No.

The Republic of Indonesia
National Development Planning Agency
(BAPPENAS)

The Republic of Indonesia
Basic Study for
Mid-Term Infrastructure Development

FINAL REPORT

March 2010

JAPAN INTERNATIONAL COOPERATION AGENCY

NIPPON KOEI CO., LTD.

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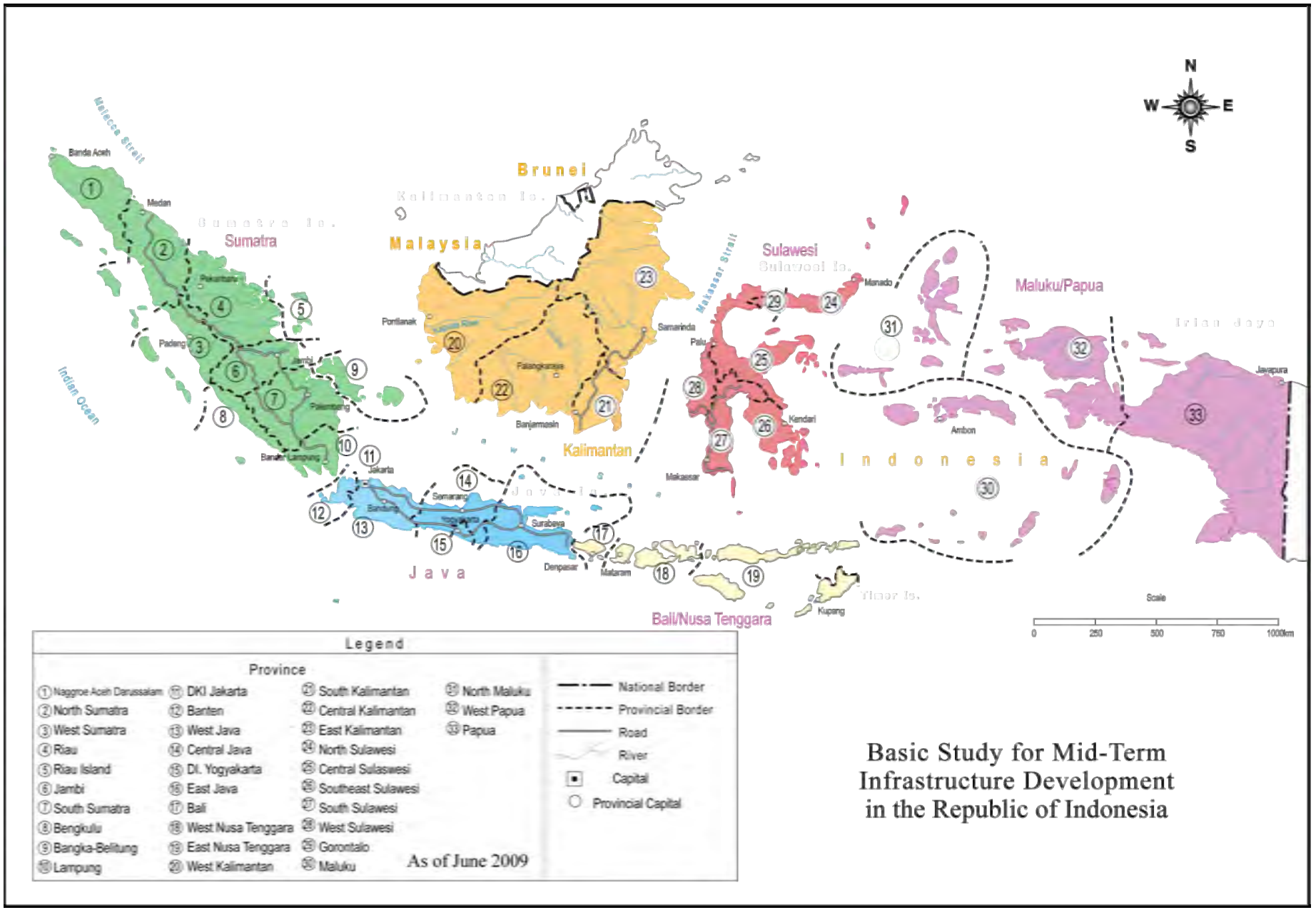

Basic Study for Mid-Term Infrastructure Development in the Republic of Indonesia

The Republic of Indonesia
Basic Study for Mid-Term Infrastructure Development

Final Report

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Abbreviations	Indonesian	English
ADB		Asian Development Bank
ADF		Asian Development Fund,
ADF		Agency Francaise de Development
ANS		Air Navigation Services
ANSP		Aviation navigation service providers
APBD	Anggaran Pendapatan dan Belanja Daerah	Regional Government Budget
APBN	Anggaran Pendapatan dan Belanja Negara	National Government Budget
APBN-P	Anggaran Pendapatan dan Belanja Negara Perubahan	Revised National Government Budget
AP-I	Angkasa Pura I	Indonesia Airport Corporation I
AP-II	Angkasa Pura II	Indonesia Airport Corporation II
APLN	Anggaran PT PLN	PLN's Budget
ASEAN		Association of South-East Asian Nations
ATC		Area Traffic Control
ATM		Air Traffic Management
AWLR		Automatic Water Level Recorder
BAPPENAS	Bedan Perencanaan Pembangunan National	National Development Planning Agency
BHMN	Badan Hukum Milik Negara	State-Owned Legal Entity
BI	Bank Indonesia	Indonesia Central Bank
BKF	Badan Kebijakan Fiskal	Fiscal Policy Agency
BKPM	Badan Koordinasi Penanaman Modal	Indonesia Investment Coordination Board
BOO		Build Own Operate
BOT		Build Own Transfer
BP Migas	Badan Pelaksana Kegiatan Usaha Hulu Minyak dan Gas Bumi	The Implementing Agency for Upstream Oil and Natural Gas Business
BPD	Bank Pembagunan Daerah	Regional Development Bank
BPJT	Badan Pengatur Jalan Tol	Toll Road Management Agency
BPK	Badan Pemeriksa Keuangan	Supreme Audit Agency
BPKP	Badan Pengawasan Keuangan dan Pembangunan	Financial and Development Supervisory Board
BPLS	Badan Penanggulangan Lumpur Sidoarjo	Sidoarjo Mud Management Board
BPN	Badan Pertanahan Nasional	National Land Agency
BPP-SPAM	Badan Pendukung Pengembangan Sistem Penyeidaan Air Minum	Water Supply Development Supporting Agency
BPS	Badan Pusat Statistik	Central Bureau of Statistic
BRICs		Brazil, Russia, India, and China
BRT		Bus Rapid Transit
BUJT	Badan Usaha Jalan Tol	Toll-road Business Agency
BUMD	Badan Usaha Milik Daerah	Regional Owned Enterprises
BUMN	Badan Usaha Milik Negara	State-Owned Enterprises
CCT		Clean Coal Technology
CDM		Clean Development Mechanism

Abbreviations	Indonesian	English
CMEA		Coodinating Ministry of Economic Affairs
CNS		Communication, Navigation , Surveillance
CNS/ATM		Communication, Navigation, Surveillance/ Air Traffic Management
CPI		Consumer Price Index
CSR		Corporate Social Responsibility
DAK	Dana Alokasi Khusus	Specific Allocation Fund
DAU	Dana Alokasi Umum	General Allocation Fund
DBH	Dana Bagi Hasil	Revenue Sharing Fund
DGAC		Directorate General of Air Communications
DGCA	Direktorat Jenderal Perhubungan Udara	Directorate General of Civil Aviation
DGEEU		Directorate General of Electricity and Energy Utilization
DGR		Directorate General of Railways
DGWR	Directorate Jenderal Sumber Daya Air	Directorate General of Water Resources
DIPA	Daftar Isian Pelaksanaan Anggaran	Budget Implementation Registration Form
DIPA-K/L	Daftar Isian Pelaksanaan Anggaran-Kementerian/Lembaga	List of Field Budget Implementation for Ministries and Agencies
DOT		Department of Transportation
DPD	Dewan Perwakilan Daerah	Regional Representative Board
DPPP (DP3)	Direktorat Pengelolaan PenerusanPinjaman	Directorate for the Management of Local Government Sub-loans
DPR	Dewan Perwakilan Rakyat	House of Representative
DPRD	Dewan Perwakilan Rakyat Daerah	Regional House of Representative
DPU	Departemen Pekerjaan Umum	Ministry of Public Works
DSM		Demand Side Management
EE		Energy Efficiency
FAO		Food and Agriculture Organization of the United Nations
FDI		Foreign Direct Investment
FTP		Fast Track Program (for electric power development)
FY		Fiscal Year
GB Island		Great Britain Island
GDP	Pendapatan Domestik Bruto (PDB)	Gross Domestic Product
GHG		Greenhouse Gas
GOI		Government of Indonesia
GRDP		Gross Regional Domestic Product
GW		Giga Watt
GWh		Giga Watt Hour
HSD		High Speed Diesel
IBRD		International Bank for Reconstruction and Development

Abbreviations	Indonesian	English
ICAO		International Civil Aviation Organization
ICOLD		International Commision of Large Dam
ICP		Indonesia Crude Oil Price
ICT		Information and Communication Technology
IDA		The International Development Association
IDB		Islamic Development Bank
IDPL		Infrastructure Development Program Loan
IFC		International Finance Corporation
IFI		International Fund Institution
IIFF		Indonesia Infrastructure Financing Facility
ILS		Instrument Landing System
IMF		International Monetary Fund
IMO		Infrastructure Maintenance and Operation
IPP		Independent Power Producer
ISDA		International Swaps and Derivative Association
ISSC		International Ship Security Certificate
ITS		Intelligent Transportation System
IWRM		Integrated Water Resources Management
Jamali	Java-Bali-Madura	
JBIC		Japan Bank for International Cooperation
JICA		Japan International Cooperation Agency
JORR		Jakarta Outer Ring Road
JV		Joint Venture
KKPPI		National Committee for the Acceleration of Infrastructure Provision Policy
kmc		Kilo Meter Circuit
KRD	Kereta Rel Diesel	Diesel Multiple Unit
KRDE	Kereta Rel Diesel Elektrik	Diesel Electric Multiple Unit
KRL	Kereta Rel Listrik	Electric Multiple Unit
KTI	Kawasan Timur Indonesia	Eastern Indonesia
kV		KiloVolt
kWh		Kilo Watt Hour
LAA	Listrik Aliran Atas	Overhead Wire
LRT		Light Rail Transit
MDC		More Developed Contry
MDGs		Millenium Development Goals
MEMR		Ministry of Energy and Mineral Resources
MIC		Middle Income Country
MMCFD		Million Cubic Feet per Day
MMSCFD		Million Standard Cubic Feet per Day
MOA		Ministry of Agriculture
MOE		Ministry of Environment
MOF		Ministry of Finance
MOHA		Ministry of Home Affairs

Abbreviations	Indonesian	English
MOT		Ministry of Transportation
MPW		Ministry of Public Works
MRT		Mass Rapid Transit
MTEF		Medium-term Expenditure Framework
MTFF		Medium-term Fiscal Framework
Musrenbang	Musyawarah Perencanaan Pembangunan	Meeting for Development Planning
MVA		Mega Volt Ampere
MW		Mega Watt
NAD	Nanggroe Aceh Darussalam	
NGO		Non-Governmental Organization
NJOP	Nilai Jual Obyek Pajak	Tax Object Selling Price
NOx		Nitrogen Oxide
NTB	Nusa Tenggara Barat	West Nusa Tenggara
NTT	Nusa Tenggara Timur	East Nusa Tenggara
O&M		Operation and Maintenance
ODA		Official Development Assistance
OECD		Organisation for Economic Co-operation and Development
OOF		Other Official Flow
P3CU		PPP Central Unit
PBB		Performance Based Budget
PDAM	Perusahaan Daerah Air Minum	Publicity-owned water company
PELINDO	PT. Pelabuhan Indonesia	Indonesia Port Corporation
PERPAMSI	Persatuan Perausahaan Air Minum Seluruh Indonesia	Association of Indonesian Water Companies
Perpres, PP		Presidential Regulation
PFI		Private Finance Initiative
PHLN	Pinjaman dan Hibah Luar Negeri	Foreign Loan and Grant
PIMAC		Public Private Infrastructure Investment Management Center
PJT1	Perum Jasa Tirta 1	Public Water Service Corporation
PLTP	Pembangkit Listrik Tenaga Panas Bumi	Geothermal Electricity Power Plant
PLTU	Pembangkit Listrik Tenaga Uap	Steam Elctricity Power Plant
PNBP	Penerimaan Negara Bukan Pajak	Non Tax Revenues
PNPM	Program Nasional Pemberdayaan Masyarakat	National Program for Community Empowerment
PP	Peraturan Pemerintah	Government Regulation
PPA		Power Purchase Agreement
PPh	Pajak Penghasilan	Income Tax
PPI		Private Participation in Infrastructure
PPJT	Perjanjian Pengusahaan Jalan Tol	Toll Road Development Agreement
PPN	Pajak Pertambahan Nilai	Value Added Tax
PPP		Public Private Partnerships
Propenas	Program Pembangunan Nasional	National Development Program

Abbreviations	Indonesian	English
PSO		Public Service Obligation
PT KAI	Kereta Api Indonesia	Indonesia Railways Company
PT Pelni	Pelayaran Nasional Indonesia	The National Indonesian Shipping Company
PT Pertamina	Perusahaan Tambang Minyak Nasional	National Oil Company
PT PGN	Perusahaan Gas Negara	Government Gas Company
PT PLN	Perusahaan Listrik Negara	National Electricity Company
PT Telkom		Telecommunication Company
Renja-KL	Rencana Kerja-Kementerian Lembaga	Work Plan for Ministries and Agencies
Renja-SKPD		Work Plan of Work Unit of the Regional Government
Renstra-KL	Rencana Strategi-Kementerian Lembaga	Strategic Plan for Ministries and Agencies
Renstra-SKPD		Strategic Plan for of Work Unit of the Regional Government
RKA-KL	Rencana Kerja dan Anggaran Kementerian/Lembaga	Work Plan and Budget for Ministries and Agencies
RKP	Rencana Kerja Pemerintah	Government Work Plan
RKPD	Rencana Kerja Pemerintah Daerah	Regional Government Work Plan
RPJM	Rencana Pembangunan Jangka Menengah	Medium-Term Development Plan
RPJMD	Rencana Pembangunan Jangka Menengah Daerah	Regional Medium-Term Development Plan
RPJMN	Rencana Pembangunan Jangka Menengah Nasional	National Medium-Term Development Plan
RUKD	Rencana Umum Ketenagalistrikan Daerah	Regional Eletricity General Plan
RUKN	Rencana Umum Ketenagalistrikan Nasional	National Eletricity General Plan
RUPTL	Rencana Usaha Penyediaan Tenaga Listrik	Electric Power Provision Plan
RUU&NK	Rencangan Undang-undang & Nota Kesepahaman	Bill and Note of Understanding
SAL	Saldo anggaran Lebih	Comulated Budget Surplus
SBI	Sertifikat Bank Indonesia	Certificate of Bank of Indonesia
SBI 3M		State Bank of Indonesia 3 months
SBN	Surat Berharga Negara	Government Securities
SBSN	Surat Berharga Syariah Negara	Islamic Based Government Securities
SE-MK	Surat Edaran-Menteri Keuangan	Circulation Letter by Ministry of Finance
SKPD	Satuan Kerja Perangkat Daerah	Regional Work Unit
SLA	Penerusan Pinjaman	Subsidiary Loan Agreement
SOE		State-Owned Enterprises
SOx		Sulfur Oxide
SPM	Standar Pelayanan Minimum	Minimum Service Standard
SRI		System for Rice Intensification
TAC		Track Access Charges
TDL	Tarif Dasar Listrik	Electricity Base Tariff Rate

Abbreviations	Indonesian	English
TEU		Twenty Foot Equivalent Unit
TIS		Traffic Information Systems
TOE		Tonne of Oil Equivalent
TWh		Tera Watt Hour
UK		United Kingdom of Great Britain and Northern Ireland
UNDP		United Nation Development Program
UNESCAP		UN Economic and Social Commission for Asia and the Pacific
USA		United States of America
UU	Undang-undang	Act/Law
VAT		Value Added Tax
VFM		Value For Money
WKP	Wilayah Kerja Pertambangan	Mining Work Area
WUA	Perkumpulan Petani Pemakai Air (P3A)	Water User's Association

Chapter 1 Introduction

1.1 Background and Basic Understandings of the Study

Gross Domestic Product (GDP) per capita of Indonesia had stayed below $1,000 level during the economic crisis in 1997. With an annual increase ratio of more than 6%, GDP per capita had recovered to nearly $2,000 level in 2007, which is more than the level before the economic crisis. Blessed with natural, agricultural and human resources, Indonesian economy is expected to grow continuously. However, to keep the current level of growth sustainably and to grope for further growth of socio economic development, a comprehensive development plan with medium to long-term point of view toward the national development is required. To redress the development gaps among regions toward the balanced development, to develop and utilize abundant natural resources effectively, and to promote foreign and private investments for the sustainable economic development, it is necessary to promote the development of economic infrastructure.

The Government of Indonesia formulated National Medium-term Development Plan (RPJM 2004-2009) taking the following items as national development agendas, and made efforts to accomplish the agendas by setting targets, priority issues, and basic policies:

1) Create a secure and peaceful Indonesia;
2) Establish justice and democratic society; and
3) Increase the social and economic welfare of the people.

The development of economic infrastructure is behind the schedule caused by the reasons like:

1) Lack of government budget for the development of large scale infrastructure; and
2) Absence of policy formulation based on the medium and long-term views.

Under such circumstances, the Government of Indonesia is scheduled to formulate the next National Medium-term Development Plan (2010-2014) within the year 2009 in order to promote the strategic development of economic infrastructure.

In this study, based on the assessment results of issues on the current National Medium-term Development Plan (RPJM 2004-2009), recommendations will be examined and provided on the measures to effectively promote the development of infrastructures in the next National Medium-term Development Plan (RPJM 2010-2014) in the sector of transportation, power, water and sewerage, flood control/irrigation. Further, this study will examine and propose the candidate projects to be listed in the next Blue Book 2010-2014, and PPP Book.

Indonesia annually receives loans amounting 2.5 billion US dollars mainly from Japan's ODA, the World Bank, and the Asian Development Bank. The impact of such debt on the national budget is not negligible, thus examination will be made on financing in this study from medium to long-term points of view.

The Government of Japan formulated its "assistance policy to Indonesia" in 2004, which raised "development of economic infrastructure" as one of the five important points. Japan's ODA has been supporting the development of economic infrastructures through provision of Yen Loans to a considerable number of infrastructure development projects listed in the Blue Book as candidate projects for foreign development assistance in the sectors of transportation, power, water and sewerage, and water resources development. There would be no further changes on this policy, meaning that future Yen Loan projects will be selected from the Blue Book to be prepared.

1.2 Objectives of the Study

The objectives of the study are as follows:

1) To assist BAPPENAS in formulation of the next National Medium term Development Plan (2010-2014), which works will be mainly handled by BAPPENAS.

2) To examine and propose effective measures to further promote infrastructure development

3) From the view point of realizing the above measures, examine and recommend the candidate project list to be put into the next Blue Book (2010-2014).

4) During the course of above works, make clear the impacts of sovereign debt on the government finance in the medium to long-term.

1.3 Work Schedule

1.3.1 Work Plan and Bar Chart

According to the original study schedule presented in the Inception report, this study will be conducted from the middle March 2009 until the end of September 2009, for a period of about seven months. The following table shows the details of work plan in each stage. Figure 1.3.1 shows the overall schedule of the study shown with Indonesian government schedule.

Stage	Major work items	Original Schedule (Actual Achievement)
(1) Preparatory Work in Japan	[1] Collection and Examination of the Existing Documents and Information [2] Review of Policy and Plan of Infrastructure Development in Indonesia [3] Review of Current Status of Donor's Assistance and Policy in Infrastructure Development [4] Collection and Examination of Review Results of RPJM 2005-2009 [5] Preparation of Inception Report	Middle to end of March 2009 0.3 month
(2) First Work in Indonesia	[1] Explanation and Discussion on IC/R [2] Confirmation of Work Progress of Formulation of New RPJM 2010-2014 [3] Preparation of Draft Strategy for Infrastructure Development in Each Sector → ***Presentation to GOI side for discussion*** [4] Identification of Issues to be Prioritized in Each Sector → ***Presentation to GOI side for discussion*** [5] Identification of Cross-Sector Issues in Infrastructure Development → ***Presentation to GOI side for discussion*** [6] Request of Additional Document and Information to BAPPENAS [7] Report to JICA Indonesia Office	End of March to middle of April, 2009 0.8 month
(3) First Home Work in Japan	[1] Report to JICA Headquarters [2] Analysis of Results of First Work in Indonesia and Collected Documents and Information, re-planning of Approach of 2nd Work in Indonesia [3] Preparation for 2nd work in Indonesia	End of April, 2009 0.3 month
(4) Second Work in Indonesia	[1] Review of Draft Strategy for Infrastructure Development, Issues to be Prioritized in Each Sector and Cross-Sector Issues in Infrastructure Development → ***Presentation to GOI side for discussion*** [2] Develop action plans and indicators to monitor the progress of development [3] Examine and propose measures to accelerate infrastructure development considering the nature of fund for development [4] Compare, arrange and evaluate utilization of ODA and PPP scheme for the promotion of infrastructure development [5] Forecast of macroeconomic framework of Indonesia (Indication of multiple scenario) [6] Analysis on impact of public external debt for each macroeconomic framework [7] Draft recommendation on the first concept draft of the next National Medium term Development Plan (RPJM 2010-2014) → ***Presentation to GOI side for discussion*** [8] Confirmation, analysis and discussion on the first concept draft (in case the first concept draft is ready) [9] Report to JICA Indonesia Office	Beginning to end of May, 2009 1.0 month
(5) Second Home Work in Japan	[1] Report to JICA Headquarter the Result of Second Work in Indonesia [2] Preparation of Interim Report → ***Submission to JICA for discussion and consent***	Middle of June, 2009 0.5 month

Stage	Major work items	Original Schedule (Actual Achievement)
(6) Third Work in Indonesia	[1] Explanation and Discussion of Interim Report [2] Monitoring of Procedure of Collecting Local Government and Community Opinions on 1st Concept Draft [3] Collection and Analysis of Infrastructure Development Plans submitted by other Ministries and Agency concerned [4] Cross-sector Integration of Infrastructure Development Plan [5] Cross-sector Integration of Proposed Project to Blue-books and PPP [6] Preparation of List of Proposed Project in the Blue-books based on Plural Scenario Analysis on Appropriate Investment Size → ***Presentation to GOI side for discussion*** [7] Preparation of draft list of proposed project under PPP → ***Presentation to GOI side for discussion*** [8] Report to JICA Indonesia Office	Beginning of July to end of July, 2009 1.0 month (August to December, 2009)
(7) Third Home Work in Japan	[1] Report to JICA Headquarter the result of third work in Indonesia [2] Preparation of Draft Final Report → ***Submission to JICA for discussion and consent***	Beginning to middle of August, 2009 0.5 month (December, 2009 to beginning of January, 2010)
(8) Fourth Work in Indonesia	[1] Explanation and Discussion on Draft Final Report [2] Preparation of Recommendations of 1st Concept Draft of RPJM (2010 – 2014) [3] Finalization of Proposed Projects List in Blue-books → ***Presentation to GOI side for discussion*** [4] Finalization of Proposed Projects List to be implemented under PPP → ***Presentation to GOI side for discussion***	Beginning of September, 2009 0.3 month (End of January, 2010)
(9) Forth Home Work in Japan	[1] Report to JICA Headquarter the Result of Fourth Work in Indonesia [2] Preparation of Final Report	End of September, 2009 0.4 month (February to March, 2010)

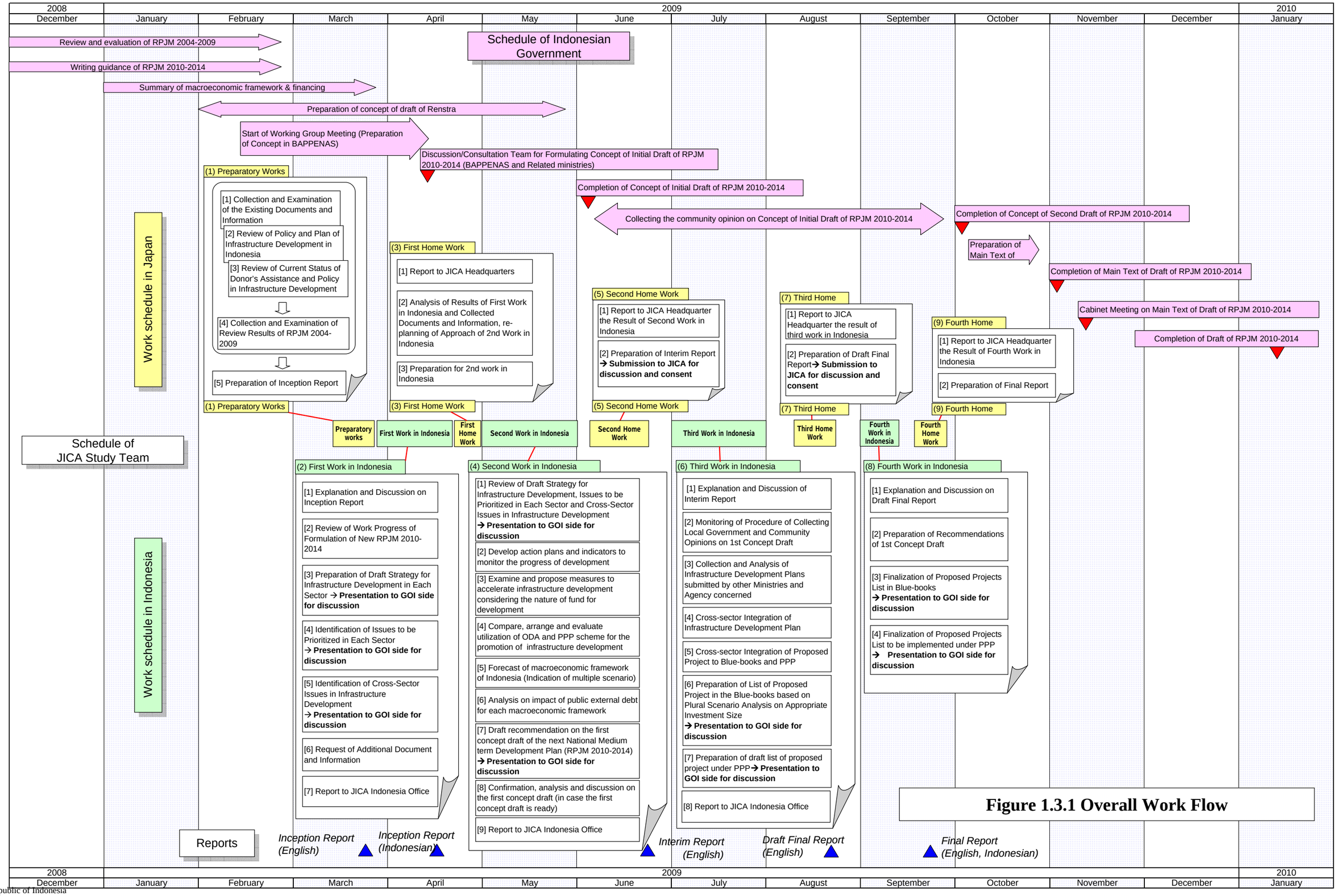


Figure 1.3.1 Overall Work Flow

Chapter 2 Infrastructure Development Strategy for the Next Five Years

2.1 Economic Performance and Structure of Indonesia

2.1.1 Recent Economic Performance of Indonesia

The Indonesian economy had marked a high growth in the early 1990's. The GDP growth rate was 8.0% on the average between 1990 and 1996. The speed of development was as high as that experienced in Thailand and Malaysia. Industrialization and modernization of agriculture were promoted and GOI's policies were successful in achieving the developmental targets. With regard to industrialization, the transfer from "import substitution" to "export-promotion" was accelerated. These policies had created large employment opportunities.

