action Plan and Monitoring and Evaluation System.

Table 7-1: Overview of the Governance Sector in Japan’s ODA

Period	1960s	1970s and early 1980s	Late 1980s	1990s	From the end of 1990s	From the end of 2000s
	Nation-State Building	Economic Development	Structural Adjustment	Growth until the Asian Financial Crisis	Democratization and Decentralization	Middle Income Countries
Historical Context	<ul style="list-style-type: none"> • Cold War • ASEAN (1967) • Inauguration of President Suharto (1968) • Green Revolution 	<ul style="list-style-type: none"> • First Oil Crisis (1973) • End of Vietnam War (1975) • Second Oil Crisis (1979) 	<ul style="list-style-type: none"> • Plaza Accord (1985) • Reverse Oil Crisis (1986) • End of Cold War (1989) 	<ul style="list-style-type: none"> • Asian Financial Crisis (1997) 	<ul style="list-style-type: none"> • Laws on local autonomy (1999) • Millennium Development Goals (2000) • Election of President Yudhoyono by direct election (2004) • Terrorist incidents • Regional conflicts 	<ul style="list-style-type: none"> • Japan-Indonesia Economic Partnership Agreement (2008) • G20 Accession (2008) • Jakarta Commitment (2009) • Sustainable Development Goals (2015)

² The relationship of the governance sector with the two sectors are explained in the footnote above.

<p>Situation of the Sector</p>	<ul style="list-style-type: none"> Indonesia's first election (1955) Nationalism and state-led development (until 1966) National police was merged to Army (1969) 	<ul style="list-style-type: none"> Prioritization of economic development under Suharto administration Only three political parties were eligible for participating in elections Army seats in House of Representatives Nomination of President by People's Consultative Assembly 		<ul style="list-style-type: none"> Democratization (liberalization of establishment of political parties, relaxation of election qualification requirements, and direct election of President and local governors) Decentralization (budget distribution to regions, transfer of branch offices of central government to local governments) Increased criticism against corruption Separation of police from military (2000) Judicial reform 	<ul style="list-style-type: none"> General and presidential elections (2009) Change of administration following 2014 presidential election 	
<p>Priority Development Issues in the 5-Year Development Plan</p>		<ul style="list-style-type: none"> Unification as a single nation 		<ul style="list-style-type: none"> Peace and security Equality and democracy Development of democratic political system and national unification Good governance Eradication of corruption 	<ul style="list-style-type: none"> Administrative reform (public institutions and governance reform) Enhanced democracy, synergy between central and local governments, and capacity building of local governments Law enforcement and eradication of corruption 	
<p>Direction of Japan's Cooperation</p>		<p>Statistics</p>	<p>Statistics</p>	<ul style="list-style-type: none"> Statistics Census 	<ul style="list-style-type: none"> Statistics Human resource development of local governments Capacity development for community policing Support for legal and judicial reform Support for elections 	<ul style="list-style-type: none"> Capacity development for community policing SDGs implementation
<p>Outcomes</p>	<p>Improved capacity for census implementation → Voters list and the population database → Peaceful election → South-South Cooperation → Social stability and continued democratic elections → Institutionalization of community policing model</p> <p>(Note: Dashed lines indicate spillover effects from 'Peaceful election' to 'South-South Cooperation' and 'Social stability and continued democratic elections'.)</p>					

Note 1: Dashed lines in the section of outcomes indicate the impact/ spillover effect from the previous period.

Note 2: The detail explanation on strengthening local governments is found in the chapter of “Regional Development” of this report.

7.2 Historical Context and Japan's Cooperation

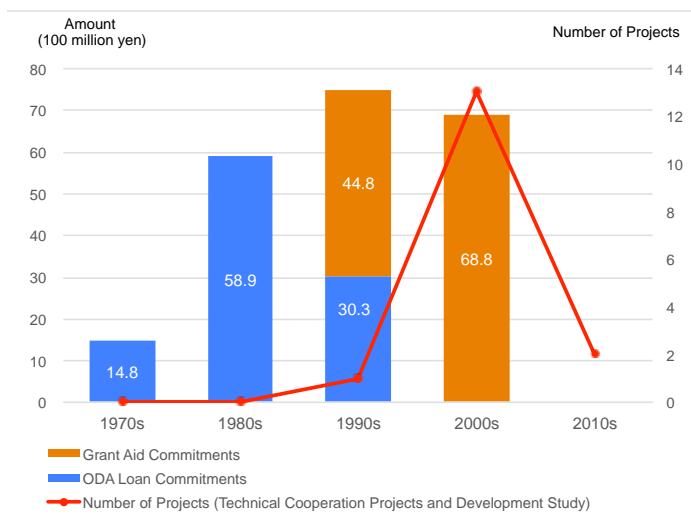
7.2.1 Number of projects and commitment amounts

Until the Suharto administration, Japanese assistance to the governance sector had been limited to the statistics subsector centered on computer provision through ODA loans and dispatch of experts. After democratization in 1998 and subsequent decentralization, cooperation projects rapidly increased.

There have been 35 projects in the governance sector until the end of 2017, including 14 technical cooperation projects, 2 development studies, 4 ODA loans, and 15 grant aid projects (which include 6 Emergency Grant Aid projects and 1 Non-Project Grant Aid project). All the four yen loans, which in total amounted to 10.4 billion yen, were provided between the 1970s and 1990s prior to democratization in 1998 and were for computer provision in the statistics subsector. In contrast, all the grant aid projects were provided after democratization.

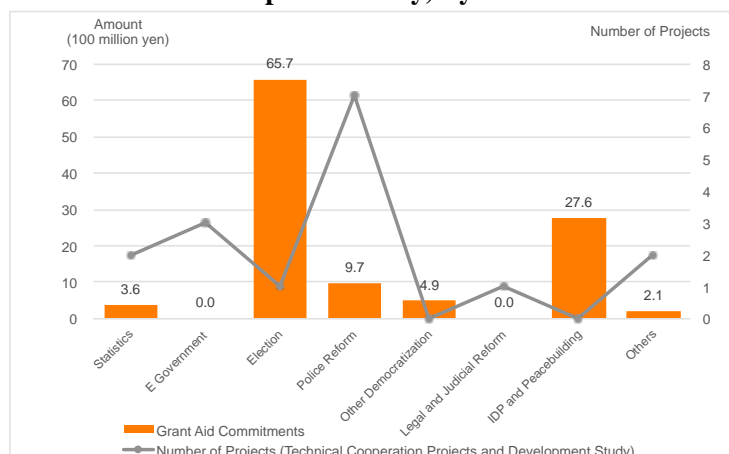
The commitment amount of loans and grant aid by decade and the number of technical cooperation projects and development studies are summarized in Figure 7-1. Except for ODA loans, a scheme that provides a relatively large amount per project, the period of democratization from the late 1990s till the 2000s was the peak of grant aid and technical cooperation, and that the cooperation has drastically decreased in the 2010s.

Looking at the breakdown of grant aid by subfield, support for democratization including assistance to the elections and police support accounts for more than 70% of the total amount (Figure 7-2). Among them, the ratio of projects to support two elections is especially high accounting for 58% of



Source: JICA Review Team

Figure 7-1: Commitment Amounts of ODA Loans and Grant Aid (E/N basis), and the Number of Technical Cooperation (Technical Cooperation Project and Development Study) by Decade



Source: JICA Review Team

Figure 7-2: Commitment Amounts of Grant Aid and the Number of Technical Cooperation (Technical Cooperation Project and Development Study) in the Governance Sector by Subsector

the total. Support for internally displaced people (IDPs) from such areas as Timor-Leste, Aceh and Maluku and support for peacebuilding accounted for 24% of the total. On the other hand, nearly half of the technical cooperation projects, or 7 out of 16 projects were in the area of police assistance that has continued since 2001 until today.

Moreover, though not counted as individual projects, cooperation through individual experts and training is very important in the governance sector. Among them, the major ones include long and short-term experts in the statistics subsector since the 1980s, election experts for the 1999 election, police experts since the 2000s, and a series of training seminars for the police and judicial reform subsectors.

Other than the above, there are also projects closely related to governance among the projects that are classified in other sectors in this review. For example, 21 projects in “Transportation” and 2 projects in “Telecommunications” are related to support for measures to combat terrorism such as maritime safety. Seven projects related to regional administration and administrative human resource development are classified in “Regional Development.” There is also a peacebuilding project in the “Basic Education” sector. Four in “Economic Policy and Macro-Economic Management” and three in the “Private Sector Development” sector are related to support for institutional reform and administrative capacity improvement.

7.2.2 Period-specific characteristics of Japan’s economic cooperation for Indonesia in the governance sector

In this section, the situation of the governance sector in Indonesia and support of the Japanese government for Indonesia are summarized by period³.

- From the end of the 1970s to the 1990s: An era of limited support to the statistics subsector through equipment provision and dispatch of experts
- From the end of the 1990s: An era when support expanded rapidly due to democratization and decentralization
- From the end of the 2000s: An era when support diminished due to the establishment of democratization and focus shifted to improving investment environment

(1) From the end of 1970s to the 1990s: An era of limited support to the statistics subsector through equipment provision and dispatch of experts

1) Situation of the sector and major efforts by Japan

Under the Suharto administration until 1998, there were only a few projects in Japan’s cooperation in the governance sector such as installation of computing system to the Central Bureau of Statistics (BPS). This might be because of the prioritization on economic development than public administration reforms in

³ As shown in Table 7-1, there was no Japanese cooperation in the governance sector in the 1960s.

the era. According to the Ministry of Foreign Affairs of Japan “ODA White Paper 1999 Second Volume,” the oldest published priority areas of Japan’s ODA to Indonesia, which continued to be valid until the 2004 Country Assistance Program, did not include the governance sector.

Even so, support for the population censuses in 1980 and 1990 as well as the economic census in 1996 in the form of dispatch of experts from the Ministry of Internal Affairs and Communications of Japan and provision of computers contributed greatly to building the important foundation for Indonesia. Such assistance strengthened the capacity of staff members both at BPS and its regional offices, and contributed to improved quantity and quality of statistics which is the basis of policy planning and decision making. In addition, by including regional offices in the target of equipment provision, the assistance contributed to the promotion of data aggregation at the regional level⁴.

It should be also noted that Japan has implemented the “Professional Human Resource Development Project” (ODA loan) over four phases since 1990 until today to support government officials at the national and regional levels in studying in Japan⁵.

(2) From the end of the 1990s: An era when support expanded rapidly due to democratization and decentralization

1) Situation of the sector

The fall of the Suharto administration

The Asian Financial Crisis in 1998 led to the demise of the Suharto administration on 21st May 1998 and President Habibie was inaugurated on the same day. President Habibie made a policy announcement in his speech on television on the day of inauguration, focusing on the following points: 1) political reforms, improvements of the quality of life, and democratization; 2) elimination of corruption and nepotism; 3) amendments of laws and regulations for the general election; 4) amendments of laws and regulations for eliminating monopoly, and 5) responsibilities in the international society. This was an important turning point of the Indonesian society.

Following the announcement, President Habibie eagerly pursued political reforms, and the democratization and decentralization processes were accelerated. The subsequent political turmoil was followed by the general election and the presidential election in 2004 where the public elected President directly for the first time. In the following ten years, Indonesia's politics and society have been increasingly stabilized under President Yudhoyono’s two consecutive terms of office. Major events in this period are summarized in the table below. These events brought a significant impact on the contents of Japanese cooperation.

⁴ *Indonesia kyowakoku Chuo Toukei Kyoku konpyutar kakuchō jigyou jigo hyōka. [Evaluation of Central Bureau of Statistics Computer Expansion Project].* 1995., and the Center for Global Communications, International University of Japan. *Supporting Informatization and IT: Evaluation of IT-Related Projects in Asian Countries. Final Report.* 2004.

⁵ This project is categorized in “Regional Development” in this review because among the participants, the ratio of local government officials is higher.

Table 7-2: Major Events related to Democratization and Decentralization

Reforms related to Democratization	Reforms related to Decentralization	Political Events and Incidents
1998/6 Repeal of permission system in publication, liberalization of forming labor parties		
1998/10 Freedom of speech in public place		
1999/1 Three political laws enacted (law on political parties, law on general election, and law on representative bodies)		
1999/3 Competition law established	1999/4 Law No.22/1999 on Local Government and Law No. 25/1999 on Fiscal Balance between Central and Local Governments enacted	1999/6 The first general election under the new law 1999/8 The referendum and violence in East Timor 1999/10 Election of President Wahid at the People's Consultative Assembly (MPR)
1999/10 The first Constitutional amendment		
2000/8 The second Constitutional amendment		2001/7 Impeachment of President Wahid and inauguration of Vice President Megawati
2000/8 Separation of the national police from the armed forces		2002/10 Bali night club bombing 2002/12 Establishment of the Corruption Eradication Commission (KPK)
2001/11 The third Constitutional amendment		2004/4 The second general election. Partai Demokrasi Indonesia-Perjuangan led by President Megawati lost a large number of seats
2002/8 The fourth Constitutional amendment		2004/7 Election of President Yudhoyono in the first direct election (run-off election held in September)
	2004/10 Revision of Law on Local Government and Law (No.32/2004) and law on Fiscal Balance between Central and Local Governments (No. 33/2004). The National Development Planning System Law (No.25/2004) enacted	2005 onwards Gubernatorial/mayoral elections 2009/7 Re-election of President Yudhoyono

Source: JICA Review Team

Constitutional and Election Reforms

In Indonesia before democratization, there was the People's Consultative Assembly (MPR) as the supreme decision making body above the House of Representatives (DPR), which used to appoint the President. The MPR was composed of members of the DPR, regional representatives, and representatives of functional groups. This meant that there were factions not elected by election in the MPR.

Since 1999, Indonesia went through four constitutional reforms. In the first amendment in October 1999, presidential powers were reduced, introducing president's term of office restrictions (re-election only once) and stripping the president's legislative power. The second reform in August 2000 introduced provisions concerning basic human rights such as right to exist, prohibition of

discrimination, equality under the law, freedom of religion, freedom of occupation, freedom of movement, freedom of thought and creed, freedom of expression, and freedom of association and assembly. By the same amendment, the legislative power of the DPR against the President was strengthened, and decentralization was also decided. In the third constitutional reform in November 2001, the privilege of the MPR, which had been regarded as the highest resolving institution representing administrative, legislative and judicial powers under the 1945 Constitution, was abolished. The fourth amendment in August 2002 included the public election system for President and Vice President, making the MPR as a bicameral system of the DPR and the Council of Regional Representatives (DPD), with the accompanying abolition of military and police faction.

The 1999 election was held under the general election law established in 1999. In response to the constitutional reform, the law was revised in 2003, under which the general election in 2004 was executed. The large-scale election required complicated administration, as four national and local assembly elections— namely House of Representatives, newly established Council of Regional Representatives, provincial assemblies, and district/municipal assemblies— were to be held at once in April. In July, the first ever direct election of President and Vice President was conducted (the runoff election was held in September). In addition, the direct election of local chiefs was also stipulated by the local autonomy law in 2004, which was carried out sequentially after 2005 upon the expiration of the term of office of pre-existing chiefs.

Legal and Judicial Reforms

During the Suharto administration, the judicial power was divided between the Supreme Court and the Ministry of Justice and Human Rights. As a result, independence of judicial powers and the rule of law were not established, as the court was intervened by politics. In the 1990s, the necessity of justice reform was pointed out both inside and outside Indonesia, and in 1997 the World Bank published a report on legal and judicial reform in Indonesia. Since the Asian Financial Crisis in the same year, the judicial reform was pressed for by foreign countries, and the momentum of judicial reform was heightened. Amid democratization, the Supreme Court announced the “Blue Print” outline of its reform in 2003. Following this, reforms aimed at establishing the rule of law and legal system improvement were promoted. In 2004, judicial administration including personnel and budget was transferred from the Ministry of Justice and Human Rights to the Supreme Court (the one roof system)⁶.

Decentralization

With respect to decentralization, the law on local government in April 1999 established that the local government would be two layers of provinces and districts/municipalities. The function as an agent of the central government remained in the province, but legally, the hierarchical relationship between provinces and districts/municipalities disappeared. Most of the central government's offices were

⁶ Terutoshi Yamashita. “Indonesia shiho seido to shiho kaikaku no joukyou. [Judicial System in Indonesia and the Status of Its Reform].” *ICD NEWS* No.3, 2002., and Tamaki Kakuda. “Indonesia ho seibi shien wakai-chotei seido kyoka shien purojekuto purojekuto seika bunseki chosa hokokusho. [Report on Outcomes of the Project on Improvement of Mediation System in Indonesia].” *ICD NEWS* No. 44, 2010.

transferred mainly to districts/municipalities. The role of the central government became limited to such areas as diplomacy, defense and security, justice, finance, and religion, and nearly all authority concerning the provision of administrative services was delegated to districts/municipalities. More than two million civil servants, or roughly 60% of the total number were transferred from the central level to local governments. Moreover, the revision of the law on local government (No.32/2004) and the law on fiscal balance between central and local governments (No.23/2004) were enacted in October 2004 clarifying the division of roles between the national and local governments. It was also decided that local chiefs would be elected by direct election. Furthermore, to formulate an effective regional development plan consistent with regional situation and residents' needs, the National Development Planning System Law (No.25/2004) was also enacted in the same month, and the bottom up type of regional development plan formulation process was started.

The Security Situation and Separation of the National Police from the Armed Forces

While democratization progressed through two elections, terrorist attacks occurred frequently in this era since the Bali bombing in October 2002 with many casualties⁷. In addition, the Indonesian territorial waters had become piracy prone areas where about 30% of piracy incidents of the whole world occurred then⁸. In 1999, Timor-Leste became independent from Indonesia. In addition to separatist movements in Aceh and Irian Jaya (current Papua), other religious and ethnic violence also occurred in Maluku islands, Central Sulawesi Province and Kalimantan island from the late 1990s to the early 2000s. In the Yudhoyono administration, peace progressed in these places, and domestic security improved.

Meanwhile, according to the decision of the MPR in August 2000, it was decided that the police, which had been positioned as the fourth army after land, sea, and air forces, would be separated from the national army. In 2002, the national police became an organization under the direct control of the President by the new police law, and this brought about organizational and institutional changes to become a civilian police institution. At the same time, the Law on National Defense was enacted. Legally, the roles of “national defense” and “domestic security” were separated, with the former allotted to the military and the latter to the police. The national police in this period was in the middle of confusion including conflict with the army whose authority was reduced, terrorist incidents in various places, response to regional conflicts and independence movements, and even political turmoil in which appointment of the INP Chief was involved⁹. Under these circumstances, the national police that had been feared by the public during the Suharto regime and were often associated with corruption had to carry out full reform.

To summarize, the key to grasp the role played by Japanese cooperation in the governance sector in this era lies in the understanding that Indonesia has firmly promoted democratization and decentralization despite political confusion.

⁷ Including the JW Marriott Hotel bombing in September 2003, the Australian Embassy bombing in September 2004, the second bombing in Bali in October 2005, and bombings at the JW Marriott and Ritz-Carlton Hotels in July 2009.

⁸ JICA. *Basic Design Study Report on the Project for Provision of Patrol Ships for Anti-Piracy, Anti-Maritime Terrorism and Non-Proliferation in the Republic of Indonesia*. May 2006.

⁹ Hiroto Yamazaki. *Indonesia no keisatsu kaikaku no genjou 2. [The Situation of the Indonesian National Police Reform. No.2]*. 2002.

2) Major efforts by Japan

Under these circumstances, Japan began to support democratization and decentralization with election assistance in 1999 and support for the 2000 population census, which accelerated and expanded to other areas such as police and legal and judicial reforms. From the viewpoint of “Assistance for Peace and Stability,” Japan also worked on cooperation in such areas as maritime safety and peacebuilding. Japan’s cooperation in the governance sector expanded in the 2000s in terms of variety, amount of financial assistance and number of projects. The second election assistance in 2004 was also provided in a huge scale. The support for police reform continued to grow, and technical cooperation projects were implemented both in the statistics and judicial reform subsectors. It can be said that the governance sector became one of the priority sectors of Japanese assistance all at once responding to the fact that Indonesia entered a critical turning point for democratization. This can be also seen in the Country Assistance Program of 2004. Among the three prioritized areas of “Assistance to Realize Sustainable Growth Driven by Private Sector,” “Assistance to Create a Democratic and Fair Society,” and “Assistance for Peace and Stability,” the second area included “Governance (judicial reform, police reform, assistance for decentralization).” This was not included in Japanese priority areas prior to this Country Assistance Program.

Election Assistance

Cooperation programs for the elections in 1999 and 2004 were especially notable because they were huge in terms of both financial and manpower contributions. They were of great significance in supporting the momentum of democratization. Many development partners also regarded the elections as important and provided various kinds of assistance. Among them, Japan showed its presence as the top donor by contributing roughly one third of all international assistance, or USD 35 million, to the 1999 election, and about one fourth, or USD 23 million to the 2004 elections¹⁰. In 2004, the US and UNDP provided USD 24 million and USD 20 million, respectively. JICA dispatched over 20 experts each to provide advice for national and regional election commissions in the elections in 1999 and 2004. The elections in 2004 was regarded as a critical event in international politics, or a milestone for firmly establishing democracy in Indonesia. Therefore, it received high attention in the international community. It is significant that Japan contributed to the peaceful success of such elections.

Statistics Cooperation

In the statistics subsector that Japan had supported since the pre-democracy era, new types of assistance were provided in accordance with the background of democratization and decentralization. For example, as part of the support to the 2000 population census, 79 optical character recognition (OCR) systems were introduced with grant aid for the first time in the BPS. This realized total aggregation of all survey items for the first time in Indonesian population census. After that, JICA also supported the development of small area statistics based on this. In the context of decentralization, the support was of great

¹⁰ JICA. *Indonesia kyowakoku senkyo shien shuryoji hyoka chosa hokokusho. [Assistance to General Election in the Republic of Indonesia. Terminal Evaluation Report]*. October 2004., and JICA Knowledge Site. <http://gwweb.jica.go.jp/>.

importance in the sense that it supported laying the groundwork for local policy planning. Furthermore, due to the success of the population census and introduction of OCR, the BPS played an important role in the voter registration for the 2004 election. As Japan also supported this, it can be said that Japanese cooperation in the statistics subsector played an important role in supporting democratization.

Support for Police Reform

One of the notable projects to support democratization is the Support Program for Reform of the Indonesian National Police which Japan has been intensively supporting since 2001. This program is historically significant because it has supported the INP, which was separated from the armed forces to mainstream the concept of community policing. The program includes a variety of contents including grant aid and technical cooperation projects based in Bekasi on the outskirts of Jakarta. Through these projects, the model for community policing was developed which is characterized by police boxes and door-to-door visits, as well as sincere and prompt action in criminal identification and other activities. In addition, another technical cooperation on tourist police with the same approach as Bekasi was implemented in Bali where many Japanese tourists visit and there were concerns over terrorism since 2002. Along with on-site training by Japanese experts dispatched from the National Police Agency under these projects, the program also provided training for senior management and promoted institutionalization of community policing in Indonesia through the dispatch of advisors to the Chief of INP, training in Japan, and dispatch of experts to the Police Science College.

Support for Legal and Judicial Reform

In the area of legal and judicial reform, JICA has conducted a series of training in Japan since 2002, looking for ways to contribute to the reform of the judicial system, especially measures to reduce the outstanding cases of the Supreme Court as listed in the Supreme Court's "Blue Print." As a result, a technical cooperation project named "the Project on Improvement of Mediation System" was realized in 2007.

Assistance for Peace and Stability

Under the security situation such as terrorist incidents, frequent piracy incidents, independence movements and regional conflicts, the Country Assistance Program of 2004 placed "Assistance for Peace-Building and Reconstruction" and "Securing Law and Order" (including "measures to combat terrorism" and "strengthening piracy countermeasures and maritime security system") under the third priority area "Assistance for Peace and Stability." For example, for peacebuilding, technical cooperation projects "Keeping Peace and Strengthening Integration in Post-Conflict Areas" (2006-2007) and "Technical Support for Strengthening the Regional Based Education Management (Maluku)" (2008-2011) were implemented in Maluku¹¹. In addition, utilizing assistance through international organizations and the Grant Aid for Grassroots Human Security Project scheme, support for displaced people was provided. Even prior to the formulation of the Country Assistance Program,

¹¹ See Chapter XIII "Basic Education" in this report for details.

Japan provided assistance to displaced people at the independence of Timor-Leste in 1999, and supported the Aceh peace process by hosting the Preparatory Conference on Peace and Reconstruction in Aceh in Tokyo in December 2002. Japan has also contributed to accurate information transmission through the support for the media, fostering a sense of unity among the people, and enhanced freedom of speech, thereby contributing indirectly to peace and stability in Indonesia.

In the field of security, several projects were implemented in the area of maritime safety and airport security, including provision of patrol vessels and Vessel Traffic Service System (VTS) through grant aid projects and technical cooperation, “The Project on BAKORKAMLA Structural Enhancement” (2008-2011)¹².

Moreover, during this era, JICA also invited members of the DPD and local parliament for training in Japan. In addition, a series of assistance for promoting E-Government was provided, including a development study, followed by technical cooperation to develop capacities of government officials and strengthening the local government on this matter.

(3) From the end of the 2000s: An era when support diminished due to the establishment of democratization and focus shifted to improving investment environment

1) Situation of the sector

The general and presidential elections in 2009 were, by and large, carried out democratically and peacefully following the successful elections of 2004. With the elections, the Yudhoyono administration entered the second term, further stabilizing the politics and society. Meanwhile, without any large-scale regional conflicts and as a result of progress of measures against terrorism by the police who received various external assistance, security has improved. The general and presidential elections in 2014 were also held peacefully, and President Joko was elected. In consideration of these situations, it is internationally recognized that Indonesia's democratization has been firmly established.

2) Major efforts by Japan

While the governance sector was regarded as a priority area in the Country Assistance Program of 2004, this continued only until the fiscal year 2011 according to “Japan’s ODA Data by Country” published by the Ministry of Foreign Affairs every year. In the Country Assistance Policy of 2012, the sector is no longer included in the three priority sectors. Instead, it is mentioned “[a]ttention is also to be paid to the point that governance such as improvement of legal predictability and legal stability is important for promoting the improvement of the business and investment environment.” This trend can also be seen from the amount of assistance and the number of projects presented in the previous section. Amidst the establishment of democratization in Indonesia and the overall situation surrounding the ODA, it can be said that the support for governance rapidly expanded in the 2000s has been shrinking since 2012.

¹² See Chapter II “Transport” in this report for details.

Specifically, the assistance to elections and the statistics subsector ended in 2004 and 2008, respectively. The support for legal and judicial reform also ended in 2009 but resumed since 2015 in the form of technical cooperation for intellectual property rights protection. Aiming at the national dissemination of the outcomes achieved so far, the support for police reform continues although the program components have been narrowed down.

While Japanese assistance to the governance sector shrinks, projects related to this sector are implemented under other sectors. For example, in the economic policy and macro-economic management sector, there are projects on budget formation and tax affairs. In the private sector development sector, a project on intellectual property rights protection is on-going in the 2010s. As mentioned in the Country Assistance Policy, it can be said that the focus of Japan's assistance to the governance sector has shifted from democratization to improvement of the business and investment environment.

Meanwhile, JICA started a new initiative in 2017 to support implementation of the Sustainable Development Goals (SDGs) adopted at the UN Summit in 2015. This was in response to the high level of commitment by the Government of Indonesia in implementing SDGs. JICA has been implementing a "Survey on Promoting Planning and Implementation of Sustainable Development Goals (SDGs)" since 2017 that provides technical support for setting national targets/indicators and national/sub-national action plans, as well as for strengthening the monitoring and evaluation mechanism.

As for measures against terrorism, the 2012 Country Assistance Policy specifies under the third priority area, or "assistance for the enhancement of capacity to address issues of Asian region and international society," that "Japan will offer assistance that contributes to the enhancement of capacity required for responding to issues of Asian region such as securing of maritime safety, measures against terrorism and infectious diseases. At the same time, Japan will offer assistance for Indonesia to address global issues such as environmental conservation and climate change, while offering assistance that will help increase the capacity as a donor country." Under this policy, a new type of cooperation such as "the Project on Capacity Building for Information Security" (2014-2017) has been implemented. The project aimed at strengthening the capacity to respond to cyber attacks against the backdrop of rapid development and spread of information technology.

7.3 Noteworthy Achievements in Cooperation

This section presents cooperation with three subsectors that have made noteworthy achievements in the governance sector: 1) long-term cooperation with the statistics subsector since the 1970s; 2) the election assistance which accounts for the largest amount of assistance in this sector, and 3) the support for the police reform which has continued since 2001 until today and has the largest number of projects in this sector.

7.3.1 Cooperation in the statistics subsector

(1) Overview

In Indonesia, population census, economic census, and agricultural census are conducted every ten years. Of these, Japan supported the implementation of three population censuses from 1980 to 2000 and the economic census of 1996. In particular, the Statistics Bureau of the Ministry of Internal Affairs and Communications of Japan dispatched ten long-term experts in total and many short-term experts, and hosted many training in Japan. Japan had also provided computer equipment necessary for conducting the censuses through ODA loans and grant aid¹³. Through the first two loans out of the three ODA loans in total, Japan provided mainframe computers to BPS. The third yen loan project provided a total of 3,000 computers to BPS and its 330 regional offices. The assistance that installed computers in the regional offices enabled BPS to introduce a system to aggregate the data at the regional level. In the statistic subsector, Japan had also provided a yen loan to the Ministry of Industry, “Equipment Supply for Installation of Computer for Industrial Statistics and Planning” (1982). It can be said that Japan has steadily supported Indonesia in developing the statistics subsector, which forms the basis of policy making, for a long time.

Table 7-3: Japanese Support to Population and Economic Censuses and Equipment Provision

(1)	Population Census in 1980: Four experts (1980-1986) and Yen Loan “Central Bureau of Statistics Computer Installation Project” (1979)
(2)	Population Census in 1990: Two experts (1990) and Yen Loan “Central Bureau of Statistics Computer Expansion Project” (1987)
(3)	Economic Census in 1996: Eight experts (1992-1997) and training
(4)	Yen Loan “Central Bureau of Statistics (BPS) Computer and Regional Computer Installation Project” (1994)
(5)	Technical Cooperation “The Improvement of the 2000 Population Census” (1997-2000) and Grant Aid “Provision of Statistical Equipment for Census” (1999) with a long-term expert (2002-2004)

Source: JICA Review Team

The support for the 2000 population census was especially notable, where Japan installed 79 Optical Character Recognition (OCR) systems for the first time in BPS and its regional offices through grant aid so as to improve data entry. This enabled 100% aggregation of all items in the census results whereas previously only 5% sample was aggregated except for the gender disaggregated population

¹³ The cooperation by the Statistics Bureau of the Ministry of Internal Affairs and Communications of Japan is explained in detail in its website. <http://www.stat.go.jp/english/info/meetings/indones/indones1.html> (Accessed in April 2018)

data. Training was conducted in Japan and Indonesia to develop human resources.

The experience of the 2000 population census and the OCRs provided also played an important role in preparation of the voter registration list for the 2004 elections (see BOX 7-1). This had a significant impact considering the example of violence in the 1999 election, the importance of the 2004 election as a milestone of democratization, and concerns in the media over the delay of voter registration list development.

Moreover, as 100% aggregation was realized in the population census, the following technical cooperation project, “the Project for Developing the Information System of Small Area Statistics” (2006-2008) supported development of small area statistics at the district, subdistrict and village levels and by census blocks. This formed an important foundation of local administration in the era of decentralization.

There has been no cooperation in the statistics subsector since the above project ended in 2008. This was because the capacity of BPS had been developed compared to other developing countries and there was a need on the Japanese side to strategically allocate its limited resources.

BOX 7-1: Support for the Population Survey for Voter Registration of the 2004 Elections¹⁴

Before the 2004 elections, the voter registration list in Indonesia was not properly updated and there were many cases of double and missing registration. Since the population census did not include such information as names and addresses of the population, a new population survey was conducted. Considering the success of the 2000 population census which is similar to the population survey concerned, and availability of the OCR at BPS that can quickly count the results, President Megawati ordered the General Election Commission (KPU) to request BPS to conduct a population survey to develop the voter registration list. In consideration of the importance of the 2004 elections and the concern for the delay in the media, Japan decided to support BPS in this important yet challenging task.

In addition to technical advice by the JICA expert who was already at BPS, JICA repaired some of the OCRs and provided spare parts in March 2003 and provided 300 computers to accelerate the counting process at the regional statistic offices in September. As a result, the interim result of the population survey (217 million population) and the number of registered voters (147 million voters) were officially announced on 1st March 2004. The election was held on 5th April as scheduled. There were hardly any adverse claims against the list, and this was crucial for the election to be recognized as fair and uncontested. According to the former Director of BPS, President Yudhoyono who was elected in the 2004 election also appreciated this assistance. Later, this population data was utilized in local elections in the following years.

¹⁴ Based on the interviews conducted by the review team and the website of the Statistics Bureau, Ministry of Internal Affairs and Communications of Japan. <http://www.stat.go.jp/english/info/meetings/indones/indones1.html> (Accessed in April 2018)

(2) Outcomes and spillover effects

The outcomes of Japanese assistance in this subsector are summarized as follows.

- The technical know-how of census implementation is institutionalized in BPS.
- The OCRs realized 100% aggregation of the census results and development of small area statistics. As a result, conditions for developing effective policies in line with demographic dynamics have been established, and major government agencies began to refer to BPS statistics.
- The voter registration list for the 2004 elections and the population database were developed.

These outcomes have had some spillover effects even after termination of Japanese assistance. For example, the OCRs, together with additional equipment purchased by the Indonesian government, are continuously used in censuses in the following years including the 2010 population census. Although BPS is currently considering the method for the next 2020 population census, the same OCRs are expected to be used if a paper-based survey methodology is adopted.

Moreover, the population list developed for the 2004 elections became the basis of the population database developed by the Ministry of Home Affairs. Based on the database, the national ID card (KTP Nasional) was introduced in 2004 in Indonesia. The database has been updated by the Ministry of Home Affairs, and the electronic ID (Family card) was introduced in 2011. The database is widely utilized in various sectors of the government including voter registration for the general and local elections, tax affairs, social security, and criminal identification in collaboration with the INP¹⁵.

In addition, BPS has also accumulated experience in “teaching others” through South-South Cooperation. For example, BPS has received Cambodian trainees under JICA’s Third Country Training Program for five times from 2006, when the economic census was implemented, to 2011. In 2016, when another economic census was conducted, BPS hosted a visit from Nepal. The JICA expert to both countries previously worked in Japanese cooperation to Indonesia for a long time. According to him, the response of BPS to the Third Country Training is very good compared to other countries, which was another reason for him to bring over the training to Indonesia for many times. For these countries, the example of Indonesia where the social situation is relatively similar, provides useful input that can be immediately applied to their own countries’ situation. For example, the issue like how to count numerous food stalls in the economic census cannot be found in Japanese example.

Furthermore, even in the framework not related to Japanese cooperation, BPS has dispatched experts to provide lectures on census implementation to countries like Madagascar and Pakistan by the invitation of the Statistical Economic and Social Research and Training Centre for Islamic Countries (SESRIC).

¹⁵ Based on the interviews conducted by the review team and the website of the Directorate General of Population and Civil Registration. (Accessed in April 2018)
<http://www.dukcapil.kemendagri.go.id/detail/sejarah-ktp-di-indonesia>;
<http://www.dukcapil.kemendagri.go.id/detail/tertib-administrasi-kependudukan>;
<http://www.dukcapil.kemendagri.go.id/detail/pemanfaatan-data-penduduk-melalui-koneksitas-data-warehouse-dan-biometri>.



OCR Provided with Grant Aid

(Source: The Statistics Bureau, Ministry of Internal Affairs and Communications of Japan)



Training Participants from Cambodia Joining the 2006 Economic Census Surveyor

(Source: The Statistics Bureau, Ministry of Internal Affairs and Communications of Japan)

7.3.2 Support for the elections

(1) Overview

As shown in the previous section, the 1999 and 2004 elections supported by Japan were the historical turning points for Indonesia. The overview of Japanese assistance to the elections is as follows.

Table 7-4: Overview of Japanese Assistance to the Elections

1999	2004
<ul style="list-style-type: none"> - Financial contribution of USD 35 million through UNDP (Emergency Grant Aid) - 20 Short-term JICA experts - Election monitoring team 	<ul style="list-style-type: none"> - 620,000 ballot boxes and 1.22 million voting booths (through Non-Project Grant Aid of USD 22 million) - JICA experts (one long-term expert and 24 short-term experts: 16 in the general election, four in the presidential election and four in the runoff) - Nine projects under the Grant Aid for Grassroots Human Security Projects (for local NGOs to conduct voter education projects) in total USD 490,000. - Election monitoring team

Source: JICA Review Team

Japanese assistance to the series of elections was an “all-Japan” cooperation mobilizing various schemes and players (See BOX 7-2 for details). This included the dispatch of experts, provision of ballot boxes and voting booths through the Non-Project Grant Aid, and the Grant Aid for Grassroots Human Security Projects that was provided for nine projects in two years—an unusually large number of projects as they were meant to be followed up by the experts dispatched. The number of experts dispatched totaled more than 20. Some of them were selected even from projects in other sectors. All these show how much Japan prioritized this support. In addition to the aforementioned contribution through the statistics subsector, the Support Program for the Reform of the National Police also supported the police to smoothly play the role in the elections. In this way, the pre-existing projects also collaborated with the assistance to the election.

Not only through major cooperation schemes such as grant aid and technical cooperation, Japan also utilized other channels to flexibly respond to the needs of Indonesia such as establishment of the public opinion survey institute (see BOX 7-3) and voter education, for example, through the budget of JICA Indonesia Office. These were also important although they are not as visible as other major schemes in official records. For example, JICA collaborated with the Asia Foundation funded by USAID to publish 16 million copies of voter education leaflet for the presidential election (of these, 8 million copies were financed by JICA). The leaflet was distributed in 63 districts of 11 provinces. JICA not only provided the funding but also collaborated with the Asia Foundation in developing the contents of the leaflet through JICA expert.

The long-term expert for the 2004 election assistance remained in the JICA Indonesia Office even after the election. He provided technical support for capacity development of local KPU for the local election in Aceh in 2006, an important event that followed the earthquake and peace agreement.

BOX 7-2: Impact of “Visible Japanese Aid” at the Election Assistance

In the assistance to the 1999 election, the time for preparation was limited. Japan therefore provided support through financial contribution to UNDP. UNDP implemented support programs that included technical support for the KPU on election management, voter education by NGOs and election monitoring. The assistance from Japan was also utilized to lease computers for vote counting, telecommunication equipment, and election ink to prevent double voting. JICA was the only donor to dispatch experts to local KPUs. It was effective to have dispatched two JICA experts, one election specialist and one JOCV (Japan Overseas Cooperation Volunteer) OB/OG who knows Indonesia very well, to local election commissions. The experts played a role of bridging the local and central KPUs to inform what was needed, and also provided logistical advice. This was meaningful since Indonesia is such a vast country with various needs depending on places. At the central level, JICA experts were key function of bridging other donors and the Indonesian government.

With the influence of the economic crisis, regional conflicts and terrorist incidents remaining, the general election in 2004 was the first election after the series of constitutional reforms. It was a large-scale election which required complicated administration, as four national and local assembly elections— namely House of Representatives, newly established Council of Regional Representatives, provincial assemblies, and district/municipal assemblies— were to be held at once. For about 150 million registered voters, 590,000 voting stations and 660 million ballot papers were prepared nationwide. The first ever direct election of President and Vice President was also conducted. This time, Japan provided direct support rather than through UNDP. The most notable was the provision of 620,000 ballot boxes and 1.2 million voting booths. Foldable, metal type designs were chosen so that the same equipment can be utilized for elections in the coming years. The ballot boxes and voting booths with Japanese ODA stickers were distributed to 20 out of 33 provinces, and this “visible Japanese aid” had a significant impact on the success of the election.

Also, in 2004, JICA experts were dispatched in pairs to six locations covering 24 provinces following the success of the 1999 election assistance. The experts provided critical advice on logistical management and conducted KPU staff training. This strengthened the cooperation between the central and local KPUs, and JICA experts as in-house advisors not only provided various advice but also provided moral support. The Government of Indonesia appreciated this cooperation saying, “The UN focused its assistance on conflict areas where you get higher media attention. On the other hand, Japan was the only donor country who sent its human resources to various regions. Although this may be an unglamorous work, the situation is very different from province to province in Indonesia. So, we are grateful that JICA experts conducted activities tailored to the needs of each provincial government.” (The then Deputy Secretary General of the KPU. Based on the article in JICA FRONTIER, 2004)¹⁶.

¹⁶ JICA. “Tokushu: Indonesia no senkyo to minshuka shien. [Featured Article: Elections in Indonesia an Assistance for Democratization].” *JICA FRONTIER* No.59, June 2004.

(2) Outcomes and spillover effects

The 2004 election turnout was high at 83% for the general election in April, 79% for the presidential election in July, and 76% for the run-off election in September. Both the conclusion of the international election monitoring team and the results of the public opinion survey show that the election was conducted freely and fairly¹⁷. The number of voting stations that could not conduct the election at the polling day was about 100, which was less than 0.018% of the total. The rate dropped even more with only less than 10 cases in the presidential election and mere two cases in the run-off. These figures show significant improvement from the 1999 election¹⁸. Behind the scene, JICA experts dispatched to local KPUs and the local staff members handled many challenges such as voter registration cards or ballot papers not delivered on time or protecting voting stations and ballot papers from heavy rain and landslides.

The success in the historically significant election brought about important ripple effects. The subsequent elections in Indonesia, starting with the local chief elections since 2005 and including the 2009 and 2014 general and presidential elections, were largely conducted peacefully, freely and fairly. This is thanks to Indonesia's own efforts and support from other development partners that have continued to support Indonesian elections. But it would not be an exaggeration to say that the legacy of Japanese assistance in 2004 has also filled a role. Compared to Cambodia which had received the election assistance in the period similar to Indonesia and is still receiving the assistance, the level of democracy in Indonesia is notable. Moreover, Indonesia already has experience in South-South Cooperation in this subsector. In 2012, Indonesia received the Secretary General of the Egyptian election commission through a JICA project to teach the role of judiciary in elections.

A larger spillover effect would include the Bali Democracy Forum which started in 2008. The Indonesian government had hosted the event every year inviting world leaders. This has shown their will that Indonesia shall act as the democracy leader in the international community. Last but not least, the most important spillover effect can be found in the fact that Indonesia enjoyed the stable political scene and economic development for a decade under the Yudhoyono administration for two terms since the 2004 election. Only the free and fair election process can bear the fruit¹⁹.

Since the Cambodian election in 1992, the UN and the Japanese government have provided election assistance in many parts of the world. For JICA's technical cooperation, the support for Cambodia in 1998 was the first case, followed by the assistance to Indonesia in 1999. The case of Indonesia was just the second case and the scale was huge. This experience and lessons learned were utilized in similar assistance by Japan in the following years in other countries such as Afghanistan and Egypt. This was also an important spillover effect. The JICA expert who led the election assistance in Indonesia says that the reason why such a large-scale assistance was accepted in Indonesia was because Japan had accumulated achievements through multiple cooperation efforts in various sectors.

¹⁷ JICA. *Indonesia kyowakoku senkyo shien shuryoji hyoka chosa hokokusho. [Assistance to General Election in the Republic of Indonesia. Terminal Evaluation Report]*. October 2004.

¹⁸ JICA. *Indonesia kyowakoku senkyo shien shuryoji hyoka chosa hokokusho. [Assistance to General Election in the Republic of Indonesia. Terminal Evaluation Report]*. October 2004.

¹⁹ Based on the interviews conducted by the review team.



Voting booths with Japanese sticker
(Source: Japan International Cooperation System)



**A voting station in East Java
(Presidential Election in July 2004)**

BOX 7-3: Support for the First Public Opinion Survey²⁰

Until 2003, there was no nationwide public opinion survey conducted in Indonesia. The methodology utilized in opinion surveys by the newspaper company and others was phone interviews. Since only 5% of the population had phones at that time, the findings of such surveys did not truly reflect public opinion of Indonesian people.

Under the Program for Economic Policy Support, JICA organized policy dialogues between Indonesian policy makers and six members from Japanese academia since 2001. The dialogues aimed at economic recovery and stabilization, as well as democratization. Through these dialogues, Mr. Heri Ahmadi (Member of Parliament) and Prof. Takashi Shiraishi (President of Institute of Developing Economies, JETRO) proposed establishing an independent institution to conduct reliable public opinion surveys. As a result, Lembaga Survei Indonesia (LSI: Indonesia Survey Institute) was established with support from JICA.

LSI conducted seven opinion surveys from August 2003 to September 2004, including before and after the general and presidential elections. The samplings were 2,200 nationwide. The respondents were randomly selected by category, and face-to-face surveys were conducted. The results were analyzed with cross tabulation to know in detail what the public was thinking. JICA provided advice on survey methodologies and organizational management of LSI, as well as financial support. The results of the surveys were presented at press conferences, which gradually received attention and were taken up in prominent newspapers and TV programs.

The public opinion survey by LSI was the first survey of this kind in Indonesia based on a sophisticated methodology. By this initiative, Indonesian society came to realize the power of the public opinion survey— that it can evaluate the performance of the current administration on a regular basis; it shows what the public expects from the politics, and these results are linked to how the government deals with public needs. As a result of LSI's success, the number of public opinion survey institutions has rapidly increased, many of which established by persons who gained experience at LSI.

7.3.3 Support Program for Reform of the Indonesian National Police

(1) Overview

The INP was separated from the armed forces in 2000. Although the INP was transformed as a civilian police institution by the New Police Law of 2002, it was still unclear how they should change their mindset and activities in concrete terms. The reform was one of the most important features of democratization. Turning the once-feared police into a police force for citizens is a big challenge that requires thorough changes from organizational culture to the mindsets of individual police officers. Against this backdrop and following the efforts of top-level and key intellectuals in both countries, this program started in 2001 with the dispatch of the “Advisor to the Chief of Indonesian National

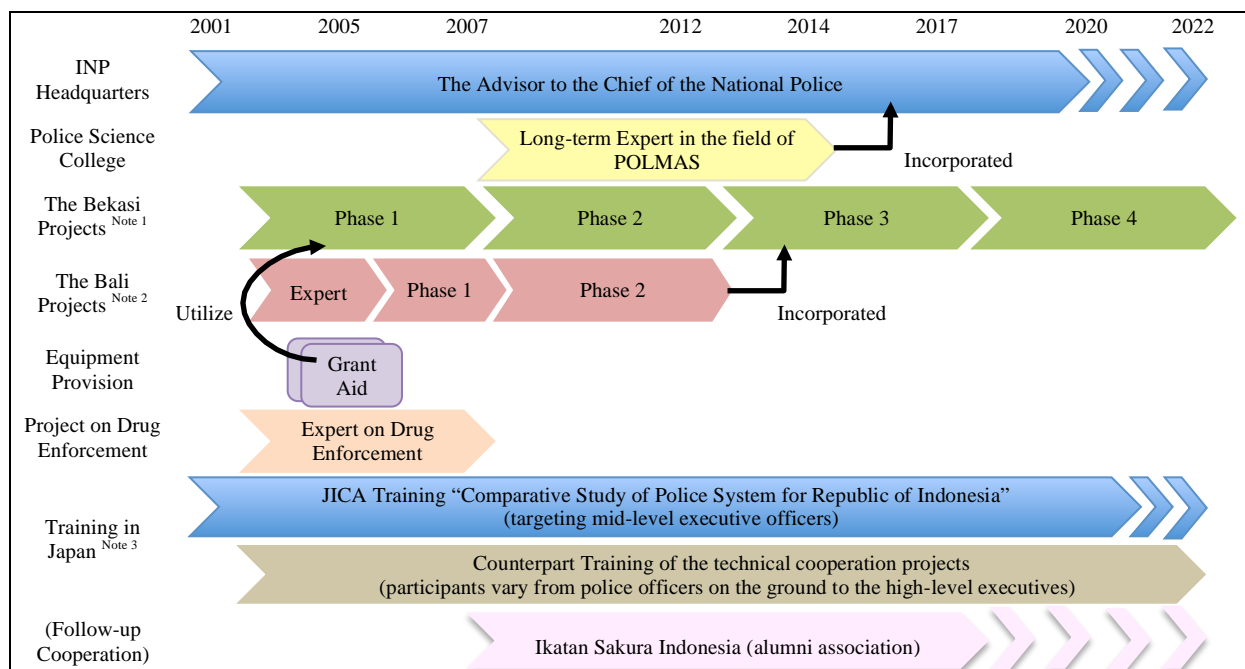
²⁰ Based on the interviews conducted by the review team.

Police,” under the full backup of the National Police Agency of Japan (See BOX 7-6).

The figure 7-3 shows the historical development of various components of this program. There are three key pillars which have continued from the early stage of the program until today: 1) dispatch of a long-term expert as the Advisor to the Chief of Indonesian National Police who also serves as the Program Manager (hereinafter called “the Advisor”); 2) training in Japan, “Comparative Study of Police System for Republic of Indonesia” (hereinafter called “the comparative study training,” and 3) technical cooperation projects to pilot community policing activities in Bekasi on the outskirts of Jakarta (hereinafter called “the Bekasi Projects”). With these pillars at the core, the program continued to expand until 2012, and then has been consolidated again in these three pillars.

There have been seven Advisors in total dispatched by the National Police Agency of Japan under JICA. The feature of this program is that in addition to the Advisor who alternates every two to three years, there is a program coordinator who is a former JICA Junior Expert (JOCV), lives in and knows Indonesia very well. Having engaged in the program since the beginning, he has maintained the memory of the program and is actively coordinating the program with a wealth of personal connections. By the Advisor and the Program Coordinator, various projects have been coordinated well as a strategic program rather than being just a group of projects.

The comparative study training has sent mid-level officer candidates under the age of 40 to police boxes or police stations, which are at the forefront of Japanese police, for one to two months. The training in 2017 was the 17th round and the total participants reached more than 300. In the comparative study training, lectures are provided when the participants are still in Indonesia so that once in Japan, they can spend more time in the field, closely observing the Japanese police activities day and night including the role of police box and actions taken after receiving 110 calls (emergency calls). Though the selection of participants is done by the program’s stakeholders of both countries, the final decision is made by the Japanese side. In addition to the comparative study training, the counterpart training is also utilized as an important component of the program, through which in total 333 participants (as of July 2017) varying from the INP Chief to police officers in the field have visited Japan for training.



Note 1: Phases 1 and 2 refer to the “Project on Enhancement of Civilian Police Activities” (Phase 1 and 2), and Phases 3 and 4 refer to the “Project on Nationwide Capacity Development of Police Officers for POLMAS – Indonesian Civilian Police Activities” (Phase 1 and 2).

Note 2: Phase 1 refers to “Enhancement of Civilian Police Activities for Bali Regional Project,” and Phase 2 refers to “Project on ‘Building a Society with a Sense of Safety in Bali.’”

Note 3: INP has also participated in other JICA Group Training Courses held in Japan and other countries.

Source: JICA Review Team

Figure 7-3: Development of the Support Program for Reform of the Indonesian National Police

The Phases 1 and 2 of the Bekasi Projects were implemented from 2002 to 2012 as “Project on Enhancement of Civilian Police Activities” (Phase 1 and 2). From 2012, the Phase 3, or “Project on Nationwide Capacity Development of Police Officers for POLMAS– Indonesian Civilian Police Activities” was implemented. POLMAS (*perpolisian masyarakat*) means community policing by Indonesian police. The subsequent project, which is virtually phase 4 of the Bekasi Projects started in October 2017. The Bekasi Projects aimed at “sincere actions” and “prompt responses” as the concept of community police trusted by citizens. To achieve “sincere actions,” technical transfer was made through on-the-job training in criminal identification that collects evidences at crime scenes. To achieve “prompt responses,” technical cooperation was provided in communication control which enables quick mobilization to the scenes responding to the calls. There were two grant aid projects in the early stage of the program to provide criminal identification and radio communication equipment. In addition, with combination of the grant aid and the budget of the technical cooperation project, in total 14 Japanese-style police boxes were built equipped with patrol cars, motorbikes and fax machines. With this support, the Japanese “police box system” that ensures safety of the local area in close cooperation with the community became the third concept of the Bekasi Projects.

In response to the Bali nightclub bombing in 2002, JICA dispatched an expert as the Advisor to the Chief of the Bali Regional Police Department (POLDA). As a result, technical cooperation projects were implemented in two phases from 2005 to 2012 which introduced the same approach to community policing as the Bekasi Projects but in the form of tourist police tailored to the characteristics of Bali, the major tourist destination. The activities included door-to-door visits to hotels, restaurants, money exchanges and travel agents and development of the safety standard for hotels and restaurants.

Moreover, from 2007, a long-term expert was dispatched to the Research and Development Center on POLMAS established under the Police Science College (PTIK, currently the School of Police Sciences and Technology: STIK). The alumni of this seminar amounts to 268 students as of July 2017. Similarly, there have also been 282 graduates from the seminar at the First School of Leadership (SESPIMMA) of the Police Staff College.

Since around 2012, the scale of this program, which expanded over ten years, began to shrink. The dispatch of the expert to the Police Science College and the Bali Projects ended by incorporating their activities into those of the Bekasi Projects and the Advisor.

Towards national dissemination, 17 Police Resorts (POLRES) of 10 provinces/POLDAs were selected in 2012 as the pilot sites to participate in trainings in Bekasi and to receive follow-up visits by JICA experts. Until 2016, the pilot sites have expanded to 40 POLRES of 16 provinces/POLDAs. Among them, there have emerged some “self-sustainable POLDAs” which provide training for other non-pilot POLRES/ POLDA. In the future, the challenge would be how to ensure the quality in dissemination and how to apply the model in such a vast and diverse country.



Koban, or a residential police box established by Japanese assistance²¹



JICA Expert providing OJT to the criminal identification team
(Source: JICA FRONTIER May 2003)

²¹ The police box originally had a sign “BKPM” which stands for *Balai Kemitraan Polri dan Masyarakat* (Community Police Partnership Center). However, since it was decided not to use the name BKPM whose abbreviation is similar to other words, the sign was removed. The police box is now called either *Polsubsektor* (Police Sub Sector) or *Koban* (*Koordinator Bantuan*).

BOX 7-4: POLMAS Good Practices and Changing Mindset of Police Executives

Starting from the end of the Phase 2 of the Bekasi Projects, *Bhabinkamtibmas* (*Bhabin*: literary means Community's Order and Security Guidance Police, or community police officer) which is similar to Japanese *Chuzai* (resident local police officer), became the center of the POLMAS activities. In small police boxes with resident space, Bhabins are stationed alone and live with the family. There are also Bhabins in police boxes with work shift. Key features of Bhabins' activities are: 1) door-to-door visits in the jurisdiction, called *Junkai Renraku*, and 2) resolving various community problems.



**Mr. Fadlullah,
Bhabinkamtibmas presenting
problem solving documents**

In the Bekasi Projects, many Bhabins came to build trustworthy relationships with residents and actively work with the community. Some of them even became lecturers of POLMAS training for other police officers. For example, Mr. Fadlullah, Bhabinkamtibmas of Koban Bantarjaya says, "Referring to the Japanese police practices I observed in Japan, I have visited local houses one by one and attended community gatherings such as weddings and prayers. Through these activities, local residents came to know me and started to ask for consultation and bring problems such as domestic violence, thefts or feuds. Though I am originally from Lombok, I feel that I am part of the community, a family." The head of a village comments, "Previously, if something happens, we had to go to the Police Sector which is far. We used to fear the police. But now, we can go to Koban. We feel our community is safer now."

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The phase 3 of the Bekasi Projects compiled POLMAS good practices by Bhabins as part of its efforts toward national dissemination of JICA's POLMAS model. Moreover, a contest (*Lomba POLMAS*) was held in 2015 where pilot provinces send representatives to present good practices. With the initiative of the INP, the contest became a national event from the next year, connecting all POLDAs with the video conference system. The event is held with great excitement in which POLDAs compete for the "INP Chief Cup." This had a significant impact on raising the motivation of POLDAs in taking actions for POLMAS. At the same time, this shows the commitment of the INP in nationwide dissemination of POLMAS.

Through the compilation of good practice and presentations made at the contest, the INP recognizes many good practices of Bhabins resolving community problems, which even include cases where Bhabins persuaded parents to send their children to school and was appreciated by the District Governor, and Bhabins helping out construction of irrigation, road or micro hydro-power generation facilities.

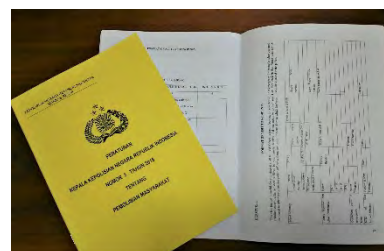
In order to disseminate these good practices, it is very important to promote these down-to-earth but unnoticeable activities by institutionally acknowledging and appreciating them. This is called "*Gyomu Kanri*" (reporting system for work management) in Japanese. The project's counterparts understand this point well. The Chief of the Community Guidance Unit (BINMAS) of Police Resort Metro Bekasi said, "the most important thing for national dissemination is that those in the leadership position acknowledge the performance of police officers (such as Bhabins), appreciate outcomes, and encourage them." The Chief of the Department of Security Guidance (BAHARKAM) of the INP also commented, "you should report to the INP Headquarters in case a change of Chiefs of POLDA/ POLRES results in undermining sincere activities of Bhabins." With such a strong leadership, it is expected that even in Indonesia where the change of the leadership tends to affect the direction of the institution, the INP's institutional will to promote POLMAS activities by Bhabins continues to spread further.

(2) Outcomes and spillover effects

The major outcomes and spillover effects of this program include institutionalization, changing citizens' perception, criminal identification, and South-South Cooperation. In addition, the long-term efforts for human resource development turned into establishment of an alumni association called *Ikatan Sakura Indonesia*. With this association, further spillover effects are expected to be produced in the future (See BOX 7-5).

Institutionalization

In October 2005, the INP launched community policing (POLMAS) as its basic strategy in the INP Chief's Decree (SKEP/737/X/2005). This incorporated community policing approaches of several development partners including Japan. For example, the Police-Community Partnership Forum (Forum Kemitraan Polri dan Masyarakat: FKPM), a system that allocates a responsible area to each police officer and door-to-door visits introduced by the Bekasi Projects were adopted as a means to promote POLMAS activities.



The format adopted in the 2015 Regulation

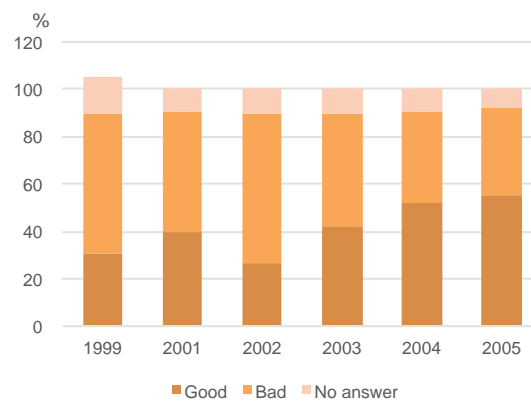
In 2015, with support from the International Organization for Migration (IOM), the INP issued the Regulation of the INP Chief No.3/2015 regarding POLMAS, which summarized and updated several decrees and regulations on POLMAS. The regulation includes reporting formats developed by the Bekasi Projects. The same formats and other manuals by the Bekasi Projects are also adopted in the textbooks of police schools.

This policy is reflected in concrete policy measures. In 2011, the INP ordered all POLDAs to assign one Bhabin per village. From 2015, the budget allocation for Bhabins' activities increased from 100,000 rupiahs to 1.1 million rupiahs per month per Bhabin. It is also ordered to recruit police school graduates with excellent performance as Bhabins. In 2017, the institutional structure of the INP has also been strengthened; in the Department of Security Guidance (BAHARKAM), which is in charge of POLMAS, a POLMAS head coordinator position (*Ka Kor BINMAS*) was newly established and the number of director position was increased from one to two (DIR BINTIBMAS and DIR BINPOTMAS). The INP leaders recognize that Japanese cooperation has had a significant impact on these actions.

Changing Citizens' Perception

The community appreciates that the mindset of the police has changed, its relationship with the community is closer, and its action has become quicker and sincerer through the Bekasi Projects. In the initial stage of the Bekasi Projects, even land acquisition for building a police box was difficult. However, towards the end of the Phase 1, the Bekasi Projects began to hear the demand of citizens and local governments for more police boxes, saying that they would provide land for it. Indeed, some "copied police boxes" have emerged. In terminal evaluations and ex-post evaluation, as well as interviews made in this review, both the community and local police officers commented that the residents were no longer afraid of the police and came to trust them; residents now visit the police box in case of emergencies.

According to the national opinion survey conducted by KOMPAS, the citizens' perception of the police has improved since 2003 (Figure 7-4). In the KOMPAS survey conducted in 2017, 46% of the respondents answered that the INP's performance in general is better than the previous year²². These perceptions are thought to be influenced by several widely published outcomes such as the arrest of terrorists and drug dealers. Still, the same survey also showed that the evaluation of the police performance had also improved in daily services. As much as 50-60% of the respondents answered that the police performance was "better" in such areas as "handling crime around your residence," traffic management, and "processing the driver's license and vehicle's license plate."



Source: JICA Review Team based on the results of KOMPAS surveys cited in Takeshi Kohno "Indonesia kokka keisatsu kaikaku no hitsuyosei to nihon keisatsu niyoru kaikaku shien no arikata nitsuite [Necessity of national police reform in Indonesia and Japanese police reform assistance]." *Keisatsugaku Ronshu (The Journal of Police Science)* Vol.58, No.11.

Figure 7-4: Trend of Citizens' Perception of the Police

Criminal Identification

In the Bekasi Projects, JICA experts on criminal identification have accompanied the Indonesian police on crime scenes to provide on-the-job-training and made technical transfer at the laboratory utilizing the equipment provided by Japan. As a result, criminal identification of Bekasi Police Resorts is acclaimed as the number one in the nation, and the INP held the criminal identification training in Bekasi in 2009. Although there were some objections initially against introducing Japanese advanced technology to Bekasi Police Resorts rather than to the INP headquarters, this shows that the INP recognized the criminal identification technique of Bekasi Police Resorts is superior, which means the change of the militaristic hierarchical mindset. Since 2011, there are cases where the results of criminal identification were sent to the prosecutor's office as investigation material. The "criminal identification certificate exam" started by the Bekasi Projects was officially adopted in the INP in 2013, and from 2013 to January 2017, the exam was implemented in 21 provinces issuing 100 A-class certificates and 706 B-class certificates.

South-South Cooperation

By Indonesia's initiative, the Bekasi Projects have hosted training of Timor-Leste police officers since 2010. As part of the training for the Timor-Leste police in Japan, JICA also sent Timor-Leste police officers to Indonesia. For example, in November 2013, 30 Timor-Leste police officers visited Bekasi to receive lectures on the role of police box and community police officer and to accompany door-to-door visits to local houses and schools. They also receive the operation manual written in

²² "Apresiasi di Tengah Tantangan. [Appreciation Amidst Challenges]." *KOMPAS*. 3 July 2017.

Indonesian²³. This kind of activities to expand the model to third countries is also included in the scope of the Bekasi Projects phase 4.

To summarize, this program has produced significant outcomes. In 2010, in front of President Yudhoyono, who was also involved in the start of the program as the Coordinating Minister of Political and Security Affairs of the Megawati administration, the program and Mr. Hiroto Yamazaki, the first Advisor to the INP Chief, received an award of recognition by the INP. Moreover, since 2012, the Advisor has been invited to present the outcomes of the program at the Leadership Meeting (RAPIM) of the Indonesian armed forces and the INP which is also attended by the President, related ministers, and chiefs of POLDAs. These also show how much the program is appreciated by the INP.



Police officers of Timor-Leste accompanying Indonesian police officer (right) in door-to-door visits
(Source: JICA website)

There are many reasons behind the success of this program. The most notable is that the Bekasi Projects provide practical training through a comprehensive assistance for police boxes, equipment and technical transfer. To be able to offer practical examples of community policing in Japan through JICA training is also a strong point of Japanese assistance compared to other international organizations or NGOs. It is also important that the program makes a good follow-up of training and takes an approach to think together how to develop an Indonesian method by referring to Japanese examples, rather than implanting the Japanese method. This attitude can be also seen in the fact that most JICA experts communicate in Indonesian. This kind of technical cooperation that aims at human resource development and changing the mindsets of an institution and its people takes a long time to bear fruit. In that context, continuation of the program from a long-term perspective was also important despite the reduction of the volume of the program.

BOX 7-5: Human Resource Development and Ikatan Sakura Indonesia

The alumni of the first group of participants of the comparative study training have moved up the ranks to Brigadier Generals. In the next five years, they are expected to become Chiefs of POLDA. Therefore, they are at the stage where they can utilize what they learned in Japan for decision making. These human resources have been strategically placed in counterpart positions of JICA projects and contributed to smooth operation of the projects. Furthermore, an alumni association called Ikatan Sakura Indonesia (ISI) was established in 2007. Currently the membership has expanded to around 700 including alumni of the comparative study training and counterpart trainings. ISI holds an annual meeting to share the progress of the JICA's support program. Apart from the JICA program, the members of ISI work on dissemination of POLMAS by their own initiatives such as conducting training on POLMAS and establishing or rehabilitating police boxes through JICA's Follow-up Cooperation scheme.

²³ JICA website. News "Koban seido ha senpai ni manabe (Higashi Timor). [Let's learn Koban system (Timor-Leste)]." March 2014. https://www.jica.go.jp/topics/news/2013/20140327_01.html

BOX 7-6: Achievement of a Passionate Leader

One of the key persons behind the start of this program, the first ever cooperation for the entire police institution of a country by the National Police Agency of Japan, was Mr. Hiroto Yamazaki, the first Advisor to the Chief of the National Police²⁴. He was once stationed in Indonesia as the First Secretary at the Embassy of Japan. When he was heading the Japanese civilian police corps in Cambodia under the UN peacekeeping operation in 1991, the Indonesian civilian police head was Mr. Rusdihardjo, who later became the INP Chief; they were good friends since Mr. Yamazaki was stationed in Indonesia. When Indonesia requested several countries to support the separation of the INP from the armed forces, Mr. Rusdihardjo requested Japan to send an advisor with the name of Mr. Yamazaki as a candidate. As a result, Mr. Yamazaki was dispatched as the Advisor in February 2001.



Mr. Yamazaki (left) and INP Chief at the award ceremony
(Source: Hiroto Yamazaki)

The time when the program started was also the turbulent time of democratization in Indonesia. He had built the program with several components step by step with various inputs from key intellectuals in both countries. His contribution to designing the successful program was significant including the foresight in identifying community policing as the pillar of the cooperation, the strategic decision to send mid-level officer candidates to Japan from a long-term perspective, and expansion of the program by encouraging ingenuity of JICA experts.

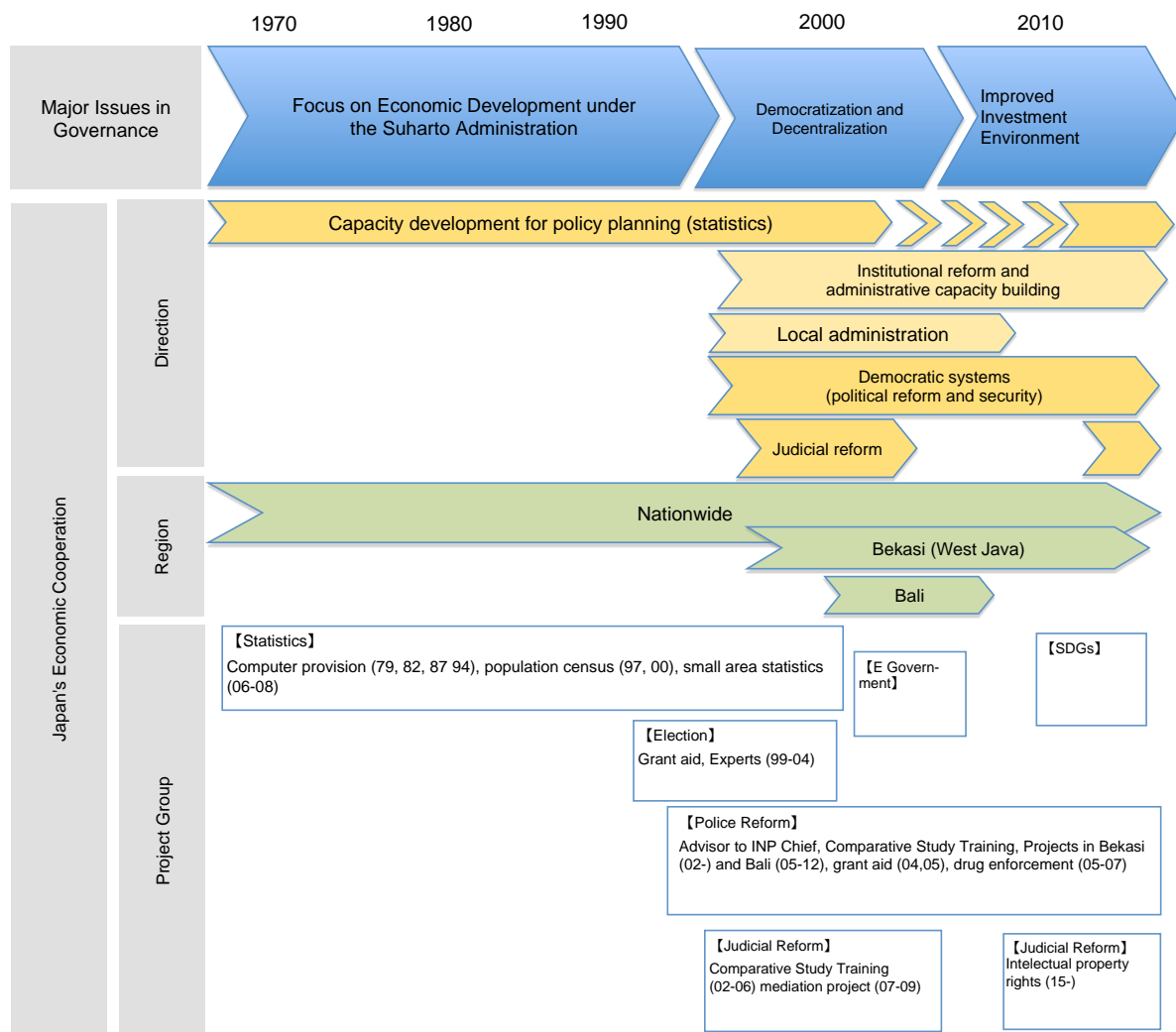
Mr. Yamazaki was appointed again as the fourth Advisor between 2009 and 2012, and has continued to have a strong relationship with the INP and the program such as through the ISI annual meeting even after his retirement from the National Police Agency.

²⁴ On how the program started, see Hiroto Yamazaki. “Indonesia kokka keisatsu kaikaku shien 10 nen no kiseki. [Indonesia Kokka Keisatsu Kaikaku Shien 10 Nen no Kiseki [Ten Years of the Support for the Reform of the Indonesian National Police],” *Keisatsugaku Ronshu* (The Journal of Police Science) Vol.62, No.5, 2009.

7.4 Outcomes/Impacts of Japan’s Economic Cooperation and Future Prospects

7.4.1 Outcomes/impacts of Japan’s economic cooperation to date

Based on the review of period-specific characteristics and noteworthy achievements of Japan’s economic cooperation in the governance sector, major issues, direction of cooperation, implementation areas and project groups are summarized as below.



Note: The detailed explanation on “institutional reform and administrative capacity building” and “local administration” can be found in “Economic Policy and Macro-Economic Management,” “Private Sector Development,” and “Regional Development” Chapters.

Figure 7-5: Characteristics of Japan’s Governance Cooperation

The key feature of Japanese cooperation in the governance sector is that it grew rapidly in response to democratization and decentralization, which were the critical turning point for Indonesia. The cooperation areas included those form the foundation of the country such as statistics, elections, police and judiciary. Although it is difficult to measure the degree of Japanese contribution to democracy establishment in Indonesia, which still has various remaining challenges, it is safe to say that Japanese contribution was significant at least in areas it had made a large amount of visible inputs and outputs such as statistics, elections and police reform. This is also evident from the interviews of relevant

stakeholders in both countries. It had a historical and diplomatic importance that Japan, as the top donor to Indonesia and an Asian neighbor, stood together with Indonesia and supported democratization in the turbulent times between the end of 1990s and 2000s.

The below is the summary of the outcomes of the subsectors presented in this chapter. Firstly, provision of 79 OCR systems enabled 100% aggregation of the population census results. This formed the basis of effective policymaking in government offices. The development of the voter registration list not only made a significant contribution to the implementation of fair elections in 2004 but also had a spillover effect being utilized as the basis for the population database, which until today is utilized in various ways in the public administrative sector.

Secondly, Japanese cooperation for the elections in 1999 and 2004 amounted to one third (USD 35 million) and one fourth (USD 23 million) of overall external assistance. The latter included providing 620,000 ballot boxes and 1.2 million voting booths. For both elections, JICA dispatched over 20 experts to national and local KPUs. These contributed to the achievement of free and fair elections. This led to a stable society and allowed democracy to take root.

Thirdly, a total of 15 police boxes were built as models. Over 700 police officers were trained in Japan. The community policing model was developed through technical cooperation, and is now reflected in the policy of the INP. Good practices have emerged in many provinces by implementing the model. With the alumni of the first group of participants of the comparative study training having moved up the ranks, further dissemination of the model and deepening of the relationship between the two countries are expected.

South-South Cooperation

As a spillover effect, Japanese cooperation has developed into South-South Cooperation in several subsectors. In the statistics subsector, BPS has not only hosted JICA's Third Country Training for Cambodia and Nepal but also dispatched experts to provide lectures on census implementation to other countries even in the framework not related to Japanese cooperation. In the election assistance, Indonesia received a study visit from Egypt in 2012. In the police subsector, Indonesia also hosts training of Timor-Leste police officers, and activities to expand the model to third countries is included in the scope of the Bekasi Projects phase 4, which started in October 2017.