Foreign direct investment from overseas increased since the late 1980's. Many countries like ASEAN countries and China implemented deregulation of foreign capitals and invited foreign direct investment. Indonesia also adopted deregulation, for example, by admitting investment from companies with 100% foreign capital. However, the timing was a little late and sufficient capital did not flow into the country to develop international production networks.

The Asian financial crisis in 1997 seriously affected Indonesia's economy. After the crisis, most of the private investments were stalled and the economy became inactive. Budget for infrastructure development as well as for renovation of existing facilities was drastically decreased and most of the important projects were canceled or suspended. Due to such low investment, the speed of recovery of the Indonesian economy was slow and it impeded socio-economic development of the country.

Since 1997, GOI had implemented an IMF program and struggled to recover from the crisis. Due to its efforts, the economy had shown a good recovery and the IMF program ended in 2003. Even after that, GOI has continuously addressed its structural reforms. Although the economy sometimes fluctuates due to unexpected events, such as global market turbulences and natural disasters, the influence over its macro-economy remains small[1] and the economic situation of Indonesia is becoming better and more stable in recent years. Such tendencies can be observed in key economic indicators as shown in Table 2.1.1.

[1] IMF Press Release No. 09/201 tells that "Benefiting from these strong initial conditions, the Indonesian economy has thus far withstood the shocks well. After enduring substantial market pressures during the last quarter of 2008, there are signs of returning market confidence as indicated by the stronger rupiah, lower interest rates, and a recovery in the stock market." "Looking forward, we have raised our projection of economic growth for 2009 to 3-4 percent with inflation expected to decline to about 5 percent by the end of the year." Currently, IMF projects that the GDP growth rate will be 4.0% in 2009 and 4.8% in 2010. (Source: IMF's "World Economy Outlook (July 2009))

Table 2.1.1 Key Economic Indicators of Indonesia

Years / Indicators	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
GDP Growth Rate	0.2%	4.8%	3.5%	3.6%	4.1%	5.1%	5.6%	5.5%	6.3%	6.1%
Inflation Rate (CPI)	2.0%	9.4%	12.6%	10.0%	5.1%	6.4%	17.1%	6.6%	6.6%	11.06%
Unemployment Rate	6.40%	6.10%	8.10%	9.06%	9.57%	9.86%	10.26%	10.28%	9.11%	8.39%
Foreign Currency Reserve (US$ Billion)	27.3	29.3	27.9	31.2	36.3	36.3	34.7	42.6	56.9	51.6
Exchange rate (Rp./$ At year end)	7,100	9,595	10,400	8,940	8,425	9,327	9,830	9,020	9,419	10,950
Trade Balance (US$ Billion)	24.7	28.5	25.3	25.7	28.6	25.1	28.0	39.6	39.6	7.97
Interest Rate (SBI 3M, At year end)	12.6%	14.3%	17.6%	13.1%	8.3%	7.4%	12.75%	9.5%	7.8%	11.08%
Credit Rating (S&P, at year end)	CCC+	B-	CCC	CCC+	B	B+	B+	BB-	BB-	BB-

Source: BPS, BI, S&P

Many of the economic indicators have improved over the last decade. For example, the GDP growth rate has been improving since 2000. Although it took several years, the economy has steadily recovered with a strong increase in domestic consumption. Foreign currency reserve shows an increasing trend and compared to 1999, the amount almost doubled in 2007. This is due to GOI's strict foreign currency control in the early 2000s. Also, trade balance has been improving, and the export industries are becoming active as before the financial crisis. Credit rating, which is a very important indicator for foreign investors, is also rising gradually and this indicates that credit worthiness of Indonesia is improving. This helps GOI to increase the issuance of the national bond in the recent years.

However, in contrast to these healthy indicators, some indicators such as inflation rate (CPI) and interest rate have not shown good performance. These rates are rather unstable and they especially marked high in 2005 and 2008 when the world's oil price increased sharply. This implies that these indicators are sensitive to world economic conditions (e.g., fluctuation of prices of key commodities and exchange rates).

Besides these two indicators, the unemployment rate has not been good. The rate remains high at around 8 to 10% and worsened since 2001. This means economy is not growing enough to absorb the large labor force. The government should adopt a policy to stimulate job creation to improve the unemployment rate. One of such policies is to promote industrialization which should be reinforced by improved provision of infrastructure. The following Table 2.1.2 shows the impact of each industry on employment.

Table 2.1.2 Impacts on Total Employment, 1985-2005

Industry	Growth rate of employment (1)	GDP growth rate (2)	Elasticity (3) =(1) / (2)	Employment share (1985) (4)	Impact on total employment (5) =(3) x (4)
Agriculture, forestry, hunting, fishery	0.95%	2.47%	0.38	54.7%	0.21
Mining and quarrying	3.89%	2.01%	1.94	0.7%	0.01
Manufacturing	3.62%	6.96%	0.52	9.3%	0.05
Electricity, gas and water	5.13%	10.27%	0.50	0.1%	0.00
Construction	3.89%	5.23%	0.74	3.4%	0.03
Wholesale trade, retail trade, restaurants and hotels	3.25%	5.17%	0.63	15.0%	0.09
Transportation, storage, communication	5.30%	6.76%	0.78	3.1%	0.02
Financing, insurance, real estate and business services	7.59%	4.67%	1.63	0.4%	0.01
Community, social and personal services	1.08%	3.66%	0.30	13.3%	0.04

Source: Socioeconomic Study for Assisting Formulation of New JICA's County Assistance Strategy for Indonesia

Table 2.1.2 shows that "Agriculture, forestry, hunting, fishery", which is the primary industry, has the highest impact on employment between 1985 and 2005, followed by "Wholesale trade, retail trade, restaurants and hotels" and "Manufacturing". The primary industry and "Wholesale trade, etc." have a direct impact on employment but their value-added is small compared to that of manufacturing.

The following Table 2.1.3 shows the impact on employment by region and industry.

Table 2.1.3 Impact on Domestic Employment by Region and Industry

Relative rank within region	Java		Sumatra		Kalimantan		Sulawesi		Other Eastern Indonesia	
1	Wholesale and retail	0.061	Wholesale and retail	0.037	Agriculture, forestry and fisheries	0.014	Agriculture, forestry and fisheries	0.013	Agriculture, forestry and fisheries	0.021
2	Manufacturing	0.039	Agriculture, forestry and fisheries	0.012	Wholesale and retail	0.005	Wholesale and retail	0.004	Manufacturing	0.002
3	Agriculture, forestry and fisheries	0.038	Manufacturing	0.007	Manufacturing	0.002	Social services	0.004	Wholesale and retail	0.002
4	Social services	0.023	Social services	0.007	Social services	0.002	Manufacturing	0.001	Social services	0.002
5	Construction	0.021	Construction	0.006	Mining and quarrying	0.001	Construction	0.001	Construction	0.001
6	Transportation and telecommunications	0.017	Transportation and telecommunications	0.004	Construction	0.001	Transportation and telecommunications	0.001	Transportation and telecommunications	0.001
7	Mining and quarrying	0.006	Mining and quarrying	0.004	Transportation and telecommunications	0.001	Mining and quarrying	0.000	Mining and quarrying	0.000
8	Finance and insurance	0.006	Finance and insurance	0.001	Electricity, gas and water	0.000	Electricity, gas and water	0.000	Electricity, gas and water	0.000
9	Electricity, gas and water	0.000	Electricity, gas and water	0.000	Finance and insurance	0.000	Finance and insurance	0.000	Finance and insurance	0.000

Source: Socioeconomic Study for Assisting Formulation of New JICA's County Assistance Strategy for Indonesia

As indicated in the above table, the agricultural sector still accounts for a large employment share in the country as a whole. However, in regions such as Java-Bali and Sumatra, where industry is the dominant economic activity, manufacturing and services may have a larger impact on job creation. At the same time, as the employment share continues to decrease in the agriculture sector, it is easily expected that contribution of the agricultural sector to economic growth and on employment will diminish over time. Therefore, policies to promote industries would be effective to improve economy and employment.

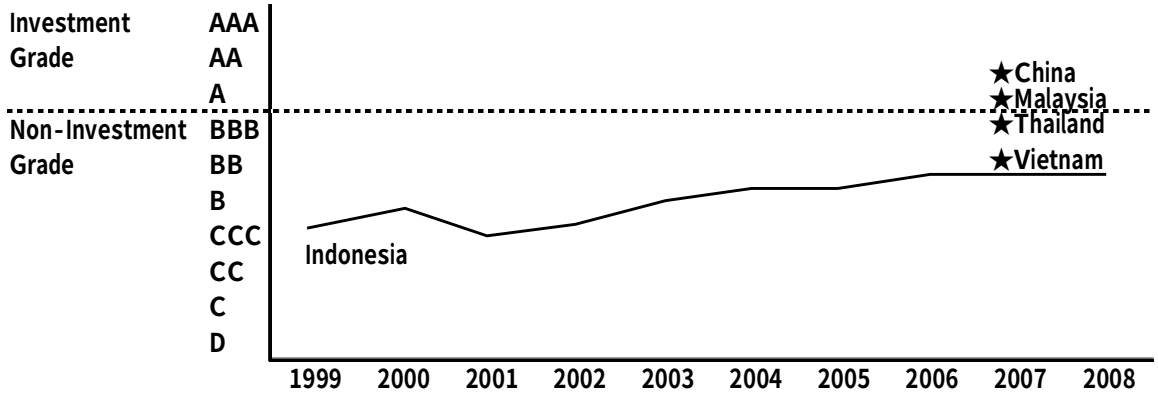
Next, performance of the Indonesian economy is analyzed through comparison with other countries. Table 2.1.4 compares the key economic indicators between Indonesia and other countries.

Table 2.1.4 Comparison of Economic Performance with Other Countries (in 2007)

Economic Indicators	Indonesia	Thailand	Vietnam	Malaysia	China
Nominal GDP (US$ Billion)	432.94	245.66	70.02	186.48	3,250.82
Real GDP Growth Rate (05-07 Av.)	5.8%	4.8%	8.4%	5.7%	11.0%
GDP per capita (US$)	1,947	3,737	818	6,948	2,461
Unemployment Rate	9.11%	1.5%	2.0%	3.1%	4.2%
Foreign Reserve (US$ Billion)	56.9	87.5	19.9	101.3	154.0
Foreign Debt (US$ Billion)	136.6	61.5	21.3	54.5	345.9
Import Cover Ratio (Month)	9.2	7.5	4.9	8.3	19.3
Ratio of Foreign Debt to GDP	31.6%	25.0%	30.4%	29.2%	10.6%
Debt Service Ratio	19.2%	11.1%	5.5.%	3.8%	2.0%
Credit Ratings (Moody's/S&P)	Ba3/BB-	Baa1/BBB+	Ba3/BB	A3/A-	A1/A

Source: IMF, IBRD, CEIC
Note: "Import Cover Ratio" is the ratio of how many months of foreign reserves are available for monthly imports.
"Debt Cover Ratio" is the ratio of foreign debt service (including principal and interest) to export amount.

As seen in the table, nominal GDP of Indonesia is larger than that of Thailand and Malaysia. Real GDP growth rate of Indonesia is also higher than that of these two countries, although it is lower than that of China and Vietnam. However, when looking at GDP per capita, that of Indonesia is lower than other countries, except Vietnam. It is also worth noting that unemployment is considerably high in Indonesia. This reinforces the view that the current level of economic growth is insufficient to reduce unemployment. It is worth mentioning that the credit rating, an important indicator for private investment, has been gradually improving, but it is still the lowest among the listed countries.



Source: S&P
Note: Ratings of other countries are as of end of 2007.

Figure 2.1.1 Trend of Credit Rating of Indonesia and Comparison with Other Countries

2.1.2 Economic Structure of Indonesia

The economic structure of Indonesia, in terms of the "demand side", is shown in Table 2.1.5.

Table 2.1.5 Breakdown of GDP of Indonesia (Demand Side)

At Constant Prices(billion Rupiah; calendar year)	2001	2002	2003	2004	2005	2006	2007	01-07Ave
Expenditure on GDP at 2000 market prices	1,442,984	1,505,216	1,577,171	1,656,517	1,750,815	1,847,293	1,963,974	–
Private consumption	886,736	920,750	956,593	1,004,109	1,043,805	1,076,928	1,131,187	–
Government consumption	97,646	110,334	121,404	126,249	134,626	147,564	153,310	–
Gross fixed capital formation	293,793	307,585	309,431	354,866	393,501	403,162	440,078	–
Increase in stocks	32,659	13,085	45,997	25,099	33,508	29,027	912	–
Exports of goods and services	573,163	566,188	599,516	680,621	793,613	868,257	937,849	–
Less: Imports of goods and services	441,012	422,271	428,875	543,184	639,702	694,605	756,348	–
Statistical discrepancy	–	9,547	(26,896)	8,757	(8,535)	16,961	56,987	–
Total population [a] *million; as of 1 July*	208.6	211.4	214.3	217.1	219.9	222.1	224.9	–
LABOR FORCE *thousand; calendar year*	98,812	100,779	102,631	103,973	105,857	106,282	108,131	–
Employed thousand; calendar year	90,807	91,647	92,811	93,722	93,958	95,177	97,583	–
Total expenditure (Central government) (At Current Prices)	341,562	327,863	376,505	427,176	509,633	667,129	757,245	–
% of GDP	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	01-07Ave
Expenditure on GDP at 2000 market prices	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Private consumption	61.5	61.2	60.7	60.6	59.6	58.3	57.6	59.9
Government consumption	6.8	7.3	7.7	7.6	7.7	8.0	7.8	7.6
Gross fixed capital formation	20.4	20.4	19.6	21.4	22.5	21.8	22.4	21.2
Increase in stocks	2.3	0.9	2.9	1.5	1.9	1.6	0.0	1.6
Exports of goods and services	39.7	37.6	38.0	41.1	45.3	47.0	47.8	42.4
Less: Imports of goods and services	30.6	28.1	27.2	32.8	36.5	37.6	38.5	33.0
Statistical discrepancy	–	0.6	-1.7	0.5	-0.5	0.9	2.9	0.5
Total expenditure (Central government) (At Current Prices)	23.7	21.8	23.9	25.8	29.1	36.1	38.6	28.4
Growth	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	01-07Ave
Expenditure on GDP at 2000 market prices	3.83	4.31	4.78	5.03	5.69	5.51	6.32	5.07
Private consumption	3.49	3.84	3.89	4.97	3.95	3.17	5.04	4.05
Government consumption	7.56	12.99	10.03	3.99	6.64	9.61	3.89	7.82
Gross fixed capital formation	6.49	4.69	0.60	14.68	10.89	2.46	9.16	7.00
Increase in stocks	62.17	-59.93	251.52	-45.43	33.50	-13.37	-96.86	18.80
Exports of goods and services	0.64	-1.22	5.89	13.53	16.60	9.41	8.02	7.55
Less: Imports of goods and services	4.18	-4.25	1.56	26.65	17.77	8.58	8.89	9.06
Statistical discrepancy	–	–	-381.73	-132.56	-197.47	-298.72	235.98	–
(Gross domestic capital formation)	10.3	-1.8	10.8	6.9	12.4	1.2	2.0	5.98
Total population	1.36	1.34	1.33	1.32	1.30	0.98	1.29	1.27
LABOR FORCE	3.30	1.99	1.84	1.31	1.81	0.40	1.74	1.77
Employed	1.08	0.93	1.27	0.98	0.25	1.30	2.53	1.19
Total expenditure (Central government) (At Current Prices)	55.30	-4.01	14.84	13.46	19.30	30.90	13.51	20.47
Contribution to percent change in GDP from previous year	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	01-07Ave
Expenditure on GDP at 2000 market prices(growth)	3.83	3.65	4.78	5.03	5.69	5.51	6.32	4.97
Private consumption	2.15	2.36	2.38	3.01	2.40	1.89	2.94	2.45
Government consumption	0.49	0.88	0.74	0.31	0.51	0.74	0.31	0.57
Gross fixed capital formation	1.29	0.96	0.12	2.88	2.33	0.55	2.00	1.45
Increase in stocks	0.90	-1.36	2.19	-1.33	0.51	-0.26	-1.52	-0.12
Exports of goods and services	0.26	-0.48	2.21	5.14	6.82	4.26	3.77	3.14
Less: Imports of goods and services	-1.27	1.30	-0.44	-7.25	-5.83	-3.14	-3.34	-2.85
Statistical discrepancy	–	–	-2.42	2.26	-1.04	1.46	2.17	–
(Gross domestic capital formation)	2.19	-0.40	2.31	1.56	2.84	0.30	0.48	1.32

Source: Itatistik Indonesia 2008

As shown in the table above, the share of "Private Consumption" in GDP is the largest. This implies that "Private Consumption" is the backbone of the Indonesian economy and stimulating domestic

consumption plays a very important role to expand the economy. However, the average growth rate of "Private Consumption" of 4.05% is the lowest among all the items. In terms of the contribution to change in GDP, "Exports of Goods and Services" is the largest (3.14). This implies that in the mid-term, exports will be the key to boost the Indonesian economy.

Next, the economic structure of Indonesia is analyzed in terms of the "supply side" which is shown in Table 2.1.6.

Table 2.1.6 Breakdown of GDP of Indonesia (Supply Side)

At Constant Prices(billion Rupiah; calendar year)	2001	2002	2003	2004	2005	2006	2007	01-07Ave
GDP by industrial origin at 2000 market prices	1,442,984	1,505,216	1,577,171	1,656,517	1,750,815	1,847,293	1,963,974	–
Agriculture	225,686	231,614	240,387	247,164	253,882	262,403	271,587	–
Mining	168,244	169,932	167,604	160,101	165,223	168,029	171,362	–
Manufacturing	398,324	419,388	441,755	469,952	491,561	514,100	538,078	–
Electricity, gas, and water	9,058	9,868	10,349	10,898	11,584	12,251	13,525	–
Construction	80,080	84,470	89,622	96,334	103,598	112,234	121,901	–
Trade	234,273	243,267	256,517	271,142	293,654	312,521	338,946	–
Transport and communications	70,276	76,173	85,458	96,897	109,262	124,976	142,945	–
Finance [c]	123,086	131,523	140,374	151,123	161,252	170,074	183,659	–
Public administration	70,200	70,482	71,148	72,324	73,700	76,618	80,778	–
Others	63,757	68,500	73,957	80,583	87,099	94,087	101,194	–
Net factor income from abroad	-66,211	-56,357	-81,231	-80,468	-107,382	-113,858	-116,241	–
% of GDP	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	01-07Ave
GDP by industrial origin at 2000 market prices	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Agriculture	15.6	15.4	15.2	14.9	14.5	14.2	13.8	14.8
Mining	11.7	11.3	10.6	9.7	9.4	9.1	8.7	10.1
Manufacturing	27.6	27.9	28.0	28.4	28.1	27.8	27.4	27.9
Electricity, gas, and water	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Construction	5.5	5.6	5.7	5.8	5.9	6.1	6.2	5.8
Trade	16.2	16.2	16.3	16.4	16.8	16.9	17.3	16.6
Transport and communications	4.9	5.1	5.4	5.8	6.2	6.8	7.3	5.9
Finance [c]	8.5	8.7	8.9	9.1	9.2	9.2	9.4	9.0
Public administration	4.9	4.7	4.5	4.4	4.2	4.1	4.1	4.4
Others	4.4	4.6	4.7	4.9	5.0	5.1	5.2	4.8
Growth	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	01-07Ave
GDP by industrial origin at 2000 market prices	3.83	4.31	4.78	5.03	5.69	5.51	6.32	5.07
Agriculture	4.08	2.63	3.79	2.82	2.72	3.36	3.50	3.27
Mining	0.33	1.00	-1.37	-4.48	3.20	1.70	1.98	0.34
Manufacturing	3.30	5.29	5.33	6.38	4.60	4.59	4.66	4.88
Electricity, gas, and water	7.92	8.94	4.87	5.30	6.30	5.76	10.40	7.07
Construction	4.58	5.48	6.10	7.49	7.54	8.34	8.61	6.88
Trade	4.38	3.84	5.45	5.70	8.30	6.42	8.46	6.08
Transport and communications	8.10	8.39	12.19	13.38	12.76	14.38	14.38	11.94
Finance [c]	6.60	6.85	6.73	7.66	6.70	5.47	7.99	6.86
Public administration	1.07	0.40	0.94	1.65	1.90	3.96	5.43	2.19
Others	5.74	7.44	7.97	8.96	8.09	8.02	7.55	7.68
Contribution to percent change in GDP from previous year	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	01-07Ave
GDP by industrial origin at 2000 market prices(growth)	3.83	4.31	4.78	5.03	5.69	5.51	6.32	5.07
Agriculture	0.64	0.41	0.58	0.43	0.41	0.49	0.50	0.49
Mining	0.04	0.12	-0.15	-0.48	0.31	0.16	0.18	0.03
Manufacturing	0.92	1.46	1.49	1.79	1.30	1.29	1.30	1.36
Electricity, gas, and water	0.05	0.06	0.03	0.03	0.04	0.04	0.07	0.05
Construction	0.25	0.30	0.34	0.43	0.44	0.49	0.52	0.40
Trade	0.71	0.62	0.88	0.93	1.36	1.08	1.43	1.00
Transport and communications	0.38	0.41	0.62	0.73	0.75	0.90	0.97	0.68
Finance [c]	0.55	0.58	0.59	0.68	0.61	0.50	0.74	0.61
Public administration	0.05	0.02	0.04	0.07	0.08	0.17	0.23	0.10
Others	0.25	0.33	0.36	0.42	0.39	0.40	0.38	0.36

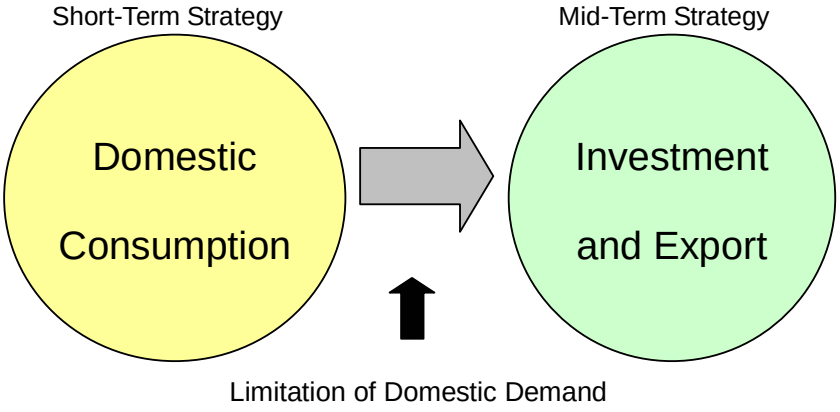
Source: Itatistik Indonesia 2008

The industry which contributed most to the GDP growth between 2001 and 2007 is the manufacturing industry, followed by trade industry, and transport & communication industries. It is expected that the population of Indonesia will keep growing at more than 1.0% for the next ten years[2]. Thus, "Private Consumption" is expected to continue to contribute to economic growth. However, an increase in disposable income of the population needs to be addressed through strategies to boost industrialization and job creation. It can be expected that "Exports of Goods and

[2] BPS(2005) "Indonesia Population Projection 2000-2025"

Services" and "Fixed Capital Formation" function as alternative drivers of the economy. As the economy grows in Asia and ASEAN, demand for resources of Indonesia is expected to expand. Indonesia must be ready to take advantage of it. Thus, strengthening its international competitiveness by promoting investments in industries and infrastructure will be very important in the next RPJM.

Based on the above consideration, it is recommended that in the short-term, GOI adopts a strategy to stimulate domestic consumption and fully recover from the global economic crisis of 2008. In the mid-term, since limitation of the increase in domestic demand is expected, it is recommended that the Indonesian economy will shift towards an "Investment and Export" oriented economy.



Source: JICA Study Team

Figure 2.1.2 Necessity of Transformation of Economic Structure of Indonesia

2.2 Socio-Economic Issues in Indonesia

2.2.1 Review of Economic Performance under Current RPJM

In the current RPJM, the macro-economic framework is discussed in Chapter 34. In this chapter, the following prospects are shown for the economy during 2005-2009[3].

i) Improved welfare of the people through effective economic growth
ii) Attaining high economic growth
iii) Attaining sustained economic stability

Also, in the current RPJM, the target rates for key indicators are shown. Table 2.2.1 shows the comparisons between planned and actual figures of key indicators for the term 2005-2008.

[3] RPJM 2004-2009

Table 2.2.1 Comparison of Planned and Actual Figures of Key Indicators for 2005-2008

	2005		2006		2007		2008		2009 (PLAN)	
	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Revised Plan
GDP Growth Rate	5.5%	**5.6%**	6.1%	5.5%	6.7%	6.3%	7.2%	6.1%	7.6%	4.3%
Annual Inflation	7.0%	17.1%	5.5%	6.6%	5.0%	6.6%	4.0%	11.1%	3.0%	6.5-7.5%
Unemployment Rate	9.6%	10.3%	8.9%	10.3%	7.9%	9.1%	6.6%	8.4%	5.1%	8.3-8.4%
Foreign Debt Out-standing to GDP	48.0%	**48.0%**	43.9%	**39.2%**	37.9%	**31.6%**	35.4%	**30-33%***	31.8%	N.A.
Fiscal Deficit to GDP	0.8%	**0.8%**	0.7%	1.0%	0.3%	1.3%	0.0%	0.1%	0.3%	N.A.

Source: BAPPENAS (RPJM 2004-2009), BPS, BI
Note: The symbol "*" is a projected figure. The figures with underbars are the items which achieved the planned figures.

a. GDP Growth Rate

The target growth rate was achieved only in 2005, but the gaps between planned and actual figures were not significant. Thus, it is generally regarded that the Indonesian economy is in a healthy condition in recent years[4]. The global financial crisis of 2008 also influenced Indonesia's economy and the projection of the growth rate for 2009 was revised from 7.6% to 4.3%. At the same time, GOI implemented the fiscal stimulus policy in order to sustain the economy.

Due to GOI's various policies, including the stimulus package, the economy of Indonesia appears to be recovering. For example, IMF evaluated the effectiveness of the package and has upgraded its projection of growth rate of 2009 from 2.5 to 3.5%. Also, according to the Central Statistics Agency (BPS), Indonesia's economy grew by 4.4% in the first quarter, supported by a robust domestic consumption[5]. In June 2009, the Minister of Finance expressed the view that the economy of Indonesia might grow by 4.6% in the second quarter[6].

On the other hand, there are still substantial uncertainties in the global markets. For example, IMF states that the world economic growth will fall to 0.5% in 2009, the lowest rate in more than 60 years[7]. IMF also states in the "Global Financial Stability Report" that more time is needed for investors and consumers to recover their confidence and for the global economy to improve. In this sense, optimism is discouraged and the macroeconomic situation of Indonesia should also be carefully monitored.

b. Annual Inflation

The volatility of CPI is high and control of inflation is one of the challenges for GOI. In order to address this issue, GOI has adopted "inflation targeting" since 2000 and tried to control the inflation rate. However, during 2004-2008, the targets were not achieved. The gaps between the planned and

[4] For example, OECD state that "Indonesia's economic performance has improved markedly over the last few years. The economy has recovered in earnest from the 1997-98 financial crises, and GDP growth has been around 5½ per cent per year since 2004." (OECD "Economic Assessment of Indonesia 2008" July 2008)
[5] The latest projection and realized data can be obtained through the web page of BPS (http://www.bps.go.id/).
[6] Jakarta Post (July 1, 2009)
[7] This is a quotation from "IMF survey magazine: IMF Research" dated on January 28, 2009.

actual figures are smaller for 2006 and 2007 but larger for 2005 and 2008. BI analyzes that inflation in 2005 and 2008 are mainly due to the increase of fuel prices in the global market[8].

c. Unemployment Ratio

Decreasing unemployment rate is another important agenda for GOI. As can be seen from the Table 3.1.1, the targets were not achieved during all the included years. Moreover, the gaps between planned and actual figures seem wider compared to those of other indicators. This suggests two things. One is that the current economic growth is not sufficient to create enough job opportunities to absorb the large labor force. The other is that the current government policy to reduce the unemployment is not effectively working.

d. Outstanding Foreign Debt to GDP

The amount of outstanding foreign debt surely decreases and GOI has been achieving the target for 2004 and 2008. There is a GOI policy to diversify financing sources and rely more on domestic debt[9]. According to the "Financial Note and Indonesian Budget, FY 2009", GOI puts higher priority on domestic financial sources. Firstly, GOI is trying to maximize the non-debt financing, especially from domestic banking and asset management. It is also mentioned that in the future, issuance of government securities (SBN), especially rupiah SBN in the domestic market, would remain as a priority financing source of the budget. This is based on the following main considerations: (1) increasingly limited sources of deficit financing from non-debt; (2) increasingly varied instruments of government securities, including Islamic-based government securities (SBSN); and (3) reducing foreign debt exposure in order to reduce the exchange rate risk.

e. Fiscal Deficit to GDP

In terms of fiscal deficit to GDP, the target is only achieved in 2005 but almost achieved for other years, except in 2007. In this context, "deficit" means "D. Surplus/Deficit Budget (A-B)" in APBN. The deficit is strictly controlled by MOF based on the Government Regulation No. 23/2003. Even though the targets are not achieved for 2006, 2007, and 2008, the figures are within 3.0% of GDP and the gaps between planned and actual figures are minimal. Regarding debt management, MOF has issued the decree MOF No.447/2005 stating the strategy for government debt management. Based on this decree, strict control on both foreign and domestic debts has been enforced. Specifically, the decree sets the following targets:

1) Total amount of deficit of APBN and APBD does not exceed 3% of GDP in respective years.

2) Cumulative amount of central and regional government loan does not exceed 60% of GDP.

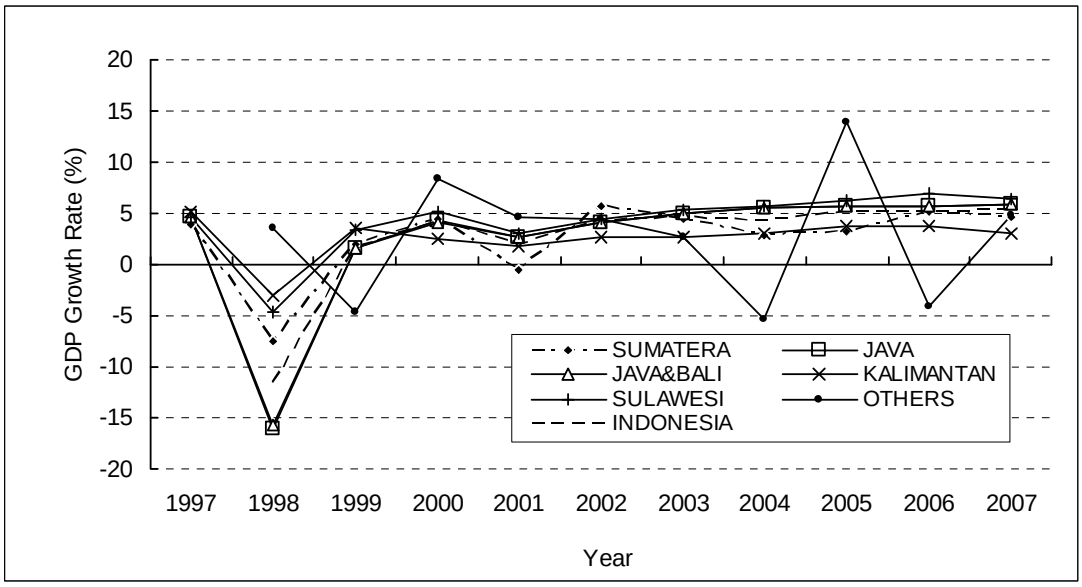
The above performance indicates that the control of national deficit by MOF is strictly enforced and working effectively.

[8] BI has released the following view on its homepage on April 6, 2006. "The relatively high CPI inflation for Q1-2006 was due to strong impact of the increase of fuel price in October 2005. For overall 2005, CPI inflation soared to 17.11% (y-o-y), well above the 6.4% CPI inflation recorded in 2004." Similar analysis was done by BI for inflation of 2008.

[9] For more details, see Daily Times of November 06, 2007.

2.2.2 Socio Economic Conditions of Indonesia

Addressing socioeconomic issues is another important agenda for GOI. As indicated in GOI's Long-Term Development Plan (RPJP) 2005-2025, "balanced growth" is one of the key agenda of GOI. The following Table 2.2.1 shows the trend of Regional GDP (GRDP) for the main islands of Indonesia.

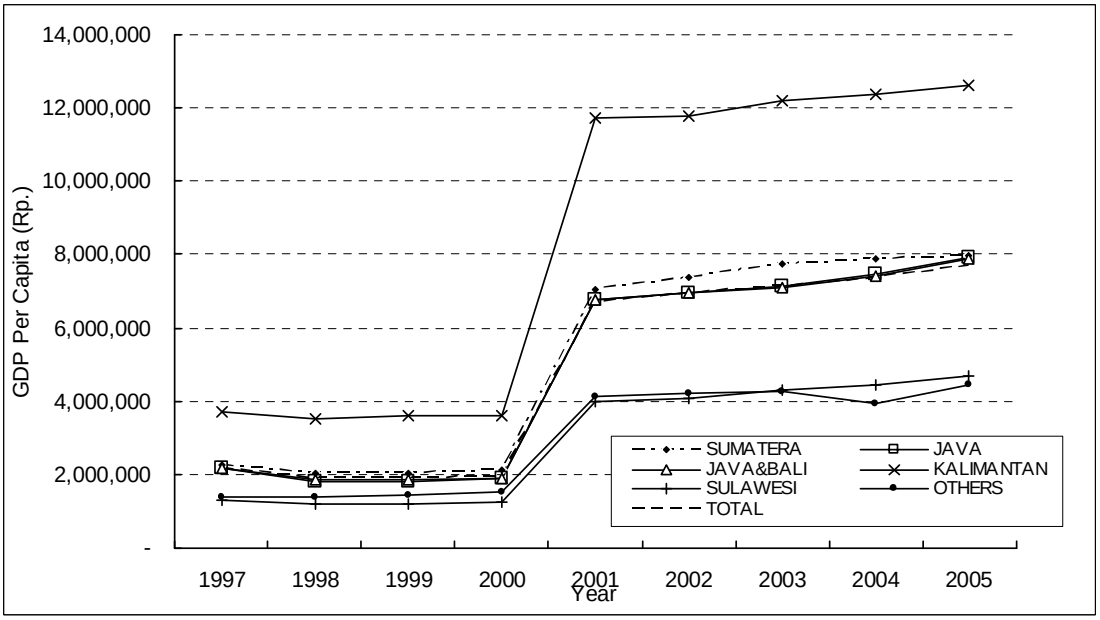


Source: Statistik Indonesia (2008)

Figure 2.2.1 Trend of Regional Growth by Islands

According to the above figure, similar growth trends can be observed in all islands, except in "Others".

The next Figure 2.2.2 shows the trend of GDP per capita by islands.



Source: Statistik Indonesia (2008)

Figure 2.2.2 Trend of GDP per Capita by Islands

The above figure indicates that GDP per capita in all islands is increasing but there are disparities in absolute terms. For example, GDP per capita in Kalimantan is significantly high, while those in Sulawesi and "Others" are low. Sumatra and Java-Bali are in the middle trend. It is also observed that the gaps of these disparities are not narrowing. The level of GDP per capita does not necessarily coincide with the level of quality of life but it is important to recognize that these kinds of disparities actually exist in Indonesia when the infrastructure investment strategy is formulated.

The status of MDGs achievements in Indonesia is shown in the following Table 2.2.2[10].

Table 2.2.2 Status of Achievement of MDGs in Indonesia

	1990 Status	Current Status (2006)	Target
Mortality Rate of Children under 5 years old (person/1,000 person)	97	40	32
Primary School Enrollment Rate	88.7%	94.7%	100.0%
Nutrition Deficiency Rate of Children under 5 years old	35.5%	28.0%	18.0%
Population with continuous access to improved water resources	30.9%	68.0%	65.5%
Poverty Rate	15.1%	16.6%	7.5%

Source: JICA

In terms of "Mortality Rate of Children under 5 years old", the indicator shows a good performance and the record of 2006 almost reached the target. The indicators for "Primary School Enrollment Rate", "Nutrition Deficiency Rate of Children under 5 years old" and "Population with continuous access to improved water resources" also show improvements. Performance on "Population with continuous access to improved water resources" has improved and continuous efforts are encouraged to accelerate access to clean water. However, improvement can not be observed for "Poverty Rate." It should be noted that the standard to measure poverty rate was revised in 1996[11] and that the new standard tends to produce higher numerical values. The figures of 1990 and 2006 can not be compared directly but even based on the revised standard, high levels of poverty remain a critical issue in Indonesia. Figure 2.2.3 shows the trend of poverty over time.

[10] For detailed information on the standards and evaluation results, see the web page of "MDG Monitor" (http://www.mdgmonitor.org/index.cfm) which is run by UNDP.

[11] In Indonesia, poverty rate is calculated based on evaluation of availability of "commodity basket" which consists of "food composition" and "non-food composition". In this revision, items of both compositions were changed. For details, refer to Chioilir Maksum, "Official Poverty Measurement in Indonesia"

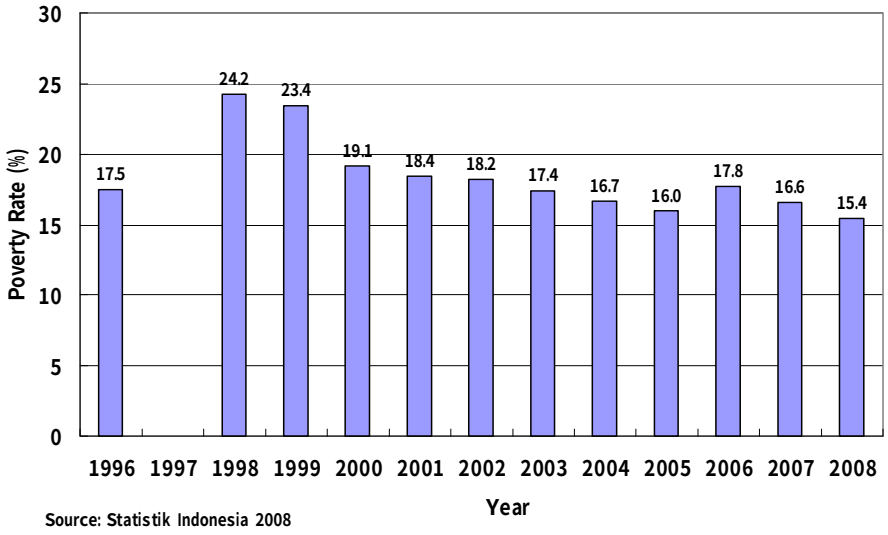


Figure 2.2.3 Trend of Poverty Rate

2.2.3 Infrastructure and International Competitiveness of Indonesia

Indonesia has made a remarkable transition to a democratic and decentralized state with stable macroeconomic and political regime. Indonesia is now a confident middle-income country, ready to move to the next phase of transformation with a strong standing in South East Asia and assume responsibilities as one of the key regional leaders. For the past decades, as discussed in the previous sections, Indonesia's economy has grown strongly, and most of its economic indicators suggest healthy macroeconomic fundamentals despite the recent global financial shock. Indonesia is likely to move to the ranks of upper middle-income countries in the near future. Although Indonesia is already performing well, there are still some areas where it could do better like in the aspect of poverty which remains a widespread problem. Its employment rate has been lower than the labor opportunities. Access to basic infrastructure services is also among the lowest in the Asian region. Indonesia's internal consumption-led economy[12] is likely to slack in its robust growth unless diverse business potentials are tapped and developed to attract local and foreign investments.

The limited investment in infrastructure over the last decade is the foremost risk to the economic prospects because an accumulation of infrastructure assets can increase the growth rate in the short- and long-term periods. Economic growth is positively correlated with the stock of infrastructure assets, and income inequality declines with higher infrastructure quantity and quality[13] (See discussions in Section 3.1.2). The strong association between GDP and the availability of basic infrastructure, including telecommunications, power, paved roads, and access to safe water, are widely accepted. Infrastructure is essential to generating growth; bringing communities, workers,

[12] Key Indicators for Asia and the Pacific, ADB

[13] I. Chatterton et al., Estimation of Infrastructure Investment Needs in the South Asia Region, the World Bank. M. Fay et al., Investing in Infrastructure, Policy Research Working Paper No. 3102, the World Bank. K. Seethepalli, et al. How Relevant is Infrastructure to Growth in East Asia?, the World Bank. A. Estache et al., How Much Does Infrastructure Matter to Growth in Sub-Saharan Africa?, the World Bank.

firms and regions in the economic activities; and providing services to people in need. Infrastructure impacts on poverty in two ways, namely: it supports the processes of growth in which much poverty reduction depends, and it helps the poor access basic services that can improve their lives and income opportunities[14]. Indonesia's infrastructure quality ranks among the lowest in the region (See Table 2.2.3). This may explain in part why nearly half of the population is still 'near-poor', with consumption level of about less than one third above the national poverty line[15], despite the country's recent economic achievements. Indonesia's current economic growth is good but still limited due to low quality and levels of investment in infrastructures.

Since the business climate needs to be improved and private investments are largely required, it is an urgent task to address the infrastructure problem, which is identified as the key bottleneck in business development. Lower infrastructure costs through reliable transportation, well-connected logistics network, and stable electricity supply will be attractive to businesses. In fact, neighboring countries such as Thailand, Malaysia and Vietnam have attracted foreign investment by improving the investment climate through better infrastructure service provision[16].

Table 2.2.3 Infrastructure Development

Indicator		Ranking*	2008**	2009**	Thailand**	Malaysia**
Infrastructure		--	96	84	41	27
Electrification Rates (%)	53[17]	11 out of 12	82	96	41	39
Fixed Telephone lines (%)	4	12 out of 12	100	79	84	72
Access to Improved Sanitation (%)	55	7 out of 11	--	--	--	--
Access to Improved Water (%)	78	7 out of 11	--	--	--	--
Road (km per 1,000 population)	1.7	8 out of 12	105	94	35	24
Quality of Railroad Infrastructure		--	58	60	52	19
Quality of Port Facilities		--	104	95	47	19

Source: * Connecting East Asia,
** World Economic Forum, ranking out of 134 countries. Ranking of 2009 for Thailand and Malaysia

Infrastructure availability for growth lags behind most of the other countries in the region. For example, lack of power supply is the most critical bottleneck for progress. Power demand of over 3,500 MW cannot be provided due to lack of supply (See Sections on Electricity for details). Currently, roughly 90 million people are not connected to the electricity network[18], with the majority being poor and living outside of Java-Bali. Indonesia's fixed-line telephone network has also lost its competitiveness. Moreover, traffic congestion in the main road network has worsened during the peak hours in Jakarta, considering that only few road expansions have been done during the last years. (Refer to the following sub-sector sections for details.)

Infrastructure development is summarized in Table 2.2.4 below which compares Indonesia's level of access to basic infrastructure with that of countries by income category from low to high income. Provision of water and sanitation services is far behind even compared with the low income

[14] Connecting East Asia, ADB, JBIC, and the World Bank, 2005.
[15] About US$1.55-a-day. Indonesia achieved the MDG target by 2006 on the percentage of people living on less than US$1-a-day.
[16] T. Higashikawa, et al. Quantitative Analysis of Indonesia's Short- and Long-term Development Strategies, May 2008.
[17] The latest statistics shows that 60% of population is connected to the network.
[18] An estimate of 90 million people was derived based on the 60% connection rate.

countries. The number of households connected to a piped water supply system decreased from 18% in 2001 to 16% in 2007 although clean water is supplied to about 90% of the population in 2007 through non-piped systems like communal water fountains and borehole wells. This may place severe health implications therefore rapid expansion of water supply is urgently needed. (See sections on Water Supply and Sewerage.)

Sanitation facilities provision is also not progressing. Less than two-thirds of the population has access to improved sanitation facilities[19]. Only 1.3% of the households are connected to private or public sewerage systems[20]. Existing sewerage systems, just seven of which are operating in the cities of Indonesia, only serve about 200,000 households. Lack of proper sewerage systems and solid waste facilities causes widespread contamination of surface and ground water and pollution on the environment, in general. Rivers are contaminated with untreated industrial wastewater and human wastes, which is the primary reason why Indonesia has a high incidence of typhoid fever.

Table 2.2.4 Access to Infrastructure by Income Group (in 2000)

Country	GDP per capita	Electricity Generation (kWh per capita)	Road (km/1,000 persons)	Rail (km/1,000 persons)	Water (% household connected)	Sanitation (% household connected)
Low Income Countries	475	116	1.06	0.07	76.26	45.58
Middle Income Countries	1,919	406	1.10	0.13	81.82	61.87
Indonesia (in 2007)	801 1,925	-- 631	-- 1.7*	-- 0.027**	18.0*** 16.2	-- 1.3
High Income Countries	29,808	2,031	10.54	0.44	99.59	98.07

Sources: World Bank, Department of Public Works of Indonesia, Asian Development Bank
Note: Data with * is in 2008, ** in 2006, *** in 2001. Data for Indonesia shown in the first line is in 2000 and the second set of data is for 2007.

Maintenance of existing assets is largely neglected on national roads, particularly the paved roads in Kalimantan, Maluku, and Papua Islands, and on the district road network where condition of about half is classified as either poor or bad. Other utilities including water, which has high water losses, power, which suffers from unplanned blackouts, irrigation, ports, airports and railways also require proper maintenance. The magnitude of problems may vary among the sub-sectors. However, it is evident that the low quality of infrastructure services is commonly serious among the sub-sectors (See chapters of relevant sub-sectors).

Table 2.2.5 shows the investment size in infrastructure in selected countries in East Asia. Meanwhile, Table 2.2.6 suggests that in countries such as China and Vietnam, where large investments in infrastructures have been maintained, substantial fixed capital assets were realized.

[19] Improved sanitation, including private and communal septic tanks, is provided to about 55% in 2000 and 60% in 2007.
[20] Innovative community-based sanitation schemes are reported as sustainable.

Table 2.2.5 Infrastructure Investment (Percentage of GDP)

0-3%	4-7%	Over 7%
Cambodia	Lao PDR	China
Indonesia	Mongolia	Thailand
Philippines		Vietnam

Source: Connecting East Asia (Latest year available, based on available data from country-specific sources, World Bank PPI Database 2005.)

Table 2.2.6 Selected Infrastructure Capital Formation, 1990-2000

Country	Total road network (km)			Electricity generating capacity (GW)			Annual average GDP growth
	1990	2000	Growth	1990	2000	Growth	
China	1,028,348	1,679,848	63%	127	299	136%	10.1%
Indonesia	288,727	355,951	23%	13	25	98%	4.2%
Philippines	160,560	201,994	26%	7	12	81%	3.0%
Thailand	52,305	60,354	15%	8	19	125%	4.5%
Vietnam	105,557	215,628	104%	2	6	180%	7.6%

Source: Connecting East Asia

Infrastructure gaps are severe in Indonesia, reflecting past low investments. Moreover, considering the country's geographical feature, it also faces challenging needs on public services such as transportation utilities that link the islands and farm-to-market access – a key to boosting agriculture. This will yield to high employment demand and alleviate poverty level.

2.3 Infrastructure provision to sustain strong and equitable economic growth

2.3.1 Introduction

Indonesia has made a remarkable transition to a democratic and decentralized state with stable macroeconomic and political regime. A high growth scenario is set in the new RPJM to achieve a 7% growth by 2014, which is the same GDP growth level achieved during the Soeharto administration (1968-1997)[21]. In contrast, the recent GDP growth has been modest at 5-6%. Boosting the economy by an additional 1-2% in the next five years will be challenging and a drastic change in government policies will be required to attain the target growth. Despite the country's recent economic achievements, nearly half of the population is still 'near-poor', with consumption level of about less than one third above the national poverty line[22]. During the last decade, unemployment remained high at around 9%, which is substantially higher than that of other countries in Asia (See the previous section). This implies that even if the country's economy has improved, income disparity has widened because prosperity was not distributed in an equitable manner. Therefore, the economic policy needs to address equitable development while achieving a high growth scenario.

The infrastructure sector will support the strong economic growth. Growth is expected to be driven

[21] An average growth rate of 7% was achieved during the period.
[22] About US$1.55-a-day. Indonesia achieved the MDG target by 2006 on the percentage of people living on less than US$1-a-day.

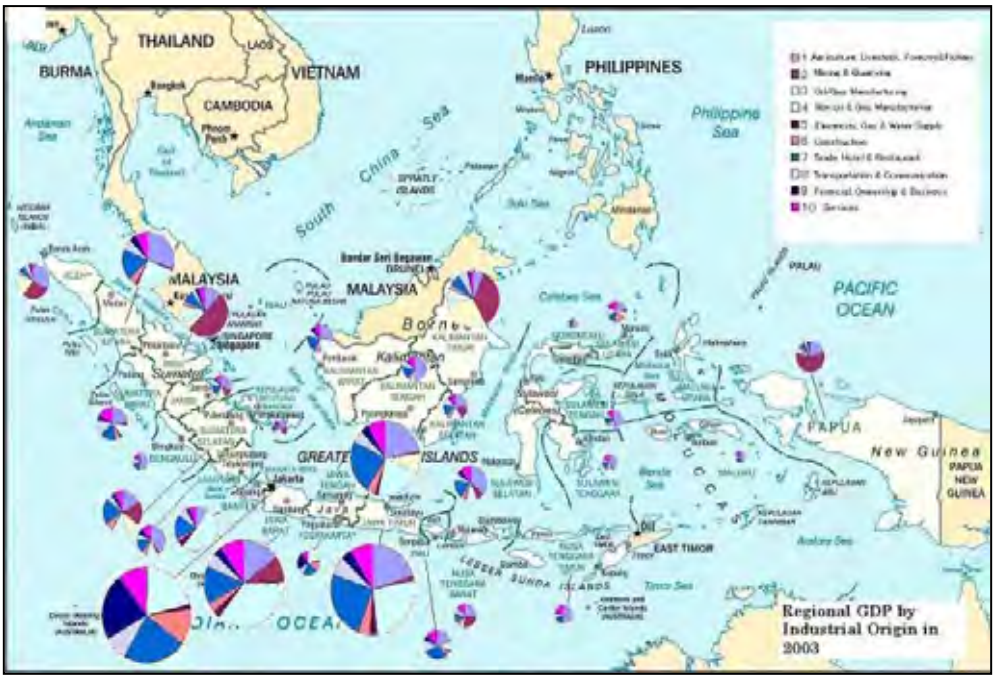
largely by the manufacturing industry in well-established economic centers, especially in Java and Sumatra. The national economy would be reinforced by the resource and resource-processing industries and services in eastern Indonesia. Revitalized manufacturing industry in Java and Sumatra is expected to demand more goods produced in other parts of Indonesia. Thus, this would create more new jobs and higher wages. With increased disposable income, service industries not only in Java and Sumatra but also in eastern Indonesia would be expanded. In order to promote growth, the infrastructure sector will provide necessary support to industries in the economic center as well as the rest of the country. High growth and higher employment should be complemented by poverty reduction measures. Thus, the sector will also address the needs of infrastructure provision for groups who may be left behind in the growing economy.

2.3.2 Infrastructure provision to sustain strong economic growth

The new RPJM aims a high economic growth of 7% in 2014. Economic growth could be achieved through an increase in final demand and greater investment in physical assets. Increases in final demand, from domestic and foreign, spur economic growth. Infrastructure service provision will support the high growth scenario by helping augment demand for goods and services by industries and households. An accumulation of physical capital also improves growth; therefore, expansion of investment in infrastructure should be the priority of the sector.

For the immediate economic boost, a reduction in infrastructure costs for business will be aimed by building a strong backbone infrastructure to connect business centers within and among the regions, and upgrading infrastructure in highly productive areas to promote robust domestic demand. For the mid- to long-term, the sector should enhance support of industrial development by improving business environment through establishment of the network for Indonesia to be fully integrated with the Asian market, and with the ASEAN economy.