The Importance of Continuous Engagement

The past cooperation in this sector clearly shows the importance of a long-term and continuous engagement. This is especially true in cooperation related to the police and judicial reforms, which aims at institutional reforms, changing the way of business and people's mindset. JICA experts and key intellectuals in both subsectors point out that this kind of human resource development takes more than 20 to 30 years to bear fruits. Today, after more than ten years since human resource development on the ground and strategic use of JICA training in Japan started, key persons who feel close to Japan and understand the Japanese system and approach in these areas have now been promoted to the executive level that can affect policy decisions.

The cooperation program to support the INP reform has continued until today even though there was a discussion to seek an exit strategy in the early 2010s. As a result, a roadmap to national dissemination of the POLMAS model has been carefully planned, and good practices have emerged showing positive signs of national dissemination driven by strong Indonesian initiatives. The initiatives to promote POLMAS by members of the ISI utilize JICA's Follow-up Cooperation scheme. It seems that behind this spillover effect, there were not only self-help efforts of the members but also the presence of the on-going JICA project. Direct and indirect impacts of continuous engagement therefore have been big.

Related to continuous engagement, there is another characteristic of cooperation in this sector. The main players of technical cooperation have been experts dispatched by Japanese line ministries such as the Statistics Bureau of the Ministry of Internal Affairs and Communications, the National Police Agency, and the Ministry of Justice. A long-term dedication and steady efforts of these experts have not only produced project outcomes but also contributed to deepening relationships between specialized agencies of both countries. The approach to technical cooperation through the dispatch of experts to "always be there" was taken in Japanese cooperation since long time ago even before the introduction of the current approach based on PDM²⁵. Japanese cooperation in Indonesia in this sector has demonstrated good practices of this traditional approach. One of the key factors to this success was common among all subsectors; when the experts took Japanese experience as an example, they worked together with Indonesian counterparts to think how best to develop a method suitable to the Indonesian situation by referring to the Japanese example, rather than merely adopting the Japanese method to Indonesia. They developed Indonesia's own models and supported human resource development for the models.

Utilization of Assets

Even though it is important to maintain continuous engagement, it is difficult to continue cooperation in all the subsectors when cooperation in this sector cannot be expanded. For example, the cooperation in the statistics subsector ended after more than 30 years of engagement, and currently other development partners such as Australia are active in this subsector implementing cooperation similar to Japan's past assistance. This is not necessarily bad since it is the result of the "selection and concentration" policy of Japan and may have contributed to better division of roles among development partners. However, considering that the strong tie between related institutions of the two countries had been developed through long-term cooperation, it seems to be necessary to maintain and effectively utilize the valuable relationship.

There are some examples of utilization of assets developed by long-term cooperation. For example, in the program to support the INP, even after the project in Bali ended in 2012, a project liaison officer is continuously hired there by the Bekasi Projects. The officer plays an important role in coordinating

²⁵ Project Design Matrix is a table which outlines objectives and outcomes of a project. JICA uses PDM in planning, monitoring and evaluating technical cooperation projects. PDM is a tool for results-based or performance-based management. JICA Institute for International Cooperation. *Jigyo management handbook. [Project Management Handbook]*. First edition, December 2007., and JICA Evaluation Department. JICA. *JICA jigyo hyoka handbook. [JICA Project Evaluation Handbook]*. Ver. 1.1. May 2016.

smooth project operation and maintaining good relationship with local stakeholders. Another example is seen in cooperation in the judiciary subsector. Even after JICA's technical cooperation project ended, the Ministry of Justice of Japan and project stakeholders have continued the exchange between the two countries. As a result, support to this field resumed from another angle, that is intellectual property rights protection. The relationship built through the past cooperation has been instrumental in implementing the new project (See BOX 7-7). Following the end of the past project, the national staff of the project has worked as a secretary of the counterpart and served as a contact person to the Indonesian side. This helped maintaining good relationship between the two sides.

BOX 7-7: Cooperation for Legal and Judicial Reform and Exchange beyond ODA²⁶

Cooperation Period: from 2002 to 2009

During the legal and judicial reform in Indonesia in the midst of democratization, Japan's cooperation in this subsector started with a training program in Japan called "Comparative Study on Judicial System" that was implemented every year from 2002 to 2006. The International Cooperation Department (ICD) of the Ministry of Justice of Japan hosted the training in which Indonesia's judges, prosecutors, attorneys, and officials of the Ministry of Justice and Human Rights participated to exchange and discuss judicial systems of the two countries and observe Japanese judicial practices through site visits. Through this training, stakeholders of both countries came to realize that the Japanese mediation system is applicable to Indonesia as an efficient way to process civil disputes and would be useful for reducing a large number of outstanding cases of the Supreme Court²⁷.

As a result, the technical cooperation Project on Improvement of Mediation System was implemented for two years from 2007. The outcomes of the project included: 1) revision of the Supreme Court Regulation on Mediation Procedures in the Court (in 2008), which was formulated in 2003 but was not utilized in practice; 2) improved mediator training curriculum and its implementation, and 3) development of DVD and a guidebook to explain mediation techniques. After a follow-up project, JICA's cooperation in this subsector ended, leaving it to Indonesia's own efforts.

The support for legal and judicial reform is not enough to support formulation of a law through a long process. It becomes meaningful only after supporting the process up to its implementation. To implement a new law, it is necessary to change the mindset of stakeholders. This is why the cooperation in this field is said to take a long time, and the cooperation by the Ministry of Justice of Japan in other countries have continued for over ten years. However, JICA's cooperation in this area in Indonesia was limited to a two-year technical cooperation project implemented in the 2000s when the support to the governance sector quickly expanded, except for the above-mentioned seminar series. Therefore, the end of the project was received with disappointment by some stakeholders. As for the outcomes of the project, the regulation was revised again in 2016 with support from Australia, but the major points Japan supported in the revision in 2008 are maintained. Apart from this, the JICA Review Team could not obtain any update information on the status of utilization of training materials developed in JICA's cooperation, number of training conducted nor court-based mediation cases.

When the project ended in 2009, Mr. Yoshiro Kusano, the then professor of Gakushuin University who was one

²⁶ Yoshiro Kusano. "Indonesia wakai chotei seido kyoka shien purojekuto no omoide to sonogo no soft na ho seibi shien [Memories of the Project on Improvement of Mediation System and Softer Cooperation Afterwards]." *ICD NEWS* No.68, September 2016; Yoshiro Kusano. "Nihon no ADR (wakai chotei) no Asia heno hashhin: Indonesia wakai chotei seido kyoka shien purojekuto no jissshi ni tsuite [Disseminating Japanese ADR (Mediation) to Asia: the Project on Improvement of Mediation System in Indonesia]." *Toyo Bunka Kenkyu* (Study of Oriental Cultures), Vol.13; The website of the ICD, Ministry of Justice of Japan; JICA reports and interviews conducted by the review team.

²⁷ In parallel, JICA Indonesia Office had an officer in charge of project formulation in this field between 2003 and 2007. When the Great Earthquake off the Coast of Sumatra and Tsunami in the Indian Ocean occurred, the officer was actively engaged in post-disaster assistance in this field including support to recover the land records in Aceh. The seminar on assistance to Alternative Dispute Resolution (ADR) method in tsunami-affected areas in Aceh was also held by connecting Aceh with experts in Japan through JICA-NET (a video conference system) to address the situation where the court cannot handle a large number of domestic relations cases such as on succession (Sozaburo Kawata. "Indonesia shiho kaikaku shien chukan hokoku. [Mid-term Report on Support for Indonesia's Judicial Reform]." *ICD NEWS* No.30, March 2007).

of the advisory group members of the project, and the IDC believed that even though the regulation was revised, continuous follow-up was necessary to implement and disseminate it. Therefore, they utilized their own budgets to visit Indonesia once a year and offer training in Japan. Through these exchange, the Japan-Indonesia Lawyers Association (JILA) was established in August 2012 which has been the hub of the mutual exchange until today. The Indonesian stakeholders have also actively participated in the exchange by utilizing their own sources of funds to visit Japan or increase the number of training participants. The exchange has developed into university-to-university partnerships in which graduates of Gakushuin University join the visit to Indonesia. With the seven-year cooperation by JICA, the relationship between the legal communities of the two countries, which previously did not have much exchange, has developed into much deeper one, with so many exchanges and members engaged. It is very meaningful that the voluntary exchanges by stakeholders have continued after the end of JICA's cooperation.

In 2015, JICA started the Technical Cooperation Project on Intellectual Property Rights Protection and Legal Consistency for Improving Business Environment (categorized in "private sector development" in this review) by expanding its long-term cooperation on intellectual property rights protection in collaboration with the Japan Patent Office. The counterpart agencies were expanded from the Directorate General of Intellectual Property of the Ministry of Law and Human Rights to the Supreme Court and the Directorate General of Legislation of the same ministry. In addition to continuing cooperation on intellectual property examination, the project also supports improving capacities to draft related business laws and regulations and process intellectual property cases. Through these, the project aims at improving capacity to ensure consistency in drafting laws and regulations. The request for this project by the Supreme Court was originated from the discussion with the ICD through the exchange channel explained above, and the counterpart at the Supreme Court includes those related to the past technical cooperation project on mediation. Legal predictability is a major part of the improved investment environment. Therefore, it is expected that the new project, which restarted Japan's cooperation in the judicial sector, is to produce outcomes while effectively utilizing the assets of the past cooperation.

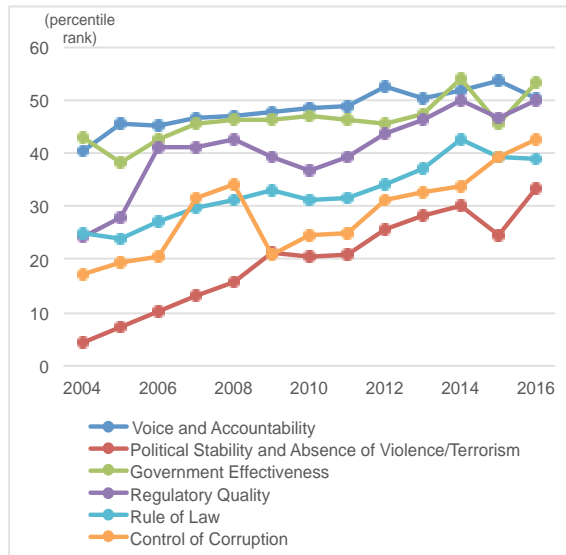
7.4.2 Implications for future cooperation

Japanese cooperation in the governance sector has decreased as democracy becomes well-entrenched in Indonesia. However, there are still needs for cooperation. For example, the issue of corruption remains a challenge despite the continuous efforts to tackle this issue since the Yudhoyono administration. President Yudhoyono put an eradication of corruption as a policy priority issue and strengthened corruption and fraud investigations for senior government officials through the Corruption Eradication Commission. President Joko Widodo also has continued to grapple with corruption eradication. As a result, the Corruption Perceptions Index (CPI) released by Transparency International has improved from the 143rd among 180 countries in 2007 to the 100th among 183 countries in 2011 and the 90th among 176 countries in 2016. Although the CPI score has improved every year²⁸, it needs further improvement.

Figure 7-6 shows the trend in the World Bank's Worldwide Governance Indicators of Indonesia. This shows that all indicators are improving since 2004. However, the 2016 data shows that Indonesia ranks at the middle among ASEAN countries except for "Voice and Accountability" which was the second highest. In "Political Stability and Absence of Violence/ Terrorism," Indonesia ranks the eighth out of ten countries. In the same indicator as well as "Regulatory Quality" and "Rule of Law," Indonesia's percentile rank is below the median of ASEAN countries. Among all the target countries, all of the indicators are at around or below 50%. Therefore, it can be said that there is much room for improvement.

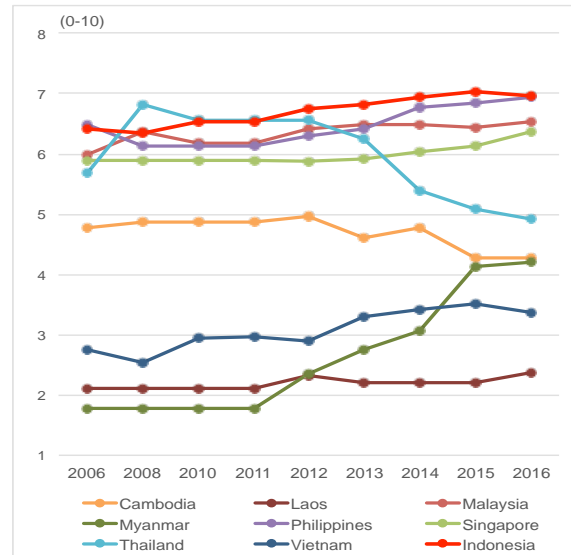
²⁸ Transparency International Website. www.transparency.org/ (Accessed in April 2018)

For example, policy recommendations published in 2010 by the Jakarta Japan Club, the Japanese chamber of commerce and industry in Indonesia, advocated the necessity for “improved legal transparency” which includes foreseeable and unified law interpretation and prompt and accurate execution, prompt and fair dispute resolution (including central and local level coordination and on land acquisition), strengthened corruption control including in the judiciary, and early review of regulations related to labor law²⁹.



Note: The unit is percentile rank indicating the country ranking of the estimate of each indicator. Indicates what percentage of the country has lower estimates than the country concerned. The closer to 100, the higher the ranking.
Source: The World Bank

Figure 7-6: Trend in the World Bank's Worldwide Governance Indicators



Note: Brunei is not included in the original data source.
Source: The Economist Intelligence Unit

Figure 7-7: Trend in Democracy Index of ASEAN Countries

Meanwhile, Figure 7-7 shows the transition of Democracy Index³⁰ of ASEAN countries announced by the Economist Intelligence Unit, the research and analysis division of the Economist Group of the UK. It indicates that the level of Indonesian democracy is at the top among ASEAN countries. It ranks at 48th overall, which is a relatively high level among developing countries. It is therefore clear that Indonesia is the democracy leader of the region as mentioned earlier. It should be noted however, that in the past ten years, the growth of the index value has been minimal and it decreased in the latest figure in 2016. As a result, the index of the Philippines is getting very close to that of Indonesia.

While Indonesia enjoys political stability, there are also concerns over spreading religious exclusionism and widening class divides as seen in the religious influence on the 2017 Jakarta governor election, even though Indonesia upholds *Bhinneka Tunggal Ika* (Unity in Diversity), which

²⁹ The Jakarta Japan Club. *Ogon no 5 nenkan ni mukete- business kankyo kaizen he muketa nihon kigyo no teigen. [Towards Golden Five Years – Recommendations of Japanese Companies for Improved Business Environment]*. 2010.

³⁰ The Democracy Index is based on five categories: “electoral process and pluralism,” “civil liberties,” “the functioning of government,” “political participation,” and “political culture.” Based on their scores, each country is classified as one of four types of regime: “full democracy” (from 10 to 8: 19 countries out of 167 countries and regions in the 2016 report), “flawed democracy” (less than 8 to 6: 57 countries and regions), “hybrid regime” (less than 6 to 4: 40 countries and regions) and “authoritarian regime” (less than 4: 51 countries). The Economist Intelligence Unit. *Democracy Index 2016: Revenge of the Deplorables.* 2017.

emphasizes on diversity and tolerance, as the national motto. In the close presidential election in 2014, there was a fierce negative campaign. Although elections are conducted democratically and peacefully in general, it is said that fraud in elections has become sophisticated, and there is concern about stagnation or undoing of democratization³¹. Therefore, it is greatly important to support “Unity in Diversity” in Indonesia even today, considering the changing social structure and emerging issues of politics and religion in recent years.

In this section, three directions are proposed for the future assistance of Japan in the governance sector: 1) on-going efforts to improve the business and investment environment; 2) support for SDGs implementation which has been started by the on-going study project, and 3) assistance to maintain the quality of democracy and “Unity in Diversity.”

In pursuing these directions, it is important to maintain and utilize the assets of the past cooperation as mentioned in the previous section. It is expected that utilization of human assets such as the ISI will continue in the Support Program for Reform of the Indonesian National Police. It is imperative to also maintain relationship with the Indonesian side in other subsectors by utilizing the Knowledge Co-Creation Program Courses (Group and Region-Focused Training Courses) and Follow-up Cooperation, and by continuing dialogues with research institutions which JICA have worked together in the past.

Support for SDGs implementation

The support for SDGs implementation is meaningful in the sense that it can possibly utilize the past assets and contribute to the global community. The current study project is the first project under JICA to support SDGs. It supports the implementation of all aspects of SDGs rather than in specific sectors.

Behind this cooperation, there is a strong commitment to SDGs by the Indonesian government. It can be said that the project is one of JICA’s efforts “to enhance the capacity of Indonesia to address global issues” like its cooperation for climate change measures. This project involves pilot activities such as technical support for setting national targets/indicators and national/sub-national action plans, as well as for strengthening the monitoring and evaluation mechanism. In setting targets/indicators, for example, the Indonesian government appreciates the study team’s thorough approach, which included constant follow-up of the related UN discussion, examining individual indicators one by one to make necessary advice, and discussion with BPS on data availability.



Minister Bambang of BAPPENAS (second from the left) at the UN High-level Political Forum in July 2017
(Source: Tribun Bisnis HP)

³¹ Based on the interviews conducted by the review team and Jun Honna. “Exclusive Nationalism in Indonesia’s Democratic Elections: Prabowo’s Challenge in 2014.” *Asiya Kenkyu [Asian Studies]* Vol.61, No.4. October 2015.

In the future, the Indonesian government is planning to align its national development plans with SDGs indicators. In 2018, it will start developing the next national five-year development plan. It will be of great significance if JICA can make an input to this work from the SDGs viewpoint. The potential areas for such input might be considered as follows: suggesting policy issues that need more attention to fill the gap between the SDGs indicators and the national development plan; clarifying the target of development policy by collecting disaggregated data such as by sex and age, and promoting multi-sectoral development at the local government level to address multiple SDGs goals.

Moreover, the study project has brought about a new connection with BPS in the statistics subsector with which JICA ended cooperation in 2008. As a part of this, JICA is implementing training programs in Japan on SDGs statistics, and cooperation with BPS on this is expected. Although the offices in BPS that the study team works with are different from the ones that had received the long-term Japanese cooperation on census, it is recommended that JICA build a new relationship with BPS through the support for SDGs implementation, utilizing the asset built through the past cooperation.

Support for “Unity in Diversity”

In the same way as it was in 2004, it is important for Japan to maintain *Bhinneka Tunggal Ika* and firmly establish democracy in Indonesia. Compared to Australia and UNDP that had supported the elections in 2009 and 2014, Japan has not provided assistance to the elections in recent years. However, given the changing social structure and emerging issue of politics and religion, and with the 2019 presidential election in mind, it is worth considering the possibility to cooperate with NGOs and the media acting for democratic elections or to study if there are any needs for assistance in the KPU. In addition, to address concerns of spreading identity politics, it is also important to review the civic/citizenship education curriculum of the primary and secondary education or to disseminate the idea of pluralism and tolerance by training teachers of religion in public schools.

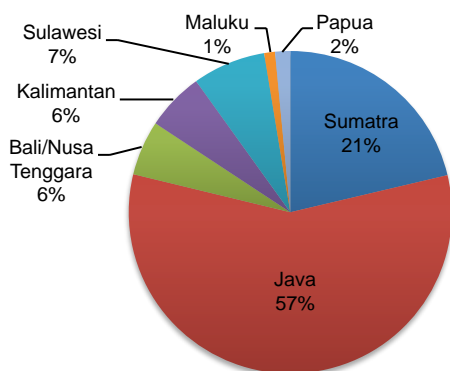
Chapter VIII Regional Development

8.1 Summary¹

The focus of Japanese cooperation for regional development in Indonesia can be divided into two phases, which are from the 1960s to the 1980s and after the 1990s. From the 1960s up to the 1980s, Japan’s cooperation focused mainly on the development of regional master plans including the macroeconomic management targeting Java and Sumatra. In the 1990s, JICA steered its cooperation policy toward supporting individual projects in Java under the master plans rather than merely developing the blueprints. Moreover, the eastern part of Indonesia including Sulawesi became a priority of Japan’s cooperation, responding to a development policy of the Indonesian government.

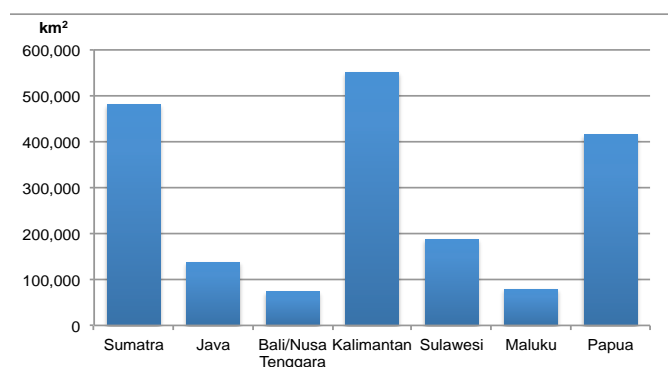
After 1998, in response to the progress of decentralization as well as the adaptation of participatory approach introduced under Poverty Reduction Strategies by the World Bank and the IMF, JICA shifted its focus from assistance formulating regional master plans by national government to reinforcing the coordination between local government and local community. At that time, most donors allocated their financial resources mainly for institutional reform of the national government or assistance toward NGOs and local communities. JICA’s approach to promote capacity building of local government was therefore complementary to the activities of other donors.

Following the international agenda in the 2000s, such as improving aid effectiveness and poverty reduction, JICA promoted a program approach combining several projects, such as development of master plan, capacity building of human resources, and formulation or dissemination of a development model, in order to generate synergistic effects in regional development. The Village Fund was launched in 2014 replacing the National Program for Community Empowerment (PNPM), which had been implemented for years supported by development partners. This underlines that the challenge of the country now is to balance between support for urban areas and regional/local development to realize the well-balanced development aimed at by the medium-term development plan led by the President Joko Widodo.



Source: Central Bureau of Statistics

Figure 8-1: Population Distribution



Source: Central Bureau of Statistics

Figure 8-2: Land Area by Region

¹ This Sector covers cross-sectoral regional development, wide area development by specific sectors as well as housing development in metropolitan area.

Table 8-1: Overview of the Regional Development Sector in Japan's ODA

Period	1960s	1970s and early 1980s	Late 1980s	1990s	From the end of 1990s	From the end of 2000s
	Nation-State Building	Economic Development	Structural Adjustment	Growth until the Asian Financial Crisis	Democratization and Decentralization	Middle Income Countries
Historical Context	<ul style="list-style-type: none"> • Cold War • ASEAN (1967) • Inauguration of President Suharto (1968) • Green Revolution 	<ul style="list-style-type: none"> • First Oil Crisis (1973) • End of Vietnam War (1975) • Second Oil Crisis (1979) 	<ul style="list-style-type: none"> • Plaza Accord (1985) • Reverse Oil Crisis (1986) • End of Cold War (1989) 	<ul style="list-style-type: none"> • Asian Financial Crisis (1997) 	<ul style="list-style-type: none"> • Laws on local autonomy (1999) • Millennium Development Goals (2000) • Election of President Yudhoyono by first direct election (2004) 	<ul style="list-style-type: none"> • Japan-Indonesia Economic Partnership Agreement (2008) • G20 Accession (2008) • Jakarta Commitment (2009) • Sustainable Development Goals (2015)
Situation of the Sector	<ul style="list-style-type: none"> • Concentration of economic activities to Java 	<ul style="list-style-type: none"> • Local Administration Law (1974) • Establishment of BAPPEDA/Province (1974) • Establishment of BAPPEDA/District (1980) 	<ul style="list-style-type: none"> • Economic discrepancy 	<ul style="list-style-type: none"> • Development of eastern part of Indonesia • Spatial Planning Law (1992) 	<ul style="list-style-type: none"> • Strengthening of local administration • National Development Planning System Law (2004) 	<ul style="list-style-type: none"> • Balanced Economic development • Village Law (2014)
Priority Development Issues in the 5-Year Development Plan	<ul style="list-style-type: none"> • Migration to outer islands • Linkage with food production increase • Agriculture development 		<ul style="list-style-type: none"> • Development of outer islands 	<ul style="list-style-type: none"> • Development of eastern part of Indonesia (1990) • Redressing disparities among regions 	<ul style="list-style-type: none"> • Local autonomy (2001) • Regional development by local initiatives • Poverty reduction 	<ul style="list-style-type: none"> • Strengthening connectivity • Fostering manpower for local industry
Direction of Japan's Cooperation	<ul style="list-style-type: none"> • Integrated regional development master plan • Integrated regional Development (Java) • Housing Development in metropolitan area 		<ul style="list-style-type: none"> • Integrated regional development master plan (Sumatra) • Low cost housing 	<ul style="list-style-type: none"> • ODA Charter (1992) • Sub-sectoral regional development project • Community development 	<ul style="list-style-type: none"> • Program Approach • Strengthening local administration • Training of village facilitators 	<ul style="list-style-type: none"> • Development Cooperation Charter (2015) • Improvement of human settlement in local area • Improvement of living environment in local cities • Regional development based on university development
Outcomes						

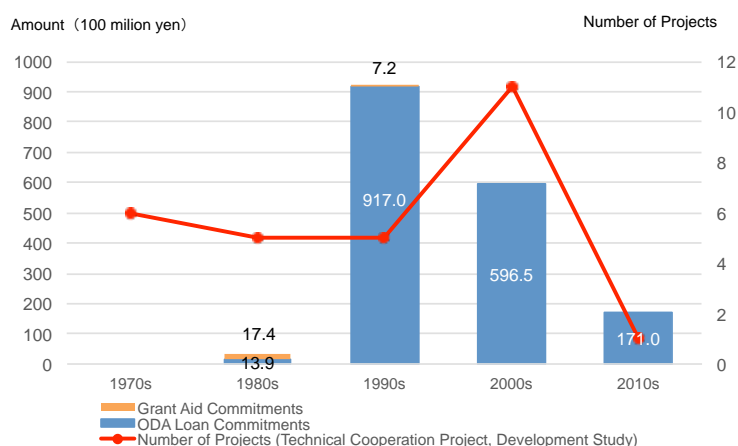
Note: Dashed lines in the section of outcomes indicate the impact/spillover effect from the previous period.

8.2 Historical Context and Japan's Cooperation

8.2.1 Number of projects and commitment amounts²

Over the 50 years of cooperation, the amount of financial cooperation and number of technical cooperation for regional development have changed in accordance with the policies of the Indonesian government of the time. There are 44 projects implemented under the sector, which can be broken down into 15 development studies, 13 technical cooperation projects, 13 ODA loans and 3 grant aid projects.

As shown in Figure 8-3, the amount of assistance provided from Japan to Indonesia has varied. After reaching 90 billion yen, it was decreased to 60 billion yen in the 2000s and plummeted to 17 billion yen in the 2010s. The sharp rise in the 1990s was due to an increase of ODA loan for projects targeting certain sub-sectors in eastern regions and housing development responding to the policies to promote development of the eastern part.



Source: JICA Review Team

Figure 8-3: Commitment Amount of ODA Loan and Grant Aid (E/N basis), and Technical Cooperation (Technical Cooperation Project and Development Study)

The focus of technical cooperation also varied over time. In the 1970s, development study was started. Then the direction of support shifted to implementation of projects targeting eastern regions as the government adopted policies to promote development of the eastern part. In the 2000s, the number of projects focusing on capacity development for regional development increased in the form of technical cooperation.

Table 8-2 provides the accumulated number of projects for regional development by scheme and sector since the 1970s. In terms of the shift of the number of projects by sector, development study for regional integrated master plan was a major form of cooperation from the 1970s to the 1990s. The number of projects for capacity development for local government increased from one in the 1990s to four in the 2000s in response to decentralization.

Although constant cooperation is found in the sector of housing development, its component was changed from development of low cost housing and redevelopment of the former airport site in the 1970s to the establishment of the Research Institute for Human Settlement (RIHS) by grant aid and technical cooperation in developing institutions in the 1990s. In the 2000s, an integrated survey targeting Surabaya and Makassar was conducted.

² Some regional development programs include health, education and infrastructure projects. However, these projects are categorized in other sectors in this review and therefore are not included in this chapter.

**Table 8-2: Regional Development Cooperation by Sub-Sector and Period
(by number of projects)**

	Regional integrated master plan (M/P)	Fostering local administrators	Capacity development for stakeholders	Sub-sectoral regional development	Housing/urban development	Total
1970s	3	0	0	0	3	6
1980s	2	1	0	0	5	8
1990s	2	2	1	2	5	12
2000s	0	3	4	2	6	15
2010s	0	1	0	1	1	3
total	7	7	5	5	20	44
(by scheme)						
Technical Cooperation Project	0	2	5	0	6	13
ODA Loan	0	4	0	5	4	13
Grant Aid	0	1	0	0	2	3
Development Study	7	0	0	0	8	15

Source: JICA Review Team

8.2.2 Period-specific characteristics of Japan's economic cooperation on regional development

In this section, the situation of the regional development sector in Indonesia and support of the Japanese government for Indonesia are summarized by period.

- From the 1960s to the first half of the 1980s: Integrated regional development study (Cooperation for developing regional development master plan)
- The second half of the 1980s: Integrated regional development Study (Focusing on regional inequity)
- The 1990s: Development of the eastern part of Indonesia
- From the end of the 1990s: Decentralization and poverty eradication
- From the end of the 2000s: Balanced regional development

(1) From the 1960s to the first half of the 1980s: Integrated regional development study (Cooperation for developing regional development master plan)

1) Situation of the sector

From the 1960s to the 1970s, the priority of Indonesian Government was placed on implementing migration policy from Java to other islands where agricultural development for food production was promoted. In 1969, the first 5-year development plan, REPELITA I (1969/70-1973/74) was developed. Under REPELITA I, rehabilitating devastated infrastructure in the 1960s was prioritized. REPELITA II highlighted the importance of economic growth, and balanced development was promoted under REPELITA III. At the level of local government, the Local Autonomy Law was enacted in 1974 and functions of province and district/ municipality were clarified. The *Inpres* system was also introduced to fiscal management of local government. In 1974, Regional Development Planning Agency (BAPPEDA)

was established in province, and in district in 1980, and they were given a function of planning and coordination. In the subsector of housing development, the “Kampong Improvement Program (KIP)” was implemented in the metropolitan area, and low-cost housing projects were started, following the launch of the Ministry of Public Housing.

2) Major efforts by Japan

In the 1960s, upon implementation of food production policies, projects with names of target regions as projects’ title, such as the “West Java Food Production Increase Project” (1968-1974), and the “East Java Maize Project” (1968-1974), were carried out. In the 1970s, responding to the progress of regional autonomy, the “Java Regional Study - Phase I, Part A, East Java” (1975), the “Java Regional Study - Phase I, Part B, Central Java” (1976), and “Southern Coast Development Plan, East Java” (1978-1980) were implemented in Java island. For outside of Java island, the “Master Plan Study for the South Sulawesi Water Resources Development Project” (1976) and the “South Sulawesi Regional Agricultural Development Planning” (1976-1982) were implemented. In addition, in the 1980s, the “Master Plan Study on Lower Asahan River Basin” (1984-1985) was conducted, which is explained in the chapter for “Private Sector Development”.

Regarding housing development in metropolitan area, the development studies, the “Housing Development” (1972) and the “Low Cost Housing Project” (1979), and a technical cooperation project, the “Development of Building Materials by the Effective Use of Locally Available Raw Materials” (1978-1983) were conducted. In the 1980s, the “Urban Planning Study on Surabaya Metropolitan Area” (1981) and the “Urban Renewal Housing Project in Jakarta” (1982) were implemented.

(2) The second half of the 1980s: Integrated regional development study (Focusing on regional inequity)

1) Situation of the sector

Amid the decline of oil revenue, Structural Adjustment Policies such as promotion of deregulation and sound fiscal management were adopted in REPELITA IV (1984/85-1988/89). As regional development policies, an integrated approach to develop metropolitan areas with emphasis on reinforcing capacity of local government administration and securing independent fiscal sources of local government was taken.

2) Major efforts by Japan

Up to the late 1980s, assistance to develop a regional master plan in Java was continued. In 1986, the “West Java Integrated Regional Development Study” (1986) was conducted. As the widening inequality between regions started to attract attention, the “Study on the Integrated Regional Development Plan for the Northern Part of Sumatra” (1988-1990) was implemented in four provinces in Sumatra island as the first regional integrated development study outside of Java. Based on the outputs produced by the study, the “Study on the Integrated Regional Development Plan for the Southern Part of Sumatra” (1991-1993) was launched.

Regarding housing development, several projects by different scheme were executed such as the “Master Plan and Feasibility Study on Kemayoran Urban Housing Development Project” (1988-1990) by development study, the “Establishment of Geographic Information System for DKI Jakarta” (1989) for effective management of basic urban infrastructure through an ODA loan, and “Project for Improvement of the Institute of Human Settlements” (1989-1990) through grant aid followed by the technical cooperation project, ”The Development of Appropriate Technology for Multi-story Residential Building and Its Environmental Infrastructure for Low Income People” (1993-1998).

(3) The 1990s: Development of eastern part of Indonesia

1) Situation of the sector

Under REPELITA V (1988/89-1993/94), increased inequality during the 1970s and the 1980s became an urgent issue to be tackled. To achieve balanced development between industrial sector and agriculture sector, each provincial government formulated a Provincial Spatial Designing and Structure Plan under their own administrative capacity³. In 1990, President Suharto adopted a policy to promote development of the eastern Indonesia. Following the establishment of the eastern regional development council to promote the policy in 1993, the Presidential Special Fund was set up to support community development at the level of village, while rural infrastructure was developed by the national government.

2) Major efforts by Japan

During this period, a new approach of regional development cooperation focusing on specific sectors in wider regions was taken, while cooperation for developing master plan, such as the “Development Study on Comprehensive Regional Development Plan for the Western Part of Kalimantan” (1997) was continued. Under the collaboration of the Ministry of Public Works as counterpart, two ODA loan projects, the “Human Settlement Improvement Project Phase I-II” (1993, 1995) and the “Rural Areas Infrastructure Development Project Phase I-III” (1994, 1998, 2001) were implemented. In addition to those local infrastructure improvement projects, in response to the adoption of the policy to promote development of the eastern Indonesia, the following projects were carried out: the “Small Scale Irrigation Management System Project Phase I-III” (1989, 1994, 1998), the “Study on Integrated Modernization Plan for Sea Transportation in Eastern Indonesia” (1992-1994); the “Development Study on the Nationwide Ferry Service Routes” (phase I: 1992, phase II: 1997-1998); the “Maritime Transportation Sector Loan in Eastern Indonesia” (phase I: 1991, phase II: 1992); and the “Decentralized Irrigation System Improvement Project Phase I-II” (2002, 2008).

The focus of capacity development in technical cooperation projects was shifted from formulating regional master plans to implementing projects under autonomy of local government. The “Policy and Implementation Support for the Development of Eastern Indonesia” (1995-1998) was conducted by a JICA expert team and “The JICA Junior Expert Team Cooperation for Implementation Support for Integrated

³ The Spatial Planning Law (1992/25) was enacted by the then Ministry of Public Works in 1992.

Area Development Project in Barru District” (1995-2001) was undertaken by a JOCV team with the support of the Ministry of Home Affairs, Directorate General for Regional Development (BANGDA). In South Sulawesi Province, the “Project on Strengthening Sulawesi Rural Community Development to Support Poverty Alleviation Programmes” (1997-2002) was carried out with the Ministry of Home Affairs, Directorate General for Community and Empowerment (PMD). This project shifted its focus from effective implementation of a given national government’s development program in villages to empowerment of villagers toward regional development with local government’s autonomy which was promoted under the policy to develop the eastern Indonesia with a participatory development approach.

(4) From the end of the 1990s: Decentralization and poverty eradication

1) Situation of the sector

Decentralization

After the Asian Financial Crisis in 1997, the presidency was passed to Baharuddin Jusuf Habibie and decentralization was promoted in accordance with the Local Autonomy Law and the Financial Balance Between National and Local Institutions Law enacted in 1998 and come into effect in January 2001. In the process of transferring more duties and responsibilities to district governments, a part of national government budget was allocated to districts and the local officials who were employed by the national government were reassigned to the local government.

Although the provincial and district governments were given the right to manage their own budget, the capacity for executing the budget was not sufficient. In 2004, the two laws mentioned above were amended as a way of rethinking the appropriate balance of responsibilities between provincial governments and district governments. In October 2004, the National Development Planning Law was enacted, designating the span of development plans as follows: short-term planning (over one year), medium-term planning (five years), and long-term planning (over 20 years).

Poverty Reduction Strategy

Under RPJMN (2004-2009) and Poverty Reduction Strategy Paper (PRSP), the Yudhoyono Government elected by the first direct presidential election in 2004 announced a new poverty reduction strategy comprising three clusters: (1) direct support to the poor; (2) financial support to poor communities, and (3) lending to small and medium enterprises. A representative program under this strategy was National Community Empowerment Program (PNPM) (2006-2014) which was carried out by National Team for the Acceleration of Poverty Reduction (TNP2K) placed under the Coordinating Minister for Economy. Efforts to reinforce coordination between the government and development partners such as the World Bank were made. The core component of the program was PNPM-Mandiri. As shown in Table 8-3, PNPM-Mandiri consisted of five core programs and seven supporting programs. Financial and technical cooperation to run the program was provided by development partners such as the World Bank and Japan.

Table 8-3: Components of PNPM-Mandiri Program

Core-program: basic programs targeting the whole country
- PNPM-Rural
- PNPM-Urban
- PNPM Rural Infrastructure (PNPM-RIS)
- PNPM Regional Infrastructure for Social and Economic Development (PNPM-PISEW:RISE)
- PNPM Disadvantaged and Special Areas
Supporting program: programs Targeting specific development issues or specific group
- PNPM Agro-business Improvement (PNPM-PUAP)
- PNPM Marine and Fisheries (PNPM-KP)
- PNPM Tourism
- PNPM Generation (PNPM-Generasi)
- PNPM Green (G-KDP)
- PNPM Neighborhood Development (PNPM-ND)
- PNPM Housing and Settlements

Source: TNP2K

2) Major efforts by Japan

After the Asian Financial Crisis in 1997, Japanese cooperation was designed focusing on sectors related to securing a social safety net for those affected by the crisis, such as basic education, health and employment. As a program which provides direct support to local residents, the Community Empowerment Program (CEP) was launched with the collaboration with NGOs in Indonesia⁴.

In the context of fostering decentralization in Indonesia, based on outputs of the past projects, new technical cooperation projects, the “Regional Development Policies for Local Government” (2001-2005) and the “Human Resource Development for Local Governance I, II” (2002-2007) were executed with the Ministry of Home Affairs for developing capacity of local government officials. To strengthen coordination between local administrations and communities, the “Technical Cooperation for Community Empowerment Program with Civil Society (PKPM)” (2004-2006) was implemented with BAPPENAS, focusing on training on facilitators who link the two parties.

Japanese cooperation to Indonesia followed not only the issues of development policies in Indonesia, but also the international agenda represented by Development Assistance Committee (DAC) and other agencies. In the early 2000s, improving aid effectiveness through coordination of institutions and policies was a major issue in development society. In 2003, the Japanese government launched ODA Task Force and formulated the “Action Plan for Improvement of Cooperation Effect” in 2005 to ensure well-designed modalities and effective implementation of cooperation. Accordingly, Japan promoted a program approach so that projects under different schemes would be better coordinated. In Indonesia, JICA Makassar Field Office was opened in 2005, and the “South Sulawesi Province Regional Development Program” (2006-2012), in which cross-sectoral development issues were

⁴ JICA. *Thematic Evaluation for Capacity Development of Local Administrations: Case Study in Indonesia*. 2006.

targeted, was carried out based on the agreement between the Japanese ODA Task Force and South Sulawesi Provincial Government.

Table 8-4: South Sulawesi Province Regional Development Program

<p><u>Urban Area Development Sub-program</u></p> <ul style="list-style-type: none"> • Integrated Spatial Plan for the Mamminasata Metropolitan Area (2005-2006) (Development Study) • Enhancement of Urban Development Management in the Mamminasata Metropolitan Area (2009-2012) (Technical Cooperation Project) • Project for Water Supply Service Improvement in the Mamminasata Metropolitan Area (2009-2012) (Technical Cooperation Project) • Project for Capacity Building for Solid Waste Management in the Mamminasata Metropolitan Area (2014-2017) (Technical Cooperation Project) <p><u>Well-balanced Regional Economy and Industry Promotion Sub-Sector Program</u></p> <ul style="list-style-type: none"> • Project for Development of Industry based on Local Resources in South Sulawesi Province (2009-2012) (Technical Cooperation Project) <p><u>Social Development Sub-program</u></p> <ul style="list-style-type: none"> • Project for Improvement of District Health Management Capacity in South Sulawesi Province (PRIMA-K) (2007-2010) (Technical Cooperation Project) • Integrated Plan for Junior Secondary Education Improvement in South Sulawesi Province in the Republic of Indonesia (2007-2010) (Technical Cooperation Project)
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The “Northeastern Indonesia Regional Development Program” was implemented to disseminate outputs of the project in South Sulawesi to other areas in Sulawesi and Maluku regions. As the program progressed, the effects of coordination between technical cooperation project for the “Sulawesi Capacity Development Project (CDP)” and an ODA loan for “Regional Infrastructure for Social and Economic Development (RISE)” as well as between ODA loan for the “Hasanuddin University Engineering Faculty Development Project” and a technical cooperation project for “Capacity Building in Engineering, Science and Technology at Hasanuddin University” were produced. In Maluku region, a reconstruction program after conflicts was carried out with close collaboration with an institution in South Sulawesi.

Table 8-5: Northeastern Indonesia Regional Development Program

<p><u>Capacity Development for Regional Development Sub-Program</u></p> <ul style="list-style-type: none"> • Sulawesi Capacity Development Project (CDP) (2007-2012) (Technical Cooperation Project) • Hasanuddin University Engineering Faculty Development Project (2007) (ODA loan) • Project for the Development of the Engineering Faculty of the Hasanuddin University (UNHAS), South Sulawesi (2009-2012) (Technical Cooperation Project) <p><u>Economic Infrastructure Improvement Sub-Program</u></p> <ul style="list-style-type: none"> • Study on Arterial Road Network Development Plan for Sulawesi Island and Feasibility Study on Priority Arterial Roads in South Sulawesi Province (Development Study) (2006-2008) • Study on Optimal Electric Power Development in Sulawesi (Development Study) (2006-2008) <p><u>Regional Development on Local Potentials Sub-Program</u></p> <ul style="list-style-type: none"> • Project for Tourism Product Development (2007-2008) (Technical Cooperation Project) • Project for Improvement of Bridges in South-East Sulawesi Province (2009) (Preparatory Survey) • Regional Infrastructure for Social and Economic Development (RISE I) (2007) (ODA loan) • Rural Settlement Infrastructure and Kabupaten Strategic Area (RISE II) (2014) (ODA loan)

Other Regional Cooperation Sub-Programs

- Community Rehabilitation in Post Conflict Area (2006-2007) (Technical Cooperation Project)
- Technical Support for Strengthening the Regional Based Education Management (2008-2011) (Technical Cooperation Project)

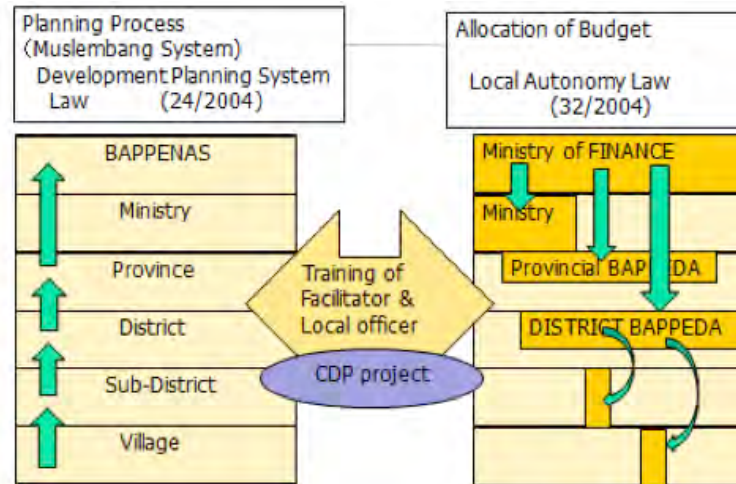


Figure 8-4: Schematic Image of the Sulawesi Capacity Development Project

To propel the Poverty Reduction Strategy of Yudhoyono administration, “Regional Infrastructure for Social and Economic Development (RISE I)⁵” (2007-2014) and “Rural Settlement Infrastructure and Kabupaten Strategic Area Development (RISE II)” (2014-2016) were implemented by ODA loan as core projects of PNPM-Mandiri. These projects played a pivotal role in reducing poverty through developing small-scale infrastructures such as access roads, irrigation facilities, market facilities, water supply facilities and drainage facilities, education and health facilities. RISE I and II also contributed to promoting KSK (*Kawasan Strategis Kabupaten*) formulated by the Spatial Development Plan of then the Ministry of Public Works.

(5) From the end of the 2000s: Balanced regional development

1) Situation of the sector

Village Law and Village Fund

During the second-term of the Yudhoyono administration inaugurated in 2009, the prioritized region for development was the most populated region, Java. Regarding regional development, cooperation for poverty reduction was continued. During this period, weak legal institutions and inefficient mechanism for allocating budgets to local governments were regarded as impediments for poverty reduction and further decentralization. In fact, there was inefficient division of roles between the planning process under the National Planning System Law enacted in 2004 and the budget distribution system under the

⁵ The abbreviation of RISE in Indonesian is PNPM-PISEW (*Pengembangan Infrastruktur Sosial Ekonomi Wilayah*).

laws on local autonomy described above. At that time, development plan was developed under the former law, while the allocation of financial resources to implement the plan was under the latter.

To correct this institutional inefficiency, the Village Law⁶ was enacted in 2014 under which the Village Fund was set up to allocate financial resources directly to the local authority for community development. In 2015, the law came into effect and the Village Fund was distributed from the Ministry of Finance to district governments and finally to villages. To materialize the ideas of the legal institution, the role of facilitators (*Pendamping Desa*) who bridges administration with community did matter and also management capacity of local officials needed to be improved. Therefore, the Ministry of Home Affairs launched training programs for local government officials to improve their capacity to manage villages and local government administration.

BOX 8-1: Background Story of Village Fund and Its Performance

In accordance with the Village Law, 90% of the village fund is to be allocated equally to each village. The rest is distributed to prioritized villages based on four criteria: population; area; size; poverty incidence, and geographical conditions⁷. Under the district governor ordinance, 70% of the fund is allocated to programs of poverty reduction, education, infrastructure and agriculture. The rest is for covering general expenses and subsidy.

After the fund was transferred to each village, the local authority is in charge of implementing planned projects, monitoring the progress and reporting to district governments quarterly. The head of district governments has responsibility of monitoring and evaluation. In addition to the fund, each village receives district subsidy called ADD (*Alokasi Dana Desa*) corresponding to 10% of the national subsidy to districts. Furthermore, 10% of revenues of district governments redistributed to each village, a considerable amount of financial resources, is allocated for financing village activities⁸.

In implementation of projects financed by the Village Fund, expert teams (TA) comprising six professionals and two subdistrict village facilitators (PD)⁹ were deployed under district governments. To reinforce coordination between administration and local community, one village facilitator (PLD) per three villages was hired through on-line selection. As villages planned to recruit 30,000 facilitators in total in 2016 and 40,000 in 2017, hiring so many facilitators with quality will be a challenge¹⁰.

The outputs of projects financed by the Village Fund in 2015 and 2016 are summarized as below¹¹.

Activities	Outputs	Activities	Outputs
Local road	89,826 km	Irrigation facilities	17,387 facilities
Bridge	535.3 km	Retaining walls	43,054 sites
Boat	1,726 boats	Sanitary facilities	56,658 facilities
Water supply facilities	22,126 facilities	Village market	3,010 markets
Well construction	19,486 sites	Nursery School	14,301 schools
Water reservoir	968 sites	Health unit	4,137 facilities
Drainage facilities	90,589 sites	Health center	9,941 facilities

⁶ UU Nomor 6 2014, tentang Desa (National Law No.6, regarding village)

⁷ The criterion for geographical conditions is based on the Geographical Constraints Index (IKG).

⁸ The budget of the Village Fund has been increasing from IDR 24.6 trillion in 2015 to IDR 45.98 trillion in 2016 and IDR 60 trillion in 2017. In 2018, it is expected to reach IDR 120 trillion (according to the document of the Ministry of Villages, Disadvantaged Regions and Transmigration).

⁹ One PD for rural development and the other for infrastructure development.

¹⁰ Based on the interview conducted by the review team in August 2017.

¹¹ Based on the document of the Ministry of Villages, Disadvantaged Regions and Transmigration.

Policies under President Joko Widodo

RPJMN (2014/15-2018/19)¹², which is the third phase of RPJPN (2005-2025), was executed by the Presidential Decree No.2 of 2015 under President Joko Widodo, known as Jokowi. The RPJMN was developed to reflect this campaign promise (*Nawacita*) which has three pillars: (1) human resource development; (2) key sector development, and (3) balanced regional development. The third one was based on the idea that propelling regional development without leaving some regions behind benefits the whole country.

The RPJMN has four principles for promoting regional development: (1) industrial development in regions outside of Java; (2) improvement of nationwide connectivity; (3) human resource development in local area, and (4) improvement of investment environment in local area. As for the development of the eastern Indonesia, improvement of marine transportation, promotion of primary product and its processing and development of mining industry are placed as major development issues to be addressed. The importance of achieving regional development with consideration of preconditions specific to each region is emphasized in the RPJMN.

Regarding development of islands, the Ministry of Marine Affairs and Fisheries implemented programs targeting islands near border and fishermen villages, which are explained in more detail in Chapter IX “Agriculture and Food Security.”

2) Major efforts by Japan

When shedding light on the response of development organizations to policies adopted by the government of President Joko Widodo, there seems to be consensus on the direction of cooperation toward regional development. One shared view is the regions to be focused on. Every donor targets the eastern Indonesia, while the World Bank and Asian Development Bank covers other parts of the country in addition to the eastern part. Especially for Papua Province, development partners believe that consideration of the province’s specific preconditions is a must and collaboration with local NGOs such as BaKTI in South Sulawesi is the key.

The other common understanding of development organizations is that governance of village administrations and the role of district governments which monitor village activities are key factors for successful regional development in Indonesia. The Australian government, for instance, conducted the DFAT/KOMPAK project which supported development of training modules and implementation of training targeting the local government officials of the Ministry of Home Affairs. In this context, as one of the major partners for Indonesian regional development, the Japanese government implemented or is implementing the following projects harmonized with policies adopted by the current government.

¹² RPJPN presented the following targets in each phase: Phase I (2005-2009) targeted National Development, Safety and Peaceful Democratic Society; Phase II (2010-2014) aimed at Human Resource Development, Science & Technology Development, and Promotion of Economic Power; Phase III (2015-2019) aims at Increase Competitive Economic Power based on Rich Natural Resources, and Phase IV (2020-2025) targets Further Development & Self-sustained Nation based on Rich Human Resources & Local Endowments.

Basic Study for Regional Development (2015)

From January to November in 2015, the Basic Study for Regional Development was conducted to collect relevant information on regional development for future cooperation to support the implementation of the RPJMN under the new government. The study reports its findings from the viewpoint of further promotion of decentralization, and industrial development in local areas and improvement of connectivity. Regarding the first point, in order to support projects financed by the Village Fund and capacity development of local government officials, technical cooperation for providing training to local government officials and facilitators was suggested. An ODA loan project for improving local infrastructure to succeed RISE was also proposed as a possibility. For the promotion of industrial development in local areas, utilizing the experience of technical cooperation, enhancing coordination among industries, academia, and government were presented, while carrying out a survey on Science and Techno Park Plan. The last was for strengthening connectivity in the country. Aiming at providing strategic and long-term support, it was suggested to conduct a survey and planning based on the experiences Japan had accumulated in the development of the eastern Indonesia. The study concluded that a consistent support, which covers preparatory surveys, technical cooperation project and infrastructural development with loan is worth to be considered.

Trial Training Program for Strengthening Local Administration (2016-2017)

Basic Study for Strengthening Local Administration, which had a component of trial training programs, was conducted by a local NGO, COMMIT in 2016¹³. The curriculum of the program was prepared with the support of Ehime Prefecture, Aichi Prefecture, UNCRD and NGOs which had good relationships with COMMIT, and universities (Ryukyu University, Nagoya University, Nihon Fukushi University and Kobe University) which had experience in conducting training. In addition to community development, capacity development of government officials to attract more enterprises and encourage investments was also conducted in this project.

Capacity Building in Engineering, Science and Technology (C-BEST) at Hasanuddin University in the Eastern Part of Indonesia (2015-2020)

As of 2018, the C-BEST training program for strengthening collaboration among industries, universities and the government is underway.

¹³ Community Initiatives for Transformation (COMMIT) is headquartered in Makassar in South Sulawesi, and has presence in six provinces in Sulawesi island, East and West Nusa Tenggara Provinces, and Maluku Province.

8.3 Noteworthy Achievements in Cooperation

The projects in the regional development sector have been designed in harmony with Indonesian policies. This section goes through the trend of implemented projects by dividing the cooperation history into four periods: (1) development study on regional master plan (the 1970s-the 1990s); (2) participatory community development (the 1990s-the 2000s); (3) capacity development for local administration (the early 2000s); and (4) poverty reduction policy (the late 2000s). Representative projects which reflect the feature of each period were selected and their scope, objectives and outputs are described in details.

8.3.1 Development study on regional master plan (the 1970s and the 1980s)

Technical cooperation for regional master plan study was executed in close relation to the development of local autonomy and implementation of regional development policies or strategies. As representative projects, the following two development studies, which were the first cooperation in Java and Sumatra respectively, are explained in detail below.

East Java Regional Study (1975)

This development study was the first regional study for developing a master plan to achieve regional development with equal distribution of benefits across Java. The study was executed with the counterpart of the then Ministry of Public Works and Electricity and BAPPEDA in the east Java province which was established in 1974 based on the Local Administration Law. After the scrutiny of the potential of development in the east Java, two strategies were proposed. One was a top-pull strategy under which the industrial sector with high potential in Surabaya plays a leading role. Another was a bottom-push strategy which focused on the improvement of the agricultural sector, including water resources in rural area.

In accordance with the strategies suggested above, the master plan proposed six priority development programs and two supplemental programs. Out of the six priority development programs, the industrial program included the “Surabaya Metropolitan Urban Development Study” (1981-1983) and ODA loan projects entitled, “Gresik Steam Power Plant Units No.3 and No.4” (1981-1983). As the water resources development program, “Wonogiri Irrigation Project” (1979), “Wonogiri Multipurpose Dam Reservoir” (1976), “Upper Solo River and Madiun River Improvement” (1985), “Brantas River Middle Reaches Improvement I, II” (1979,1981), and “Irrigation and Flood Control Facilities Improvement” (1989) were executed through ODA loans. The “Southern Coast Development Plan, East Java” (1978-1980) was implemented, targeting the southern coastal area and the agricultural sector.

North Sumatra Regional Integrated Development Plan (1988)

This master plan was formulated in four provinces to contribute to achieving development targets in REPELITA V (1989/90-1993/1994) and the National 20-year Development Plan. Since it was not practical to cover all the areas in the four provinces, the area was divided into 24 divisions and 11 priority development areas with potential based on the three criteria namely, natural condition, social

and economic condition, and location of core cities. After the selection of prioritized areas, Integrated Development Program (IDEP) for each area covering multiple sectors was designed. In total, 430 projects were planned. According to a follow-up survey conducted by JICA in 1994, all of the targeted four provinces made spatial plans based on Spatial Structure Planning Law enacted in 1992 and eight out of eleven priority development areas utilized the spatial plans. In West Sumatra Province and Riau Province, 74 projects out of 184 were under planning or executed under national or state budget. In North Sumatra Province, the “Nias Island Irrigated Agriculture Development Study” (1990-1991) was carried out.

8.3.2 Participatory community development (the 1990s and the 2000s)

In the 1990s, considering the lessons from the implementation of structural adjustment programs in the 1980s, new approaches were taken toward regional development by encouraging various stakeholders such as academics and NGOs to participate in the process of development projects. In Indonesia, to mitigate the widening economic inequality between regions, the Presidential Fund for community development was set targeting “less developed villages” which were selected based on poverty indices. As the first project implemented by participatory approach linking with NGO activities, the “Project on Strengthening Sulawesi Rural Community Development to Support Poverty Alleviation Program” (1997-2002) is discussed in this section.

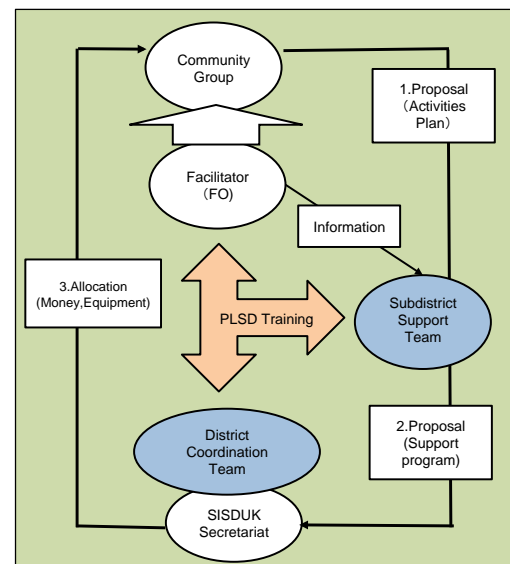
Project on Strengthening Sulawesi Rural Community Development to Support Poverty Alleviation Program (1997-2002)

With the objective of developing participatory community development approach and disseminating the approach to the South Sulawesi Province, the “Project on Strengthening Sulawesi Rural Community Development to Support Poverty Alleviation Program” was implemented from 1997 to 2002. The major activities of the project were (1) community empowerment in Takalar District, (2) development of capacity development system, and (3) formulation of training program for sharing the results of capacity development with other districts. The counterpart organizations were the Ministry of Home Affairs at the national level and Community Development Bureau (PMD) of Takalar District government.

At the initial stage of the project, decentralization had not permeated the whole country yet because a top-down approach had been common for community development in the eastern Indonesia; national government developed development programs with implementation guidelines and the local government followed them. Under such circumstances, it was no wonder that the local community did not have enough autonomy for development of their community. In fact, when the “Program for Rural Development in the Least Development Area” was launched in 1993, the implementation guideline indicated followings: establishment the mechanism for revolving funds in the village; organization of 20 local resident group, and selection of target facilities from the shopping lists on infrastructure such as road and bridge. However, it did not work well.

Considering this historical context, first, field studies were conducted in four villages in Takalar District. It started from awareness raising of the local people and to organizing communities. It took more than one year to finally design specific activities which cover the whole process from planning to implementation. As decentralization was accelerated during the project and the governor of the district started to think and make his decisions with autonomy, the project was taken positively. In the process of building a consensus on community development among stakeholders, a training program was developed on the basis of participatory local and social development method (PLSD) with the support of Hasanuddin University. The plan intends to target four actors: (1) policy maker; (2) planning officer; (3) practitioner in local government, and (4) facilitators of NGO. One notable output of this project was the launch of a new system called “Local Village Community Development Support System (SISDUK)” by which provincial governments can support activities proposed by village organizations or groups. In this system, first, village organizations are required to make a project proposal after discussion coordinated by the facilitator who was assigned to villages by this project. Next comes submission of the proposal to subdistrict manager for screening. After careful examination, only the proposal which meets requirements is sent to the coordination office of district government, and financial or technical assistance for implementation are provided to qualified village organizations. At least one third of the total project cost is financed by village organizations themselves. The SISDUK system brought a noticeable improvement in reducing months required for the proposed project to be implemented. Before, it took 18 months for the proposed projects pass through a series of red tape not only in the district government, but also in villages, cities and the national. The SISDUK system was institutionalized into the planning system by introducing the District Ordinance in 2002.

The SISDUK system was running in Palaunkanda Village, Polon Banken Utara Subdistrict, Takalar District in 2010, eight years after the termination of the project. The implemented projects in 2009 in this village were irrigation pump management, bio-gas supply, micro-credit activities, sewing group, and improvement of bridge. The average size of each project was IDR 9 million. The SISDUK enabled the district government to provide assistance not only for as-usual activities such as construction of local facilities, but also for activities proposed by the local voice. The enhancement of local participation in regional development improved economic status of the local beneficiaries.



Source: Project report

Figure 8-5: SISDUK Implementation Cycle

BOX 8-2: Participatory Development

1) Rural Integrated Development Cooperation Project in Barru District, South Sulawesi Province by JOCV Team

In Galun Village, Barru District, a JOCV team implemented participatory rural projects from 1995 to 2001. The scope of activities ranged widely from establishing Seed Center and Animal Bank to water supply facilities in rural area. These brought positive impacts on the livelihood of local community. For example, communal water supply system introduced by the JOCV team improved the access of the local to water resources.

Furthermore, the local in the village learned from JOCV projects about how to improve their living by themselves and this interaction changed local people's attitude in a positive manner, according to the head of the village.

The earnings of local people increased and so did the amount of donation to religious activities. Even after the termination of the project, some members of ex-JOCV team revisited the village to communicate with the local people and maintain good relations with each other.

2) Community Empowerment Program (CEP)

As community participatory approach under the collaboration with NGO, a community empowerment program was implemented from 1998 to 2008 by JICA with two objectives: (1) to prevent low-income households from falling below the poverty line after the Asian Financial Crisis, and (2) to promote reconstruction from earthquakes and tsunami in Aceh and Yogyakarta.

JICA supported 62 projects which were proposed by Indonesian NGOs. By region, 16 projects were conducted in Sumatra (four in North Sumatra and 12 in Aceh), one in Kalimantan, 24 in Java (four in West Java, eight in Central Java, one in East Java, four in Jakarta and seven in Jogjakarta), 21 in eastern Indonesia (ten in South Sulawesi, one in North Sulawesi, one in Maluku, six in East Nusa Tenggara and three in West Nusa Tenggara).

A closer look at 43 projects except ones conducted in Aceh and Yogyakarta shows that projects with community empowerment has the highest number (11 projects), followed by environmental conservation at community level and poverty reduction (five projects), irrigation related activities (three projects), maternal health (three projects), food processing (two projects), and others (eight projects). Most of projects aimed at poverty eradication or environmental conservation by capacity development of community.

In relation with natural disasters in Aceh in 2004 and Yogyakarta in 2006 respectively, 19 projects were implemented in total: seven projects for reconstruction; five for sanitary facilities; four for PDSP, and two for gender and one for disaster education. Those projects contributed to providing a prompt and tailored support for recovery¹⁴.

8.3.3 Capacity development for local administration (the early 2000s)

With decentralization put into effect in 2001, district governments needed to take autonomous actions and develop the capacity of local government officials. Responding to this situation, JICA conducted a project, "Human Resource Development for Local Governance I and II" (2002-2007) with the Ministry of Home Affairs and Manpower Training Institute of the ministry. The training methodology developed in this project was utilized in other projects.

Human Resources Development for Local Governance I and II (2002-2007)

This project focused on training institutes, not the local government itself. At the initial stage of the project, intensive half-a-year discussions were held among stakeholders. The followings were the discussed points: (1) effective way of conducting training program for local government staff; (2) capacity development for

¹⁴ JICA. *Indonesia's Development and JICA's Cooperation. Final Report.* 2010.

trainers, and (3) coordination between provincial government and district government. In discussion, participants were required to start from scratch, rather than relying on existing ideas.

Under the centralized governance during Suharto regime, local government officials had less chance to think and act at their own discretion but just follow what the central government decided. To change this situation, the project held a training program for district leaders to cultivate skills in finding and solving problems. The training accepted 1,800 participants, which accounts for 35% of the total district leaders.

In order to sustain the changes produced by the project, the “Training Management Guideline” was adopted by the Ministry of Home Affairs. As mentioned later, the training program developed in this project was utilized in the “Sulawesi Capacity Development Project (CDP)” Inducing local government officials to seek for improvements with autonomy was an output to be highlighted of this project.

8.3.4 Poverty Reduction Policy (the late 2000s)

In the late 2000s, Poverty Reduction Policy initiated by the World Bank and other development organizations was applied to mid-term development plan of every country. Following this trend, in Indonesia, PNPM was conducted as mentioned before. This section sheds light on two projects. One is the “Local Settlement and Infrastructure Improvement Project,” which was implemented in two stages in nine provinces based on the results of “Local Infrastructure Improvement” financed by ODA loan in the 1990s. The other is a technical cooperation, the “Sulawesi Capacity Development Project,” which was implemented in six provinces in Sulawesi islands and took a multi-stakeholder approach for community development. Since both were leading projects in this period, a nationwide dissemination of the project outputs was expected.

Regional Settlement Infrastructure and Kabupaten Strategic Area Development (RISE) (2007, 2014)

The RISE project was implemented as one of the PNPM programs under Yudhoyono government targeting areas with high poverty indices (237 subdistricts, 35 districts, and 9 provinces). The objectives were to alleviate poverty in the target areas, to achieve self-sustained regional development and to strengthen administrative capability of local government through the revitalization of local economy and improvement of the access of the poor to social services. Table 8-6 shows the outline of the RISE project.

Table 8-6: Outline of the RISE I and II

	RISE-I	RISE-II
Implementation Period	2007.3-2014.7	2014.2-2016.12
Target Area	9 provinces, 35 districts and 237 subdistricts North Sumatra, Jambi, Bengkulu, Bangka-Belitung, West Kalimantan, South Kalimantan, South Sulawesi, West Sulawesi, West Nusa-Tenggara	
Total Cost	31.56 billion yen	13.94 billion yen
Loan Amount	23.52 billion yen	10.03 billion yen
Related Organization	Implementation Agency: then Ministry of Public Works (CIPTA KALYA) Coordination Agency: BAPPENAS Related Ministry: Ministry of Home Affairs, Ministry of Maritime Affairs and Fisheries, Ministry	

	of Small, Medium Industry and Cooperative, Ministry of Agriculture, Ministry of Environment and Forestry, Ministry of Health, Ministry of Commerce
Performance	<ul style="list-style-type: none"> • Agricultural and local road: 14,156.8 km • Bridge: 37.9 km • Moorings: 286 sites • Water supply facilities: 2,843sites • Water supply pipeline: 1,631 km • Drainage facilities: 376.3 km • Dike: 39.8 km • Small irrigation system: 1,122 km • Primary health facilities (including improvement): 1,186 sites • Elementary and junior high school: 586 sites • Market Facilities: 554 sites

Source: JICA Review Team based on RISE implementation Team Report

Under the promotion of government decentralization, the PNPM program played a leading role as model of participatory rural development project. At the end of the project, the Village Fund was established and brought the project financial sustainability which was a concern before. Since the capacity development of facilitators remained unsolved, the project held a training for facilitators under the collaboration with the CDP project.

BOX 8-3: Case of the RISE project in South Sulawesi

1) Fishery project in Sinboro subdistrict, Mamuju District

In Sinboro village, construction of mooring facilities including peer and fish market was completed at the end of 2012. This enabled more fishing boats to anchor and made it easier for more fisheries exporters to buy from fishermen. The facilities also offered dealers of food and vegetables new purchasing options. As distribution of goods became smoother, new businesses such as grocery store, bean seller, fuel retailers, and Ojek (bike and taxi service) started. According to the subdistrict fishery office, the catchment volume of fisheries increased from 5,188.23 tons in 2012 to 5,965.88 tons in 2013.

2) Suspension bridge construction in Luinjon Village, Batu-Batu Subdistrict, Enrekang District

In Luijon village, farmers produced cacao and vegetables as major agricultural outputs, but road condition from agricultural field (2,000 ha) to the center of the village was not good for shipping because of complex topography. To ameliorate accessibility to the market, the suspension bridge with 25 m in length and 1.5 m in width was constructed by the RISE program. Effectiveness of transportation of agricultural products by wagon or motorcycle was greatly enhanced, leading to less transportation time. This brought more free time for farmers, which otherwise would have been spent for carrying their products.

Sulawesi Capacity Development Project (CDP) (2007-2012)

To alleviate poverty through regional development, the “Northeastern Indonesia Regional Development Program” was implemented from 2007 to 2016. The program targeted six provinces in Sulawesi island, Maluku Province and North Maluku Province¹⁵. CDP was implemented as major activities of this project. The objectives of CDP were: (1) to design a plan of regional development; (2) to create a mechanism to improve capacity for regional development, and (3) to promote development led by regional authority.

Based on the results of projects implemented in the late 1990s, a facilitator training program was carried out in six provinces in Sulawesi Island. The training program focused on (1) concept of Participatory Local Social Development (PLSD) and village development support system (SISDUK), (2) methodology of training (step-by-step training program in PKPM), and (3) effective application of results in the subdistrict manager training in North Sumatra (Action plan and Implementation). The

¹⁵ Annual average income in the eight provinces was almost half of the national annual average income.

stakeholders such as policy makers, planners of local governments, and community facilitators (most of them were NGOs) attended the training¹⁶. This multi-stakeholder approach was noteworthy in a sense that it placed an emphasis on developing capacity of each participant and encouraging thinking by themselves about development problems rather than just discussing standard subjects.

The training program was designed based on the idea of capacity development which requires participants to think for themselves starting from identifying problems to delineating plans and finding solutions. To foster autonomy, the training expenses were designed to be financed by the provincial and district budget except some training. By sharing good practices in targeted districts and cities in BAPPEDA Province (counterpart of this project) with other areas, the relationship and communication between different levels of authority were greatly improved. For this purpose, one Project officer (PO)¹⁷ was dispatched to each BAPPEDA.

BOX 8-4: CDP activities in Wakatobi District, South East Sulawesi Province

Wakatobi District in South East Sulawesi Province was newly approved as a district in 2003 where *Bupati* was a master facilitator trained in the PKPM project. Facilitator training program in six villages were conducted by the district budget soon after commencing the CDP project. Most of pilot projects proposed in the training program were about environmental conservation such as forest reserve ordinance and tree planting in Ronga village and sand reserve ordinance in Matahola village.

Planning: in September 2007, a training program in Wangi subdistrict was held. Village leaders and facilitators participated. To identify development problems, a training on the Community Based Issue Analysis was carried out (April 2008 and August 2008).

Selection of Issue for local development: After training program, three issues were selected: (1) deforestation; (2) land degradation, and (3) quality of water. Then, a field survey on present condition and interview with the local were conducted and finally the first issue, deforestation, was selected as a priority to be tackled. For example, the area of Monte Karepo Forest area was precipitously deforested from 50 ha in 1950 to 20 ha in 1980 and to 2.5 ha in 2008. The research identified a main driving factor of deforestation as the influx of immigrants who lack knowledge on intensive agriculture and therefore conducted slash and burn agriculture.

Action Plan: In September 2008, a workshop for making an action plan was held. After the workshop, the Village Action plan was made and implemented feasible activities.

Monitoring/Evaluation: From November to December in 2008, a workshop for monitoring was held. A seminar for evaluation and feedback was also conducted (April 2009).

Throughout these series of training and workshops for one year, the capacity of village leaders was greatly enhanced. In Wakatobi District, thanks to the leadership of *Bupati*, administrators in the village and the province started to act with more autonomy though there is still room for improvement.

¹⁶ 144 policy makers, 218 planners of local governments, 51 NGO members, and 3,768, community facilitators were trained.

¹⁷ Out of six POs assigned to Provincial BAPPEDA, three POs were master facilitators who participated in the training program of PKPM.

8.4 Outcomes/Impacts of Japan’s Economic Cooperation and Future Prospects

8.4.1 Outcomes/Impact of Japan’s Economic Cooperation to date

Based on the review of period-specific characteristics and noteworthy achievements of Japan’s economic cooperation in the regional development sector, major issues, direction of cooperation, implementation areas and project groups are summarized as below.