The infrastructure sector strategy for economic growth shall focus on the regions which have the greatest economic impact to the country to realize the high growth scenario. This can be justified on efficiency grounds as the resource is limited. The geographical distribution of GDP, as shown in the following Figure 2.3.1, indicates the relative size of GRDP (contribution of each provincial GRDP to GDP) and industrial compositions in each region in 2003, i.e.: Java accounted for 60% of GDP, followed by Sumatra (22%), Kalimantan (9%), Sulawesi (4%), and other eastern Indonesia (3%).



Source: Socioeconomic Study for Assisting Formulation of New JICA's County Assistance Strategy for Indonesia

Figure 2.3.1 Production and Industrial Distribution by Indonesian Province, 2003

From the data, it is easily understood that Java-Bali and Sumatra are the productive centers. A good stimulus policy in these regions is very likely to quickly boost economic growth of the country as a whole. Therefore, policies to improve economic competitiveness in Java-Bali and Sumatra should be prioritized as it would induce higher economic growth. In the infrastructure sector, acute and urgent bottlenecks should be removed to improve the productivity of these regions and further boost the national economy. At the same time, infrastructure services should be upgraded as more sophisticated infrastructure is demanded in the nation's capital and other main cities.

The Indonesian economy has been supported by strong domestic consumption, and consumer confidence is expected to remain as the main driver of growth in the years to come. Infrastructure provision shall focus on regions and industries where domestic demand has the most impact through improved mobility of goods and passengers in the domestic market, i.e., trade within and among the regions. However, Indonesia's internal consumption-led economy[23] will need to be complemented by diverse business potentials to attract local and foreign investments. Measures will also be taken to improve infrastructure to promote imports and exports in the regions and connect the markets with East Asia and ASEAN.

Infrastructure provision will aim to facilitate economic integration in ASEAN and Asia. China has attracted substantial direct foreign investment, and the rapidly growing economy has caused production costs to rise. Backed by lower transportation and labor costs in ASEAN, and as a risk management strategy, foreign direct investment has flowed back in the ASEAN countries to diversify production sites and lower costs of business activities. Therefore, Indonesia should be prepared to meet the increasing demand for resources, consumer goods and services from ASEAN,

[23] Key Indicators for Asia and the Pacific, ADB

India and China whose economies are expected to continue to rise. Indonesia is in an advantageous position to attract labor-intensive industries because of its large educated labor force, which would substantially improve the country's macroeconomic status in terms of lower unemployment rate and increased tax revenues.

The reason why infrastructure is the solution for robust economic growth is because the level and quality of infrastructure is among the key factors for selecting an investment site among multiple cities and countries (See details below). Investors look into the investment climate fundamentals such as political and macroeconomic stability and further consideration is given to the cost of doing business, transportation time and costs, which are determined by the provision of paved roads, ports, airports, logistics network for moving products, and stable electricity supply not to damage valuable products. Therefore, infrastructure provision should be improved to establish a favorable business environment for future growth. This needs to be complemented by improved institutional framework to promote private participation in infrastructure, as public fund alone is insufficient to provide appropriate infrastructure services.

Industrial clusters are formed in Bangkok, Kuala Lumpur, and Hanoi. Compared with them, the concentration of industry in Jakarta is insignificant. As Indonesia failed to invest in infrastructure after the monetary crisis in 1997, access to basic infrastructure services is among the lowest in the Asian region, and economic growth has not been sufficient enough to absorb labor and reduce poverty. Tables 2.2.5 and 2.2.6 above suggest that in countries such as China and Vietnam, where large investments in infrastructures have been maintained, substantial fixed capital assets were realized. As discussed in the previous section, neighboring countries such as Thailand, Malaysia and Vietnam have maintained high infrastructure investment levels to successfully attract foreign and domestic investments.

The country's future competitiveness within the region will largely depend on the performance during the next RPJM period. Therefore, substantial increases in investment in infrastructure are strongly recommended. Furthermore, keeping the quality of the existing assets is equally important.

2.3.3 Infrastructure provision for equitable growth

The previous discussions suggest that the priority of infrastructure provision in Java-Bali and Sumatra can be justified on efficiency grounds but it would not improve regional disparity. Strong economic growth in regions outside Java-Bali is also required to achieve the RPJM high growth scenario and increased tax revenues for redistribution. Further, the economic effect in Java-Bali and Sumatra could be maximized provided special measures are taken to increase activities in other regions as production stimulus may only be circulated within the region[24]. Therefore, investment in infrastructure in other regions should be similarly promoted. Infrastructure needs in each region naturally differ and adequate investment to improve the economy and social welfare will be discussed in the following sub-sector sections.

[24] T. Higashikawa, et al. Quantitative Analysis of Indonesia's Short- and Long-term Development Strategies, May 2008.

Growth mechanism is diverse and it creates demand within and outside the region. As demonstrated in the transportation section of this report, the amount of trading goods in monetary terms is largest between Java-Bali and Sumatra. The amount of trading goods between Sulawesi and other eastern islands is relatively small, which suggests that these islands are less likely affected by economic growth in other regions. The location of islands and nature and scale of economic activities suggest that each region has a particular growth mechanism (See Table 2.3.1). The manufacturing industry exists mainly in Java, and the major activity in Sumatra Island is agriculture including plantation crops such as oil palms. In Kalimantan, natural resources and its processing industry, and oil palms are dominant. In Sulawesi, agriculture, fishery and oil palms are the main activities. Other parts of eastern Indonesia have substantial shares in agriculture, oil palms and mineral resources. Resource-based industries are found across the country but more so outside of Java-Bali and closer to the resource production sites. However, food processing, apparels, and furniture are the dominant industries and mostly concentrated in Java due to better transportation infrastructure and the proximity of markets and supporting industries. Infrastructure provision for growth should match the specific needs of the regions to promote economic activities.

Export/import-oriented industries tend to concentrate in Java-Bali and Sumatra. Therefore, immediate infrastructure provision should also focus on supporting international trade logistics and upgrading existing infrastructure assets for strong and competitive business. The rest of the regions are not yet fully integrated in the inter-island and international trade network (See details in the transport section). Thus, an increase in domestic demand in these regions is particularly important, at least in the short term, while maintaining exports of natural resources. Particular focus should be given to the provision of backbone infrastructure network and basic infrastructure services to increase final demand to promote growth and improve social conditions. In addition, infrastructure provision will try to connect the regions to domestic markets for encouraging trade across regions, and in the long-term, the establishment and reinforcement of infrastructure for foreign trade will be necessary. It is expected that demand for resources will increase in the future. Indonesia has played, and will continue to play, a significant role as a supplier of natural resources centered on mineral resources to the Asian region. Accordingly, resource-related industries will continue to be important for the Indonesian economy.

2.3.4 Poverty alleviation through basic infrastructure services

Poverty and regional disparity remain as widespread problems in Indonesia and their key issues are interrelated. Economic growth alone would not improve poverty and regional gaps. Growth has to be associated with job creation in all regions of the country and improvements of social welfare. Therefore, the sector strategy will be to provide special attention to the groups and regions not involved in high-growth mechanisms.

Employment rate has been lower than the labor opportunities. Historically, agriculture has significantly contributed to the economic growth thus creating employment opportunities throughout the country. However, as discussed in the previous Section 2.1, considering this sector's relatively

low expected growth, the agriculture sector is unlikely to remain a key sector for national economic growth. The manufacturing industry is to grow faster than the other sectors, therefore, it has a potential to drive growth and generate substantial jobs. Thus, promoting the manufacturing industry especially in Java could be considered more effective to achieve a robust economic growth. In other regions, the provision and improvements of irrigation facilities are considered essential not only from the food security point of view but also on the significant impact on regional employment opportunities.

Economic growth will create jobs and reduce poverty. However, direct interventions to the needy population are required. It is widely believed that provision of basic infrastructure services such as roads, clean drinking water, sewerage systems, and electricity are effective measures for reducing poverty. Basic infrastructure services provision is needed for the rural and urban poor and socially vulnerable groups. Table 2.3.1 below summarizes the proposed interventions in the infrastructure sector. Details are discussed in the following sub-sector sections.

Table 2.3.1 Infrastructure Interventions by Region

<table>
<tr><th></th><th>Java-Bali</th><th>Sumatra</th><th>Kalimantan</th><th>Sulawesi</th><th>Nusa Tenggara</th><th>Maluku / Papua</th></tr>
<tr><td rowspan="2">Growth</td><td colspan="6">Accumulation of capital, increased demand for goods and services, and improved investment climate through provision of public infrastructure</td></tr>
<tr><td colspan="2">Support to manufacturing industry
(Textiles and machinery)</td><td colspan="4">Support to resource processing industry
(Mineral resources, marine, food & beverages, etc.)</td></tr>
<tr><td>Employment</td><td>Manufacturing industry
(Textiles and machinery)</td><td>Manufacturing and agriculture</td><td colspan="4">Resource processing industry
(Mineral resources, marine, food & beverages, etc.)
Agriculture
Service industry
(Wholesale, retail, tourism, social service)</td></tr>
<tr><td rowspan="4">Distribution and Poverty Reduction</td><td colspan="6">Improved access to public institutions (especially in cities)</td></tr>
<tr><td colspan="6">Improved provision of basic infrastructure (clean water, sanitation, etc)</td></tr>
<tr><td colspan="3">Increased job opportunities
(especially in rural areas)</td><td colspan="3">Increased job opportunities
Improvement of basic infrastructure
(especially in rural areas)</td></tr>
<tr><td colspan="6">Support to small and medium enterprises</td></tr>
</table>

Source: Socioeconomic Study for Assisting Formulation of New JICA's County Assistance Strategy for Indonesia. Modified by the JICA Study Team

As discussed, increased investment in physical capital and induced demand are essential for growth. Investment in infrastructure by both public and private sectors should be revitalized through a sound investment climate. Growth could be boosted if development in Java-Bali and Sumatra is stimulated, but economic growth in Java-Bali and Sumatra alone would not induce a substantial effect to the rest of the economy. Thus, specific interventions are required to generate sufficient employment and reduce poverty.

2.3.5 Infrastructure Strategy

In the next five years under the new RPJM, the infrastructure sector will support the RPJM strategy by helping boost economy and alleviate regional disparity and poverty. This should be achieved

through the two-pronged strategy, i.e.:

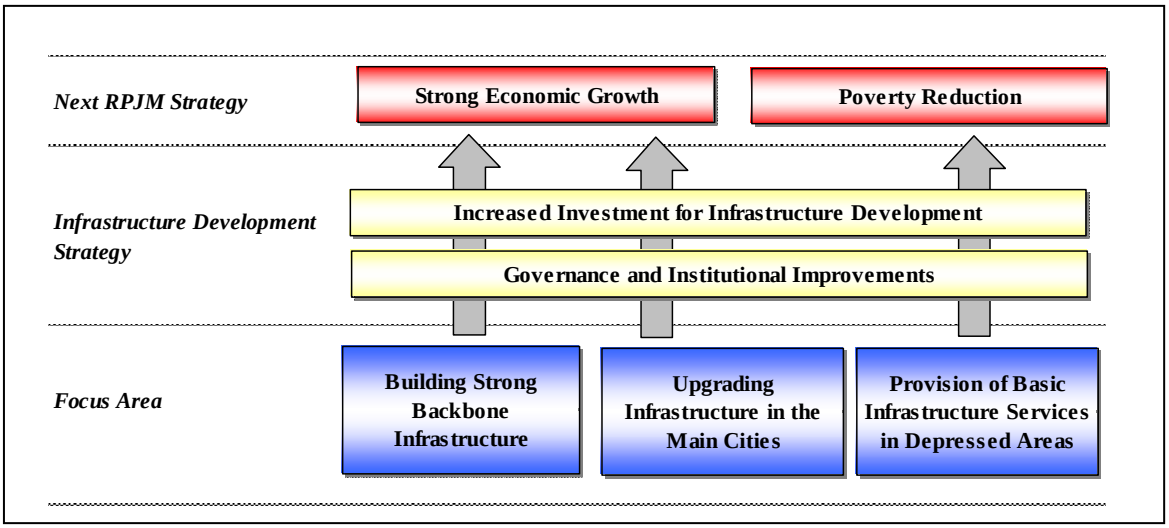
(i) increased investment in infrastructure; and
(ii) regulatory reforms related to the investment climate and human resources development in infrastructure.

It is critical to increase investment in infrastructure, which has significantly declined after the Asian financial crisis, to enhance growth. An accumulation of physical capital including public infrastructure induces economic growth and poverty alleviation.

Private investment in physical capital (both in industry and infrastructure) can be encouraged if the country's economic infrastructure provision (key backbone infrastructure and modern infrastructure services in the main cities) is addressed. Poverty and income distribution can be improved if the social infrastructure (basic infrastructure services) is properly provided.

Thus, infrastructure investments should focus on the following three areas:

(a) Building strong backbone infrastructure;
(b) Upgrading infrastructure in the main cities; and
(c) Provision of basic infrastructure services in depressed areas for improved economic opportunities.



Source: JICA Study Team

Figure 2.3.2 Next RPJM Strategy

The main aims are to support the increase of distribution of goods to meet the growing internal and external demands, provide smooth and safe mobility of people, promote industrial development, sustain national food security, and alleviate regional disparity. The infrastructure sector focus areas will serve as guideposts to develop a roadmap of the sub-sector interventions as identified in Table 2.3.1. In order to reinforce the investment strategy and attract necessary investments, adequate public policies on infrastructure need to be in place. Details of the sectoral approach are discussed in the following sections of the report.

The sector strategy will mainly try to address the regional needs summarized in Table 2.3.1 as

follows:

(a) Building strong backbone infrastructure
- Java-Bali and Sumatra, the growth center: to improve competitiveness of industries through strengthening the network to connect the main cities of Java-Bali and Sumatra, and through intensified electrical supply systems
- Other regions: to promote industries in natural resources and processing industries, agriculture and services and to improve mobility of goods and people

(b) Upgrading infrastructure in the main cities
- Main cities which drive growth: to improve competitiveness of industries by removing the key bottlenecks and upgrading infrastructure services
- Jakarta: to establish suitable infrastructure as the nation's capital (improvements in traffic congestion, power supply, sanitation, etc.)

(c) Provision of basic infrastructure services in depressed areas for improved economic opportunities
- special attention to the groups and regions not involved in high-growth mechanisms through provision of basic infrastructure services to improve welfare and to create jobs

While increasing infrastructure provision, establishing a sound investment climate is essential to promote investment in physical capital by the private sector. This requires not only a stable democratic and transparent institutional framework but also better human capability. Improvement of the investment climate has been the government's topmost priority. The government, among others, overhauled the Investment Law, announced a comprehensive new economic policy, reformed the finance sector, revised a tax law, and established a forward-looking Electricity Law. However, further policy efforts to improve areas such as subsidies and user charges are required to promote private investment in infrastructure.

Chapter 3 Infrastructure Financing Strategy

3.1 Necessary Investment Amount

3.1.1 Investment Needs and Financial Gap

Improvements of the infrastructure sector should be properly addressed in the next RPJM as it will affect the country's ability to achieve development targets. Some empirical studies[1] confirmed that lack of access to infrastructure services has negatively affected the overall economic growth and income equality, while improved infrastructure stocks and its service quality have significantly decreased income inequality. Reduced infrastructure spending has lowered the long-term GDP growth by over one percentage point every year. This implies that Indonesia's limited investment in infrastructure has constricted its economic growth and worsened the poverty situation. Therefore, it is vital for the next RPJM to lay a strong foundation for infrastructure in order to transform Indonesia into a more developed country.

In early 2009, BAPPENAS estimated the total amount of infrastructure investment necessary from 2010 to 2014. The estimation was done for the major sectors, including housing and resettlement, transportation, electricity, energy, postal services, telecommunications, and a special budget for the Sidoarjo mud disaster. The results are shown in Figure 3.1.1.

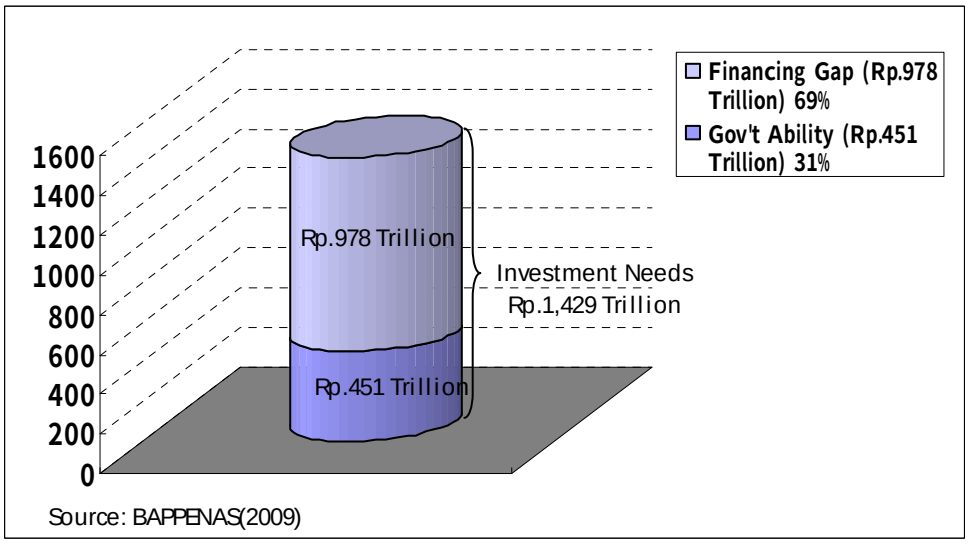


Figure 3.1.1 Investment Needs and Financial Gap (2010-2014)

The estimate shows that an investment of Rp 1,429 trillion is necessary to achieve the aimed development. However, it also shows that only Rp 451 trillion or 31% of the total amount is funded

[1] C. Calderon and L. Serven (2004), The Effects of Infrastructure Development on Growth and Income Distribution, The World Bank, and others (See Reference), K. Seethepalli et al., How Relevant is Infrastructure to Growth in East Asia?, The World Bank, ADB, JBIC, and the World Bank, Connecting East Asia. Averting an Infrastructure Crisis in Indonesia

through the government budget. Simple calculation shows that approximately Rp 280.5 trillion is necessary per annum, with Rp 90.2 trillion allocated from the government budget.

Table 3.1.1 Infrastructure Needs and Financing Source

Infrastructure Needs (per year (Ave.))	Infrastructure Financing from Government Budget (per year (Ave.))	Infrastructure Financing from other means (per year (Ave.))
Rp 285.0 Trillion	Rp 90.2 Trillion	Rp 195.6 Trillion

Source: BAPPENAS (2009)

The following Table 3.1.2 shows the government's infrastructure investment budget in the last decade.

Table 3.1.2 Infrastructure Investment Budget in the Last Decade

Unit: Rp Trillion

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Budget	11.1	15.4	13.2	15.1	17.6	26.1	54.0	59.5	77.7	97.6	93.3

Source: BAPPENAS (2009)

Note: Amounts for 2000-2008 are realized budget. Amounts for 2009-2010 are the planned budget.

In the last three years, government investment amounted to Rp 77.7 trillion in 2008, Rp 97.6 trillion in 2009, and Rp 93.9 trillion in 2010. The reason why a relatively high amount was spent in 2009 was due to the government's economic stimulus package to recover the economy from the damage of the global economic crisis of 2008. Thus, considering the empirical data, BAPPENAS estimated that the annual budget allocation for infrastructure of Rp 90.2 trillion seems realistic.

According to BAPPENAS, the gap of Rp 978 trillion, which almost equals GOI's national expenditure in 2008 (Rp989.5 trillion.), would be filled through foreign direct investments (FDI), public private partnerships (PPP), Corporate Social Responsibility (CSR), and community participation. Particularly, the government's expectation on PPP is high, where private funds are utilized for the development of infrastructure facilities. However, according to interviews with BAPPENAS, the vision on how to procure necessary funds to bridge the gap remains unclear.

For a reference, infrastructure investment estimation by GOI for the next five years is shown in Table 3.1.3.

Table 3.1.3 Infrastructure Investment Estimation for 2010-2014

Unit: Thousand Rp.

No	Sector	Estimation of Baseline Allocation Needs					Total***)
		2010	2011	2012	2013	2014	
1	Water Resources	15,983,774,670	15,909,533,220	16,909,100,039	17,973,194,572	19,106,100,486	90,931,702,986
	Activities funded by the government	15,983,774,670	15,909,533,220	16,909,100,039	17,973,194,572	19,106,100,486	85,881,702,986
	Activities funded by the private						5,050,000,000
2	Housing and Settlement						102,871,402,396
	Activities funded by the government	12,476,562,500	14,649,172,625	14,731,572,131	16,970,532,094	18,896,561,045	77,724,400,396
	Activities funded by the private						271,002,000
	Subsidy	3,116,000,000	3,800,000,000	4,760,000,000	5,900,000,000	7,300,000,000	24,876,000,000
3	Transportation	34,361,874,080	41,957,052,888	45,774,593,277	49,577,497,104	52,375,461,815	638,540,624,164
	Activities funded by the government	34,361,874,080	41,957,052,888	45,774,593,277	49,577,497,104	52,375,461,815	224,046,479,164
	Activities funded by the private						414,494,145,000
4	Electricity						289,654,226,444
	Allocation through MEMR Budget	5,252,988,395	6,206,986,074	6,868,783,289	8,242,539,947	9,891,047,936	36,462,345,640
	Allocation through PHLN (SLA)	6,418,280,000	6,187,720,000	9,242,323,200	11,090,787,840	13,308,945,408	46,248,056,448
	Activities funded by the private						206,943,824,356
5	Energy						75,608,820,000
	Activities funded by the government	371,580,000	393,880,000	418,270,000	445,060,000	474,530,000	2,103,320,000
	Activities funded by the private	14,701,100,000	14,701,100,000	14,701,100,000	14,701,100,000	14,701,100,000	73,505,500,000
6	Post, Telecommunication and Information						228,884,945,480
	Activities funded by the government	2,788,719,000	3,890,389,700	4,487,882,765	5,053,001,549	6,064,952,465	22,284,945,480
	Activities funded by the private						206,600,000,000
7	Countermeasure to Sidoarjo Mud Disaster	1,313,000,000	1,445,000,294				2,758,000,294
	Activities funded by the government	1,313,000,000	1,445,000,294				2,758,000,294
	Activities funded by the private						
	Total Investment Estimation (a)						1,429,249,721,764
	Total Government Investment Estimation*) (b)	72,548,498,645	84,452,014,801	89,190,201,500	98,261,825,267	106,808,653,747	451,261,193,960
	Total SLA Estimation**) c)	6,418,280,000	6,187,720,000	9,242,323,200	11,090,787,840	13,308,945,408	46,248,056,448
	Total PPP Investment Estimation (a)-(b)-(c)						906,864,471,356
	Total Subsidy Estimation	3,116,000,000	3,800,000,000	4,760,000,000	5,900,000,000	7,300,000,000	24,876,000,000

Sources : BAPPENAS(2009) "Indonesia Infrastructure Development Program 2010-2014"

Notes : *) Excluding Specific Allocation Fund (DAK) Rp 48,183 Trillion

**) Electricity Investment Estimation Through Sub-Loan Agreement (SLA)

***)Difference of one digit in the last figure are caused by rounding off

3.1.2 Necessary Investment Size to Achieve Target Growth

Accumulation of infrastructure assets can increase the growth rate in the short-term and long-term periods. Limited access to basic infrastructure services would restrict the present welfare and future potential growth of the country. Furthermore, provision of more sophisticated infrastructure would be demanded as Indonesia is becoming a higher income country. It is widely accepted that substantial investment is needed for Indonesia to be competitive in the region and adequate infrastructure service is required to attract sufficient private investments.

Various studies suggest that 5-7% of GDP should be invested in infrastructure to expand its economy rate to around 6%[2]. Some argue that investments of 5% of GDP are required to sustain a 6% economic growth rate[3], while others suggest that an investment of US$4.7 billion is required to boost GDP by 2.4%[4]. It was also implied that a 7.5% GDP growth would increase demand for infrastructure investments at 7% of GDP[5]. Another study also suggests that 5% of GDP for new assets and an additional 2% of GDP for capital replacement should be required[6]. Another study estimated that East Asian countries would have to spend about 6.2% of GDP annually, of which 65% is for new investments and the remaining 35% is for the maintenance of the existing assets[7]. A World Bank study[8] projected the total investment needs in infrastructure for the period 2005-2010[9].

Table 3.1.4 summarizes the study projection. For the East Asia and Pacific Region, the size of the new investment needs is estimated at 3.7%, while that for maintaining the existing assets is about 3%. Thus, the total investment level is around 6.6%. Considering this, Indonesia's investment level needs to increase to more than double to match the quality of services available in other countries.

Table 3.1.4 Expected Annual Investment Needs During 2005-2010

	New		Maintenance		Total	
	US$Mil	**%GDP**	**US$Mil**	**%GDP**	**US$Mil**	**%GDP**
By Income Group						
Low income	49,988	3.18%	58,619	3.73%	108,607	6.92%
Middle income	183,151	2.64%	173,035	2.50%	356,187	5.14%
High income	135,956	0.42%	247,970	0.76%	383,926	1.18%
Developing Countries by Region						
East Asia & Pacific	99,906	3.67%	78,986	2.90%	178,892	6.57%
South Asia	28,069	3.06%	35,033	3.82%	63,101	6.87%
Europe & Central Asia	39,069	2.76%	58,849	4.16%	67,918	6.92%
Middle East & North Africa	14,884	2.37%	13,264	2.11%	28,148	4.48%
Sub-Saharan Africa	13,268	2.84%	12,644	2.71%	25,912	5.55%
Latin America & Caribbean	37,944	1.62%	32,878	1.40%	70,822	3.02%
All developing countries	233,140	2.74%	231,654	2.73%	434,793	5.47%

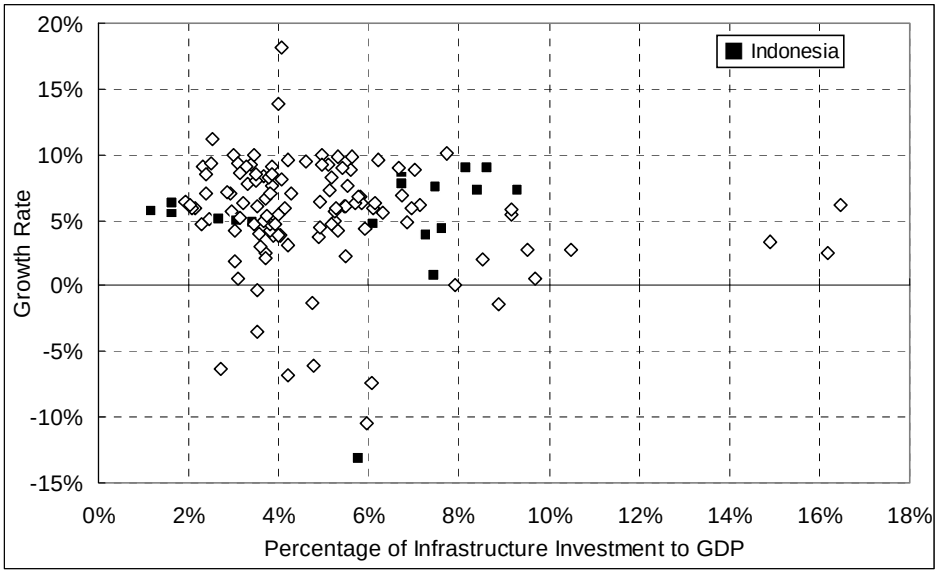
Source: the World Bank

[2] Studies examined were "Averting an Infrastructure Crisis in Indonesia", "Connecting East Asia", "Estimation of Infrastructure Investment Needs in the South Asia Region" (I. Chatterton), "Investing in Infrastructure" (M. Fay), and "How Relevant is Infrastructure to Growth in East Asia" (K. Seethepalli).
[3] Averting an Infrastructure Crisis in Indonesia, 2004.
[4] Averting an Infrastructure Crisis in Indonesia, 2004.
[5] I. Chatterton and O.S. Puerto, Estimation of Infrastructure Investment Needs in the South Asia Region, the World Bank.
[6] M. Fay and T. Yepes, Investing in Infrastructure, Policy Research Working Paper No. 3102, the World Bank.
[7] Connecting East Asia, ADB, JBIC, and the World Bank, 2005.
[8] M. Fay and T. Yepes, Investing in Infrastructure, Policy Research Working Paper No. 3102, the World Bank.
[9] The infrastructure sector in the study covered roads, railways, electricity, telecommunications, water and sanitation. Ports, airports, canals, and oil and gas sub-sectors were excluded because of insufficient and incompatible data.

Table 3.1.4 above suggests that the combined annual investment requirement in the East Asia & Pacific and South Asia regions is around US$242 billion. A World Bank/UNESCAP study indicates that developing South Asian and Pacific countries need annual investments of US$88 billion from 2006 to 2010[10], of which nearly half is required for the energy sector. This figure is about 40% more than the estimated investment in the previous study. The large increase was due to the assumption of the higher investment needs in the region. According to the study, the total investment needs for East Asia & Pacific is estimated to decrease by 0.4 percentage point while that for South Asia increased by 0.8 percentage point. Assuming the investment size is constant for East Asia & Pacific, the total investment would reach a level of US$270 billion. This figure is indicative but conservative as the author suggests that the new investment requirement for East Asia & Pacific at 4% of GDP is higher than the previous projection. In another estimate, the Asia-Pacific Infrastructure Forum found that the region's investment requirements would be approximately US$300 billion per year[11]. These studies calculated the annual investment needs to be around US$240-300 billion for East and South Asia.

3.1.3 Empirical Data and Comparison with Other Countries

Next, the relation of GDP growth rate and capital spending is analyzed using empirical data. The following Figure 3.1.2 shows the relation of GDP growth ratio and capital spending in Asian counties[12].



Source: Prepared by JICA Study Team based on data from ADB "Country Table."

Figure 3.1.2 Relation of Growth Rate and Ratio of Infrastructure Investments to GDP

[10] I. Chatterton and O.S. Puerto, Estimation of Infrastructure Investment Needs in the South Asia Region, the World Bank. This study updated the investment needs by following the approach used by M. Fay and T. Yepes.

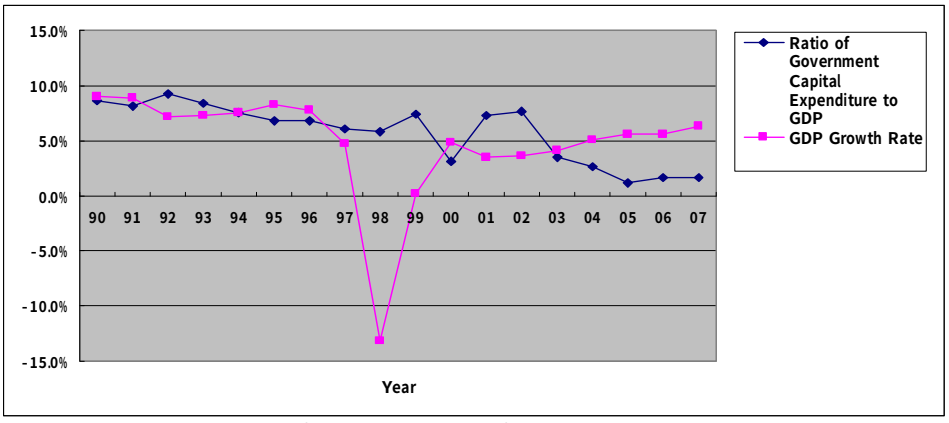
[11] As quoted in Infrastructure Challenges in South Asia: The Role of Public-Private Partnerships, G. Nataraj, 2007, ADB Institute (ADB Institute Discussion Paper No. 80)

[12] The sample countries are China, Hong Kong, Indonesia, Malaysia, Papua New Guinea, Sri Lanka, South Korea, and Thailand. The sample term is from 1990 to 2007. The data is used only when available.

As can be seen from the figure, many countries allocated budget at 2-6% of GDP for capital expenditures and achieved growth rates of 2-10%. In the Indonesian case, approximately 5% of growth was achieved even when the investment ratio is around 2%. The impact on growth by the investment in infrastructure is considered to be associated with a time lag. Although it is difficult to specify the levels of time lag, various studies suggest the accumulation of infrastructure assets contribute to economic growth and is a significant driver of long-run growth. Infrastructure plays an important role in promoting growth. However, benefits of infrastructure investment alone are difficult to measure as it is contingent on a combination of various factors. Levels of accumulated capital stock and human capital, and the effectiveness of use of these resources also affect the growth potential. Other factors such as governance and policies cannot be isolated to measure growth. We could conclude that infrastructure significantly and positively affects GDP, and from the above figure, investment in infrastructure at 2-6% of GDP appears to contribute to economic growth by 5-10%.

As discussed, many factors influence economic growth and the above figure only tells a partial story. Growth is contingent on the configuration of various elements such as financial systems, human capital and governance. Good governance tends to be associated with better provision of infrastructure[13]. In addition, large and positive impacts from infrastructure development may be evident in less developed countries. It is suggested that the effective use of infrastructure resources accounts to one-quarter of the growth differential and more than 40% of the growth differential between low and high-growth countries[14]. Therefore, the above analysis implies that Indonesia needs to substantially increase its capital expenditure in order to achieve the growth rate of 7.0%.

Next, the relation between GDP growth ratio and investment ratio for specific countries is analyzed. In Indonesia, the ratio of government infrastructure investment to GDP has been declining since 1990. The following Figure 3.1.3 shows the trend of the government infrastructure investment (the central government's capital expenditure) and the GDP growth rate of Indonesia between 1990 and 2007[15].



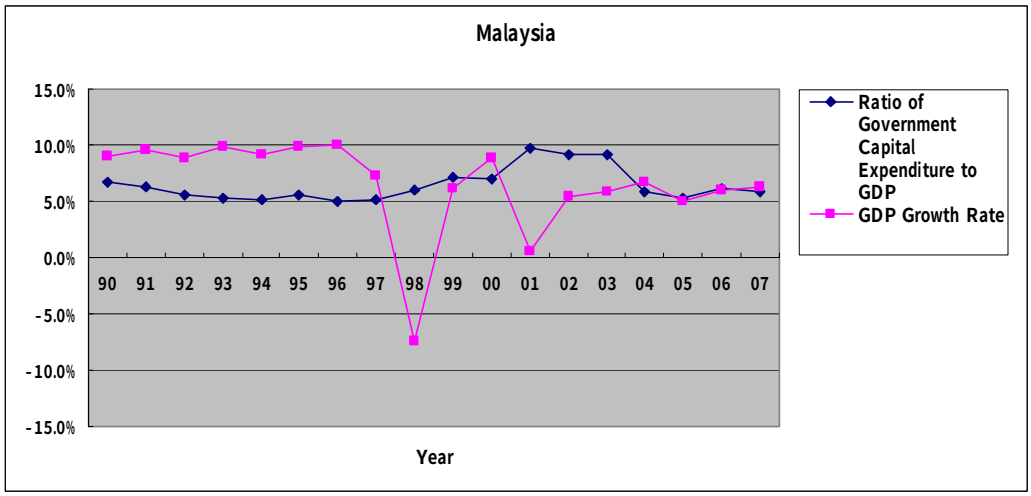
Source: ADB "Key Indicators for Asia and the Pacific 2008"

Figure 3.1.3 Trend of Infrastructure Investment and GDP Growth of Indonesia

[13] K. Seethepalli et al, How Relevant is Infrastructure to Growth in East Aisa?,the World Bank.
[14] C. Hulten, Infrastructure Capital and Economic Growth: How Well You Use It May Be More Important than How Much You Have. NBER Working Paper 5874, 1996.
[15] Here, "Capital Expenditure by the Central Government" is used as the figure for infrastructure investment.

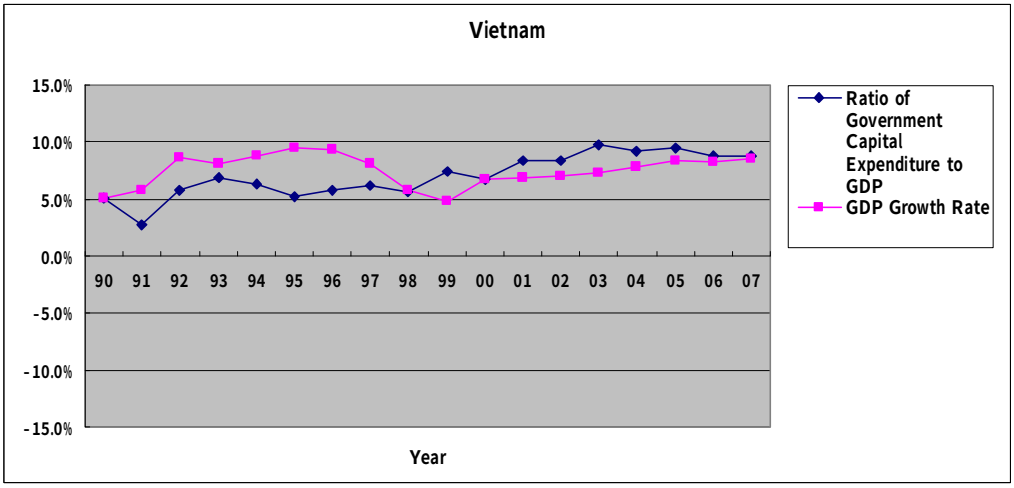
As evident in the figure, the ratio of the government capital expenditure to GDP has been decreasing by 1.2% in 2005, 1.6% in 2006 and 1.6% in 2007. The GDP growth rate for these years was over 5.0% but still lower than the level before the Asian economic crisis.

The following Figures 3.1.4, 3.1.5 and 3.1.6 show the same data for Malaysia, Vietnam, and Thailand.



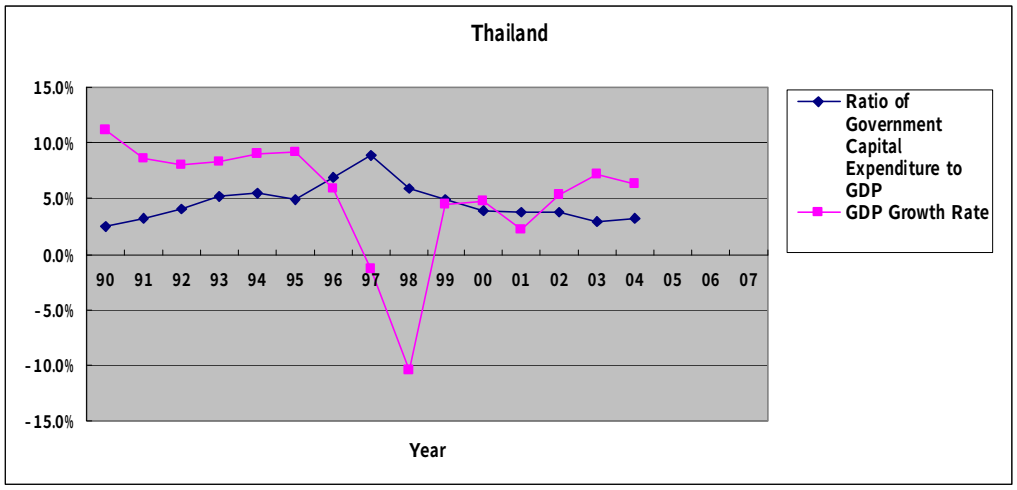
Source: ADB "Key Indicators for Asia and the Pacific 2008"

Figure 3.1.4 Trend of Infrastructure Investment and GDP Growth of Malaysia



Source: ADB "Key Indicators for Asia and the Pacific 2008"

Figure 3.1.5 Trend of Infrastructure Investment and GDP Growth of Vietnam

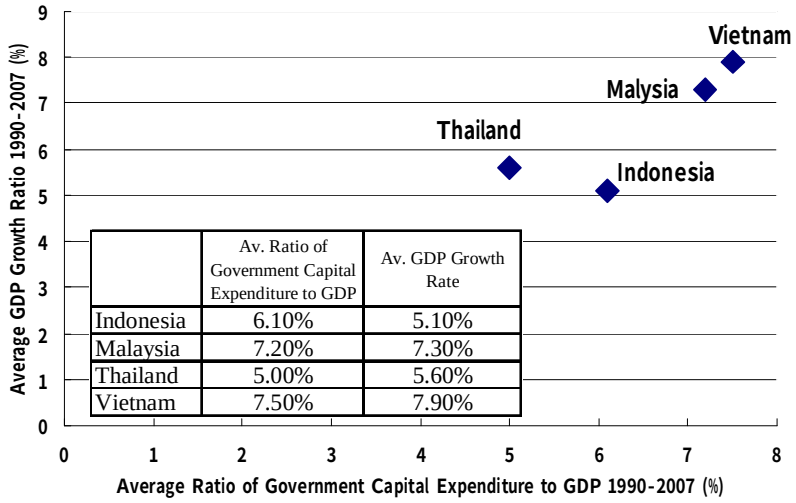


Source: ADB "Key Indicators for Asia and the Pacific 2008"
Note: Data is only available up to 2004.

Figure 3.1.6 Trend of Infrastructure Investment and GDP Growth of Thailand

In Malaysia, the ratio of government capital expenditure to GDP was kept at over 5.0% and GDP growth was over 5.0% except in 1998 and 2001. The figures of Vietnam show a different trend. The ratio of government capital expenditure to GDP was high and nearly 10% during the last five years. The GDP growth rate also remained stable and high. It is observed that the Vietnamese economy did not experience a sharp decline in 1998, implying that the direct influence of the Asian financial crisis was smaller. In Thailand, the ratio of government capital expenditure to GDP was decreasing but still higher than that of Indonesia. Comparison of all the data has confirmed that the ratio of government capital expenditure to GDP in Indonesia is lower than those of other countries in recent years.

The following Figure 3.1.7 shows the relation between the average ratios of government capital expenditure to GDP and average GDP growth rate of the four countries.



	Av. Ratio of Government Capital Expenditure to GDP	Av. GDP Growth Rate
Indonesia	6.10%	5.10%
Malaysia	7.20%	7.30%
Thailand	5.00%	5.60%
Vietnam	7.50%	7.90%

Source: ADB "Key Indicators for Asia and the Pacific 2008"
Note: The figure is average for 1990-2007. As for Thailand, data for 1990-1004 is applied.

Figure 3.1.7 Relations between Infrastructure Investment and Economic Growth (1)

The above figure and table show that in Malaysia and Vietnam, both the average ratio of government capital expenditure to GDP and the average GDP growth rate are higher than those of Indonesia. Roughly speaking, Malaysia and Vietnam achieved more than 7% of GDP growth with over 7% of infrastructure investment. As for Thailand, the average GDP growth rate is higher than that of Indonesia although the average ratio of government capital expenditure to GDP is lower. Based on the data between 1990 and 2007, Malaysia and Vietnam realized higher GDP growth with the higher infrastructure investment ratio to GDP. This suggests that Indonesia's comparatively lower GDP growth may have had some relationship with its lower infrastructure investment.

3.1.4 Conclusion

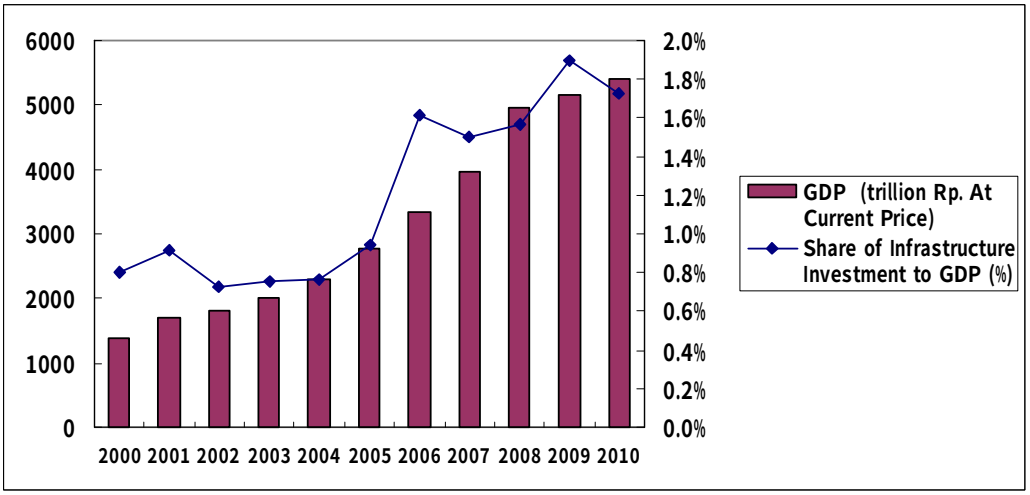
The next RPJM aims to achieve a 7% GDP growth rate in 2014. In order to attain this rate of growth, an infrastructure investment of 6-7% of GDP is needed in Indonesia. This translates to new investments estimated to be around Rp230 to 280 trillion per annum[16]. If the investment has to be solely borne by the central government, the current budget would need to be more than tripled. In addition, addressing the backlog of under-spending in the past ten years, while undertaking major new projects, will require significantly large additional investments. This is vital to meet increasing demand that would further boost the economy. Therefore, the government's estimate of investment needs at Rp 1,429 trillion for the next five years, i.e., Rp 285 trillion per annum, may not be far off from what is needed in the country, given the substantial backlog in investment and maintenance[17].

3.2 Analysis on Government Budget Structure

3.2.1 Infrastructure Investment Budget in Recent Years

Investment needs appear substantial as compared to the recent public spending pattern. Figure 3.2.2 shows the central government's spending and capital expenditures for 2000-2010. The levels of public infrastructure investment have been low at around 1-2% of GDP, or about 10% of the central government's overall spending.

[16] The investment sizes are estimated based on the 2007 GDP and the corresponding exchange rate.
[17] Directorate of Highway suggests investments of 8.6% of GDP as the rule of thumb. This suggests that Rp 340 trillion per year will be required.

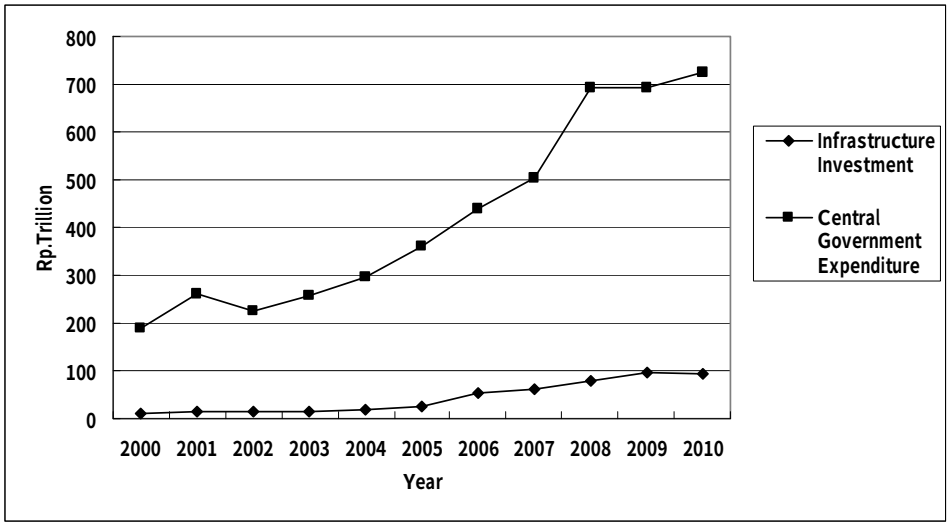


Source: Ministry of Finance

Figure 3.2.1 Trend of Share of Infrastructure Investment to GDP

Government infrastructure investment has steadily increased in absolute terms since 2001. However, it has not grown at the same pace as the economy. It is also noted that the investment amount is well below the pre-crisis level which reached about 6% of GDP.

The trend of central government expenditure and infrastructure investments are shown in Figure 3.2.2



Source: Ministry of Finance

Figure 3.2.2 Central Government's Expenditure and Infrastructure Investment

As can be seen from the figure, the central government expenditure has an increasing trend since 2000. One of the reasons for this increase is the increase in tax and non-tax revenues due to economic recovery and the recent tax reform. Notably since 2005, when Ms. Sri Mulyani took office as the Finance Minister, various effective tax reforms have been introduced.

Meanwhile, infrastructure investment is showing a similar growing trend, although modest compared with that of the central government expenditure. However, according to MOF's budget data, from the early 2000s, the three elements of government expenditure, namely, "transfers to regions", "subsidies", and "social assistance", took up the increase and this strictly limited

infrastructure investment.

3.2.2 Characteristics of GOI's National Budget (APBN)

Indonesia's basic fiscal framework is the National Budget Income and Expenditures (APBN). The APBN of 2008 and 2009 is shown in Table 3.2.1.

Table 3.2.1 APBN 2008 and 2009

(In Trillion Rupiah)

Description	2008		2009			
	APBN-P	% to GDP	APBN	% to GDP	Adjusted APBN	% to GDP
A. National Revenue and Grants	**895,0**	**20,0**	**985,7**	**18,5**	**848,6**	**15,5**
I. Domestic Income	892,0	19,9	984,8	18,5	847,6	15,4
1. Income from taxes	609,2	13,6	725,8	13,6	661,8	12,1
a. Domestic Taxes	580,2	12,9	697,3	13,1	642,2	11,7
i. Profit	305,0	6,8	357,4	6,7	319,6	5,8
- Oil&Gas	53,6	1,2	56,7	1,1	280,8	5,1
- Non-Oil&Gas	251,4	5,6	300,7	5,6	38,8	0,7
ii. Income Tax	195,5	4,4	249,5	4,7	233,6	4,3
iii. Land & Property	25,3	0,6	28,9	0,5	23,9	0,4
iv. BPHTB	5,4	0,1	7,8	0,1	7,2	0,1
v. Export Tax	45,7	1,0	49,5	0,9	54,4	1,0
vi. Other Taxes	3,4	0,1	4,3	0,1	3,5	0,1
b. International Trade Taxes	29,0	0,6	28,5	0,5	19,5	0,4
i. Inflow	17,8	0,4	19,2	0,4	17,2	0,3
ii. Outflow	11,2	0,2	9,3	0,2	2,4	0,0
2. National revenue Other than Tax	282,8	6,3	258,9	4,8	185,9	3,4
a. Resources	192,8	4,3	173,5	3,3	103,7	1,9
i.Oil&Gas	182,9	4,1	162,1	3,0	92,0	1,7
- Oil	149,1	3,3	123,0	2,3	62,4	1,1
- Natural Gas	33,8	0,8	39,1	0,7	29,6	0,5
- Non-Oil&Gas	9,8	0,2	11,4	0,2	11,7	0,2
ii. General Mining	6,9	0,2	8,7	0,2	8,7	0,2
- Forestry	2,8	0,1	2,5	0,0	2,5	0,0
- Fishery	0,2	0,0	0,2	0,0	0,2	0,0
b. State Company Profit	31,2	0,7	30,8	0,6	26,1	0,5
c.PNBP	53,7	1,2	49,2	0,9	50,6	0,9
d. Revenue from BLU	5,1	0,1	5,4	0,1	5,4	0,1
II. Grant	2,9	0,1	0,9	0,0	0,9	0,0
B. National Expenditures	**989,5**	**22,1**	**1.037,1**	**19,5**	**988,1**	**18,0**
I. Central Government	697,1	15,5	716,4	13,4	685,0	12,5
A. Expenditures by Ministeries & Agencies	290,0	6,5	322,3	6,0	322,3	5,9
B. Expenditures by Other Than Ministeries & Agencies	407,0	9,1	394,1	7,4	326,7	6,6
- Interest for Loan	94,8	2,1	101,7	1,9	110,6	2,0
a. Debt Domestic	65,8	1,5	69,3	1,3	70,1	1,3
b. Debt International	29,0	0,6	32,3	0,6	37,8	0,7
- Subsideas	234,4	5,2	166,7	3,1	123,6	2,3
a. Energy Subsidy	187,1	4,2	103,6	1,9	67,0	1,2
b. Non-Energy Subsidy	47,3	1,1	63,1	1,2	56,6	1,0
II. Transfer to regions	292,4	6,5	320,7	6,0	303,1	5,5
1. Balancing Funds	278,4	6,2	297,0	5,6	279,3	5,1
a. Profit Sharing Fund	77,7	1,7	85,7	1,6	68,1	1,2
b. General Allocation Fund	179,5	4,0	186,4	3,5	186,4	3,4
c. Special Funds	21,2	0,5	24,8	0,5	24,8	0,5
2. Special Funds & Adjustments	14,0	0,3	23,7	0,4	23,7	0,4
a. Autonomy Funds	7,5	0,2	8,9	0,2	8,9	0,2
b. Funds for Adjustments	6,5	0,1	14,9	0,3	14,9	0,3
C. Primary Balancing	**0,3**	**0,0**	**50,3**	**0,9**	**28,9**	**0,5**
D. Surplus/Deficit Budget (A-B)	**-94,5**	**-2,1**	**-51,3**	**-1,0**	**-139,5**	**-2,5**
E. Financing (I + II)	**94,5**	**2,1**	**51,3**	**1,0**	**139,5**	**2,5**
I. Domestic Financing	107,6	2,4	60,8	1,1	109,5	2,0
1. Domestic Banking	-11,7	-0,3	16,6	0,3	65,8	1,2
a. RDI	0,3	0,0	3,6	0,0	3,7	0,1
a.1 SIL:PA 2008	-	-	2,1	0,0	51,3	0,9
b. Government Account	-12,0	-0,3	3,9	0,0	3,9	0,0
c. Finalizing Money Due to Nation	-	-	9,1	0,2	9,1	0,2
2. Non-Banking Domestic	119,3	2,7	44,2	0,8	43,7	0,8
a. Privatization Net	0,5	0,0	0,5	0,0	0,5	0,0
b. Sale of National Assetts	3,9	0,1	2,6	0,0	2,6	0,0
c. National Certificates Net	117,8	2,6	54,7	1,0	54,7	1,0
d. Government Investment Funds	-2,8	-0,1	-13,6	-0,3	-14,1	-0,3
II. Foreign International Financing	-13,1	-0,3	-9,4	-0,2	-14,5	-0,3
1. Drawdown of External Foreign Loan (Bruto)	48,1	1,1	52,2	1,0	57,6	1,1
a. Loan Program	26,4	0,6	26,4	0,5	31,9	0,6
b. Project Loans	21,8	0,5	25,7	0,5	25,7	0,5
2. Loan Payment Installments	-61,3	-1,4	-61,6	-1,2	-72,1	-1,3
III. Additional Loan Payments	-	-	-	-	44,5	0,8

Source : Ministry of Finance
*) Difference of one digit in the last figure are caused by rounded off

The basic items of APBN are: A) National Revenue and Grants, B) National Expenditures, C)

Primary Balancing, and D) Financing. The APBN of 2009 was revised due to the global economic crisis of 2008. According to the adjusted APBN 2009, the total amount of national revenue and grants is Rp 848.6 trillion, which equals 15.5% of GDP. On the other hand, the total amount of national expenditure is Rp 988.1 trillion, which is 18.0% of GDP. The difference of Rp139.5 trillion is the government's deficit and financed mainly through borrowings from domestic banks.