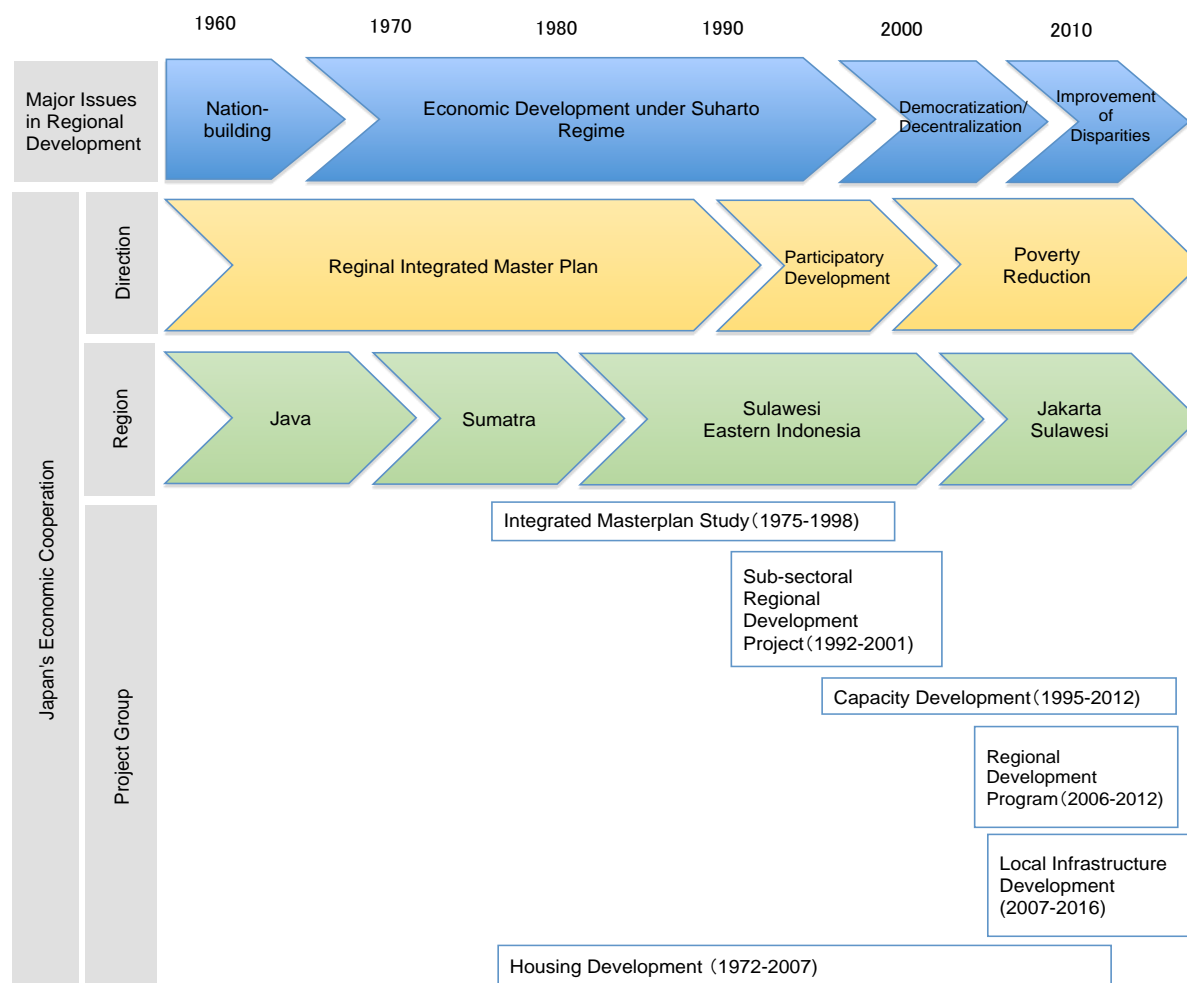


Figure 8-6: Characteristics of Japan’s Cooperation in Regional Development

(1) Formulation of integrated regional master plan by development study

From the 1970s to the 1980s, Japanese cooperation in this sector mainly supported development of integrated regional master plan targeting firstly Java, then Sumatra. After the 1990s, in response to the policy to promote development of the eastern Indonesia, the eastern Indonesia including Sulawesi became focused areas instead of Sumatra. In the 2000s, targeted area for regional development moved to Java and Sulawesi.

The characteristics of projects also changed over time. In the 1970s, at the central level, macro-economic planning models were introduced to BAPPENAS, while an integrated regional development master plan study was introduced at the local level for improving skills in planning and

coordinating with other stakeholders. In the 1980s, when the North Sumatra Integrated Regional Development Study was conducted, a management committee consisting of the Ministry of Public Works, BAPPENAS and the Ministry of Home Affairs was organized with the aim of accelerating the shift from the stage of learning the concept of regional planning to the stage of implementing it.

In the planning stage of REPELITA V (1989/90-1993/94), BAPPENAS recognized the IDEP (Integrated Development Plan) as a regional plan complimentary to the sectoral approach taken under a 5-year national development plan. The counterpart, the Ministry of Public Works, translated main part of the report into Indonesian and distributed to every ministry and BAPPEDA in each province to utilize it for delineating Provincial Spatial Design Plan¹⁸.

Dr. Sumedi Andono Mulyo (Department of Regional Development, BAPPENAS) who had studied in Japan as a scholar described the impact of JICA's cooperation for regional development as follows¹⁹:

- (a) JICA's integrated regional master plan from the 1970s to the 1980s brought opportunities for BAPPENAS staff to contemplate regional development from the viewpoint of regions, not from the national government. As a result, regional development from the viewpoint of regions became common. This is an approach unique to Japanese cooperation, comparing to other development partners.
- (b) The Japanese regional development program in Sulawesi from 2005 to 2008 contributed to improving capacity for rural development and was extended to other regions. The outcomes of these programs had a great impact on BAPPENAS in programming development plan. For example, at the designing stage of the development plan in 2008, the country was divided into seven areas for strategic regional planning, and this idea was also reflected in RPJMN (2010-2014) as the third part of the national plan²⁰.

(2) Sub-sectoral regional development project

After 1990, when strategic priority in eastern Indonesia development including Sulawesi was emphasized, ODA loans for sub-sectoral regional development projects were continuously implemented and contributed to the development of targeted regions. A project, "Rural Areas Infrastructure Development I-III" (1994-2001) was carried out as a part of poverty alleviation strategies of REPELITA VI (1993/94-1998/99). This project targeted 20,633 least developed villages in the country, and small-scale rural infrastructure development such as local road, water supply facilities, and sanitation facilities was conducted. Throughout the three phases, 19,097 villages²¹ were

¹⁸ In 1992, the Ministry of Public Works (at that time) established the Spatial Planning Law (Law No.25/1992) so that provincial governments formulate provincial spatial design plans. According to the JICA follow-up study report for regional integrated master plan published in 1994, 8 IDEPs out of 11 were priority areas in the provincial spatial design plan.

¹⁹ JICA. *Indonesia's Development and JICA's Cooperation. Final Report*. 2010.

²⁰ This planning system was utilized by the succeeding RPJMN (2015-2019).

²¹ As the total number of villages is calculated by accumulation of the villages referred to in JICA evaluation reports, some villages might be counted multiple times.

covered. According to the post evaluation study, regional disparities were mitigated through increase in income and improvements of health condition of beneficiaries.

Table 8-7: Outcome of Local Infrastructure Improvement I, II and III

Phase	I		II		III	
Target region	21 Provinces 3,457 villages		21 Provinces 7,580 villages		14 Provinces Total 8,060 villages	
	Village	Performance	Village	Performance	Village	Performance
Road (soil, sand)	1,397	9,981 km	6,570	25,584.5 km	3,704	11,934 km
Bridge	781	36.9 km	3,631	142.8 km	1,846	70.85 km
Pier	320	937 sites	872	1,120 sites	244	471 sites
Water supply	1,077	9,210 sites	3,069	23,409 sites	816	4,064 sites
Sanitary facility	463	3,929 sites	2,796	12,048 sites	469	1,968 sites
Small irrigation facility	—	—	216	3,078 sites	981	1,423 km
Agro-market facility /Agro-processing		—	157	2,295 sites		—

Source: JICA Review Team based on JICA post evaluation report

(3) Multi-stakeholder approach for regional development

As decentralization was promoted after 2001, the approach of cooperation taken by JICA was different from other development partners. While most of donors focused on supporting a single stakeholder such as the national government or communities, JICA targeted multiple stakeholders. For instance, JICA supported projects to develop planning skills of provincial and district authorities with consultation of the Ministry of Home Affairs and BAPPENAS, and to create a mechanism to enhance coordination between administrators and beneficiaries. This multi-sector approach was complementary to other donors' activities²².

One of the successful assistance adopting multi-stakeholder approach was SISDUK (later called Takalar Model), a coordination mechanism between local government and community, which was developed in the "Project on Strengthening Sulawesi Rural Community to Support Poverty Alleviation Programmes". SISDUK was adopted by the local ordinance of Takalar District in 2002. In addition to the introduction of the system, activities such as supporting community activities under the district budget and employing facilitators had a great impact on the succeeding JICA projects to enhance community participation. These activities contributed to the promotion of government decentralization and in 2010 SISDUK won an OTODA AWARD (empowerment sector).

In the case of "Sulawesi Capacity Development Project (CDP)", COMMIT was established as an association of facilitators in 2012. COMMIT carried out capacity development for facilitators by the periodical task force meetings or dialogues with government officials and BaKTI. COMMIT also rendered Third Country Training Program such as Afghanistan, Bhutan, and Myanmar and received

²² Ministry of Foreign Affairs of Japan. *Country Assistance Evaluation of Indonesia*. 2008.

observation visits and trainees from other eastern Indonesian regions. At the final stage of the project, a coordination activity with the RISE project was promoted²³.

The “Regional Infrastructure for Social and Economic Development (RISE-I)” and “Rural Settlement Infrastructure and Kabupaten Strategic Area (RISE-II)” were conducted from 2007 to 2016 and succeeded in enhancing social bonds among villagers and ownership of the village by holding participatory planning activities through Sector Discussion Group (KDS) and implementation of projects through Village Financial Institution (LKD) in KSK area. Improvement of water supply facilities and construction of communal restrooms contributed to the decrease in incidence of infection via water and amelioration of sanitary condition. According to the consultants involved in this project, 95% of the targeted villages were satisfied with the performance of the RISE²⁴.

Regarding human resources development for regional development, several regional development projects were carried out by JICA, having offered training to 6,200 local government officials and 4,800 facilitators of NGO. The number of participants in training in Japan amounts to 114. Also, an ODA loan project, “Professional Human Resources Development II” provided scholarships to study for higher degrees in Indonesia, and around 70% of the master degree graduates of the project were local government officials²⁵. By enhancing capacity development not only for national government officials, but also for local government officials and facilitators of NGOs, Japan’s cooperation contributed to sustainable development of Indonesia.

(4) Housing development

Since the 1970s, cooperation on housing development in the metropolitan area had been provided under various schemes including long-term expert dispatch. In the 1990s, RIHS was established by grant aid together with technical cooperation as a core facility for development of manpower and construction technology. RIHS contributed to the development of low cost housing in Jakarta and Surabaya and made a guideline for earthquake-resistant housing. In relation to the standard of earthquake resistance, RIHS participated in the International Network of Architecture and Housing for Disaster Prevention which was initiated by Japan²⁶.

(5) Relationship and mutual trust between Indonesia and Japan

JICA’s cooperation for regional development contributed to cultivating mutual trust between Indonesia and Japan. For example, *Bupati* of Barru District described the community development project executed by JOCV team from 1995 to 2002 as follows:

²³ Training program was executed in Bone District, South Sulawesi Province.

²⁴ JICA. *Chiho sector kiso chosa (joho shushu kakunin chosa) [Data collection survey on the Regional Development Policy/Program in Indonesia]*. 2015.

²⁵ Ministry of Public Works and Housing. *Inspiration of PNPM-PISEW Implementation 2008-2013. Summary Report*. 2015.

²⁶ For example, RIHS participated as a panelist in an international symposium, “Protecting Lives from Earthquake and Tsunami Disasters” held in 2012 organized by UNESCO and others.

“To be honest, I did not know about activities of JOCV before. Barru District was far from the urban area and relatively poor, but I thought local activities gained momentum by interacting with JOCV team. In particular, nursery center, animal bank, and water supply brought remarkable improvement of the living in the village. Although the JOCV team consisted of volunteers, not professionals, their achievements were marked as distinction. They also built good relationships with villagers as if they were family members in the village. The activities of JOCV played a role of sowing seeds for future economic activities of the village. Poultry farming, for instance, was firstly introduced by the JOCV and now the activity grew into a good cycle in which corn processing companies for feeding poultries buy corns from farmers, sell them to farmers for farming after processing and buy poultries again from farmers.”

The head of village told that even after the termination of the project, the interaction of villagers with the JOCV was continued and had a positive influence on the living of villagers.

The good relationship among stakeholders built by the past projects is evidenced by the fact that many villagers who remember the projects gathered and treated the review team with warm hospitality during the site visit in Takalar and Jenepono Districts. Similarly, the long-term cooperation enabled Japan to build long lasting relationships with Indonesian counterparts such as BAPPENAS, the Ministry of Public Works, and Provincial Government of South Sulawesi even after the cooperation. Toward further cooperation for the eastern Indonesia development, the COMMIT was established by the CDP project as mentioned earlier.

8.4.2 Implications for future cooperation

Future cooperation for regional development should be coordinated with the RPJMN steered by the Joko Widodo administration which seeks to tackle following regional development obstacles: (1) industrial development in regions other than Java island; (2) improvement of nationwide connectivity; (3) human resource development for local industry development, and (4) institutional improvement for industrial development and investment.

This chapter concludes with implications extracted from the overview of the cooperation history as described below:

(1) Comprehensive support from planning to implementation

For sustainable regional development of Indonesia, it is important to provide comprehensive support from planning to implementation with emphasis on promotion of local industry and poverty reduction based on Japan’s experiences. Because Japan has an edge on delineating blueprints of regional development from the long-term viewpoint, it is expected to utilize its know-hows particularly in the development of the eastern part of Indonesia where private-led development is difficult.

(2) Support for capacity development of local government officials and facilitators

The collaboration and coordination between the national and local governments have been critical for regional development, but they have not been fully established yet. To promote it, stakeholders at each level need to recognize each role with appropriate demarcation. Especially, the needs to support capacity development of local government officials and facilitators remain high. In addition, for

strategic capacity development of local government officials, increasing the number of loan or grant scholarships targeted to local government officials can be one option.

(3) Utilization of Japanese experiences

Toward the balanced regional development, future cooperation should be designed in the form of utilizing past Japanese experiences for regional development since both countries have similar natural conditions like island countries with many active volcanoes. There is room left for cooperation in mitigating the gap widening between cities and rural areas in Indonesia or between Java and the other islands.

Providing technical cooperation on formulating environment, energy, and disaster prevention policies as well as introducing a method for sustainable local development like one-village-one-product activity and/or *Michi-no-Eki* (a roadside rest area providing not only parking spaces and restrooms, but also tourism-related goods and services) in which Japan has an advantage is one possible option. In addition, as explained earlier in “(1) Comprehensive support from planning to implementation,” Japan needs to support the Indonesian government with long-term view to implement their policies. Also, future cooperation for regional development needs to consider maximizing synergy effects by coordinating with the scheme of Public Private Partnership for supporting Japanese SMEs in overseas and JICA Partnership Program involving Japanese local governments.

(4) Exploitation of the past assets

Japan’s cooperation over 50 years has deepened mutual understandings between Indonesia and Japan on regional development. This long history of collaboration therefore can provide a good foundation in implementing future projects. In the places where projects were carried out in the past, a close relationship with counterparts is maintained, which can be utilized in the future cooperation. From the viewpoint of country to country cooperation, reinforcing existing relationships needs to be kept in mind.

For example, in the eastern Indonesia, maritime infrastructure improvement projects under the scheme of ODA loan were implemented, following a master plan study. Based on these past activities, conducting a survey on existing small and medium port facilities will be effective to strengthen connectivity. Also, based on the experience of “Higher Education Development Support Project (HEDS)”, building a new partnership with universities in Papua and Maluku as strategic partners for regional development is worth considering. In the case of HEDS project, capacities of teaching staff and students in the universities were developed under the collaboration of eleven universities in Sumatra and West Kalimantan. North Sumatra University (USU) and Bandung Institute of Technology (ITB) played a pivotal role in the project, and training/scholarship in Japan and a domestic scholarship program were implemented under technical cooperation and ODA loan. By setting Hasanuddin University, Surabaya Institute of Technology, and Gadjah Mada University as resource universities, a project to strengthen collaboration or develop a network among the universities in Maluku and Papua might be effective for the development of the eastern part of Indonesia. Japan’s rich experiences of collaborating with universities in Indonesia can provide a steppingstone for designing future cooperation for capacity development for regional development.

Chapter IX Agriculture/Food Security

9.1 Summary¹

The history of Japanese cooperation in the sector of agriculture and food security in Indonesia is divided broadly into two phases, one in the 1970s and the other after the 1980s. Until the 1970s, agricultural development cooperation was implemented sporadically mainly in irrigation and related areas in target regions, seeking to grasp the situations and the needs of the country. In the 1980s, the direction of cooperation became clearer, and the comprehensive agricultural program named “Umbrella Cooperation,” which combined financial cooperation and technical cooperation, was implemented in three phases by 2000. From the 2000s, with the increase in GDP, agricultural cooperation has become a part of poverty reduction program. Accordingly, projects to improve distribution systems and related to regional resources have been implemented. At this time, due to globalization, emerging infectious diseases such as avian influenza (which is a zoonotic disease) have become a major concern from the viewpoint of socio-economic loss. Against this background, projects focused on improving animal health were implemented. Thus, agricultural and food security sector has responded to the priorities and the needs of the times.

(1) Agriculture

The effectiveness of Japan’s cooperation in irrigation was very significant from the viewpoint of agriculture and food security. Irrigation projects were closely related to increasing food production in general, particularly rice production which was a top priority of the country at that time. More than 50 ODA loan projects on irrigation facility development were implemented from 1970, expanding irrigated areas by approximately 370,000 ha. Along with the development of irrigation facilities through ODA loan projects, cooperation to sustain the outputs produced by facilities development was realized. One example is the establishment and capacity development of water users associations to ensure proper maintenance of irrigation facilities by farmers and local engineers who actually use the facilities.

In addition, the Umbrella Cooperation, which was implemented in three phases, was a program-type cooperation implemented by linking multiple cooperation schemes for the first time. The First Umbrella Cooperation (1981-1985) aimed to increase rice productivity. The Second Umbrella Cooperation (1986-1990) aimed to increase *Parawija*² crops (intercrop) production in addition to rice. The potato and soybean production targeted in the program increased during this period and contributed to increasing food production. The Third Umbrella Cooperation (1995-2000) aimed at “improving the standard of living of farmers.” However, because of the Asian Financial Crisis and a crop failure, the contents of the project were drastically changed due to the change in the agricultural policy.

¹ The agriculture and food security sector includes agriculture, irrigation, food, livestock, sericulture and fisheries.

² Parawija means rice equivalent food crops such as corn, soy bean, cassava and potato.

In addition, package type cooperation to Bogor Agricultural University (IPB) began in 1977 and continued until the 1990s. At first, it started as cooperation between the two governments, but it came to develop as person-to-person and university-to-university cooperation during the long-term cooperation. Currently, IPB has concluded an academic partnership with many universities in Japan. In addition, two Science and Technology Research Partnership for Sustainable Development (SATREPS) projects are in implementation as of 2017³.

In Indonesia, the President Joko administration continues to place high priority on ensuring food security, and correcting income and regional disparities. In addition, the President prioritizes the development of agribusiness, sustainable agriculture, and benefits to farmers. Moreover, development of irrigation system is placed as a means to achieve these goals. Irrigation projects have been continuously implemented since the “Brantas Delta Irrigation Rehabilitation Project” in the 1970s. In 2017, two loan agreements were signed for the ODA loan projects of Rentang Irrigation Modernization Project and Komering Irrigation Project as two model projects for modernization of irrigation system⁴. In addition, a market-oriented agriculture promotion project is being implemented from the standpoint of strengthening public private partnership (PPP), and it is contributing to the promotion of agriculture, which is a key industry.

Table 9-1: Overview of the Agriculture/Food Security Sector in Japan’s ODA

Period	1960s	1970s and early 1980s	Late 1980s	1990s	From the end of 1990s	From the end of 2000s
	Nation-State Building	Economic Development	Structural adjustment	Growth until the Asian Financial Crisis	Democratization and Decentralization	Middle Income Countries
Historical Context	<ul style="list-style-type: none"> • Cold War • ASEAN (1967) • Inauguration of President Suharto • Green Revolution • Oil dependent economic development 	<ul style="list-style-type: none"> • First Oil Crisis (1973) • End of Vietnam War (1975) • Second Oil Crisis (1979) 	<ul style="list-style-type: none"> • Plaza Accord (1985) • Reverse Oil Crisis (1986) • End of Cold War (1989) 	<ul style="list-style-type: none"> • Asian Financial Crisis (1997) • Export-oriented economic growth (until 1997) • Outbreak of avian influenza in Asia (1997) • Crop failure by El Niño (1998) 	<ul style="list-style-type: none"> • Laws on local autonomy (1999) • Millennium Development Goals (2000) • Election of President Yudhoyono by direct election (2004) 	<ul style="list-style-type: none"> • Japan-Indonesia Economic Partnership Agreement (2008) • G20 Accession (2008) • Jakarta Commitment (2009) • Sustainable Development Goals (2015) • Global Maritime Axis Doctrine (2014-) • One Health (2016-)

³ “The Project for Ecological Studies on Flying Foxes and Their Involvement In Rabies-related and Other Viral Infectious Diseases” and “The Project for Development and Implementation of New Damage Assessment Process in Agricultural Insurance as Adaptation to Climate Change for Food Security.”

⁴ The Rentang Irrigation Modernization Project aims at improvement and maintenance of the Rentang Irrigation District in West Java Province. The amount of loan is approximately 48.3 billion yen. The Komering Irrigation Project (Phase III) aims at enhancing and improving irrigation facilities and strengthening maintenance management systems in Komering Irrigated District of South Sumatra and Lampung Provinces. The amount of loan is approximately 15.9 billion yen.

Period	1960s	1970s and early 1980s	Late 1980s	1990s	From the end of 1990s	From the end of 2000s
	Nation-State Building	Economic Development	Structural adjustment	Growth until the Asian Financial Crisis	Democratization and Decentralization	Middle Income Countries
Situation of the Sector	<ul style="list-style-type: none"> From food imports to self-sufficiency 		<ul style="list-style-type: none"> Achievement of self-sufficiency in rice (1984) Food diversification 	<ul style="list-style-type: none"> Re-import of rice after the achievement of self-sufficiency Correction of income and regional disparities Food diversification and quality improvement 	<ul style="list-style-type: none"> Food import Farmer income disparities Food diversification 	<ul style="list-style-type: none"> Emergence of larger scale farming/ farmers Re-achievement of self-efficiency in rice
Priority Development Issues in the 5-Year Development Plan	<ul style="list-style-type: none"> Production of and self-sufficiency in rice Expansion of remote islands (the latter of 1970s-) 	<ul style="list-style-type: none"> Self-sufficiency in rice and food diversification New rice field development and migration policy 	<ul style="list-style-type: none"> Improvement of farmers' income Poverty reduction and correction of regional disparities Emergency food production increase (1998-) 	<ul style="list-style-type: none"> Improvement in farmers' income Strengthening food security through food production Food diversification Agro-industrialization 	<ul style="list-style-type: none"> Improving food sovereignty by self-sufficiency and expansion of food production Agroindustry promotion Correction of regional disparities Regional development 	
Direction of Japan's Cooperation	<ul style="list-style-type: none"> Increase of food production Food aid Expansion of agriculture field by irrigation system 	<ul style="list-style-type: none"> Increase of food production and diversification Expansion of agriculture field by irrigation system 	<ul style="list-style-type: none"> Improvement of farmers' incomes as a goal, but in reality emergency food production by importing rice 	<ul style="list-style-type: none"> Stable food supply and income improvement as a poverty reduction program 	<ul style="list-style-type: none"> Maintaining and disseminating outcomes of past cooperation including Third Country Training 	
Outcomes	<p> 【Agriculture】 Umbrella Cooperation as a pioneer in comprehensive program assistance Contribution to increased food production by expanding irrigation area Strengthening animal health and livestock technology Strengthening IPB (Bogor Agricultural University) </p> <p> 【Fisheries】 Promotion of fishery industry by improving fishing ports </p>					

Note: Dashed lines in the section of outcomes indicate the impact/ spillover effect from the previous period.

Regarding the livestock subsector, cooperation for animal health and breeding implemented from the latter half of the 1970s is the field where Japan had technical advantage. The subsector made steady progress by adopting new technology transferred through intensive input into hub institutions. Artificial insemination was among the most focused area for technology transfer, having been introduced by a project started in 1986 and strengthened by following projects until 2002. Third Country Training and South-South Cooperation were implemented after the completion of technical cooperation. It is expected that Indonesia will disseminate the technology of artificial insemination to Asian and African countries, as Indonesia's specialty.

(2) Fisheries

Japan's cooperation in the fisheries subsector has aimed at increasing protein intake by the cooperation in aquaculture and management of the fishery resources. Regarding the development of fishing ports, Jakarta Fishing Port has a 40-year history of the cooperation covering from the construction design projects in the 1970s to the rehabilitation projects which were completed in 2012. The total aid amounts to approximately 16 billion yen. The projects which were implemented so far included the improvement of environment and the improvement of fishing port infrastructure such as quay, breakwater, cold storages and wastewater treatment system. In addition, the cooperation including the technology of aquaculture also contributed to laying a basis for aquaculture system, changing regions and targets from the latter half of the 1970s. The technology of aquaculture in Bali spread to the surrounding areas and contributed to the development of regional economies. The Joko administration started in 2015 has listed the "Maritime Axis Doctrine" as the important strategy for the development of economy based on the rule of law in the ocean, economic development based on sustainable marine fishery resources in Indonesia, and international presence as a maritime nation. Therefore, the Ministry of Maritime Affairs and Fisheries plans to develop marine fisheries centers on the 15 outer islands close to the border. At the request of the Indonesian government, the Japanese Government plans to support the development of the Integrated Marine and Fisheries Centers and Fishing Market in six outer islands (Sabang, Natuna, Morotai, Moa, Saumlaki, and Biak) with rich fishing grounds and high potential for fisheries development. It is expected that the program will develop the fisheries facilities and markets to contribute to economic development in outer islands through development of fisheries subsector and improvement of living standard of fisheries communities.

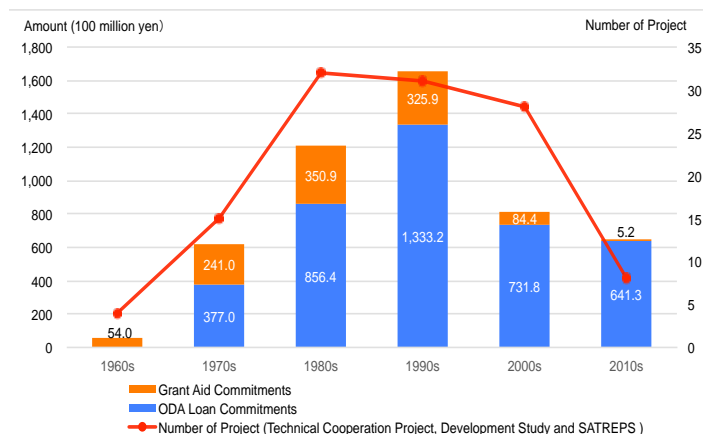
9.2 Historical Context and Japan's Cooperation

9.2.1 Number of projects and commitment amounts

Beginning with food aid projects in 1968, projects for the agriculture and food security sector has been undertaken with various schemes such as technical cooperation, ODA loan, grant aid, and development study for approximately 50 years.

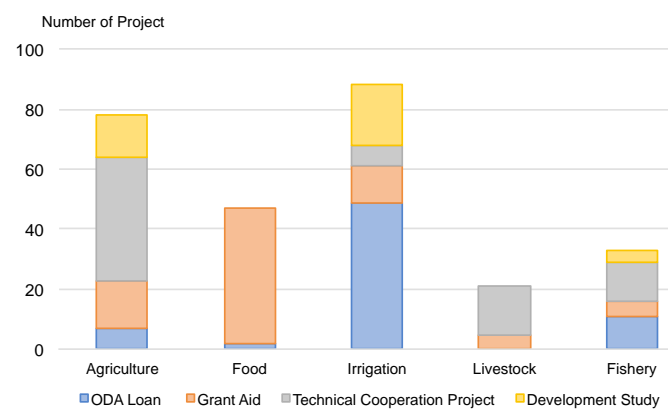
There have been 271 projects implemented in the sector as of December 2017, which can be broken down into 77 technical cooperation projects, 39 development studies, 70 ODA loans, 83 grant aid projects, and 2 SATREPS projects.

Figure 9-1 summarizes the amount of commitments for the agriculture and food security sector and the number of projects in other assistance schemes for every 10 years. The breakdown by subsector is: 79 agriculture projects; 47 food projects; 89 irrigation projects; 21 livestock/ sericulture projects, and 34 fisheries projects (Figure 9-2). The number of projects, and the aid commitments of ODA loans and grant aid under the sector increased steadily with the increase in agricultural and irrigation projects from the 1960s to the 1990s. The total amount of ODA loan was over 100 billion yen in the 1990s, with the largest number of irrigation projects reaching 35 projects in the 1990s. The number of projects has decreased from the 2000s. However, the total number of projects was always over 40 between the 1970s and the 2000s.



Source: JICA Review Team

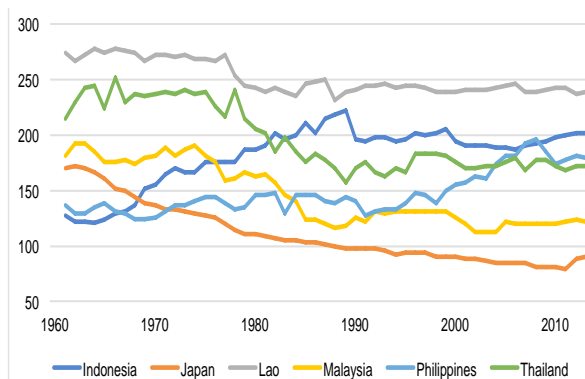
Figure 9-1: Commitment Amounts of ODA Loans and Grant Aid (E/N base), and the Number of Technical Cooperation (Technical Cooperation Project, Development Study, etc.) and SATREPS by Decade



Source: JICA Review Team

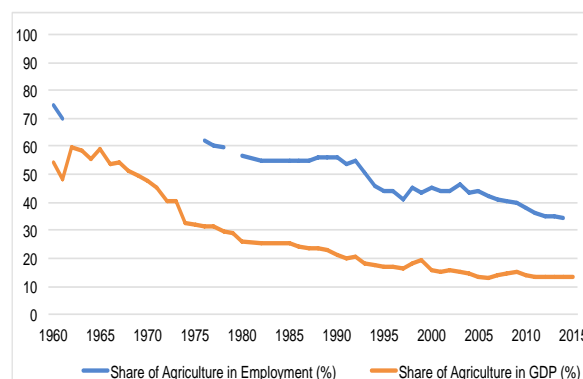
Figure 9-2: Number of Cooperation Projects for the Sector of Agriculture and Food Security by Scheme and Subsectors

The agriculture and fisheries are major industries in Indonesia, which supply food, and contribute to the livelihoods of many people. The rice supply quantity, 201.8 kg per capita (2013) is especially large compared with 89 kg per capita in Japan (2013) where rice is a staple food in the same way as Indonesia. Thus, rice plays a major role as an identity of the Indonesian people (Figure 9-3). The following figure shows the position and transition of the agriculture sector.



Source: FAOSTAT

Figure 9-3: Rice Supply Quantity (kg/capita/year)(Country Comparison)



Source: FAO, World Bank, ILO, BPS

Figure 9-4: Position and Transition of the Agriculture Sector

The food supply, especially rice, was the top priority in Indonesia during the President Suharto administration between the 1960s and the 1970s when Japan started the cooperation. As the food production increased and supply stabilized, the agriculture sector as the main industry that occupied more than 50% of GDP in the 1960s was gradually replaced by the manufacturing industry, and the share of agriculture in GDP fell. Meanwhile, about 30% of the working population is still engaged in the agriculture sector. With food diversification and advancement of society as a middle-income country, improvement of livelihoods, besides stable food supply, is expected through increasing productivity, adding high value, and the promotion of industrialization.

9.2.2 Period-specific characteristics of Japan's economic cooperation for Indonesia in the agriculture sector/food security

In this section, the situation of the agriculture and food security in Indonesia and support of the Japanese government for Indonesia are summarized by period.

- From the 1960s to the first half of the 1980s: Implementation of irrigated area expansion projects, focusing on food aid and increasing production which began as postwar reparations
- The second half of the 1980s: Implementation of projects including a comprehensive program such as the Umbrella Cooperation for increased food production and diversification, improved farmers' livelihoods, and improved regional disparities (early period)
- The 1990s: Implementation of projects including a comprehensive program such as the Umbrella Cooperation for increased food production and diversification, improved farmers' livelihoods, and improved regional disparities (later period)
- From the end of the 1990s: Support to reduce poverty and correct regional disparities
- From the end of the 2000s: Cooperation to improve food sovereignty and reduce poverty

(1) From the 1960s to the first half of the 1980s: Implementation of irrigated area expansion projects, focusing on food aid and increasing production which began as postwar reparations

1) Situation of the sector

In the first half of the 1960s, the agriculture sector occupied more than 50% of GDP and 70% of employment in Indonesia, and rice was a main product. Securing stable food supply, especially rice was an urgent issue, and rice self-sufficiency had consistently been the top priority since independence. In the first Five-Year Development Plan (REPELITA I: 1969/70-1973/74), the increase of rice production by consolidating in Java island and the development of new rice paddy in non-Java islands, especially in Sumatra island were undertaken. With the goal of increasing rice production and self-sufficiency, the rice production increased by 24% during the planned period and the food production was increased by consolidation, and by developing new agricultural land in the remote islands. REPELITA II (1974/75-1978/79) focused on processing agriculture products and natural resources. Ensuring self-sufficiency in rice, creating employment opportunities in the rural areas, and strengthening capacity of agricultural workers were priorities. The plan took a comprehensive rural development approach. It aimed at increasing rice production in outside Java island along with an immigration policy. The following REPELITA III (1979/80-1983/84) aimed to achieve fair distribution of the development outcome, rapid economic growth and social stability, and production consolidation in Java and expansion in the outer islands as well as the diversification. It promoted the reduction in dependence on rice and the diversification of food consumption forms. Regional development, development of regional adaption crops, farmer's organization, and agricultural products processing began at the time. Rice production steadily increased, and the year of 1984 saw the achievement of the rice self-sufficiency.

2) Major efforts by Japan

Japanese cooperation was in line with the top priority in Indonesia, increase in the food production. Japan focused on exploring the cooperation needs until the 1970s. Placing food aid, irrigation focusing on rice, food production increase and stable food supply as cooperation core, support was provided through technical transfer and restoration of agricultural technology and agricultural inputs (aid to increase food production), and development in irrigation-related areas. In line with the non-Java island migration policy of the government, cooperation in the development of non-Java islands was also carried out on Sumatra island, Sulawesi island and Kalimantan island, and it laid the base for future projects such as a regional development program of Sulawesi. In this way, the cooperation contributed to the promotion of "Green Revolution," and the increase of production by improving productivity. In the 1980s, the need for assistance became clearer. The concept of implementing and collaborating on agricultural projects comprehensively led to the implementation of the Umbrella Cooperation later on.

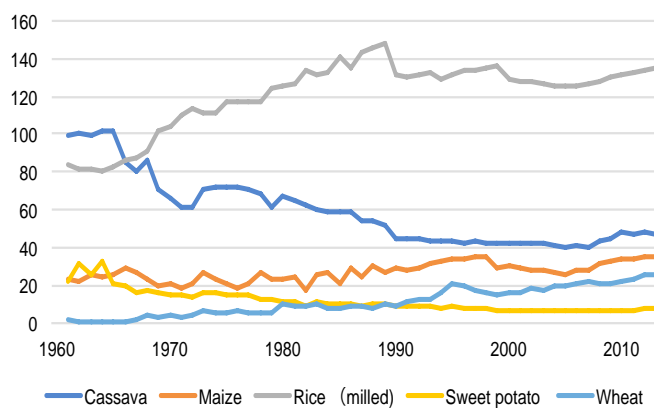
The cooperation to increase supply of animal protein, which was an issue in the livestock and fishery field, started. In the livestock subsector, cooperation in animal health began in 1977. The Animal Health Center was constructed in Medan and Lampung by grant aid, and technology related to investigation and diagnosis of animal diseases was improved based on these centers, and Third Country Training started from 1984. In the fisheries subsector, both technical cooperation to fisheries

and development of fishing ports began to cope with the increase of fishery consumption. A fishing port was constructed in Jakarta after the loan aid, “Development of Tuna Fishery Bases” in Aceh and Bali. The Jakarta fishing Port was intermittently supported by ODA loans more than nearly 40 years until 2012. The technical cooperation, “The Mariculture Research and Development Project” (1978-1986) was also carried out in Serang, West Java Province, to enhance human resources who are engaged in aquaculture.

(2) The second half of the 1980s: Implementation of projects including a comprehensive program such as the Umbrella Cooperation for increased food production and diversification, improved farmers’ livelihoods, and improved regional disparities (early period)

1) Situation of the sector

In the mid-1980s, the food consumption of Indonesia, especially by urban residents, diversified by income rise. The consumption of major crops other than rice increased, and the demand for animal proteins such as meat, milk, eggs, and seafood began to increase. The diversification of the production



Source: FAOSTAT

Figure 9-5: Food Supply Quantity (kg/capita/year)

therefore began to be justified. In REPELITA IV (1984/85-1988/89), the goals were to: a) increase the level of nutrition; b) increase employment opportunities; c) increase production of agricultural products to supply raw materials to domestic industries, and d) maintain social harmony with natural resources and environmental conservation. Based on these goals, the four main pillars of the agricultural development strategy were developed, which were efficient use and new development of existing agricultural land, diversification of cultivated crops, and recovery of cultivated land decreasing in fertility.

2) Major efforts by Japan

Japanese cooperation continued to support Indonesian policy. “The First Umbrella Cooperation” (1981-1985) strengthened the direction of comprehensive cooperation in the agriculture sector. “The Second Umbrella Cooperation” (1986-1990) targeted the increasing production of major crops such as potato and soybeans in addition to rice. As the target areas, ten provinces were selected from Java island, Sumatra island, and Sulawesi island. Projects on irrigation, water management and proper agricultural mechanization were continuously carried out from the First Umbrella Cooperation through strengthening crop protection, post-harvest treatment and distribution improvement. The growth of potato and soybean seed aimed at the growth and distribution of good seeds was conducted in the early 1990s after the end of the Umbrella Cooperation period.

In addition, the cooperation in the livestock subsector started in earnest since this time. The cooperation in animal health began from the latter half of the 1970s, and Japan began to cooperate with the Veterinary Assay Laboratory from the mid-1980s to the early 1990s to provide high-quality veterinary medicines stably. Moreover, the technical cooperation “Strengthening of Artificial Insemination Center Project” (1986-1995) was implemented as the cooperation for improvement of livestock production. In this project, the Singosari Artificial Insemination Center located in East Java Province was implemented for nine years with several extensions. An after-project care (2000-2002) was also conducted. Cooperation for aquaculture in the fisheries subsector was also started and a technical cooperation project, “Strengthening the Research and Development of Coastal Aquaculture Project” (1988-1993) in Lampung Province was implemented, following the technical cooperation, “The Mariculture Research and Development Project” (1978-1986). The technology of disease management and production of young shrimp was developed, and it contributed to the shrimp aquaculture industry by providing technology to private enterprises.

(3) The 1990s: Implementation of projects including a comprehensive program such as the Umbrella Cooperation for increased food production and diversification, improved farmers' livelihoods, and improved regional disparities (later period)

1) Situation of the sector

After the 1990s, the share of the agriculture in the GDP fell to about 20%, but it still occupied about 50% of the employment. At the same time, the gap between the agricultural and the industrial production, and between the urban and the rural income widened. Improving farmer's income thus became an urgent issue. However, in 1998, a food crisis occurred due to a failure to increase production according to the demand, the Asian Financial Crisis in 1997, and the massive drought due to El Niño, and the country needed to import more than 5 million tons of rice. The importance of the stable supply of rice was thus reaffirmed. On the other hand, the demand for food consumption increased further, and the consumption of meat, dairy products and fishery products increased. Therefore, the livestock and fisheries industries were also promoted. REPELITA V (1989/90-1993/94) emphasized the use of agricultural resources and the correction of the regional disparities, aiming to build a more balanced economic structure. The government focused on production of agricultural primary commodities such as rubber, coffee, palm oil, and other agricultural products rather than food because these primary commodities can ensure foreign currency acquisition and employment. The following REPELITA VI (1994/95-1998/99) emphasized the shift from the improvement of productivity to the poverty alleviation with quality improvements and diversification of agriculture. The agroindustry focusing on agricultural processing, which can be expected as the effects of the diversification of crops, attracted considerable attention under the situation focusing on the improvement of the farmers' incomes. However, in 1998, as mentioned earlier, Indonesia came into a situation where mass import of food was inevitable, and an emergency food production plan was implemented.

2) Major efforts by Japan

The scope of Japanese cooperation was expanded from rice, soybeans, and potatoes to quality improvement, diversification, and added values of vegetables, livestock products, and marine products. To improve the standard of living of farmers, the Third Umbrella Cooperation was implemented, incorporating ongoing projects. The central-level and regional-level projects were implemented until the emergency food production project by the conversion of the agricultural policy in 1998. In the livestock subsector, technical cooperation, the “Dairy Technology Improvement Project” (1997-2002) was conducted, which was a cooperation to improve dairy technology in the field. The aquaculture industry in the fishery sector was focused on shrimp cultivation. Therefore, in order to flexibly correspond to changes in the market and environment, technical cooperation, “Research and Development for the Multispecies Hatchery” (1994-1999) was started in Bali. It was cooperation for seedling production other than shrimp, tailored to the regional characteristics, and the cultivation technology of milk fish and grouper fish was developed. The project brought mass production of milkfish. As a result, small-scale fishermen on the coast who depended on primitive fishing methods came to produce and provide juvenile fish by themselves.

(4) From the end of the 1990s: Support to reduce poverty and correct regional disparities

1) Situation of the sector

Agriculture occupied about 15% of GDP after the 2000s, but still occupied about 45% of the employment in Indonesia. In addition to responding to the market economy that was gradually becoming globalized, the stable supply of rice, the importance of which was reaffirmed, was a challenge in addition to improving farmer’s income. In addition, the consumption of protein was still low, and the demand for livestock and fishery products was expected to increase along with economic growth, and production expansion was also expected. In the National Development Program (PROPENAS) (2000-2004), the increase in income of producers and stable food supply were raised as priority issues, and food production and diversification of food were set as strategies. The program included: a) agribusiness development (development of irrigation nets and participation in agriculture and village development); b) improvement of food reserves, and c) water development and management. The National Medium Term Development Plan (RPJMN) (2005-2009) stated that it would revitalize the agricultural and fisheries industry to create employment in agriculture and fishing villages and contribute to economic growth. Many agricultural protection policies began. The main agricultural policies included: a) price cooperation policy; b) fertilizer subsidies; c) seed subsidies; d) provision of credit to farmers; e) promotion activities; f) development of new varieties; g) development of irrigation facilities, and h) additional rice distribution with subsidies.

2) Major efforts by Japan

In response to the above issues in Indonesia, Japan conducted a development study, “The Support Program for Agriculture and Fisheries Development in the Republic of Indonesia” (2002-2005) as the

successor of the Umbrella Cooperation based on the policy and situation in Indonesia. “Stable Food Supply and Improvement of Nutrition ” was aimed from a national economic perspective, and “Raising the Income of Farmers and Fishermen and the Vitalization of the Rural Economy” was aimed from a regional economic perspective. For the former, the programs for: a) improvement of the agricultural system and production support; b) improvement and maintenance of infrastructure for agricultural production, and c) sustainable utilization of fishery resources, were launched. Furthermore, programs for d) promotion of agricultural fishing villages and e) improvement and strengthening of the market of agricultural and fishery products were set up for the latter. Action plans of the five programs were developed. As a result, cooperation for agriculture, fisheries and livestock fields functioned as cooperation for “measures against poverty” through “the program for stable supply of food.” Along with the improvement of food security policy planning and implementation, and improvement of agricultural management and distribution systems, the eastern part of Indonesia development projects based on regional resources were also implemented to correct regional disparities. Thus, while the production of rice was maintained, a new agricultural policy aimed at diversifying crops began. This was largely related to the standard of living of farmers. Redressing economic disparities between local cities and rural areas, Java and the others (especially the eastern part of Indonesia), was an important issue.

In the livestock subsector, in response to the change of dietary habits in Indonesia from the late 1990s, technical cooperation on improvement of livestock production technology was implemented through feed management and feed production. The technical cooperation projects, the “Dairy Technology Improvement Project” (1997-2002) and the “Regional Resource Utilization Dairy Technology Promotion Plan” (2004-2007) supported dairy farming, and the “Beef Cattle Development Project Utilizing Local Resources in the Eastern Part of Indonesia” (2006-2011) contributed to correcting the disparities between the east and the west with beef cattle production. Also, in the fisheries subsector, technical cooperation, the “Freshwater Aquaculture Development Project in Indonesia” (2000-2007) in Jambi was carried out and contributed greatly to the increase in production by disseminating the tilapia aquaculture to small fishermen. The production volume of aquaculture began to equal fishery production at that time, and now the amount of aquaculture is more than double of fishery production⁵.

(5) From the end of 2000s: Cooperation to improve food sovereignty and reduce poverty

1) Situation of the sector

The number of farming households decreased from 31.2 million to 26.1 million in ten years from 2003 to 2013. On the other hand, the average size of each farmer is enlarged, and the number of large-scale farmers is increasing. The food production increased steadily, particularly in the rice from 2005 to 2013, with a 3.5% increase per year, and re-achieved rice self-sufficient by 2007⁶. The production of

⁵ Ministry of Maritime Affairs and Fisheries. *Indonesia Marine and Fisheries Book*. 2017.

⁶ Policy Research Institute, Ministry of Agriculture, Forestry and Fisheries of Japan. *Indonesia: shuyou nosanbutsu no jukyū to nogyo seisaku. [Indonesia: Supply and Demand for Major Agricultural Products and Agricultural Policy.]* 2016.

corn also reached 18.5 million tons in 2013, which met the domestic needs of 17 million tons in 2013. This is said to be attributed to the increase in the yield by high-yield varieties and the revival of fertilizer subsidies. On the other hand, shortage of infrastructure such as irrigation facilities, shortage of farmland and human resources, regional disparities, and urban and rural disparities are raised as issues. For further sustainable economic development, agroindustry promotion and raw material supply to bioenergy are emphasized.

In response to the National Long-Term Development Plan (2005-2025) and RPJMN (2010-2014) in the second term of the President Yudhoyono administration which started in 2009, the Ministry of Agriculture drafted the agricultural development plan (2010-2014). The main goals of this plan are: a) establishing a sustainable self-sufficiency system for food, b) food diversification, c) increasing added value, competitiveness and exports of the agricultural products, and d) improving the welfare of farmers. The government also announced a long-term economic development plan, “Masterplan Acceleration and Expansion of Indonesia Economic Development, 2011-2025.” The policy had eight programs, including 22 major economic activities. In particular, it stipulates “establishment of a global distribution hub for agricultural products, fishery products, and other natural resources by 2025, and establishment of its position as one of the world's leading food suppliers” as some of the goals.

After the regime change to the President Joko administration in 2015, food security is positioned as one of the priority areas for the national development, and the goal is to improve food security and self-sufficiency rate through expansion of agricultural production such as rice while emphasizing on redressing regional disparities and establishing a stable society. The two major goals that the Ministry of Agriculture will tackle are agroindustry promotion and improvement of food sovereignty. Indonesia, based on the open economy, aims to improve the quality and quantity of domestic agricultural and livestock production. Therefore, by increasing the degree of processing, it seeks for producing high-value added products in the agriculture and livestock industries. The vision of the Ministry of Agriculture is “achieving sustainable agricultural and bio-industrial systems that create a variety of wholesome food and high-value added products based on regional resources to improve food sovereignty and farmers’ incomes.” The seven general policies to be implemented are: a) raising self-sufficiency rates in rice, corn, and soybean, and increasing the production of meat and sugar; b) promotion of competitive products, export products, import alternatives, bio-industrial feedstocks; c) strengthening systems related to seed, farmers, technology, popularization, quarantine and food security; d) development of agricultural areas; e) focusing on strategic products; f) infrastructure development and agroindustry development in rural villages as foundations for sustainable bio-industry development, and g) good governance and bureaucracy reform. The characteristic of the administration is to highly focus on the ocean policy. This can be seen from the five pillars of the concept of maritime axis set up at the time of the inauguration of the government. The following five pillars are comprehensively considered: a) improvement of maritime defense; b) maritime diplomacy; c) management of marine resources; d) development of maritime infrastructure, and e) rebuilding maritime culture. Among these, the priority development strategies in the fisheries subsector are: a) improvement of added value and technological innovation; b) improvement of

infrastructure; c) promotion of law on fishery management; d) sustainable fishery management, and e) improvement of living standards of coastal fishermen.

2) Major efforts by Japan

Although the number of cooperation projects in Japan reduced, cooperation for agriculture, fisheries and livestock industry continued for reducing poverty and correcting disparities through program of stable food supply after the latter half of the 2000s. The following technical cooperation projects were implemented in relation to the shift from the production of rice and major crops to quality improvement of diversified crops and high-value added products: “Standardization and Quality Control for Horticulture Products of Indonesia (Improvement of Thermal Treatment Technique against Fruit Flies on Fresh Mango)” (2009-2013); the “Project for the Improvement of Countermeasure on the Productive Diseases of Dairy Cattle” (2008-2011); “Technical Assistance to Small and Medium Enterprises in Indonesian Fish and Shrimp Industry” (2008-2011), and the “Project for Sustainable Indonesian Fisheries Product Competitiveness” (2008-2011). Also, a project to improve distribution systems started by Public Private Partnership such as the technical cooperation, “Public-Private-Partnership Project for the Improvement of the Agriculture Product Marketing and Distribution System” (2016-2020). Thus, projects with a new direction are being implemented. These projects contribute to improving the standard of living of farmers through improvement of production and processing technologies for agricultural and fishery products that meet market needs, and improvement of distribution systems. Also, the Fishing Port in Larantuka, East Flores District, East Nusa Tenggara Province, established through a grant aid project, “The Project for Promotion of Sustainable Coastal Fisheries” (2007), is highly evaluated by the Indonesian government as one of the models of rural development.

In the latter half of the 2000s, a grant aid project, “The Project for Improvement of Animal Health Laboratories for Diagnoses of Avian Influenza and Other Major Diseases of Animals” and a development study, “Project for Improvement on the Vaccination Program for Avian Influenza Control in Indonesia” (2007-2009) were started in 2007 from the viewpoint of livestock quarantine due to the emergence of new infectious diseases associated with the globalization and concerns for the outbreak of avian influenza in Indonesia. This led to the establishment of Disease Investigation Center (DIC) with the latest facilities in Subang, West Java Province. In addition, the technical cooperation “Project on Capacity Development of Animal Health Laboratory” (2011-2015) was implemented to improve diagnostic ability of livestock diseases. As a result of the project, the center was certificated by the International Organization for Standardization (ISO), resulting in achieving global standard technology.

9.3 Noteworthy Achievements in Cooperation

The following five examples are covered as representative examples of cooperation.

(1) The Umbrella Cooperation is a program cooperation, which pioneered inter-scheme collaboration and was implemented three times from 1981 to achieve comprehensive goals. It covered from the stage of identification and development of projects to that of implementation and follow-up.

(2) Komerang irrigation project had a very significant impact on the improvement of farmer's income and enhancement of production in paddy fields through continuous cooperation in irrigation by Japan for more than 30 years. It contributed to the enhancement of food production, particularly rice which was a priority issue in Indonesia. Phase III, the final stage, will be carried out to provide water to the farmland that does not supply irrigation water, and renovate the facilities developed by Phase II.

(3) Cooperation for Bogor Agricultural University (IPB) was undertaken to develop advanced human resources in the agricultural sector. In the long-lasting cooperation, the relationship developed beyond the inter-governmental framework, and a cooperative relationship between Indonesian and Japanese universities was developed. At present, IPB has established an academic partnership with many Japanese universities to implement various projects including SATREPS.

(4) In the livestock subsector, technological improvement of Singosari Artificial Insemination Center was realized through intensive technology transfer, and the center grew to be able to conduct Third Country Training and South-South Cooperation.

(5) Jakarta Fishing Port in the fisheries subsector, to which long-term cooperation was provided since the 1970s, contributed not only to the fisheries subsector including the creation of employment for women in Indonesia, but also to the Japanese diet.

9.3.1 Comprehensive Umbrella Cooperation for increasing food production

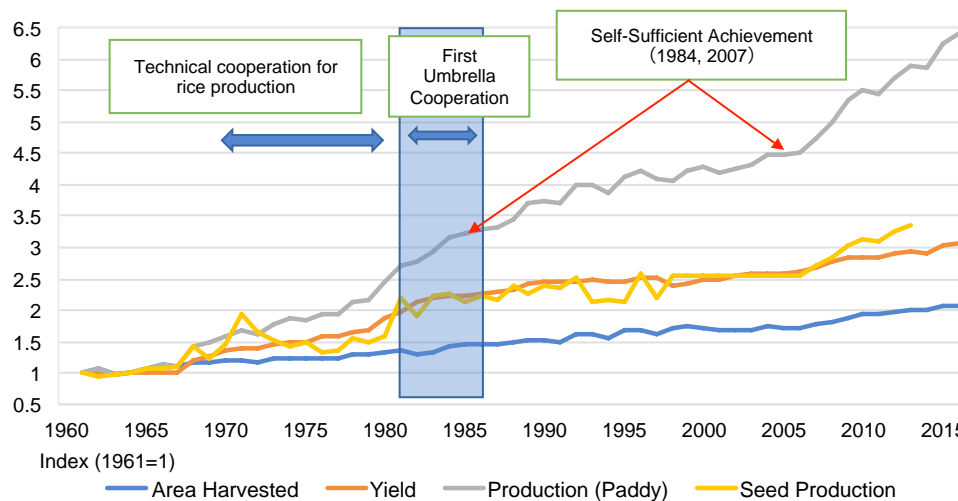
The First Umbrella Cooperation (1981-1985): As mentioned earlier, variety of problems arose with increasing production. Among them, the pest damage caused by rice brown planthopper from the late 1970s to the 1980s was a particularly serious problem affecting rice production. To cope with this problem, an agreement on the cooperation of enhancement of rice production has been concluded, and the First Umbrella Cooperation, which aimed at increasing rice production through a comprehensive combination of measures such as productivity improvement by improving irrigation management system, crop protection by pest control, and increase of yield by post-harvest technology started. The results showed that the yield increased dramatically between 1979 and 1982, contributing to the achievement of self-sufficiency in rice in 1984.

The fields covered were: 1) growth and distribution of good seeds, 2) enhancement of crop protection; 3) regional verification and exhibition of technology; 4) irrigation and water management, and 5) improvement of post-harvest. The cooperation was provided in a combination of these fields. The

target sites were eight provinces: Aceh, South Sumatra, Lampung, West Java, Central Java, East Java, South Kalimantan and South Sulawesi. The cooperation includes the following features.

- a) The cooperation was carried out by combining various types and fields of cooperation in order to achieve larger policy targets and the development challenges such as self-sufficiency in rice that was difficult to achieve in a single project.
- b) The cooperation strengthened collaboration between financial (loan and grant aid) and technical cooperation (development study, technical cooperation, dispatch of experts, acceptance of trainees, etc.) in order to enhance efficiency and produce effects at an early stage.
- c) Through a comprehensive and continuous implementation system, consolidation between projects was realized to maximize effects of each project and enhance synergies.

In the field of crop protection, cooperation was carried out in the package of technical cooperation, grant aid, and development study. The technical cooperation “Food Crop Protection Project” (Phase I: 1980-1987, Phase II: 1987-1992) was implemented until 1992 including Phase II to establish a system to strengthen crop protection. The followings were the features of the project. First, the headquarters placed in the Ministry of Agriculture could be directly connected to the field, and the project site was distributed across the country according to the purpose. Secondly, the ecological research was emphasized. Finally, the cooperation with infrastructure projects such as the grant aid project, “Pest and Disease Forecasting Control Project” in which a pests forecast center, eight crop protection centers, and 26 pest outdoor laboratory facilities were developed. There was an outbreak of brown grasshopper during the rice production promotion plan from the latter half of the 1970s, and the damage was serious. For this problem, a prediction system and a new control method were established. This project not only produced research results but also contributed to human resources development. Phase II increased target crops. It also improved the level of the assistant counterparts dramatically, and disseminated the project results through comprehensive pest management training for local communities and Third Country Training. It was highly evaluated by the Indonesian side. The technology of crop protection contributed to growing the rice production by disseminating the method to farmers. The production and distribution of good seed were also an important program for raising yield. After a development study, a distribution network for the production was strengthened with both grant aid and loan. At this time, there were two peaks of seed production, which were the first half of the 1970s and the first half of the 1980s. The first peak coincided with the time when projects such as enhancement of food production in West Java were implemented. The second peak occurred when there was a significant increase in rice yield and the production during the First Umbrella Cooperation was implemented, indicating the contribution by the Umbrella Cooperation.



Source: FAOSTAT

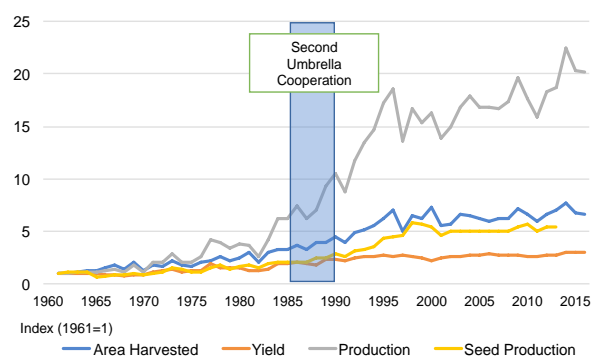
Figure 9-6: Transition of Rice Production

The Second Umbrella Cooperation (1986-1990): After the First Umbrella Cooperation, there were differences in the direction of agricultural development between Java and the other areas; while in Java island, an emphasis was placed on the industry with development of high-value added products by effective use of water and land, and agricultural development centering rice along with development of related infrastructure was expected in the other areas. Against this background, the Second Umbrella Cooperation was implemented to increase main food crop such as rice, soybeans and potatoes, the demand of which was increasing. In order to increase the production of the major food crops, including Parawija crops, the cooperation was combined with technical and financial cooperation. The target fields were: a) enhancing production and distribution of good seed; b) strengthening crop protection; c) regional verification and exhibition of technologies; d) irrigation and water management; e) improving post-harvest, and f) appropriate agricultural mechanization. The target sites were as follows: (1) rice production in ten provinces, which were Aceh, North Sumatra, South Sumatra, Lampung, West Java, Central Java, East Java, Yogyakarta, South Kalimantan, and South Sulawesi; (2) potato in five provinces, which were Jambi, West Java, Central Java, East Java, and South Sulawesi; (3) soybeans in five provinces, which were Jambi, South Sumatra, East Java, Bali, and North Sulawesi. Production of potatoes and soybeans increased during the project period, which can be attributed to the enlargement of the area and seed production, and technology transfer. During the same period, the growth rate of agriculture and fisheries industries in Indonesia increased (average growth rate of 4.5% from 1987 to 1989 compared to 3.8% from 1969 to 1989). The rural poverty rates also declined (from 40% in 1976 to 14% in 1990). The enhancement of the production of soybeans and potato seeds was enabled by



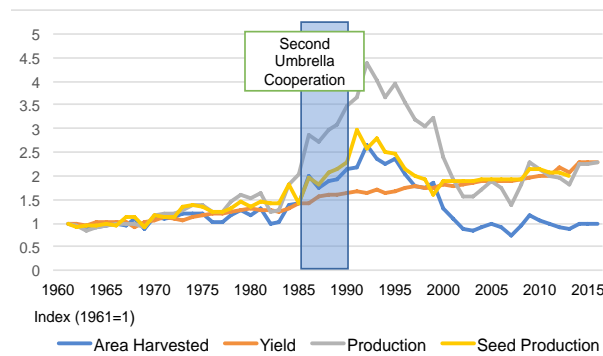
Potato Seed Center Constructed by the Cooperation

technical cooperation projects, “The Seed Potato Multiplication and Training Project” (1992-1997) and “The Quality Soybean Seed Multiplication and Training Project” (1996-2003), both of which were implemented after the end of the Second Umbrella Cooperation period.



Source: FAOSTAT

Figure 9-7: Transition of Potato Production



Source: FAOSTAT

Figure 9-8: Transition of Soybean Production

The Third Umbrella Cooperation (1995-2000): In the early 1990s, the “Third Umbrella Cooperation” was developed, which was aimed at improving farmers' incomes rather than production of agricultural products. The gap between industrial and agricultural productivity disparities as well as urban and rural income disparities was growing. Therefore, by targeting improving the standard of living of farmers as the top priority, it sought for maintaining and developing agriculture and implementing counter measures against poverty. Indonesian organizations such as BAPPENAS, and the Ministry of Agriculture, and the then Ministry of Public Works worked together when the programs were developed. Three goals were set: a) to improve agricultural productivity; b) to improve the quality of agricultural products and diversification, and c) to add value to agricultural products. The projects consisted of central projects and regional projects. The central projects were implemented uniformly at the central level, such as human resources development and promotion of basic test research. On the other hand, the regional projects consisted of some projects that met the needs of each model region, including the establishment of local adaptation technologies. The main target crops were rice, soybeans, and potatoes, but fruit trees, vegetables, livestock products, and inland water fisheries were also included. Four regions were selected from a viewpoint of strengthening their agroecological systems (agricultural conditions that comprehensively reflect nature, economic and social conditions) and a degree of potential or needs for agricultural development. As a result, irrigated region (South Sulawesi Province), highland region (West Java Province), low land (rainfed agriculture) region (West Nusa Tenggara Province), and swamp region (South Kalimantan Province) were selected. The activity consisted of the following eight components: a) human resource development for policy planning and improvement of administrative capacity; b) improvement of research capacity for appropriate production technology development cooperation; c) development of agricultural dissemination system for improvement of farm management and agriculture diversification; d) development of irrigation drainage facilities and improvement of water resource management system; e) development of systems for agricultural credit efficiency; f) fostering and strengthening farmers' organizational activities; g) post-harvest activities to increase added value of agricultural products, and h) rural infrastructure development. However, by the Asian Financial Crisis, the poor rice harvest brought a major food crisis for two years from 1997 to 1998, resulting in importing

5 million tons. The Indonesian government therefore shifted agricultural policy to increasing the production of staple food, which were rice, soybean and corn, as an emergency measure until 2001. The Umbrella Cooperation also made changes to the plan. From October 1998, two districts were selected from each of West Java and South Sulawesi Provinces as model areas to implement model farm projects such as cooperation for improving living standards of farmers. Thus, the functions of the Umbrella Cooperation became limited.

The technical cooperation “Project for Improvement of Agriculture and Training System” (1996-2002), which was implemented after the change of the administration, aimed to promote agribusiness and food security. Facilitators identified targeted farmers’ challenges, and extracted good examples, then these examples were utilized for training and dissemination. As a result of conducting training tailored to local needs, the project achieved good results. This was also consistent with the promotion of agroecological system, which continued to be discussed in the future policy.

BOX 9-1: Inherited Cultivation Techniques

The Third Umbrella Cooperation was completed in 2000. The technical cooperation project, “The Seed Potato Multiplication and Training Project ” implemented to increase Parawija crop production was superseded by the “Development of High Quality Seed Potato Multiplication System Project” (1998-2003) to establish a growth system. Production was increased after a series of projects and the transferred technology is still practiced at the project site (Figure 9-7). The development and culture techniques which were established painstakingly at that time have been maintained to date. The project site has become a base for the dissemination of potato cultivation and nationwide popularization, and conducts activities for distribution of cheap potato seeds, successful development of new varieties that are strong for various diseases, and continued internship training of about 100 vocational schools, farmers, government agencies and even overseas organizations. As a secondary effect, farmers started to develop and sell processed potato to improve livelihoods by themselves. Also, surrounding areas started agro-tourism for regional development⁷.



Processed potato

9.3.2 Komerling Irrigation Project (ODA Loan)

With the aim of achieving self-sufficiency, the government promoted irrigation development under several successive national development plans from 1969. In total, 86 cooperation projects on irrigation facilities were carried out in Indonesia by 2015. Regarding ODA loan, beginning with the “Brantas Delta Irrigation Rehabilitation Project” in 1970, 34 ODA loans, which amounts to 260 billion yen, were provided. The expanded irrigated area reached about 37,000 ha. Together with the Rentang Irrigation Modernization Project which will be described later, Japan has provided cooperation in the five largest irrigated areas in Indonesia and greatly contributed to improving rice production. The yield per unit area of rice increased from 1.15 to 1.45 times, and the planting rate became 1.46 times. By 2011, it became possible to make double or triple cropping in more than 50% of regions. In addition, the dissemination of improved varieties also contributed greatly to production in “Green Revolution.”

⁷ Interview with the Director of the Potato Seed Center (November 2017).

Improved varieties have rapidly spread from 1965, which is attributable to the expansion of irrigation facilities. As a result, production increased by 200% approximately (annual rate of 5.7%), yields increased by 134% (annual rate of 4.1%), and harvested area increased by 35% (annual rate of 1.6%) for 21 years from 1967. Cooperation for such irrigation projects began in 1970 from the “Brantas Delta Irrigation Rehabilitation Project” in East Java. Subsequently, the “Ular River Flood Control Project” (1971) and the “Way Jepara Irrigation Project” (1973) were implemented, focusing on Java and Sumatra islands. From the 1980s, irrigation facilities development has been implemented on the islands other than Java and Sumatra. In the early 1990s, small-scale irrigation management projects were implemented in the eastern part of Indonesia, where development was delayed, in order to increase production and farmers' incomes, and to contribute to regional stability. In the early 2000s, a project was also implemented to strengthen the restoration and the maintenance of existing irrigation facilities (Rehabilitation and Capacity Improvement Projects) mainly in Java, Sumatra and Kalimantan. This section reviews the Komering Irrigation Project, describing its output and future prospects based on its historical impact.

The History and Outcome of Komering Irrigation Project

Komering District is located in two provinces of South Sumatra and Lampung, Sumatra island, and is located in 200 km north of Palembang which is the provincial capital of South Sumatra. The main purposes of this project were: 1) increasing and stabilizing grain production; 2) food diversification; 3) improvement of agricultural production by expanding irrigated farmland; 4) strengthening existing facilities, and 5) introduction of participatory irrigation management systems including monitoring systems. The continued cooperation in Indonesia for more than 30 years brought about a significant impact on increasing farmers’ income and rice production in paddy fields.



Komering Irrigation Project Puru Jaya Headworks (Source: Nippon Koei)

This project is based on the master plan formulated by JICA’s technical cooperation in 1979. In the Phase I (1990), about 21,000 ha was irrigated sourcing from the River Komering flowing out of Lake Ranau through developing Purjaya head works, sedimentary pond (3 locations), primary canal (30.5 km), and secondary canal (Restoration of the former Belitang main canal: 67 km).



Komering irrigation facility

The Phase II of the loan signed in 1995 was carried out in two stages, between 1997 and 2001 (Phase II (1)), and between 2006 and 2015 (Phase II (2)). The irrigation development of approximately 24,000 ha was realized in the Phase II (1), and about 1,400 ha in the Phase II (2), totaling 5,900 ha since the Phase I. The Komering Irrigation Project is the fourth largest irrigation project in Indonesia as of today (about 70,000 ha), contributing to the production of 887,000 tons of rice in 2015. This also means that the project has made

the largest contribution to the rice supply in western Indonesia. The project also enabled production in a dry season, and production quadrupled from about 31,000 to 138,000 tons. The yield increased from 2.5 tons/ha to 6.3 tons/ha (rainy season). As a result, the project has contributed not only to poverty reduction through increasing employment opportunities and incomes of farmers, and improving living standards through enhancing education and welfare of local people as well as the revitalization of the regional economy, but also to food security⁸. The Phase II (2) of this project focused on: a) a more advanced technical approach for improvement of productivity; b) strengthening the ability to develop projects that have been cultivated continuously from the master plan and strengthen their management methods; c) enhancement of transparency and consistency in managing and implementing projects, and d) high sustainability considering the environment in mind was implemented.

Future Prospects and Spillover Effects

An agreement to implement Komerling Irrigation Phase III was signed in 2017 as a new loan aid, and an expansion of areas by approximately 8,500 ha and renovation of facilities developed by the former projects including head works are currently planned. Despite forthcoming challenges such as increasing water resources and managing water allocation, it is expected to improve farmer's living standards and contribute to food security through increasing rice production by continuous expansion of irrigation areas.

In addition, the President Joko Administration has positioned food security as one of the major policies in the National Medium-Term Development Plan (2015-2019), and it aims to increase rice production and ensure sustainable food security through renovation of existing irrigation facilities and development of new irrigation districts. The goals are: a) new irrigation development, 1 million ha; b) rehabilitation of existing irrigation facilities (facilities for surface water irrigation, groundwater irrigation, tidal wetland drainage, and fishing pond feed): 3 million ha; c) improvement of irrigation facilities operation and management: 7.3 million ha, and d) development of new water resources for construction of new dams.

In addition, the new goal of irrigation is "irrigation modernization." The strategy for irrigation modernization has been consolidated as following five pillars through self-examination that has been carried out internally within the Department of Water Resources, Public Works and Housing Ministry: a) management of water sources; b) improvement of irrigation facilities; c) improvement of irrigation management system; d) strengthening institution development, and e) human resources development. Irrigation modernization projects for Komerling and Rentang signed in 2017 are model projects for modernization. Activities including modernization of facilities, construction of water management systems, and enhancement of personnel and organizations will be implemented to water cooperatives that supervise tertiary irrigation facilities at the end. In addition to the active employment of local engineers fostered in the previous cooperation, it is expected to contribute to achieving policy targets by applying the latest knowledge of Japan to realize efficient water distribution with the water management system utilizing a telemetering and tele-control system.⁹

⁸ Nippon Koei. *Komerling Irrigation Project Phase II (2) Report: Project Brief*. 2015.

⁹ Interview with Mr. Yoshiharu Minoura and Mr. Yutaka Matsumoto (Nippon Koei) (July 2017).

9.3.3 Package type cooperation to Bogor Agricultural University (IPB)

As cooperation for the development of advanced human resources in the agricultural sector, a package type project to Bogor Agricultural University (IPB) began in 1977, and continued until the 1990s. IPB is located in Bogor City of West Java Province, about 60 km away from Jakarta, which is one of Indonesia's oldest national universities with the highest academic standards in agricultural education and research in the country. The technical cooperation project, “Agricultural Products Processing Pilot Plant Project, Bogor Agricultural University” (1977-1984), the first cooperation, was initially implemented as a part of agricultural technical cooperation, and plant installation and technical cooperation related to agricultural engineering were undertaken. Later, grant aid was provided in 1983 and 1984 to provide research equipment and construct facilities, ODA loans were provided in 1989 and 1994 for construction of facilities in the agricultural department, and grant aid was provided in 1996 for equipment provision. In addition, in cooperation with the technical cooperation, “Academic Development of the Graduate Program at the Faculty of Agricultural Engineering and Technology, Institute Pertanian Bogor” (1988-1993) to enhance university education in the agricultural sector and to increase degree holders, the Third Country Training for Asia and Africa was also conducted (1998-2000).

The outputs of a series of package type cooperation were as follows: a) improvement of internal efficiency in education; b) qualitative and quantitative expansion of graduate school education, and c) strengthening of research activities. Figure 9-9 shows that the number of papers published steadily increased since the project began. Also, the cooperative relationship developed through the projects between IPB and Japan remains in various forms. The most notable is sending/ accepting IPB lecturers to study for higher degrees in Japan. Japan accepted the highest percentage of IPB

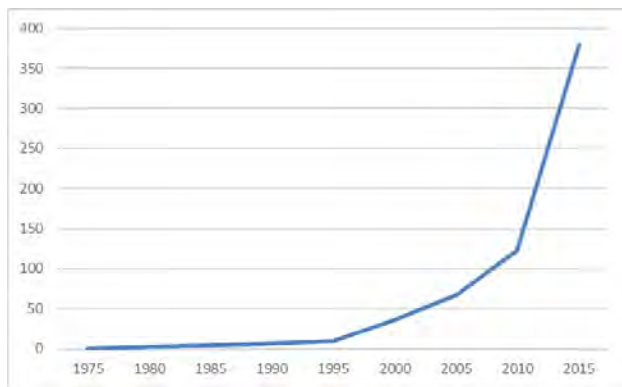


**Faculty of Veterinary Medicine
constructed by Japan's cooperation**

lecturers who have studied abroad; 16% of them have graduated from universities in Japan (Figure 9-10). IPB concluded an academic partnership with many universities in Japan, and has conducted technical exchanges and joint research. For example, satellite classes have recently been established at Kyoto University and Nara Institute of Science and Technology to improve mutual education.

In addition, as a SATREPS project, “Project for Ecological Studies on Flying Foxes and Their Involvement In Rabies-related and Other Viral Infectious Diseases” in which IPB and Japanese universities collaborated, established a biosafety-level 3 research facility in IPB, which could bring more diverse and higher research. Moreover, “The Project for Development and Implementation of New Damage Assessment Process in Agricultural Insurance as Adaptation to Climate Change for Food Security” is also implemented as SATREPS. Thus, the relationship initially started between the governments grew into a cooperative relationship between individuals as well as universities through the long-term cooperation¹⁰.

¹⁰ Interview with Dr. Herry Suhardiyanto, Rector (at that time) of Bogor Agricultural University (July 2017).



Source: Bogor Agricultural University

Figure 9-9: Number of IPB Papers Published

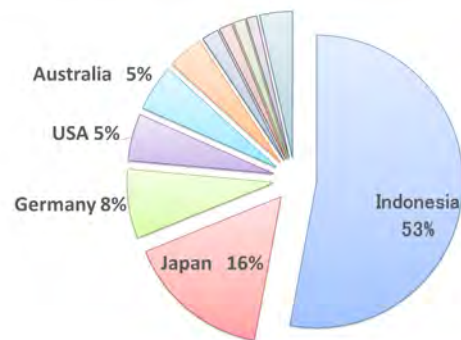


Figure 9-10: IBP Lecturer Final Education

IPB currently lists five agendas: a) food; b) energy; c) ecology; d) poverty eradication, and e) biomedicine. It develops and provides new high-yield rice varieties in academic and technical aspects, and sells the rice and avian influenza vaccines as business. Through these efforts, IPB contributes to food security in Indonesia.

9.3.4 Technical cooperation for artificial insemination

Cooperation for animal health and breeding improvement technology implemented since the latter half of the 1970s is the area of Japan's specialty. The cooperation was implemented for improving the technology by intensive input to public institutions. Outcomes such as stable supply of high quality livestock cattle, improvement of the quality of frozen semen and its supply system, and technical service (disease diagnosis, medical test, etc.) were produced by transferring technology to centers. In particular, the technical cooperation "Strengthening of Artificial Insemination Center Project" (1986-1991) was undertaken at the Singosari Artificial Insemination Center from 1986, and the project was carried out for a long period of time including its follow-ups (1991-1993, 1993-1995) and after-project care (2000-2002). The center accepted trainees from ASEAN countries and Africa in the Third Country Training projects, "ASEAN Training Course on Dairy Husbandry Technology" (2003-2005) and "Artificial Insemination Project" (2006-2009), and shared knowledge, technology and know-hows transferred from Japan with other developing countries.

Outcome

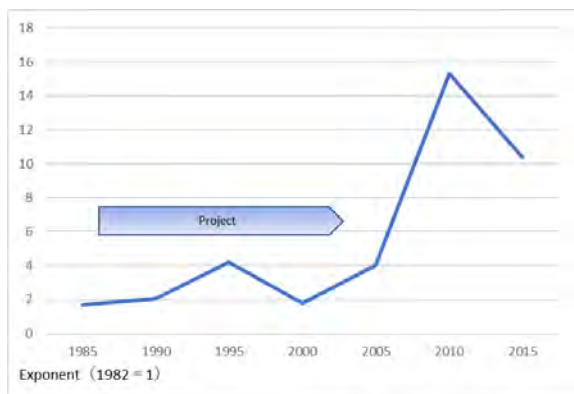
In the above "Strengthening of Artificial Insemination Center Project" the preparation of frozen semen, enhancement of the ability to assess pregnancy and artificial insemination were focused.

From 1986, the Center conducted various training programs, including pregnancy appraisal, reproductive disorder, frozen semen handling, and feed preparation for more than 9,000 trainees in Indonesia and abroad. The center conducted a wide range of activities including feed analysis, sperm sex appraisal, preservation of fish spermatozoa, livestock tourism, livestock business consulting, and research services for master and doctorate program and also campus programs. Currently, 3,500,000 units of frozen semen are being produced annually under ISO 9001, and the total number of frozen

semen produced reached 37,000,000 units as of 2015, which were distributed nationwide. In the third country training conducted through the improvement of artificial insemination techniques in Indonesia, lectures and practical training for animal artificial insemination to dairy cows were carried out. The training conducted between 2007 and 2009 contributed to the capacity development of 57 trainees in 19 countries. After the Third Country Training, some countries (Vietnam, Sudan, and Zimbabwe) which participated in the training requested opportunities to participate in a regular training program due to the increased recognition for the importance of capacity development in the area.

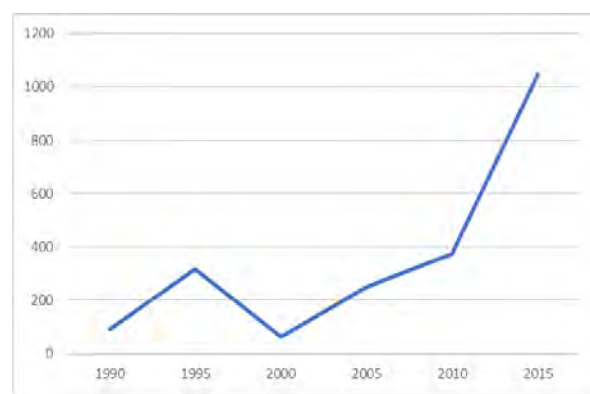
South-South Cooperation

In recent years, the technology of artificial insemination, which were cultivated over more than 30 years in Indonesia, has led to South-South Cooperation. From 2015, Indonesia has been providing cooperation for Kyrgyzstan, which had performed old artificial insemination methods after the collapse of the Soviet Union, to improve its reproductive technology¹¹. The cooperation is planned to be implemented in Suriname in South America, and it is expected that the technology will be utilized and disseminated worldwide as strength of Indonesia. Figure 9-11 shows the number of frozen semen production and Figure 9-12 shows the transition of participants in the training at Singosari Artificial Insemination Center from the beginning of Japanese cooperation. Since the start of the artificial insemination project in 1986, the number of production has been on the rise, and the number has increased dramatically from the end of after-project care in 2002. In addition, the center started accepting trainees from around 1990 and the number has been steadily increasing.



Source: Singosari Artificial Insemination Center

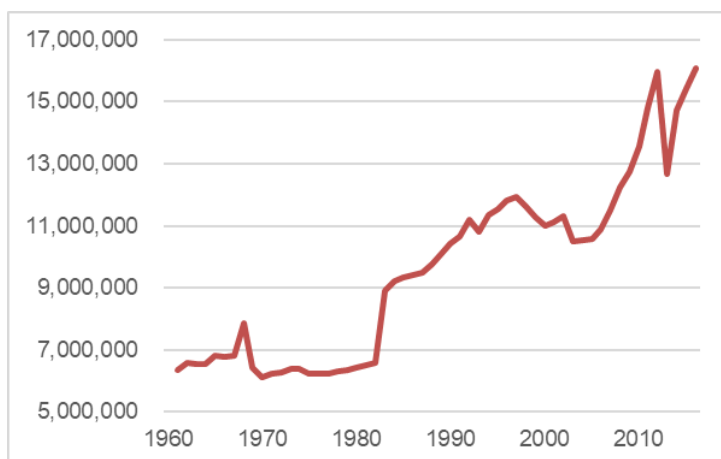
Figure 9-11: Transition of Frozen Semen Production in Singosari



Source: Singosari Artificial Insemination Center

Figure 9-12: Number of Trainees (domestic and overseas)

¹¹ National Coordination Team of SSTC. *Annual Report of Indonesia South-South and Triangular Cooperation 2015*. 2016.



Source: FAOSTAT

Figure 9-13: Transition in the National Cattle Population in Indonesia



Source: Singosari Artificial Insemination Center
South-South Cooperation Report

9.3.5 Jakarta Fishing Port

Indonesia is the country with the third largest exclusive economic zone (EEZ) in the world. The total production of fisheries and aquaculture is far superior to other fishery countries in Southeast Asia, such as Thailand, Vietnam and Philippines. However, the intake of animal proteins was less than that in all of the other Asian countries in the 1970s, and the annual domestic supply of seafood was about 10 kg per person, which was about one fifth of Japan. To improve this situation, cooperation in fisheries began. The projects related to Jakarta Fishing Port started from a master plan in 1973, and the Phase 4 construction (upgrading sanitary facilities and port infrastructure) was completed in 2002. After that, the project for rehabilitation of quay and breakwater was conducted intermittently between 2005 and 2012, and the current land area after the completion of rehabilitation business is about 80 ha, which is the largest fishing port in Indonesia.

The greatest feature of Jakarta fishing port is that it is one of the largest complex in the world with four functions: (1) fishing port; (2) market; (3) fish processing, and (4) leisure. About 1,500 fishing boats are now registered and it became the world's leading tuna fishing port. After the first shrimp processing plant was constructed in 1986, more than 300 fishery companies operate a marine processing plant at the port, which has generated approximately 50,000 employments, especially for women. Fishery products exported from the fishing port are about 40 billion yen per year. The investment is estimated at about 50 billion yen (2014), which is more than 16 billion yen provided by ODA loans. It is expected that the port



Jakarta Fishing Port

becomes a model of Indonesian fisheries distribution hub through the rehabilitation of obsolete facilities and strengthening the management to contribute to the stable supply of fishery products.

BOX 9-2: Examples of Creative Ideas at Jakarta Port

In the Jakarta fishing port project, various ideas were used to implement the project. In this project, the Indonesian side adopted a traditional Indonesian foundation construction method using bamboo piles and mats, when the breakwater and revetment on the weak ground were constructed. About 1,000,000 bamboos were used, and a breakwater was constructed. This method helped curb the use of precious foreign currencies. The building still functions, and it is highly evaluated. The method is therefore adopted as well in the loan project for the development of the International Trade Port, Tanjung Priok Port near Jakarta Fishing Port¹². A new attempt was also made to share some of the wave protection functions of revetment and breakwater with mangrove.



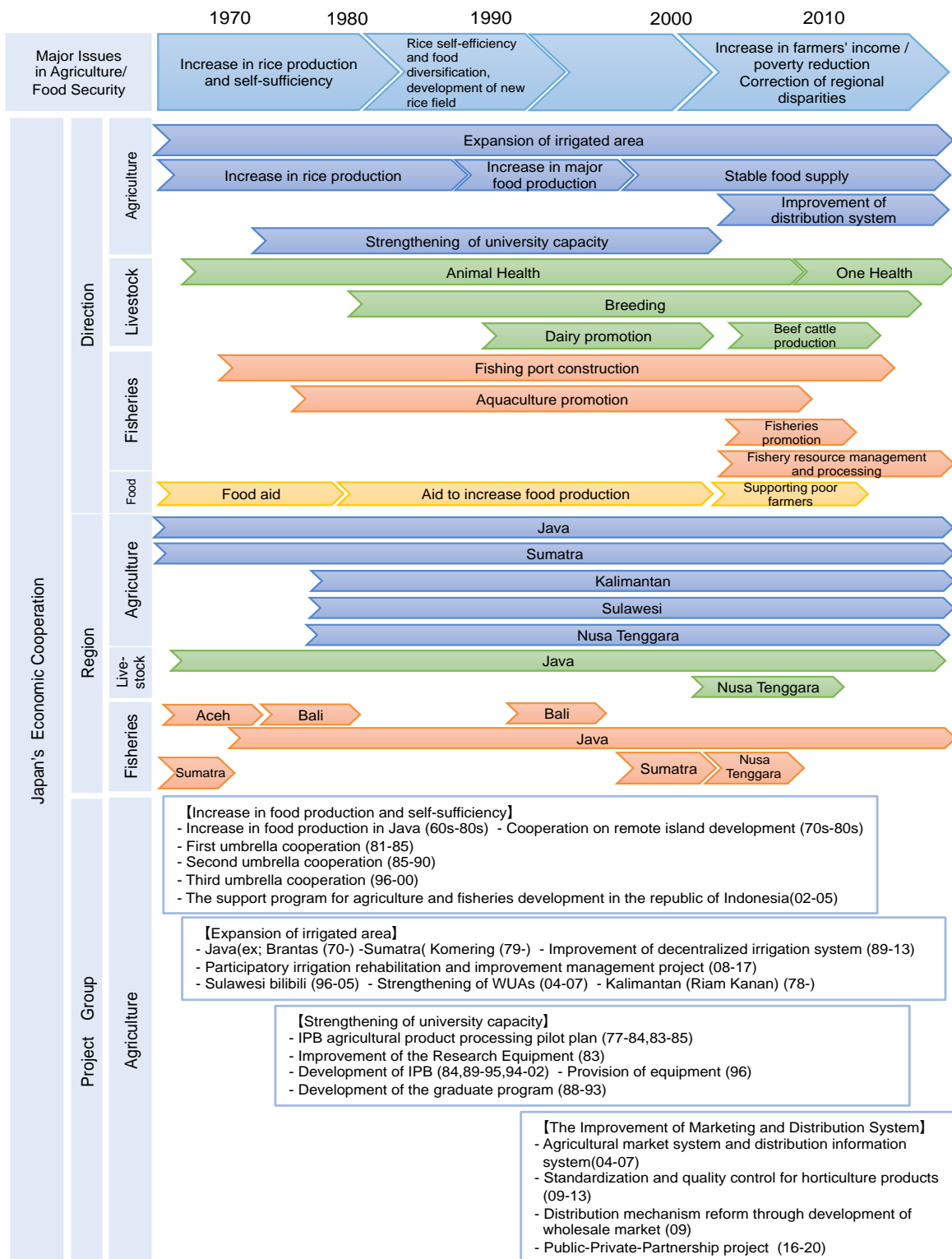
Mangrove breakwater
(Source: Sadao Orishimo)

¹² Interview with Mr. Sadao Orishimo (Oriental Consultants Co., Ltd) (August 2017).

9.4 Outcomes/Impacts of Japan's Economic Cooperation and Future Prospects

9.4.1 Outcomes/impacts of Japan's economic cooperation to date

Based on the review of period-specific characteristics and noteworthy achievements of Japan's economic cooperation in the agriculture and food security sector, major issues, direction of cooperation, implementation areas and project groups are summarized as below.



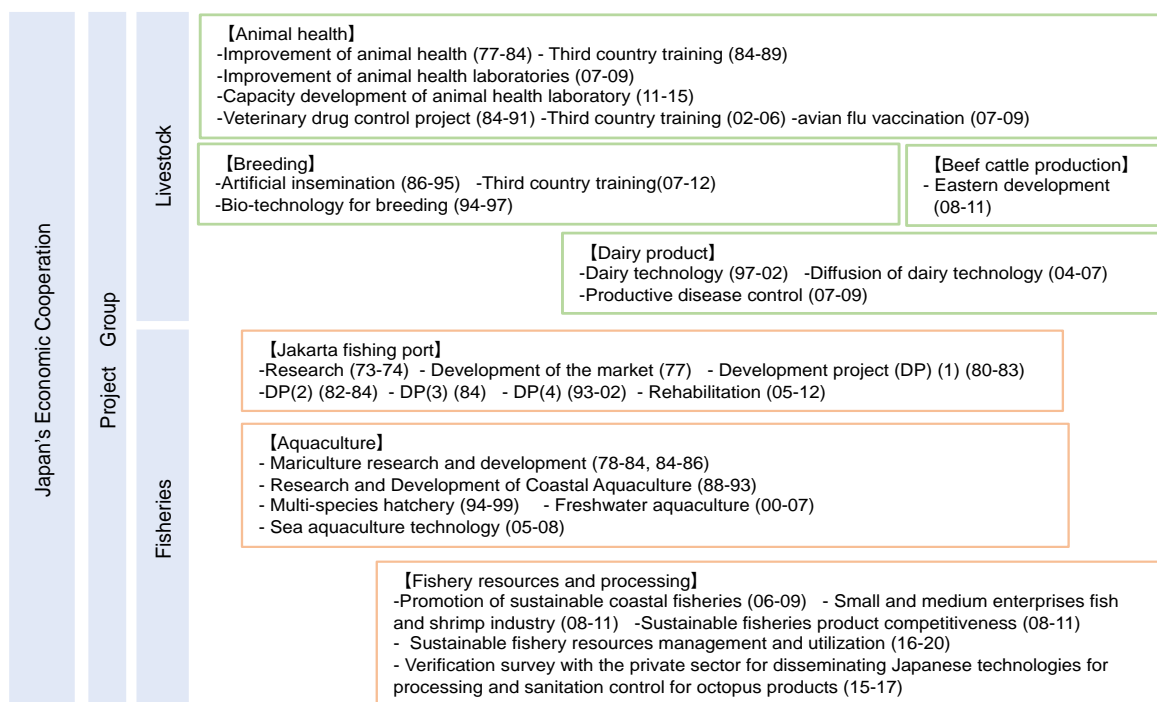


Figure 9-14: Characteristics of Japan's Cooperation in Agriculture/ Food Security

Japan has been supporting the agriculture sector and food security in Indonesia through financial assistance and technical cooperation since the late 1960s. The following two aspects can be raised as main features of Japan's cooperation in the sector. First, cooperation in agriculture and food security gradually expanded the scope of the subject area to meet the needs of the people, and contributed to increasing food production in accordance with priority issues of the country, including food diversification and improvement of farmers' incomes. Secondly, Japan provided comprehensive cooperation combining technical and financial assistance to strengthen capacities of governmental agencies and research institutions that support the related areas, and it contributed to laying a solid foundation of agriculture and fishery industries. Overall, Japan's cooperation can be broadly classified into the following three fields: a) the long term cooperation for the agricultural sector centered on rice, and the expansion of irrigated areas through irrigation projects; b) cooperation in the livestock subsector, and c) cooperation in the fisheries subsector. The outline of the results of cooperation for each field is described below.

1) Cooperation in the agricultural sector focused on rice

This field has the following outcomes.

- The Umbrella Cooperation implemented up to the third phase is the program cooperation that pioneered collaboration among cooperation schemes, and covered from the stage of problem identification and project formulation to the stage of implementation and follow-up to achieve comprehensive objectives. In the third cooperation, though main goal shifted to improve agricultural incomes and living standards of farmers, the cooperation basically aimed at increasing production of major crops including rice. Japanese agricultural cooperation, which was closely linked with

irrigation system, functioned effectively in the program. As a result, it brought positive impacts to multiple fields such as increased production of rice and major food crops, achievement of self-sufficiency, synergistic effects due to the introduction of various types of cooperation, and increased collaboration among related fields.

- In order to increase production of major crops including rice, the government promoted development of irrigation system under the government initiative. The irrigated area expanded from 3,600,000 ha in 1982 to 7,140,000 ha in 2014, with assistance by donors and international organizations including Japan from the 1960s. As an effect of irrigation development, yield per unit area of rice and the planting rate in irrigated farmland increased significantly because of double and triple cropping.
- Japan's cooperation strengthened education of IPB, which plays an important role in agricultural development. The cooperation helped to develop facilities and equipment of the Faculty of Livestock, Faculty of Fisheries, Agriculture, and Veterinary Medicine, and to conduct studying abroad programs for instructors. These assistance programs enabled IPB to strengthen its education qualitatively and quantitatively, as well as its research activities, contributing to agricultural development of the country. IPB has grown to be able to conclude academic exchanges with a number of Japanese universities.

2) Cooperation in the livestock subsector

Cooperation in the livestock subsector has the following results.

- Japan's cooperation was implemented from two directions; (1) technology transfer at resource/hub institutions, and (2) technology dissemination utilizing the resource/hub institutions. The animal health project began in the latter half of the 1970s, and started to support the veterinary laboratory from the mid-1980s to provide stable supply of high-quality veterinary medicines. Furthermore, from the latter half of the 2000s, a veterinary diagnostic facility (Disease Investigation Center) has been established with the latest facilities in Subang from the viewpoint of quarantine. Subsequently, projects aimed at improving the diagnostic ability of livestock diseases were also implemented, and the acquisition of ISO certification was realized during the project period, which proves the high quality of the technology. This cooperation strengthened the prevention system of zoonosis on the livestock side, and it contributed not only to the agricultural field but also to emerging infectious diseases.
- The technical cooperation project, "Strengthening of Artificial Insemination Center Project" started in the mid-1980s aimed at improving livestock productivity. In the project, long-term cooperation was provided to the Singosari Artificial Insemination Center in East Java Province. An after-project care and Third Country Training were provided, and the cooperation grew into South-South Cooperation targeting other developing countries.

3) Cooperation in the fisheries subsector

Finally, the main cooperation for the fisheries subsector is as follows.

- Cooperation for fisheries technology and fishing ports began in the 1970s. After the development of the tuna fishery base in Aceh and Bali, the construction of fishing port in Jakarta followed. ODA loans were provided to support Jakarta Fishing Port for nearly 40 years until 2012. The current land area is about 80 ha, and more than 100 fishery companies operate a fish process plant at the port and the fishery products are exported and earn about 40 billion yen annually, becoming the largest fishing port in Indonesia.
- Technical cooperation, “The Mariculture Research and Development Project” was implemented in Serang, West Java Province, around 1970, and contributed greatly to the development of human resources engaged in fish and shellfish cultivations. From the 1980s, technical cooperation projects, the “Strengthening the Research and Development of Coastal Aquaculture Project” and the “Research and Development for the Multispecies Hatchery” were conducted for the Gondor Institute in Bali. These projects produced significant outputs in the development of human resources and the improvement of the research and development facilities of the institute. This research institute is also used as a study visit destination for JICA fisheries project of other developing countries. In the 2000s, the technical cooperation, “Freshwater Aquaculture Development Project in Indonesia” was implemented in Jambi Province, and cooperation to disseminate tilapia aquaculture to small fishermen was implemented. The project increased the number of small-scale farmhouses and production of the fish, which grows 17% annually¹³.

9.4.2 Implications for future cooperation

Though the population growth rate in Indonesia is decreasing, it is still as high as 1.4% between 2000 and 2010. Food supply therefore is still an important policy issue (Table 9-2). On the other hand, as shown in Figure 9-15, the demand for diversification of food increases as the income level is improved. Especially, the demand for food other than rice, such as grains, vegetables, livestock products and marine

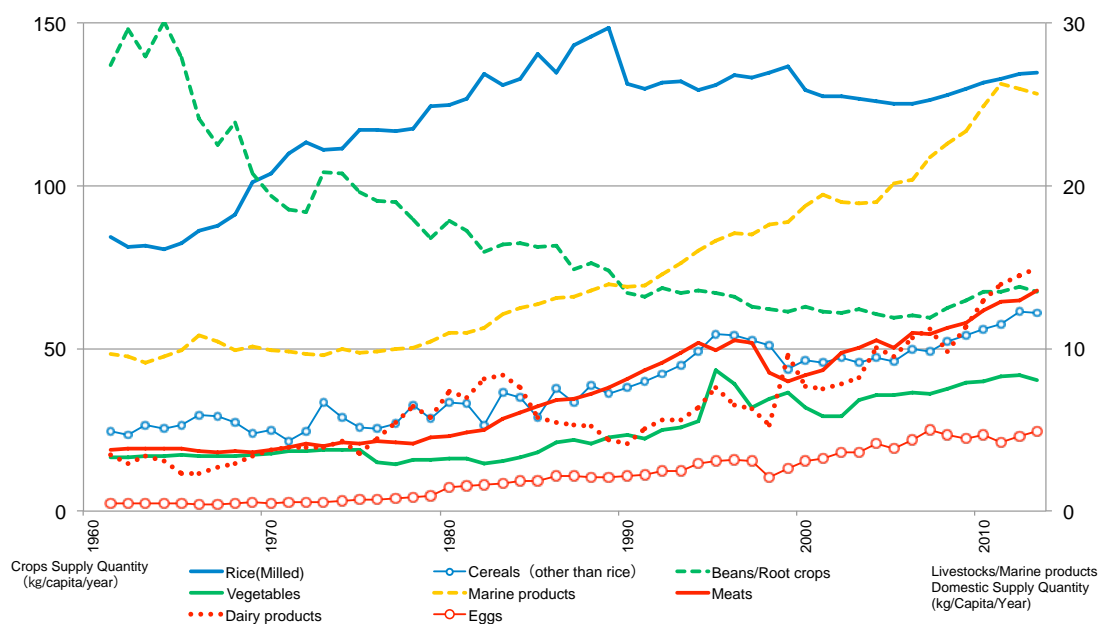
Table 9-2: Rice Production and Population Growth

	Production (1,000 ton)	Population (1,000 persons)	Availability/person (kg)	Consumption/person (kg)
Year 2000	51,898	208,939	162.9	129.5
Year 2010	66,469	240,676	176.8	131.8
Annual rate of change (%)	2.51	1.42	0.82	0.18

Source: FAOSTAT, World Bank

products is growing remarkably, thus, the diversification of agricultural production and the improvement of distribution including value chains are crucial. For rice production and consumption, it generally declines as income levels rise. However, the consumption of rice per capita has increased from 2005 in Indonesia. As shown in Figure 9-6, the total production of rice still increases at a high level. In addition, food crops are diversifying, and the consumption of cassava, a major root vegetable, decreased (from 100kg in 1965 to 50 kg in 1990). Production of foreign crops such as wheat and potatoes increases.

¹³ Ministry of Maritime Affairs and Fisheries. *Indonesia Marine and Fisheries Book*. 2017.



Source: FAOSTAT

Figure 9-15: Food Supply Quantity (kg/capita/year)

Because the population growth rate in Indonesia is forecasted to decline in the future, the amount of rice supply available per capita is likely to increase. Against this background, the government focuses on production of high-value added product/food, improvement of market distribution systems, and agricultural mechanization due to aging and diversification of employment in order to address poverty reduction and improve farmer's income. To this end, Indonesia prioritizes capacity development, and the needs to construct more efficient system for sustainable agriculture based on market distribution systems and regional resources are very high. In particular, besides the existing top-down style, there would be a strong need for interactive bottom-up projects that involve community¹⁴.

In response to these needs, through the JICA Partnership Program, the “Project for Market Oriented Agriculture Promotion by Public-Private Partnership” (2014-2017) was implemented as a project tailored to the regional characteristics, which had been envisioned since the Third Umbrella Cooperation. It is expected that cooperation between the public and private sectors will continue to promote regional development and improve the distribution system based on the regional needs. Besides, it is forecasted that extreme weather disasters will increase with climate change. Since agriculture is the most vulnerable industry to natural disasters, they will directly affect food security. The agricultural insurance system for mitigating economic damage of agricultural producers resulting from climate change, and establishing cooperation systems for agricultural production have begun in Indonesia from 2016. JICA has implemented the technical cooperation “Project of Capacity Development for the Implementation of Agricultural Insurance” to support the stable operation and implementation of agricultural insurance systems and a SATREPS project, “The Project for Development and Implementation of New Damage Assessment Process in Agricultural Insurance as

¹⁴ Interview with Mr. Noor Avianto, Directorate of Food and Agriculture, BAPPENAS (August 2017).

Adaptation to Climate Change for Food Security” to efficiently implement the damage assessment, which is a core of the insurance system. These projects are expected to contribute to the realization of food security from multiple perspectives.

Irrigation is likely to be an important issue as food demand increases and diversifies. The government of Indonesia aims to expand irrigation area by modernizing the irrigation system of large areas, and rehabilitating and improving existing small and medium-sized areas. The need for Japanese cooperation, which has supported irrigation system in Indonesia for a long time and can transfer latest technologies including operation and maintenance such as asset management, is still high¹⁵. Specifically, the integrated management of finite water resources, the development of irrigation systems integrated with water conservation technology, and maintenance management including asset management will be the focus of future projects. In addition, most of the existing irrigation areas is under the jurisdiction of local governments. Therefore, it is necessary, by positioning irrigation projects as infrastructure projects supporting food security, to implement projects with community-based irrigation system corresponding to the regional characteristics of natural, social, administrative and market aspects.

In the fisheries subsector, the Joko administration’s “Maritime Axis Doctrine” plan has increased development needs of many areas in fisheries fields, including development of outer islands and fishing port development, empowerment of small-scale fisherman and fisheries cooperative associations, increase of added value for fishery products such as fishery processing and aquaculture, and strengthening the overall distribution including cold chains. Japan, which is also a maritime nation, is expected to provide cooperation with advanced technologies and experiences. Against this background, the Ministry of Maritime Affairs and Fisheries is developing the Integrated Marine and Fisheries Center in 15 islands close to the border, aiming to revitalize the economy of outer islands through the fisheries industries’ promotion. Responding to the request of the Indonesian government, the Government of Japan plans to support development of fishing ports and the market aiming at establishing a hub in six outer islands where fisheries are prosperous and have high potential for further fisheries development. In the sector of fishery processing, Japan’s cooperation will contribute to the redressing of disparities by using local resources, the strengthening of production with improved processing technology and the development of a value chain through public private partnerships implemented with Japanese small and medium-sized enterprises. Also, it will greatly contribute to the expansion and revitalization of markets in Japan and overseas.

In the livestock subsector, Japanese cooperation was carried out in the past from two directions: technology transfer to resource/hub institutions, and a technology dissemination using the institutions. As the sectors to which technical transfer has finished and are developing independently, or to be further developed on their own in the future, artificial insemination and public health utilizing technology in animal health can be raised. The technology of artificial insemination

¹⁵ Interview with Dr. Mohammad Irfan Saleh, Directorate of Water Resources and Irrigation, BAPPENAS (August 2017).

developed through the technical cooperation contributes to the popularization of artificial insemination not only in Indonesia, but also in the world through Third Country Training and South-South Cooperation. With the economic growth, higher quality will be required in these fields, and further development is expected based on the knowledge and experience accumulated through cooperation from Japan. In the animal health sector, in addition to the conventional viewpoint of animal health, the viewpoint of public health which influences both human and animals is strongly required. This field is also related to the “One Health”¹⁶ approach, in which the Ministry of Agriculture and the Ministry of Health are collaborating to protect health of both people and animals. Therefore, this field has potential to contribute on a global scale. Strengthening the relationship between Japan and Indonesia in various aspects in the agriculture sector and food security will contribute not only to the both countries but also to the achievement of the targets of Sustainable Development Goals (SDGs). In identifying future cooperation areas which are worth investing for long period of time, it is necessary to draw on the past good practices and to select areas with strong needs regardless of the size of the field, while remembering the importance of steady implementation of small measures for the development of the sector.

¹⁶ FAO. *Indonesian Ministries Pledge One Health Collaboration*. 2017.

Chapter X Disaster Risk Reduction

10.1 Summary

In Indonesia, where various disasters such as flood, landslide, debris flow, volcanic eruption, and earthquake occur frequently, disaster risk reduction is an urgent issue and a necessary requirement for safety and stable daily lives of the people as well as economic development.

Japan has continuously supported Indonesia in the area of disaster risk reduction beginning from flood control measures in the comprehensive river-basin development project as postwar reparation in the 1960s, and human resource development and facility development for volcanic erosion control in the 1970s. As for flood control, the Japanese government has provided ODA loans and supported comprehensive river basin development for Brantas River and Jeneberang River as well as flood protection in major cities. In addition, the long-term support for volcanic erosion control through construction of protection facilities and human resource development has made Indonesian people familiar with “Sabo,” a Japanese word for erosion control, to an extent that the word has become an Indonesian word¹. In this sector, Indonesia is becoming more self-sustained; a course on disaster risk reduction opened in Gadjah Mada University at undergraduate and graduate levels enabling Indonesian staffs to develop human resources within the country.

In addition, Japan has supported Indonesia when natural disasters occurred, ranging from the emergency phase to the reconstruction phase. In the 2000s, Indonesia was hit by a series of large-scale natural disasters including the Great Earthquake of the Coast of Sumatra and Tsunami in the Indian Ocean and the Earthquake Disaster in Central Java. Starting with the dispatch of Japan Disaster Relief Teams, Japanese response to these disasters covered from the emergency relief phase, in which humanitarian and technical assistance and emergency grant aid were provided, to the reconstruction phase. Even after other development partners withdrew from the country, Japan continued support for communities surrounding tsunami evacuation facilities. Such support has developed into exchanges between Banda Aceh City and Higashimatsushima City affected by the Great East Japan Earthquake through which they shared their knowledge and experiences. As for the Central Java Earthquake, more than 100,000 earthquake-resistant houses have been built through Japan’s technical cooperation.

After the experiences of those catastrophic disasters and in response to the international discussions on the disaster preparedness such as the 2005 UN World Conference on Disaster Risk Reduction, the Indonesian government became more focused on pre-disaster measures to mitigate, prevent, and prepare for coming natural disasters. Indonesia has been working on strengthening disaster reduction systems as exemplified in the establishment of the National Disaster Management Agency (BNPB) in 2008.

Responding to the request of the Indonesian government, Japan has expanded its cooperation in this sector from flood control and erosion control to institutionalization of disaster risk reduction at the

¹ Considering the prevalence of the word, “Sabo” is used mainly in this report in lieu of erosion control.

national and local government levels. Moreover, Japan has also supported newly recognized issues such as development of the early warning system, institutional capacity for seismic resilient building, disaster mitigation management for “*Banjir Bandang*” and land subsidence. In recent years, joint research projects are implemented by universities and research institutes of the two countries under SATREPS². These projects aim at not only capacity development but also establishing a system to conduct research based on the needs in Indonesia and implementing research outputs in the society such as in evacuation and communication system for communities.

Given that Japan and Indonesia are similar in their geological and geographical characteristics and thus hold similar risks of natural disasters, the relationship between the two nations in this sector has become the one for mutual cooperation. For instance, there was a case in which people affected by the Great East Japan Earthquake enhanced their willingness for recovery after exchanges of knowledge in disaster risk reduction and roadmap for recovery with people in Aceh who experienced the Indian Ocean Earthquake and Tsunami. In addition, research on volcanic eruption cases in Indonesia provided useful feedback to a disaster risk reduction guideline of Japan.

As Indonesia develops economically, the country has been developing its social infrastructure and disaster risk reduction measures. Consequently, positive outcomes have been realized in mitigating damages from frequent small-scale to medium-scale disasters such as floods caused by heavy rain. However, the structural measures are not sufficiently developed in comparison with its economic development level. In addition, investments for both structural and non-structural prevention measures for infrequent yet high risk and huge-scale disasters such as floods caused by low frequent rain, earthquake and tsunami have not been sufficient. Therefore, Japan’s cooperation in this regard is hoped.

Table 10-1: Overview of Disaster Risk Reduction Sector in Japan’s ODA

Period	1960s	1970s and early 1980s	Late 1980s	1990s	From the end of 1990s	From the end of 2000s
	Nation-State Building	Economic Development	Structural Adjustments	Growth until the Asian Financial Crisis	Democratization and Decentralization	Middle Income Countries
Historical Context	<ul style="list-style-type: none"> • Cold War • ASEAN (1967) • Inauguration of President Suharto (1968) • Green Revolution 	<ul style="list-style-type: none"> • First Oil Crisis (1973) • End of Vietnam War (1975) • Second Oil Crisis (1979) 	<ul style="list-style-type: none"> • Plaza Accord (1985) • Reverse Oil Crisis (1986) • End of Cold War (1989) 	<ul style="list-style-type: none"> • Asian Financial Crisis (1997) 	<ul style="list-style-type: none"> • Laws on local autonomy • Millennium Development Goals (2000) • Election of President Yudhoyono by direct election (2004) 	<ul style="list-style-type: none"> • Japan-Indonesia Economic Partnership Agreement (2008) • G20 Accession (2008) • Jakarta Commitment (2009) • Sustainable Development Goals (2015)
Situation of the Sector	<ul style="list-style-type: none"> • Eruption of Mt. Agung (1964) 	<ul style="list-style-type: none"> • Earthquake in Irian Jaya (1976) 		<ul style="list-style-type: none"> • Large Flood in Semarang (1990) 	<ul style="list-style-type: none"> • Indian Ocean earthquake and tsunami (2004) 	<ul style="list-style-type: none"> • Establishment of National Disaster Management

² Joint program with Japan Science and Technology Agency (JST)

Period	1960s	1970s and early 1980s	Late 1980s	1990s	From the end of 1990s	From the end of 2000s
	Nation-State Building	Economic Development	Structural Adjustments	Growth until the Asian Financial Crisis	Democratization and Decentralization	Middle Income Countries
	<ul style="list-style-type: none"> Eruption of Mt. Merapi and Kelud (1966) 	<ul style="list-style-type: none"> Earthquake in Bali (1976) Earthquake in Irian Jaya (1981) Eruption of Mt. Galunggung (1982) 		<ul style="list-style-type: none"> Earthquake in Flores Island (1992) Adoption of Yokohama Strategy in World Conference on Disaster Reduction (1996) 	<ul style="list-style-type: none"> Adoption of Hyogo Framework for Action in UN World Conference on Disaster Reduction (2005) Nias-Simeulue earthquake (2005) Joint Committee of Indonesia and Japan on Disaster Reduction Yogyakarta earthquake (2006) Enactment of Disaster Management Law No. 24 (2007) 	<ul style="list-style-type: none"> Agency (BNPB) (2008) Sumatra earthquake (Padang 2009) Sumatra earthquake (Mentawai 2010) Eruption of Mt. Merapi and Mt. Sinabung (2010) Eruption of Mt. Sinabung (2013-2014) Adoption of Sendai Framework for Action in World Conference on Disaster Reduction (2015)
Priority Development Issues in the Indonesia's 5-Year Development Plan					<ul style="list-style-type: none"> Development of disaster risk reduction system Emphasis on prevention 	<ul style="list-style-type: none"> Development of disaster risk reduction system Emphasis on prevention
Direction of Japan's Cooperation	<ul style="list-style-type: none"> Facility construction for flood and erosion control 	<ul style="list-style-type: none"> Facility construction for flood and erosion control Expert dispatch for erosion control 	<ul style="list-style-type: none"> Facility construction for flood and erosion control Construction of Erosion Control Center and human resource development through management support 	<ul style="list-style-type: none"> Facility construction for flood and erosion control Human resource development in management at Erosion Control Center Promoting flood control in local cities 	<ul style="list-style-type: none"> Support for recovery from Great earthquake of coast of Sumatra and Tsunami in the Indian Ocean and Earthquake Disaster in Central Java Risk reduction support for other types of disaster Development of disaster risk reduction system at central and local government 	<ul style="list-style-type: none"> Promoting research cooperation through SATREPS Development of disaster risk reduction system at central and local government Urgent Disaster Reduction Project for Mt. Merapi Urban Flood Control in Selected Cities
Outcomes	<p>Progress on flood control in large-scale river basin Progress on flood control in local cities</p> <p>Human resource development in erosion control Capacity building for disaster reduction at national and local level</p> <p>Recovery from Disaster</p>					

Note: Dashed lines in the section of outcomes indicate the impact/spillover effect from the previous period.

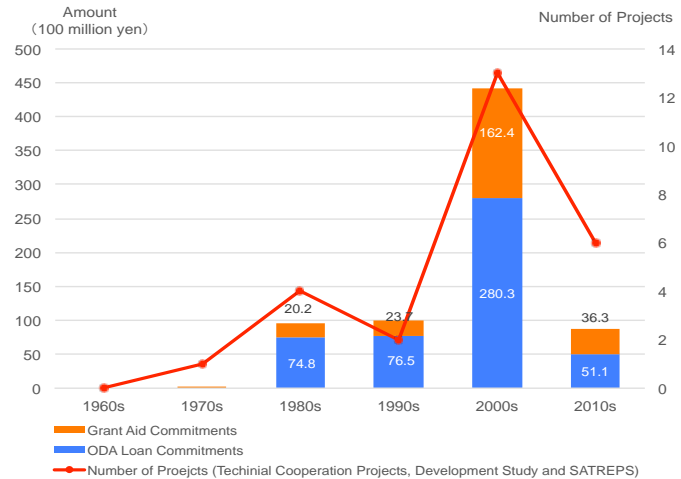
10.2 Historical Context and Japan's Cooperation³

10.2.1 Number of projects and commitment amounts

Japan has continuously supported Indonesia's disaster risk reduction since the 1960s.

Out of 57 projects that have been implemented as of December 2017, there are 13 technical cooperation projects, 11 development studies, etc., 7 ODA loans, 24 grant aid projects, and 2 SATREPS projects⁴.

Figure 10-1 shows commitment amounts of ODA loans and grant aid and the number of technical cooperation by decade. As the figure shows, the number of projects increased from the 1980s, and the commitment amount for ODA



Source: JICA Review Team

Figure 10-1: Commitment Amounts of ODA Loans and Grant Aid (E/N basis), and the Number of Technical Cooperation (Technical Cooperation Project, Development Study, etc.) and SATREPS by Decade

loans was highest in the 2000s. This increase in ODA loans may be due to the fact that there were many loans put into recovery support from the disasters including the Major Earthquake Off the Coast of Sumatra and Tsunami in the Indian Ocean, Central Java Earthquake, and eruption of Mt. Merapi.

10.2.2 Period-specific characteristics of Japan's cooperation for Indonesia on disaster risk reduction sector

In this section, the situation of disaster risk reduction sector in Indonesia and support of the Japanese government for Indonesia are summarized by period.

- From the 1970s to the 1990s: Comprehensive support for Sabo, river basin development and management, and flood control in several cities
- From the end of the 1990s: Large-scale disaster response
- From the end of the 2000s: Development of a comprehensive system for disaster risk reduction

³ In this report, the Disaster Risk Reduction sector consists of 1) post-disaster recovery support, 2) Sabo, and 3) disaster risk reduction. Since disaster risk reduction and flood control are closely related topic, this chapter touches briefly on flood control. The appendix to this report on "River basin development and management" describes Japan's cooperation in flood control more in detail.

⁴ The total number of projects in the area of: 1) post-disaster recovery support, 2) Sabo, and 3) disaster risk reduction. Projects on flood control (2 technical cooperation projects, 17 development studies, and 38 ODA loans) are not included since it is included in the "River Basin Development and Management" sector. Inundation projects in Jakarta and Surabaya were conducted as drainage and sewerage improvement which is described in the chapter for "Water Supply, Drainage and Environment Management."

(1) From the 1970s to the 1990s: Comprehensive support for erosion control, river basin development and management, and flood control in several cities

Situation of the sector and major efforts by Japan

1) Background of support for (volcanic) erosion control

Indonesia is one of the biggest volcanic countries in the world where there are 127 active volcanoes (equivalent to 16% of active volcanoes in the world). Especially in Java, the center of politics and economy, there are more than 20 active volcanoes, and thus people's lives in Java have always been influenced by those volcanoes both positively and negatively. As for the benefit, volcanic eruption provides productive soil and enables farmers to raise triple-cropping. On the other hand, people have been facing the risk of volcanic eruption for centuries. For example, people residing near Mt. Merapi have experienced and suffered from volcanic eruption of the mountain for 68 times since 1548.

With this background as a volcanic country, volcanic mudflow/ landslide sediment disaster has caused large-scale disasters and thus been considered as one of the biggest impediments for the country's land protection and economic development. Responding to requests from the Indonesian government, Japan has continuously supported the development of comprehensive erosion control measures through technical cooperation and ODA loans since the 1970s. More specifically, the support started with the dispatch of experts in the early 1970s and establishment of the Volcanic Sabo Technical Centre (The center was renamed the Sabo Technical Centre in the 1990s and expanded to cover Sabo in general) and developed human resources for the centre for more than 30 years.

As for ODA loans, Japan implemented projects to mitigate sediment flow caused by volcanic eruption. These volcanoes are: Mt. Merapi; Mt. Kelud; and Mt. Semeru. Among these three, Mt. Merapi is known as the most active volcano in Indonesia, and it erupts almost every three to four years. Eruption often causes severe damages. For example, more than 1,300 people died due to the eruption in 1930. The frequency of eruption is presumed to be even higher in recent years. In addition to the high risk of the disaster, the mountain's proximity to world heritage sites makes disaster risk reduction of Mt. Merapi vital for protecting the country's tourism industry; the mountain is located merely 30 km away from Yogyakarta where two world heritage sites, namely, Borobudur Temple and Prambanan Temple are located. Recognizing the importance of disaster risk reduction for Mt. Merapi, Japan supported a development study from the late 1970s to develop a master plan called "Master Plan for Land Erosion and Volcanic Debris Control in the Area of Mt. Merapi" in 1980. Based on the plan, Japan and Indonesia implemented two ODA loan projects in the 1980s and the 1990s.

2) River Basin Development and Management Project and Flood Control

Aside from eruption, flood and debris flow are major types of disaster in Indonesia that occur almost every year. To assist the country in coping with these frequent disasters, Japan supported flood control along with river basin development and management projects for large-scale rivers such as Brantas River, Jeneberang River, Solo River, and other rivers that run through large cities such as Jakarta and Surabaya.

As shown above, Japan built the foundation of the long-lasting cooperation in the erosion control during this period. In parallel, flood control, another subsector Japan has continuously supported, was also started in this era as a part of river basin development and management cooperation.

(2) From the end of the 1990s: Large-scale disaster response

Situation of the sector and major efforts by Japan

In the 2000s, a number of disasters happened in Indonesia including the Major Earthquake off the Coast of Sumatra and Tsunami in the Indian Ocean, and Japan's cooperation in this period focused on assisting Indonesia's recovery from these disasters.

1) Major Earthquake off the Coast of Sumatra and Tsunami in the Indian Ocean

When the Major Earthquake off the Coast of Sumatra and Tsunami in the Indian Ocean occurred, the Japanese government immediately sent the Japan Disaster Relief Teams to Indonesia. In addition, the government implemented a series of projects including: development of a master plan for the recovery of Banda Aceh; 12 community recovery support projects; urgent infrastructure restoration (e.g., night soil treatment plant); non-project grant aid projects for roads, drains, community buildings, and others; ODA loans for infrastructure restoration in the transportation and water resource sectors.

2) Central Java Earthquake

Japan also sent a Japan Disaster Relief Team to the Special Region of Yogyakarta when the Central Java Earthquake occurred. JICA first assessed the needs for disaster recovery support and then implemented a technical cooperation project, "Central Jawa and DIY Earthquake Reconstruction Program Advisory Team" (2006-2007), in order to manage all the recovery projects assisted by Japanese government. Besides the technical cooperation project, eight community recovery support projects, local industry restoration support, rebuilding and designing of elementary/secondary school and health center, and dispatch of Japan Overseas Cooperation Volunteers in the health sector were conducted. In addition, the project made a policy recommendation for the local government to include the seismic performance requirement in the subsidy program for reconstruction of houses. With the concrete advice by the project related to this recommendation, the housing reconstruction project administered by the Indonesian government resulted in successful reconstruction of more than 100,000 earthquake-resistant houses⁵. This became the pioneer example of "Build Back Better" in a developing country.

3) Eruption of Mt. Merapi

Mt. Merapi's volcanic activity level increased in April 2006, and when the activity level reached its peak in May, people residing near the mountain were forced to evacuate to a temporary camp at the foot of the mountain. In June of the same year, a large-scale pyroclastic flow occurred and killed two people. Further, the flow could have caused debris flow and yielded serious damages in the lower area.

⁵ Based on an interview with JICA expert.

This potential disaster led the Indonesian government to work on an urgent construction of a Sabo dam upstream utilizing an ODA loan.

4) Support for erosion control

Japan has continuously provided technical cooperation and ODA loans in this subsector since the previous period. As for technical cooperation, the “Integrated Sediment Disaster Management Project for Volcanic Area” (2001-2006) has been implemented. This project developed planning and implementation methods for comprehensive local disaster prevention measures, developed human resources to implement the measures, and established as well as supported a course on Sabo at the Department of Engineering at Gadjah Mada University. Additionally, a project titled “Integrated Disaster Mitigation Management for ‘*Banjir Bandang*’” (2008-2011) was implemented.

(3) From the end of the 2000s: Development of a comprehensive system for disaster risk reduction

Situation of the sector and major efforts of Japan

1) Policy change on disaster risk reduction

Given the serious damages caused by the Major Earthquake off the Coast of Sumatra and Tsunami in the Indian Ocean, the Indonesian government promoted changes in its policy on disaster risk reduction from post-disaster measures to pre-disaster, preventative measures.

In alignment with this policy change, the Disaster Management Law was enacted in 2007, and the BNPB was established. In addition to the past disaster experiences, these policy changes were also influenced by the Hyogo Framework for Action that was adopted in the Second World Conference on Disaster Reduction. The framework included two actions with high priority, namely, 1) setting disaster risk reduction as a priority issue and build robust foundation and 2) improving early alert by specifying, assessing, and monitoring disaster risks.

2) Disaster risk reduction system at the central and local levels

To comply with the policy change, the administration system at the central and local levels had to be improved. Therefore, JICA started to support a development study, “The Study on Natural Disaster Management Plan,” in 2007 and supported the central and pilot local governments improve their planning capacity. Furthermore, a five-year long technical cooperation project, “The Project for Enhancement of the Disaster Management Capacity of BNPB and BPBD” (2011-2015), started in 2011 in order to strengthen BNPB’s capacity in the areas of finance, human resources, and policy implementation. Other assistance for preventative disaster risk reduction measures such as capacity building for early tsunami alert was also provided through the JICA Partnership Program (JPP).

3) Beginning of preventative disaster risk reduction measures

Japan has implemented a series of technical cooperation projects such as the “Project on Capacity Development for National Center of Indonesian Tsunami Early Warning System” (2007-2009) that

targeted Meteorological, Climatological and Geophysical Agency (BMKG), an institution which was made responsible for transmitting early tsunami alert by the Disaster Management Law, and the “Project on Building Administration and Enforcement Capacity Development for Seismic Resilience” (2007-2011) and its second phase (2011-2015) that aimed to disseminate seismic resilient buildings nationwide with the Ministry of Public Works and Housing (PUPR) as the main counterpart.

Shortly after the Great East Japan Earthquake occurred, Indonesia provided various support to Japan. Taking this opportunity, inter-city interaction began through a JPP project between Higashimatsushima City of Miyagi Prefecture and Banda Aceh City.

4) Support for eruption of Mt. Merapi

When the level of volcanic activity increased in Mt. Merapi in October 2010, Japan dispatched a Japan Disaster Relief Team, followed by support through ODA loans and JPP. The eruption in 2010 was one of the biggest in the past century, and it caused a number of pyroclastic flows that resulted in 324 losses of life and 380,000 refugees. Although the Indonesian government continued to work on structural development against eruption after the master plan was revised in 2001, the amount of pyroclastic flow from the eruption reached 140 million metric tons which was 28 times more than what was estimated in the master plan. Under these circumstances, Japan provided support aiming to revise the master plan, develop erosion control facilities, and promote activities of dissemination and enlightenment for residents through an ODA loan, the “Urgent Disaster Reduction Project for Mount Merapi (II),” in 2014.

5) Disaster reduction through SATREPS

From the end of the 2000s, SATREPS projects have been implemented such as “Multi-disciplinary Hazard Reduction from Earthquakes and Volcanoes in Indonesia,” and the “Project for Integrated Study on Mitigation of Multimodal Disasters Caused by Ejection of Volcanic Products.” These projects had benefits for both Japan and Indonesia. For Indonesia, the country was able to learn and to apply Japanese technologies on observation, prediction, and notification of earthquake, tsunami, and volcanic activities. This is useful in reducing disasters damage for the people. For Japan, on the other hand, these projects made it possible to implement comparative study between Indonesian and Japanese examples. For instance, a research question, “whether a large-scale earthquake similar to Sumatra earthquake can happen in the Nankai trough” can directly affect Japanese disaster mitigation measures. Furthermore, if these research projects can clarify the process and mechanism of volcanic eruption through the observation of Indonesia’s various volcanoes which frequently erupt, the findings are expected to provide useful insights on Japanese eruption forecast system⁶.

SATREPS projects were distinct from other academic research because the outcomes of the projects are aimed to be practically utilized in the society. Disaster risk reduction through SATREPS projects deal with not only researching natural phenomena but also sharing results of research with government offices.

⁶ University of Tokyo website. <http://www.eri.u-tokyo.ac.jp/indonesia/project.html> (Accessed in April 2018)

10.3 Noteworthy Achievements in Cooperation

This section introduces five key achievements of Japanese cooperation, namely, 1) the long-term cooperation in the field of Sabo, 2) flood control projects that was implemented as a part of river basin development, 3) recovery support from the 2004 Indian Ocean Earthquake and Tsunami that influenced 200,000 people, 4) recovery from the Central Java Earthquake that achieved “Build Back Better,” 5) establishment of BNPB and disaster management system and 6) other emergency assistance.

10.3.1 Comprehensive erosion control through human resource development and physical control

(1) Technical cooperation projects on Sabo

The Indonesian government requested Japan to provide technical cooperation on Sabo technology. As a response, the Japanese government sent long-term technical experts in the early 1970s. After the expert dispatch, the Indonesian government submitted an official request for a project on volcanic Sabo center improvement to the Japanese government. Accepting the request, Japan provided technical cooperation projects listed below for more than 30 years since the 1980s.

- i) Volcano and Sabo Control Technology Centre (VSTC) Project (1982-1989)
- ii) Sabo Technical Centre (STC) Project (1992-1997)
- iii) Integrated Sediment Disaster Management Project for Volcanic Area (2001-2006)
- iv) Integrated Disaster Mitigation Management for “*Banjir Bandang*” (2008-2011)

Ever since the Volcanic Sabo Technical Centre was built in the Special Region of Yogyakarta by grant aid cooperation, JICA’s cooperation on Sabo took place mostly there.

The main objectives of the “Volcano and Sabo Control Technology Centre (VSTC) Project” and the “Sabo Technical Centre (STC) Project” were to 1) provide trainings on volcanic Sabo for Indonesian technician and 2) develop technology to establish appropriate Sabo construction method in Indonesia. Objectives of the following project, “Integrated Sediment Disaster Management Project for Volcanic Area” were establishing planning and implementation method for local comprehensive disaster countermeasure and developing human resources. The project also included a component of establishing and managing a course for erosion control at the Department of Engineering at Gadjah Mada University.

Through technical cooperation projects listed as i) and ii) above, approximately 220 Indonesian experts were trained in Sabo. In addition, about 100 technicians were also trained in the project iii) above. These experts are now working in organizations related to the Ministry of Public Works and Housing. Japan has contributed to capacity development of Indonesian experts in Sabo, especially in the aspects listed below, through technical cooperation projects since the 1970s.

- Sharing documents and information that Japan and Indonesia hold on Sabo technology, which led to the improvement of capability and knowledge of Indonesian experts.
- Providing knowledge and technology on damage reduction of sediment disasters, which led to the improvement of capability and knowledge of Indonesian experts.

- Development of guidelines and manual for management of pyroclastic flow and sediment disaster, which was used to disseminate the concept of integrated sediment disaster management among Indonesian experts.

The level of objectives for the projects listed above became higher as the support continued. Originally, the main objective was to 1) train Indonesian staff members in related organizations to work on volcanic disaster risk reduction. Then, the following project aimed to 2) increase the capacity of the staff so they can work on volcanic disaster risk reduction by themselves, and this was followed by the next project which aimed to 3) establish a mechanism to systematically share the technical knowledge and to develop a course on natural disaster risk reduction in the civil engineering department. With these steps, human resource development at the university level became possible.

As described above, Japan’s long-term technical cooperation on Sabo contributed not only to the improvement of individuals and organizations but also to the development of system that facilitate human resource development.

(2) Cooperation and its effectiveness on volcanic erosion control

For the region around Mt. Merapi, Japan developed the “Master Plan for Land Erosion and Volcanic Debris Control in the Area of Mt. Merapi” (completed in 1980) by conducting a development study in the late 1970s. Since then, Japan provided ODA loans every time when the region faced a risk for sediment disaster by volcanic eruption. Through the ODA loan projects, Japan built Sabo facilities by applying many technologies such as steel-made double wall dam, slit type dam, strengthening debris flow observation system, and revision of the master plan based on new analytic technologies. Currently, the total number of Sabo dam has reached 250 including dams constructed with the Indonesian government’s own budget. There are also about 330 Indonesian experts specialized in Sabo through technical cooperation. Although there were not enough Indonesian technicians in the 1980s when Japan started the series of support, Japan’s cooperation successfully improved their capability, and today, those technicians and their successors are taking important roles in the field of Sabo in Indonesia.

Table 10-2: Projects for Mt. Merapi

Year	Project Name
1977	Study for making master plan for land erosion and volcanic debris control in the area of Mt. Merapi (M/P)
1985	Urgent Disaster Reduction Project for Mount Merapi (ODA Loan)
1995	Mt. Merapi & Mt. Semeru Volcanic Disaster Countermeasures (2) (ODA Loan)
2005	Urgent Disaster Reduction Project for Mt. Merapi/Progo River Basin and Mt. Bawakaraeng (ODA Loan)
2014	Urgent Disaster Reduction Project for Mount Merapi (II) (ODA Loan)

The “Urgent Disaster Reduction Project for Mount Merapi (II)” in the table above was distinct from other projects because it cooperated with the SATREPS project, “Multi-disciplinary Hazard Reduction from Earthquakes and Volcanoes in Indonesia” and focused on software components such as using alert system and establishing evacuation system in addition to facility construction.

Moreover, Japan supported planning and developing Sabo facilities considering mining management of gravels. By reusing the gravels accumulated in the dam, it becomes possible to secure the capacity and to prolong the life of the dam. Gathering gravels can provide local residents cheap aggregates as well as a means to support their livelihoods. Thus, this process is contributing to economic development.

A number of Sabo projects have also been implemented for other volcanoes in Indonesia including Mt. Kelud, Mt. Semeru, and Mt. Bawakaraeng.

10.3.2 Flood control project

Flood control projects were first implemented as a part of river basin development and management projects. Earlier, flood control projects dealt with Brantas River, Jeneberang River, and Solo River. In addition, four projects on river improvement for Ural River in North Sumatra were implemented. These projects accounted for more than half of flood control projects implemented by Japan in Indonesia. Multi-purpose dams were built for three main river basins, namely, Karangates dam (Brantas River), Wonogiri dam (Solo River), Bili Bili dam (Jeneberang River). Combined with river improvement, it became rare for these three river basins to have flood.

Table 10-3 shows flood control projects implemented in several cities⁷. The needs for flood protection were estimated to be high because massive floods were observed in all targeted cities before the project and frequent floods were bottleneck of growth of population and economy. Furthermore, there was a high risk of floods due to heavy rainfalls observed. The projects were comprehensive and large-scale which consisted of development of dykes and new drainage channel and existing channel improvement. According to the beneficiary survey conducted in the ex-post evaluation, severity, frequency, and duration of flood decreased significantly in the target area of each project. In the case of Aceh River, for example, the number of average annual flood decreased from 1.92 times to 0.25 times per year. Therefore, it can be said that Japan's cooperation in flood control has contributed to stable livelihood and economic development of the target cities.

Table 10-3: Flood Control Projects in Cities

Fiscal Year	Project Name	Province	Exceedance Probability Year	Target City and Its Population
1980	Krueng Aceh Urgent Flood Control Project	Aceh	5 years	Banda Aceh (approx. 200,000)
1985	Padang Area Flood Control Project	West Sumatra	25 years	Padang (approx. 820,000)
1993	Upper Citarum Basin Urgent Flood Control Project 1,2	West Java	20 years	Bandung (approx. 2.51 million)
1998	Medan Flood Control Project	North Sumatra	25 years	Medan (approx. 3 million)

⁷ In Jakarta and Surabaya, sewerage and drainage projects were also effective in controlling flood. Details are described in Chapter 4.

10.3.3 Recovery support from the disaster caused by the Major Earthquake off the Coast of Sumatra and Tsunami in the Indian Ocean

The number of deaths and missing caused by the Major Earthquake off the Coast of Sumatra and Tsunami in the Indian Ocean reached more than 168,000, and 81,942 houses were significantly damaged. Moreover, 58,785 houses were negatively affected by the earthquake and tsunami.

As a response to this large-scale disaster, Japan provided a series of cooperation including the dispatch of the Japan Disaster Relief Team, development of the reconstruction master plan for Banda Aceh, 12 community recovery support projects, urgent infrastructure reconstruction, non-project grant aid cooperation which was used for reconstruction of roads and drainage, and construction of tsunami escape buildings among others, and reconstruction of transportation and infrastructure for the water resource sector. Especially, the Japan Disaster Relief Team received high reputation in terms of its promptness. As for the development of the master plan, Japan developed it based on BAPPENAS's blueprint and conducted a technical study cooperating with non-project grant aid. GIS map was also developed.

Evacuation buildings were constructed as a disaster risk reduction measure for future tsunami. In areas where evacuation buildings were constructed, JICA conducted activities to improve livelihood of local residents. More specifically, JICA provided technical assistance for managing activities such as baking cakes, processing dried fish, and traditional handcrafting.

To disseminate the outcomes of these activities to other communities in Aceh as a whole, JICA implemented "The Project on Self-Sustainable Community Empowerment Network Formulation in Nanggroe Aceh Darussalam (NAD) Province" for two years from 2007. This project provided several types of support such as improving livelihood of local residents, capacity development of local administrators, broadcasting a radio program in which people could seek advice via phone. Japan supported broadcasting this radio program for three years.

Due to an armed conflict between the Free Aceh Movement (GAM) and the Indonesian Security Forces that lasted until the peace agreement was made in 2005, Aceh had been working not only on recovery from the earthquake and tsunami but also on rebuilding from the conflict. In an ODA loan project, the "Aceh Reconstruction Project" (2007), new roads and drainage were constructed in order to reconstruct infrastructures for transportation and water resource better than the pre-disaster level. A new 137 km-long road constructed through the project that connects Takengon in Central Aceh District and Blangkejeren in Gayo Lues District effectively ameliorated accessibility to Aceh and other regions. The project assisted the region's economic restoration and contributed to "Build Back Better."

As these examples show, infrastructure restoration has been done first to assist the recovery from devastated damage of the disaster in the four-year long recovery process of Aceh region. After the condition of infrastructure improved, Japan provided more comprehensive support that included community-level recovery and reconstruction support.

BOX 10-1: Dr. Muzailin Affan and Education for Disaster Reduction

Dr. Muzailin Affan, Assistant Professor of Syiah Kuala University in Banda Aceh, works to provide disaster education for people in the region after the Major Earthquake Off the Coast of Sumatra and Tsunami in the Indian Ocean. He was affected by the disaster, and he lost his sisters and parents in that event.

He deeply regretted that he lacked sufficient knowledge about tsunami to tell his parents to run away after the earthquake occurred. Through this experience, he recognized the importance of disaster education.

He participated in a JICA project, “The Project on Self-Sustainable Community Empowerment Network Formulation in Nanggroe Aceh Darussalam (NAD) Province” in 2007 and worked on providing disaster education. After the project ended, he came to Japan to see countermeasures for tsunami at Sanriku Coast and realized that it was vital to prepare for possible disasters in advance. Further, a word of Minister of the Embassy of Japan in Indonesia (former) that disaster risk reduction is “an investment for the future” encouraged Dr. Muzailin to study about disaster risk reduction. Among all options, he decided to study in Tohoku University in Japan where earthquake and tsunami occur frequently. Witnessing the damage caused by the Great East Japan Earthquake, he became more motivated to promote disaster education. Since then, he has been playing a key role of encouraging interactions regarding disaster risk reduction between Japan and Indonesia.

Today, he works to lead evacuation drills, set up disaster education laboratory in primary schools, organize exhibitions at the tsunami museum, and promote disaster countermeasures at the community level. Especially for economically disadvantaged regions, he considers livelihood improvement is as important as disaster education. Hence, he is working to provide support for both community development and education.

Similar to a Japanese tsunami related story of “the fire of rice sheaves,” there is a story song called SMONG in Simeulue island. Learning from these methods, Dr. Muzailin is trying to utilize narratives and songs to inform people of the danger of tsunami and the importance of running away from it.

A song’s title SMONG means “tsunami” in the local language of Simeulue. The song was created after a devastating earthquake and tsunami happened in 1907 and had been passed onto next generations. Thanks to this song, people successfully evacuated to a high place when they saw tide ebbing after an earthquake in 2004. Although the earthquake created more than 9m high tsunami, only seven out of more than 70,000 local residents were affected by the disaster.



Residents of Banda Aceh Community



Dr. Muzailin Affan



Disaster Education Laboratory at a Primary School in Banda Aceh

BOX 10-2: Deepening the Partnership after the Great East Japan Earthquake

When the Great East Japan Earthquake occurred on 11th March 2011, a large amount of financial, physical, and personal support was provided by the Indonesian government and people. For the energy shortage caused by suspension of nuclear plants, the Indonesian government supplied one million metric ton of LNG. Moreover, government officials from Indonesia visited disaster-stricken areas as shown in Table 10-4.

Table 10-4: List of Indonesian Government Officials who Visited Disaster-Stricken Area of the Great East Japan Earthquake

Time	Name of Visitors
May 2011	Prof. Ir. Kuntoro Mangkusubroto, former secretary of Rehabilitation and Reconstruction Agency for Aceh and Nias
June 2011	Susilo Bambang Yudhoyono, former president of Indonesia
February 2012	Mr. Eddy Purwanto, Former undersecretary of Rehabilitation and Reconstruction Agency for Aceh and Nias
July 2012	Mr. Eddy Purwanto, Former undersecretary of Rehabilitation and Reconstruction Agency for Aceh and Nias
August 2012	Ms. Illiza Sa'aduddin Djamal, former deputy mayor of Banda Aceh

Source: JICA Review Team

These visits of government officials who have experienced recovery from the Major Earthquake off the Coast of Sumatra and Tsunami in the Indian Ocean rendered psychological support for victims of the Great East Japan Earthquake, they said. In other words, the visits reminded victims of the Great East Japan Earthquake that there were people who successfully recovered from the damage of large-scale disasters. Having received the visit of those government officials, Higashimatsushima city became interested in communicating and interacting more with Banda Aceh, and the city suggested to plan a JPP project, which later was implemented by Higashimatsushima Organization for Progress and Economy, Education, Energy (HOPE). This project aimed to increase understandings about four major issues (i.e., sustainable community development, regional disaster prevention, community business, and development of functional regional administrative organization) through residents-led activities in order to achieve an ultimate goal, that is, sustainable recovery from the disaster. More specifically, both cities held training programs and accepted trainees from Japan and Indonesia in order to exchange information on community business. This type of activity has been developed and kept implemented in successive projects earlier than expected. Given that these projects are led by local residents and include business as a main domain for project activities, the projects have been stimulating for both sides and contributed to vitalization of communities.

Since the tsunami, JICA has been building relationships with Banda Aceh through other schemes of support. For example, JICA organized Japanese teachers' visits to Banda Aceh as a part of training program. From Indonesia, Japan accepted trainees for the comprehensive disaster countermeasure administration course. As these activities indicate, JICA has been facilitating the communication and interaction between Japanese and Indonesian damage-stricken cities.

10.3.4 Recovery support for the disaster caused by the Central Java Earthquake

In May 2006, an M6.3 earthquake whose seismic center was on the south of the Special Region of Yogyakarta killed more than 5,700 people and injured more than 36,000 people. The number of collapsed and partly damaged houses reached 156,664 and 202,032, respectively. Since the governor of the Special Region of Yogyakarta advocated for "residents-led recovery," local governments (provincial and district/municipality levels) directed recovery efforts.

The Japanese government sent the Japan Disaster Relief Teams to the area immediately after the disaster. JICA also acted quickly and conducted the needs assessment for disaster recovery support. It also implemented a project titled, "Central Jawa and DIY Earthquake Reconstruction Program Advisory Team" in order to oversee overall recovery support projects. Further, JICA provided eight

community recovery support projects as well as cooperation by Japan Overseas Cooperation Volunteers for local business restoration, reconstruction of primary/secondary schools and health center, and health care. As for reconstruction of schools and health centers, grant aid was utilized.

To deal with the most important issue of housing reconstruction, the Indonesian government, in consultation with JICA, made an early decision to provide subsidy to the victims whose houses got damaged. The subsidy, which was about 150,000 yen per house, was provided to 240,000 to 250,000 houses. With this background, the Indonesian government requested Japan for another support for architectural administration, and the “Sub Project of Supporting Building Administration for Promoting Reconstruction of the Housing and Earthquake Resistance Strength Improvement of Building” (2006-2007) was implemented.

The project’s aim was to reduce risks of earthquake-derived damages by providing subsidy for housing reconstruction with a condition of increasing the strength of houses. The project also contributed to improving technical and administrative capability of local governments which was essential to achieve the above goal. The main activities of the project included clarification of key requirements needed for increasing architectural strength of houses and promotion of such activity. Furthermore, a building certification system was introduced in association with subsidy from the Indonesian government, in order to enforce the introduction of earthquake resistant building. Training programs for officers in charge of building certification also contributed to the enforcement.

On the side of communities, they organized an association for housing reconstruction. By acting as an association, they were actively engaged in the recovery process. This active engagement energized themselves and created positive atmosphere toward recovery.

It is difficult to provide ODA-based financial aid for housing reconstruction since houses are personal assets. On the other hand, shelters are the basic needs vital for people affected by disasters to regain their life before disaster. When it comes to housing reconstruction, it is ideal that the new houses will be able to bear at least the similar scale earthquake. However, in developing countries, there are several issues that make reconstructing non-engineered masonry⁸ houses earthquake-resistant difficult. Those issues include: the lack of building code for houses, the lack of technician’s capability, and the high cost for construction. Nevertheless, in case of the Central Java Earthquake, more than 100,000 non-engineered houses were successfully reconstructed earthquake-resistant after all these conditions were met.

- 1) Financial support was provided to union for reconstruction of housing by the central and/or regional governments, subject to receiving building certification
- 2) Government, residents, and communities understood the needs to strengthen buildings
- 3) JICA supported earthquake-resistance design houses by using Japanese technology for seismic resilient design.

⁸ Non-engineered masonry: rock-, brick-, concrete block-structures that are not designed and built based on engineering theories and methods.

What were distinctive regarding the recovery from the Central Java Earthquake were that 1) it successfully rebuilt houses, which are personal assets, earthquake-resistant and that 2) it pioneered the current trend of “Build Back Better.”

10.3.5 Cooperation for Establishment of BNPB and Disaster Management System

After the Disaster Management Law was enacted in 2007, and BNPB was established (2008), the development of a disaster management structure in both central and local levels became the priority issue. JICA supported capacity building from the community level to central-regional level of disaster management for various types of disasters by implementing “The Study on Natural Disaster Management Plan” (2007-2009) and “The Project for Enhancement of the Disaster Management Capacity of BNPB and BPBD” (2011-2015). Especially, the capacity of the local level was significantly enhanced at 25 districts and towns in 2 provinces, through the preparation of regional disaster management plan, hazard-risk map and community disaster management. As for the preparation process of the disaster management plan, stakeholders such as Indonesian National Armed Forces, PUPR and BMKG understood disaster management plan through supporting application for coordinating with stakeholders and hazard map, which is introduced for facilitating understanding and coordination of the plan. This is one example of the contribution from the project. These efforts synchronized with the policy and implementation of Indonesian disaster management systems. For example, disaster management is prioritized in the same way as “public investment” in the National Medium Term Development Plan (RPJMN) (2015-2019). Although the dissemination from the pilot area to the entire country was not observed at the end of the project in 2015, it can be expected to realize in the medium term since BNPB has committed to national dissemination.

10.3.6 Other emergency assistance and support for disaster risk reduction

(1) Emergency assistance

Japan’s emergency assistance to Indonesia for natural and social disasters since 2001 is listed below. This includes the dispatch of the Japan Disaster Relief Teams (comprised of the Ministry of Foreign Affairs, the National Police Agency, the Fire Defense Agency, the Maritime Safety Agency, JICA, medical doctors and pharmacists) and the Self-Defense Force, grant aid, and experts. The list also includes the assistance implemented through international organizations such as the International Committee of the Red Cross and the United Nations (i.e., FAO, UNICEF, WFP).

Table 10-5: List of Emergency Assistance since 2001

Fiscal Year	Project Name
2003	Emergency Assistance for the Earthquake Disaster in Papua Province, Indonesia
2003	Assistance for prevention measures for avian influenza in Asian countries
2004	Dispatch of a Second Japan Disaster Relief Medical Team in Response to the Disaster in Indonesia Caused by the Major Earthquake off the Coast of Sumatra and the Tsunami in the Indian Ocean
2004	Dispatch of a Third Japan Disaster Relief Medical Team in Response to the Disaster in Indonesia Caused by the Major Earthquake off the Coast of Sumatra and the Tsunami in the Indian Ocean
2004	Japan's Assistance to Indonesia for Earthquake Disaster off the Coast of Sumatra
2004	Emergency Aid to Indonesia for Earthquake/Tsunami Disaster
2004	Emergency Aid to Indonesia for Earthquake Disaster on Alor Island, East Nusa Tenggara Province
2004	Emergency Aid to Indonesia for Earthquake Disaster in Papua Province
2005	Emergency Assistance in response to Avian Influenza Epidemic in Indonesia (October 2005)
2005	Emergency Aid to the Republic of Indonesia for Flood and Landslide Disaster on Java Island
2005	Emergency Grant Aid to the Republic of Indonesia
2005	Emergency Grant Aid to the Republic of Indonesia
2006	Emergency Assistance to Indonesia for the Large-scale Tsunami in Southwest Coast of Java Island Caused by the Earthquake
2006	Emergency Grant Aid in Response to Earthquake Disaster in Central Java, Republic of Indonesia
2006	Emergency Aid to the Republic of Indonesia for Flood and Landslide Disaster on Java Island
2006	Emergency Assistance to Indonesia for Flood and Landslide Disaster in South Sulawesi Province
2009	Earthquake Disaster off the Coast of Padang, West Sumatera in Indonesia (Dispatch of Japan Disaster Relief Team)
2009	Earthquake Disaster off the Coast of Padang, West Sumatera in Indonesia (Dispatch of Japan Disaster Relief Team [Japan Self-Defense Forces])
2009	Emergency Assistance to Indonesia for Earthquake Disaster off the Coast of Padang, West Sumatera in Indonesia
2010	Emergency Grant Aid for the Earthquake off the Mentawai Islands, West Sumatra Province and the Eruptions of Mt. Merapi on Central Java Island in Indonesia
2010	Dispatch of a Japan Disaster Relief Expert Team in response to damage from the eruptions of Mt. Merapi on Central Java Island in Indonesia
2012	Emergency Aid to the Republic of Indonesia for Flood and Landslide Disaster
2014	Dispatch of Japan Disaster Relief (JDR) Team in response to the Crash of an Air Asia Plane
2014	Termination of Operations by the Escort Vessels of Japan Disaster Relief (JDR) Team in response to the Crash of an Air Asia Plane
2015	Emergency Assistance to Indonesia in Response to Smoke Pollution (Haze)
2015	Dispatch of an Expert to Indonesia in Response to Smoke Pollution
2016	Emergency Assistance to Indonesia for Flood and Landslide Disaster in South Sulawesi Province

Source: JICA Review Team based on the information of the Ministry of Foreign Affairs of Japan

This table lists the international emergency assistance officially announced by the Ministry of Foreign Affairs of Japan. In addition, there have been cases of emergency assistance through preexisting projects or dispatch of experts. The boxed article below introduces one such cited from the ODA White Paper (2014).

**BOX 10-3: How the Disaster Management Technology of Japan, a Disaster-Prone Nation, Saved 5,000 Villagers from Flooding
– Japanese Engineers Struggle against Natural Dam Collapsing in Indonesia-**

Torrential rains continuing on from the previous day caused a natural dam to collapse, and a flood of debris rushed down the river and slammed relentlessly into the village. It was July 25, 2013, when intense torrential rain upstream of the Way Ela River, running through the central part of Negeri Lima village in Maluku Province of Indonesia, caused a natural dam to burst, which let out huge amount of water and debris. This debris flood rushed downstream to the village, home to approximately 5,000 people. Around 13 million cubic kilometers of water, equivalent to the amount of water in 5,200 Olympic-size swimming pools, flowed through the area. 30 hectares – equivalent to half of the village – was affected, causing damage to 422 households, schools, and other buildings. Regrettably, three people lost their lives in this disaster. However, there could have been thousands of casualties rather than just three.

It is not widely known that Japanese disaster risk reduction experts contributed greatly to minimizing flood damage. Mr. Hisaya Sawano, then an expert at JICA as a policy adviser on Integrated Water Resources Management for the then Ministry of Public Works of Indonesia now working for Public Works Research Institute (PWRI) explained, “A natural dam forms when accumulated dirt caused by a large landslide due to an earthquake or torrential rain blocks water flow of a river. In this case, the dam that collapsed was formed by a massive landslide that occurred upstream of the Way Ela River in July 2012, a year before the flood. Right after that landslide, the then Ministry of Public Works asked for my advice on the assessment of the situation and possible countermeasures. So the first thing I did was visit the area to examine the situation, and then proposed the necessary emergency response measures. I also advised them that it was necessary to immediately summon an erosion and sediment control (“SABO” in Japanese) expert team from Japan to the site.”