The characteristics of GOI's budget of 2008 and 2009 can be summarized as follows:

a) National revenue and expenditures are approximately 20% of GDP.

"National Revenue and Grants" is Rp 895.0 trillion (20.0% of GDP) in 2008 (Revised) and Rp 848.6 trillion (15.5% of GDP) in 2009 (Revised) while "National Expenditure" is Rp 989.5 trillion (22.1% of GDP) in 2008 (Revised) and Rp 988.1 trillion (18.0% of GDP) in 2009 (Revised).

b) The deficit is about 2% of GDP.

Government Regulation No.23/2003 stipulates that the fiscal deficit must be less than 3% of GDP. In APBN, the amount of "Deficit" is under this level, i.e., Rp 94.5 trillion (2.1% of GDP) in 2008 (Revised) and Rp 139.5 trillion (2.5% of GDP) in 2009 (Revised). According to an interview with MOF, the policy is to constantly maintain fiscal deficit below 2%, and the deficit exceeding this threshold in 2009 was due to GOI's fiscal stimulus package to recover from the influence of the global economic crisis in 2008.

c) "Subsidies" occupies a large share (approximately one third) of the government budget.

"Subsidies", which is included in the "non-line ministries expenditures", is Rp 234.4 trillion (5.2% of GDP or 23.7% of the total government expenditure) in 2008 (Revised) and Rp 123.6 trillion (2.3% of GDP or 12.5% of the total government expenditure) in 2009 (Revised). This also occupies a large share in the expenditure. MOF explains that the subsidy spurred in 2008 due to the oil price hike[18] as energy subsidies are sensitive to the condition of the global oil market.

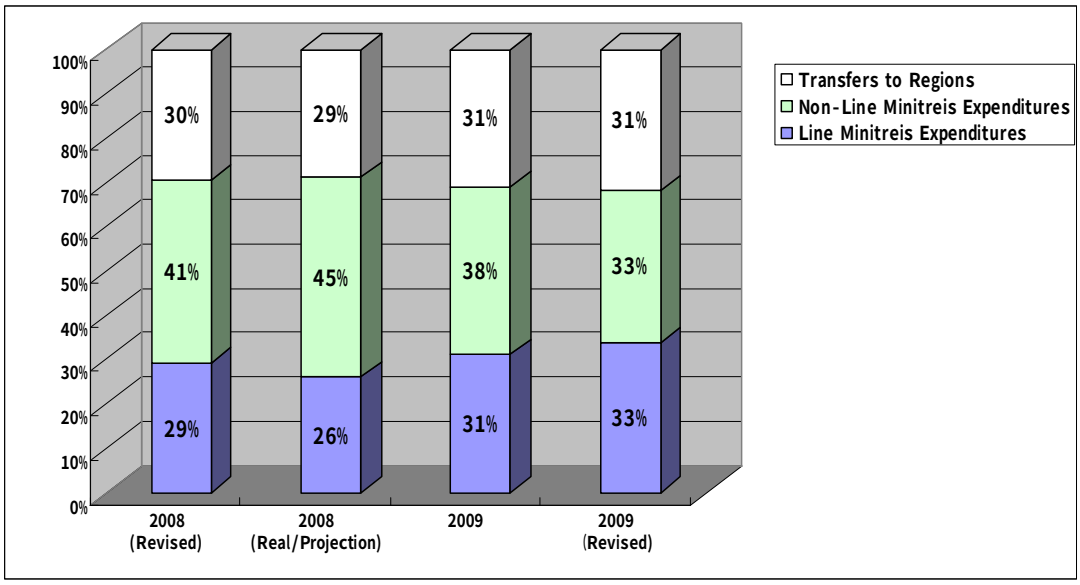
d) "Transfer to regions" also occupies a large share (approximately one third) of the national budget.

"Transfer to regions" is Rp 292.4 trillion (6.5% of GDP) in 2008 (Revised) and Rp 303.1 trillion (5.5% of GDP) in 2009 (Revised), which are almost equal to those of "Expenditure by Ministries and Agencies". The main components of "Transfer to regions" are "Revenue Sharing (*Dana Bagi Hasil*: DBH)" and "General Allocation Fund" (*Dana Alokasi Umum*: DAU)" and the amounts are automatically calculated by formula and standards of existing laws[19].

The shares of "Line Ministries Expenditures", "Non-Line Ministries Expenditures", which include

[18] Quotation from an interview to MOF.
[19] Regarding the details of DBH and DAU, refer to the section 3.3.3.

"Subsidies", and "Transfers to the region" in the national expenditure in the 2009 APBN are almost the same as in 2008, as shown in the following Figure 3.2.3. The expenditure proportion is used for the basic simulation in the next section.



Source: JICA Study Team (Data from GOI)

Figure 3.2.3 Share of Expenditure Items

3.2.3 Basic Simulation of Government Infrastructure Investment Budget

In this section, the results of the basic simulations on the future infrastructure investment budget of GOI are shown. The purpose of the analysis is to examine the following items:

(1) Level of revenues and expenditures of the government
(2) Sensitivity of future revenues and expenditures to economic growth
(3) Scale of infrastructure investment

The government budget for 2010-2014 is projected based on a model of APBN. The following three scenarios in Table 3.2.2 are assumed in the model.

Table 3.2.2 Future Scenarios for Indonesian Economy and Budget (2010-2014)

Case	Scenario
Base Case	Scenario projected by GOI (GDP Growth Rate is approximately 6.0%)
High Growth Case	Scenario with GDP average growth rate of 7.5% (+1.5% of Base Case)
Low Growth Case	Scenario with GDP average growth rate of 4.5% (-1.5% of Base Case)

Source: JICA Study Team

As shown in the above table, the scenario projected by MOF is used as the basis of the analysis. The detailed figures are shown in the following Table 3.2.3:

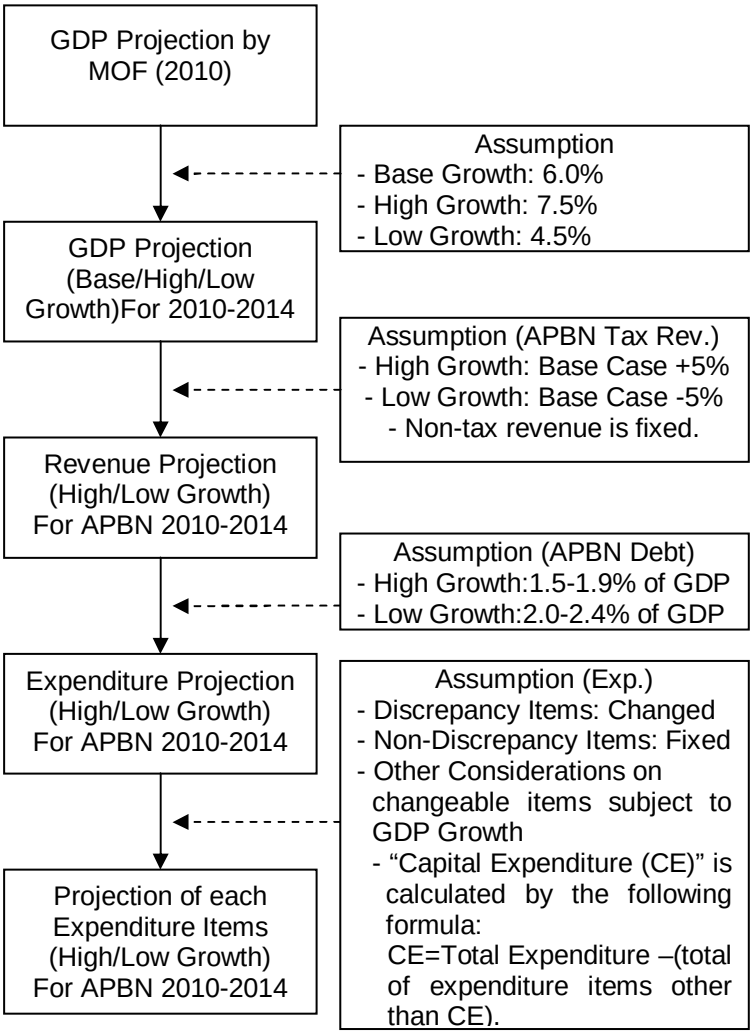
Table 3.2.3 Budget Projection by MOF (Base Case)

Items	2010	2011	2012	2013	2014
GDP	5,723.8	6,067.2	6,431.3	6,817.1	7,226.2
Growth Rate of GDP(%)	6.0%	6.0%	6.0%	6.0%	6.0%
A.State Revenue and Grants	952.8	1,057.4	1,223.6	1,426.8	1,668.6
I. Domestic Revenue	951.2	1,055.3	1,221.6	1,425.0	1,666.9
		10.9%	15.8%	16.7%	17.0%
1.Tax Revenue	742.7	846.5	992.2	1,171.1	1,390.4
2.Non-Tax Revenue	208.5	208.8	229.5	253.8	276.4
II. Grants	1.5	2.0	2.0	1.8	1.7
B. State Expenditure	1,074.1	1,185.0	1,343.5	1,544.8	1,783.5
I. Central Government Expenditur	751.7	820.3	916.4	1,042.0	1,191.9
a. Line Ministries Expenditure	340.1	409.1	470.6	560.1	652.6
Mandatory	139.9	149.4	165.9	184.6	205.4
- Personal Expenditure	87.8	96.2	108.6	123.0	140.0
- Goods&Services Expenditure	31.6	35.8	38.7	41.8	45.0
- Plafond Use of PNBP & BLU	20.5	17.4	18.6	19.8	20.4
Discretionary	200.2	259.7	304.7	375.6	447.2
- Goods&Services Expenditure	50.4	52.1	56.4	61.4	66.9
- Capital Expenditure	83.2	113.9	138.3	180.5	219.3
Capital Expenditure Ratio (% to GDP)	1.5%	1.9%	2.2%	2.6%	3.0%
- Social Assistance	66.6	93.7	110.0	133.6	161.0
b. Non-Line Ministries Ependitur	411.5	411.1	445.8	481.9	539.3
Subsidies	161.0	151.6	147.6	137.9	133.9
Others	250.5	259.5	298.2	344.0	405.4
II Transfer to Region	322.4	364.7	427.0	502.8	591.6
C. Primary Balance	-3.9	1.7	25.3	41.2	61.3
D. Overall Balance (A-B)	-121.3	-127.6	-119.8	-118.0	-114.9
E.. Financing	121.3	127.6	119.8	118.0	114.9
Financing (% to GDP)	2.1%	2.1%	1.9%	1.7%	1.6%

Source: MOF

Note: According to an interview with MOF, constant price (2010 base) is used for this table.

The figures of "High Growth Case" and "Low Growth Case" were calculated using the "Base Case" figure. The flow of the calculation is shown in the following Figure 3.2.4:



Source: JICA Study Team

Figure 3.2.4 Flow of Calculation of Figures for "High/Low Growth Case"

The base figures for the analysis are the GDP and APBN projected by MOF[20]. In the first step of the simulation, GDP (2010-2014) for "Base Case", "High Growth Case" and "Low Growth Case" are projected by applying a GDP growth rate of 6.0%, 7.5 % and 4.5%, respectively.

Next, the projection of "Revenues" and "Expenditures" for APBN 2010-2014 is made. As the basis of the analysis, MOF applies the following assumptions in Table 3.2.4 for future APBN projections (Base Case).

[20] MOF (2009) "Fiscal Policy &Resources Envelope, Medium Term Budget Framework 2010-2014"

Table 3.2.4 Key Assumptions for ABPN (2010-2014) Projection by MOF

Items	2010	2011	2012	2013	2014	Average
a. Growth (%)	6	6.0-6.3	6.4-6.9	6.7-7.4	7.0-7.7	6.3-6.8
b. Inflation (%)	5	5.0±1	5.0±1	4.5±1	4.5±1	4.8-5.6
c. SBI (3bln) (%)	7	6.0-7.5	6.0-7.5	5.5-6.5	5.5-6.5	6.3-7.1
d. Exchange Rate (Rp/US$)	10,000	9,250-9,750	9,250-9,750	9,250-9,850	9,250-9,850	9,250-9,850

Source: MOF

In terms of the projection of "total revenue" for APBN 2010-2014, the following assumptions in Table 3.2.5 are applied for "High Growth Case" and "Low Growth Case".

Table 3.2.5 Assumptions for Total Revenue

	High Growth Case	Low Growth Case
Tax and Non-Tax Revenue	105% (+5%) of Base Case	95% (-5%) of Base Case
Grant	Same as Base Case	Same as Base Case

Source: JICA Study Team

The "tax revenue" and "non-tax revenue" of the "High Growth Case" are assumed to be 105% of the "Base Case" and those of the "Low Growth Case" are assumed to be 95% of the "Base Case". It is assumed that "Grant" figures are same for all three cases since it is irrelevant to changes in GDP.

Next, the total expenditures for 2010-2014 for the "High Growth Case" and "Low Growth Case" are calculated as the sum of "total revenue" and "debt". As mentioned above, GOI tries to keep the debt within 3% of GDP and the debt levels were at approximately 2% of GDP in these years. Thus, the simulation assumes the following rates in Table 3.2.6 for the government debts.

Table 3.2.6 Assumptions for Government Debt

	2010	2011	2012	2013	2014
Base Case (GOI Assumption)	2.1%	21%	1.9%	1.7%	1.6%
High Growth Case	1.9%	1.8%	1.7%	1.6%	1.5%
Low Growth Case	2.4%	2.3%	2.2%	2.1%	2.0%

Source: JICA Study Team

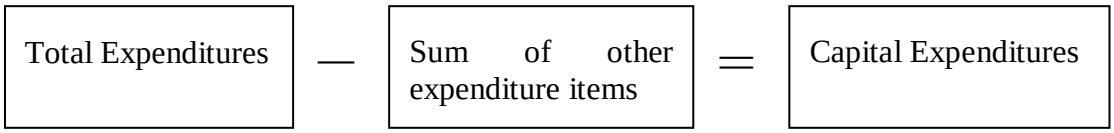
Based on the results of the above calculations, each expenditure item in APBN (2010-2014) for the "High Growth Case" and "Low Growth Case" is estimated based on the following assumptions in Table 3.2.7 below.

Table 3.2.7 Assumptions and Formula for Projection of Each Expenditure Item

	Expenditure Items	Assumptions for "High Growth Case" and "Low Growth Case"
A	I. Central Government Expenditure	Calculated by GDP Growth Scenario (± 5.0%)
B	a. Line Ministries Expenditure	Sum of "C" and "G"
C	Mandatory	Sum of "D" to "F"
D	- Personal Expenditure	Same as "Base Case"
E	- Goods & Services Expenditure	Same as "Base Case"
F	- Plafond Use of PNBP & BLU	Same as "Base Case"
G	Discretionary	Calculated by "A-C"
H	- Goods & Services Expenditure	Calculated by GDP Growth Scenario (± 5.0%)
I	- Capital Expenditure	Calculated by "G-H-J"
J	- Social Assistance	Calculated by GDP Growth Scenario (± 5.0%)
K	b. Non-Line Ministries Expenditure	Sum of "L" to "M"
L	Subsidies	Same as "Base Case"
M	Others	Same as "Base Case"
N	II Transfer to Region	Calculated by GDP Growth Scenario (± 5.0%)

Source: JICA Study Team

"Capital Expenditure" is the difference between "G. Discretionary" and "H. Goods & Services Expenditure" plus "J. Social Assistance". In other words, "Capital Expenditure" is calculated as "total expenditures minus the sum of other expenditure items" as shown in Figure 3.2.5. In this analysis, "Capital Expenditure" is used as a proxy for the government infrastructure investment budget.



Source: JICA Study Team

Figure 3.2.5 Formula Calculation of "Capital Expenditure"

The results of the projections for the "High Growth Case" and "Low Growth Case" are respectively shown in the following Tables 3.2.8 and 3.2.9:

Table 3.2.8 Simulation Results of the National Budget (High Growth Case)

Items	2010	2011	2012	2013	2014
GDP	5,832.3	6,269.7	6,740.0	7,245.5	7,788.9
Growth Rate of GDP(%)	7.5%	7.5%	7.5%	7.5%	7.5%
A.State Revenue and Grants	1,000.3	1,110.1	1,284.8	1,497.9	1,751.8
I. Domestic Revenue	998.8	1,108.1	1,282.8	1,496.1	1,750.1
1.Tax Revenue	779.8	888.8	1,041.8	1,229.7	1,459.9
2.Non-Tax Revenue	218.9	219.2	241.0	266.5	290.2
II. Grants	1.5	2.0	2.0	1.8	1.7
B. State Expenditure	1,111.1	1,222.9	1,399.4	1,613.9	1,868.7
I. Central Government Expenditur	772.6	840.0	951.0	1,085.9	1,247.5
a. Line Ministries Expenditure	361.1	428.9	505.2	604.0	708.2
Mandatory	139.9	149.4	165.9	184.6	205.4
- Personal Expenditure	87.8	96.2	108.6	123.0	140.0
- Goods&Services Expenditure	31.6	35.8	38.7	41.8	45.0
- Plafond Use of PNBP & BLU	20.5	17.4	18.6	19.8	20.4
Discretionary	221.2	279.5	339.3	419.4	502.8
- Goods&Services Expenditure	52.9	54.7	59.2	64.5	70.2
- Capital Expenditure	98.3	126.4	164.6	214.7	263.5
Capital Expenditure Ratio (% to GDP)	1.7%	2.0%	2.4%	3.0%	3.4%
- Social Assistance	69.9	98.4	115.5	140.3	169.1
b. Non-Line Ministries Ependitur	411.5	411.1	445.8	481.9	539.3
Subsidies	161.0	151.6	147.6	137.9	133.9
Others	250.5	259.5	298.2	344.0	405.4
II Transfer to Region	338.5	382.9	448.4	527.9	621.2
C. Primary Balance	0.0	0.0	0.0	0.0	0.0
D. Overall Balance (A-B)	-110.8	-112.9	-114.6	-115.9	-116.8
E..Financing	110.8	112.9	114.6	115.9	116.8

Source: JICA Study Team (Base Data from MOF)

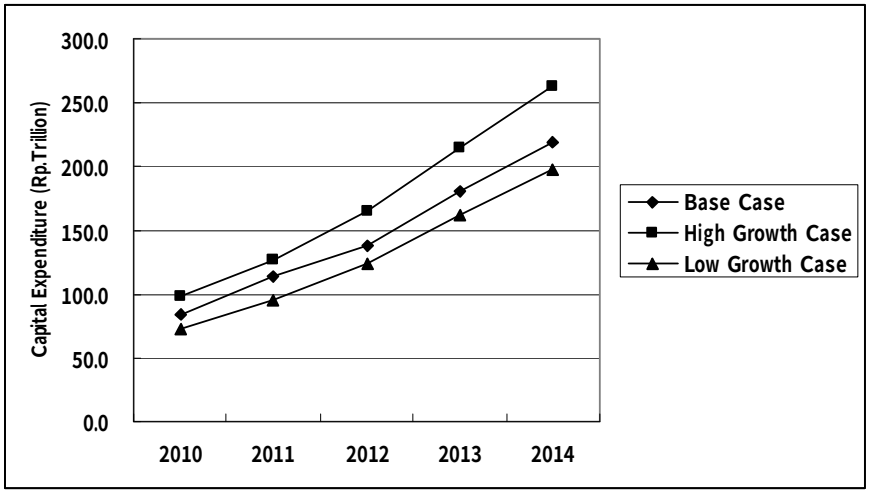
Table 3.2.9 Simulation Results of the National Budget (Low Growth Case)

Unit Rp. Trilion

Items	2010	2011	2012	2013	2014
GDP	5,669.5	5,924.7	6,191.3	6,469.9	6,761.0
Growth Rate of GDP(%)	4.5%	4.5%	4.5%	4.5%	4.5%
A.State Revenue and Grants	905.1	1,004.5	1,162.6	1,355.5	1,585.2
I. Domestic Revenue	903.6	1,002.5	1,160.6	1,353.7	1,583.5
1.Tax Revenue	705.6	804.2	942.6	1,112.5	1,320.9
2.Non-Tax Revenue	198.1	198.4	218.0	241.1	262.6
II. Grants	1.5	2.0	2.0	1.8	1.7
B. State Expenditure	1,041.2	1,140.8	1,298.8	1,491.3	1,720.4
I. Central Government Expenditur	734.9	794.3	893.2	1,013.7	1,158.4
a. Line Ministries Expenditure	323.4	383.2	447.4	531.8	619.1
Mandatory	139.9	149.4	165.9	184.6	205.4
- Personal Expenditure	87.8	96.2	108.6	123.0	140.0
- Goods&Services Expenditure	31.6	35.8	38.7	41.8	45.0
- Plafond Use of PNBP & BLU	20.5	17.4	18.6	19.8	20.4
Discretionary	183.5	233.8	281.5	347.2	413.7
- Goods&Services Expenditure	47.9	49.5	53.6	58.3	63.6
- Capital Expenditure	72.4	95.3	123.4	161.9	197.2
Capital Expenditure Ratio (% to GDP)	1.3%	1.6%	2.0%	2.5%	2.9%
- Social Assistance	63.3	89.0	104.5	126.9	153.0
b. Non-Line Ministries Ependitur	411.5	411.1	445.8	481.9	539.3
Subsidies	161.0	151.6	147.6	137.9	133.9
Others	250.5	259.5	298.2	344.0	405.4
II Transfer to Region	306.3	346.5	405.7	477.7	562.0
C. Primary Balance	0.0	1.0	2.0	3.0	4.0
D. Overall Balance (A-B)	-136.1	-136.3	-136.2	-135.9	-135.2
E.. Financing	136.1	136.3	136.2	135.9	135.2

Source: JICA Study Team (Base Data from MOF)

The following Figure 3.2.6 and Table 3.2.10 show the difference of "capital expenditure" (Rp trillion).



Source JICA Study Team

Figure 3.2.6 Simulation Result-1 Difference of Capital Expenditure

Table 3.2.10 Simulation Result-1 Difference of Capital Expenditure

Unit: Rp Trillion

Case		2010	2011	2012	2013	2014	Total
	Average. Growth Rate						
Base Case	6.0%	83.2	113.9	138.3	180.5	219.3	735.2
High Growth Case	7.5%	98.3	126.4	164.6	214.7	263.5	867.5
Low Growth Case	4.5%	72.4	95.3	123.4	161.9	197.2	650.2

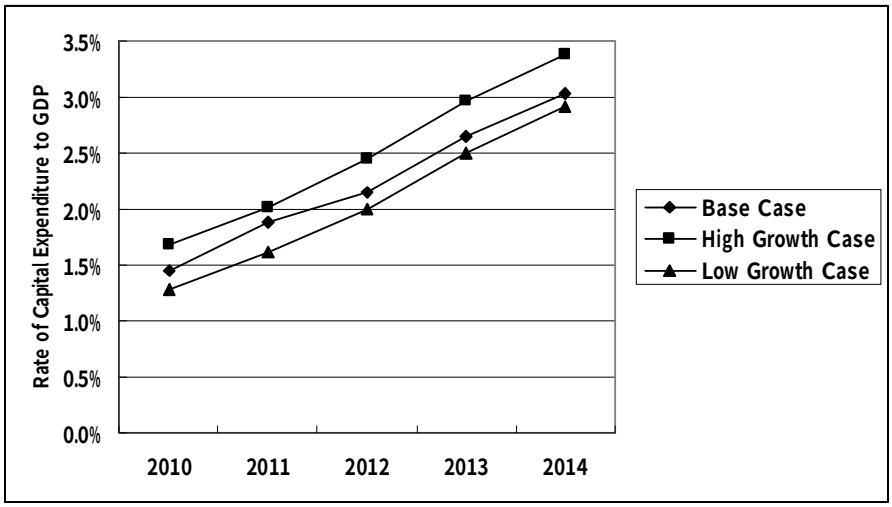
Source: JICA Study Team

Main implications of the above are as follows:

a) Even in the "High Growth Case", the total investment amount for the five years (2010-2014) is Rp 867.5 trillion. This is only about 60% of what is required for infrastructure investment (Rp 1,429 trillion).

b) According to BAPPENAS calculation, the annual average infrastructure investment needs (2010-2014) is Rp 285.0 trillion. The largest figure in the above table is Rp 263.5 trillion in the "High Growth Case" (2014). The target investment cannot be achieved even in the "High Growth Case" if the current APBN structure is kept.

Subsequently, the ratio of "Capital Expenditure" to GDP is examined. The results are shown in the following Figure 3.2.7 and Table 3.2.11:



Source: JICA Study Team

Figure 3.2.7 Simulation Result-2 Difference of Ratio of Capital Expenditure to GDP

Table 3.2.11 Simulation Result-2 Ratio of Capital Expenditure to GDP

Case	2010	2011	2012	2013	2014
Base Case	1.5%	1.9%	2.2%	2.6%	3.0%
High Growth Case	1.7%	2.0%	2.4%	3.0%	3.4%
Low Growth Case	1.3%	1.6%	2.0%	2.5%	2.9%

Source: JICA Study Team

In Chapter 2, the Study Team suggested that infrastructure investment at 6-7% of GDP is necessary to achieve higher growth. However, the above table shows that achieving this target is not easy if the current APBN structure is maintained.