In September 2012, a survey team from Japan conducted an intensive survey of the affected area. “From my experience of having seen many cases of natural dams in Japan, I immediately realized that we were dealing with quite a dangerous situation.” Mr. Tadanori Ishizuka of PWRI, who served as the survey team’s SABO expert stated. Having concluded that the risk of collapse was extremely high, the survey team recommended that the then Ministry of Public Works immediately consider taking necessary countermeasures and preparedness efforts. In order to help the Ministry understand the danger of the situation, the team provided a video created in Japan that used computer-generated imagery (CGI) to illustrate what would happen if a natural dam collapsed. The video later proved to be more effective than the team expected.

Mr. Yoshio Tokunaga (PWRI), then an expert at JICA, who served as the Disaster Management Policy Adviser to BNPB, visited the site many times and, together with the Chief of Negeri Lima Village, visited the disaster management offices in Maluku Province and Central Maluku Regency to urge them to strengthen countermeasures. In collaboration with the Embassy of Japan and local JICA Office, he also worked on grassroots education with a local NGO for proper evacuations.

“During the early stages of our activities, there were residents and people concerned on the Indonesian side who did not believe that the natural dam would ever collapse because it was surrounded by sturdy-looking rocks. We therefore used the CGI video of the natural dam collapsing, which Mr. Ishizuka brought from Japan, along with erosion control pamphlets and other materials made by JICA, and continued the educational activities together with local and national NGOs, college students, and representatives of the village. The video was very effective. It helped a lot of the residents understand the danger of the natural dam collapse and the necessity of emergency evacuations,” Mr. Tokunaga commented.

At the end of February 2013 - five months prior to the natural dam collapse - PWRI, which Mr. Ishizuka belongs to, signed an agreement with the then Ministry of Public Works of Indonesia, and then set up a device (PWRI’s water stage gauging buoy) in order to automatically measure the water level of the natural dam. Relevant parties from Japan and Indonesia continued to monitor the natural dam, and shared information on its water level. The experts monitoring changes in the water level found that the situation had become dangerous several days before the collapse, and urged the village residents to evacuate. The residents, with clear images of possible damage from natural dam collapse, promptly evacuated, which contributed to minimizing casualties.



Source: Ministry of Foreign Affairs of Japan. *Japan's Official Development Assistance White Paper 2014: Japan's International Cooperation*. 2015. p.90-91. http://www.mofa.go.jp/policy/oda/page23_000807.html (Accessed in April 2018)

A natural dam created in the upper stream of the Way Ela River. Before (left) and after (right) the collapse of the dam. (Photo: Ministry of Public Works of Indonesia (former))

“On that day, I noticed on my computer in Japan that the water level of the natural dam had reached its full capacity and realized how terrible the situation became. I was very worried because I could not reach my collaborators in Indonesia by phone. It was a great relief when I later learned that the disaster had caused minimal casualties,” said Mr. Ishizuka. It can be said that this was achieved because the Indonesian government officials and local residents listened to the scientific analysis from Japan, a disaster prone nation. While this did not attract much attention in Indonesia because of the minimal damage, it is said that among local residents, many share a strong feeling that their lives were saved by Japanese.

“The natural conditions of Indonesia are similar in many ways to those of Japan, so I believe that Japan can greatly contribute to the field of water-related disasters in Indonesia,” commented Mr. Sawano. It is expected that Indonesia will take advantage of this experience when working to reduce the risks of possible disasters in the future.

(2) Disaster Risk Reduction Support through JICA Partnership Program

The JICA Partnership Program (JPP) is a scheme in which Japanese local governments and/or NGOs propose projects to cooperate with developing countries to which JICA provides funding. In the disaster risk reduction sector, 11 JPP projects have been adopted by JICA (see Table 10-5). The interaction between Banda Aceh City and Higashimatsushima City was nurtured through one of these JPP projects. The JPP projects cover various aspects such as disaster education, utilization of volcano monitoring system, system development for information transfer, and construction of seismic resilient buildings.

As of December 2017, a total of 90 JPP projects have been implemented in Indonesia, and many of them was in the disaster risk reduction sector. It is notable that various organizations including educational corporations, NGOs, and research institutes have implemented these projects. Since capability building of various parties and levels is needed to reduce disaster risks, it is possible to observe many cases on how local governments and communities in Indonesia work on this challenge.

Table 10-6: List of Japan Partnership Program Projects Implemented in Indonesia

Implementation Period	Project Name	Implementing Organization
2017-2018	Project on Enhancing Ability of Community Based Disaster Risk Reduction by Women	The NGO Collaboration Center for HANSHIN QUAKE Rehabilitation
2015-	Disaster Education by Utilising Traditional Dance “Maena” of Nias Island	Bambang Rudyanto’s Laboratory, Wako University
2012-2017	Project for Earthquake Safer Built Environment employing PP-Band Mesh Seismic Retrofit (PPBM) Technology for Masonry Housing	Institute of Industrial Science, University of Tokyo
2011-	Enhancing Abilities of Community-based Disaster Management of Several Villages around Merapi Volcano in Central Java	Radio FMYY
2009-2011	Promoting Project for Geotechnical Disaster Prevention Technology in hilly and Mountainous Areas in Indonesia	Akita University
2007-2008	International Cooperation Project for the Restoration of the Earthquake-hit Area of Java Island	Kyoto City
2004,2005,2006	Coexistence with Volcano	Shimabara City, Nagasaki
2003	Training on Participatory Disaster Management in Asian Cities	CITYNET
2017-2019	Agricultural Development and Disaster Risk Reduction project by Agro-tourism Promotion Utilizing the Knowledge of Roadside Station (Michi-no-Eki)	Minami-Boso City, Chiba
2016-2019	Capacity Development Project on Regional Disaster Management by Utilizing Volcanic Monitoring and Observation System on West Side of Mt. Merapi	Mt. Fuji Research Institute
2015-2018	Banda Aceh and Higashimatsushima Mutual Reconstruction Project: Community Economic Empowerment for Local Disaster Mitigation	Higashimatsushima Organization for Progress and Economy, Education, Energy (HOPE)
2013-2015	Community Based Mutual Reconstruction Acceleration Program by Utilization of Local Resources in Banda Aceh City and Higashimatsushima City	HOPE

Source: JICA Review Team based on JICA website⁹

⁹ JICA website. <https://www.jica.go.jp/partner/kusanone/country/indonesia.html> (Accessed in April 2018)

10.4 Outcomes/Impacts of Japan's Economic Cooperation and Future Prospects

10.4.1 Outcomes/impacts of Japan's economic cooperation to date

Based on the review of period-specific characteristics and noteworthy achievements of Japan's economic cooperation in the disaster risk reduction sector, major issues, direction of cooperation, implementation areas and project groups are summarized as below.

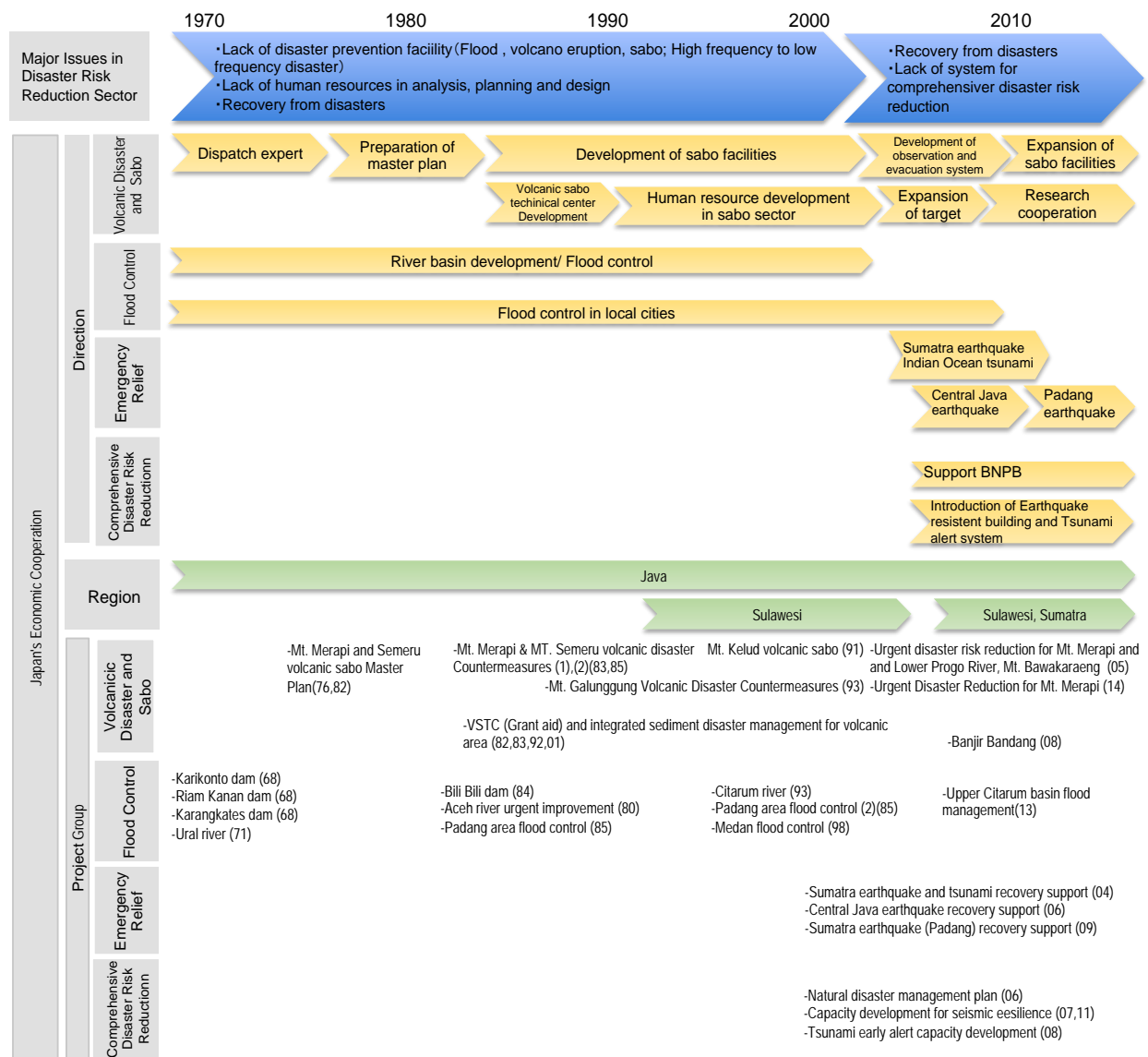


Figure 10-2: Characteristics of Japan's Cooperation in Disaster Risk Reduction

(1) Novelty

As mentioned previously, Japan and Indonesia are similar in their geological and geographical characteristics. Therefore, both countries experience similar types of disaster. Various outcomes have been made by introducing new concepts from Japan to Indonesia.

Sabo, Volcano disaster risk reduction

- Since Japan learned modern erosion control technologies from western countries during the Meiji period, Japan has been advancing the technologies in a way that they fit to the country's natural and social conditions. For Indonesia where a series of volcanic eruptions and sediment disasters occurred in the 1960s, Japan's technical guidance offered by long-term experts on Sabo that started in the 1970s was a new concept regarding the country's volcanic and debris flow disaster countermeasures. Japan has supported Indonesia continuously for different types and scales of volcanic eruptions. As a result of Japan's cooperation, facilities represented by Sabo dams and revetment works were introduced for the first time in Indonesia. In addition, "Sabo" that was once a new concept to Indonesia, is now used more prevalently in Indonesia.
- Through cooperation, Japan was able to accumulate its experiences on volcanic and debris flow disaster countermeasures. These experiences have provided useful feedbacks to Japan's volcanic Sabo planning and facility development. For example, the Sabo facilities with sand pocket effects developed in Sakurajima and Mt. Unzen were cases in which experiences gained in Indonesia were effectively utilized. In addition, the experiences were further utilized to make a hazard map and set up restricted areas upon disasters. As these examples indicate, Japan's cooperation for Sabo in Indonesia benefitted Japan, and its novelty needs to be acknowledged¹⁰.

River Basin Development and Management/ Flood Control

- For river basin management, construction of large-scale flood control facilities such as multi-purpose dam and headrace tunnel became common as a physical disaster risk reduction measures after those facilities were developed with ODA loans from Japan. In the 2000s, Japan also introduced the concept of integrated water resource management to Indonesia.

Disaster Risk Reduction

- After the Central Java Earthquake, reconstruction of damaged houses with earthquake resistance strength was a challenge for recovery. Many houses could be reconstructed with proposed key requirement for quake-resistance through implemented building certification application system with technical support from Japan. Furthermore, BMKG gained enough capacity to announce tsunami warning within 5 minutes after the related earthquake through enhancement of observation, analysis data and warning system operation. These had never been implemented in Indonesia before the 2000s.

(2) Added Value

Japan's continuous support for Indonesia has brought additional values.

Sabo and Volcanic Disaster Risk Reduction

- For human resource development, Japan successfully developed human resources by

¹⁰ The Embassy of Japan in Indonesia. "Merapi kazan wo chushin to shita nichiiindonesia kazan bosai jigyo no rekishi. [The history of Japan-Indonesia volcanic disaster risk reduction centered on Mt. Merapi.]" http://www.mofa.go.jp/mofaj/gaiko/oda/about/hanashi/page22_000688.html (Accessed in April 2018)

implementing multi-step capacity development. Specifically, Japan first approached human resources in the administrative area where the needs for human resource development was highly urgent, and then established human resource development program at universities aiming at long-term development of human resources. A long-term commitment of Japan enabled these kinds of step-by-step development.

- The long-term commitment fruited people's interaction. This interaction facilitated implementation of two SATREPS projects which required submission of proposals from both Japan and Indonesia and were difficult to complete without mutual understanding and cooperation. The fact that multiple SATREPS projects have been planned and completed successfully indicates that the past cooperation nurtured mutual understanding between Japan and Indonesia.

Recovery from Disasters

- Leading "Build Back Better," which refers to rebuilding a community stronger and more durable than before the community experiences a disaster, as exemplified in the reconstruction assistance to Yogyakarta in which the project accomplished constructing seismic resilient non-engineered housings through technical assistance.
- After the Great East Japan Earthquake, people of Banda Aceh City and Higashimatsushima City started mutual interaction. Citizens of Higashimatsushima, who are working to recover their community, and Banda Aceh, which has an experience of recovering from a catastrophic disaster, share their knowledge and cooperate to realize "mutual restoration". Interaction at a grassroots level and strong relationship between victims of disasters in Japan and Indonesia are an additional value produced through Japan's cooperation to Indonesia, and such value may be a foundation for future cooperation in the field of disaster risk reduction.

10.4.2 Implications for future cooperation

Japan is one of a few developed countries that have rich experiences in dealing with various disasters such as earthquake, tsunami, landslide, volcanic eruption, and flood. Indonesia is similar to Japan because both countries are in the Pacific Ring of Fire facing risks of similar disasters. Therefore, Japan's knowledge and experiences on disaster risk reduction have been beneficial to Indonesia. It is true that Japan also took disasters frequently happened in Indonesia as reference and learnt from them.

As a way of maturing partnership between two countries in disaster risk reduction, followings are the proposals of possible cooperation and exchange.

(1) Pre-investment for preventive disaster risk reduction

Although ten years have passed since the establishment of BNPB in Indonesia, its main concern is still on the emergency response phase. While BNPB is also active in disaster risk reduction and conducted preventive measures as well as preparedness, their concrete activities remain at the level of disaster education, awareness raising and stocking relief supplies. Since BNPB does not have jurisdiction to coordinate among related ministries, it needs to rely on the initiatives of responsible ministries such as

PUPR in investment for infrastructures. Although investment amount for disaster risk reduction is not small, it is not sufficient for the level of disaster damage and the size of the country's economy. From now on, it is recommended for Japan to provide advice and implement concrete measures to improve investment for preventive disaster risk reduction in collaboration with related agencies in Indonesia by utilizing past experiences of Japan and cases of supporting other countries.

(2) Capacity development of local disaster risk reduction organizations and related agencies

JICA has been engaged in capacity development not only for central government but also local disaster risk reduction organizations. Since the level, frequency, and risk of disaster can vary significantly from place to place, the countermeasures shall be developed at the local level. Therefore, local governments need to play critical roles in leading disaster risk reduction measures. Local governments are required to act flexibly in different phases (i.e., prevention, pre-disaster preparation, emergency support, and rehabilitation and reconstruction). Target of the capacity development are not only decision-making offices but also sector-related offices such as health, education, police, fire department, public works, information system, community development, finance, etc. Thus, cooperation should be seamless in terms of both sectors and phases.

In this respect, every Regional Disaster Management Agency (BPBD) needs to acquire the capacity to lead and coordinate various related organizations concerning disaster risk reduction. And other organizations shall cooperate with BPBD in taking disaster risk reduction measures. However, it is hard to say that such cooperative relationships are deployed nationwide. Therefore, there is a need to continue cooperation that can contribute to capacity building of local organizations for disaster risk reduction.

One of the characteristics of Japanese cooperation is involvement of various stakeholders, not just administrative organizations. For example, Japanese research institutes, such as university, have contributed to the research capacity development of universities and research institutes in Indonesia on disaster risk reduction through SATREPS. In addition, local governments in Japan and research institutes have been contributing to capacity development of local governments, community organizations, and educational organizations through JPP projects. These kinds of public and private efforts are expected to continue for developing capacity of many parties. Furthermore, it is required to develop a system for BPBD to play a role to coordinate among local authorities and community groups to disseminate the output achieved with Japanese cooperation.

(3) Accumulation of knowledge on disaster risk reduction for self-sustaining development

Indonesia is one of the countries that Japan has been providing support for disaster risk reduction for a long time. Through the long-term cooperation, there are organizations such as BNPB and the Sabo Technical Centre that have gained the capacity and have accumulated experiences in developing and operating disaster risk reduction systems. Some of them have great potential to implement Third Country Training and South-South Cooperation because they already have experiences accepting training from abroad.

As mentioned before, various disasters have occurred in Indonesia such as the 2004 Indian Ocean Earthquake and Tsunami, and many development partners other than Japan also have provide various assistance. Indonesia has progressed significantly with the support of development partners over the past 15 years. However, the cooperation output was accumulated without enough time for the Indonesian government officials to gain technical knowledge to internalize such results. In other words, although policy measures and situations have greatly improved on the surface, the Indonesia's disaster risk reduction organizations have developed them without deep understanding of the technical background to the level that they can develop and improve the system by themselves after the external assistance finished. It is also observed that operation and maintenance of the equipment introduced by development partners are not sufficient, and standards introduced are not fully utilized.

Japan is expected to provide assistance to Indonesia in areas such as the creation of an intellectual basis to enable self-sustaining development by the people of Indonesia. Such cooperation is likely to a relationship that both countries respond together to the common challenges of disaster risk reduction.

Chapter XI Climate Change and Natural Environment Conservation

11.1 Summary

Indonesia was an important supplier of lumber for Japan during the 1970s and 1980s—a period of rapid economic growth in Japan—due to high demand for imported lumber. Against this background, many of Japan’s cooperation projects in Indonesia back then concerned the development of forestry to promote this particular industry. The 1990s saw growing international concerns about climate change and biodiversity, resulting in increased awareness of the importance of conserving tropical forests in Indonesia as part of efforts to solve these environmental issues. JICA has thus started to formulate projects for Indonesia from a perspective of biodiversity conservation and climate change response since then. (Of all the projects since 1990 for the country, 13 projects concern biodiversity while 12 are related to climate change. By contrast, no projects before 1990 bore the terms *biodiversity* or *climate change* in their titles).





Natural environment conservation (forests)

Japan’s development cooperation has set out a strategy whereby forest protection and conservation areas in Indonesia are managed by the Indonesian government and local communities working together. This initiative has been highly commended by Indonesia’s Ministry of Environment and Forestry (KLHK) as having contributed to capacity development in fire prevention and extinguishing. KLHK has also put in place community-based *Manggala Agni* (volunteer fire corps) modeled after volunteer fire corps in Japan that KLHK learned about during their training as part of JICA’s Training and Dialogue Programs in the country. In 2015, Indonesia was hit by forest and peat fires on a scale that had never been seen in recent years. This disaster resulted in a large-scale loss of biodiversity and larger emissions of greenhouse gases (GHGs), among other major challenges, revealing the need to further build the country’s capacity to prevent forest fires. This prompted the Indonesian government to establish the Peat Land Restoration Agency in 2016 to restore the peat land devastated by fires and prevent peat fires.

Natural environment conservation (biodiversity)

In the mid-1990s, the Research Center for Biology (RCB) was constructed in Cibinong, Bogor District, West Java Province (about one-hour’s drive south of Jakarta) with ODA grant from Japan. The Center is used effectively today, contributing to the country’s biodiversity research. RCB’s Herbarium *Bogoriense*, Museum *Zoologicum Bogoriense*, and Museum of Microbial Culture collections are used for various purposes: they are utilized for biodiversity research and conservation, visited by researchers from other countries for their research, and used by middle and high school students in Indonesia for their studies. In 2011, the “Project for Development of the Internationally Standardized Microbial Resources Center to Promote Life Science Research and Biotechnology” was launched as part of SATREPS. Involving a number of Japanese universities and research institutions, this project has enhanced interaction between Japanese and Indonesian researchers and transferred technologies for advanced storage of microorganisms and other purposes.

Table 11-1: Overview of the Climate Change and Natural Environment Conservation Sector in Japan's ODA

Period	1960s	1970s and early 1980s	Late 1980s	1990s	From the end of 1990s	From the end of 2000s
	Nation-State Building	Economic Development	Structural Adjustment	Growth until the Asian Financial Crisis	Democratization and Decentralization	Middle Income Countries
Historical Context	<ul style="list-style-type: none"> • Cold War • ASEAN (1967) • Inauguration of President Suharto (1968) • Oil-dependent economic development • Green Revolution 	<ul style="list-style-type: none"> • First Oil Crisis (1973) • Amended Foreign Investment Law (1974) • End of Vietnam War (1975) • Second Oil Crisis (1979) 	<ul style="list-style-type: none"> • Plaza Accord (1985) • Reverse Oil Crisis (1986) • End of Cold War (1989) 	<ul style="list-style-type: none"> • UN Conference on Environment and Development, Convention on Biological Diversity, UN Framework Convention on Climate Change (1992) • Kyoto Protocol (1997) • Asian Financial Crisis (1997) 	<ul style="list-style-type: none"> • Laws on local autonomy (1999) • Millennium Development Goals (2000) • Election of President Yudhoyono by direct election (2004) 	<ul style="list-style-type: none"> • Japan-Indonesia Economic Partnership Agreement (2008) • G20 Accession (2008) • Jakarta Commitment (2009) • Sustainable Development Goals (2015) • Paris Agreement on Climate Change (2015)
Situation of the Sector	<ul style="list-style-type: none"> • Japan liberalizes lumber imports. (1960) • Japan joins forest development in Kalimantan (1963) • Basic Forestry Act enacted (1967) 	<ul style="list-style-type: none"> • Forest development dependent on foreign capital • Accelerated depletion of tropical lumber • Tightened export ban on logs and sawn wood 	<ul style="list-style-type: none"> • Accelerated forest degradation due to transmigration program • Development of social forestry • Concepts of biodiversity and endangered species widely accepted 	<ul style="list-style-type: none"> • Growing environmental awareness • Development of watershed management • Great forest fires (1997–1998) • Development of participatory resource management 	<ul style="list-style-type: none"> • Participatory resource management 	<ul style="list-style-type: none"> • Merger of Ministry of Environment and Ministry of Forestry (2015) • Participatory resource management • Mainstreaming and integrated implementation of SDGs
Priority Development Issues in the 5-Year Development Plan		<ul style="list-style-type: none"> • Improving low productivity resulting from inadequate infrastructure • Great need for resource reserves surveys • Expansion of transmigration program • From log export to sawn wood export 	<ul style="list-style-type: none"> • Defining demarcations, encouraging agroforestry, promoting ecotourism • Log export ban (1985) 	<ul style="list-style-type: none"> • Natural resources and environmental conservation 	<ul style="list-style-type: none"> • Natural resources and environmental conservation • Declining transmigration • Forest Fire Prevention Department established (2000) 	<ul style="list-style-type: none"> • Natural resources and environmental conservation
Direction of Japan's Cooperation	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • Forest resources survey • Technical cooperation in efficient forestry • Development and transfer of afforestation technology • Wood processing and distribution 	<ul style="list-style-type: none"> • Forest restoration through industrial plantation • Forest tree breeding study for industrial plantation 	<ul style="list-style-type: none"> • Restoration of degraded forests • Biodiversity conservation • National park management • Mangrove conservation • Forest fire prevention • Basin conservation /management; social forestry 	<ul style="list-style-type: none"> • Integration into a program • Satellite-based natural resource management • Participatory resource management 	<ul style="list-style-type: none"> • Climate change response • Joint Crediting Mechanism (JCM) • Biodiversity conservation • REDD+ • Participatory resource management
Outcomes	 <p>Transfer of forest development technology</p>			 <p>Participatory forest fire management; volunteer fire cops</p>		
				 <p>Enhancing climate change response</p>		
				 <p>Biodiversity sampling; mangrove conservation</p>		

Climate change

Global concerns about climate change have been growing since 1990. Japan's cooperation in climate change for Indonesia began in earnest in the 2000s. Indonesia was the first country in the world that received a Japanese ODA loan designed to address climate change response. The country also led the climate change policy in the region by setting national mitigation goals ahead of other Association of Southeast Asian Nations (ASEAN) countries. This ODA loan was comprehensive, covering cross-sectoral issues as well as mitigation and adaptation. Japan's assistance helped the Indonesian government in mainstreaming climate change and developing its capacity to address climate change. It also promoted Joint Crediting Mechanism (JCM)¹, Reducing Emissions from Deforestation and Forest Degradation in Developing Countries (REDD+)², and other related initiatives. In May 2016, credits were issued for the first time after the JCM was launched: credits for a total of 40 tons were issued for GHG emission reductions in two energy conservation projects involving refrigeration equipment and others. These mechanisms are still at earlier stages of preparation or implementation. Continued assistance is necessary to attain the GHG reduction goals.

Meanwhile, the environment surrounding development assistance for Indonesia is changing. KLHK is not considering requesting ODA loans from Japan at the moment. In response to the Paris Agreement on Climate Change, Indonesia has set out an ambitious intended nationally determined contribution (INDC)³. The country is also reluctant to issue credits that can be obtained from the JCM and REDD+ to other countries.

¹ A system that allows Japan to use certain amounts of the GHG emission reductions in developing countries that have been made possible by its development assistance and cooperation that take advantage of its technologies, products, infrastructure, or services for the achievement of its own emission reduction target.

² A mechanism whereby developed countries provide financial and other assistance to developing countries that have reduced GHG emissions by curbing deforestation and forest degradation or maintained and enhanced forest carbon stocks by conserving forests.

Developed countries that have provided such assistance are also credited for having contributed to climate change control. The basic framework for this mechanism was decided on at the 19th Conference of Parties (COP 19) to the United Nations Framework Convention on Climate Change (UNFCCC) in 2013.

³ The Conference of Parties (COP) 19 Warsaw decision in 2013 invited all countries to prepare their INDCs well in advance of COP21 in December 2015. INDCs that countries thus prepared became their own nationally determined contributions (NDCs).

11.2 Historical Context and Japan’s Cooperation

11.2.1 Number of projects and commitment amounts

Japan’s assistance in climate change measures and natural environment conservation, which started with the 1976 development study “Forest Inventory for Management and Logging in Central Java,” has produced numerous outcomes mainly through the technical cooperation, that were implemented together with grant aid and loan assistance.

There have been 92 projects implemented under the sector as of December 2017, which can be broken down into 40 technical cooperation projects, 15 development studies, 10 ODA loans, 21 grant aid projects and 6 SATREPS projects. Figure 11-1 shows the commitment amounts of financial assistance and the number of projects in the other schemes for each ten-year period.

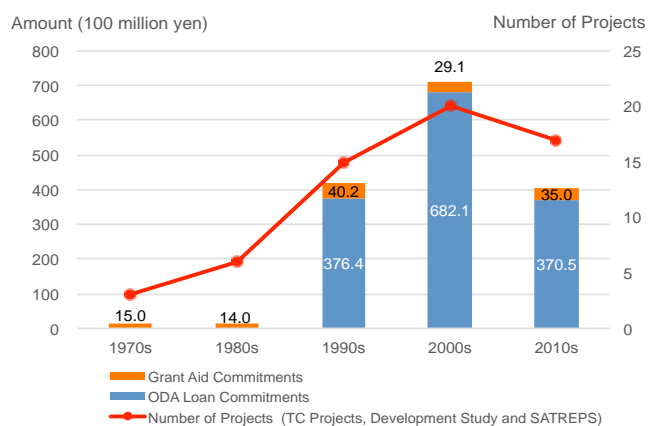


Figure 11-1: Commitment Amounts of ODA Loans and Grant Aid (E/N basis) and the Number of Technical Cooperation (Technical Cooperation Project and Development Study) and SATREPS by Decade⁴

The number of projects began to increase in the 1990s. It further grew in the 2000s due to three major factors: the global trends, Indonesia’s climate change responses, and the growing awareness of the importance of biodiversity conservation. ODA loan commitments peaked in the 2000s as the “Climate Change Program Loans” were provided from 2008 to 2010.

11.2.2 Period-specific characteristics of the Japan’s economic cooperation for Indonesia in the climate change measures and natural environment conservation sector

In this section, the situation of the climate change measures and natural environment conservation sector in Indonesia and support of the Japanese government for Indonesia are summarized by period.

- The 1960s: Spread of forest resource development from Java to Kalimantan
- The 1970s and the first half of the 1980s: From the end of a foreign capital-led economy to development based on wood processing
- The second half of the 1980s: From the sustainable management of tropical rain forests to the promotion of industrial plantation
- The 1990s: Integrated resource management through watershed management, and biodiversity conservation

⁴ This figure includes three “Climate Change Program Loan” projects because they are important for this sector even though they are classified in the “Economic Policy and Macro Economics” sector in this review.

- From the end of the 1990s: Participatory resource management, institution building, and the use of satellite information
- From the end of the 2000s: The mainstreaming of climate change and biodiversity; an increasing number of related projects

(1) The 1960s: Spread of forest resource development from Java to Kalimantan^{5,6}

Situation of the sector and major efforts by Japan

Following World War I, Indonesia produced teak in Java and lauan (*Dipterocarpaceae*, from natural forests) in Sumatra amid growing global demand for lumber. After World War II, the country's forest development spread to natural forest wood in the Outer Islands (the regions excluding Java and Bali). Skidding was inefficient in Kalimantan as it was done by human or horse power or even due to the lack of labor. The growing demand for lumber in Japan on the back of the country's rapid economic growth (starting around 1955) prompted the establishment of Kalimantan Forest Development Cooperation Co. Ltd. (FDC) in Japan in 1963. This represented the launch of joint forest development between FDC and *Perhutani*, a state forestry corporation.

After Suharto effectively took power in 1965, Indonesia made a shift in economic policy focus from state corporations to foreign investment. The government enacted the Basic Forestry Act in 1967 and the Foreign Capital Investment Act in 1968. In 1969, the government began to issue commercial forestry concessions (HPH). The concurrent enactment of the Foreign Investment Act opened the door wide to foreign capital with preferential treatment including tax breaks. As a result, Indonesia's log production began to surge around 1970.

JICA implemented no cooperation project in forestry during the 1960s.

(2) The 1970s and the first half of the 1980s: From the end of a foreign capital-led economy to development based on wood processing

1) Situation of the sector

Under its development policy that embraced foreign capital, the Suharto administration actively issued commercial forestry concessions until 1980 (The original validity period of 35 years was later shortened to 20 years.). Lumber was second only to oil as a major means of acquiring foreign currency. In the 1970s, infrastructure for felling forests such as roads and ports was inadequate, especially in Kalimantan, pushing down productivity. The First Five-Year Development Plan (REPELITA I: 1969/70-1973/74) therefore focused on infrastructure development. Development led by foreign capital allowed the Indonesian

⁵ Tachibana, Satoshi. "Tonan asia no mokuzai sanshutsu chiiki ni okeru shinrin kaihatsu to mokuzai yushutu kisei seisaku [Forest Exploitations and Timber Export Restrictions in Southeast Asian Countries]." *Chiiki Seisaku Kenkyu* [regional policy studies] Vol. 3, No.1, 49-71. 2000.

⁶ Ando, Yoshitomo. "Tonan Ajia ni okeru kaihatsu seisaku no tenkai to wagakuni no keizai kyoryoku [Developments in development policy in Southeast Asia and Japan's economic cooperation]," a report presented to the 1983 autumn meeting of the Japanese Forest Economic Society.

economy to grow but hindered capital formation by Indonesians. As a result, the widening gap in income and growing employment gave rise to public resentment. The anti-Japanese riots in 1974, combined with the growing movement of resource nationalism in the developing world, prompted a shift from economic development led by foreign capital, or more precisely, a shift from the export of logs to wood processing (industrialization)⁷.

REPELITA II (1974/75-1978/89) stressed the need to assess the existing forest resources reserves on state-owned land in order to calculate indicators necessary for forest development, including the deforestation rate, amid progress in forest development in Indonesia. In the 1980s, the degradation and decrease of forest resources became apparent; the increase in the number of HPH decelerated rapidly (Figure 11-2). REPELITA III (1979/80-1983/84) set out the policy of processing wood into sawn wood, plywood, and pulp chips within Indonesia as much as possible and to establish such processing as an industry.

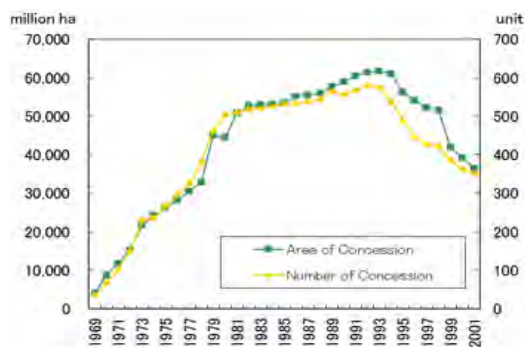


Figure 11-2: The Number of Commercial Forestry Concessions (logging concessions) Issued and the Total Area Covered

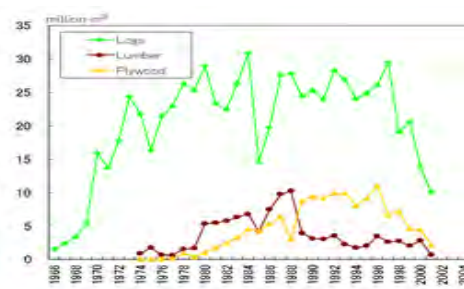


Figure 11-3: Indonesia's Lumber Production (logs, lumber, and plywood) (m³)

2) Major efforts by Japan

Much of Japan's assistance in this sector during the 1970s was in the forestry subsector, particularly in South Sumatra Province. The foundations of long-term cooperation for this province were built during this period with a number of projects that led to industrial plantation efforts by the private sector. These projects included the technical cooperation project that started in 1979, the first of its kind in the province, and the feasibility study that began in 1988. In the 1980s, the apparent degradation and decrease of forest resources prompted Japan's cooperation to markedly shift from forest resource development to forest resource conservation.

(3) The second half of the 1980s: From the sustainable management of tropical rain forests to the promotion of industrial plantation

1) Situation of the sector

Tumbling oil prices due to the reverse oil crisis of 1986 aggravated the Indonesian economy, highlighted by a drop in the economic growth rate and discouraged investment due to a weaker rupiah. Subsequently, efforts were made to extricate the country from dependence on income from the export

⁷ Ando, *ibid.*

of oil and gas, including the deregulation process from 1986 to 1989. Expectations were high for the forestry subsector to play a major role in creating employment and acquiring foreign currency with the development of the domestic wood processing industry in the context of less dependency on oil. The total export ban was imposed on logs as early as in 1985. Attention was turned to sustainable forest development. REPELITA IV (1984/85-1988/89) set out the initiative of demarcating the boundaries between forest reserves and other types of forests within national forests as the first priority in its descriptions about forestry. Other priorities included improving afforestation and forest management, expanding the wood processing industry, promoting social forestry, improving scientific skills in managing tropical rain forests, and developing tourism in national parks and conservation areas.

2) Major efforts by Japan

Japan's development cooperation included the technical cooperation project, "Reforestation of Tropical Rain Forest" (1985-1989), which was implemented in East Kalimantan Province in line with the Indonesian government policy of sustainable forest development. This project enabled technology transfer concerning ecological research on, and sustainable management of, tropical rain forests. A series of projects to support industrial plantation included the technical cooperation project, "Industrial Plantation Forest Development Plan in South Sumatra Area" (1979-1988) and grant aid, the "Project for the Improvement of the Equipment for the Afforestation in East Kalimantan" (1989). These projects contributed to development of a wood processing industry without recourse to illegal logging or resource plundering.

(4) The 1990s: Integrated resource management through watershed management, and biodiversity conservation

Situation of the sector and major efforts by Japan

Integrated resource management through watershed management

With regard to forest conservation, REPELITA V (1989/90-1993/94) represented a major shift from "sustainable resource management (as a source of foreign currency)," advocated in REPELITA IV, to "(essential) sustainable forest management and institutional capacity development for forest management." Forest conservation projects during the 1990s were characterized not only by afforestation that encompassed headwater forest conservation, basin conservation, watershed management, and social forestry, but also by "integrated forest management" or "integrated watershed management," both of which embrace the social aspect as represented by water and land use and community activities in the basin. Japan's development cooperation in this period included the development study, "Social Forestry Development Project in the Upper Musi Watershed" (1996-1998). Projects classified in the then-defined sector of forestry and forest conservation include the grant aid project titled "Project for the Construction of the Forest Tree Improvement Development Centre" (1990-1991) for selective breeding research on trees suitable for industrial plantation, and the technical cooperation project known as "Forest Tree Improvement Project" (1992-1997), as well as the above-mentioned project titled "Reforestation of Tropical Rain Forest" from the late 1980s.

Biodiversity conservation

The UN Conference on Environment and Development in 1992 raised global awareness of the global environment and prompted the international community to discuss challenges, reach agreements, and build partnerships in related fields. In this increased awareness, Indonesia attracted global attention when 2 of the 25 “biodiversity hot spots” in the world were identified in the country. Prompted by the needs of the times, in 1995 JICA launched the technical cooperation project, “Biodiversity Conservation Project,” which also involved a grant aid project for equipment provision. From 2011 to 2014, JICA implemented the “Project on Mangrove Ecosystem Conservation and Sustainable Use in the ASEAN Region.”

(5) From the end of the 1990s: Participatory resource management, institution building, and the use of satellite information

1) Situation of the sector

Due to the Asian Financial Crisis, the budget of the then–Ministry of Forestry decreased temporarily⁸, but that had little direct impact on development cooperation in forest conservation and biodiversity conservation. The Local Administration Act of 1999, which was put in force in 2001, relegated the right to issue HPH (logging concessions, the right to gather forest products, the right to use wood) from the then–Ministry of Forestry to district governors. The relegation allowed district governments to allocate income from natural resources and use them as a revenue source. Thus district governments issued a large amount of HPH to secure revenues. It is said that some of the existing HPH have been wrongly issued by districts governments; they have been issued for tracts of national parks and forest reserves under the management of the central government as well as those for which such concessions have already been issued. Moreover, concessionaires often engage in logging that disregard related regulations (including those regarding deforestation rates) and clear-cut forests and leave the land as it is⁹. Regulators fail to uncover such wrongful issuance of HPH or crack down on violations of HPH-related regulations. It is said that forest degradation has been accelerated after the decentralization process.

2) Major efforts by Japan

Japan’s technical cooperation, which traditionally focused on the central government of Indonesia, shifted in focus to activities that are conducted at the initiative of local communities and governments in line with the challenges after the above-mentioned enactment of the Local Administration Act. No major changes were made to the workings of the then Ministry of Forestry; affairs related to national park management and the Forestry Research and Development Agency remained under the direct

⁸ Material from the financial planning bureau, the general directorate, the Ministry of Forestry (provided by a national strategic adviser on highland forestry).

⁹ Araya, Akihiko. “Present State of Decrease of Forest Area, Illegal Logging and Illegal Timber Export in Indonesia.” <http://www.zenmoku.jp/sinrin/english.pdf> (Accessed in March 2018)

management of the central government. Yet the powers that had rested with the ministry's bureaus responsible for social forestry, forest fire prevention, and production forests were transferred to provincial governments. This transfer caused major confusion among local governments. For one thing, they did not have enough capacity to plan and implement projects back in 2000. For another, they were facing a public finance crisis in the aftermath of the Asian Financial Crisis. The transfer also made it necessary for Japan's technical cooperation providers to make various workarounds to identify their targets and methods as the choice of the counterpart agency greatly influences the scope and impact of technology transfer.

In 2001, before the discussions over the UN Framework Convention on Climate Change, JICA implemented the technical cooperation project, "Demonstration Study on Carbon Fixing Forest Management in Indonesia" (2001-2006). The project assessed the extent of soil degradation and measured CO₂ sequestration in Indonesia, which has vast areas of land and forests and represents the largest GHG emitter among the ASEAN countries. In 2007, Bali hosted the COP13 that came up with major achievements, including the Bali Road Map, which involved the launch of two Ad Hoc Working Groups, as well as the agreement on how to manage the Adaptation Fund, financed by 2% of the credits under the Clean Development Mechanism (CDM)¹⁰. In the forest subsector, COP13 decided to begin studying ways to incorporate the option of "Reducing Emissions from Deforestation and Forest Degradation (REDD)" into a post-2012 framework and work on demonstration activities and capacity development. Accordingly, many studies and demonstration projects have been carried out to this day.

In recent years, Indonesia has frequently been hit by forest fires in the dry season. Forest fires have been particularly serious in Kalimantan, a land of peat, where fires often break out spontaneously and are not extinguished easily. Haze from the island have caused harm to neighboring Malaysia and hampered airline flights, attracting international attention. By nature, a forest fire intrinsically occurs spontaneously every four to five years. Yet experts say that the increasing number and extent of fires are caused by many other factors, including dry weather stemming from climate change as represented by the El Niño phenomenon, as well as human factors as represented by burning in slash-and-burn farming and human failure to put out fires completely. These circumstances prompted JICA to implement a series of technical cooperation projects for forest fire prevention from 1996 to 2009, including the "Forest Fire Prevention Management Project," the first of this series, and the "Forest Fire Prevention Project by Initiative of People in Buffer Zone" (2006-2009). The preceding "Forest Fire Prevention Management Project" had developed an early detection system by taking advantage of satellite information. The diffusion of computers, the launch of microwave satellites, and the rapid development of image processing technology in recent years highlighted the need for logging and afforestation planning that is based on the monitoring of, and accurate information on, illegal logging

¹⁰ One of the Kyoto Mechanisms that was incorporated into the Kyoto Protocol, which was adopted at COP3, as a system for achieving the GHG reduction goals. This system helps developed countries attain their reduction goals by implementing projects that will result in GHG emission reductions in developing countries (host nations) by taking advantage their funds and technical assistance and then obtaining all or part of the reductions from such projects as an emission quota.

and forest resources as well as forest fires. To compile such monitoring and other information into a data source, JICA implemented the “Project for the Support on Forest Resources Management through Leveraging Satellite Image Information” in 2008. It should be noted that the “Forest Fire Prevention Management Project,” which had already been implemented at the time of the great forest fire in 1997, attracted great attention for its prescience. To help address this great forest fire, Japan conducted firefighting activities as part of emergency assistance and carried out other supporting activities involving health hazard assessment and environmental monitoring. The country also provided fire extinguishing equipment and dust masks to Indonesia.

Of the forests devastated by the great forest fire of 1997, those in two national parks, which were important natural forests, were addressed with afforestation under the “Project for the Promotion of Mass Propagation Technique of Native Tree Species for Reforestation” (2004-2007). The tree species used for industrial plantation in Indonesia were traditionally dominated by eucalyptus and acacia, both of which are exotic, fast-growing species whose silvicultural technology had been already developed. In the fire-devastated land, these species grew faster than the tree species that constituted the natural forests, impeding the restoration of these forests. Because these native tree species (chiefly *Dipterocarpaceae*) are slower in growth but better in quality, there was a growing demand for technology for afforestation using native tree species. This led to the implementation of the “Project for the Promotion of Mass Propagation Technique of Native Tree Species for Reforestation.” In the “Forest Tree Improvement Project (Phase 2),” which was completed in 2004, JICA dispatched a follow-up expert and provided equipment necessary for research on afforestation technology using native tree species.

In Indonesia, mangrove vegetation covers much of the country’s long coastline. Sumatra, Bali, and Lombok in particular are replete with mangrove forests. In Bali, however, many mangrove forests were cleared during the 1990s, leaving the culture ponds as they were. The then–Ministry of Forestry was engaged in mangrove afforestation on this densely populated island. Japan’s assistance at the time was directed at mangrove afforestation technology and mangrove forest management under the technical cooperation project titled “Development of Sustainable Mangrove Management Project” (1992-1999). However, the strong request for participatory mangrove afforestation from the then–Ministry of Forestry resulted in the implementation of another technical cooperation project titled “Mangrove Information Center Project” (2001-2006), which built the only mangrove promotion hub in Indonesia. To replicate the outcomes of this project, Japan implemented yet another technical cooperation project, “Subsectoral Program on Mangrove” (2007-2010).

In 2007, the year of COP13, Japan and Indonesia held a policy dialogue on how Indonesia should address climate change. This led to two major high-level agreements on this issue. One was the Joint Statement by Japan and the Republic of Indonesia on the Enhancement of the Cooperation on Climate Change, Environment and Energy Issues, which was announced by the leaders of the two countries in August that year. The other was the joint statement by the Minister of the Environment of Japan and the Minister of Environment of the Republic of Indonesia on environmental conservation cooperation through the co-benefit approach, announced by the two environmental ministers in December of the

same year. In that year, Japan decided to provide loans under the “Climate Change Program Loan” scheme, which centers on budget support based on Indonesia’s National Action Plan on Climate Change. Japan provided such loans three times, in 2008, 2009, and 2010 (see 11.3 for details).

(6) From the end of the 2000s: The mainstreaming of climate change and biodiversity; an increasing number of related projects

Climate change

1) Situation of the subsector

Indonesia is known for its eagerness to address climate change. The country hosted COP13 in Bali in 2007. In 2009, then President Yudhoyono announced the national climate change mitigation target ahead of other ASEAN countries. He stated that by 2020, Indonesia will reduce GHG emissions by 26% from a business-as-usual (BAU) scenario and by 41% with international assistance, if any. The country’s commitment to addressing climate change remained unchanged under the Joko Widodo administration. Recently, Indonesia announced ambitious numerical targets of reducing GHG emissions in its INDC.

The international community recognized that the importance of conserving tropical forests in Indonesia was recognized in the context of addressing global warming and biodiversity following the adoption of the Framework Convention on Climate Change, the Convention on Biological Diversity, and the Declaration of Forest Principles, which are three of the outcomes of the UN Conference on Environment and Development in 1992. Indonesia accounts for only 1.3% of the Earth’s land surface but 10% of the world’s tropical forests. Scientists estimate that of all the species in the world, 12% of mammals, 7.3% of reptiles and amphibians, and 17% of birds live in the country. In the face of such global trends, Japan’s assistance for Indonesia changed in the 2000s. In formulating projects, Japan came to place more focus on biodiversity conservation and climate change response rather than on forestry development as seen in the earlier periods.

With regard to climate change, the global mean temperature has been rising every year. The National Aeronautics and Space Administration (NASA) and the National Oceanic and Atmospheric Administration (NOAA) of the United States state that the record of the hottest year has been broken three years in a row since 2014, suggesting long-term global warming. According to some estimates, Indonesia is the third largest emitter of GHGs in the world if land use change and forest fires are taken into account. The Indonesian government admits this. To achieve the national mitigation goals mentioned above, the Indonesian government formulated the National Action Plan for Reducing Greenhouse Gas Emissions (RAN-GRK) and introduced such systems as the domestic GHG inventory and MRV (measuring, reporting, and verifying) in 2011. By 2013, all provincial governments completed their provincial GHG emissions reduction action plans (RAD-GRK).

When the Kyoto Protocol took effect in 2005, Annex 1 countries (developed countries that had ratified the protocol) became obliged to reduce GHG emissions during the first commitment period (2008–

2012). This stimulated activities surrounding CO₂ emissions trading markets and CDM. Meanwhile, a question was increasingly raised as to the arrangement whereby developing countries, especially emerging economies such as China and India, were not obliged to reduce GHG emissions, although they emitted them in large quantities. The international community became aware of the need for a new framework. The COP15 negotiations in Copenhagen in 2009 failed to reach an agreement on a post-2012 framework. COP21 in Paris in 2015, however, adopted a new framework, i.e. the Paris Agreement on Climate Change, which came into force in 2016. The Paris Agreement is the first international framework on climate change after the Kyoto Protocol. It was agreed on as a framework involving all 196 parties to UN Framework Convention on Climate Change, including Indonesia. Subsequently, Indonesia submitted an INDC for the post-2020 period to the United Nations. The INDC (Intended Nationally Determined Contributions) states that by 2030, the country will reduce GHG emissions by 29% from the BAU scenario and by 41% if it receives international assistance (6 billion US dollars). These figures are slightly different from those in RAN-GRK mentioned above. Even government officials are confused as to which target should be attained. The Indonesian government may need to clarify the situation and integrate these different targets. The government says that Indonesia should increase the share of renewable energy to 23% by 2030. This indicates vast potential for maintaining and expanding technical cooperation in renewable energy and energy efficiency with Japan.

2) Major efforts by Japan

In the face of such global trends, Japan's assistance shifted significantly around the end of 2000 to better meet the needs of Indonesia. A growing number of projects were designed to address climate change (Table 11-2). Few such projects were implemented during the 1990s. With the launch of the Climate Change Program Loan scheme in 2008, Japan adopted many such projects.

As highlighted by the Program Loan scheme from 2008 to 2010, the presence of Japan was quite large among development partners, many of whom wanted to provide climate change assistance to Indonesia given the country's importance in this subsector. Japan differed from other major development partners in assistance approach. The UK, for example, set up a trust fund for this purpose that revolved around grant aid rather than loan assistance. This approach was supported by the Scandinavian countries. Norway set out the policy of budget support for REDD+ in 2010.

Japan's assistance, by contrast, took the approach of respecting the will of partner country governments and supplementing the portions that they cannot afford to address. A JICA expert¹¹ stated that while the World Bank tended to attach strict conditions, Japan was on the same wavelength with countries in Asia, of which Japan is a part. He also said that the views of the Japanese side were readily accepted by Indonesia, for which Japan was the leading donor at the time.

¹¹ Interview with JICA Senior Adviser Masato Kawanishi in July 2017.

Table 11-2: Projects Related to Climate Change

Year	Project Name (Scheme)
2008	Climate Change Program Loan (ODA Loan)
2009	Climate Change Program Loan (2) (including Economic Stimulus and Budget Support Loan) (ODA Loan)
2010	Climate Change Program Loan (3) (ODA Loan)
2010-2015	Project for Capacity Development for Climate Change Strategies (Technical Assistance for ODA Loan)
2012-2014	Project for Capacity Development for the National Focal Point on Climate Change to Enhance the Implementation of Climate Change Policies in Indonesia (Technical Cooperation Project)
2012-2017	Pilot Study for Carbon Sequestration and Monitoring in the Gundih Area, Central Java Province, Indonesia (SATREPS)
2013-2018	Project for Assessing and Integrating Climate Change Impacts into the Water Resources Management Plans for the Brantas and Musi River Basins (Technical Assistance for ODA Loan)
2013-2018	Indonesia-Japan Project for Development of REDD+ Implementation Mechanism (IJ-REDD+) (Technical Assistance for ODA Loan)
2014-2017	Project for Capacity Development for Green Economy Policy (Technical Assistance for ODA Loan)
2014-2017	Capacity Development Assistance for Low Carbon Development (including assistance to the Joint Crediting Mechanism [JCM] Secretariat) (Technical Cooperation Project)

Biodiversity

Situation of the subsector and major efforts by Japan

Indonesia plays an important role in the biodiversity subsector. Japan's development cooperation went into full swing between the late 1990s and 2000. Indonesia has two of the 25 biodiversity hot spots in the world. It is classified by Conservation International, a global NGO, as one of the world's 17 megadiverse countries, i.e. countries with high biodiversity and many endemic species. Indonesia embraces 12% of the mammal species around the globe, placing the country second only to Brazil. Likewise, the country harbors 7.3% of the reptile and amphibian species, ranking fourth in the world. Many endemic species are only found in Indonesia, making biodiversity conservation important for the country. In the Red List of the International Union for Conservation of Nature and Natural Resources (IUCN), announced in 2016, Indonesia ranks fourth in the world in terms of the number of endangered species. A total of 1,257 species are reported to be endangered¹². However, there are only a few cases where regional biodiversity is securely conserved in Indonesia, and national parks are no exception. In fact, the country has difficulty in dealing with illegal loggers and squatters and has to play a cat-and-mouse game with them. It was not until the promulgation of the ministerial decree of 2006 that the management of conservation areas was significantly changed. The ministerial decree represented a major policy shift: it admits special zones where local people are allowed to reside in the zoning process. Earlier, the government did not allow farmlands or residences in national parks. As a result, national park officials are now required to have skills in accommodating residents to a certain extent and working with them in managing conservation areas near the border through effective communication with them. This is a practical policy based on the realities on the ground; it represents

¹² International Union for Conservation of Nature (IUCN). *IUCN Red List version 2016-1*. Table5: Threatened species in each country.

a preferable direction in the context of managing conservation areas in the face of such realities. For a national park office, however, capacity development for its employees poses a major challenge.

In managing conservation areas, Indonesia works closely with NGOs and other development partners. Their joint projects with the National Park Bureau (BTN) and the Natural Resources Conservation Agency (BKSDA) are conspicuous in Sumatra and Kalimantan, where tigers, orangutans, and other threatened large mammal species live. By contrast, activities by NGOs are limited in Sulawesi, Papua, and Maluku, where BTN and BKSDA try to protect and grow rare species separately on a small scale. Only a few conservation areas on these islands have a detailed inventory of local flora and fauna. Some have only inadequate findings of surveys that were conducted at the time of designation. Obtaining more substantial findings to set out clear directions in biodiversity conservation requires closer information exchange and coordination with researchers¹³. Local residents often see forests in terms of economic value only and engage in the act of logging for immediate but small revenues. Forest conservation and livelihood improvement for local communities are closely related. These two goals should be attained. In this context, it is important to build a system for Payment for Ecosystem Services (PES) or the like whereby biodiversity conservation has economic value.

Amid accelerating deforestation in Indonesia, the European Union (EU), the United States, Germany, and other developed countries as well as international NGOs are conducting many projects to address illegal logging and protect rare fauna and flora in the country. In particular, projects for animals that are notable, well-known, and popular, such as orangutans and Sumatran tigers, are large in both number and scale. By contrast, Japan's cooperation in biodiversity conservation focuses more on the institutional aspect, as shown in the table below. Spearheading such cooperation was the "Biodiversity Conservation Project," implemented in the late 1990s. This and other subsequent projects involved many activities. They included strengthening the functionality of national parks and developing the capacity of associated personnel, constructing the Research Center for Biology (RCB) at the Indonesian Institute of Sciences (LIPI) through grant aid, managing collections at RCB, and conserving mangrove forests. The construction of RCB greatly contributed to biodiversity research in Indonesia. RCB's Herbarium *Bogoriense*, Museum *Zoologicum Bogoriense*, and Museum of Microbial Culture collections are effectively used for biodiversity research and conservation. The number of dried plant samples there increased from 20,000 in 2003, before the project, to more than 730,000 in 2010.

The provision of research and sample preservation equipment and educational equipment to the Botany Division and the Microbiology Division of the Research Center for Biology resulted in the annual number of visitors to these botanical and microbiological facilities increasing to 1,399 in 2010. This represented 108% of the anticipated figure of 1,300. This project also resulted in the number of botanical or microbiological studies published in 2010 growing to 187, representing 111% of the projected figure of 160. In this way, the project produced better-than-expected research outcomes (an

¹³ Akitoshi Kawamoto. "Indonesia no seibutsu tayosei no genkyo to hozon ni tsuite. [Current Situation and Conservation Policy of Biodiversity in Indonesia]." *Kaigai no Shinrin to Ringyo* [Japanese Journal of International Forest and Forestry] No.82. 2011..

increased number of studies, as well as increased or the same levels of samples) and educational outcomes (an increased number of visitors). The project had another significant impact: it promoted research for the development of new drugs and biofuels with the use of plants and microorganisms.

In Indonesia, some 40 million people are currently engaged in agriculture, forestry, or fisheries, thus living off ecosystems. Other people also depend directly or indirectly on ecosystem services for their lives. With the construction of the botanical and microbiological research buildings and the provision of equipment for such research, sample preservation, and environmental education, efforts were made to (i) discover and utilize previously unknown biological resources and manage, (ii) use already known biological resources in a sustainable manner, and (iii) promote the public understanding of biodiversity conservation, not least the significance of biological resources. These efforts were instrumental in maintaining and enhancing ecosystem services as well as conserving biodiversity, which constitutes the foundations of ecosystem services¹⁴.

With the Nagoya Protocol coming into force¹⁵, the trading of genetic resources is becoming more active between provider and user countries. Both the potential and the significance of conserving genetic resources are therefore significant for Indonesia, a major provider of such resources.

Table 11-3: List of Projects on Biodiversity Conservation

Year	Project Name (Scheme)
1992-1999	Development of Sustainable Mangrove Management Project (Technical Cooperation Project)
1995	Biodiversity Conservation Project (Grant Aid)
1995-1998	Biodiversity Conservation Project (Phase I)
1996	Biodiversity Conservation Project (Grant Aid)
1998-2003	Biodiversity Conservation Project (Phase II) (Technical Cooperation Project)
2001-2006	Mangrove Information Center Project
2004, 2005, 2006	Project for Improvement of Research Facilities for Biodiversity Conservation and Utilization (Grant Aid)
2004-2009	Gunung Halimun-Salak National Park Management Project (Technical Cooperation Project)
2007-2009	Project on Improvement of Collection Management and Biodiversity Research Capacity of the Research Center for Biology, Indonesian Institute of Sciences in Indonesia (Technical Cooperation Project)
2007-2010	Subsectoral Program on Mangrove (Technical Cooperation Project)
2009-2011	Natural Resource Management Project in Gunung Halimun-Sarak National Park, Lebak District, Banten Province (JICA Partnership Program)
2009-2012	Strategy for Strengthening Biodiversity Conservation through Appropriate National Park Management and Human Resources Development (Technical Cooperation Project)
2011-2014	Project on Mangrove Ecosystem Conservation and Sustainable Use in the ASEAN Region (Technical Cooperation Project)
2011-2016	Project for Development of the Internationally Standardized Microbial Resources Center to Promote Life Science Research and Biotechnology (SATREPS)

¹⁴ Koichiro Ishimori. *Ex-Post Evaluation of the Japanese Grant Aid Project: "Project for Improvement of Research Facilities for Biodiversity Conservation and Utilization."* 2010.

¹⁵ Formally known as the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity.

Forest fire prevention

Situation of the subsector and major efforts by Japan

Japan conducted two major projects in peat land areas in Indonesia, including Kalimantan. One was the “Program of Community Development of Fires Control in Peat Land Areas,” a technical cooperation project from 2010 to 2015. The other was a SATREPS project, “Wildfire and Carbon Management in Peat Forests in Indonesia,” from 2010 to 2014. The first project developed the capacity of organizations engaged in peat fire prevention in the project area as well as the residents there. It also reduced significantly the number of residents of the villages that conducted burning among the villages targeted by the project (the percentage of the residents who conducted burning in the total number of people targeted by the survey). The second project built satellite-based fire detection and prediction systems, although there was room for improvement in terms of precision.

11.3 Noteworthy Achievements in Cooperation

This section reviews five selected activities: (1) “Climate Change Program Loan (CCPL)” (I-III), which started in the 2000s as the world’s first ODA loan to address climate change, and gave rise to a number of derivative projects, including the “Project for Capacity Development for Climate Change Strategies” (2010-2015); (2) The “Indonesia-Japan Project for Development of REDD+ Implementation Mechanism (IJ-REDD+),” an initiative for laying the groundwork for a REDD+ mechanism to be launched globally in 2020; (3) the “Mangrove Information Center Project,” which contributed greatly to the restoration of mangrove forests in Bali and the findings from which were shared in the ASEAN region; (4) the “Forest Fire Prevention Management Project,” which produced community-based volunteer fire corps; and (5) the “Project for Improvement of Research Facilities for Biodiversity Conservation and Utilization,” which was highly instrumental in improving biodiversity research.

11.3.1 Climate Change Program Loan (CCPL) (I-III)

This was a budget support loan scheme designed to encourage climate change measures based on Indonesia’s National Action Plan on Climate Change¹⁶. Indonesia was the first country to receive a Climate Change Program Loan, the first of its kind in the world. This was followed by Vietnam. CCPLs were not provided by Japan alone; they were provided in the form of cofinancing with the World Bank and the French Development Agency (AFD) among other donors. They were provided in three phases between 2008 and 2010. This led to the “Project for Capacity Development for Climate Change,” which was implemented from 2010 to 2015 as a project incidental to the ODA loan project.

The implementation process was made up of four phases: (i) holding Japan-Indonesia policy dialogue on how Indonesia should address climate change; (ii) identifying specific policy actions to address the issue; (iii) monitoring the performance of these actions; and (iv) providing loans. Regular monitoring was conducted by two project formulation advisers at JICA Indonesia Office, as well as an advisory and monitoring team headed by Mr. Hironori Hamanaka, the then Chair of the Board of Directors of the Institute for Global Environmental Strategies (IGES). In addition, the consultative committee, made up of the Japanese side, the Indonesian side, and two cofinancing partners—AFD and the World Bank, met to review the performance of the policy actions. The consultative committee was cochaired by the Minister of the Embassy of Japan in Jakarta and the secretary general of the competent government agency of Indonesia. It was also attended as necessary by Mr. Hamanaka, the head of IGES, for technical advice.

CCPL schemes are seen to have largely achieved the policy actions in each phase. In Phase II, in particular, progress was made in mainstreaming climate change measures in the formulation of the National Action Plan for Greenhouse Gas Reduction and the National Adaptation Program. Progress was also made both in mitigation sectors such as forest management and geothermal power promotion and in adaptation sectors such as disaster risk management, agriculture, water resources management,

¹⁶ While a project loan is designed to support a specific project (with the aim of, for example, constructing a power station or building a harbor), a program loan is a budget support loan designed to improve the policy and institutional aspects based on a socioeconomic development plan or the like of a recipient country.

and marine fisheries. CCPL policy actions, which were originally designed based on the climate change policy of the Indonesian government, are still underway at not only the central but also local government levels as the relevant needs have remained even after CCPL was completed¹⁷. These policy actions resulted in the enforcement of the presidential decree on the conservation of peat-land ecosystems in 2014 as well as the establishment of FIT (Feed in Tariff) for solar power in 2013.

Track record of assistance

- (1) Japan launched bilateral policy dialogue in 2007. It assisted Indonesia in formulating the Policy Matrix, a list of major policy actions for climate change to be taken by Indonesia every year until 2009.
- (2) After confirming the implementation of climate change measures in Indonesia in 2007, Japan provided a CCPL in August 2008 (credit limit: approximately 30.8 billion yen).
- (3) After assessing the performance of climate change measures in Indonesia in 2008 through three rounds of monitoring, Japan provided the second phase of CCPL (including Economic Stimulus and Budget Support Loan) in December 2009 (credit limit: approximately 37.4 billion yen).
- (4) After assessing the performance of climate change measures in Indonesia in 2009 through two rounds of monitoring, Japan provided the third phase of CCPL in June 2010 (credit limit: approximately 27.2 billion yen)¹⁸.

Because KLHK takes a political stance of not implementing loan assistance projects, there will likely be little demand for budget support with loan assistance in climate change or environmental conservation. CCPL came to an end in itself for this reason, but gave rise to a number of other projects. One example is the “Project for Capacity Development for Climate Change Strategies” (2010-2015), a technical cooperation project that provided comprehensive assistance for the Indonesian government’s efforts in the policy and technical aspects. Another example is the technical cooperation project titled “Capacity Development Assistance for Low Carbon Development” (2014-2017). This project is designed to allow the Japanese government to take advantage of JCM. Under the JCM arrangement, Japan can use, for the purpose of attaining its own reduction goals, part of the GHG emission reductions and removals made possible by the transfer of GHG-reducing technologies, products, systems, services, and infrastructure to developing countries. Until the end of 2017, this project will support the JCM Secretariat at the Coordinating Ministry for Economic Affairs.

Joint Crediting Mechanism (JCM)

A mechanism whereby Japan uses certain amounts of GHG reductions made possible by assisting or cooperating with developing countries with its technologies, products, infrastructure, or services that help to reducing GHG emissions for the purpose of achieving its own reduction goals. The Joint Crediting System was incorporated into Japan’s Vision and Actions toward Low Carbon Growth and a Climate Resilient World, an initiative that Japan announced at the 17th Conference of the Parties to the UN Framework Convention on Climate Change (COP17) in Durban, South Africa, in 2011.

¹⁷ JICA. *Kiko hendo taisaku programu roon no seika to kadai ni kansuru joho shushu kakunin chosa fainaru report. [Data collection survey on the outcomes of and Challenges for Climate Change Program Loan: Final Report]*. 2015.

¹⁸ Country Assistance Planning Division I, International Cooperation Bureau, Ministry of Foreign Affairs. *ODA Loan for Indonesia: Climate Change Program Loan*. 2010.

11.3.2 Indonesia-Japan Project for Development of REDD+ Implementation Mechanism (IJ-REDD+)

Indonesia has the third largest forest area in the world following Brazil and the Democratic Republic of the Congo. Forests account for nearly half of the country's land area. They represent approximately 2% of all forests around the globe. Indonesia is also endowed with biodiversity: it is home to some 20% of all the animal and plant species in the world. Supported by abundant tropical forest resources, Indonesia and other Southeast Asian countries felled trees in large quantities to produce plywood and other products. It was in this context that the sustainable management of tropical forests came to be recognized as a global challenge during the 1990s. Since the 1990s, deforestation and forest degradation were aggravated by mining development, the conversion of forests to farmland and plantations, and forest fires.

Scientists estimate that for a 16-year period between 1990 and 2006, Indonesia lost 1.34 million ha of its forest area on average every year.

At COP13 held in Bali in 2007, Indonesia joined other major tropical forest countries to advocate the establishment of a new framework. COP13 adopted the Bali Action Plan, which clearly stated the importance of REDD+, an initiative that involves conserving forests, sustainably managing forests, enhancing forest carbon stocks (increasing the growing stock of forests), as well as reducing emissions from deforestation and forest degradation (REDD). The conference also discussed designing a system for this purpose.

Supported mainly by the Norwegian government and United Nations-REDD (hereafter referred to as UN-REDD), Indonesia has been working on the formulation of a national REDD+ strategy, the designation of an organization responsible for measuring, reporting, and verifying (MRV), and the establishment of a financing mechanism. The country has also selected priority provinces for REDD+ implementation in Kalimantan and Sumatra. In these provinces, development partners and private businesses are conducting many REDD demonstration activities in the field.

REDD+

A mechanism whereby developed countries provide financial and other assistance to developing countries that have reduced GHG emissions by curbing deforestation and forest degradation or maintained and enhanced forest carbon stocks by conserving forests. Developed countries that have provided such assistance are also credited for their contribution to climate change control. The basic framework for this mechanism was decided on at the 19th Conference of the Parties (COP19) to the United Nations Framework Convention on Climate Change (UNFCCC) in 2013. The mechanism is scheduled to be put into action in 2020. United Nations agencies and donor agencies including JICA are now working on systems necessary for developing countries to introduce REDD+, as well as the establishment of monitoring technology and the development of human resources.

Expected outputs of the Indonesia-Japan Project for Development of a REDD+ Implementation Mechanism

1. Subnational framework on REDD+ is developed in West Kalimantan.
2. National park REDD+ model is developed in the Gunung Palung National Park.
3. REDD+ model for HP/HL/APL (peat land) is developed at pilot site(s) in West Kalimantan.
4. Capacity of carbon monitoring is enhanced at the provincial level in Central Kalimantan.
5. Project findings are referred to in the process of developing REDD+ implementation mechanisms at the national level.

For its part, Japan is conducting a technical cooperation project titled the “Indonesia-Japan Project for Development of a REDD+ Implementation Mechanism.” Working with KLHK, this project is assisting the establishment of a REDD+ implementation mechanism at the provincial level through demonstration activities on the ground mainly in West Kalimantan Province, where little progress has been made in addressing deforestation or reducing carbon emissions. (This assistance also covers capacity development for the reference emissions level/reference level for measuring forest related credits: REL/RL¹⁹ and MRV of forest related greenhouse gas emissions²⁰). The project is also in Central Kalimantan Province supporting closer monitoring of GHG emissions from peat land. The purpose of the project is to develop a REDD+ implementation mechanism in West and Central Kalimantan. Toward achieving this goal, the project has made a measure of progress since its launch in June 2013. Except for Output 4, project activities so far have largely been progressing according to plan. Most of the performance indicators will likely be achieved when the project is completed²¹.

Currently, the Ministry of Environment and Forestry seems to be staying away from requesting development partners for loan assistance but welcoming grant aid. This makes it rather difficult to establish an effective implementation mechanism for REDD+. Establishing a strategy, a monitoring system, a financing mechanism, and safeguard arrangements on paper does not necessarily mean these components will work properly as a broader system. In Indonesia, a highly decentralized nation, the central government may take action, but provinces or districts and cities may not. Closer coordination with local governments such as provinces and districts (regencies) are vital for better system operation. Such coordination or consensus building with local governments have proved rather difficult in some cases. The central government has devised a monitoring methodology and established the REDD+ Agency under presidential control, but actual forest monitoring is under the authority of KLHK. The REDD+ Agency often has difficulty doing what it wants.

Western donor countries tend to hire Western development consultants only to develop and complete such systems as far as technical aspects are concerned. Japan, on the other hand, tries to empower recipient countries so that they can implement projects on their own even if this requires much time. Of these two approaches, the Indonesian government prefers the Japan approach; it may not adopt what development partners have developed as it is. The World Bank takes the approach of offering funds and presenting conditionalities to the Indonesian government. The World Bank offered loan assistance when the Indonesian government set up the Peat Land Restoration Agency in the wake of the great forest fire of 2015. The Indonesian government decided to turn down the offer. With increased ownership by the Indonesia side, the presence of the World Bank is not as strong as it used to be.

¹⁹ Reference emissions level / Reference level (REL / RL). At COP 17, it was recognized that REL / RL plays an important role as a benchmark for evaluating the performance of each country's implementation of REDD+ activities.

²⁰ Measurement, reporting and verification (MRV) of greenhouse gas emissions. A series of processes to measure the amount of greenhouse gas emissions attributable to their activities and to ensure the accuracy and reliability of the emissions measured.

²¹ Global Environment Department, JICA. *Indonesia koku nippon indonesia REDD+ jisshi mekanizumu kochiku purojekuto chukan review hyoka hokokusho. [Mid-term review report on the Indonesia-Japan Project for Development of a REDD+ Implementation Mechanism]*. 2015.

Demonstrating a strong presence in the REDD+ is Norway, which committed one billion US dollars in 2010. This does not mean that Norway actually paid one billion US dollars to Indonesia. As the Scandinavia country adopts a results-based payment system, the payment has not been made because no outcomes have been produced. The commitment has yet to have any impact, as it has not resulted in forest conservation activities. Yet such an assistance modality is quite convenient for the Indonesian government, which sometimes shows its readiness to listen to what Norway has to say on the policy aspect but displays its reluctance to do the same to JICA and other development partners. Such an assistance modality may offer an effective option for development partners to increase their presence and provide a valuable hint for Japan’s assistance going forward, although it is premature to evaluate it.

11.3.3 Mangrove Information Center Project (Bali Province; Directorate General of Land Rehabilitation and Social Forestry, Ministry of Forestry)

Table 11-4: List of Projects on Mangrove Forest Conservation

Year	Technical Cooperation Projects
1992-1999	Development of Sustainable Mangrove Management Project
2001-2006	Mangrove Information Center Project
2007-2010	Subsectoral Program on Mangrove
2011-2014	Project on Mangrove Ecosystem Conservation and Sustainable Use in the ASEAN Region

Indonesia has a vast number of islands. Of them, Sumatra, Bali, and Lombok have a mangrove forest belt along their shores. As mangrove forests grow in shallow brackish waters, local residents use them as a source of charcoal or as culture ponds for fish or prawns; they are not fit for farming. Culture ponds become unusable in several years due to deteriorating water quality. It is under these circumstances that JICA launched the “Development of Sustainable Mangrove Management Project” in 1992 in the form of a verification survey.

At the time, the then–Ministry of Forestry was trying to conduct mangrove afforestation at abandoned culture ponds. Inadequate data on the species that constitute mangrove forests or their ecology meant that the survival rate hovered around 20–30%. However, the assignment of JICA experts changed the situation. Research on these aspects advanced two to three years after they started their activities in Indonesia. The development of suitable land and afforestation there improved the survival rate up to 80%.

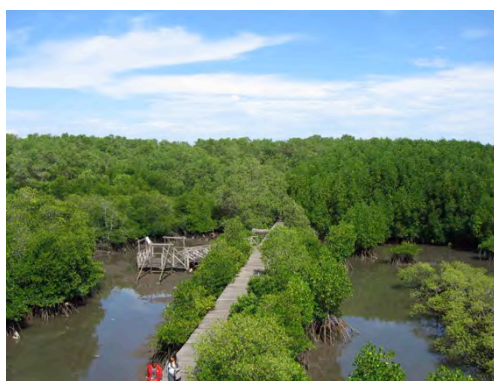
Amid global awareness that mangrove forests provide ecosystems that are important for biodiversity, JICA launched the “Mangrove Information Center Project” and other technical projects in Bali, which had abandoned culture ponds. The Mangrove Information Center (MIC), completed in 2003, displays dioramas and explanations on the ecology and functions of mangrove forests. The trail that was constructed in the adjacent mangrove afforestation site (completed in 2004) provides an opportunity for tourists to learn about local ecosystems. The MIC and the trail are suitably located as public relations facilities; they are about 15 minutes’ drive from the airport in Denpasar, a local hub for tourism. To date, the MIC has offered 23 training courses in total for mangrove extension workers around the country. It has also organized a total of 162 environmental education events in three years,

attracting more than 10,000 people in total. Afforestation events, which were held 118 times, have been attended by over 16,000 people. The participants in these afforestation events have had their names engraved in a board at the afforestation site.

The MIC in Bali is now one of the two mangrove management centers designated by the Ministry of Environment and Forestry. In line with this designation, the organization that manages the MIC has been named Mangrove Management Center 1 (MMC1). As the counterpart is the Directorate General of Land Rehabilitation and Social Forestry of the Ministry of Forestry, the MIC has two major tasks: (i) enlightening and educating local residents about the importance of mangrove forests; and (ii) carrying out activities aimed at ensuring the coexistence of culture ponds and mangroves, including promoting silvo-fishery (the practice of allowing local residents to construct culture ponds in exchange for obliging them to plant mangroves around such ponds). Because the MIC offers environmental education to adjacent schools, the trail is well known to local residents. The trail is used more by them than by tourists. At COP13 in 2007, the MIC was designated as one of the official visiting sites. It was also commended by the provincial government for its ecotourism activity.



An ecological exhibit in MIC



Trail in a mangrove forest and an afforestation site

11.3.4 Forest Fire Prevention Management Project (Jambi Province; West Kalimantan Province; Directorate of Forest Fire Control, Directorate General of Forest Protection and Nature Conservation, Indonesian Ministry of Forestry)

Table 11-5: List of Projects on Forest Fire Prevention

Year	Project Name (Scheme)
1996–2001	Forest Fire Prevention Management Project (Phase I) (Technical Cooperation Project)
2001	Project for Improvement of Forest Fire Equipment (Grant Aid)
2001–2006	Forest Fire Prevention Management Project (Phase II) (Technical Cooperation Project)
2006–2009	Forest Fire Prevention Project by Initiative of People in Buffer Zone (Technical Cooperation Project)
2010–2015	Program of Community Development of Fires Control in Peat Land Areas (Technical Cooperation Project)
2010–2015	Wildfire and Carbon Management in Peat Forests in Indonesia (SATREPS)

For nearly two decades since the 1990s, Japan has conducted a number of projects for forest fire prevention in Indonesia, which is still hit frequently by forest fires. One noteworthy outcome of such assistance is fire corps tasked with forest fire control in the regions. Japan's capacity-building efforts led to organizational strengthening of these corps. This had a national impact, as there were no fire corps in Indonesia. Once in several years, a great forest fire breaks out during the dry season in Indonesia. The often untimely control of forest fires, large or small, in a geographically vast and extensive country not only reduces forest resources; the resultant haze greatly affects neighboring countries in the form of flight interruptions, health problems, and other hazards, creating an international problem. Forest fires will likely be on the rise as scientists suspect that the El Niño phenomenon and climate change have helped to increase forest fires in recent years.

Phase I of this project developed an early detection system based on satellite information, an initial firefighting training program, and community initial firefighting activity in national parks. When a great forest fire broke out in 1997, one year after the launch of Phase I, the detection system installed in the city of Bogor transmitted information to the provinces covered by the project. Based on the outcomes of Phase I, the government organization unit responsible for forest fire control was upgraded from a single section to a directorate made up of four sections. In addition, its office was transferred from Bogor to the building of the then–Ministry of Forestry in the Special Capital Region of Jakarta.

Phase II of the project narrowed down the target areas to four national parks and led to the establishment of *Manggala Agni* under the firefighting command of the then Ministry of Forestry. *Manggala Agni* is modeled after Japanese volunteer fire corps. It is the brainchild of the then–Director General of Forest Protection and Nature Conservation, who visit such fire corps while he was in Japan on a counterpart training program. Satellite-based information on fire hot spots (*Titik Panas*), broadcast every day, is also accessible on the Internet at any time²². It is also reported by newspapers and in news programs. This is likely contributing to raising the awareness not only of people in the project areas but also the public at large. Phase II also carried out participatory socioeconomic surveys and offered education on environmental conservation and forest fire prevention for middle schools.

Manggala Agni has already been in place in almost all the national parks around the country. These firefighters watch training DVDs provided to them and conduct regular drills. Hot spot information continues to be updated every day, including Saturday and Sunday, as Phase II provided training for a wider range of employees. With regard to educational activities for environmental conservation and forest fire prevention, discussions with the Ministry of Education and Culture from the planning stage resulted in district governments incorporating these issues into their school textbooks.

The “Forest Fire Prevention Management Project” was followed by the “Forest Fire Prevention Project by Initiative of People in Buffer Zone” (2006-2009). Given that fires broke out sporadically in sparsely populated areas around forests, this technical cooperation project set out the strategy of managing forest protection and conservation areas in tandem with local communities there. Based on this strategy, the

²² http://webgis.dephut.go.id:8080/nfms_simontana/home/mapview/ (Accessed in March 2018)

project provided the technical assistance necessary for development of fire prevention facilities and the associated organizing of human resources by the initiative of people in such buffer zones. From 2010 onward, Japan conducted two peat-land fire prevention projects to address the urgent issue of preventing fires in peat swamp forests that emit carbon dioxide in large quantities. One was the technical cooperation project titled “Program of Community Development of Fires Control in Peat Land Areas” (2010-2015). This project aimed to develop the fire prevention capacity of community fire control organizations and firefighting companies of the Ministry of Forestry. It also supported closer coordination among relevant government agencies and a better organizational structure of these firefighting corps. At the same time, Japan also implemented a SATREPS project titled “Wildfire and Carbon Management in Peat Forests in Indonesia” (2010-2014). Although no comprehensive research had been conducted on how carbon is released from tropical peat, this project succeeded in measuring the long-term and continued trends in carbon dioxide (CO₂) emissions in tropical peat land for the first time in the world after installing observation towers for measuring CO₂ emissions.

11.3.5 Project for Improvement of Research Facilities for Biodiversity Conservation and Utilization

Table 11-6: List of Projects on Biodiversity Conservation

Year	Project Name (Scheme)
1995	Biodiversity Conservation Project (facility construction for the Zoology Division) (Grant Aid)
1995-1998	Biodiversity Conservation Project I (capacity-building for researchers) (Technical Cooperation Project)
1996	Biodiversity Conservation Project (equipment provision for the Zoology Division) (Grant Aid)
1998-2003	Biodiversity Conservation Project II (establishing research and information management frameworks) (Technical Cooperation Project)
2004, 2005, 2006	Project for Improvement of Research Facilities for Biodiversity Conservation and Utilization (Grant Aid)

Representing about 1.3% of the world’s land area, Indonesia is home to some 20% of the world’s species. Yet their habitat environments have been degraded due in large part to economic development backed by a growing population. Species extinction has been proceeding at an unprecedented rate. Efforts to conserve biodiversity have been called for. Agriculture, forestry, and fisheries are major industries for Indonesia, where some 40 million people, or 19% of the population, are engaged in these industries. Biodiversity conservation is thus a key issue to be addressed for the country’s sustainable development. Basic research for the conservation and utilization of biodiversity is conducted at the Research Center for Biology (RCB) of the Indonesian Institute of Sciences (LIPI). Before the project, its botany and microbiology divisions used buildings not designed for research. The equipment there was old-fashioned and inadequate. Many of the 1.3 million plant samples that had been accumulated since the 19th century were stored in an unfavorable environment. It was urgently necessary to restore damaged samples properly and improve the storing environment.

At the request of the Indonesian government, the Japanese government had provided assistance to RCB, as shown in Table 11-6. Yet the botany and microbiology divisions were using significantly

aging facilities and equipment. This prompted Japan to implement the “Project for Improvement of Research Facilities for Biodiversity Conservation and Utilization,” a grant aid project designed to provide these divisions with new facilities and equipment as part of efforts to conserve biodiversity in Indonesia.

This project constructed a botanical and microbiological research institute in Cibinong, near Jakarta, and provided grant aid to finance the improvement of both the research environment and the environment for storing plant samples. The improved research and sample storing environments made it possible to store valuable samples according to international standards. With the provision of research and sample preservation equipment and educational equipment to the Botany and Microbiology divisions, the project produced outcomes that are expected or better than planned (an increased number of studies, as well as increased or the same levels of samples) and educational outcomes (an increased number of visitors). The project had another significant impact: it promoted research for the development of new drugs and biofuels with the use of plants and microorganisms²³.

²³ JICA. *Ex-Post Evaluation of the Japanese Grant Aid Project, “Project for Improvement of Research Facilities for Biodiversity Conservation and Utilization.”* 2010.

11.4 Outcomes/Impacts of Japan’s Economic Cooperation and Future Prospects

11.4.1 Outcomes/impacts of Japan’s economic cooperation to date

Based on the review of period-specific characteristics and noteworthy achievements of Japan’s economic cooperation in the climate change and natural environment conservation sector, major issues, direction of cooperation, implementation areas, and project groups are summarized as below.

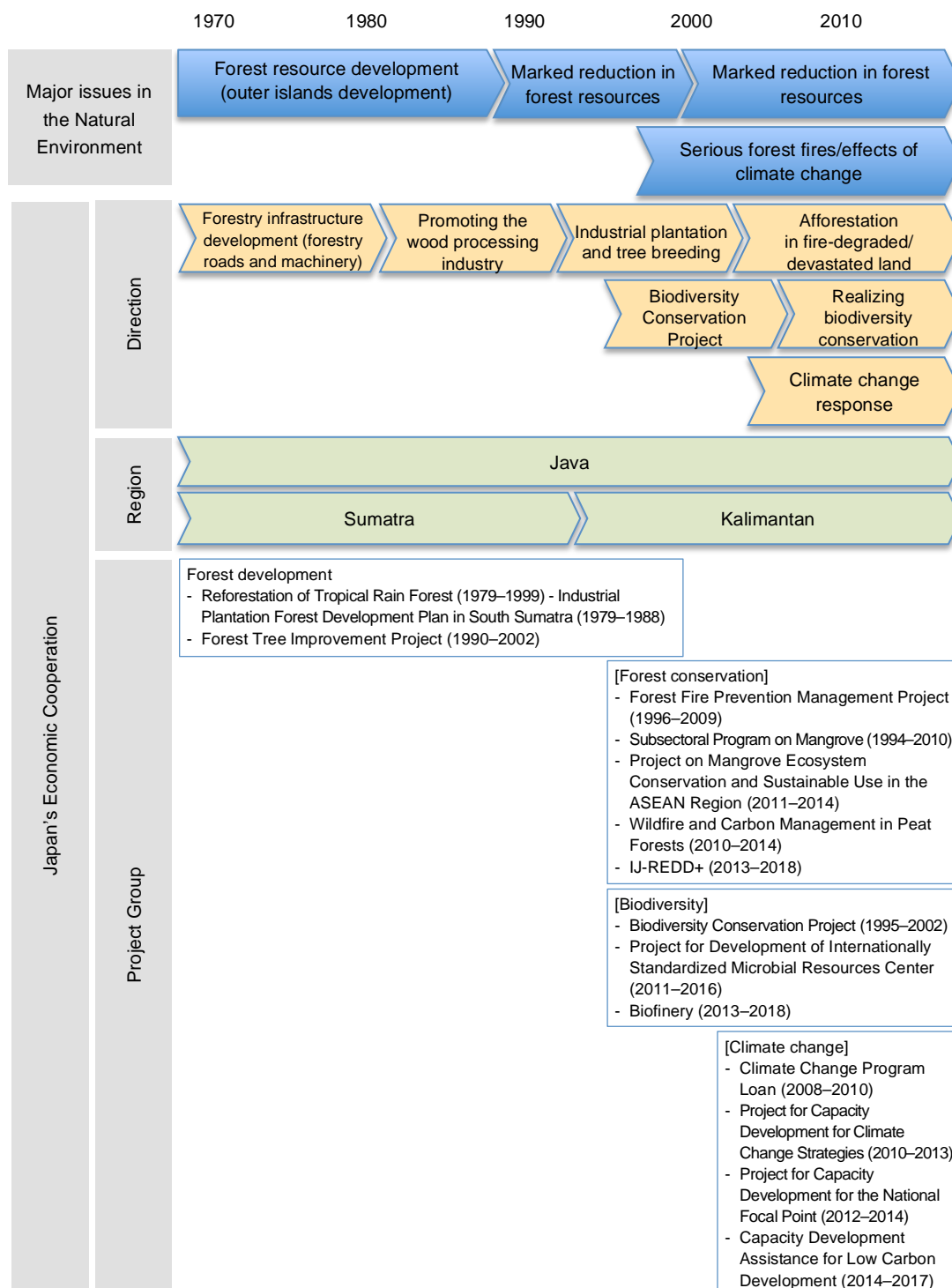


Figure 11-4: Characteristics of Japan’s Cooperation in Climate Change and Natural Environment Conservation

Natural environment conservation (forests)

A series of Japan's projects for forest fire prevention have been highly evaluated by KLHK for three major outcomes: (i) the establishment of fire corps that have now taken root in Indonesia; (ii) the formulation of the strategy of managing forest protection and conservation areas by the government and local communities working in tandem; and (iii) contribution to the development of the capacity of participatory fire prevention and extinguishing. Japan's assistance in forest fire prevention is more or less highly evaluated. Yet sustained assistance is needed as the problem of forest and peat fires has not been solved. In 2015, for example, Indonesia was hit by forest and peat fires on a scale that had never been seen in recent years. This disaster resulted in a large-scale loss of biodiversity and larger emissions of greenhouse gases (GHG), among other major challenges. The above-mentioned SATREPS project titled "Wildfire and Carbon Management in Peat Forests in Indonesia" succeeded in measuring the long-term and continued trends in CO₂ emissions in tropical peat land for the first time in the world, contributing to elucidating the mechanism whereby carbon is released from tropical peat. This and other SATREPS projects are highly evaluated by the Indonesian side for having accumulated scientific expertise and putting it to good use for society.

Natural environment conservation (biodiversity)

With regard to the conservation of mangrove forests, the then–Ministry of Forestry of Indonesia was also attempting mangrove afforestation at abandoned culture ponds. Yet, due to the insufficient data on the species that constitute mangrove forests and their ecology, the survival rate hovered around 20–30%. However, the assignment of JICA experts changed the situation. Research on these aspects advanced in a few years after the start of their activities in Indonesia. The development of suitable land and afforestation there improved the survival rate up to 80%. This development cooperation from Japan significantly improved the previous situation where mangrove forests had been converted to housing sites, dams, garbage dumps as well as the sites for commercial and tourist facilities in Bali, and to prawn culture ponds and industrial sites in Java.

The MIC, completed in 2003, displays dioramas and explanations on the ecology and functions of mangrove forests. The trail that was constructed in the adjacent site of mangrove afforestation contributed greatly to raising public awareness about mangroves. Because the MIC offers environmental education to adjacent schools, the trail is well known to local residents. The trail is used more by them than by tourists. At COP13 in 2007, the MIC was designated one of the official visiting sites. The establishment of the MIC has promoted mangrove-related training, environmental education, and ecotourism. Training participants planted trees in areas where they came from. As a result, a total of 4,000 ha have been afforested across the country. Building on these outcomes, Japan implemented the "Project on Mangrove Ecosystem Conservation and Sustainable Use in the ASEAN Region" from 2011 to 2014. This technical cooperation project shared good practices and lessons learned for the conservation of mangrove ecosystems that had been accumulated at the Ministry of Forestry through Japan's development cooperation with relevant organizations and communities in the ASEAN region for better South-South Cooperation.

It is worth noting that Japan's development cooperation has not been limited to conservation activities that are conspicuous to the public, such as efforts to conserve the shores and mangrove forests in Bali, but also provided various types of important support. For example, it has provided Indonesian researchers with opportunities to study in Japan and implemented technical cooperation projects, both for the purposes of identifying species and preserving their type specimens (the original specimens from which the description of new species is made), which are the fields where researchers are decreasing in number even in Japan. Japan has also provided grant aid to build a herbarium. The construction of the Research Center for Biology (RCB) has greatly contributed to the country's biodiversity research. RDCB's Herbarium *Bogoriense*, Museum *Zoologicum Bogoriense*, and Museum of Microbial Culture collections are being put to good use for biodiversity research and conservation. The number of dried plant samples there increased from 20,000 in 2003, before the project, to more than 730,000 in 2010. It is reported that researchers from other countries have come to visit the herbarium and its associated facilities for joint research. Indonesian researchers who have obtained a doctor's degree in Japan now use the facilities and equipment thus provided, and prepare written proposals to be submitted to the government in order to procure better, newer equipment. These proposals are often accepted. In short, the research institute is now independent.

Climate change

During the 1990s, climate change became an extremely important issue for Indonesia as well as for the international community. This was the background against which Japan implemented a loan assistance scheme known as Climate Change Program Loan. Japan's assistance in climate change for Indonesia is favorably evaluated for having been consistent with the country's long-term development plan. The technical projects that stemmed from this loan scheme, including the "Project for Capacity Development for Climate Change Strategies," are also favorably evaluated for having supported the secretariats for the National Action Plan for Reducing Greenhouse Gas Emissions (RAN-GRK) and provincial GHG emissions reduction action plans (RAD-GRK) and thus helped to develop the capacity to monitor carbon dioxide emissions at the national and provincial levels. It is also especially noteworthy that Japan targeted even adaptation measures at early stages when many development partners were only interested in mitigation measures.

11.4.2 Implications for future cooperation

Indonesia has the third largest forest area in the world and embraces a number of biodiversity hot spots. The country also ranks third in the world in terms of GHG emissions when those from forest fires and peat decomposition are taken into account. In that sense, Indonesia holds a key to the issues of climate change and biodiversity. The likelihood that GHG emissions and deforestation will increase further due to growth in the population and energy demand defies optimism. The INDC for the post-2020 period that Indonesia submitted to the United Nations states that by 2030, the country will reduce GHG emissions by 29% from the BAU scenario and by 41% if it receives international assistance (6 billion US dollars). This shows that climate change has continued to be a major issue. Indonesia faces

a host of issues with regard to biodiversity as well. As mentioned earlier, in the Red List of the IUCN, Indonesia ranks fourth in the world in terms of the number of endangered species. A total of 1,257 species are reported to be endangered.

The great forest fire of 2015 affected more than 2.6 million ha of forests and peat land. The Peat Land Restoration Agency is tasked with restoring more than two million ha of peat land in a five-year period from 2016 to 2020 under its action plan. This peat land, amounting to 2,103,327 ha to be precise, consists of 480,310 ha of land burned in the 2015 fire (protected area and cultivated area), 1,358,425 ha of peat domes with canals (protected area), and 264,592 ha of peat domes without canals (protected area)²⁴. The problem with forest and peat fire prevention is that there is no effective alternative to a major cause of such fires (the act of burning as part of slash-and-burn farming) and no good practice. In short, land management without such burning has yet to prove effective. Going forward, Japan should continue to provide development cooperation in developing initial firefighting capacity, mounting information campaigns, strengthening policies and institutions, and developing participatory fire control methods, among other fields²⁵.

Indonesia has a population of 260 million, ranking fourth in the world, and a birth rate of 2.46 children per woman. There is no doubt that the population will grow further. With a growing population, the country may face difficulty in securing food or providing education. In fact, many of the births are attributed to poor teenagers²⁶. Climate change and biodiversity conservation are closely related to poverty. Forest fires are often caused by slash-and-burn farming by poor farmers. Protecting forests alone and disregarding the livelihoods of the poor may not solve the problem. For this reason, a more desirable option would be to deal with poverty, climate change, and biodiversity loss at the same time with a view to addressing the three aspects of sustainable development (social, economic, and environmental) in an integrated manner.

The 2013–2018 “Indonesia-Japan Project for Development of REDD+ Implementation Mechanism (IJ-REDD+)” is a technical cooperation project aimed at addressing a comprehensive range of issues with the SDGs in mind. Its project activities include “the improvement of livelihood, biodiversity conservation, and the provision of environmental services.” As for the transfer of credits under REDD+ and JCM, it is desirable to formulate projects that focus also on incidental activities that produce cobenefits such as livelihood improvement, national park management, the transfer of energy-saving technology, while accurately assessing Indonesia’s assistance needs in the policy aspect in light of progress in international negotiations.

²⁴ Nazir Foead. *Recovery and Restoration of Indonesian Peatland*. 2016.

<https://drive.google.com/file/d/0B0bphNpFTYgRTXdtlcyU1pFWEU/view> (Accessed in March 2018)

²⁵ Kuno Hiromitsu. *Indonesia no shinrin, deitanchi kasai/ deitanchi kaifuku heno torikumi ni kakaru saikin no genjo to kadai. [The Recent State of and Changes for Efforts to Address Forest and Peat Fires and Restore Peat Land in Indonesia]*. 2016.

²⁶ SankeiBiz. “Indonesia jinko zoka ni kenen: hinkon kasoku mo keimou minorazu. [Indonesia: Growing Population a Source of Concern; Public Awareness-Raising Ineffective Amid Growing Poverty.]” April 2014.

<http://www.sankeibiz.jp/macro/news/140407/mcb1404072206015-n1.htm> (Accessed in March 2018)

Indonesia plays a crucial role in natural environment conservation. This is something many development partners pay attention to. Norway, for example, committed one billion US dollars in 2010 in its assistance for REDD+. This commitment has made Norway one of the most favored development partners by the Indonesian government. With these huge funds, the government set up the REDD+ Agency, which is now conducting a range of activities with focus on institution building for REDD+. These activities, however, have yet to curb deforestation²⁷. Future developments in this respect deserve attention. In the climate change and natural environment conservation sector in Indonesia, Japan has not committed such a huge amount of grant aid in recent years. It is likely that Japan will concentrate its assistance resources on technical cooperation.

Due in part to the merger between the Ministry of Environment and the Ministry of Forestry, there has been some confusion since 2015 over the question as to which central government office assumes what authority or jurisdiction. This confusion is partly caused by different policymaking processes among such offices. It is pointed out that the power dynamics among central government offices and among the central and local governments may be a factor in the fact that the Indonesian government is not of one voice on such issues as GHG emission reduction credits. Indonesia has two different sets of climate change mitigation targets (INDC and RAN-GRK, as mentioned earlier) in parallel. This makes project formulation difficult, but it may be important to accurately assess the needs by listening to various opinions within the government. Indonesia is known for being considerably eager to attain the SDGs as they were with regard to the MDGs. The Presidential Decree issued on the SDGs in July 2017 calls on the central government to develop a national SDG action plan in six months and provincial and other local governments to come up with their own SDG action plan within 12 months. The SDGs include many environmental-related goals (e.g. SDG12: Responsible Consumption and Production; SDG13: Climate Action; SDG14: Life Below Water; SDG15: Life on Land [Biodiversity]). The project formulation process should focus on these goals while taking stock of cross-sectoral issues such as poverty reduction and partnership building.

In response to the Paris Agreement on Climate Change, Indonesia has set out an ambitious INDC, which states that by 2030, the country will reduce GHG emissions by 29% from the BAU scenario and by 41% if it receives international assistance. It is reluctant to trade its reduction credits with donor countries. Still, the Ministry of Environment and Forestry and a few other government offices may be positive about the issuance of such credits. As credit issuance is a political issue, KLHK may change its basic stance on the issue when it reshuffles its personnel. There is much demand for projects that are designed to achieve the several SDGs that Indonesia is strongly committed to in an integrated manner through activities other than credit issuance. They may include a project that addresses climate change, poverty reduction, and biodiversity conservation at the same time. Being the third largest GHG emitter in the world and a treasure trove of wild animals and plants, Indonesia has the potential to contribute greatly to attaining the SDGs.

²⁷ Hideyuki Kubo. "Indonesia ni okeru REDD+ seido to shinrin gensho yokusei. [REDD+ Institutional Framework and Measures for Reducing Deforestation in Indonesia.]" *Kaigai no Shinrin to Ringyo* [Japanese Journal of International Forest and Forestry] No.91. 2014.

Chapter XII Health and Medical Care/ Social Security

12.1 Summary

In the late 1960s, when system of providing medical services in Indonesia were limited, Japan's cooperation laid the foundation of the medical services through intensive support for rehabilitation of hospitals and reinforcement of educational systems for health providers. The focus was then shifted to thematic cooperation to strengthen the health system from the 1980s, in such areas as maternal and child health (MCH), community health, infectious disease control, and drug and food safety responding to the needs at the time.

With regards to emerging and re-emerging infectious disease control, Japan had dispatched Japan Disaster Relief teams soon after the first human case of Avian Influenza H5N1 infection was confirmed, and subsequently provided technical cooperation based on the needs for Avian Influenza infection control. In recent years, Japan launched a new scheme called SATREPS. Through this scheme, Japan has been supporting Indonesian research institutes to gain new knowledge and technologies and to conduct innovative trials for improving the level of science and technology as well as solving global issues in infectious control.

In the area of social security, Japan assisted the establishment and development of the National Vocational Rehabilitation Center (NVRC) in the 1990s which contributed to promoting employment of persons with disabilities. Soon after the national social insurance system started its operation in 2014, Japanese system of labor and social insurance attorneys was introduced to Indonesia. As the system attracted the keen interest of the counterpart organizations, a new technical cooperation project started in 2017 in order to assist the establishment and operation of the attorney system.

The volume of Japanese cooperation in health, medical care and social security is gradually decreasing since health-related indicators show certain improvements. However, there is now increasing concern about the double burden of infectious and non-communicable diseases and the aging population which Japan is currently facing. In order to take measures against the common health issues and to achieve Universal Health Coverage (UHC) in Indonesia, Japan is expected to provide further technical cooperation utilizing its experiences.

Table 12-1: Overview of the Health and Medical Care/ Social Security Sector in Japan's ODA

Period	1960s	1970s and early 1980s	Late 1980s	1990s	From the end of 1990s	From the end of 2000s
	Nation-State Building	Economic Development	Structural Adjustment	Growth until the Asian Financial Crisis	Democratization and Decentralization	Middle Income Countries
Historical Context	<ul style="list-style-type: none"> • Cold War • ASEAN (1967) • Inauguration of President Suharto (1968) • Green Revolution 	<ul style="list-style-type: none"> • First Oil Crisis (1973) • End of Vietnam War (1975) • Second Oil Crisis (1979) 	<ul style="list-style-type: none"> • Plaza Accord (1985) • Reverse Oil Crisis (1986) • End of Cold War (1989) 	<ul style="list-style-type: none"> • Asian Financial Crisis (1997) • First human case of H5N1 Avian Influenza in Asia (1997) 	<ul style="list-style-type: none"> • Laws on local autonomy (1999) • Millennium Development Goals (2000) • Election of President Yudhoyono by direct election (2004) 	<ul style="list-style-type: none"> • Japan-Indonesia Economic Partnership Agreement (2008) • G20 Accession (2008) • Jakarta Commitment (2009) • Sustainable Development Goals (2015)
Situation of the Sector ^{1,2}	<ul style="list-style-type: none"> • IMR 120 (1967) • MMR 500 (1968)³ • TFR 5.6 (1968) • Life expectancy at birth M 47.3 F 50.1 (1960) 	<ul style="list-style-type: none"> • IMR 85 (1980) • TFR 5.0 (1975) • Life expectancy at birth M 53.4 F 55.7 (1970) 	<ul style="list-style-type: none"> • IMR 71 (1986) • TFR 3.7 (1985) • Life expectancy at birth M 60.3 F 62.9 (1985) 	<ul style="list-style-type: none"> • IMR 50 (1995) • MMR 368 (1993) • TFR 3.1 (1990) • Life expectancy at birth M 61.6 F 64.7 (1990) 	<ul style="list-style-type: none"> • IMR 32 (2006) • MMR 200 (2006) • TFR 2.5 (2003) • Life expectancy at birth M 66.5 F 69.7 (2000) 	<ul style="list-style-type: none"> • IMR 23 (2015) • MMR 126 (2015) • TFR 2.4 (2015) • Life expectancy at birth M 67 F 71 (2015)
Priority Development Issues in the 5 - Year Development Plan in Indonesia	<ul style="list-style-type: none"> • Improve hospitals • Improve public health • Promote family planning • Train health providers 	<ul style="list-style-type: none"> • Improve hospitals • Establish and expand <i>Puskemas</i> • Promote family planning 	<ul style="list-style-type: none"> • Improve health and medical services • Infectious disease control • MCH • Promote primary health care 	<ul style="list-style-type: none"> • Improve health and medical services • Promote primary health care • Infectious disease control 	<ul style="list-style-type: none"> • Prevention of diseases and health promotion • Expand comprehensive health services • Empower communities 	<ul style="list-style-type: none"> • Promote MCH and elderly health • Improve access to health services • Educate health workforce • Promote health insurance
Direction of Japan's Cooperation	<ul style="list-style-type: none"> • Improve hospitals • Promote family health 	<ul style="list-style-type: none"> • Improve hospitals • Train health providers • Promote family 	<ul style="list-style-type: none"> • Improve MCH • Infectious disease control • Improve 	<ul style="list-style-type: none"> • Improve MCH • Infectious disease control • Improve 	<ul style="list-style-type: none"> • Improve community health • Infectious disease control 	<ul style="list-style-type: none"> • Improve community health • Infectious disease control

¹ The World Bank. *DataBank World Development Indicators*. <https://data.worldbank.org/country/indonesia> (Accessed in April 2018)

² IMR: Infant mortality rate (per 1,000 live birth), MMR: Maternal mortality rate (per 100,000 live birth), TFR: Total fertility rate.

³ Overseas Technical Cooperation Agency. *Medical Cooperation for the Province of Maluku*. 1969.

Period		1960s	1970s and early 1980s	Late 1980s	1990s	From the end of 1990s	From the end of 2000s
		Nation-State Building	Economic Development	Structural Adjustment	Growth until the Asian Financial Crisis	Democratization and Decentralization	Middle Income Countries
			health • Improve community health	community health • Improve hospitals	community health • Improve hospitals • Encourage employment of persons with disability	• Ensure medical safety • Encourage employment of persons with disability • South-South Cooperation	• Ensure medical safety • Train health providers • Strengthen social insurance system • South-South Cooperation
Outcomes	Medical care						
	Family planning, MCH, Community health						
	Infectious disease control						
	Drug and food safety						
	Empowerment of persons with disabilities						
	Social insurance						

Note: Dashed lines in the section of outcomes indicate the impact/ spillover effect from the previous period.

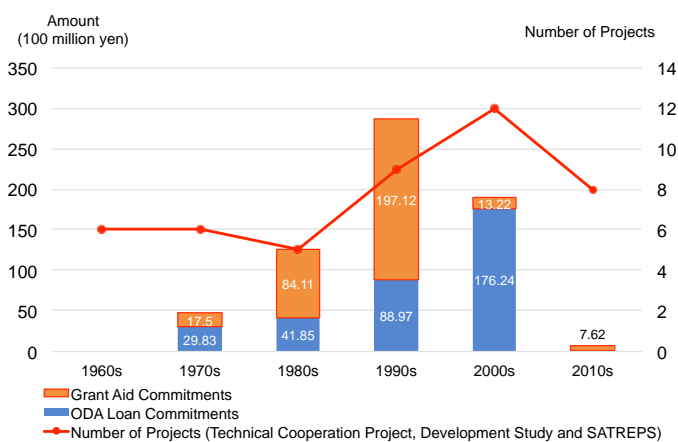
12.2 Historical Context and Japan's Cooperation

12.2.1 Number of projects and commitment amounts

Japan's assistance in health and medical care/social security has started with a technical cooperation with the faculty of dentistry at Padjadjaran University in 1966. The cooperation has been continued for more than 50 years in the form of technical cooperation, development study, ODA loans, grant aid, and SATREPS. Many of these projects were implemented by combining technical cooperation by Japanese experts and grant aid which assisted construction or rehabilitation of facilities and provision of equipment.

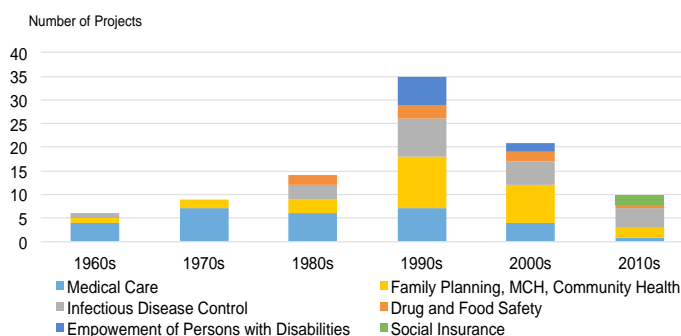
There have been 95 projects implemented under the sector as of December 2017, which can be broken down into 41 technical cooperation projects, 2 development studies, 9 loan assistance (ODA loans), 40 grant aid projects, and 3 SATREPS projects. Figure 12-1 shows the commitment amounts of financial assistance and the number of projects in the other schemes per decade. As the figure shows, the amount of ODA loan and grant aid increased in the 1990s, and the number of projects in other schemes peaked in the 2000s.

The projects of technical cooperation, development study, ODA loan, grant aid, and SATREPS can be broken down into six areas which are 29 projects for medical care, 27 projects for family planning/MCH/community health, 21 projects for infectious disease control, 8 projects for drug and food safety, 8 projects for empowerment of persons with disabilities, and 2 projects for social insurance (Figure 12-2).



Source: JICA Review Team

Figure 12-1: Commitment Amounts of ODA Loans and Grant Aid (E/N basis), and the Number of Technical Cooperation (Technical Cooperation Project and Development Study) and SATREPS by Decade



Source: JICA Review Team

Figure 12-2: Number of Cooperation (ODA loans, grant aid, technical cooperation, development studies) and SATREPS in Health and Medical Care/ Social Security (Total 95) by Thematic Area

12.2.2 Health expenditure and budget of related ministries

Health spending accounted for 2.8% of gross domestic product (GDP) in 2014⁴ and remained below average among the other ASEAN countries (3.1% of GDP). The budget share of the Ministry of Health (MOH) among the governments increased from 3.2% (2010) to 4.9% (2016), while the amount tripled from 2010 to 2015⁵. The Ministry of Social Welfare, which is responsible for empowerment of persons with disabilities in Indonesia, increased their budget share from 0.5% in 2010 to 1.1% in 2014.

12.2.3 Period-specific characteristics of Japan's economic cooperation for Indonesia in the health and medical care/social security sector

In this section, the situation of the health and medical care/social security sector in Indonesia and support of the Japanese government for Indonesia are summarized by period. In addition, the Japan's cooperation is broken down into the thematic areas: medical care; family planning; MCH; community health; infectious diseases control; drug safety; empowerment of persons with disabilities, and social insurance by period.

-The 1960s: Improve medical service delivery (infrastructures, facilities and equipment)

-The 1970s and the 1980s: Improve medical service delivery and strengthen health system through thematic assistance

-The 1990s: Strengthen health system through thematic assistance and empower persons with disabilities

-From the end of the 1990s: Strengthen health system through promoting primary health care and infectious diseases control

-From the end of the 2000s: Building resilient health system and social insurance system

(1) Situation of the sector

The 1960s: Improve medical service delivery (infrastructures, facilities and equipment)

Health related indicators in the 1960s showed urgent needs of improving medical facilities and equipment as well as public health services nationwide. The infant mortality rate (IMR) was 120 (per 1,000 births) in 1967⁶, maternal mortality rate (MMR) was 500 (per 100,000 live birth)⁷, the number of hospital bed was 0.74 (per 1,000 people), and the number of doctor was only 0.021 (per 1,000 people in 1960)⁸ at this period. The First Five-Year Development Plan (REPELITA I) (1969/70-1973/74) therefore set out the initiative to establish Community Health Center (*Puskesmas*)

⁴ WHO. *The Republic of Indonesia Health System Review. Health Systems in Transition*. Vol-7, Number-1., 2017.

⁵ Ministry of Health., *The Republic of Indonesia. Indonesia Health Profile 2015*.

⁶ The World Bank. *DataBank World Development Indicators*. <https://data.worldbank.org/country/indonesia>. (Accessed in April 2018)

⁷ Overseas Technical Cooperation Agency. *Medical Cooperation for the Province of Maluku*. 1969.

⁸ The World Bank. *DataBank World Development Indicators*. <https://data.worldbank.org/country/indonesia>. (Accessed in April 2018)

nationwide so as to provide primary health care services.

REPELITA I also stressed the promotion of family planning in response to the growing population as the total fertility rate was as high as 5.6⁹ in 1968. As one of the countermeasures, the National Family Planning Institute (LKBN) was established and then it changed its body into a non-departmental government institution called the National Family Planning Coordinating Board (BKKBN) after 1970. BKKBN was placed directly under the President and started a national family planning program.

The 1970s and the 1980s: Improve medical service delivery and strengthen health system through thematic assistances

REPELITA II (1974/75-1978/79) prioritized community health and education of health providers. In 1978, international community stressed the importance of primary health care in order to achieve “health for all” encouraging prevention and health promotion in affordable and adequate manner. In response to this movement, REPELITA III (1979/80-1983/84) set out national targets of reducing mortality rate, improving nutrition and medical services. A national policy to promote community health through improved primary health care was launched. Responding to the policy, 25,000¹⁰ Integrated Health Service Posts (*Posyandu*) were established in 1985 and provided MCH and family planning services, under the cooperation of health providers, village midwives, and PKK groups (Family Welfare Development).

In the 1980s, REPELITA IV (1984/85-1988/89) prioritized improved drug supplies in order to promote population health and medical service delivery. The set goals were; 1) to contribute to population welfare through essential drug supplies and adequate price setting and 2) to promote domestic production of major pharmaceutical ingredients¹¹. In addition, the government launched a national policy to manufacture vaccine for polio and measles domestically aiming to reduce under-five mortality rate¹².

A study of the MOH in 1986 found out that a half of mortality was caused by infectious diseases in Indonesia, while that of other developing counties averaged only 40% (WHO, 1987)¹³. Against this background, REPELITA V (1989/90-1993/94) stressed infectious disease control through improving medical facilities and promoting research and development in Indonesia.

The 1990s: Strengthen health system through thematic assistances and empower persons with disabilities

The 1990s saw high maternal and child mortality rates. This prompted the government of Indonesia to target improving quality and equality of medical services and to promote community participation in REPELITA VI (1994/95-1998/99) so as to reduce the MMR from 368 to 225 (per 100,000 live birth)

⁹ The World Bank. *DataBank World Development Indicators*. <https://data.worldbank.org/country/indonesia>. (Accessed in April 2018)

¹⁰ JICA. *Health Sector Profile Summary-Indonesia*. 1997

¹¹ JICA. *Report for Strengthening Provincial Laboratories for Food and Drug Control*. 1995.

¹² JICA. *Final Report for Fundamental Technology Transfer Project for Production of Live Attenuated Measles and Poliomyelitis Vaccine in Indonesia*. 1996.

¹³ JICA. *Kokuritsu kansensho center setsuritsu keikaku kihon sekkei [Report for National Center for Infectious Diseases]*. 1991.

by 1999. In addition, a health development plan called “Healthy Indonesia 2010” was developed in 1999 which stressed prevention and health promotion with ten area of priority such as immunization, prevention of infectious diseases, and reproductive health. One of the goals was to train 80,000 physicians to supply at least 40 physicians per 100,000 people by 2010.

This period saw rapid dissemination of *Posyandu* nationwide and 250,000 facilities were found in 1993¹⁴. Although population health and social welfare showed a certain level of improvement in the 1990s, a huge development gap emerged between eastern and western regions. President Suharto therefore established a development policy which focused on the eastern regions.

Regarding social security, a study showed that Indonesia accommodated 6 million of persons with disabilities in 1995. While the law, stating equal job opportunities for persons with disabilities, was enacted in 1997, it turned out to be unsuccessful because of high unemployment rate in Indonesia¹⁵.

From the end of the 1990s: Strengthen health system through promoting primary health care and infectious diseases control

The Asian Financial Crisis in 1997 and decentralization started in 2001 affected the provision of health services and expanded its regional disparities. The Asian Financial Crises brought budget shortfalls in social services, resulting in a shortage of physicians in rural communities. In addition, through the role of medical stock management was passed to local governments due to decentralization, it caused inadequate and insufficient medical supplies across the country.

Under these circumstances, National Development Program (PROPENAS: 2000-2004) prioritized new challenge such as family and working environment, improving health behavior, empowering community, ensuring equality of health services, training of health providers, and improving quality of medical services. The strategic plan of the MOH (RENSTRA DEPKES: 2005-2009) raised local governments’ capacity in planning and implementation of local governments and dysfunction of *Posyandu* as major issues. In 2006, a new national program called “*Desa Siaga*” movement began in which community leads health promotion¹⁶.

In 2003, the first case of Avian Influenza H5N1, an emerging infectious disease, was confirmed among poultry and among human beings in 2005. The numbers of human cases of infection and death had increased until 2006. Emerging and re-emerging infectious disease has started to be recognized as a new global threat as they could transcend borders rapidly in the era of globalization.

¹⁴ JICA. *Health Sector Profile Summary-Indonesia*. 1997.

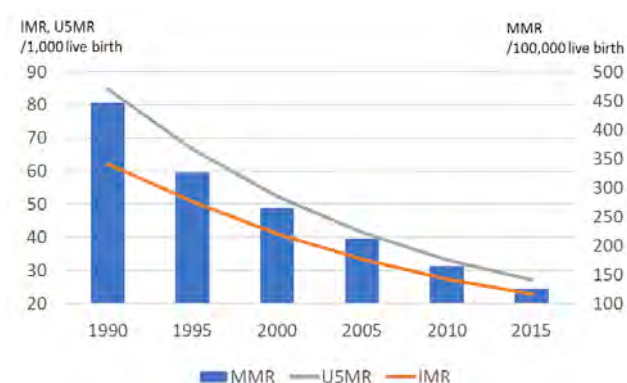
¹⁵ JICA. *The Japanese Mid-Term Evaluation Study Team for The Project for The National Vocational Rehabilitation Center for Disabled People*. 2000.

¹⁶ *Desa Siaga* means “Alert Village” Program. It determines villages which are capable to prevent and count measure health issues such as malnutrition, infectious diseases, serious illness, and accidents with mutual cooperation in communities.

From the end of the 2000s: Building resilient health system and social insurance system

The National Medium Term Development Plan (RPJMN: 2005-2009) set out targets on MCH, family planning, infectious control, training health providers, drug safety, and delivery of health services. While the indicators on MCH showed improvements (Figure 12-3), the mortality rate still remained high compared to the other ASEAN countries. For instance, the maternal mortality rate did not meet the target of the Millennium Development Goals (Table 12-2).

The government requires stable and efficient social insurance system because the rate of aging population will increase gradually after the demographic bonus ends in the latter half of the 2020s. Although a system of medical insurance started to operate in 2014 and labor insurance (workers' compensation, old age lump sum benefit, temporary welfare for death of family and annuity) in 2015, low enrollment rates and unauthorized premium collection are some of the challenges.



Source: The World Bank

Figure 12-3: Changes in MCH Indicators

Table 12-2: MCH Indicators among Five ASEAN Countries and MDGs Targets for Indonesia

MCH Indicators (2015) ¹⁷	Thailand	Philippines	Viet Nam	Malaysia	Indonesia	
					Indicators (2015)	MDGs Target
IMR ^{*1}	11	22	11	6	23	23
Under-five mortality rate ^{*1}	12	28	22	7	27	32
MMR ^{*2}	20	114	54	40	126	102
Skilled birth attendance	100%	73%	94%	99%	87%	More than 44.5%

*1 : Death per 1,000 live birth, *2 : Death per 100,000 live birth

(2) Major efforts by Japan

1) Medical care

The 1960s

Concerning a lack of medical facilities, equipment, and medical workforce, Japan started a technical cooperation project titled “Faculty of Dentistry, Padjadjaran University” (1966-1972) and “West Java Central General Hospital (1968-1972).” The assistance aimed to strengthen operation of clinical laboratories for physiology, biochemistry and blood testing through provision of equipment and technical trainings in Japan. These projects were followed by projects titled “Clinical Laboratory, Persahabatan

¹⁷ UNICEF. *The State of the World's Children 2017*.

Hospital” (1968-1972) and “Department of Thoracic Surgery, Persahabatan Hospital” (1969-1974). Persahabatan hospital received medical equipment for cardiac surgery as well as technology transfer from Japan. As a result, the hospital became one of the top referral hospitals in cardiac and thoracic surgery in Indonesia.

The 1970s and the 1980s

The 1970s saw growing Japanese assistance in the area of medical care, especially in capacity development for health providers. With regard to strengthening a nursing education system, Japan combined a grant aid project, “Construction of Nursing Education School” (1979) and a technical cooperation project, “Nursing Education” (1978-1985). The former supported the construction and expansion of the nursing schools, while the latter assisted the development of the curriculum and educational materials. With respect to strengthening medical care, projects such as “Jakarta Central Hospital, Clinical Laboratory Section” (1972-1975) and “Control of Biological Products and Virus Diagnosis” (1975-1980) assisted capacity development of diagnoses, medical treatment, and research. A follow-up study of the “Jakarta Central Hospital, Clinical Laboratory Section” found that the installed equipment was well maintained, and the counterparts were highly motivated even 16 years after the completion of the project.

National and public hospitals in Indonesia are classified into four levels according to its number of clinical departments, medical specialists and beds. A-class hospitals hold advanced facilities and medicine, and clinical departments, while D-class hospitals mainly hold only general medicine. There were only 2 A-class hospitals in 1984¹⁸ and one of them was the Dr. Cipto Mangunkusumo Hospital. For this hospital, Japan implemented a grant aid project, “Construction of Emergency Center in Dr. Cipto Mangunkusumo Hospital” (1984). The project assisted the establishment of emergency obstetrics because there were a number of emergency cases of women in their first childbirth due to lack of nutrition, infections, inadequate hygiene education for mother and child¹⁹. The establishment of the emergency medical center laid the foundation of regional emergency medical service to reach across Java island.

The 1990s

Growing economy led a dozen of traffic accidents and large scaled industrial accidents which drove up the number of outpatient and surgery cases. The Dr. Soetomo General Hospital was the only public facility to provide emergency medicine in Surabaya Municipality, therefore, Japan implemented “Rehabilitation of Emergency Center in Dr. Soetomo General Hospital” (1993) and a technical cooperation project, “Emergency Medicine in Dr. Soetomo General Hospital” (1994-1998) aiming to strengthen facilities and transfer knowledge in emergency medicine.

¹⁸ JICA. *Kyukyu iryo center kensetsu keikaku kihon sekkei chosa hokokusho [Report for the Project of Emergency Department Building of Dr. Cipto Mangunkusumo Hospital]*. 1984.

¹⁹ JICA. *Kyukyu iryo center kensetsu keikaku kihon sekkei chosa hokokusho [Report for the Project of Emergency Department Building of Dr. Cipto Mangunkusumo Hospital]*. 1984.

From the end of the 1990s

In response to the lack of health providers in rural part of Indonesia, Japan started an ODA loan project, “Development of Faculty of Medicine and Health Sciences of Syarif Hidayatullah State Islamic University” (2004). The State Islamic University was chosen as the counterpart because the university has focused on improving medical services in rural communities. With the project, educational buildings were constructed and equipment was provided. Moreover, prospective lectures were dispatched to Japan for study. While an ex-post evaluation of the project indicated that the students’ enrollments from rural areas remained limited, it was confirmed that the project contributed to improving the quality of education and medical skills of the graduates in actual clinical practices²⁰.

From the end of the 2000s

In the late 2000s, the Government of Indonesia needed to accelerate the establishment of faculty of medicine at universities in order to meet the target of “Healthy Indonesia 2010”, which aimed to increase the number of physicians to 40 per 100,000 by 2010 because the physician to population ratio remained as low as 20 per 100,000 in 2004. Following the policy of the Ministry of Education to have universities with medical schools establish affiliated teaching hospitals, Japan started an ODA loan project, “Development of World Class University at University of Indonesia” (2008). The University of Indonesia was chosen to be a partner because they play an important role in national medical education, as their graduates account for 10% of entire medical doctors in Indonesia. The project assisted the improvement of faculty of medicine, the establishment of a teaching hospital and capacity building of lecturers and workforces.



Teaching hospital under the construction at the University of Indonesia

Toward improving nursing capacity, Japan implemented the “Project for Enhancement of Nursing Competency through In-Service Training” (2012-2017) with the MOH, five universities and nine hospitals. The project introduced Career Development Ladder System²¹ to enhance stepwise professional development at pilot hospitals and strengthen in-service training program for geriatric and disaster nursing. The decree of the Minister of Health which detailed the utilization of the Ladder System was issued on 15th August 2017, and the system was disseminated to other hospitals through the project.



Simulation training of emergency and disaster medicines

²⁰ *Evaluation Report for Development of Faculty of Medicine and Health Sciences of Syarif Hidayatullah State Islamic University*. 2016.

²¹ The ladder system is a grading structure to facilitate career and skill progression by defining different levels of clinical practice in nursing which include educational plan. It aims to improve nursing in-service abilities. (Based on Japan Red Cross Society. *Kangojissen Noryoku Kojo notameno Career Kaihatsu Ladder Donyu no Jissai [Facts on establishment of career ladder system for improving nursing ability in practice]*. 2008.

2) Family planning

The 1960s

Japan succeeded in reducing IMR and fertility rates, and spreading family planning only within 20 years after World War II. Applying these experiences and knowledge, Japan implemented the “Family Planning Project” (1969-1985) in the Special Capital Region of Jakarta. The project provided assistances to develop educational and visual software and to provide contraception and promotional equipment for family planning promotion.

The 1970s and the 1980s

The BKKBN established local offices in each of the 301 districts in 27 provinces, and cooperated with government agencies and private organizations for family planning promotion. The above mentioned Japanese technical cooperation “Family Planning Project” had continued until 1985 and assisted the BKKBN in developing educational equipment. In spite of the difficulties such as social-cultural diversity across the nation and vulnerable governmental systems, activities of the BKKBN implemented at all the levels from village to subdistrict, district and province raised awareness on and increased use of contraceptives.

The 1990s

Under the increased use of contraceptives, the total fertility rate dropped to 3.1 in 1990 from 5.6 in 1968. In order to share their practices and technologies for developing educational and visual equipment to other countries, Japan supported Indonesia to hold a Third Country Training Programs (TCTP) titled “Family Planning IEC (Information, Education and Communication)” (1993-1997) and “Role of Multimedia in Family Planning” (1998-2002). Trainees were from Viet Nam, Kenya and several other countries, selected from personnel who were responsible for family planning and who were middle management. The training introduced Indonesian practices on community-based promotion of family planning and effective and efficient use of the educational equipment.

3) MCH

The 1970s and the 1980s

Given the limited MCH services in Indonesia, which was a pressing issue, Japan implemented a technical cooperation project, “Community-based Family Planning and Maternal and Child Health” (1989-1994) in Central Java Province. This project promoted family planning and MCH services, and improved the referral system for infant and pregnant women with high risk. During a training course in Japan implemented as a part of the project, a physician, who was a counterpart of the project, found Japan’s MCH Handbook very useful, showing interest to introduce it to Indonesia. This was a start of developing Indonesian MCH Handbook and a series of assistances was continued for a long period (See 12.3.2).

From the end of the 1990s

A joint evaluation of the above project showed that many mothers began using the MCH Handbook while health volunteers also came to use it to fill up necessary information. This demonstrates that the MCH Handbook is an effective tool for health service delivery²². Based on this result, the “Ensuring the Quality of MCH Services through MCH Handbook” (1998-2003) began. The MCH Handbook was disseminated at 23 provinces in 2003, gradually spread nationwide. The cooperation prompted the ministry to issue the Ministerial Decree in 2004 for usage of the MCH Handbook at health facilities.

From the end of the 2000s

Aiming to sustain development of the MCH Handbook in Indonesia, a technical cooperation project, “Ensuring Maternal and Child Health Service with MCH Handbook Phase 2” (2006-2009) was started. Under the project, the MOH held several TCTP training for countries in Asia, Central East and Africa, where Indonesia shared their experiences and lessons learned from the development of the MCH Handbook (See 12.3.2).

4) Community health

The 1970s and the 1980s

In response to regional health promotion in the 1970s, a technical cooperation project titled “Regional Health in North Sumatra” (1978-1989) was implemented and contributed to prevent infectious diseases, and improving examinations of infectious diseases such as Malaria, intestinal and parasite infections.

The 1990s

The national policy prioritizing the development of eastern region prompted Japan to target Sulawesi. Meanwhile, a grant aid project, “Improvement of District Health Services in South Sulawesi” (1996) combined with an ODA loan project, “Strengthening District Health in Sulawesi” (1996) and a technical cooperation project, “Improvement of District Health Services in South Sulawesi” (1997-2002), contributed to improving primary health care through training health providers and building capacity of districts on health planning and implementation.

From the end of the 2000s

Japan was engaged in improving primary health care mechanism with cooperation of community and government in the “Improvement of District Health Management Capacity in South Sulawesi Province Project” (2007-2010) and its Phase 2 (2010-2014) in the late 2000s. The projects applied a mechanism where target communities made plans and submitted proposals, while health offices and subdistrict offices provided technical support for the implementation and the district office allocated budget and monitored the activities. As an evaluation stated that the mechanism was effective for improving

²² JICA. *Final Report for Community-based Family Planning and Maternal and Child Health*. 1994.

primary health care, Japan launched a continuous cooperation through the Phase 2. This project incorporated the mechanism into the existing planning and budgeting cycle of local governments and national health program called “*Desa Siaga*”, aiming to gain governmental and financial sustainability. In fact, some target areas activated the *Desa Siaga* program applying the planning and budgeting mechanism of the technical cooperation. This success attracted surrounding districts and two districts adopted the mechanism after the end of the cooperation. In one of the districts, all of the villages utilize it . Meanwhile, the mechanism is recognized as an effective method to promote the *Desa Siaga* program by the MOH, introduction sessions were held at some seminars where community health officers across the countries attended.

5) Infectious disease control

The 1970s and the 1980s

The government of Indonesia launched a national policy to produce oral polio vaccine (OPV) and measles vaccine domestically at the late 1980²³. Aiming to support the policy, Japan started a series of assistance to the national pharmaceutical company PT Bio Farma (PBF) (It turned into PT Bio Farma (Persero) in 1997, and hereafter “PT. Bio Farma”) which was only the company producing vaccine in Indonesia (See 12.3.1).

The 1990s

In response to the needs of infectious disease control and research and development for the area, Japan developed grant aid projects, “Construction of National Infectious Diseases Hospital” (1991, 1992) in the Special Capital Region of Jakarta and “Research Development for Tropical Medicine in Airlangga University” (1997) in Surabaya, East Java Province.

From the end of the 1990s

Japan dispatched a survey team of Japan Disaster Relief from September to October 2005 soon after the first human case of Avian Influenza infection was confirmed. Subsequently, Japan developed technical cooperation projects in health and agriculture sectors based on the needs for Avian Influenza control. In the health sector, MOH Indonesia started to implement measures for early detection and early response of Avian Influenza infection, such as issuing a national surveillance guideline and implementing infection prevention activities. However, the surveillance system at provincial and district health offices was not effective enough, and therefore Japan started a technical cooperation project, “The Project to Enhance Surveillance System for Avian Influenza” (2008-2011) in South Sulawesi Province. Through the support of the project, surveillance activities were properly implemented at provincial, district, health facility as well as community levels. Reporting and monitoring systems were well established, which contributed to strengthening the communication

²³ JICA. *Report for Fundamental Technology Transfer Project for Production of Live Attenuated Measles and Poliomyelitis Vaccine*. 1988.

among provincial, district, health facility as well as community levels, and enabled them to take appropriate and rapid responses according to the technical protocol developed through a project activity. The technical protocol became a governor's decree in South Sulawesi Province and the budget for surveillance activity was secured, which meant that sustainability of the surveillance activity was assured from policy and financial aspects. Even in 2017, six years after the termination of the project, the surveillance activity is being implemented by South Sulawesi Provincial Health Office and its District Health Offices.

In addition, a grant aid project, "The Project for Strengthening the National Laboratory for Controlling the Highly Pathogenic Avian Influenza and other Emerging and Re-emerging Infectious Diseases" (2011) is currently implemented for strengthening diagnostic capacity.

Indonesia hit the peak of Avian Influenza in 2006 with 55 human cases and 45 deaths. Afterwards, the numbers of human case and death declined and became below 10 for each in 2010. No human case has been confirmed since 2016.

From the end of the 2000s

From the 2010s, three SATREPS projects have been implemented in the area of emerging and re-emerging infectious disease control in Indonesia. SATREPS projects, "Identification of Anti-Hepatitis C Virus Substances and Development of HCV and Dengue Vaccines" (2010-2014) and "Project for Searching Lead Compounds of Anti-malarial and Anti-amebic Agents by Utilizing Diversity of Indonesian Bio-resources" (2015-2020) aimed to strengthen research system and capacity of Indonesian universities and research institutes through joint research with Japanese universities for identifying and searching effective substances among Indonesian rich bio-resources. Identification of such substances is the critical first step for development and production of vaccine and drug in Indonesia. Another SATREPS "Project for Ecological Studies on Flying Foxes and Their Involvement in Rabies-related and Other Viral Infectious Diseases" (2015-2020) is implemented as a joint research on flying foxes which are considered as a host of viruses of rabies and other zoonoses. The joint research focuses on identification of viruses which flying foxes carry, as well as clarification of roles played by the flying foxes in routes of infection through ecological study, including type of the virus, interaction with other animals or human. Although Indonesia is endowed with bio-diversity and has various animals, research on wild animals is not so advanced compared to that research on livestock. Therefore, it is expected that research technology transfer through the joint research of the SATREPS project will further advance research on zoonoses through wild animals in Indonesia.

6) Drug and food safety

The 1970s and the 1980s

Japanese assistance in the area of drugs and food safety began with the combination of an ODA loan, "Construction of National Center for Quality Control" (1983) and a technical cooperation project, "Management of Quality of Drug" (1983-1989). Cooperating with the national center of food and drug

quality control, the project constructed building and installed equipment and facilities required for analysis. Technologies were transferred to counterparts in six departments: animal experimentation; pharmacology; toxicology; microbiology; biopharmaceuticals, and standard goods. Meanwhile, a total of 21 counterparts received training in Japan and 48 experts were dispatched to Indonesia during the project, which enabled the central government to take control of drug and food safety and quality.

The 1990s

A grant aid project, “Strengthening Provincial Laboratories for Food and Drug Control” (1995) was started to address the problem of poor monitoring system of drug safety in local areas. The project was implemented at five provincial laboratories in Bandung, Surabaya, Ujung Pandang (current Makassar), and Medan, and installed analytical equipment to enhance provincial control on drug and food safety which are on market.

From the end of the 1990s

There was growing concern over the shortage of drugs at public hospitals and community health centers in local areas. Additionally, health providers such as nurse and midwife sometimes managed drug stocks due to a lack of pharmacist. Under these circumstances, Japan started technical cooperation titled “Improve Drug Supply Management System and Promote Rational Use of Drugs (Phase 1)” (2005-2007) and its Phase 2 (2007-2012). The projects assisted National Agency of Food and Drug Control to improve equipment and laboratories as well as building capacity of personnel thorough training. It also focused on strengthening drug supply management at community health centers in pilot areas.



Training for drug supply management at community health center

Under the phase 1 project, health providers received trainings for drug supply management and rational use of drugs. Subsequently at the Phase 2 project, Standard Operating Procedure (SOP) was newly developed in response to the request of one of the counterparts; SOP is a tool for health providers to sustain knowledge gained through the training. Along with the progress of the project, the number of model areas were expanded to four provinces and started to involve pharmacists of public hospitals. An evaluation of the project found that the transferred knowledge of drug management were well-entrenched among health providers in the model areas²⁴.

From the end of the 2000s

Globalization brought falsified medical products, vaccine and contaminated food to the market in

²⁴ JICA. *Project Completion Report. Improve Drug Supply Management System and Promote Rational Use of Drugs.*

Indonesia. This issue prompted BAPPENAS to prioritize drug and food safety at annual planning of 2018. Responding to the poor pharmacovigilance system to detect side effects of distributed drugs and foodborne diseases, Japan started a technical cooperation project, “Ensuring Drug and Food Safety” (2016-2021). With regards to drug safety, the project provides training in Japan, holding seminars cooperating with Pharmaceuticals and Medical Devices Agency (PMDA), aiming to strengthen government capacity to control drug safety and to enable their quick emergency response. In the area of food safety, the assistance focuses on building the capacity of the government for food monitoring and strengthening ability of food inspections. It transfers Japanese technologies of food inspection to mid-level lab technicians, utilizing available reagent and equipment in Indonesia.

7) Empowerment of persons with disabilities

The 1990s

Following the grant aid “Project for the Improvement of the Equipment for the Mobile Rehabilitation Unit Services” in the 1990s, Japan began assistance to establish a vocational rehabilitation system for persons with disabilities. A technical cooperation project titled “Development of Vocational Rehabilitation System in the National Rehabilitation Center for the Physically Disabled People, Prof. Dr, Soeharso Surakarta” (1994-1997) assisted development of curriculum for computer and sewing training courses, job placement system, and capacity of the instructors. It was implemented as a pilot project and an evaluation found



Sewing training course at NVRC for persons with disabilities in Bogor

that these training enlarged employment opportunities for the graduates. Based on the positive evaluation result, grant aid for “The Project for the NVRC for Disabled People” (1996, 1997) supported establishment of the NVRC in Bogor. This was followed by “The Project for Improvement of National Vocational Rehabilitation Center for Disabled People” (2003-2006), which assisted starting up of five training courses and institutionalization of the vocational system for persons with disabilities.

8) Social insurance

From the end of the 2000s

With respect to social insurance system, a technical cooperation project, “Strengthening Social Security System” (2014-2017) was implemented. Referring to the Japanese attorney system, a pilot project was developed, and trialed an attorney system where attorneys play an important role in expanding insurance coverage and premium collection. Consequently, the trial resulted in expanding membership coverage and adequate premium collection especially for the workers in informal sectors. The positive recognition brought subsequent cooperation of Japan titled “Capacity Building for Social Security Implementation” (2017-2020) which assisted institutionalization of the attorney system nationwide (See 12.3.3).

12.3 Noteworthy Achievements in Cooperation

This section presents long-term cooperation with two subsectors that have produced noteworthy achievements: 1) Fundamental technology transfer for production of measles and polio vaccine; 2) Ensuring MCH service with MCH Handbook, and 3) Project for strengthening social security system which contributed Indonesia to achieving UHC in Indonesia.

12.3.1 Fundamental technology transfer for production of measles and polio vaccine

(1) Background

An outbreak of measles hit the island of Lombok in 1977 and 12,508 measles cases were reported while its mortality rate reached 9% among infected children under the age of five. The outbreak also occurred in West Java Province from 1983 to 1984, and the mortality rate of infected under-five peaked at 24% at most affected regions²⁵. REPELITA IV therefore set out an initiative to reduce the under-five mortality rate. The government of Indonesia aimed to expand immunization coverage for polio and measles, but the vaccine supply was not under governmental control since the products fully relied on foreign imports.

With respect to the reduction of under-five mortality, the government announced the policy of full-scale production of vaccines for polio and measles in Indonesia and requested Japan to provide assistances to PT Bio Farma. The initial plan involved only a technical cooperation, however, grant aid projects were later added since adequate infrastructure was necessary to complete the high-technology transfer. Consequently, a series of cooperation included grant aid projects, the “Project for the Construction of the Facilities for Live Attenuated Oral Poliomyelitis and Measles Vaccine production” (1989, 1990) and the “Project for the Improvement of the Equipment” (1991), and a technical cooperation project, “Fundamental Technology Transfer Project for Production of Live Attenuated Measles and Poliomyelitis Vaccine” (1989-1996) which strengthened facilities, equipment and capacities for vaccine production.

The cooperating organizations in Japan- The Research Foundation for Microbial Diseases of Osaka University (BIKEN) and Japan Polio Research Institute (JPRI) (currently transferred to BIKEN) received 50 trainees and dispatched 48 experts to Indonesia. The transferred knowledge and technologies were well-entrenched in PT Bio Farma at earlier stage than expected because the company had kept high level of technologies and capacity since 1890 of their first establishment.

(2) Outcomes and spillover effects

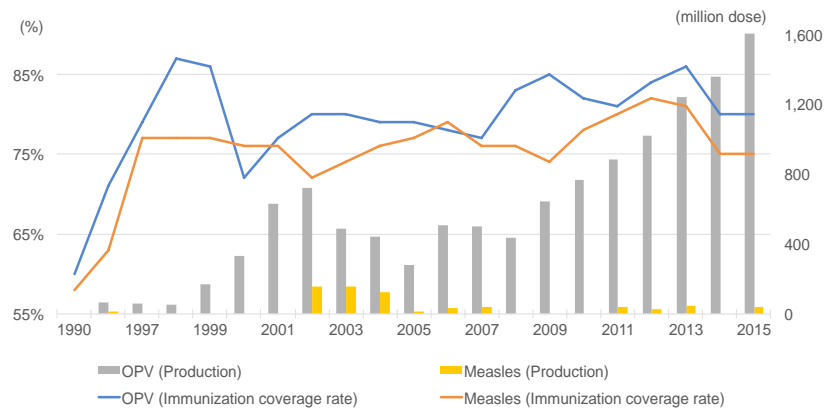
Establishment of domestic manufacture of the vaccines for polio and measles

The government of Indonesia approved the quality of measles vaccine manufactured by PT Bio Farma in 1993 and the polio vaccine in 1994. The original target was to produce 20 million doses for the polio vaccine and 7.5 million doses for the measles vaccine to fill the annual needs of 5 million births.

²⁵ JICA. *Fundamental Technology Transfer Project for Production of Live Attenuated Measles and Poliomyelitis Vaccine*. 1988.

Consequently, PT Bio Farma succeeded in producing 63 million doses of polio vaccine and 15 million doses for measles annually from 1995 to 1996. This fulfilled all the needs, so that the domestic share reached 100%.²⁶

Thus, the government became able to plan and implement adequate immunization program for children when needed. Due to this achievement, the vaccination rate of infant for the polio increased from 71% (1995) to 72% (2000) and 82% (2010)²⁷ while that for the measles jumped from 63% (1995) to 76% (2000) and 78% (2010)²⁸ (Figure 12-4). Several factors are associated with the increased rate of vaccination



Source: JICA Review Team based on WHO vaccine-preventable diseases monitoring system. 2017., and the data of PT Bio Farma

Figure 12-4: Transition of Vaccination Rate (%) and Production (dose) for Polio and Measles

such as improvement of health services and rising awareness on vaccination. The domestic manufacturing is possibly one of the contributing factors, since the stable vaccine supply enabled the government to control the vaccine stock, which prevented opportunity losses for vaccination.

Expansion of the Vaccine Production and its Development

In 1997, both vaccines passed the WHO quality evaluation. Soon after that, in 1998, PT Bio Farma started to export their surplus vaccine through UNICEF and the export gradually expanded. The domestic sales grew from 2.5 billion yen (1995) into 4.2 billion yen (2000), while the export sales increased from 12.9 billion yen (1998) to 1.6 billion yen (2000)²⁹. Recent data also reveal their steady sales with the domestic sales of 3 billion yen and international sales of 10.4 billion yen (2016)³⁰.

These growths were led by 12 other vaccine of PT Bio Farma which acquired WHO prequalification one after another such as DTP (Diphtheria, Tetanus, Pertussis), TB (Tuberculosis), TT (Tetanus Toxoid), Hepatitis B by 2017. Furthermore, PT Bio Farma play significant role globally with their exports of 1.6 billion doses of Oral Polio Vaccine (OPV) and 21 million doses of measles vaccine (2015). Their exports reached 136 countries including through UNICEF, Pan American Health Organization (PAHO), and other international organizations.

With regards to human resources of the company, the number of staff was increased from 400 (1989) to

²⁶ JICA. *Report for Fundamental Technology Transfer Project for Production of Live Attenuated Measles and Poliomyelitis Vaccine*. 2002.
²⁷ WHO. *WHO vaccine-preventable diseases: monitoring system. 2017 global summary*.
²⁸ WHO. *WHO vaccine-preventable diseases: monitoring system. 2017 global summary*.
²⁹ JICA. *Report for Fundamental Technology Transfer Project for Production of Live Attenuated Measles and Poliomyelitis Vaccine*. 2002.
³⁰ PT Bio Farma. *Bio Farma Laporan Tahunan 2016 [Annual Report 2016]*; Biotech innovation for a global competitiveness. (IDR 1 =0.008322 yen; JICA Monthly exchange rate as of December 2016)

1,200 (2015) approximately, and many of graduates have been recruited from the Institute of Technology in Bandung. Most of the trained staff under the Japanese cooperation remained working at PT Bio Farma for a long time, and their knowledge has been passed to younger generation and remained internally even after their retirement. This can be proved by the fact that the facilities and equipment provided by the cooperation in 1991 are still used, contributing to vaccine production until today.

(3) South-South Cooperation

Prompted by the needs of neighbor countries on prevention of polio and measles, Indonesia and Japan implemented TCTP training from 1998 to 2007. PT Bio Farma transferred technologies of quality control, management, laboratory testing for the vaccine production for the trainees from Thailand, Viet Nam, Malaysia, Zimbabwe and others. Meanwhile, Japanese experts were dispatched as training lecturers, and it contributed to sustaining level of technologies of the PT Bio Farma³¹. WHO also recognized PT Bio Farma as a training institute in the WHO's Global Training Network, and this authorization improved international trust toward the company.

In recent years. presidents of Developing Countries Vaccine Manufacturers Network (DCVMN) were selected among the management team of PT Bio Farma. This implies that the company is contributing to global knowledge exchange on vaccine.

BOX 12-1: Development of PT. Bio Farma and Japanese Cooperation

PT Bio Farma and BIKEN have continued business to business cooperation for vaccine production even after the Japanese cooperation ended in 2007. When the management team of PT Bio Farma visited the BIKEN in Japan, an exhibition caught attraction of the management team of PT. Bio Farma.



**Exhibition of vaccine development for polio and measles (left),
A panel of Japanese Grant Aid Project (right)**

In 2016, PT Bio Farma opened an exhibition where the Japanese cooperation for polio and measles vaccine in 1989 can be seen at one of the panels. The exhibition room contains several panels and digital signage which introduce vaccine production such as raw materials of the vaccines, functions, effectiveness and so on. The exhibition and museum of PT Bio Farma are open to the public for social contribution.

³¹ JICA. *Report for Fundamental Technology Transfer Project for Production of Live Attenuated Measles and Poliomyelitis Vaccine*. 2002.

12.3.2 Ensure MCH services with MCH Handbook

(1) Overview

Background

Responding to the needs of improving MCH in the 1990s, the government aimed to improve delivery of health service, its equal distribution, and community participation. Severe health condition is reflected in the under-five mortality rate of 50 (1995, per 1,000 live birth), and MMR of 425 (1993, per 100,000 live birth). The underlying causes of the high MMR are: lack of basic knowledge of pregnancy and delivery; delay in decision to seek care for pregnant women in risk and complications; delay in reaching health facilities, and delay in receiving adequate health care at health facilities.

When an Indonesian physician attended a training course in 1991 in Japan, the Japanese MCH handbook caught his attention. At the time mothers frequently lost their health recording cards since there had been separated cards for mother, child, immunization and others³². Under this circumstance, the physician desired to introduce the compiled handbook to Indonesia. It seemed tough to convince the MOH to accept the compiled MCH Handbook since several development partners had provided their assistances to each of the health recording cards. On the contrary, the MOH approved it, so that the government started to develop the Indonesian MCH Handbook. The flow of the cooperation is shown in the table below (Table 12-3).

Table 12-3: Development of the MCH Handbook and Japanese Cooperation^{33,34}

Year	Japanese Cooperation	Phase
1992-1994	-The MCH Handbook developed and piloted in “Family Planning and MCH” (1989-1994) (Phase 0) in Central Java Province.	Pilot phase
1994-1996	-Utilization of the MCH Handbook expanded in Central Java Province	
1995-1997	-Collaborated with Special Population Fund, the World Bank (1996-2001) and United Nations Population Fund (UNFPA) and utilization of the MCH Handbook expanded to 5 provinces (Central Java, West Sumatra, East Java, South Sulawesi, and Bengkulu) .	
1997	-National version of the MCH Handbook developed	Nationalized phase
1998-2003	-Implemented the “MCH Handbook Project (1998-2003) (Phase 1) “in 2 priority provinces (West Sumatra, North Sulawesi) and 6 semi-priority provinces (Bengkulu, East Java, Yogyakarta, Bali, West Nusa Tenggara, South Sulawesi).	
1999 -	- JOCV dispatched at the semi-priority provinces, cooperating with technical cooperation project.	
2003	- The MCH Handbook disseminated in 23 provinces.	Nationwide implementation
2004	- Decree of the MOH issued and stated the usage of the MCH Handbook in MCH services (No.248/Menkes SK/III/2004)	

³² Yasuhide Nakamura. Record of Lecture. *Sekai ni Hirogaru Boshi Techo [The MCH Handbook expand to the world]*. Osaka University Graduate School of Human Sciences.

³³ Based on <https://www.jica.go.jp/project/indonesia/0600435/02/>. (Accessed in April 2018)

³⁴ Keiko Osaki, Yasuhide Nakamura, Yoko Watanabe, Yoshiko Sato, Hiromi Okuno. “Case Study: Expanded Application of Maternal and Child Health Handbook Program in Indonesia.” *Kokusai kyoryoku kenkyu [International cooperation research]*. Vol.14 No.2., 1998.