To increase capital expenditures, the following actions are therefore considered necessary:

1) Review of the current APBN structure and rationalization of expenditure (e.g., review of subsidies and use of "non-performing funds"), and
2) Promoting capital expenditures by sub-national governments through the improvement of coordination between the central and sub-national governments.

The above simulation confirmed that government budget alone cannot fulfill the infrastructure investment needs given that the existing allocation share remains unchanged. Therefore, to increase the total infrastructure investment, GOI should also try to mobilize private funds for infrastructure investments. Details of these points are discussed in Section 3.3.

3.2.4 Effects of Public Debt on Government Budget

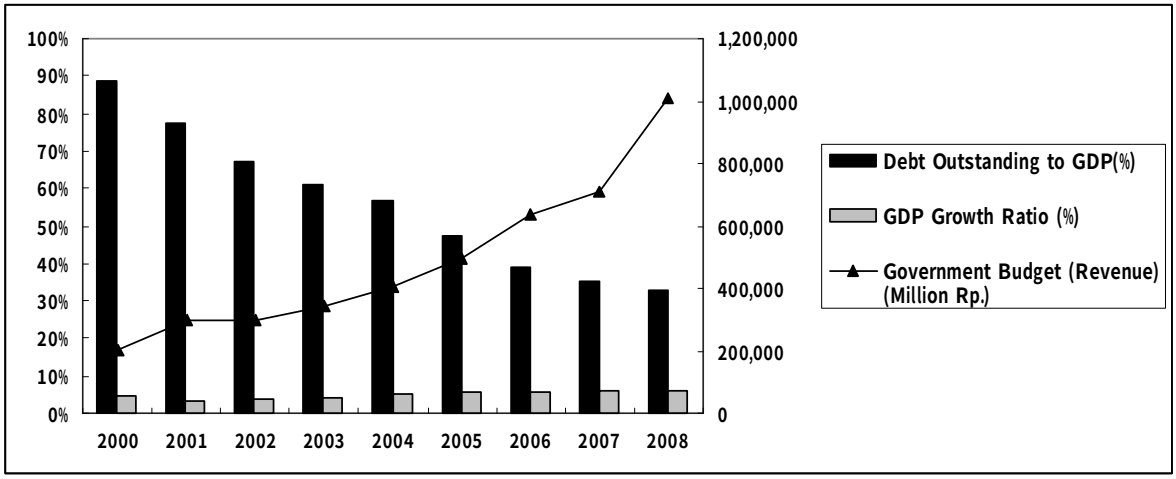
As mentioned in Section 3.2, Government Regulation No. 23/2003 stipulates that the fiscal deficit must be less than 3% of GDP. This rule has been strictly kept since 2003.

Table 3.2.12 APBN 2008 and 2009

Items	2003	2004		2005		2006		2007		2008	
	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual
Economic Growth											
Economic Growth*)	4.5	5.0	5.0	5.5	5.7	6.1	5.5	6.7	6.3	7.2	6.4
GDP Percapita											
Constant Price in 2000 (1,000 Rp)	6,625	7,626	10,506	7,946	12,700	8,333	15,000	8,791	17,600	9,317	21,700
Economic Stability											
Inflation, Consumer price Indeks (%)	5.1	6.4	6,4	7.0	17,11	5.5	6.6	5.0	6.6	4.0	6.5
Exchange rate, nominal (Rp/US$)	8,578	8,928	8,940	8,900	10	8,800	9,167	8,800	9,140	8,700	9,100
Balance of Payment											
Current Account/GDP	3.0	2.6	0,6	1.6	0.3	0.5	2.9	0.1	2.5	-0.2	-0.2
Non Oil Export Growth (%)	3.7	11.3	11.5	5.5	21.6	6.5	6.5	7.5	21.2	8.1	12.0
Non Oil Import Growth (%)	9.4	15.9	24.4	11.4	21.4	8.2	8.2	8.9	8.9	10.3	11.2
Public Finance											
Primary Balance APBN/PDB (%)	1.8	1.6	1.4	1.8	1.6	1.7	1.5	1.9	0.8	1.9	0.1
Surplus/Defisit APBN/PDB (%)	-1.7	-1.1	-1.3	-0.7	-0.5	-0.6	-1.2	-0.3	-1.3	0.0	-1.9
Tax Revenue/GDP (%)	11.9	12.1	12.2	11.6	12.7	11.6	13.6	11.9	13.0	12.6	13.7
Stock of Government Loan/GDP(%)	58.3	53.9	54.3	48.0	46.2	43.9	43.9	39.5	39.5	35.4	35.4
Foreign Debt (%)	28.3	25.3	27.3	21.6	23.3	19.3	19.3	16.7	16.7	14.4	14.4
Domestic Debt (%)	30.0	28.6	27.0	26.3	22.9	24.6	24.6	22.8	22.8	21.0	21.0

Source: Ministry of Finance

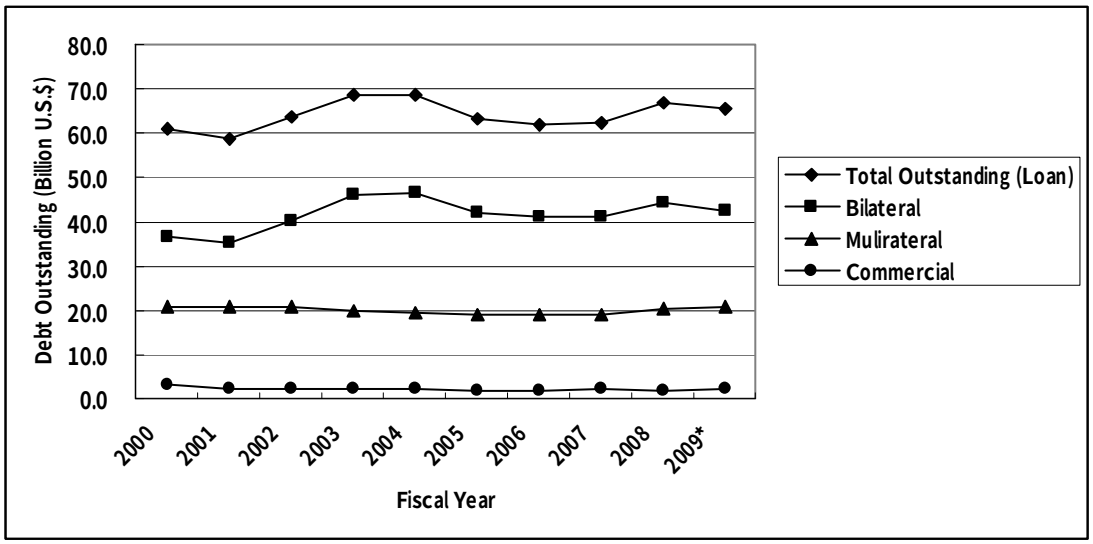
President Yudhoyono's policy instructs the reduction in the outstanding foreign debt and increase in the share of domestic financing in the total government debt. As shown in the following Figure 3.2.8, although the absolute value of outstanding debt is increasing, its ratio to GDP has been decreasing over time.



Source: MOF

Figure 3.2.8 Trend of Outstanding Debt of GOI

The trend of the outstanding loans of GOI is shown in the following Figure 3.2.9:

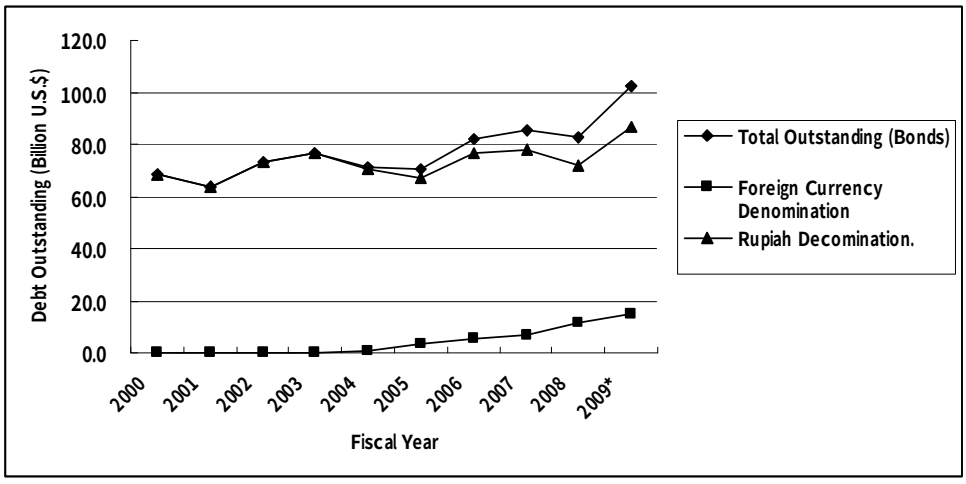


Source: MOF

Figure 3.2.9 Trend of Outstanding Loans of GOI

The above figure shows the total outstanding loans and financing sources. Loans from multilateral and commercial institutions are almost constant since 2000. The slight fluctuation of the total outstanding loans is mainly due to the changes in the bilateral loans. This implies that loan management has been conducted very rigidly as evident in an MOF document which mentions that it will conduct "prudent debt management and decrease debt to GDP ratio gradually."[21]

The trend of outstanding bonds of GOI is shown in the following Figure 3.2.10:



Source: MOF

Figure 3.2.10 Trend of Outstanding Bonds of GOI

This figure shows that the total of outstanding bonds is increasing since 2004. It is worth noting that foreign currency denomination has been increasing since 2004. This implies that the credibility of the country is improving and that the financing portfolio is widening. It is also observed in Chapter 2 that the credit rating of Indonesia has gradually improved and it is a good evidence for the country's improved borrowing capacity in the international capital market.

[21] MOF internal document

3.3 How to Increase Infrastructure Investment Fund

3.3.1 Overall Strategy

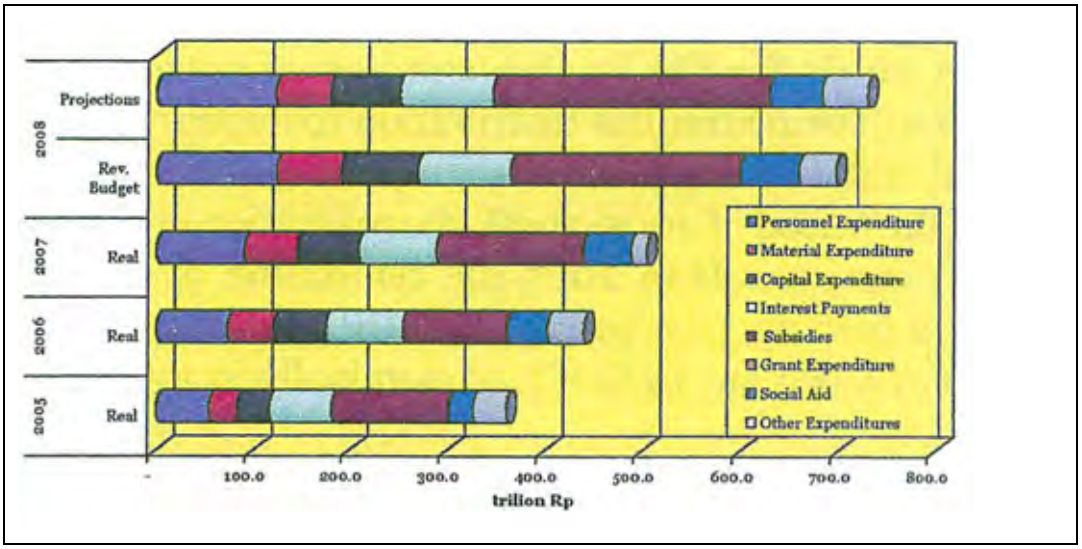
Based on the analysis on current economic conditions and GOI's budget structure, the Study Team recommends the following strategies to increase infrastructure investment funds:

a) Rationalization of expenditures, including review of subsidies;
b) Improvement of coordination with sub-national governments; and
c) Strengthening of financing strategy, including PPP.

As discussed in the previous section, the main cause of Indonesia's underperforming infrastructure is the low levels of investment in infrastructure during the past decade. The infrastructure gaps in Indonesia increased in the late 1990s, right after the financial crisis. During this time, public investment in infrastructure fell and private investment failed to increase sufficiently to compensate for the shortfall. While infrastructure investment in many countries increased after recovering from the crisis, Indonesia's investment remained low and has never returned to the pre-crisis levels. The challenge is to augment the investment level and catch up with the backlog, which should be clearly addressed in the forthcoming RPJM.

The government expenditure should aim to achieve the national development policies and goals as stipulated in the RPJM. However, a review of public expenditures suggests that a large portion of government spending is allocated to administration and subsidies. As a result, capital expenditure is badly restricted. Total expenditure in 2008 was Rp 1,023 trillion, of which Rp 729 trillion (70%) was allocated to central government's expenditures. Figure 3.3.1 shows the operational expenditures of the central government, which cover personnel, capital investments, material purchases, interest payments, and subsidies.[22]

[22] Personnel 17%, Subsidy 35%, Capital expenditure 10%.



Source: Ministry of Finance

Figure 3.3.1 Central Government Expenditure Based on Types, 2005-2008

In addition to government core administration[23], which constitutes about 10% of the budget, the government has increased allocation to education, which constitutes close to 20% of the budget. According to a recent World Bank report[24], public finances in 2009 have been stimulatory. The government spent more on its core programs[25] and significantly less on energy subsidies than in recent years[26]. However, subsidies are expected to remain large and consume around 20% of the central government budget. In the 2010 budget, the composition of spending remains unchanged. Government administration is the largest item at 15% of the budget, followed by education (11%), and infrastructure (6.3%). Defense will receive a 44% increase while health will receive a 7.4% raise compared to the 2009 revised budget.

1) Rationalization of Expenditures, including review of subsidies

The central government needs to rationalize the existing allocation pattern while the overall revenue envelope should be expanded. Rationalizing spending on personnel may require streamlining the government structure and public service provision. Policies on subsidies need a critical review and funds should be reallocated for infrastructure investments. Improved budget allocation and efficiency may serve the country's immediate needs. However, in the mid- to long-term, additional financial sources need to be identified and mobilized to meet the increasing demand for infrastructure provision. The effectiveness of government spending on infrastructure could be improved by emphasizing more on outcome, i.e., quality than quantity, which the next RPJM will incorporate as part of its concept.

Another measure to revitalize infrastructure is to direct nonperforming sectors, i.e., subsidies and unspent budget, toward infrastructure projects. As discussed above, non-discretionary expenditures

[23] It excludes salaries for teachers, doctors and nurses.
[24] Indonesia Economic Quarterly Report, the World Bank, September 2009.
[25] Large increases mainly in salaries, and modestly in capital spending and purchases of goods and services.
[26] This fall in energy subsidies was due to lower international energy prices in early 2009, tariff adjustments and the government's kerosene-to-LPG conversion program.

such as subsidies, salaries and interest payments constrict the room for capital investments which stimulate economic activities to promote growth, create jobs and reduce poverty. Low public capital investments could fail to attain targets of various important activities and limit the provision of basic infrastructure services to people, which could have a serious implication on the long-term economic growth prospects of the country. Subsidies and administration account for a third of total public expenditures. Over 15% of the national expenditure[27] is spent on subsidies, which do not contribute to economic development but rather encourage overspending of valuable resources. Fuel and electricity subsidies are sizeable and largely benefit the better-off population. Total energy subsidies reach at 5% of GDP. Current low electricity tariffs cost the economy about 2% of GDP in 2008. If the users are to cover the power supply and service costs, the government's budget worth around 2% of GDP is easily released. Tariff reforms should be gradually implemented, taking into account the users' financial capacity and willingness to pay, and competitiveness of business. The government has implemented fiscal reforms including rationalization of fuel subsidies. Its achievements seem remarkable. However, more needs to be done to create further fiscal space so as to become tolerable to oil price fluctuation. While rationalizing fuel subsidy, a compensatory program targeting the most vulnerable could be formulated and the PLN's fuel switch initiative to less expensive natural gas needs to be accelerated. A consensus is to be formed to utilize fiscal space on infrastructure improvements by reducing and reallocating subsidies. If only a portion of the subsidy budget is redistributed to implementing investment projects, it would make a huge impact on the lives of people and the future of the country. (See more on subsidies in Section 3.3.2 below.)

2) Improvement of Coordination with sub-national governments

Sub-national governments are increasingly responsible for economic development and infrastructure investments, with the transferred budget of one-third of the central government's expenditure.[28] The largest component of the total development budget of sub-national governments is transportation while the central government plays a major role in water resources and irrigation and energy. However, the former spends majority of the transferred budget on personnel and material expenditures. Hence, their planning and management have to be consistent with the national policies for infrastructure development and public service provision. The responsibilities of the sub-national governments at different levels have to be clearly defined to improve infrastructure provision.

Incentives should therefore be provided to deliver quality infrastructure services and increase regional cooperation in infrastructure service provision considering that sub-national governments have enough resources to improve the lives of the regional residents. Such measures could include provision of incentives, co-financing of specific activities, and capacity-building of regional institutions to encourage sub-national governments to invest in infrastructure. Tapping the reserves

[27] Budget Allocation for Subsidy is Rp 166.7 trillion (3.1% of GDP or 16% of 2009 National Expenditure). Various fuel subsidies account for nearly 2% of GDP. PLN's PSO is about Rp 46 trillion and Fuel is about Rp 58 trillion. (Source: Ministry of Finance)

[28] Indonesia's almost 500 provincial, district and city governments now undertake 30-40% of public spending. The 2009 budget allocates Rp 321 trillion, 30% of total expenditures, as a regional transfer.

of the sub-national governments is another possibility.[29] The amount of unspent funds is estimated as high as Rp 3 million per person for a certain province.

The ministries, such as MOHA and MOF, as well as other line ministries, do not have a mandate to monitor and control the transferred funds. Therefore, monitoring functions should be strengthened to improve efficiency of public investment.

GOI should take the following actions to improve the coordination with sub-national governments:

a) The central ministries should develop a set of guidelines for sub-national governments on infrastructure development planning and investment. The guidelines should be based on RPJM and RENSTRA;
b) Closer consultation between the ministries and sub-national governments should take place when sub-national governments prepare their development plans. GOI should clarify procedures especially for projects under the ownership of sub-national governments;
c) MOHA and MOF should strengthen their assessment functions when calculating the DBH and DAU to be transferred to sub-national governments. For example, the ministries should request sub-national governments to submit their budgeting and implementation plans, and check whether they are appropriate and consistent with the national policies and strategies. When the plans deviate from the national policies, MOHA and MOF shall provide advice and instructions to sub-national governments;
d) MOHA and MOF should regularly evaluate the spending status of the transferred money. In case inappropriate use or deviation from the original plans is detected, MOHA and MOF should provide advice to sub-national governments. Under such evaluations, the causes for inappropriate use or implementation should be carefully analyzed and measures to address the issues should be reflected in future budgeting; and
e) An "incentive system" should be considered. In this system, sub-national governments are required to set outputs or targets for their key expenditure items. When MOF prepares the budget for the next year, the performance of achievements by each sub-national government shall be evaluated and reflected in terms of the amount of transferred funds. This system is expected to improve motivations of sub-national governments to closely coordinate with the ministries and implement their budget in an appropriate manner.

In parallel with the above mentioned actions, capacity development for sub-national government officials to improve their planning, implementation and management capacity of infrastructure investment projects should also be carried out.

3) Strengthening of Financing Strategy including PPP

Indonesia's debt to GDP has declined and the deficit has been kept low. As a result, the government's borrowing capacity is improved. Options to borrow funds can be found in domestic

[29] Total unused fund by local governments is estimated at Rp 110 trillion, 3% of GDP. (Public Expenditure Review by the World Bank)

and international markets. Domestic financial institutions will gain experience in infrastructure lending over time. Cost of private loans may be higher as the degree of comfort required by the private agencies is likely to be extensive. The government may seek benefits of less expensive funds from multilateral and bilateral lenders.

Public funds alone are insufficient to cover the increasing demand for infrastructure. Steps to promote private sector participation need to be taken. The goal is not only to acquire financing but also to tap their expertise and advanced technologies, thus encouraging competition and improving efficiency in the sector. Disconnection of service provision cost and user charges discourages private investors. The problem is serious especially in the energy sector: Fuel and electricity subsidies are the biggest distortions that encourage wasteful over-consumption, burden the national budget, benefit the wealthier populations, and burden the environment as low prices discourage clean renewable energy. If it is intended to attract private capital, the government will need to adopt more effective targeted subsidies and sustainable pricing policy.

PPP is a strong tool to attract private funds to build infrastructure. GOI has elaborated to promote PPP since 2005, but so far, the progress is not very well. GOI needs to thoroughly review its legal and regulatory framework and implement effective policies and programs to further promote PPP.

3.3.2 Improving Fiscal Space through Decreasing Subsidies

In this section, the impact of decreasing subsidies is analyzed. The breakdown of subsidies in recent years is shown in the following Table 3.3.1.

Table 3.3.1 Breakdown of Subsidies

Unit: Trillion Rp (Nominal Price)

Descriptions	2005		2006		2007		2008	
	Realization	% to GDP	Realization	% to GDP	Realization	% to GDP	Realization	% to GDP
I. Energy Subsidies	**104.4**	**3.8**	**94.6**	**2.8**	**116.9**	**3.0**	**222.6**	**4.8**
1. Fuel Subsidies	95.6	3.4	64.2	1.9	83.8	2.1	146.6	3.1
2. Electricity Subsidies	8.9	0.3	30.4	0.9	33.1	0.8	76.0	1.6
II. Non-Energy Subsidies	**16.3**	**0.6**	**12.8**	**0.4**	**33.3**	**0.8**	**59.1**	**1.3**
1. Food	6.4	0.2	5.3	0.2	6.6	0.2	12.0	0.3
2. Fertilizer Subsidies	2.5	0.1	3.2	0.1	6.3	0.2	15.2	0.3
3. Seed Subsidies	0.1	0.0	0.1	0.0	0.5	0.0	1.0	0.0
4. PSO	0.9	0.0	1.8	0.1	1.0	0.0	1.7	0.0
5. Programmed Credit	0.1	0.0	0.3	0.0	0.3	0.0	3.2	0.1
6. Cooking Oil Subsidies	-	-	-	-	0.0	0.0	0.5	0.0
7. Soy Bean Subsidy	-	-	-	-	-	-	0.5	0.0
7. Tax Subsidy	6.2	0.2	1.9	0.1	17.1	0.4	25.0	0.5
8. Other Subsidies	-	-	0.3	0.0	1.5	0.0	-	-
Total BPP	**120.8**	**4.3**	**107.4**	**3.2**	**150.2**	**3.8**	**281.7**	**6.0**

Source: MOF

Subsidies consist of “Energy Subsidies” and “Non-Energy Subsidies”. As can be seen from the above table, “Energy Subsidies” shares the majority. Among the sub-items, “Fuel Subsidies” is the largest and occupies approximately 70-90% of the total amount of subsidies, followed by

"Electricity Subsidies". It is evident that these two categories critically influence GOI's ability to invest in infrastructure.

Subsidies in Indonesia take up 12.5-23.7% of the national expenditure, which is high compared to those of other countries. For instance, in Malaysia the ratio of subsidy to the operating national expenditure is 3.6% (2003), 6.3% (2004), 13.7% (2005), 9.4% (2006), 9.8% (2007), and 7.9% (2008).[30]

The subsidies occupy a large share of the government expenditure at 28.5% in 2008, 16.1% in 2009 (planned), and 12.5% in the 2009 revised budget. However, MOF plans to decrease the subsidy and planned allocations for the next five years as shown in the following Table 3.3.2:

Table 3.3.2 Budget Plan for Subsidies (2010-2014)

Unit: Rp Trillion

Items	2010	2011	2012	2013	2014
State Expenditure	1074.1	1185.0	1343.5	1544.8	1783.5
Subsidy	161.0	151.6	147.6	137.9	133.9
Ratio of Subsidy to State Expenditure	15.0%	12.8%	11.0%	8.9%	7.5%

Source: MOF

The ratio of subsidies to the state budget is to decline from 15.0% in 2010 to 7.5% in 2014 (See Table 3.3.2). The assumptions to decrease subsidies are unclear, however, it appears that the fuel subsidies were calculated based on the lower projected oil prices. In order to rationalize the subsidies, the following actions needs to be taken.

a) Tariffs, such as oil and electricity, shall appropriately cover costs.
b) Ceiling (Maximum Level) of subsidies shall be set.
c) Rationalization of management of State-Owned Enterprises (SOE) shall be implemented.

Firstly, the tariffs for public utilities, such as electricity and fuel, and fertilizers should be increased to appropriate levels. The burden of subsidies is too large for GOI, compared to those of other countries. Although the President has authority to decide these tariffs, current tariff structures and levels should be reviewed and set considering the domestic as well as international market conditions. A reduction in the subsidies would free up significant additional resources for infrastructure. GOI needs to review and gradually set tariff at appropriate levels. It is also critical to design compensatory programs to ensure basic public services to the poor group.

Secondly, it is recommended to set a ceiling (Maximum Level) for each subsidy item. According to the current formula for subsidy estimation, subsidies are calculated to compensate the operational losses of SOEs. This discourages self-efforts of SOEs and may cause moral hazard of SOEs. The government has in effect no control over the amount of subsidy, as the actual amount paid to SOEs is determined by the changes in the market conditions. Therefore, a ceiling should be set on the

[30] MOF of Malaysia

amount of subsidies to prevent squander of limited resources.

Thirdly, the management of SOEs should be rationalized. As discussed above, the revenues of SOEs, such as PLN and PERTAMINA, are guaranteed by the government through the provision of subsidies. Since their revenues are guaranteed regardless of their performance, their motivation to improve and rationalize management tends to be weak. Thus, an introduction of an "incentive system" should be considered to change the mindset of SOEs for improved self-efforts, including the setting of ceiling for the levels of subsidies to SOEs as discussed above. This system enforces efforts to improve turnovers and profits and decrease costs.

Measures to rationalize SOE management include the following actions:

a) Review of the current organizational structure to streamline functions;
b) Introduction of stricter cost-effective management (e.g., introduction of ICT, cost reduction in facilities and equipment, effective use of outsourcing); and
c) Reduction in production losses (e.g., electricity loss)

The fiscal space was estimated based on the decreased subsidies by 10% for APBN 2010-2012 and 5% for APBN 2013-2014. A substantial increase in fiscal space would be expected as shown in the following Table 3.3.3:

Table 3.3.3 Impact of Decrease of Subsidy and Fiscal Space

Unit: Trillion Rupiah

	2010	2011	2012	2013	2014	Total
(a) State Expenditure	1074.1	1185.0	1343.5	1544.8	1783.5	-
(b) Subsidy (Plan)	161.0	151.6	147.6	137.9	133.9	-
(c)Subsidy (Reduced)	107.41	118.5	134.35	77.24	89.175	-
(d) Fiscal Space (=(b)-(c))	53.59	33.1	13.25	60.66	44.725	205.325

Source: MOF/JICA Study Team
Note: The figures of "Subsidy (Plan)" are estimated by MOF. The figures of "Subsidy (Reduced) are estimated by JICA Study Team. Reduction rate of 10% is applied for APBN 2010-2012, and 5% is applied for APBN 2013-2014.