Year	Japanese Cooperation	Phase
2006	-Budget allocated from the decentralization budget for reduction of IMR and MMR -The MCH Handbook disseminated in all the 33 provinces.	phase
2006-2009	-“Improving MCH with MCH Handbook II” (2006-2009) (Phase 2) assisted systematization of continuum care of MCH services with the MCH handbook.	Institutionalization into health system phase
2007-2012	- Implemented the “International Training on Strengthening District Health Planning in the Era of Decentralization for Improvement of the Health Status of Children and Mothers” (2007-2012) for TCTP trainings. - Indonesia received trainees from Laos, Morocco, Afghanistan, Viet Nam, Bangladesh, Palestine and Timor-Leste at 5 trainings (East Java, West Java, West Sumatra, West Nusa Tenggara and Central Java) and participants from Afghanistan, Cambodia, and Kenya at technology exchanges.	South-South Cooperation phase
2014-2016	-“Strengthening District Health Planning in the Era of Decentralization for Improvement of the Health Status of Children and Mothers (Phase 2)” (2014-2016) held TCTP trainings and received trainees from Viet Nam, Laos, Timor-Leste, Kenya, Afghanistan, Myanmar, Uganda in 3 training courses (Bali, Jakarta, Yogyakarta, West Sumatra)	
2016	-The National version of the MCH Handbook updated under the initiative of the Directorate of Family Health, the MOH.	
2017	-A comparative study was conducted for utilization of the MCH Handbook among participants from Indonesia, Thailand, Kenya and the Philippines. Observers from Afghanistan and Tajikistan also attended.	

Japanese Cooperation

The MCH Handbook has been developed utilizing the contents of brochures and posters in Indonesia instead of just translating the Japanese MCH Handbook into Indonesian³⁵. After the completion of the development, some provinces changed the design of the front cover or added original topics along with their needs and cultural context. Under the phase 1 project, the MCH Handbook disseminated nationwide and it led the issue of the ministerial decree in 2004, and budget allocation to the MOH in 2016 for developing the MCH Handbook.

The assistance of the phase 2 project targeted institutionalization of the MCH Handbook to ensure its sustainability. A packaged pre-service training for health providers was developed and incorporated in training programs of the MOH, the Indonesian Midwife Association and the Indonesian National Nurses Association and also the curriculum of 632 midwifery schools and 440 nursing schools³⁶. Educational tools were also developed for mothers’ class “Pregnancy” and “Child bearing” which was implemented as a national program. Japan assisted the government to include the indicators related to the MCH Handbook utilization³⁷ in their regular monitoring and evaluation system. Then in 2017, the

³⁵ Keiko Osaki, Yasuhide Nakamura, Yoko Watanabe, Yoshiko Sato, Hiromi Okuno. “Case Study: Expanded Application of Maternal and Child Health Handbook Program in Indonesia.” *Kokusai kyoryoku kenkyu [International cooperation research]*. Vol.14 No.2., 1998.

³⁶ JICA. *Boshihoken jigyo niokeru boshi kenko techo katsuyoni kansuru kenkyu chiken, kyokun, kongono tenkai [Research for utilization of the MCH Handbook for MCH services – Knowledge, Lessons, and Future Challenges]*. 2012.

³⁷ Primary Health Care Survey (*RISKESDAS*) uses three indicators for the MCH Handbook; Receipt (interviewee received

Primary Health Care Survey (RISKESDAS) and the Demographic Health Survey (DHS) incorporated the MCH Handbook related indicators into the regular indicators.

(2) Outcomes and spillover effects

The effects of the MCH Handbook on MCH services

According to RISKESDAS, the ownership of the MCH Handbook among mothers was 44.3%³⁸ in 2010 and it increased to 80.8%³⁹ in 2013, and to 81.5%⁴⁰ in 2016. However, there is a huge gap by region; the ownership ratio is 95% in Gorontalo Province while it is only 60.8% in Papua Province (2013)⁴¹.

RISKESDAS (2013) showed that mothers having the handbook were 16.8 times more likely to take the first ANC service, 2.3 times more likely to take the fourth ANC service, and 2.7 times more likely to choose delivery with trained personnel compared to mothers without the handbook. The similar result found at a research using the data set of DHS 1997, 2002, 2003, and 2007. It was found that the handbook ownership was associated with choice of having delivery assisted by trained personnel, receiving maternal care, and having their children vaccinated⁴².

South-South Cooperation

The cooperation has developed into the TCTP in the 2000s. The technical cooperation, “Strengthening District Health Planning in the Era of Decentralization for Improvement of the Health Status of Children and Mothers (Phase 1)” (2007-2012) and its Phase 2 (2014-2016) held eight TCTP training courses.

Under the phase 1 training, Indonesia shared its experiences of development of the MCH Handbook with the countries which have high interests in introducing the handbook to their countries. At the phase 2, trainees were chosen from the countries which already installed the handbook, and the training was shifted to the provision of learning opportunities. In the training, Indonesia and participating countries shared ideas to ensure effective utilization of the MCH Handbook.



TCTP training session in West Sumatra in 2017

the MCH Handbook at ANC service), Ownership (interviewee can show the MCH Handbook to interviewer), Recording (interviewee can show the MCH Handbook to interviewer and the preparation plan for delivery is filled).

³⁸ Ministry of Health, Republic of Indonesia. *Riset Kesehatan Dasar (RISKESDAS)* 2010.

³⁹ Ministry of Health, Republic of Indonesia. *Riset Kesehatan Dasar (RISKESDAS)* 2013.

⁴⁰ Ministry of Health, Republic of Indonesia. *Sirkesnas* (National Health Indicator Survey).2016.

⁴¹ Ministry of Health, Republic of Indonesia. *Riset Kesehatan Dasar (RISKESDAS)* 2013.

⁴² Keiko Osaki, Tomoko Hattori, and Soewarta Kosen. “The role of home-based records in the establishment of a continuum of care for mothers, newborns, and children in Indonesia.” *Global Health Action*. 2013.

The TCTP trainee brings their knowledge and skills back to their own countries after their participation and this accelerated introduction of the handbook to their countries. For example, in Afghanistan, the development of the national MCH Handbook was accelerated and a pilot trial even began after the training. Furthermore, in Palestine and Viet Nam, the government and Japan began their collaboration on the MCH handbook after the training⁴³. According to the MOH, preparation and coordination of the training requires huge efforts, but it benefits not only participating countries but also Indonesia. This is because sharing common issues with the participating countries helped them adjust and improve contents of the MCH Handbook. The MOH and the District recommended holding TCTP training in every province since it benefits the health providers of the host province by facilitating and raising awareness on utilization of the handbook.

BOX 12-2: Updating the contents of the MCH Handbook in Indonesia

The MOH has a policy to update the MCH handbook (national version) every five years. An updating work began in 2013 for the first time after the technical cooperation project terminated in 2009. Discussions and adjustment took about two years for the related directorates of the MOH and professional associations. Consensus was reached, and new contents were added; head circumference by age; identification of children with disabilities; child abuse; prevention of sexual harassment and others. Five million of the updated handbook were disseminated in 2016.

The updating process required the same amount of efforts and coordination as the development of the handbook. This update aimed to cover emerging health issues and needs at the time, and this was proceeded under internal coordination, which demonstrates the technical sustainability gained by the MOH and related institutions in Indonesia. The name of JICA is still on the back cover of the updated handbook under the name of the MOH as a form of recognition of Japan's past cooperation and contribution.



The MCH Handbook updated in 2016

12.3.3 Project for strengthening social security system

(1) Overview

The current demographic dividend in Indonesia is expected to peak in the second half of the 2020s, which will result in aging population gradually with a decreasing birthrate. Stable and efficient social insurance system is therefore required shortly. Though a target of the enrollment rate of the labor insurance (workers' compensation, old age lump sum benefit, temporary welfare for death of family and annuity) is set at 80% for the formal sector⁴⁴ and 5% for the informal sector⁴⁵ by 2019, it remains as low as 16% over all in 2015. On the other hand for the health insurance, a national goal is to cover entire population by 2019 including civil servants and workers in private sector who were covered by the former insurance system. However, it is difficult to improve the insurance coverage and premium collection since the workers in the informal sector (which accounts for 60% of entire workers) are

⁴³ JICA. *Boshihoken jigyo niokeru boshi kenko techo katsuyoni kansuru kenkyu chiken, kyokun, kongono tenkai [Research for utilization of the MCH Handbook for MCH services-Knowledge, Lessons, and Future Challenges]*. 2012..

⁴⁴ Civil servants, employees of legally registered corporations

⁴⁵ People who work for organizations that are not registered as legal entities.

unfamiliar with the periodical payment and the health insurance itself. In order to address these issues, Japan formulated a technical cooperation “Project for Strengthening Social Security System” (2014-2017) in collaboration with Japan Federation of Labor and Social Security Attorneys Associations. A system of labor and social insurance attorneys in Japan was introduced and a pilot project was started to develop a system suitable for Indonesia. Table 12-4 shows the flow of Japanese cooperation.

Table 12-4: Japanese Cooperation on Strengthening Social Insurance System

Year	Cooperation
May 2014	-Technical cooperation “Project for Strengthening Social Security System” (2014-2017) started.
August 2015	-Training on employee insurance and public medical insurance held in Japan
May 2016	-The social security attorneys system of Japan was introduced at a training on strengthen social security. The attenders were from; high-ranking officials; Coordination Ministry of Human Development & Culture, National Social Security Council (hereafter “DJSN”), Ministry of Manpower, Ministry of Finance, BPJS Ketenagakerjaan (social insurance administration for labor, hereafter “BPJS Labor”)
June 2016	-A model of the system of labor and social insurance attorneys was introduced at a meeting with related ministries and institutions. -BPJS Labor decided to pilot an attorney system suitable for Indonesia
July 2016	-Training on employee insurance held in Japan -Assisted BPJS Labor on developing a manual for employees on insurance coverage and premium collection
October 2016 June 2017	-BPJS Labor began pilot of attorney’s model (PERISAI) -BPJS Kesehatan (social insurance administration for health, hereafter “BPJS Health”) began pilot of the attorney’s model (Kader JKN)
February 2017	-Training on health insurance held in Japan
August 2017	-The “Project on Strengthening the Capacity for Social Insurance Operation” (2017-2020) started.
November 2017	-BPJS Labor and BPJS Health began institutionalization of each attorney’s model

(2) Outcomes and spillover effects

Based on the result of nine months pilot project, BPJS Labor established a system where Perisai (argent) plays a role of expanding insurance coverage, collecting premium and managing data of the membership. A target is to increase the number of Perisai up to 10,000 by the end of 2018. Meanwhile, BPJS Health has trained 1,600 Kader JKN (argent). In order to expand its operation, Japan started “Project on Strengthening the Capacity for Social Insurance Operation” (2017-2020) to assist BPJS Labor and Health to achieve a national health insurance program.

12.4 Outcomes/Impacts of Japan's Economic Cooperation and Future Prospects

12.4.1 Outcomes/impacts of Japan's economic cooperation to date

Based on the review of period-specific characteristics and noteworthy achievements of Japan's economic cooperation in the health and medical care/ social security sector, major issues, direction of cooperation, implementation areas, and project groups are summarized as below.

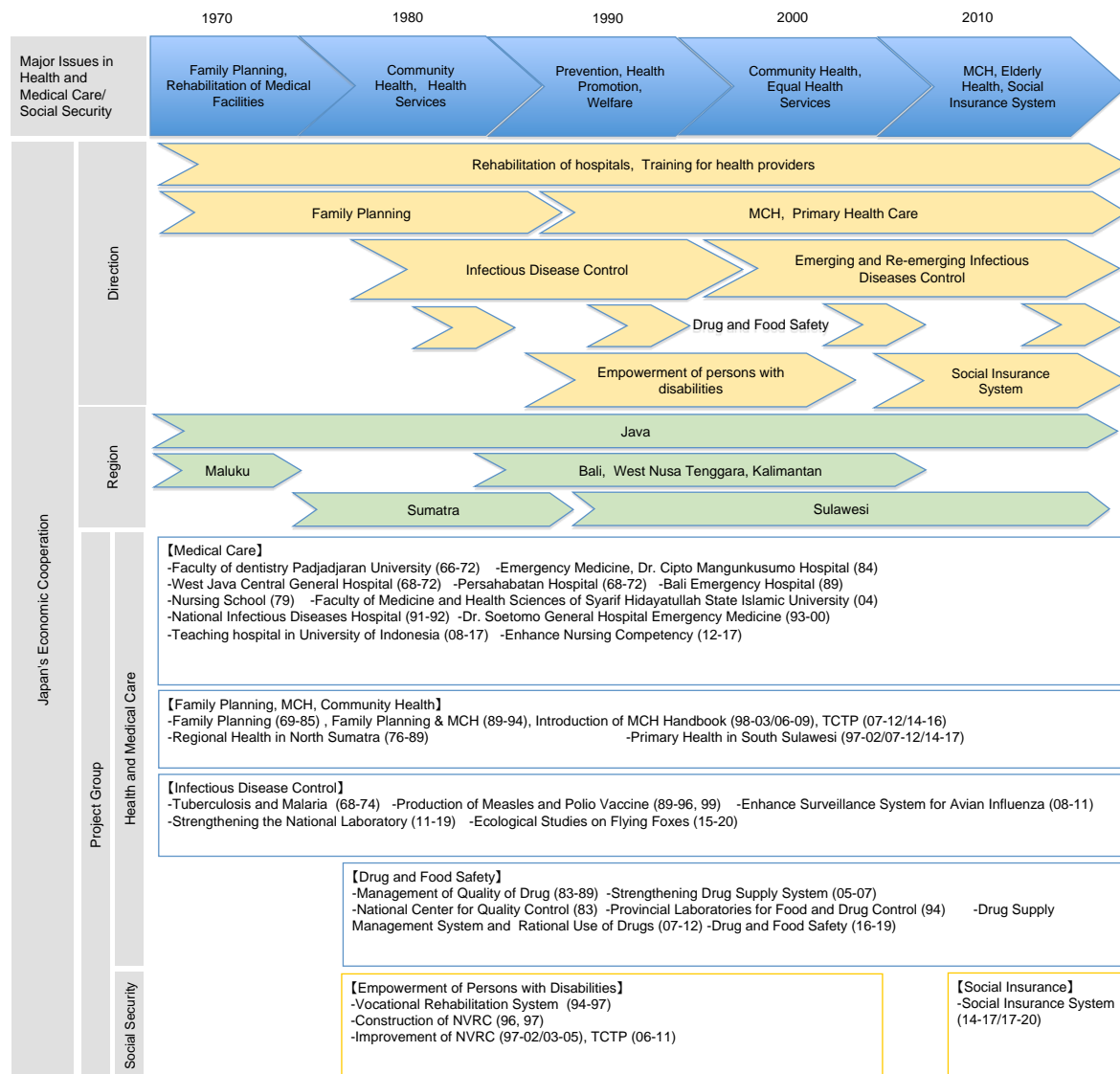


Figure 12-5: Characteristics of Japan's Cooperation in Health and Medical Care/ Social Security

Japan has mainly provided assistances by the combining infrastructure development and technology transfer. The cooperation focused first on improving medical service delivery and then shifted to strengthening health system through thematic assistance in the areas such as family planning, MCH, community health, infectious disease control, and drug and food safety. In the area of social security, Japan provided assistance in empowerment of persons with disability in the 1990s and strengthened social insurance system in the 2010s. Of those, notable contribution and projects which are worth disseminating nationwide are listed below.

(1) Notable contribution

Improving infrastructure and facilities to ensure medical service delivery

From the 1960s-when basic medical services did not reach all the population in Indonesia, Japan has assisted 19 health facilities to improve their service delivery including advanced and emergency medical care (Figure 12-6). Dr. Cipto Mangunkusumo National Central General Hospital, and Dr. Soetomo General Hospital, where their emergency departments were built under the Japanese cooperation receives 46,000 outpatients annually⁴⁶, and Dr. Soetomo General Hospital receives 34,000 outpatients annually⁴⁷.

In 1970s, Japan has supported establishment and operation of Development Center for Nursing Education in Jakarta. It turned into the Politeknik Kesehatan Kemenkes Jakarta I in 2000 and the school had produced 1,415 nursing graduates by 2017⁴⁸. Nursing Training School in Ujung Pandang Subdistrict, South Sulawesi Province has also reformed and renamed as Politeknik Kesehatan Kemenkes Makassar, and the number of graduates amounts to 2,066 from 2008 to 2017. These centers play a significant role in nursing education today in Indonesia.



Source: JICA Review Team

Figure 12-6: Geographical Distribution of Japanese cooperation (ODA Loans, Grant Aid, and Technical Cooperation)

Promotion of Family Planning

Japan contributed to raising awareness and use of contraceptives through technology transfer in development of educational and visual equipment for promotion. Consequently, the TFR declined

⁴⁶ Based on data provided by dr. Cipto Mangunkusumo National Central General Hospital (an average number of outpatients in between 2012 and 2016)

⁴⁷ Based on data provided by Dr. Soetomo General Hospital (an average number of outpatients in between 2010 and 2017)

⁴⁸ Based on data provided by National Board for the Development of Health Human Resources (BPPSDMK), Ministry of Health.

from 5.6 (1968) to 4.4 (1980), 3.1 (1990) and to 2.4 (2015)⁴⁹. The counterpart organization BKKBN now has a training center to provide training with a collaboration of faculty of medicine in Gadjah Mada University which is designated as a Center of Excellence for family planning. In addition to training for domestic personnel, the center accepts a dozen of trainees from Asian and African countries with the governmental budget.

Ensuring MCH Services with MCH Handbook

The MCH Handbook was developed in 1993 and its ownership rate reached 81.5% among mothers in all the 34 provinces across the country in 2016. The importance of the handbook is recognized by mothers themselves, and the handbook is well-entrenched in the health system in Indonesia. A study of the MOH showed that the MCH Handbook encouraged mothers to receive MCH services, which contributes to improve MCH in Indonesia.

Strengthening Production of Vaccine for Polio and Measles

After the completion of the Japanese cooperation, PT Biofarma came to fulfill 100% of domestic demand of the vaccine for polio and measles. Today they produce 43 million doses of OPV and 32 million doses for measles vaccine domestically (2016)⁵⁰. Furthermore, exports amounted to 1.6 billion doses for OPV and 21 million doses for measles vaccine reaching 136 countries (2015)⁵¹. The company grew into an enterprise with high reputation, having 3 billion yen for domestic sales, and 10.4 billion yen for exports (2016) with, 1,200 employees.

Empowerment of Persons with Disabilities

NVRC is the largest center among national institutions specialized in vocational training for persons with disabilities in Indonesia (as of 2017). The number of the graduates reached 1,943 by 2016 and among them, 64% received job opportunities. According to the Ministry of Social Welfare and NVRC, the establishment of NVRC contributed to the enactment of the law in 2016, stipulates the legal employment rate of the persons with disabilities for public and private organizations⁵². Further promotion of the employment is expected while NVRC saw increased inquiries from private companies to recruit their graduates in 2017.

(2) Cooperation Expected to Expand Nationwide

Japanese cooperation in the two subsectors is presented as examples of the cooperation which has utilized assets and which would possibly be disseminated nationwide.

⁴⁹ The World Bank. DataBank World Development Indicators. <https://data.worldbank.org/country/indonesia> (Accessed in April 2018)

⁵⁰ PT Bio Farma. *Bio Farma Laporan Tahunan 2016* [Annual Report 2016]; Biotech innovation for a global competitiveness.

⁵¹ Based on data provided by PT Bio Farma

⁵² Law on Persons with Disabilities (Law No. 4/1997) Article 14 stated that enterprises that employ more than 100 personnel, or the ones with total number of employees even less than 100 but related to the advanced technology, regardless of the public enterprises/ private companies, must employ persons with disabilities at least 1% of employment as long as they meet the prerequisite conditions and eligibility of the business.

Enhancement of Nursing Competency through In-service Training

Under the Japanese cooperation, the counterpart institutions promoted the ladder system targeting several hospitals and nurses after a draft national guideline for the system was disseminated in 2013. However, there are remaining challenges to introduce the ladder system and the counterparts, who are hospital, university, nursing association and the MOH, they are required to take specific measures against it⁵³. The adoption of the ladder system is expected to expand nationwide.

Strengthening Budget Management Capacity at Village and District Levels

Japan assisted the introduction of health management mechanism under the “Improvement of District Health Management Capacity in South Sulawesi Province Project” (2007-2010) and its Phase 2 (2010-2014). After the termination of the projects, the mechanism was adopted to neighboring two districts, and in one of the districts, all the villages utilize it as of 2017. Meanwhile, a village fund program, in which the central government allocate budget to villages began for encouraging local development. The villages in the project area utilized the mechanism to operate the village fund program as well. The mechanism was presented at the seventh health promotion seminar of the MOH in 2017, and is expected to expand nationwide.

12.4.2 Implications for future cooperation

Health related indicators show improvements and the volume of Japanese assistance gradually reduced. However, several issues remain such as the increased burden of infectious and non-infectious disease and regional gaps of health service delivery and health indicators. In response to these circumstances, Japan is expected to enlarge cooperation utilizing accumulated assets from the past cooperation and high technologies/services private firms. This section presents implications for future cooperation based on the collected information for this review.

Strengthening Social Insurance System

Japan provides assistance to strengthen labor and health insurance systems through the introduction of Japanese attorney system. Along with the insurance system, it is highly required to strengthen the health system as well in order to improve the function of the health insurance system. For example, when insured personnel receive medical services using the insurance membership, it is required to visit public health facilities. Under the circumstance where quality of public medical services are limited, it is pressing challenge to ensure the quality of the medical services which are covered by insurance.

In order to improve provision of public medical health services through strengthening the entire health system, and to ameliorate the quality of public health services overall, Japanese experiences may be applied such as training system for health providers to assure and improve quality of services, and in-service training provided by Japan Medical Association. The 50 years of operational experience of

⁵³ JICA. *Summary report for Project for Enhancement of Nursing Competency through In-Service Training*.

the national health insurance system of Japan has a potential to contribute to strengthening the health insurance system in Indonesia. For example, in addition to the current cooperation to improve insurance coverage and premium collection, Japan's experiences and knowledge could be utilized for the designing of the system of insurance benefit regulation (standardization of insured medical treatment, strict investigation for claims of medical fee, government's supervision of medical facilities etc.) since both countries adopt the social insurance system. The regulation of insurance benefit would ensure equality of health services nationwide and improve the quality of medical services as well. In order for Indonesia to achieve UHC, Japan is expected to provide assistance for strengthening the health insurance system and the entire health system utilizing its experiences.

Fill Regional Gaps in MCH Services

Though MCH indicators have gradually improved, regional gaps remain while under-five mortality rate is 21 in East Kalimantan, it is 74 in West Papua⁵⁴ (per 1,000 live birth). When it comes to the utilization of MCH services, the proportion of pregnant women who receive all the four ANC services ranged between 24.5% and 98.2%, while ownership of the MCH Handbook among pregnant women also vary from 58% to 95%. The MOH recognizes the MCH Handbook as a tool to encourage continuum care of MCH in view of the SDGs. It is therefore expected to improve the quality and fill the gap of continuum care through effective utilization of the MCH Handbook.

Corresponding to Aging Society

There are growing needs for countermeasures for the double burden of infectious and non-communicable diseases and aging population since Indonesia is estimated to enter into an aging society (aging rate at 14%⁵⁵) by 2038. BAPPENAS plans to prioritize measures for the aging population in its annual plan of 2018, and their targets are to establish training center for certified nurse specialist in geriatrics and facilities of long term care for elderlies. The Japanese cooperation, "Project for Enhancement of Nursing Competency through In-Service Training" (2012-2017) assisted Indonesia to develop in-service training module. As a spillover effect, there is a movement toward establishing a nursing association for geriatrics⁵⁶.

Indonesia is an early stage of aging population where 5.2% of the population aged more than 65 (2015)⁵⁷. Early responses may reduce the number of bedridden-elderlies and promote health of elderly. While Japan set a goal to achieve a community-based integrated care system, there is much to learn for Japan from the inclusive measures taken in Indonesia. Under the measures, power of communities is fully utilized to establish health post for elderly in village and to provide MCH services with elderly volunteers. Both countries are expected to learn from each other and continue cooperation.

⁵⁴ National Population and Family Planning Board, Ministry of Health, MEASURE DHS ICF International. *Indonesia Demographic and Health Survey 2012. Statistics Indonesia*. August 2013.

⁵⁵ The United Nations, Department of Economic and Social Affairs, Population Division. *World Population Prospects: The 2017 Revision, Key findings and Advance tables*. Working Paper No. ESA/P/WP/248. 2017.

⁵⁶ JICA. Summary report for Project for Enhancement of Nursing Competency through In-Service Training (2012-2017)

⁵⁷ The World Bank. *DataBank World Development Indicators*. <https://data.worldbank.org/country/indonesia> (Accessed in April 2018)

Empowering Persons with Disabilities

Although a series of Japanese cooperation for the persons with disabilities had completed already, there are remaining issues such as establishment of a supporting system of persons with disabilities in rural communities and inclusive sports. With regards to the inclusive sport, financial assistance from international community is lacking⁵⁸, the government budget to fulfill necessary facilities is limited, instructors are not sufficient, and social awareness in Indonesia is low⁵⁹. At shortage of human resources is also their concern, for instance the Paralympic Committee in Solo City in Central Java Province has only one instructor for 100 persons with disabilities⁶⁰. Although Australia and Germany provide small scaled fund for NGOs to promote inclusive sports⁶¹, their assistance is mainly given to the area of education, labor and social security⁶². On the other hand, Japan has dispatched JOCVs as instructors of badminton and volleyball for persons with disabilities. A youth training course titled “Sport Course for Persons with Disabilities” was held in Japan for government officers and instructors, and examples of Japanese clubs of wheel chair basketball and their daily trainings were introduced. Japanese government recognizes sport as a tool of cooperation and launched a policy called “Sport for Tomorrow” which enhances cooperation through sports. Given that Japan has more experiences in inclusive sports with more instructors and training provision compared with other countries, these experiences may contribute to promoting the inclusive sports in Indonesia.

Response to Global Issues

According to BAPPENAS, emerging infectious disease control is expected to be included in priority issues in 2018, considering the importance of strengthening capacity of response to global issues. Influence of infection easily crosses borders and becomes a global issue, and pathogens of emerging and re-emerging infectious diseases such as virus, bacteria and protozoa could have genetic mutation or drug resistance. Japan is expected to continue its support of technology transfer and capacity development in this area, which enables Indonesia to rapidly respond to such “evolution” of pathogens of emerging and re-emerging infectious diseases.

⁵⁸ The Nippon Foundation Paralympic Support Center. *Paralympic kenkyukai kiyo* [Memoir for Paralympic Study Group No.6] 2016.

⁵⁹ Adioetomo, S.M, D. Mont and Irwanto. *Persons with Disabilities in Indonesia: Empirical Facts and Implications for Social Protection Policies*. 2014.

⁶⁰ Based on the interview with Indonesia National Paralympic Committee (NPC) (April 2018)

⁶¹ <http://dfat.gov.au/people-to-people/sport/sport-for-development/asia/Pages/sport-for-development-asia.aspx> (Accessed <http://balisports.com/> in April 2018)

⁶² JICA, KRI International Corp., Tekizatekisho LLC. *Final Report. Data Collection Survey on Disability and Development in Indonesia*. 2015.

Chapter XIII Basic Education

13.1 Summary

Due to the policy of President Sukarno to prioritize higher education, it was not until the Suharto regime that the government started addressing issues in the basic education sector. Suharto's administration undertook a large-scale primary school construction, and the government of Indonesia declared the first six years of education to be compulsory in 1984. With the launching of the Fifth Five-Year Development Plan (REPELITA V: 1989/90-1993/94), the Government of Indonesia strengthened its efforts toward expansion and improvement of the lower secondary education. The nine-year compulsory education, which comprises primary and lower secondary education, was set as a policy objective of the following five-year development plan, REPELITA VI (1994/95-1998/1999). Based on these situations, Japan started its assistance in the subsector of lower secondary education with a loan for the "Junior Secondary School Building Construction Project" in 1995 followed by a technical cooperation project to enhance teaching/learning in science and mathematics in 1998, and a development study on school-based management in 1999. Through these assistance, Japan supported the achievement of the policy objective of nine-year compulsory education in terms of both quantity and quality.

With regard to teaching/learning in science and mathematics, JICA started the aforementioned technical cooperation project targeted to teacher training universities¹ for strengthening their education programs in 1998, and introduced "Lesson Study," which is unique to Japan, at junior secondary schools in 2003, involving these universities. Lesson Study has been widely disseminated in Indonesia even after technical cooperation projects were ended, and the system to sustain Lesson Study activities has been established. Regarding participatory school-based management, development studies called "Regional Educational Development and Improvement Project (REDIP)" were conducted from 1999, and a technical cooperation project was started in 2004. The REDIP model developed by the project was adopted and spread by the Government of Indonesia. The model was also adopted as a component of other education projects. Following the success of the REDIP model, school operational assistance (BOS) was introduced by the government, and it is now well-entrenched in the country.

A project to improve the quality of basic education including e-learning was implemented by a Japanese private company under JICA from 2015 to 2017. In addition, training in Japan on Lesson Study has been implemented since 2013, which has promoted the development of Lesson Study in Indonesia.

¹ Teacher training universities are 4-year higher education institutions. Ten teacher training institutions became universities by the President Decree of 1999. There are 374 teacher training institutes/universities (public 32, private 342) in Indonesia according to OECD. *Education in Indonesia*. 2015.

Table 13-1: Overview of the Basic Education Sector in Japan's ODA

Period	1960s	1970s and early 1980s	Late 1980s	1990s	From the end of 1990s	From the end of 2000s
	Nation-State Building	Economic Development	Structural Adjustment	Growth until the Asian Financial Crisis	Democratization and Decentralization	Middle Income Countries
Historical Context	<ul style="list-style-type: none"> • Cold War • ASEAN (1967) • Inauguration of President Suharto (1968) • Green Revolution 	<ul style="list-style-type: none"> • First Oil Crisis (1973) • End of Vietnam War (1975) • Second Oil Crisis (1979) 	<ul style="list-style-type: none"> • Plaza Accord (1985) • Reverse Oil Crisis (1986) • End of Cold War (1989) 	<ul style="list-style-type: none"> • Asian Financial Crisis (1997) 	<ul style="list-style-type: none"> • Laws on local autonomy (1999) • Millennium Development Goals (2000) • Election of President Yudhoyono by direct election (2004) 	<ul style="list-style-type: none"> • Japan-Indonesia Economic Partnership Agreement (2008) • G20 Accession (2008) • Jakarta Commitment (2009) • Sustainable Development Goals (2015)
Situation of the Sector	<ul style="list-style-type: none"> • Prioritization of higher education 	<ul style="list-style-type: none"> • Start of primary school construction by "one village one school policy (1973) • Abolishment of primary school tuition fee (1977) • Declaration of six-year compulsory education (1984) 	<ul style="list-style-type: none"> • Enactment of National Education System Law (1989) 	<ul style="list-style-type: none"> • Setting of nine-year compulsory education as a policy objective (1994) • Strengthening of science and mathematics by curriculum reform (1994) 	<ul style="list-style-type: none"> • Transformation of some teacher training institutions into universities (1999) • Change of Ministry of Education and Culture into Ministry of National Education (1999) • Decentralization of education administration (2001) • Establishment of Board of Education and School Committee (2002) • Amendment of National Education System Law (2003) • Start of provision of BOS (2005) • Issuance of National Standards of Education (2005) 	<ul style="list-style-type: none"> • Change of Ministry of National Education into Ministry of Education and Culture (2011) • Introduction of new curriculum (2013) • Establishment of Ministry of Research, Technology and Higher Education (2014) • Launch of 15-year compulsory education program (2015)
Reference indicator : Gross Enrollment Rate	<ul style="list-style-type: none"> • Primary 70.7% • Lower secondary 16.7% (1965) 	<ul style="list-style-type: none"> • Primary 93.3% • Lower secondary 29.2% (1978) 	<ul style="list-style-type: none"> • Primary 110.8% • Lower secondary 59.6% (1988) 	<ul style="list-style-type: none"> • Primary 113.5% • Lower secondary 69.9% (1997) 	<ul style="list-style-type: none"> • Primary 115.5% • Lower secondary 92.5% (2007) 	<ul style="list-style-type: none"> • Primary 106.4% • Lower secondary 101.1% (2016)

Priority Development Issues in the 5-Year Development Plan	<ul style="list-style-type: none"> • Prioritization of higher education to develop leaders for national development 	<ul style="list-style-type: none"> • Expansion of access to primary school (Construction of primary school) • Reform of secondary school system (incorporation of vocational education and improvement of TVET) • Improvement of quality of teachers • Shortage of textbook 	<ul style="list-style-type: none"> • Improvement of quality of education • Improvement of secondary school (repair of junior secondary schools, etc.) 	<ul style="list-style-type: none"> • Expansion and improvement of secondary schools • Improvement of quality of education • Improvement of regional disparities regarding access to schools 	<ul style="list-style-type: none"> • Implementation of nine-year compulsory education • Strengthening of specialization of teachers • Education system reform based on decentralization • Promotion of community participation in education 	<ul style="list-style-type: none"> • Implementation of quality 12-year compulsory education • Strengthening of education assessment system • Improvement of teacher management and deployment • Character development of students
Direction of Japan's Cooperation	<ul style="list-style-type: none"> • Assistance in higher education 	<ul style="list-style-type: none"> • Assistance in higher education 	<ul style="list-style-type: none"> • Assistance in higher education 	<ul style="list-style-type: none"> • Assistance to improve access to lower secondary education • Construction/ strengthening of teacher training institutions 	<ul style="list-style-type: none"> • Assistance in participatory school-based management • Assistance to introduce/ strengthen Lesson Study 	<ul style="list-style-type: none"> • Improvement of quality of education through lesson study and verification study
Outcomes	<p>Improvement of access to junior secondary school</p> <p>Improvement of quality of mathematics and science education at junior secondary school</p> <p>Improvement of participatory school-based management at junior secondary school</p>					

Note: 1) Note: Dashed lines in the section of outcomes indicate the impact/spillover effect from the previous period
2) Gross enrollment rates are from the statistics of the Ministry of Education and Culture.

13.2 Historical Context and Japan's Cooperation

13.2.1 Number of projects and commitment amounts

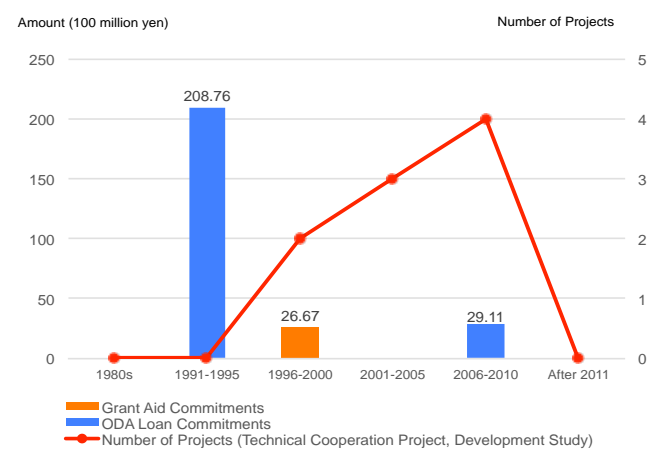
Following the “Junior Secondary School Construction Project” which started in 1995, various types of assistance have been implemented in the basic education sector. This section overviews the trend of the sector by examining the number of projects and the amount of funds approved.

There have been 14 projects implemented under the sector as of December 2017, which can be broken down into seven technical cooperation projects, two development studies, two ODA loans and three grant aid projects. Figure 13-1 summarizes the amount of approved loans/grants and the number of projects (technical cooperation and development study) of JICA assistance every five years. The number of projects is small in this sector, owing to the fact that education indicators in Indonesia were comparatively good when JICA started its support in the sector responding to the international consensus toward the Education for All (EFA) Goals made in the World Conference on Education for All held in 1990. Though traditionally few projects are implemented by loan by JICA in this sector, a construction project by loan was implemented in the 1990s in order to respond to the growing needs for lower secondary education.

Technical cooperation projects and development studies, which had not been implemented until the early 1990s, started in the late 1990s, and increased in the 2000s. In the latter half of the 2000s, projects to disseminate the results of past cooperation to other areas were implemented. Though there are no new loans, grant aid and technical cooperation projects after 2011, the “Verification Survey with the Private Sector for Disseminating Japanese Technologies for Strengthening of Children’s Mathematical Ability by e-Learning through University-Industry Collaboration” was implemented from 2015 to 2017, and the “Training Program for Institutes of Teachers Training and Education Personnel” has been implemented since 2013.

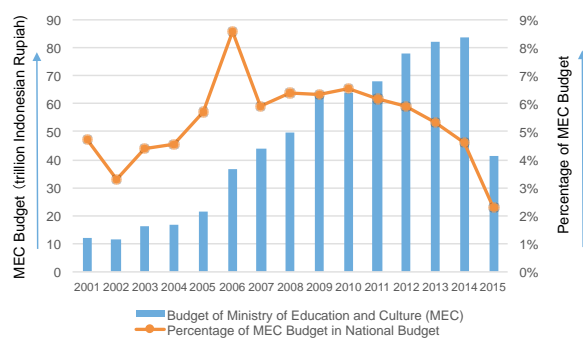
13.2.2 Budget of the Ministry of Education and Culture

Though the budget of the Ministry of Education and Culture has steadily increased with the increase of the national budget, the proportion of the Ministry’s budget in the national budget is gradually decreasing as presented in Figure 13-2. The sharp decline in 2015 is due to the separation of the higher education sector from the Ministry of Education and Culture in 2014.



Source: JICA Review Team

Figure 13-1: Commitment Amounts of ODA Loans and Grant Aid (E/N basis), and the Number of Technical Cooperation (Technical Cooperation Project and Development Study)

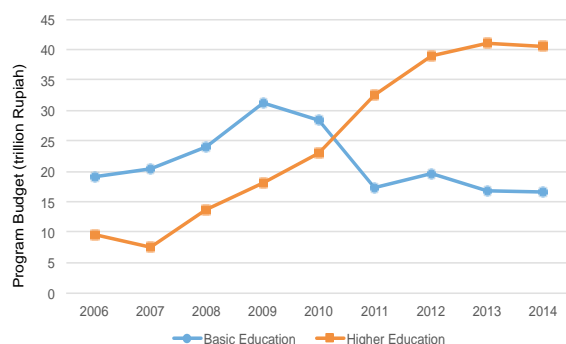


Source: JICA Review team

Note: The budget of 2015 does not include the budget for higher education

Figure 13-2: Budget of the Ministry of Education and Culture

Figure 13-3 shows the trend of budget allocated to the basic education (primary and lower secondary education) and higher education programs from 2006 to 2014. The figure shows that the budget for basic education is decreasing while that of higher education is increasing. The higher education budget surpassed that of basic education in 2011, and more than double is allocated to higher education in 2014. It is considered that the government shifted its focus from basic education to higher education because of the improvements of basic education.



Source: JICA Review Team

Figure 13-3: Program Budget for Basic Education and Higher Education of the Ministry of Education and Culture, Indonesia (2006-2014)²

13.2.3 Period-specific characteristics of Japan's economic cooperation for Indonesia in the basic education sector

In this section, the situation of the basic education sector in Indonesia and support of the Japanese government for Indonesia are summarized by period. Regarding the education system in Indonesia, refer to the footnote³.

- From the 1960s to the first half of the 1980s: Prioritization of higher education and development of primary education
- The second half of the 1980s: Development of lower secondary education
- The 1990s: Junior secondary school construction by loan and teacher training institution construction by grant
- From the end of the 1990s: Improvement of the quality of education by participatory school-based management and Lesson Study
- From the end of the 2000s: Improvement of the quality of education by Lesson Study and verification survey

² As budget classifications before 2005 and after 2015 differ that of the period during 2006-2015, a comparison with the budget before 2005 and after 2015 could not be made.

³ Primary education lasts six years, lower secondary education lasts three years, and higher secondary education lasts three years. Nine-year compulsory education (primary and lower secondary education) has become a policy objective since 1994, and the 15 year compulsory education (primary, lower secondary and higher secondary education) program has started in 2015. In addition to the general schools, there are religious schools called *madrasah* and *pesantren* under the Ministry of Religious Affairs. Article 31 of the Constitution of 1945 stipulates that every citizen has the right to education. According to the National Education System Law of 1989, the objectives of the national education system are to establish a high-quality and self-reliant human being whose values are based on *Pancasila* and to support the Indonesian society, people and State. At the local level, there are Provincial Office of Education and District/Municipality Office of Education.

(1) From the 1960s to the first half of the 1980s: Prioritization of higher education and development of primary education

Situation of the Sector

As Sukarno's regime prioritized higher education to develop national leaders for the development of the new country, it did not implement special programs in the basic education sector.

Because of the increase of the revenue by the economic development, the Suharto regime started to address issues in basic education. The government adopted a policy in 1973 to allocate the revenue gained by the oil boom to primary school construction, and started a massive primary school construction project aiming at constructing one school per village in order to ensure equal educational opportunities for all citizens. The project, which built more than 61,000 schools from 1973 to 1978, is recognized as one of the largest school construction projects in history in the world. At the same time, 280 million textbooks were distributed and 1.5 million teachers were trained by loans from the World Bank. As a result of these efforts, a gross enrollment rate of primary education exceeded 100% in 1983, and the Government of Indonesia declared six years of compulsory education for primary school-age children in 1984.

(2) The second half of the 1980s: Development of lower secondary education

Situation of the Sector

Construction of junior secondary schools did not progress as fast as that of primary schools, and the enrollment rate of junior secondary school remained as low as 41% in 1982. Some of the reasons were that school expenses of junior secondary school were high, and citizens recognized junior secondary school as "school for elites." Junior secondary school came to be regarded as "school for masses" due to the increase in the middle-class population as a result of the economic development in the early 1980s.

At that time, in anticipation of the future demand for lower secondary education, the World Bank implemented a program for lower secondary education, which consisted of in-service teacher training, improvement of science facilities/equipment and development of national examination.

(3) The 1990s: Junior secondary school construction by loan and teacher training institution construction by grant

Situation of the sector and major efforts by Japan

The Government of Indonesia committed itself to expand access to junior secondary schools in REPELITA V. REPELITA VI, which began in 1994, set "nine-year compulsory education," which extends compulsory education to lower secondary education, as one of the policy targets. Meanwhile, the gross enrolment rate of lower secondary education was only 54% in 1993, meaning that it was necessary to accommodate another six million students to achieve the full school enrollment. In addition, the enrollment rates in rural areas were low, and inter-provincial and urban-rural educational

disparities were large. Responding to these situations, a JICA loan project, the “Junior Secondary School Building Construction Project” was started in 1995. The project constructed 596 school buildings, which accounted for 8.7% of the public schools in the 12 target provinces⁴ at that time. Moreover, the gross enrolment rates of the target provinces were increased by 11.4 points on average from 1995 to 2000, which was higher than the national average of 10.2 points. Of the 12 target provinces, three provinces of Java, Riau, South Sumatra, West Kalimantan and West Nusa Tenggara showed higher improvement rates than that of the national average. In particular, West Java and South Sumatra showed the highest increase, which were 16 points. The project therefore contributed to improving the enrollment rates of junior secondary school in Indonesia.

The necessity to strengthen science and mathematics education became clearer by the curriculum reform started in 1994, which was undertaken following the launching of the policy of nine-year compulsory education. Moreover, the duration of teachers’ pre-service education was extended with the revision of teacher qualification in 1994, which the majority of existing science and mathematics teachers did not meet. As pre-service training in the new system and in-service training for existing teachers became urgent matters, a grant aid project, the “Project for Improvement of Science and Mathematics Teaching for Primary and Secondary Education” and a technical cooperation project, the “Indonesia Mathematics and Science Teacher Education Project (IMSTEP)” were requested by the Government of Indonesia and both projects started in 1998. The “Project for Improvement of Science and Mathematics Teaching for Primary and Secondary Education” constructed facilities and provided equipment for Indonesia University of Education (UPI), which was IKIP Bandung or Bandung Institute of Teacher Training and Education at that time, and provided equipment for Yogyakarta State University (UNY), which was at that time IKIP Yogyakarta or Yogyakarta Institute of Teacher Training and Education and University of Malang (UM), which was at that time IKIP Malang or Malang Institute Teacher Training and Education at that time in order to prepare these universities for activities of the technical cooperation project. The new facilities and equipment enabled these universities to diversify the contents of courses and conduct more effective and efficient lectures. Moreover, instruction books for the usage of the equipment was developed with the guidance of JICA experts, promoting effective experiments and practical training. Activities to strengthen teaching methods, contents, curriculum, syllabi, teaching materials, educational evaluation and academic exchange were also conducted, contributing to the betterment of pre-service and in-service teacher training. Furthermore, students can now graduate in a shorter period of time with better grades due to the effective and efficient classes enabled by the synergetic effects produced by the two projects. The improved pre-service and in-service training became a foundation of the projects that followed.

The Asian Financial Crisis of 1997 raised a concern for increased dropouts and decreased enrolment rates of children in poor households. The Government of Indonesia cooperated with the World Bank and the Asian Development Bank (ADB) to implement emergency measures such as exempting

⁴ West Java, Central Java, East Java, Riau, South Sumatra, Lampung, West Kalimantan, South Kalimantan, Central Sulawesi, South Sulawesi, West Nusa Tenggara and East Nusa Tenggara.

educational expenses. People's awareness of the centralized political system was evoked with the crisis, and new provisions such as promoting regional autonomy and earmarking 20% of the national budget to education have been established.

(4) From the end of the 1990s: Improvement of the quality of education by participatory school-based management and Lesson Study

Situation of the sector and major efforts by Japan

The central government has delegated the authority on education management to local governments in order to improve the quality of education by promoting school autonomy since 2001. This was realized based on the 1998 World Bank report analyzing obstacles to education reform, and other partners such as JICA, United States Agency for International Development (USAID), then AusAID and the Netherlands government carried out support in accordance with the reform. Against this background, JICA implemented development studies called "Regional Educational Development and Improvement Project (REDIP)" from 1999 to 2001 and from 2002 to 2005 in order to build a bottom-up school management model for improving junior secondary school. Based on the outputs produced by the surveys, such as increased number of primary school graduates going on to junior high school, decreased number of dropouts, activated school and class management and improved students' motivation to study, a technical cooperation project was implemented from 2004 to 2008 by expanding the target areas. The project produced not only outputs such as enhanced capacities of teachers and better participatory school-based management but also impacts such as launching of REDIP-G, which was a government version of REDIP implemented with the budget of the Indonesian government to increase the access to junior secondary schools in populated areas near Jakarta. Moreover, according to the terminal evaluation report of the project, improvements of enrollment rates and dropout rates were regarded as the effects of the project by Indonesian counterparts.

The National Education System Law was revised after the Suharto regime for regulating the new education system. The law stipulates major issues, including functions and goals of education, roles, responsibilities and rights of the government, communities, guardians and citizens on education, education standards, curriculum, roles and responsibilities of human resources related to education, and financial, management, evaluation and accreditation on education.

With a view to giving a boost to the achievement of the EFA Goals and the Millennium Development Goals (MDGs), the Indonesian government introduced BOS in 2005 as a poverty alleviation program for improving enrolment rates. The government started distributing the budget to all the primary and junior secondary schools, giving great discretion to schools. Later, BOS was started to be used for activities for quality improvement such as purchasing teaching materials and books, training teachers, and recruiting teachers on subjects related to computer and local matters.

In addition, the National Standards of Education enacted in 2005 defined standards of eight items, which were education content, process, graduates' abilities, teacher standards, education facilities,

teacher management, finance and evaluation. The provision also demanded the establishment of the National Standardization Agency (BSNP) to set up detailed educational standards and supervise their implementation, and a wide variety of educational standards were gradually launched afterwards. In 2005, the Teacher Law was enacted, and the minimum education requirement for teachers were upgraded from D2 (2 years of education after high school) to S1 (bachelor's degree) or D4 (4 year diploma). The law demanded all the existing teachers to obtain a teacher certification by 2015.

Due to the above situations, the awareness to improve the quality of teaching staff was raised, and a new technical cooperation project, "Strengthening In-Service Teacher Training of Mathematics and Science Education at Junior Secondary Level (SISTTEMS)" was implemented from 2006 to 2008 followed by another technical cooperation project, "Program for Enhancing Quality of Junior Secondary Education (Pelita)" from 2008 to 2013. As a result of the follow-up cooperation of IMSTEP implemented from 2003 to 2005, in which faculty members of UPI, UNY and UM conducted model lessons at pilot schools and developed teachers' teaching methods through Lesson Study, outputs such as changes in mentality/awareness of teachers, improvements in teaching abilities and improvements in students' performance were produced. Based on the success, SISTTEMS introduced Lesson Study in the project, aiming to activate Subject-based In-Service Teacher Training called MGMP in Indonesian. Pelita also sought for further dissemination of MGMP through Lesson Study. Lesson Study introduced by these projects have been recognized as an effective teacher training method, and is now disseminated nationwide.

A technical cooperation project, "Integrated Plan for Junior Secondary Education Improvement in South Sulawesi Province in the Republic of Indonesia (PRIMA-P)" was implemented from 2007 to 2010, aiming at the development of the region. In South Sulawesi Province, a hub in the eastern region, the enrolment rate of junior high school was 76.32% as of 2005, which were 10 points lower than the national average. As poverty and mismatch between citizen's needs and administrative services were regarded as some of the reasons for the low enrollment rate, support in education in line with regional needs was considered necessary from a viewpoint of poverty reduction through comprehensive regional development approach. Therefore, based on the outputs produced by REDIP and SISTTEMS, a comprehensive project to strengthen lower secondary education including access, quality and school management issues were started in the area. This project promoted community participation in school management, and strengthened a mechanism to address the issue of teaching/learning process.

Conflicts occurred frequently in many areas in Indonesia such as Aceh, Central Sulawesi, Maluku, North Maluku and Papua after the collapse of the Suharto administration in 1998. In Maluku and North Maluku Provinces, brushes between Christian and Muslim residents grew into big conflicts, and continued for more than three years, involving several hundreds of thousands of people. As a result, more than 5,000 people died and 340,000 people, which was one quarter of the population of the two provinces, became internally displaced persons. Against this background, JICA implemented a project to support Maluku from 2006 to 2007, which consisted of economic, social and safety pillars. Following the project, a technical cooperation project, "Technical Support for Strengthening the

Regional Based Education Management (Maluku)” was implemented from 2008 to 2011. The projects promoted school-based management to respond to the needs of the community by incorporating local values and cultures unique to Ambon Island while referring to the REDIP /SISTTEMS model, and contributed to the reconstruction and reconciliation of local residents and communities through the school activities.

Article: Assistance in Maluku

Ambon, the capital city of Maluku Province, was said to have embodied a model of religious reconciliation and peace, but the conflict that broke out in 1999 left a big scar on the island. After the conflict, JICA launched a project, “Keeping Peace and Strengthening Integration in Post-conflict Areas” targeting three areas, which were “economy,” “society (education)” and “safety” from 2006 to 2007. After the project ended, JICA started a new technical cooperation project, “Technical Support for Strengthening the Regional Based Education Management (Maluku)” (2008-2011) to disseminate the outputs to other areas of the island. The projects aimed to incorporate the traditional “Education of Siblings (POB)” concept in school improvement plans, seeking to develop tolerance, diversity, solidarity, and mutual trust among the residents. Specifically, activities such as celebrating religious events together in the community, learning about each religion, learning from representatives of community about the religious integrity rooted in Ambon, and sports events were implemented, and they increased cooperation and solidarity of the community. The strong initiative of the municipality of Ambon was further strengthened by the projects, and their ownership and motivation were increased by leveraging BOS and local human resources. Through these activities, the projects have successfully raised the momentum for peace building in Maluku.

(5) From the end of the 2000s: Improvement of the quality of education by lesson study and verification survey

Situation of the sector and major efforts by Japan

The economy and society of Indonesia gradually recovered from the crisis from the mid-2000s. Education indicators also improved steadily, and in 2009 the gross enrollment rates for primary and lower secondary education reached 116% and 98% respectively. Because of this situation, no new technical cooperation, loan and grant aid projects have been implemented in this sector. Meanwhile, the quality of education in Indonesia still has large room for improvement. In the Programme for International Student Assessment (PISA) 2015⁵, though scores of Indonesia were improved compared to the previous round, they were lower than the average in all the subjects; reading literacy, mathematical literacy and scientific literacy ranked 64th, 63th and 62nd respectively among the 70 participating countries. Moreover, scores differ between urban and rural areas, and depending on the income of households. For example, the difference between urban and rural areas in the score of scientific literacy corresponds to 1.1 years of schooling (the average score of urban areas are 33 points

⁵ The Programme for International Student Assessment (PISA) is a triennial international survey which aims to evaluate education systems worldwide by testing the skills and knowledge of 15-year-old students. In 2015 students were assessed in science, mathematics, reading, collaborative problem solving and financial literacy.

more than the average of rural areas), and the difference between students in the top and bottom socioeconomic quintile in science equals 2.3 years of schooling on average (the top quintile scores 69 points more than the bottom quintile).

After Pelita was finished in 2013, the “Training Program for Institutes of Teaches Training and Education Personnel” started, which provides lecturers in teacher training institutions/universities in Indonesia with 4-week training in Japan. As of October 2017, the seventh round of the training was finished, and a total of 144 trainees from more than 50 teacher training institutions were trained. By accommodating lecturers specializing in early childhood, primary education and lecturers of private institutions, who had not been targeted by technical cooperation projects, the training has contributed to the development of capacities of lecturers nationwide. It was confirmed that motivation of participants was higher in 2016 than before, and they participated in each session actively, giving good questions and opinions in open sessions. The training schedule in 2017 included attendance to the conference of “World Association of Lesson Study,” and all the trainees conducted presentations in the conference. The Ministry of Research, Technology and Higher Education evaluates the training highly as it enables participants to actually see and experience model lessons in Japan, disseminate what they have learned to other lectures and teachers, and write and publish academic papers based on it. The Government of Indonesia also bears a part of the cost for the training, showing high commitment from the Indonesian side.

JICA seeks to disseminate the products and technologies of small and medium-sized enterprises (SME) in Japan that can be effectively utilized to solve problems of developing countries. For this purpose, JICA calls for proposals from Japanese SMEs, and supports pilot projects of these companies through a scheme of verification study. SuRaLa Net Co., Ltd. is a company which participated in the study in Indonesia. The pilot project, which aimed to reinforce basic mathematical skills of students, was implemented in collaboration with UPI, which have been collaborating with JICA for a long time. As shown in the BOX 13-1, improvements of students’ learning by the e-learning system were proven to be significant.

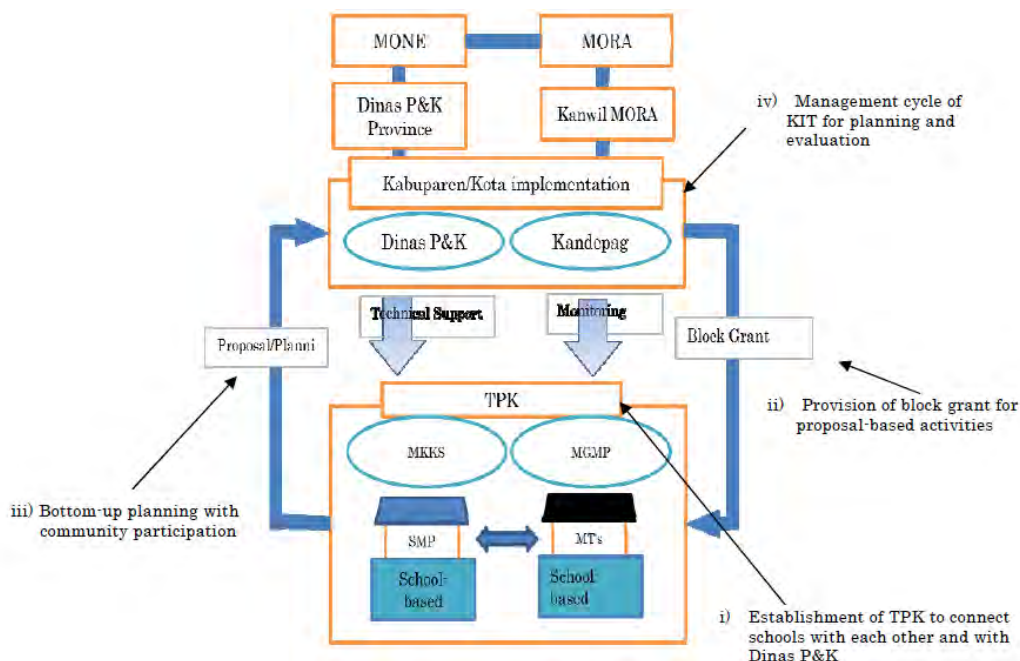
13.3 Noteworthy Achievements in Cooperation

Two projects are taken as case examples. The first case is REDIP, which had been implemented from 1999 to 2008, and the model developed by the project was adopted by other JICA projects, the Government of Indonesia and other donors. The second case is a group of projects which adopted “Lesson Study,” a unique method to improve teaching/learning in Japan.

13.3.1 Regional Educational Development and Improvement Project (REDIP)

JICA developed and strengthened participatory school-based management model through a training project, “Community Participation in Strategic Education Planning for School Improvement” (1997-1998), two development studies, or REDIP Phase 1 (1999-2001) and Phase 2 (2002-2005), and a technical cooperation project, “REDIP” (2004-2008).

The REDIP model is a bottom-up approach to strengthen school management in which (1) Subdistrict School Management Plan Development Team (TPK) is established, (2) TPKs and schools submit proposals based on the community needs, have them approved by the District/Municipality Implementation Team (KIT), and receive a block grant as a budget for proposed activities. After receiving a block grant (3) schools and TPKs are able to propose activities based on their own needs and priorities and implement the activities using block grants (approximately 300,000 yen per year per school). For example, target TPKs and schools implemented activities and events to strengthen relationships between schools and communities, teacher training to improve the quality of education, and activities for improving enrollment rates and preventing dropouts. Meanwhile, (4) KIT is in charge of managing the project cycle, planning, implementation and evaluation of school and TPK activities.



Source: Ex-post evaluation of Regional Education Development and Improvement Program (REDIP)

Figure 13-4: Four Components of the REDIP Model

The project is evaluated highly as one of the most successful projects by the Ministry of Education and Culture of Indonesia. The ministry analyzes that one of the factors for the success was that the project addressed stakeholders at all the levels, which are school, subdistrict and community. The end-line survey of the project also reported that the model produced outputs such as enhancement of school management and capacities of teachers not only at public schools but also at madrasah schools which were also targeted in the project. Moreover, REDIP-P and REDIP G developed by provinces and the government based on the REDIP model were disseminated in other areas with their own budget. The REDIP model was also utilized in other JICA projects such as PRIMA-P (2007-2010) and Pelita (2008-2013), and also used as a model for similar projects implemented by then AusAID and USAID. In addition, lessons learned by REDIP were applied to school-based management at primary schools.

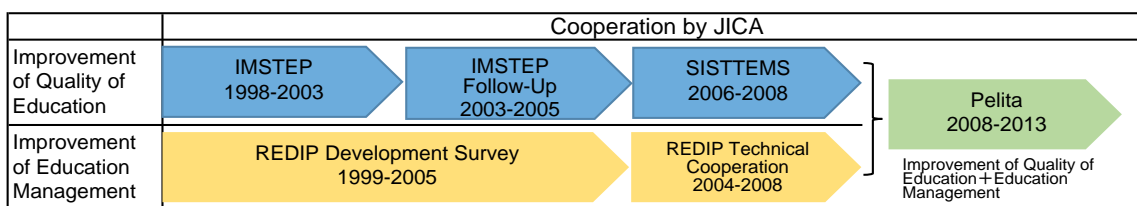
The REDIP model is still being utilized in Bekasi District and South Tangerang City which are near Jakarta. This is because parents in these areas often let their children enter schools in Jakarta, the schools in the capital became overcrowded and the number of students in the neighboring areas is decreasing. By introducing the model, the ministry seeks to decrease the cross-border school admissions by having parents and communities actively participate in the management of schools in their areas, and improve school management and quality of education.

With the introduction of BOS, the system to allocate block grants does not exist anymore. However, block grants motivated schools and communities to actually implement what they have planned in their school education plans. Moreover, training stakeholders through a series of activities using the block grant prepared them to use BOS effectively and transparently.

13.3.2 Lesson Study

The quality of junior secondary schools especially that of teachers, has been an issue in Indonesia. According to the National Education Standards developed in 2005, 36.36 % of teachers did not meet the academic qualification, which is bachelor's degree, required for teachers at junior secondary school. In response to this situation, JICA has introduced and disseminated Lesson Study in Indonesia for the improvement of the quality of science and mathematics education.

Lesson Study is a unique method in Japan to develop teaching capacities through case analysis of teaching practice. It intends to promote development of professional competence of teachers and mutual teacher learning based on actual practices at the classroom level. It consists of three activities, planning, observation/practice, and reflection. In the planning phase, one teacher or a group of teachers create a lesson plan. A teacher conducts a lesson based on the plan, and the colleagues observe it. Then, teachers discuss about the results, reflecting what has been observed/conducted.



Source: JICA Review Team

Figure 13-5: Flow of JICA Assistance

Lesson Study was introduced in IMSTEP. After that, SISTTEMS (2006-2008) sought to reactivate MGMP by Lesson Study, and incorporated the method in MGMP, targeting all the science teachers in the three pilot provinces. Meanwhile, Pelita sought to disseminate MGMP with Lesson Study, and also to improve school-based management based on the REDIP model.

According to the ex-post evaluation of SISTTEMS conducted in 2016, Lesson Study activities have been continuously implemented up until now. Moreover, the evaluation revealed that schools with more number of school-wide Lesson Study activities in 2013 were likely to score higher in the National Examination in 2015, and statistically significant differences were confirmed. Therefore, it is suggested that implementation of Lesson Study may have had an impact on students' academic achievements⁶. In addition, detailed analysis of the evaluation shows that high level Lesson Study aimed at SISTTEMS and Pelita has been maintained. Therefore, it is highly likely that Lesson Study has contributed to improving the quality of teaching/learning.

Other impacts observed by the evaluation include the implementation of Lesson Study at various education levels from primary to high schools/vocational high schools, and at various subjects besides mathematics and science. Moreover, UPI, UNY and UM, with which JICA collaborated in the projects, supported introduction of Lesson Study to other teacher training institutions/universities with funds from the Directorate General of Higher Education of the Ministry of Education and Culture. UPI, which played a central role in these projects, also served as a host institution for JICA Lesson Study Third Country Training Program. It accepted 96 trainees from 2009 to 2013 from various countries including Cambodia, Myanmar, Bangladesh, Nepal, Ethiopia, Kenya, Uganda, Ghana, Burkina Faso and Malawi, and contributed to disseminating and developing Lesson Study in these countries.



Training in Japan: “Training Program for Institutes of Teachers Training and Education Personnel”

⁶ The ex-post evaluation indicates that schools with high test scores often have highly motivated teachers, so the tendency of the teachers being active in Lesson Study need to be taken into consideration. Therefore, it is necessary to note that the frequency of school-wide Lesson Study may not necessarily be a direct factor for the high test scores.

Lesson Study was disseminated by projects of the World Bank, the Ministry of Education and Culture, and teacher training universities. UPI, UNY and UM played a central role in establishing Lesson Study Association of Indonesia (ALSI) in 2012, which promotes exchange of information, experiences and practices regarding Lesson Study. The association also participated in WALIS (World Association of Lesson Studies) actively. These associations also provide teachers in Indonesia with opportunities to publish their academic papers based on experiences obtained through training in Japan. The guidebook for a new curriculum introduced in 2013 also suggests using Lesson Study to the extent possible to implement the new curriculum effectively. Lesson Study is now what every teacher knows in Indonesia.

According to UPI, teachers are now accustomed to paying attention to each student by continuing a cycle of Lesson Study (planning, practice/observation, reflection), and seek to improve their lessons to lead students' better understandings. Teachers have realized that the teaching/learning process has been actually enhanced through Lesson Study, and this is why it is adopted by more teachers. Moreover, Lesson Study provided teachers with opportunities to collaborate with each other, and a system for collaboration and networks among teachers have been developed. As a result, the teamwork at schools have been enhanced and encouragement from school directors have increased, contributing to the development of culture to respect and care for each other. Furthermore, students enjoy lessons more than before because of student-centered lesson disseminated by Lesson Study. According to UPI, there are schools which have improved academic achievements since the introduction of Lesson Study, and the numbers of students at these schools have been dramatically increased. In recognition of such achievements in teacher education in Indonesia and other developing countries, JICA Recognition Award was awarded to Dr. Sumar of UPI in 2015.

An important contributing factor for the production of the aforementioned impacts is that the project involved not only government officers but also university professors/lecturers. By involving university professors/lecturers, (1) a sustainable system was established because university lecturers will remain even if government officials are transferred, and (2) the quality of school-level Lesson Study was maintained due to the technical inputs by the university professors/lecturers. Moreover, providing opportunities for continuous training in Japan led enhancement of capacities of lecturers at teacher training universities, which helped to popularize Lesson Study in Indonesia.

BOX 13-1 Strengthening academic achievement through e-learning

Cooperation Period: April 2015- December 2017

JICA supports dissemination and verification of the products and technologies of small and medium-sized enterprises in Japan through a scheme of verification studies. SuRaLa Net Co., Ltd. participated in the study in Indonesia, seeking to disseminate and verify its product, an e-learning system called “Surala Ninja!” The pilot project utilizing “Surala Ninja!” was implemented in collaboration with UPI at two primary schools of UPI and one pilot private-tutoring school in UPI.

The end-line survey shows remarkable improvements in mathematics in the pilot group compared to the control group⁷. In particular, the results of addition and subtraction showed statistically significant differences in all the grades between the pilot and control groups, and a significant difference was confirmed in most of the grades even in the learning achievement test that measured comprehensive abilities including multiplication and division. One of the contributing factors for the success can be attributed to the fact that one PC was allocated

to one student, which realized individual learning according to the level of each student. In other words, through the system, each student can study by himself/herself and PC can respond until students finally understand. In addition, the system records past performances and rankings by the cloud computing system, and it enabled the facilitators to grasp progress and weaknesses of each student and to provide them with appropriate assistance. Moreover, teachers were able to teach in accordance with the weaknesses of each student even in regular classes. Furthermore, according to the school director of UPI primary school, as children loved the contents, in which Ninja characters facilitate their understandings in easier and fun way, even students who get easily distracted in regular classes could concentrate on studying with “Surala Ninja!” In addition, the project placed an emphasis on developing discipline and self-reliance of children besides academic achievements, and this was also highly appreciated by the Indonesian side. These outputs and impacts are expected to further developed and disseminated in other areas in Indonesia.



**Surala private tutoring school
at UPI**

⁷ As examples, in the Pilot School A, the average score of addition of the 5th grade students improved from 52.8 to 97.9 and that of subtraction improved from 30.1 to 90.5. In the Pilot School B, the average score of addition of the 4th grade students improved from 63.1 to 97.4 and that of subtraction improved from 41.2 to 84.2.

13.4 Outcomes/Impacts of Japan’s Economic Cooperation and Future Prospects

13.4.1 Outcomes/impacts of Japan’s economic cooperation to date

Based on the review of period-specific characteristics and noteworthy achievements of Japan’s economic cooperation in the basic education sector, major issues, direction of cooperation, implementation areas, and project groups are summarized as below.

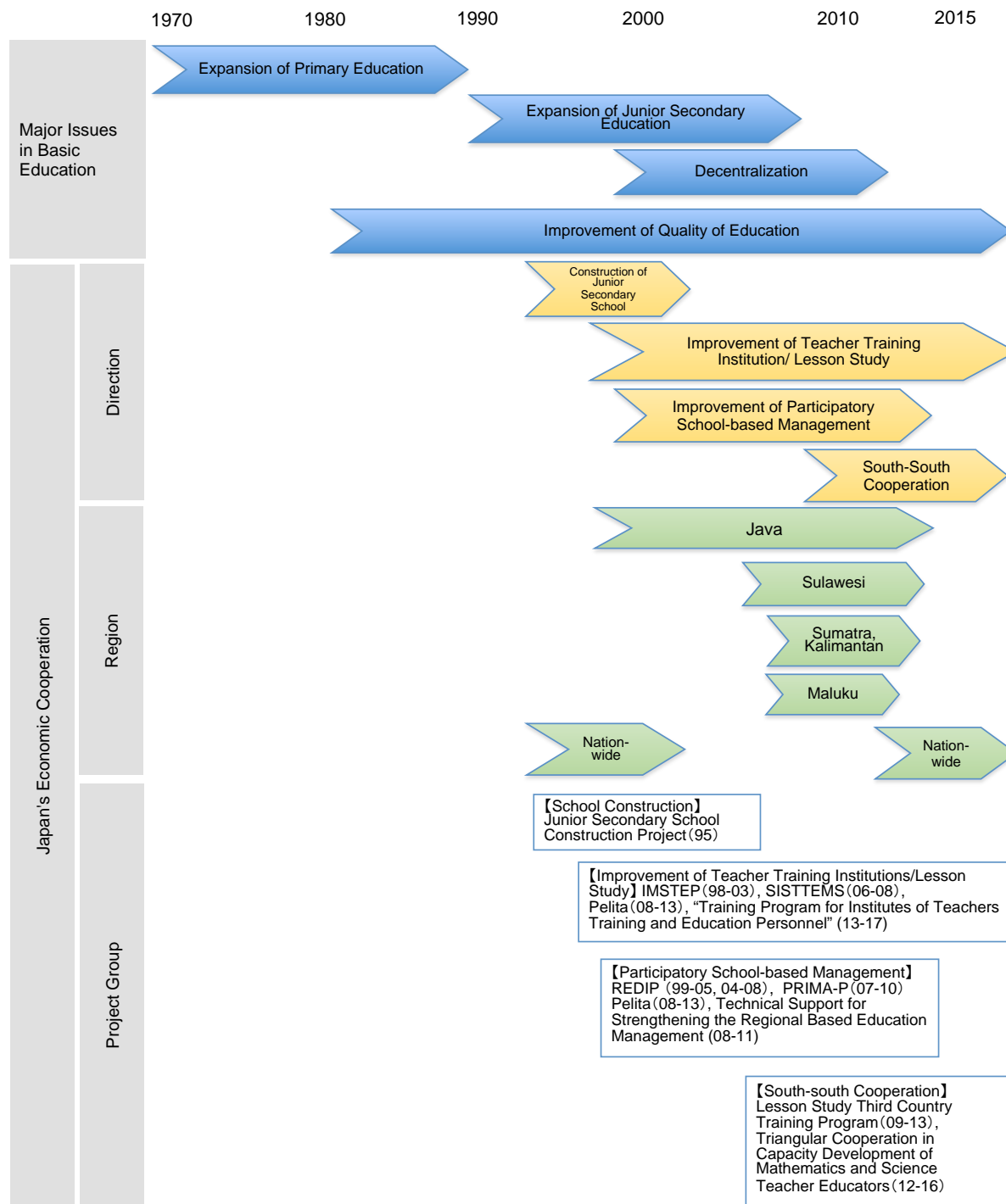


Figure 13-6: Characteristics of Japan’s Cooperation in Basic Education

In Indonesia, JICA has mainly provided support in the field of lower secondary education in response to the policy of nine-year compulsory education. The “Junior Secondary School Building Construction Project” started in 1995 constructed 596 school buildings in the target 12 provinces, contributing to the increase of the access to junior secondary school and realization of the nine-year compulsory education.

Regarding the junior secondary school management, JICA targeted 524 schools in North Sulawesi Province, Central Java Province and Banten Province to introduce and strengthen bottom-up school management to solve various problems at the school level. In addition, the number of schools covered by the government, provincial and district/municipality budget amounted to 458. The projects to improve participatory school management in Indonesia produced outputs and impacts by involving and connecting all the stakeholders, which are schools, communities and local authorities in parallel with the redefinition of the role of local administrators. After the end of REDIP, the usage of BOS, which was introduced in 2005 for the purpose of improving enrolment rates, was extended and started to be used for activities to ameliorate education quality. Activities implemented under REDIP continued to be implemented using BOS, and the essence of school management to improve the quality of education has now taken root in Indonesian schools.

Based on the experiences of Japan promoting science and technology, which led the rapid growth of the country in a short period of time, JICA promoted Lesson Study in Indonesia in order to improve the quality of education in science and mathematics. By doing so, JICA intended to develop basic academic knowledge, develop human resources with scientific thinking skills, and build the foundation of science and engineering human resources of the next generation. By combining these efforts and cooperation in engineering education in the higher education sector, JICA sought to develop human resources for the industry development in Indonesia comprehensively. Currently, Lesson Study was adopted by 17 districts/municipalities out of 27 districts/municipalities in West Java Province, all the 38 districts/municipalities in East Java Province and 3 districts/municipalities out of 5 districts/municipalities in Yogyakarta as an effective method for continuous professional teacher development. It was also adopted in Jambi in Sumatra Island, and disseminated to 5,453 teachers in 180 junior secondary schools. Moreover, it was introduced to 65 teacher training institutions/universities including those of private, and is spreading nationwide. By comprehensively working on the three major issues, or access, quality and school management, JICA has contributed to the improvement of lower secondary education.

13.4.2 Implications for future cooperation

With the social economic development and improvements of education indicators in Indonesia, support from the Japanese government in the area of basic education is decreasing. Meanwhile, there are still remaining issues in the sector, and the partnership called “Analytical Capacity and Development Partnership (ACDP)” participated by development partners such as Australia, the European Union (EU) and ADB and the Indonesian government, aiming to promote policy dialogue, national strategies and performances, conducted various studies from 2010 to 2017. Major challenges

were identified through the studies and a number of policy recommendations were made⁸. Future direction of support will need to be examined based on the study results as well as past assets of JICA and other donors. According to the information obtained in this review, the major issues and areas where technical assistance is required are identified as below.

Improving remaining educational indicators

Though the gross enrollment rates of primary and lower secondary education exceed 100%, there are still indicators to be improved. First, the completion rate of junior secondary school, which is also a target of the Sustainable Development Goal (SDG) 4.1, is still as low as 76% as of 2015⁹. Moreover, the attendance rate¹⁰ of junior secondary school as of 2015 is 88%, which is well below the gross enrollment rate, meaning that approximately 1.8 million children are not going to junior secondary school. In addition, while the attendance rate at the national level is 99% for primary education and 88% for lower secondary education, those of Papua Province is 84% for primary education and 63% for lower secondary education, which is the lowest among all the provinces. Disparities in completion rates between urban and rural areas as well as poor and wealthy households are also conspicuous.

Another challenge in indicators is that sufficient data are not collected regarding children with disabilities, and the educational situation of these children. Furthermore, the status of implementation of inclusive education¹¹ is not yet clear. Moreover, more than 70% of special education schools in Indonesia are private, and there are only four special education schools in Papua while there are 353 in West Java and 401 in East Java. Therefore, the accessibility of children with disabilities to education in certain provinces is considered to be low.

From the above, technical assistance in improving the indicators and redressing disparities are required in view of achieving indicators for the SDGs.

Improving education quality

As the low qualification and motivation of teachers were considered as some of the major reasons for low academic achievements in Indonesia, the Teacher Law of 2005 newly demanded teachers to obtain four-year university degree or a high rank in the civil service to receive a teacher certification. According to the provision, those who successfully completed a certification process would receive a professional allowance equal to 100% of their base pay. However, it was found out by an impact

⁸ The examples of research topics are as follows: "Survey of Parental Contributions in Basic Education," "Study on Teacher Absenteeism in Indonesia," "The Critical Importance of Early Grade Reading and Assessment," "General Senior Secondary Education Financing in Indonesia," "Madrasah Education Financing in Indonesia," "Review of a Decade of Gender Mainstreaming in Education in Indonesia," "Early Childhood Development Strategy in Indonesia," "Analysis of School Operational Funds," and "Support for Poor Families in Meeting the Personal Costs of Basic Education."

⁹ The completion rate is defined as the percentage of a cohort of children aged 3-5 years above the intended age for the last grade of the target education level who have completed that grade.

¹⁰ While the enrollment rate is calculated by the number of children registered at schools, the attendance rate is calculated by the number of children actually attending school.

¹¹ Article 24 of the United Nations Convention on the Rights of Persons with disabilities provides not only that children with disabilities should not be discriminated against but also that they should be able to participate in the general education system (inclusive education system).

survey that the policy led to no improvements in children's learning¹².

As explained in "13.2.3 Period-specific characteristics of Japan's economic cooperation for Indonesia in the basic education sector," the results of PISA remain low, and scores differ greatly depending on the income level of the family. Moreover, the results of the Indonesian National Assessment Program (INAP) 2016 show that the percentage of 4th grade students who reached the minimum academic standard is 53% in reading comprehension and 23% in mathematics. The results of INAP also show that there are great disparities depending on provinces. For example, the percentage of students who reached minimum academic standard in reading comprehension is the highest in Jakarta (76%), but it is the lowest in West Sulawesi (21%). Similarly, regarding mathematics, while Jakarta has the highest percentage of students who reached the minimum standard (30%), it is the lowest in Central Sulawesi and Maluku (12%).

As shown above, there is room for improvement in academic achievements. As the SDG 4.1 also aims to achieve relevant and effective learning outcome, there are needs for technical assistance in this area. UNICEF is currently implementing a project to improve reading comprehension in Papua, and the Government of Australia is implementing a pilot project to improve academic achievement in West Nusa Tenggara and East Nusa Tenggara. It is expected that these projects will be scaled up in the near future in order to improve academic achievements in the country especially in the areas which lag behind other provinces.

Improvement of resource allocation

The Government of Indonesia has recruited no new permanent teachers since 2012. According to the Ministry of Research, Technology and Higher Education, teacher candidates are oversupplied due to the increase of private teacher training institutions/universities, thus only 20% of graduates from teacher training institutions/universities can be employed as teachers. The Ministry of Education and Culture seeks to allocate teachers appropriately by transferring teachers of the oversupplied areas to undersupplied areas, but it is not functioning well. Therefore, schools which require more teachers are recruiting temporary teachers by themselves.

In addition, private madrasah schools which occupy most of the madrasah schools in Indonesia receive much less support compared to state schools, including state madrasah. According to OECD's "Education in Indonesia" (2015), at the primary level, for example, government funding for state madrasah school is on average five times greater than government funding for private madrasah. Central government provides funding for private madrasah to cover operational costs through BOS, but it is estimated that this covers only about one-fifth of total funding needs. As a result, private madrasah schools largely rely on parental contributions, even though in general, private madrasah schools cater to the poorest segments of society. The majority of funding for private madrasah schools comes from those who can least afford to pay.

¹² De Ree, J., K. Muralidharan, M. Pradhan, and H. Rogers. *Double for Nothing? Experimental Evidence on the Impact of an Unconditional Teacher Salary Increase on Student Performance in Indonesia*. 2015.

From the above, there are needs for technical assistance to realize appropriate resource allocation at the central level. It is also considered that school-level assistance will be beneficial to address these issues.

Promoting students' non-cognitive skills

The Government of Indonesia now places an emphasis on the character development of students, and the new curriculum also highlights this point. Meanwhile, the Indonesian government understands that teachers do not necessarily have an effective methodology regarding how to incorporate these aspects at the classroom level teaching. How to balance the development of character and learning achievement is also another issue in the country. It is therefore believed that there are support needs in this field.

Appendix

Appendix 1: Excerpt from the Indonesia's Development and JICA's Cooperation (September 2010)

Appendix 1-1: River Basin Development and Management.....Appendix-1

Appendix 1-2: Telecommunications.....Appendix-13

Appendix 1-1: River Basin Development and Management

1. Outline of the Sector

1.1. General Trend in Japan's Cooperation

With the Neyama Drainage Tunnel Project as the start, the Japanese government has provided Indonesia with the assistances in river basin development and management over 40 years since the end of the 1950's. Indonesia-Japan cooperation has covered development study, grant aid, ODA loan, and technical cooperation.

The amount of the ODA loans steadily increased in four decades of the 1960s through the 1990s, while that in the 2000s decreased. Especially, the amount in the 1990s largely increased from that in the previous decade. The number of projects conducted as the other schemes than loan aid in each decade of the 1970s to the 2000s is constant at 9 to 10.

1.2. Characteristics of Japan's Cooperation at Different Periods

Japan's cooperation in water resources development and management is understood to have three periods; i) construction of multipurpose dams (3K project) in the 1960s, ii) planning through development study and implementation of priority projects (the 1970s to the 1990s), and iii) rehabilitation of existing water resources facilities and water resources management (the 2000s):

(1) Construction of multipurpose dams with focus on hydropower development under the War Reparation Agreement (the 1960's)

In water resource development, too, Japan's cooperation began with the projects under the war reparations agreement. The memorial first project was the Neyama Drainage in the Brantas River basin, which started in the end of 1950. After completion of the project, malaria hardly outbreaked and a large agricultural production was attained in beneficial areas of the project. Consequently, the Japan's cooperation to the project was highly appreciated by the Indonesian government.

Following the policy of the Indonesian government, Japan provided official loans to construct the three multipurpose dam projects referred to as 3K namely, Karangates and Kali Konto Dams in the Brantas River basin and Riam Kanan Dam in South Kalimantan Province. These were recognized as the representative river basin development projects in the 1960s. These multipurpose dam projects were developed with a focus on hydropower generation, since at that time it was the first priority to reduce power shortage. The projects were completed at the end of the 1960s and in the 1970s.

(2) Development studies and priority projects on flood control and river basin development (the 1970s to the 1990s)

The flood took place and brought about serious damages almost every year in many river basins. It constituted one of the factors for impeding regional development. In addition, Indonesia also needed river basin development for hydropower generation, irrigation and municipal water supply. To meet these needs, the Japanese government carried out the development studies on flood control and river basin (water resources) development and the priority projects identified by the development studies were with Japanese ODA loans.

The multipurpose dams constructed in the period from the 1970s through the 1990s include Wlingi dam, Bening (Widas) dam, Wonorejo dam in the Brantas River basin, and Wonogiri Dam and Bili-Bili dam, which were the core projects in the Solo and Jeneberang River basins, respectively. Out of twelve studies/projects of the river basin development in the 1970s, ten of them are located in the Brantas River and Solo River basins. While, the ten studies/projects concerned with the three representative basins, which include those with ODA loans for construction of Bili-Bili and Wonorejo multi-purpose dams and development study on preparation of 3rd and 4th master plans for the Brantas River basin, were performed in the 1980s and the 1990s. Thus, many schemes concerned with the 3 representative basins were carried out in the period of from the 1970s through the 1990s. In this period, development study on river basin development was carried out for the purpose of development of the river basins other than the three representative basins. These include “Master Plan Study on North Banten Water Resource Development”, “The Study on Belawan-Padan Integrated River Basin development” and “The Study on Kampar-Indragiri River Basin Development Project”. These studies aimed at promoting the development in lagging regions where the development was behind.

Studies/projects on flood control were carried out in the 1970s and the 1980s. Those concerned with the aforesaid three representative basins and Ular River basin in North Sumatera represented about two thirds of the total number of the projects identified in the studies. In the three representative basins, flood was thus controlled by combining reservoir's flood control function with river improvement works for downstream reach. Japan's cooperation in flood control has contributed greatly to the stabilization of people's life and regional economic development in those river basins.

In the 1990s, the number of flood control projects in other river basins than these four basins noticeably increased. During the period of the 1970s through the 1990s, flood control projects for four cities, namely Banda Aceh, Padang, Bandung and Medan, were implemented with the Japanese ODA loans. After completion of the projects, flooding has hardly taken place in the four cities. Accordingly, the Japan's cooperation to Indonesia in flood control also contributed greatly to the stabilization of public welfare in major cities.

(3) Strengthening of assistance to rehabilitation of existing facilities and water resources management (the 2000s)

In view of the vast land area of the country and large population, it is continuously necessary to meet increasing water demands through the development of water resources and to take countermeasures against flood damages. Hence, Indonesia is still

in high need of the river basin development and management. Taking the situation into account, the assistance of the Japan's cooperation for river basin development and management including flood control has been continuously provided to Indonesia even in the 2000s. Japan's cooperation in the river basin development and management in the 2000s stressed the following points:

- Rehabilitation of the existing flood control and water resources facilities which were deteriorated in main river basins such as the Brantas, and Bengawan Solo River basins.
- Capacity building for the organizations concerned with river basin management

In the 2000s, the Indonesian government attempted to manage integrated water resources through participation of various stakeholders in respective river basins. To support this attempt, the Japanese government is carrying out the technical cooperation project entitled "Capacity Development Project for River Basin Organizations in Practical Water Resources Management and Technology".

2. Major River Basins Development Projects with Japan's Cooperation

It is determined that the river basins satisfying the following conditions are selected as the representative river basin on the Japanese assistances:

- i) A multipurpose dam constructed with the Japanese ODA loans is situated on the mainstream, playing a key role of flood control and water resources development in the basin,
- ii) Even after completion of the multi-purpose dam, the Japan's cooperation have been continuously provided for the schemes concerned with the basin, and
- iii) Transfer of knowledge for the Indonesian experts/engineers has been sufficiently performed.

As a result of the examination on the river basin development and management that were implemented with the assistance of the Japanese government, the three river basins, namely the Brantas, Bengawan Solo, and Jeneberang River basins, are selected as the representative river basins, since these are recognized as the main river basins from the various factors including catchment area and the long-term Japan's cooperation which have been provided to construct the multi-purpose dam on the mainstream and implement other studies and projects in the basin. Besides, the three multipurpose dams, namely Karangates Dam, Wonogiri Dam and Bili-Bili Dam in the three representative basins, respectively, are selected as core projects therein, since they play the distinguished role in the flood control and water resources development in each river basin.

2.1. Contributions of Japan's Cooperation in Major River Basins Development

(1) Brantas River Basin

As described above, the Japan's cooperation was provided for Brantas River basin development continuously since Neyama Drainage Tunnel project. It has been recognized by both governments as a success of the Japan's cooperation to Indonesia. Most of development projects in the Brantas River basin have been implemented with the Japanese ODA loans based on a master plan prepared at intervals of about years under the assistance of the Japanese Government. In total, eight (8) hydropower stations including the one installed at the end of the Tulungagung drainage tunnel are now in operation in the Brantas River basin. Out of these hydropower stations, the six (6) ones excluding aforesaid Tulungagung hydropower station and Sengguruh hydropower station were constructed with the Japanese ODA loans. Thus, the Japan's cooperation has greatly contributed to meet the increasing power demand in East Java Province.

	1960's	1970's	1980's	1990's	2000's
Master Plan	MP-I (1961) ●	MP-II (1973)* ●	MP-III (1985)* ●	MP-IV (1998)* ●	
Major Loan Project	- Dam and Hydropower				
	Karangkates Dam				
	Kali Konto Dam				
	Wlingi Dam				
	Lodoyo Dam				
	Bening Dam				
	Wonorejo Dam				
	- River Improvement				
	Porong river	Phase-1		Phase-2	
	Brantas Middle Reach	Phase-1		Phase-2	
	Surabaya river	Phase-1		Phase-2	
	- Irrigation				
	Brantas Delta				
Widas					
- Rehabilitation and Capacity Building					
Water Resources Existing Facilities Rehabilitation and Capacity Improvement					

Note: *: shows the master plan study carried out under JICA.

Figure 1: M/P Formulated and Projects Implemented with Japanese Assistances in the Brantas River Basin

In the Brantas River basin, the irrigation development proceeded with water resources development by construction of the multi-purpose dams and the total irrigation area developed by the main irrigation projects amounts to about 118 thousand ha. The irrigation development in the Brantas River basin was proceeded not only under the Japanese assistance, but also with the funds of ADB and the World Bank. With regard to the flood control, the Brantas River basin is protected from flood by combining the reservoir's flood control function of upstream multipurpose dams with flood control works for the middle and downstream reaches to keep the flood control level up to a 50-year probability. The flood control works for the Brantas River, which include those for the middle reach, Surabaya River and Kali Porong River, had been implemented with the Japanese ODA loans. After completion of the flood control works in the Brantas river basin, no flooding from the Brantas River took place in

low-lying areas of Surabaya City with a population of about 3 million, Mojokerto City, and Kediri City, which spread along the Brantas River. In addition, the river water regulated by the upstream multi-purpose dams is also effectively utilized for domestic and industrial water supply. The Brantas River water that is seasonally regulated by the upstream multipurpose dams is being extracted by the downstream regional water supply corporations (PDAMs). In the lowermost reach of the Brantas River, the river water is being extracted by PDAM Surabaya and Karangates multipurpose dam still plays an important role as a source for the water supply.

Effect of Karangates dam

Karangates dam has an effective storage capacity of 282 million m³ which accounts for about 60% of the total one of all multipurpose dams in the Brantas River basin. Since the dam is situated on the Brantas mainstream, it enables the effective seasonal regulation for the comparatively large inflow to the reservoir. Besides, it has also played a distinguished role in the water supply as the precious water source in the Brantas River basin, in addition to flood control.



Pleasure Boats in Karangates



Hydropower Waterway Facilities Provided Downstream of Karangates Multi-Purpose Dam

Transfer of knowledge through Brantas river basin development:

In the early the 1960's, an attempt was commenced to transfer the technology and knowledge on water resources development from the Japanese experts to Indonesian ones in the Brantas River basin. At that time, the Indonesian Government realized the most effectively the transfer of technology and knowledge by means of adopting the measures suiting the objectives through the project management and administrative arrangements in stages. One of the measures in the project implementation is to construct the project works by means of the force account system which was adopted by the Brantas Project Office. The construction cost was reduced by adopting the force account system and technical capability was outstandingly raised up through the man-to-man system between the Japanese and Indonesian engineers in the counterpart system adopted together with the force account system. With regard to the transfer of knowledge, these aspects are highly appreciated by the Indonesian Engineers who participated in construction of projects in the Brantas River basin at that time.

The functions of the Brantas Project Office established in early the 1960s were transferred to the present BBWS office and following three (3) organizations to deliver the experiences and knowledge of the Brantas River Project Office to the whole Indonesia:

- i) Consultant; PT. Indra Karya (established in 1970)
- ii) Construction company: PT. BRANTAS ABIPRAYA (established in 1980)
- iii) Water Resources Public Corporation; PJT 1 (established in 1990)

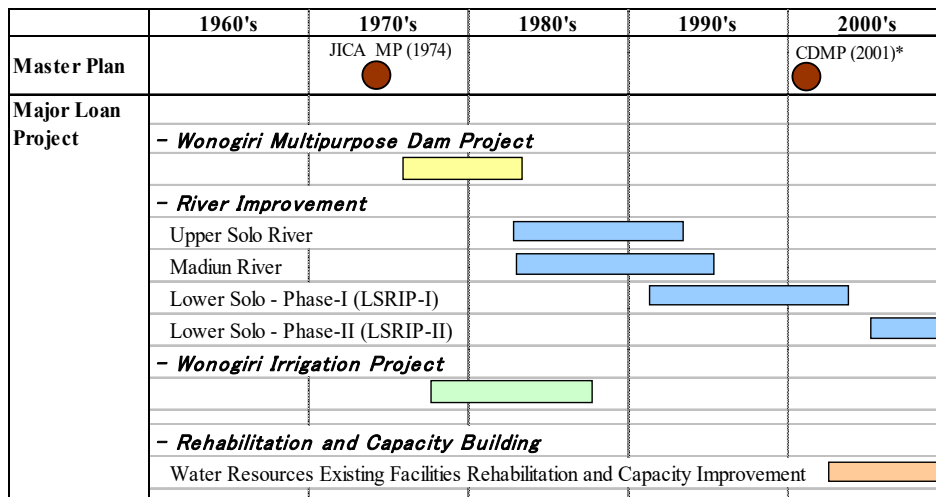
Water resources existing facilities rehabilitation and capacity improvement project

As the latest loan aid project financed by the Japanese Government, the “Water Resources Existing Facilities Rehabilitation and Capacity Improvement Project” is under implementation as of May 2010, comprising construction works for rehabilitation of flood control and water resources facilities, as well as capacity building for the PJT 1 that is responsible for operation and maintenance of water resources and flood control facilities in the Brantas River basin.

(2) Bengawan Solo River basin

The Bengawan Solo River which flows down through the Central Java area occupies a catchment area of 16,100 km² and is ranked as the largest river in Java Island in terms of the catchment area. As well as the Brantas River basin, the Bengawan Solo River basin where the old city, Surakarta (Solo), is located had suffered from flood damages almost every year since the old times. Especially, in the 1966 flood, the flood discharge of Bengawan Solo inundated in a short time two third of the city area including the palace area. The flood damages extended to the nearby towns and villages and consequently the flood damage became the largest in the past.

To promote the development of the Bengawan Solo River basin including flood control, the Japanese Government formulated a master plan on the river basin development in 1973 under JICA. While construction of the Lower Solo Improvement Project II is underway with the Japanese loan-aid, the projects concerned with river basin development of the Bengawan Solo have been realized almost in accordance with the aforesaid master plan. After then, in accordance with the official request of the Indonesian Government, the feasibility studies on the Wonogiri multi-purpose dam and development of upper Solo basin, flood control and water resources development plans have been conducted and the priority projects selected through the feasibility studies have been implemented with the Japanese ODA loans.



Note: *; A study on comprehensive Development and management Plan (CDMP) was carried out under LSRIP-I.

Figure 2: M/P Formulated and Projects Implemented with Japanese Assistances in the Bengawan Solo River Basin

Contribution of Wonogiri Multi-Purpose Dam

After completion of the Wonogiri multi-purpose dam in 1982 with the Japanese loan-aid, it contributed greatly to power supply, flood control, irrigation and municipal water supply in the region. The Wonogiri hydropower station with an installed capacity of 12.4 MW produces an annual average energy output of 55×10^6 kWh, constituting the precious power supply source therein. Wonogiri dam and reservoir is contemplated to have a flood control space to mitigate a inflow peak flood of $4,000 \text{ m}^3/\text{sec}$ to the outflow peak of $400 \text{ m}^3/\text{sec}$. As well as the Brantas River basin, the flood control plan for the upper Solo River basin is contemplated to be realized by combining the reservoir flood control effect of the Wonogiri Dam and the river improvement works for the downstream reach. After completion of the Wonogiri multipurpose dam and river improvement works in the upper Solo reach, Surakarta City could keep the flood protection level of a 10-year probability. Consequently, it had hardly suffered from the flood damage and the people' life therein became very stable. Besides, the Solo River water that is released from the Wonogiri Dam after regulation by its reservoir is extracted in the downstream head work to irrigate the paddy field areas (about 30,000ha) of the Wonogiri Irrigation Project.

(3) Jeneberang River Basin Integrated Development

To cope with the issues on flood and water resources (water shortage in the dry season) in the Jeneberang River basin including Makassar City, the flood control plan including development plan of the Bili-Bili multipurpose dam was formulated through the JICA two (2) development studies, namely "Lower Jeneberang River Flood Control Project" and "Jeneberang River Flood Control Project (Phase 2)". In the development studies, the Bili-Bili dam was planned to have a flood control space secured in its reservoir storage capacity. Consequently, the flood control for the downstream reach of the

Jeneberang River was formulated to cope with a 50-year probable flood by combining function of the flood control space of the Bili-Bili multi-purpose dam and river improvement works along the downstream reach of the Jeneberang River. Afterwards, the Japanese loan aid for construction of the Bili-Bili Dam including installation of main water conveyance pipe to the city area was provided to the Indonesian Government three (3) times until its completion in 2001. The facilities for water supply to Makassar City, irrigation water supply and construction of hydropower station located downstream of Bili-Bili Dam, which constitute the components of the Bili-Bili multi-purpose dam project, were realized through the three (3) Japanese loan-aid projects, namely “Ujung Pandang Water Supply Development Project (Stage I)”, “Bili-Bili Irrigation Project”, and “Multipurpose Dam Hydroelectric Power Plants Project” for development of municipal water supply, irrigation, and hydropower, respectively.

Classification		Title of Study/Project
Development Study		Lower Jeneberang River Flood Control Project(1979-1980)
		Jeneberang River flood Control Project (Phase II) (1981-1982)
		The Study on Capacity Development for Jeneberang River Basin Management (2004-2007)
Loan Aid Project	Dam and flood control	Lower Jeneberang River Urgent Flood Control Project Bili-Bili Multipurpose Dam Project, Phase I, II, III
	Municipal water supply	Ujung Pandang Water Supply Development Project (Stage I)
	Irrigation	Bili-Bili Irrigation Project
	Hydropower	Multipurpose Dam Hydroelectric Power Plants Project
	Sabo works	Urgent Disaster Reduction Project for Mt. Merapi/Progo River Basin and Mt. Bawakareng

Table 1: Study and Projects on River Basin Development and Management in the Jeneberang River Basin, Implemented with Japanese Assistance

Contribution of Bili-Bili Multi-Purpose Dam

The hydropower station constructed just downstream of Bili-Bili has an installed capacity of 20MW and contributed to suffice the power demand in the region whose center is Makassar City. After completion of Bili-Bili multipurpose dam, the flood control protection level for Makassar City and its surrounding areas with population of about 1.2 million increased from 10-year probability to 50-year probability. Although the habitual flooding from the Jeneberang River frequently took place before completion of the Bili-Bili multipurpose dam, it hardly occurred after completion thereof, leading to establishment of the bases for Makassar City to maintain the functions as the provincial capital and to attain the economic development. After then, the downstream irrigation area had increased to about 24,000ha in 2005. In addition, after completion of the Somba Opu water treatment plant (WTP) with a capacity of 1,000 liter/sec (886,400 ton/day), the service ratio of piped water in Makassar City increased to about 70%. These hydropower, irrigation and municipal water supply projects were constructed with the Japanese loan aids, exhibiting that the development of the Jeneberang River basin has been implemented with the Japanese consecutive assistances.

3. Japan's Cooperation in Managing River Basins and Water Resources

As described above, the Indonesian Government has started placing the importance on improvement and enhancement of water resources management system in the 2000s. To support the policy of the Indonesian Government, the Japanese Government assisted the Indonesia Government in the field of water resources management as stated below:

(1) Establishment of water councils in major river basins

With regard to the river basin management or water resources management, there has been a new movement in 2009 that the water council is established in the Brantas and Bengawan Solo River basins in accordance with the Water Resources Law No.7 of the country. The Water Council (WC) adopts the new policy of water resource management with the people's participatory approach.

In April 2010, the Jeneberang BBWS office is carrying out the preparatory works for establishing a new water council for the Jeneberang River basin. Also the preparatory works for establishing a new water council at the national (central government) level is underway under the assistance of the JICA long-term expert.

(2) Water resources management

The Japanese Government has contributed to the capacity building for the river basin (water resources) management in Indonesia by means of performing "The Study on Capacity Development for Jeneberang River Basin Management" and "Capacity Development Project for River Basin organizations" as the development study and technical cooperation project, respectively, as explained hereunder.

Study on capacity development for Jeneberang river basin management

The JICA study has contributed to the enhancement of the technical capabilities of the counterpart personnel by means of training for the office staffs and preparation of many useful manuals in the various fields such as the reservoir operation plan of Bili-Bili dam/reservoir, determination of water allocation to the respective sectors, O&M of mechanical and electrical equipment.

Capacity Development Project for river basin organizations

The technical cooperation project aims to establish the diffusion unit of water resources management technology (DUWRMT) and technical assistance to activities of the unit. In the project, at present, the preparatory works for establishing the DUWRMT have been almost completed.

4. Countermeasures against Sedimentation of Dam Reservoirs

To cope with the increasing sediment inflow into Karangates, Wonogiri and Bili-Bili multipurpose dams in the three representative basins due to the aggravated conditions of their catchments, countermeasures against the reservoir sedimentation are being carried out or are planned to be carried out with ODA loans. Concerning the Karangates

multipurpose dam, the dredging equipment for removing sediments in reservoir has been procured under the aforesaid loan aid project, called the “Water Resources Existing Facilities Rehabilitation and Capacity Improvement Project”. In case of the Bili-Bili multipurpose dam, sabo dams have been built on the Jeneberang River upstream of the Bili-Bili Dam under the loan aid project called the “Urgent Disaster Reduction Project for Mt. Merapi/Progo River Basin and Mt. Bawakaraeng”. Besides, in case of the Wonogiri multipurpose dam, the reservoir sedimentation countermeasures including construction of new spillway for flushing the reservoir sediments and watershed conservation for the dam catchment are scheduled to be implemented with ODA loans. It is Wonogiri Reservoir Sedimentation Countermeasure Project I.

5. Summary

The overall flow of the Japan's cooperation in the river basin development and management sector is shown in the following figure:

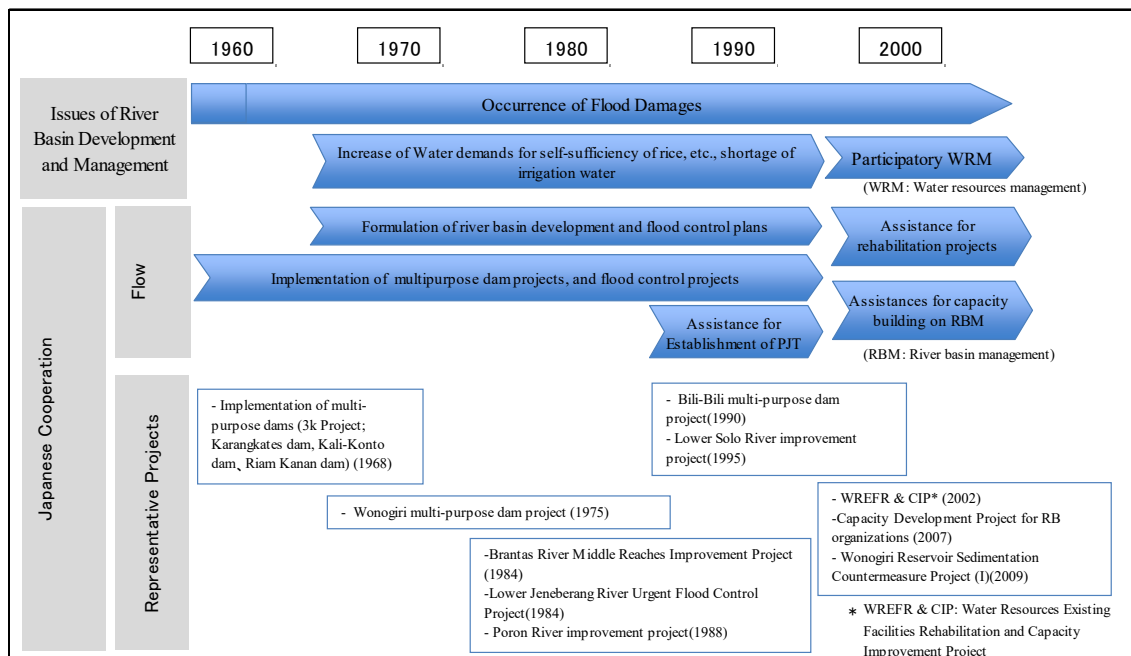


Figure 3: Overall Flow of Japanese Assistanes to Indonesia in the Sector

We understand that Japan’s cooperation has been provided in three periods: i) construction of multipurpose dams (3K project) in the 1960s, ii) planning and project identification through development studies and implementation of the identified projects in the 1970s to the 1990s, and iii) rehabilitation of existing water resources facilities and water resources management in the 2000s.

Following the policy of the Indonesian government, he Japanese government cooperated in the development of three multipurpose dam in the 1960s. They are Karangates and Kali Konto Dams in the Brantas River basin and Riam Kanan Dam in South Kalimantan Province.

In the past, the flood took place almost every year in a lot of river basins in Indonesia. Also in the 1970's to the 1990s, Indonesia needed river basin development for hydropower generation, irrigation and municipal water supply. Thus Indonesia and Japan cooperated in development studies on flood control and river basin development. The development studies identified priority projects for finance by the Japanese ODA loans. In the period from the 1970s to the 1990s, flood control projects were implemented for four cities, namely Banda Aceh, Padang, Bandung and Medan Cities, with the Japanese ODA loans. These Japan's cooperation contributed greatly to stabilization of public welfare and economic development in the regions.

In the 2000s, Japan's cooperation concentrated on i) Rehabilitation of existing flood control and water resources facilities, and ii) capacity building for the organizations concerned with river management. Besides, the Japanese government helped Indonesia to remove and/or reduce sedimentation in existing dams including Karangates dam, Bili-Bili dam and Wongiri dam.

While the development of the Brantas River basin has been highly appreciated in Indonesia as a successful river basin development. While, the success has been attained by appropriate management and measures taken by the Indonesian government. Japan's cooperation contributed to the success in terms of i) consistent cooperation from master plan study to project implementation, ii) continued cooperation, iii) a stress on transfer of technology.

The functions of the Brantas Project Office established in the early 1960's were transferred to the present BBWS office, PT. Indra Karya, a consultant, PT. ABPRAYA, a construction company and, PJT 1, a water resource public corporation to deliver the experiences and knowledge of the Brantas River Project Office to other parts in Indonesia.

Table 2: Issues and Cooperation in the Sector of River Basin Development and Management

Decades	1960s	1970s and the Early 1980s	Late 1980s	1990s up to Asian Currency Crisis	After Asian Currency Crisis	
River Basin Development and Management	Period Background	<ul style="list-style-type: none"> - East and west cold war - Green revolution - From President. Sukarno to President. Suharto - Oil dependent economic development 	<ul style="list-style-type: none"> - The 1st oil crisis (1973) - Crisis of international balance of payments (1982) 	<ul style="list-style-type: none"> - Plaza agreement (1985) - Finish of east and west cold war - Restructure from the oil dependent economy 	<ul style="list-style-type: none"> - Asia currency crisis (1997) - Resignation of President Suharto 	<ul style="list-style-type: none"> - Democratization - Decentralization
	Sector-wide Issues	- Occurrence of flood damages in the basins where flood control facilities are not improved.				
	Priority Development Issues shown in 5-year plan	- Construction of multipurpose dams for the nation building	- Increase of water demands for self-sufficiency of rice and shortage of irrigation water		<ul style="list-style-type: none"> • Government Regulation No.5/1990 regarding establishment of new water public corporation - Drought due to El Nino Phenomenon (1997) 	<ul style="list-style-type: none"> - Promotion of participatory water resources management - Law No.7/2004 regarding water resources/elucidation - Establishment of Balai that is under direct control of the central government
			- Promotion of water resources development for power supply, flood control, and irrigation and domestic/industrial water supply			
	Japanese Approach for Development Issues	- Promotion of development of multipurpose dams for the purpose of irrigation and municipal water supply in addition to flood control	- Assistance on river basin development	- Assistance on river basin development	- Assistance on river basin development	- Assistance on improvement of river basin management
			- Assistance on flood control	- Assistance on flood control	- Assistance on flood control	- Assistance on flood control
Priority Programs/ Projects for Japanese Cooperation	<ul style="list-style-type: none"> - Construction of multi-purpose dams (Kali Konto dam, Riam kanan dam, Karangates dam)¹ 	<ul style="list-style-type: none"> - Construction of Wlingi Dam and Wonogiri Dam in addition to 3 dams in the left-side column - River basin development and flood control (Brantas River, Solo River, and Jeneberang River) - Flood control (formulation of development plans, river improvement works, etc.) 	<ul style="list-style-type: none"> - Construction of multipurpose dams (Bili-Bili dam, Wonorejo Dam) - Multipurpose Dam hydroelectric power plants project - Flood control (formulation of development plans, river improvement works, etc.) - Assistance on establishment of water public corporation 	<ul style="list-style-type: none"> - Assistance on rehabilitation such as reservoir sedimentation countermeasures - Capacity building for organizations concerned with river basin management - Implementation of flood control project with sector loan 		

Note

¹: The reparation of the Second World War II was also used for the construction.

Abbreviations

1. *: WREFR & CIP: Water Resources Existing Facilities Rehabilitation and Capacity Improvement Project

2. WR: water resources, RB: river basin, develop.: development, manage.: management

Appendix 1-2: Telecommunications

1. Outline of the Sector

The sector is composed mainly of the telecommunications business sub-sector and broadcasting sub-sector. The economic cooperation that Japan have provided to this sector counts 89 projects broken down by 63 for the telecommunications and 26 for the broadcasting, as per given in the attachment.

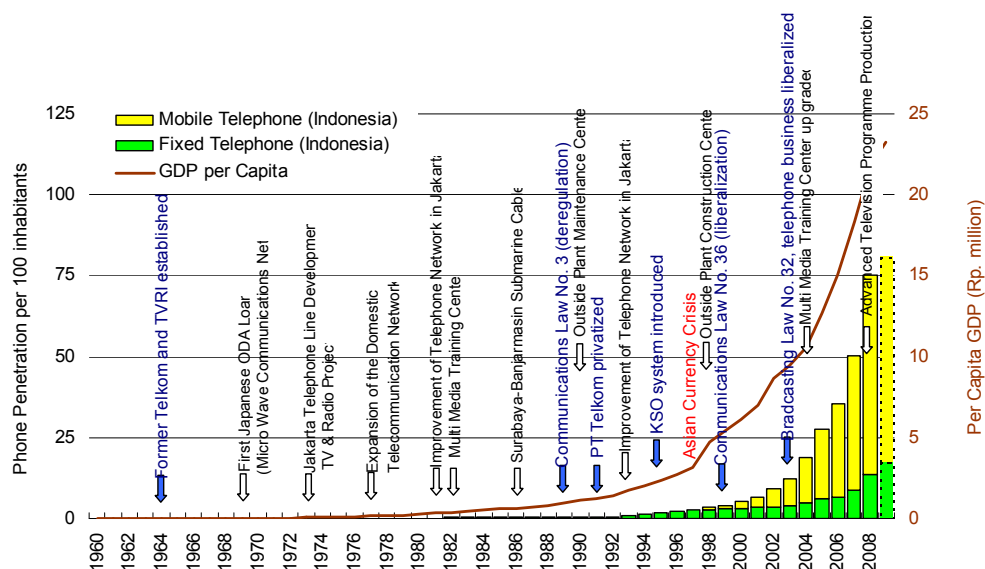


Figure 1: Vicissitudes of Communications and Broadcasting Sector in Indonesia

【National Enterprise Set Up】 The RRI (the former State-run radio station) started its broadcasting in 1945 immediately after the independence, while it was in 1960s that the TVRI (the former State-run television station) and State-run telephone-telegram stations were established. In the era, there was no economic assistance coming yet to the Indonesian communications and broadcasting sector from the international institutions. Hence, the country did not have enough financial capacity to advance in the infrastructure development for the sector. It was in 1969 when the First Five-year Development Plan was issued by the Suharto administration that a nation-wide telecommunication project was commenced financed by the Japanese ODA loans.

【Urgent Infrastructure Needs】 In the early 1970s, the World Bank Group (WBG) decided to provide its soft loan to the telecommunications project¹³, and Japan continued its economic cooperation through ODA loans, the infrastructure development of the country became in large scale. However, the required budget for the infrastructure was far gigantic than such assistance by WBG and Japan. Until 1980s, all of the projects

¹³ Telecommunications Project, IDA, Sector Investment and Maintenance Loan. Approved in 1970.

were urged, because existing facilities were far beyond the requirement in terms of quality and quantity. In the era, the land of Indonesia was too broad and islands of Indonesia were too many to speed up its communications developments.

【Plans and Growth】 Since the Third Five-year Development Plan (1979-1984), which targeted expansion of the capital city telephone network and spread of the radio and TV system in the outer islands, Indonesia took prudent tactics for challenging the difficult communications development from the long-term view point. It is introduction of the master planning, which made a great contribution to sector. In these years, a number of long term plans were built up for the trunk cables, telephone network systems, etc. Meanwhile, the Government of Indonesia attempted to ease former restrictions on private investment in this sector by issuing the Telecommunication Law in 1989. This deregulation worked well. A great amount of the private investment came into the telecommunications sub-sector since 1995 in the form of KSO System, which can be translated into the Indonesian BOT¹⁴. Notwithstanding the severe deterioration caused by the Asian Currency Crisis in 1997, the damage sustained by the telecommunication sub-sector was relatively limited compared with other sectors.

【Independence and Competition】 As the private investment became usable since the deregulation in 1989, the Indonesian telecommunications industry turned financially independent. Indonesia no longer needed to utilize the finance from the multi- and bilateral donor for the infrastructure development purpose. Upon such independence, the Indonesian telecommunications sector sailed into liberalization of the telephone and broadcasting industries with minimal exceptions by enacting the new regulations for the sector. Because of this change, the State owned telephone company had his business monopoly lost and the State owned broadcasting stations turned to the respective public stations. Despite the standpoint difference between telecommunications and broadcasting, the former state-run entities are now demanded to go out to the highly competitive business world. They are supposed to survive the respective business, keeping providing the high quality public services with their own tactics and specialties.

¹⁴ Build-Own-Operate. When developing a public infrastructure, the private sector invests and operates during the limited period agreed. When the agreed period ends, the project asset is transferred to the public sector.

As of 2009, according to the statistics of ITU (the International Telephone Union), the telephone penetration reaches over 150 million persons and ranks sixth¹⁵ in terms of number of the telephone users in the world. So the penetration ratio¹⁶ in 2008 is successful with 13.4% for the fixed telephone and 61.8% for the mobile telephone. Indonesia has already achieved the telecommunications with comparison to other Asian countries. As the telecommunications keeps contributing to the great growth of the Indonesian economy, it has been indispensable and essential to the people's living as well as the economic activities of the country.

Table 1: Telephone Penetration of Selected Asian Countries

	Fixed Phones	Mobile Phones
Vietnam	17.1%	86.9%
Philippines	4.4%	76.0%
Malaysia	15.9%	102.7%
Singapore	41.4%	142.0%
Thai	10.4%	92.0%
India	3.2%	44.7%
China	23.6%	56.3%
Indonesia	13.4%	61.8%
Japan	38.0%	87.7%

Source: ITU, as of 2008

2. Outline of Japan's Cooperation

In reply to the requests from the Government of Indonesia, Japan has been offering its cooperation to a number of the information and communications sector since 1960s to date in the form of the ODA loan, grant aid, and technical cooperation as well.

¹⁵ The first place is China (740 million), the second is India (520 million). Japan ranks seventh (110 million), based on ITU statistics.

¹⁶ The telephone penetration stands for number of telephones per 100 users.

Table 2: Issues and Cooperation in Telecommunication

Decades		1960s	1970s and the Early 1980s	Late 1980s	1990s up to Asian Currency Crisis	After Asian Currency Crisis
Telecommunication	Period Background	<ul style="list-style-type: none"> - East and west cold war - Green revolution - From President. Sukarno to President. Suharto - Oil dependent economic development 	<ul style="list-style-type: none"> - The 1st oil crisis (1973) - Crisis of international balance of payments (1982) 	<ul style="list-style-type: none"> - Plaza agreement (1985) - Finish of east and west cold war - Restructure from the oil dependent economy 	<ul style="list-style-type: none"> - Asia currency crisis (1997) - Resignation of President Suharto 	<ul style="list-style-type: none"> - Democratization - Decentralization
	Sector-wide Issues	<ul style="list-style-type: none"> - Establishment of institution 	<ul style="list-style-type: none"> - WBG followed Japanese ODA 	<ul style="list-style-type: none"> - Introduction of private money 	<ul style="list-style-type: none"> - Liberalization 	<ul style="list-style-type: none"> - Independence
	Priority Development Issues shown in 5-year plan	<ul style="list-style-type: none"> - Telephone-Teleg ram, TVRI established - Repair and rehabilitation of old facilities 	<ul style="list-style-type: none"> - Telephone network expansion in capital city - TV and radio system expansion in outer islands 	<ul style="list-style-type: none"> - Expansion of telecommunication network - Improvement of service quality - Achievement of 0.9% of telephone penetration 	<ul style="list-style-type: none"> - Liberalization of telecommunication and broadcasting 	<ul style="list-style-type: none"> - Privatization of PT. Telkom and TVRI reform - Capacity building
	Japanese Approach for Development Issues	<ul style="list-style-type: none"> - Pioneered with the first Japanese ODA loan 	<ul style="list-style-type: none"> - Institutional set up for the communications and information - Master planning - Capacity building 	<ul style="list-style-type: none"> - Development trunk lines 	<ul style="list-style-type: none"> - Capacity Improvement - Capacity building - Telephone network improve in large cities 	<ul style="list-style-type: none"> - Policy advices - Capacity building
	Priority Programs/ Projects for Japanese Cooperation	<ul style="list-style-type: none"> - Inter-island telecommunication networks 	<ul style="list-style-type: none"> - Microwave networks - Regional telephone networks - 5-year Integrated Development of Broadcasting 	<ul style="list-style-type: none"> - Java-Kalimantan submarine cable - Telephone Network Improve in Jakarta (1) 	<ul style="list-style-type: none"> - Outside Plant Construction Center - Telephone Network Improve in Jakarta (2) - Outside Plant Maintenance Center 	<ul style="list-style-type: none"> - Multimedia Training Center Upgrade - Broadcasting Strategy formulation and Planning

Japan has been advancing together with the history of the Indonesian Information and Communications Sector as it is providing the various kinds of the cooperation in the telephone system expansions (the infrastructure development) in large cities, regional towns, and outer islands, in preparation of the mid- and long term development plans (the master planning), and in promoting the technical engineers for construction and/or maintenance (the capacity building). It is Japan that first offered the financing to the Indonesian information and communications sector. It is also Japan that first carried out

the master planning therefore. In fact, around 40%¹⁷ of the telecommunication infrastructures of Indonesia are the achievements assisted by Japan. Compared to the cooperation by other multilateral funding institutions like the World Bank Group (WBG) and the Asian Development Bank (ADB), the Japanese presence must be paramount significance in terms of its times and amount.

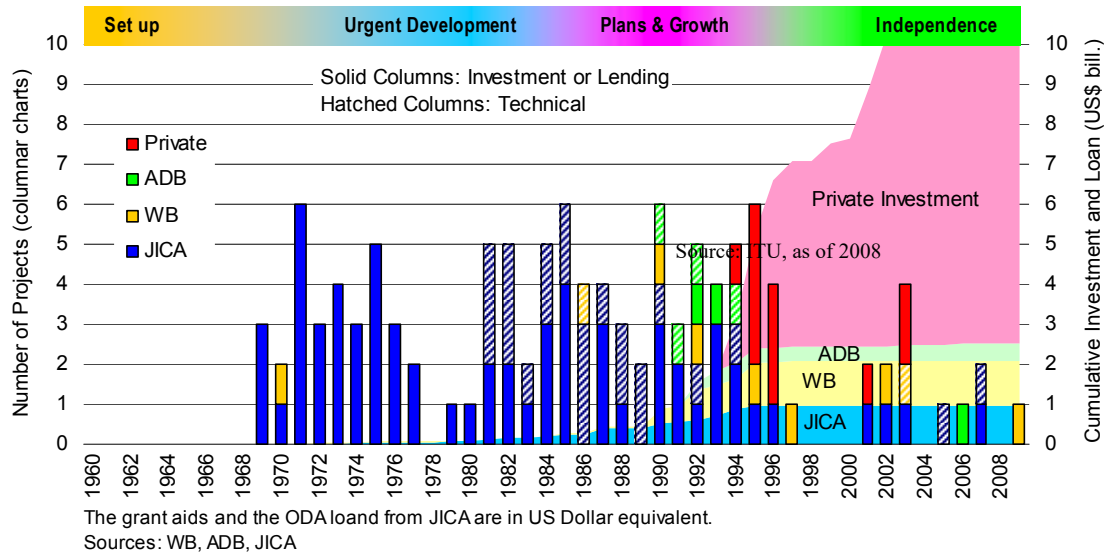


Figure 2: Cooperation of JICA and International Institutions to Indonesian Information and Communications Sector

Table 3:
Telecommunications Projects
Developed in 1970s

JICA Projects

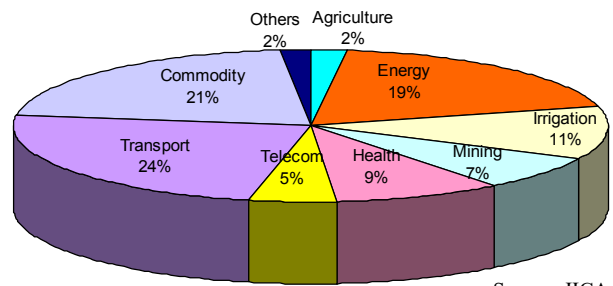
Communications (19 ODA loans and 2 grant aids)	
Coastal radio communications	1970 to 1973
Communications facility improvements (5 lots)	1971, 1972
Microwave communications network	1971, 1974, 1976
Telecommunications facilities (grant)	1972, 1977
Telephone line expansion in Jakarta	1973, 1975, 1976
Long Distance Communications	1973
Mobile Exchanges in Jakarta	1974
Java-Bali Microwave System Expansion	1979
National Radio Frequency Monitoring	1980
Broadcasting (8 ODA loans)	
Medium Wave Radio Network	1973, 1974, 1975
Local Cable Network Improvement	1975
Television Network	1975, 1977
Medium Wave Radio Network	1975, 1976

Source: JICA

WBG Projects

Communications (1 lending)	
Telecommunications Project (IDA)	1970
Broadcasting (none)	

Source: WBG



Source: JICA

Figure 3 Approved Amounts for Japanese ODA Loans (up to mid 1980s)

¹⁷ Capacity of the telephone communications is estimated to be 32 million lines as of 2008. Of these, around 14 million lines are achievements coming from the master plans worked with JICA through a number of the Development Studies.

3. Vicissitude of Indonesian Telecommunications Sector

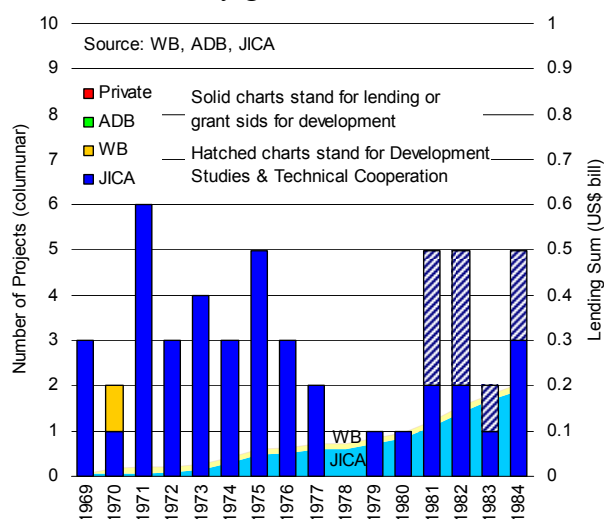
(1) The 1960s

In 1960s, it was urged to secure the long distance telecommunications linking many islands. Japan took the first initiative in 1969 for development of the inter-island telecommunications infrastructures. That is provision of the Japanese ODA loans to three telecommunications projects (one coastal communications and two microwave communications) in the first year of the First Five-Year Development Plan. It was the opening of the two-country cooperation in the sector, two years after Suharto regime began. At that time, economic cooperation from the international institutions was not started yet. Therefore, the Japanese ODA loan, of which lending conditions are very affordable, was sole finance source of Indonesia. Also, Indonesia had a good chance to introduce the Japanese technology into the country.

(2) The 1970s to the early 1980s

As the Suharto regime became stable in early 1970s, the national target was gradually shifting to the economy growth. It is imperative for economy growth to have the communications advanced. Thus, the Second Five-Year Development Plan (1974-1979) focused on development of the telecommunications networks connecting islands. The Government of Japan, in reply to the request from Indonesia, decided to advance its economic cooperation to the country by providing its ODA loans for the communications. Examples are installation of microwave communications and rehabilitation of superannuated facilities for the communications, as well as new construction of many TV and radio stations for the broadcasting.

However, Indonesia faced at that time many other issues in the fields of foods, jobs, transportation, electricity, etc. Notwithstanding the Third Five-Year Development Plan (1979-1984), which attempted the telephone lines expansion in the large cities, the radio and TV system expansion in the outer-islands, therefore, the Information and Communications Sector was not able to be the first priority. Cooperation from WBG at that time was not



No assistance was provided to the Indonesian Information and Communications Sector from the international institutions until mid 1980s. By contrast, in reply to the request from Indonesia Japan offered 31 information and communications infrastructure projects before 1980. Since 1981, Japan started its development studies aiming at more effective project development.

Figure 4: Activities of JICA, International Institutions, and Private Sector (up to early 1980s)

salient in comparison with other sectors. For example, WBG offered only one¹⁸ telecommunications project in 1970s and ADB did not started its operation yet to the same sector. As the available budget was very limited, the first master planning was commenced in 1981 looking for effective developments. That is, the JICA's Development Study on the Improvement of Telephone Network in the City of Jakarta. It was the first initiative in master planning in the communications sub-sector of the country worked by the Government of Japan.

The said master plan showed the specific priority projects and led to the following infrastructure development projects. Examples are, the Telephone Network in Jakarta 1st Phase (ODA loan in 1981), the same 2nd Phase (ODA loan in 1985), as well as the Telecommunications Project Phases III and IV (1990 and 1992 respectively) by WBG. In early 1980s, apart from the telephone lines network expansion, Japan also provided its economic cooperation for six projects in total; the telecommunications network for the eastern regions (1982), the Long Term Development Programs of the International Telecommunications (1983), the Five-Year Plan for the Integrated Development of Radio and Television Broadcasting (1984), etc. The county's target in the information and communications was becoming clear and clear.

In the Japan's master planning projects, technology transfer was highlighted, and therefore, many Indonesian engineers or government officials took training courses in Indonesia or in Japan. In the Information and Communications Sector, the Indonesian trainees count 606 persons in total since the first technical seminar organized in 1976.

¹⁸ The Telecommunications Project, IDA, Sector Investment and Maintenance Loan. Lending approved in 1970.

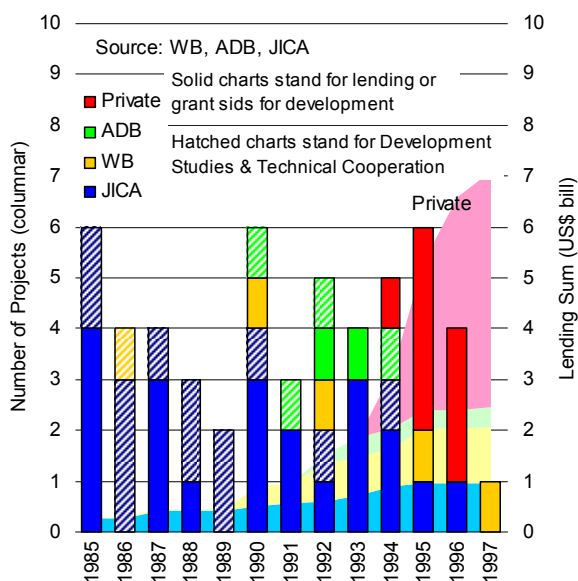
(3) The late 1980s

Since late 1980s, Japan backed up Indonesia by means of the Technical Cooperation as well as its ODA loans and Grant Aids. It greatly helped Indonesia amass many intangible fortunes of the information and communications.

According to the statistics of ITU, the telephone penetration of Indonesia was more or less 0.47% in 1988, which was far behind other South-East Asian countries. For instance, it was less than one half of the China's achievement at that time. In the era, the telephone lines could not reach rural areas but large cities, and accordingly non Jakarta residents could hardly expect to have a phone home. In fact, more than 40% of the telephone subscribers reside in Jakarta and its surrounding. This situation urged the Government of Indonesia to establish its policy of the

telephone system expansion within the Fifth Five-Year Development Plan (1989-1994). To do this, submarine trunk lines connecting islands first needed to be realized. As a great amount of soft loans from the international institutions were utilized to build the submarine cables in Indonesia, it was Japan that took the first action. In 1985, Japan decided to provide PT. Telkom with its ODA loans to the Java-Kalimantan Submarine Cable Project. The loans were put into the feasibility study (1986), engineering and construction (1987 to 1992), covering the whole process of the project realization. The said submarine project is the first realization of the Indonesian long distance sub-sea cable, which connects Surabaya (East Java) and Banjarmasin (South Kalimantan) by means of the 410 km long sub-sea optical cables with 280 Mbps of data transfer speed. In the on-shore site, a microwave telecommunication system was applied. The cable is now called "SB1" in the sector. As the digital technology was introduced, the SB1 could make contribution to improvement of the telecommunications reliability of the country. It is still working well, as one of the main trunk lines.

The Government of Japan supported Indonesia in 1988 through PT. Telkom for the Kalimantan-Sulawesi Submarine Cable Project, followed by the Java-Kalimantan cable. The Kalimantan-Sulawesi cable is one of the outcomes yielded from the Master Plan Study on the Telecommunications Network Development in the Eastern Region. The project development was later transferred to WBG. Until 1998, the 2,900 km long additional submarine cables were completed as the 2nd Surabaya-Banjarmasin cable (SB2), the Surabaya-Ujung Pandang-Banjarmasin (SUB), and the Pangkal Pinang-Pontianak (PP). Among many international institutions have made assistance to the Indonesian Information and Communications Sector, the Japan's operation must be



In addition to the ODA loans and grant aids, since mid 1980s Japan provide Indonesia with the Development Studies to amass many intangible fortunes of the information and communications.

Figure 7: Activities of JICA, International Institutions, and Private Sector (1980s to 1997)

evaluated paramount significance, in terms of its number of projects and amount provided.

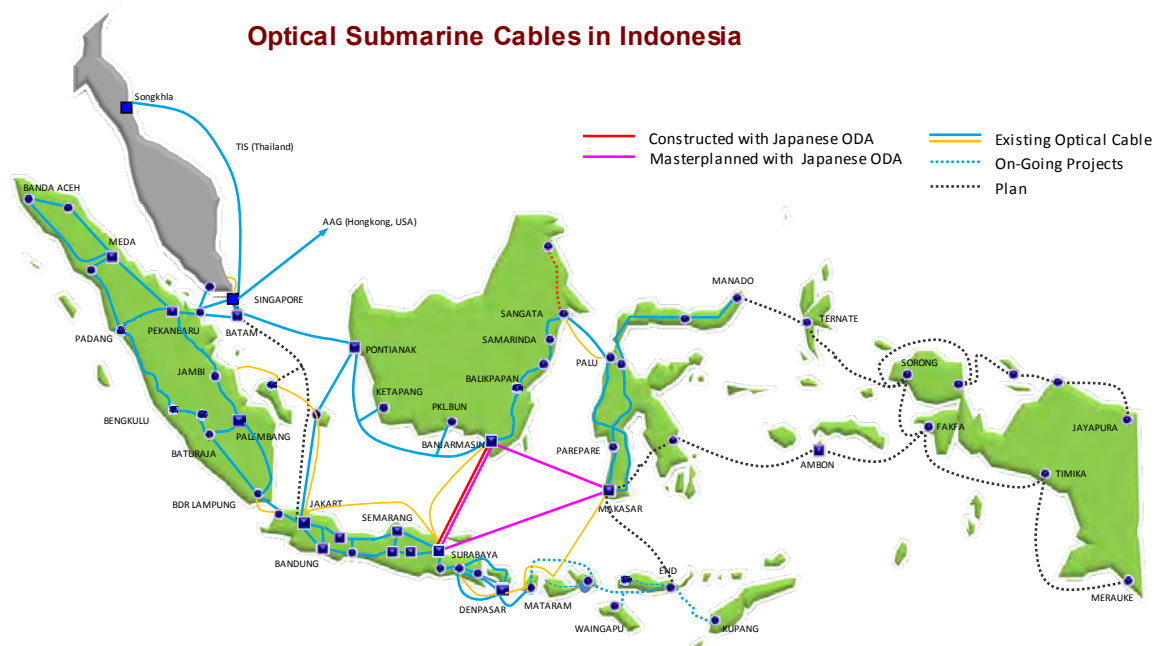
Surabaya-Banjarmasin Submarine Optical Cable Project

Approved / Reimbursed Amount : ¥7.95 billion / ¥6.23 billion

Agreed January 1987

Loan conditions : 2.6% p.a. of interest, 30 years of repayment (10 years of grace), Normal Untied

Disbursement completed : December 2001



To build a 400 km long optical submarine cables between Java and Kalimantan islands. To meet the expanding and diversifying telecommunications demands in 1980s, to secure reliability and security, to realize Kalimantan industry advanced, and to smoothen information exchange between the island. The execution agency is PT. Telkom. Japanese ODA loans are provided for the feasibility study, design and construction, with Japanese consulting firm involvement. Because of the project, the telecommunications became advanced not only in quantity, but also in quality by means of the digital data transfer technology. The project is working as one of the telecommunication backbones of the country.

(4) The 1990s

As the submarine cables were in progress, the priority was shifted to the telephone line networks. The Government of Indonesia made its decision of the enterprising capital investment to the large city suburbs where the telecommunication demand was high; Tangerang and Bekasi adjacent to Jakarta and Surabaya suburbs. This investment was to attempt to accelerate the economic growth where it was desired. In collaboration with WBG¹⁹, which had started its preparatory studies since 1986, Japan assisted Indonesia in development and improvement of the telephone line networks, in the form of the Extension and Improvement of Telecommunications Networks in Expanded Jakarta Areas (1993 and 1994) and the Regional Telecommunications Networks in Surabaya and Surrounding Areas Project (1992). These sets of the telephone line network

¹⁹ Telecommunications Technical Assistance Project, IBRD, 1986.

equipment greatly helped PT. Telkom build up the main asset framework. In the project for the Jakarta telephone network expansion, the Indonesian and Japanese engineers jointly worked. This joint work raised professional capability of the Indonesian technical experts. It is noteworthy that since the project human resources exchange has become very active to date. Meanwhile, the maintenance equipment procured by the said project is still in use in good condition, and recognized as a symbol of the two country's friendship.

The Extension and Improvement of Telecommunications Networks in Expanded Jakarta Areas

Amounts Approved/Disbursed : ¥17.35 billion / ¥16.66 billion

ODA Loan Agreed : November 1993, November 1994

Loan Conditions : 2.6% p.a. interest, 30 years of repayment (10 years of grace), Normal Untied

Disbursement completed : December 2000, December 2001

This project newly installed around 360 thousand telephone lines at 111 switching stations in and around Jakarta. Because of this, the telephone line capacity was increased as much as 210 thousand additional subscribers. As the international institutions, like WBG, made their cooperation to the telephone network expansion, the Japan's involvement corresponded to 60% of the total telephone line capacity in Jakarta in early 1990s. The telephone penetration rate was increased to be 10.7% in 2001 from 7.8% in 1998.



A Switching Center Built by the Extension and Improvement of Telecommunications Networks in Expanded Jakarta Areas

Moreover, the call completion rate was also dramatically improved due to the project; from 32% to 80% for the city calls and 28% to 71% for the long distance calls. (Values are compared between 1993 and 2001.) As the telephone user survey confirmed "satisfaction" of many subscribers in Cikarang Area, where a number of Japanese firms are located, it was evident that the facility of the telephone system was highly improved in and around Jakarta area.

During the project, the technology transfer was also highlighted. A number of the Indonesian engineers many Indonesian engineers or government officials took training courses in Indonesia or in Japan. Also, the joint work was made by the two countries' engineers at the planning and design stages of the project. The joint work raised professional capability of the Indonesian engineers. Since the project, human resources exchange has become very active to date. The maintenance equipment procured by the project is still in use in good condition.

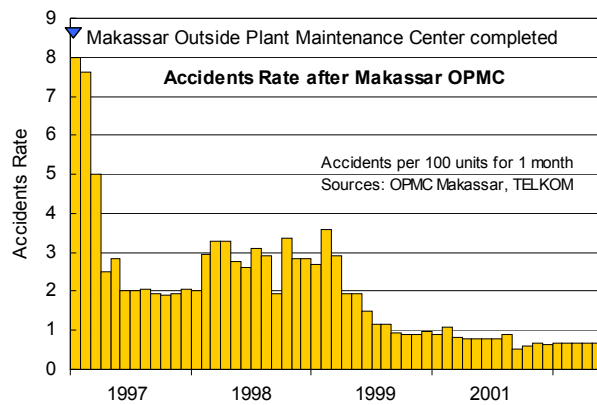
Apart from the Jakarta Telephone Line Extension, Japan made similar cooperation in Surabaya area, too. The Surabaya project was started with its master planning in 1992 and three-phase development was fully completed before 2001.

As PT. Telkom hastened to develop the telecommunications infrastructures, the telephone penetration rate was well improved to be over 1.0% in 1994 from 0.8% in 1993. The Indonesian communications was advancing well in association with Japan and the international institutions, nevertheless another issue came up. That is, the telephone system malfunctioned often. Statistics for 1992 reports that the accidents rate of Indonesia was raised to be 4.1 (accidents per 100 telephones a month), which was in fact 80 times more frequent than that of Japan. To overcome such issues, the Government of Indonesia establishes its new development plan for the

telecommunications sector. The Fifth National 5-year Development Plan (1989 – 1994) purposed to ensure the reliability and high quality services of the telephone system, while the Sixth National 5-year Development Plan (1995 – 1999) schemed to expand the telephone network by building additional 5 million telephone lines. Under these circumstances, Japan offered its ODA loans to the projects for development of the Outside Plant Maintenance Centers (OPMC) (1990 and 1994) and the Outside Plant Construction Center (1994), which obtained good results

in raise the telephone service quality and to expand the network. The Outside Plant Construction Center project, which in practice is a nursery for the Indonesian engineers, attracts a great deal of attention to the Japan’s partnership to Indonesia. The center has been enrolling more than 100 trainees, except for a couple of years after the Asian Currency Crisis, and takes the lead of the capacity building in the communications sector of the country. As the center was ISO-9001 certified, it is evident that the Indonesian technology in telephone line networking is advancing toward the international level.

In the broadcasting sub-sector in the era, Japan made its cooperation to Indonesia through JICA in the telecommunications infrastructures and capacity building thereof. Example projects are, the Training for Radio and Television (Technical Assistance and Grant Aid in 1982), the Five-Year Plan for the Integrated Development of Radio and Television Broadcasting (Development Study in 1984), the Equipment Supply to Television Training Center (Grant Aid in 1997).



The 15 Outside Plant Maintenance Centers (OPMC) built by the project improves reliability of the telephone system. For example, the accident rate was reduced due to the project to be 0.7 from 8.0 in Makassar Station of PT. Telkom.

Figure 6: Accidents Rate Reduced (OPMC Project)

(5) The 1990s to the 2000s

Since the period from end 1980s to mid 1990s, Indonesia has sailed into use of the private vitality and money. In 1989 the Communication Law No. 3 allowed the private sector participation into the telephone business within some limits. The law attempts to encourage the private investors to be involved in development of the telecommunications, which demands advanced technology and huge investment as well. The practical operation began with the KSO Scheme in 1995. Despite the negative effects of the currency crisis, the KSO Scheme enormously expanded the private investment in the sector. As a result, it is successful in increase of the telephone penetration and financial independence of the Indonesian telecommunication sub-sector. In fact, since KSO Indonesian telecommunications has been able to secure the budgets without taking its own risk and to continuously receive the technology transfer from the advanced private telephone operators.

The KSO Scheme

The KSO Scheme was called the Indonesian version of BOT (build-operate-transfer) It is a business scheme to utilize the funds and power of the private sector for rapid expansion of the fixed telephone business by granting the business rights to manage capital investments and business operations to private companies which share the profits with the state owned company, PT. Telkom. The scheme has been adopted in Sumatra, Western and Central Java, Kalimantan, and Sulawesi. The general view is that the KSO Scheme has failed to expand the telephone service and improve the efficiency of business operations, partly due to the unpredicted impact of the currency crisis. Presently, there is a move to recover granted business rights (repurchase shares in KSO companies).

Japan's cooperation has a relation with the said private participation, which brought the great advance in the Indonesian communications sub-sector. That is, the target of the KSO Scheme was mentioned within the Sixth National 5-year Development Plan (1995-1999), of which concept preparation was supported by ADB and Japan. The cooperation projects are the JICA's Telecommunications Network Development Plan for Repelita-VI (master plan study in 1992), and ADB's Development Plan and Master Plan²⁰. These master plans worked by Japan and ADB became not only the base of the Indonesian policy but partly the source of the technical specifications in the KSO tenders.

²⁰ Integrated National Telecommunication Strategic Development Plan and East Indonesia Strategic Master Plan, 1992, ADB

The country of Indonesia was seriously damaged to the private investment by the Asian Currency Crisis in 1997, nevertheless the Information and Communications Sector survived the disaster. As the private participation policy of Indonesia succeeded, the Information and Communications Sector of the country has been successful in a setup for self development not later than end 1990s. In fact, the Information and Communications Sector in Indonesia outgrew simple lending for asset building by using the international institutions.

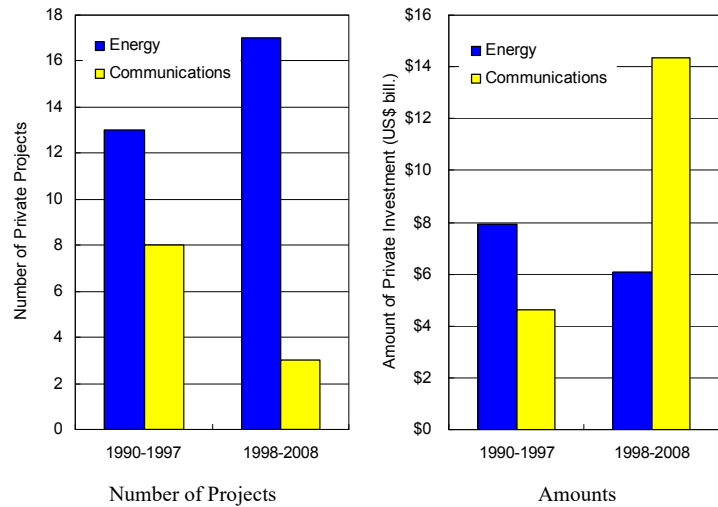
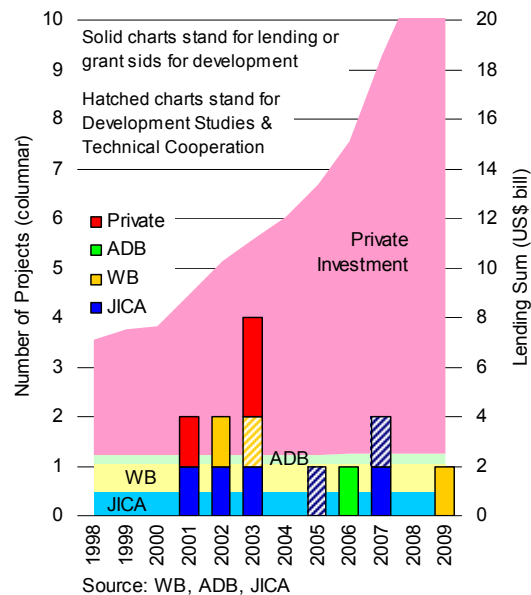


Figure 7: Private Investment Before and After the Asian Currency Crisis

As discussed earlier, the Information and Communications Sector becomes independent from the public financing, because it can utilize private money. In response to the independence of the Indonesian Information and Communications Sector, the international institutions accordingly changed their operations from financing for project development to the intangible cooperation, such as technical assistances and/or policy advice. Since 1998 Japan also altered the course of its cooperation to Indonesia toward policies, institutions, and advanced technology. Example projects are the Project for Improvement of Broadcasting Equipment for TVRI Jakarta News Division (Grant Aid in 2001), the Project for Improvement of Training Facilities for Multimedia Training Center (Grant Aid in 2002), the Capacity Development of the Ministry of Communication and Information Technology Concerning Broadcasting Strategy Formulation and Planning (Technical Cooperation in 2005), the Advanced Television Program Production (Technical Cooperation in 2007), etc. The Multimedia Training Center (MMTC) Project stands out prominently among other Japan's projects. The MMTC was build by the Japanese grant aid (the Training for Radio and Television, a project-type



Since the Asian Currency Crisis, Japan has been providing Indonesia with the policy propositions and advanced technologies through its grant aids or technical cooperation.

Figure 8: Activities of JICA, International Institutions, and Private Sector (1998 and onward)

Technical Cooperation in 1982) in order to develop faculties of those Indonesians who work for the broadcasting sector. The center is the sole broadcasting training body and has educated a large number of Indonesian talents. Today, MMTTC is not only the sole Indonesian broadcasting specific school, but an international training center for the foreign talents.

4. Summary

The telecommunications is represented by the telephone system. According to Prof. Waverman²¹, “the impact that mobile phones have on the developing world is as revolutionary as roads, railways and ports, increasing social cohesion and releasing the entrepreneurial spirit that stimulates trade and creates jobs.” Despite still on-the-way growing, it can be said that the Indonesian telecommunications sub-sector is successful in telephone penetration and has been making a great contribution to the economy growth of the country. The broadcasting sub-sector represented by television and radio has also contributing to unification and democracy spread of the country, which is composed of multiple races and religions spread widely over a great number of islands. It was evident to everybody that the role played was great because the first television broadcasting was relay of the Independence ceremony in 1962. Both of the telecommunications and broadcasting are business sector that have greatly been influenced by the technology advance and privatization, and its business mode got totally changed in Indonesia, too, as many other counties experienced.

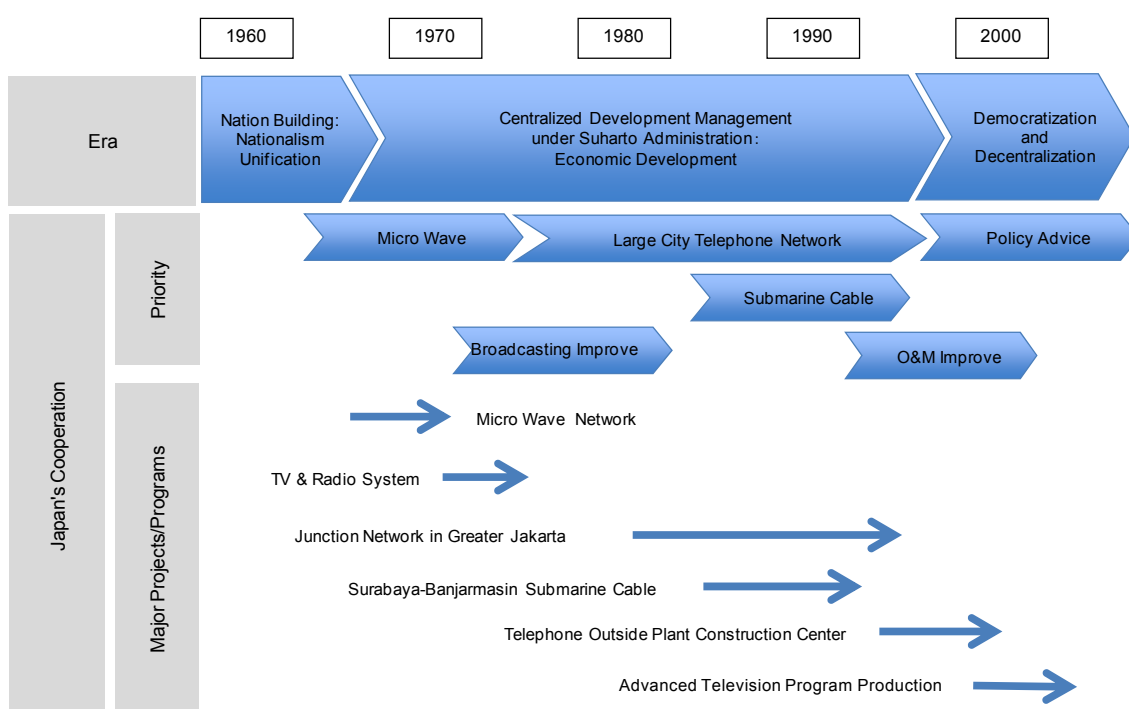


Figure 9: Changes of Cooperation in the Telecommunication Sector

²¹ Leonard Waverman. Dean of the Haskayne School of Business at the University of Calgary. “Telecommunications Infrastructure and Economic Development” joint with Lars Hendrik Roeller, American Economic Review, Sept 2001. He suggests that in the OECD, the spread of modern fixed-line telecoms networks alone was responsible for one third of output growth between 1970 and 1990.