Approximately Rp 50 trillion per annum could be freed up through a reduction in subsidies. This level could easily cover around one-fourth of the budget gap.

3.3.3 Promoting Infrastructure Investment by Sub-National Governments

"Transfer to regions" also occupies a large share in the APBN, amounting to 30% of the national expenditure, and almost equals the expenditure budget for the line ministries and agencies. "Transfer to regions" consists of "Revenue Sharing (*Dana Bagi Hasil*: DBH)", "General Allocation Fund (*Dana Alokasi Umum*: DAU)", and "Special Allocation Fund (*Dana Alokasi Khusus*: DAK)". DBH aims to share regional taxes and non-tax revenues (e.g., natural resources which include forestry, general mining, fishery, oil, gas, and geothermal) among the central, provincial and village governments. The amount of transfer to the regions is calculated based on the standards prescribed

in law No.32/2004. The amount of DBH is calculated using the following standard in Table 3.3.4:

Table 3.3.4 Standard for Calculation of DBH

	Share of the Central Government	Share of the Province				
		Share of the total of Provincial and Village Government	Share of the Province	Share of the village which gained the revenues	Share of the other villages in the province	Transaction Fee by the agents in charge
Land and Building Tax (PBB)	10.0%	90.0%	16.2%	64.8%	-	9.0%
Duties on Land and Building Transfer (BPHTB)	20.0%	80.0%	16.0%	64.0%	-	-
Income Tax	80.0%	20.0%	8.0%	-	12.0%	-
Other Duties	98.0%	2.0%	0.6%	0.8%	0.6%	-

Source: Depkeu

According to interviews with the Directorate General of Budget of MOF, the central ministries do not have an authority to intervene in the usage of the DBH.

DAU is a transfer of tax revenues which is calculated based on the formula in Law No.33/2004 as shown in the following Table 3.3.5:

Table 3.3.5 Formula for Calculation of DAU

DAU = AD + CF

- AD (Alokasi Dasar) = Basic Allocation
- CF (Celah Fiskal) = Fiscal Gap
- CF= KbF - KpF
- KbF (Kebutuhan Fiskal) = Fiscal Needs
- KpF (Kapasitas Fiskal) = Fiscal Capacity

$KbF = TBR (a_1IP + a_2 IW + a_3IPM + a_4IKK + a_5IPDRB/Kap)$

- TBR (Total Belanja Rata-rata APBD) = Total Average Spending of APBD (Local Government Budget)
- IP (Indeks Jumlah Penduduk) = Total Population Index
- IW (Indeks Luas Wilayah) = Area Index
- IPM (Indeks Pembangunan Manusia) = Human Development Index
- IKK (Indeks Kemahalan Konstruksi) = Construction Expensiveness Index
- IPDRB/kap (Indeks Produk Domestik Regional Bruto per kapita) = Index of Domestic Regional Growth per capita
- a (Bobot Indeks) = weight of index

KpF = PAD + DBH Pajak + DBH SDA

- PAD (Pendapatan Asli Daerah) = Regional Original Income
- DBH Pajak (Dana Bagi Hasil dari Penerimaan Pajak) = Revenue Sharing from Tax
- DBH SDA (Dana Bagi Hasil dari Penerimaan Sumber Daya Alam) = Revenue Sharing from Natural Resources

Source: "Pelaksanaan Desentralisasi Fiskal Di Indonesia"

DAU is intended to support regional administration so as to fulfill fiscal needs and capacity. The usage is basically at the discretion of the sub-national governments, and the central government has no control over budgetary decisions by the sub-national governments like in the DBH.

DAK is another transferred fund from tax revenues but differs from DAU whose purpose is not designated by the central government. The DAK is mainly allocated for the development of facilities in the areas of education, health, infrastructure, etc. The amount of DAK is determined based on the government's policy and will not be disbursed unless certain performance is shown by the sub-national governments.

According to interviews with MOF, the amount of DAU and DBH is almost automatically calculated based on the format stipulated in the relevant laws, and the ministries cannot interfere in the calculation process. Moreover, the use of DAU and DBH is up to the regional governments. Even MOF and MOHA do not have the authority to intervene in the usage.[31] Although MOF has information that the transferred money is not fully used and saved in banks,[32] MOF finds it difficult to take any action because they have no authority to guide or give instructions to the regional governments.

In conclusion, it is recommended that GOI should take the following actions to promote infrastructure investment:

1) Central ministries, MOF, MOHA and the relevant line Ministries shall strengthen control and monitoring functions over the use of "Transfer to Regions". Especially, each ministry is expected to take effective measures, for example:
   - MOF shall introduce monitoring and evaluation system for the appropriate use of transferred budget;
   - MOHA shall oblige the sub-national governments to submit a report on the budget execution and improve its function to provide appropriate advice; and
   - Line ministries shall strengthen their functions to monitor the progress of projects and provide appropriate support to implementing organizations.
2) An "Incentive System" shall be used for the use and execution of "Transfers to the Regions" to decrease "nonperforming budget", and to promote a secured and effective implementation of the budget.
3) A coordinating mechanism between the line ministries and the sub-national governments shall be established to ensure the national policy is reflected in the regional development.

3.3.4 Promotion of PPP through System and Capacity Improvement

In order to further promote PPP, the following actions are required.

[31] According to MOF, ministries have some control over DAK because the purpose of the usage is clearly defined by the ministries.
[32] This information is obtained from the interview with the MOF.

1) Achievement of sustainable, sound and stable macroeconomic environments
2) Review of existing regulations
3) Development of PPP-specific procurements and methodologies
4) Development of appropriate business schemes and realization of optimal risk sharing
5) Improvement of project management skills

Detailed analysis and recommendations regarding PPP are shown in Section 3.4 of this chapter.

3.4 Strategy to Promote PPP in Indonesia

3.4.1 GOI's Approach to PPP

In 2005, GOI introduced a PPP regulatory framework. In the same year, the Infrastructure Summit 2005 was held in January which was attended by the President and the relevant ministers, including MOF, CMEA, and BAPPENAS. Subsequently, the Presidential Regulation (Perpres) No. 42/2005, which governs the establishment and function of the National Committee for the Acceleration of Infrastructure Provision Policy (KKPPI), was issued in May. KKPPI is a ministerial-level national committee to promote infrastructure development in Indonesia. The focus is not limited to PPP.

In November 2005, the Presidential Regulation No. 67/2005 concerning a business entity's procurement procedure within the framework of a cooperation agreement was issued. The detailed conditions and procedures in the PPP project procurements for all central ministries are stipulated in the regulation, which is the basis of the regulatory framework for PPP in the country.[33] According to BAPPENAS, the regulation is to be revised by the end of 2009 or in the beginning of 2010.

The major actions regarding PPP in 2005 and 2006 are summarized in the following Table 3.4.1:

[33] As of May 2009, Presidential Regulation No. 67/2005 is under revision and according to a BAPPENAS officer, it is expected that the revised regulation will be effective within 2009.

Table 3.4.1 Major Actions relating to PPP

Year	Month	Events/Actions
2005	Jan.	- Infrastructure Summit 2005 was held.
	May	- Presidential Regulation (Perpres) No. 36/2005, which governs the process of land acquisition, was issued.
	May	- Presidential Regulation (Perpres) No. 42/2005, which governs the establishment and function of the National Committee for the Acceleration of Infrastructure Provision Policy (KKPPI), was issued.
	Nov.	- Presidential Regulation (Perpres) No. 67/2005, which governs the process of PPP procurement, was issued.
2006	May	- Minister of Finance Regulation No. 38/2006, which governs the risk management of PPP projects, was issued.
	Jun.	- Presidential Regulation (Perpres) No. 65/2005, which governs the process of land acquisition, was issued.
	Nov.	- Infrastructure forum was held.

Source: KKPPI

In May 2006, the MOF Regulation No.38/2006 on the risk management of PPP projects was issued. The regulation states that when a project is procured in conformity with Perpres No. 67/2005 and meets the requirements, MOF can provide "government support" as guarantee for (i) political risks, (ii) project performance risks, and (iii) demand risks.[34] This regulation is recognized as the key tool to provide assurance to investors.

In February 2009, BAPPENAS published a "Public-Private Partnerships Infrastructure Project in Indonesia" or better known as the "PPP Book". This was prepared pursuant to the Presidential Instruction (Implres) No. 5/2008 concerning the focus on economic program for the years 2008-2009. This contains the list of projects that will be developed under the PPP scheme. The PPP Book is used to provide information to national and international investors on the progress of the potential PPP projects. The Book includes data on Project Title, Contracting Agency, Project Location, Scope of Work, Estimated Investment Cost, Financial Overview, and Government Support.

3.4.2 Progress of PPP projects in Indonesia

The following projects in Table 3.4.2 were listed as model PPP projects during the "Indonesia Infrastructure Forum" held on November 1-3, 2006.

[34] However, according to the interview conducted at the Ministry of Finance, as of May 2009, the formal application for the government supports under the Minister of Finance Regulation No.38/2005 is only one (2x600 MW coal fire plan in Central Java)

Table 3.4.2 Model Projects announced in Infrastructure Forum of 2006

Model Projects	Estimated Value (in Million US$)
Telecommunications Palapa Rings Fiber Optic Network	 1,500
Power plants: 2x600 MW coal-fired plant (Central Java) 500 MW coal-oil fired plant (East Java)	 1,200 275
Toll roads: 165 km Solo-Kertosono (Central Java) 60 km Mefan airport road (North Sumatra)	 928 142
Sea ports: Surabaya Tanjung Perak expansion Margagiri-Ketapang ferry terminal (Java to Sumatra)	 280
Water and sanitation projects: Dumai (Riau Province) Tangerang, Benten (greater Jakarta) Bandung (Java)	 44 37 26

Source: GOI (2006) Seminar Materials

The status of these model projects, as of May 2009, is presented in the following Table 3.4.3:

Table 3.4.3 Status of Model Project (As of May 2009)

Project	Status
Palapa Rings Fiber Optic Network	Development of facilities
2x600 MW Coal Fire Plan (Central Java)	Negotiation with a winning bidder
500 MW Coal-Oil Fired Plan (East Java)	N.A.
165 Km Solo-Kertosono (Central Java)	Negotiation with a winning bidder
60 Km Medan Airport Road (North Sumatra)	Tender Preparation
Surabaya Tanjung Perak Expansion	Feasibility Study
Morgagni-Ketapang Ferry Terminal (Java To Sumatra)	Feasibility Study
Dumai (Riau Province)	Tender Preparation
Tangerang, Banten (Greater Jakarta)	Bidding Completed
Bandung (Java)	Tender Preparation

Source: BAPPENAS

As can be seen from the table, most of the model projects are merely at the beginning stage. According to an interview with the Risk Management Unit of MOF, only one project so far has applied for government support based on MOF Regulation No. 38/2006 (i.e., Central Java Coal Fire Project).

There are two main reasons behind this stagnation. Firstly, Presidential Regulation No. 67/2005 requires having more than 3 bidders for the project to be eligible for a PPP scheme. The project becomes eligible for government support only when it is approved as a PPP project. However, attracting 3 bidders is not always easy due to the burden of bidding document preparation. Also, there is a possibility that some of the conditions of the projects, including risk sharing between GOI and project companies, are too severe and not acceptable for private entities.

The other reason is that there are many inconsistencies between stipulations of the Presidential Regulation No. 67/2005 and those of existing procurement laws and regulations in each sector. In

many cases, the line ministries tend to follow the existing rules and hence, the projects would become ineligible for government support under the MOF Regulation of No. 38/2006. This implies that even though the regulatory framework seems established, the system often fails to function.

According to interviews with the relevant ministries, the following are considered to be the main reasons for the inactive progress of PPP projects:

- Progress of land acquisition is slow;
- Bidding process is not successful due mainly to:
  - Low profitability;
  - Unfavorable conditions;
  - Insufficient information for due diligence; and
  - Unclear content and extent of government support.
- Negotiations between the contracting authority and the winning bidder are stagnant;
- Contracting authority cannot prepare the necessary budget for the governments portion; and
- Sub-national governments are out of the scope of Presidential Regulation No. 67/2005.

In order to further promote PPP, these negative factors need to be closely analyzed and removed through prudent measures.

3.4.3 Experience of Foreign Countries and Benchmarking for Indonesia

Based on the observations of the current situation in the previous section, the possibility of the application of the PPP scheme in Indonesia is analyzed. In so doing, experiences of foreign countries such as UK and South Korea can become good references.

UK is the most well known and a leading country in the practice of PPP/PFI. The experience in UK shows that PPP could be applied to approximately 10% of the total national investment in public services as shown in Figure 3.4.4.

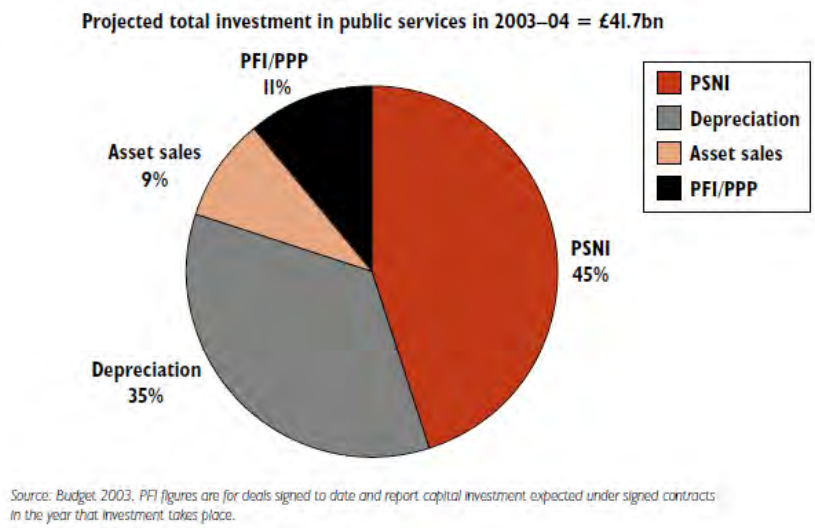
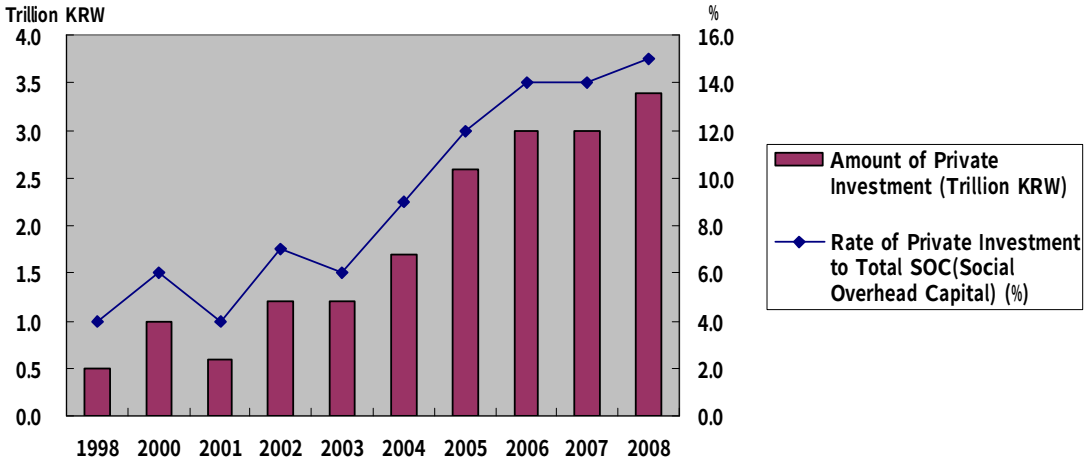


Figure 3.4.4 Share of PFI/PPP in Total Public Investment in UK

South Korea is also actively applying PPP in the recent years. The progress and share of PPP in its public investment is shown in the following Figure 3.4.5:



Source: PIMAC(2009)

Figure 3.4.5 Private Investment and its Share in Social Overhead Capital in Korea

As can be seen from the figure, the amount and share of private investments have been increasing since the early 2000s. In 2008, the share of private investment is 15% of the total social overhead capital investment.

Based on the data, even in the PPP-advanced counties, PPP accounts for only around 10-20% of the total investment in infrastructure. This level could be a benchmark for GOI in promoting PPP in infrastructure. At present, the share of PPP in public investment in Indonesia is low and actions should be taken to increase its share. Considering the current situation, 5-10% would be a reasonable target for GOI for the next five years. In the long-term, higher rate, say 10-20%, is expected as in UK and South Korea.

3.4.4 Measures to Accelerate PPP

Based on the recognitions from the previous sections, the Study Team conducted discussions with BAPPENAS, MOF and other line ministries such as MPW during several occasions and concluded that the following actions are necessary to further promote PPP in Indonesia:

- Improvement of Regulatory Framework;
- Strengthening of PPP Central Unit (P3CU) and Developing Effective Network;
- Development of PPP-Specific Planning and Procurement Procedures;
- Review and Formalization of the Basics of Risk Sharing; and
- Improvement of PPP Project Management Knowledge and Skills.

The problems and necessary actions are discussed as follows:

1) IMPROVEMENT OF REGULATORY FRAMEWORK

Indonesia already established a regulatory framework for PPP, however, its function is still limited. It should be reviewed and improved in terms of the following aspects:

a) Presidential Regulation No. 67/2005 should be reviewed to apply to a wider range of projects. Especially, conditions for the provision of governmental support should be relieved in order to promote the application of the MOF Regulation No. 38/2006[35];
b) Land acquisition regulations should be revised to speed up the process (e.g., setting deadlines for negotiations, strengthening government's authority over acquisitions, establishing arbitration organizations, developing incentive systems for sub-national governments which are to conduct direct negotiations with landowners and/or residents);
c) Clear and common guidelines for PPP project procurements should be established;
d) Application of the laws and regulations should be extended to sub-national governments;
e) Discrepancies between PPP-related regulations, such as the Presidential Regulation No. 67/2005, and the existing regulations in each ministry should be resolved.

In addition, there are many other discrepancies between the Presidential Regulation No. 67/2005 and procurement rules and regulations of each ministry that require prompt resolution.

2) STRENGTHENING P3CU AND DEVELOPING EFFECTIVE NETWORK

In 2009, the PPP Central Unit (P3CU) was established in BAPPENAS. It is expected to work as a facilitating and coordinating body to develop and implement PPP projects with the line ministries and sub-national governments. However, the mandate and functions of P3CU are not clear.

In other countries, PPP-promoting organizations are established and their roles are clearly defined. Examples are the committee for promotion of PFI in Japan, Partnerships UK in UK, and PIMAC (Public Private Infrastructure Investment Management Center) of South Korea. The role of PPP/PFI promotion organizations in Japan and UK are shown in the next page. GOI needs to consider and provide these kinds of functions through P3CU based on official decisions and documents.

[35] The key MOF Regulation No. 38/2006 cannot be implemented because of the requirements in Perpres No.67/2005 (attachment B.4). The Perpres stipulates more than three bidders for PPP. If fewer bids are received, the project is considered invalid as a PPP. Therefore, projects with less than three bidders cannot benefit from the government's support as the MOF Regulation No. 38/2006 states that "the provision of the government's support can be applied only to PPP project". Since a large scale PPP project involves high preparation costs for bidding, the risk of entering into bids is considered very high. Thus, it may be difficult to expect more than three bidders in all projects.

Role of PPP/PFI promotion Organizations in Japan and UK

1. Role of the Committee for Promotion of PFI (PFI Act, Article 21, Japan)

(1) The Committee for the Promotion of Private Finance Initiatives (hereinafter referred to as the "Committee") will be set up within the Cabinet Office.
(2) The Committee shall study and deliberate matters that fall within its authority pursuant to the provision of this Act. In addition, it shall also study and deliberate situations regarding the formulation of implementation policies, selection of qualified projects, objective evaluation of those projects, and other matters pertaining to provision of national public facility etc. through utilization of private finance.
(3) Private business operators may submit to the Committee their opinions on provision of national public facility through use of private finance.
(4) The Committee, when it finds necessary, in the course of performing its duties set forth in preceding two paragraphs, may state its opinions to the Prime Minister and heads of relevant administrative organs, in order to facilitate and coordinate the provision of Public Facility. through the utilization of private finance.
(5) The Prime Minister and heads of relevant administrative organs shall report to the Committee measures taken as a result of the receipt of the Committee's opinions set forth in the preceding paragraph.
(6) The Committee, when it finds necessary for performing its duties, may request heads of relevant administrative organizations, heads of relevant local governments, and other relevant bodies to provide necessary cooperation such as submission of data, expression of opinions, and explanations. In this case, the Committee shall take measures necessary for publication of documents which were submitted or collected for performance of its duty.

2. Role of Partnerships UK (Partnerships UK Homepage)

1) Customized support to individual project sponsors on complex procurements: Working alongside government clients we support individual project teams to deliver complex procurements and to help manage ongoing contracts. Advice can include:
   - developing and participating in project governance arrangements;
   - designing and implementing quality assurance regimes;
   - managing divergent stakeholders;
   - finding the right balance of quality, deliverability and cost to achieve Value for Money;
   - designing deal structures with efficient financing and risk sharing arrangements;
   - hiring and managing external advisors;
   - building commercial client capability;
   - structuring effective competitions and supporting negotiations with the private sector; and
   - providing specialist legal, financial, property and contract management expertise.
2) Support to smaller infrastructure contracts: Partnerships UK's public sector mandate extends to projects and services commissioned by the public sector in its widest sense not just Central Government. Many infrastructure projects are commissioned by local government, but supported by central government funds. Our general helpdesk service provides free advice to any UK public sector organization involved in procuring or managing complex procurements. The operational taskforce helpdesk provides free advice to English authorities managing operational PFI contracts.
   In addition we also work with some of the largest local government investment programmes including the Building Schools for the Future (BSF) initiative, the Waste Infrastructure Development Programme (WIDP) and the Local Housing Company (LHC) programme in England, the Hub Initiative in Scotland, and a programme of waste infrastructure procurements in Wales.
3) Providing support for policy makers to develop and implement procurement and investment policies and programmes: Partnerships UK was responsible for developing standard terms and conditions for private finance and ICT contracts. We use our market knowledge to work with H.M. Treasury, the Office of Government Commerce and Devolved Administrations to ensure these standards are practical and utilized by the public sector.
   We also sit on approval bodies such as the Projects Review Group and the Major Projects Review Group which oversee many of the major public sector investment programmes.
4) Development of public services contracts: Partnerships UK helps develop commissioner/provider models and new markets for public services. With public funds under pressure, there has been increased focus on improving the public sector skills required to commission public services effectively. This is matched by recognition that public services can be better delivered by a well balanced market of public, private and third sector suppliers. Partnerships UK has been at the forefront on this thinking. We are working closely with many locally based organizations and health trusts with responsibility for commissioning public services and with public and third sector organizations structured to deliver these services.
5) PUK Investments: Partnerships UK can also use its capital to invest directly in projects and companies. Partnerships UK Ventures is the venture capital arm of Partnerships UK plc. We invest in spin out companies from UK science institutions and universities. Our funding directly supports the commercialization of public sector assets. PUK Ventures has invested £20m to date in 20 businesses.

The initiative and supports of PPP-promoting organizations are essential. The roles and functions of P3CU should be made clear. In order to make the organization effective, sufficient authority and resources should be provided as in Japan, UK and South Korea. An effective network among "PPP-nodes" in relevant ministries and sub-national governments need to be developed.

3) DEVELOPMENT OF PPP-SPECIFIC PLANNING AND PROCUREMENT PROCEDURES

Planning procedures and methodologies for PPP projects are not yet established by the line ministries. PPP requires specific procedures such as value for money (VFM) analysis, scheme planning, bidding documents preparation, negotiations with bidders, and finance. These procedures are different from conventional procurement procedures and seem to cause some confusion and stagnation of the process.

Therefore, it is necessary to formalize the planning procedures for PPP projects. It is recommended that the guidelines and manuals for the PPP scheme planning, feasibility study, and evaluation methodology and procedures be developed and built into the existing planning procedure with appropriate adjustments. Existing procedures need to be revised as appropriate.

4) REVIEW AND FORMALIZE THE BASICS OF RISK SHARING

The contracting authority must develop the most appropriate scheme for projects. The conditions in the tender documents, including the draft concession agreement, should be reviewed and optimal risk allocation should be set as a precondition for the PPP tender. The following recommendations are presented in a JICA report on the risk sharing conditions of concession agreement[36]:

- It should be clearly stated that in principle the land cost be borne by the government.
- It should be clearly stated that in principle the government compensates company the amount due in cash, without extending the concession period.
- The procedures to change tariff structures including inflation adjustments should be described in more detail.
- The standard of services as to quality and quantity should be clearly mentioned either in draft concession agreement or technical specifications.
- Articles related to monitoring and post evaluation, including performance measurement, should be added.
- Disputes between two parties should be resolved by involving neutral agencies.
- Articles related to the application of MOF Regulation No.38 should be stipulated.

The optimal risk sharing differs depending on the sectors and characteristics of each project. However, the tender documents need to reflect the basic principles of PPP/PFI which imply that risks should be borne by the party who is best able to manage them. Risks that private sectors cannot control should be borne by the public sector.[37]

[36] JICA PPP Capacity Building Project Team Report (2009)
[37] These are stated in many PFI-related documents in UK and these principles are broadly accepted in global PPP/PFI practice

5) IMPROVEMENT OF PPP PROJECT MANAGEMENT KNOWLEDGE AND SKILLS

The improvement of project management skills to promote PPP is also vital. Many public officials, e.g., from BAPPENAS and Bina Marga, admit that their knowledge and skills of managing PPP projects need to be improved. The necessary key skills for PPP project management are as follows:

- Project Scheme Planning: The government officials, in general, should have better understanding of various PPP schemes and how to select the most appropriate scheme among them.
- VFM Analysis: VFM is important to examine and clarify the justification of adopting PPP schemes.
- Tender Documents Preparation: PPP tender documents must include specific conditions of PPP, such as financing, risk sharing and other PPP specific project procurement.
- Appropriate Risk Sharing between Public and Private: In PPP procurements, the public sector has advantages to set the initial risk sharing. Knowledge on appropriate risk sharing to attract private sector participation is critical to solicit bids.
- Proposal Evaluation Skills: It was found that in many cases, only bidding prices are subject to evaluation. An introduction of multiple-criteria evaluation, including evaluation of technical proposal, is urgently required. Thus, development of evaluation criteria and improvement of evaluation skills are necessary.
- Contract Negotiation Skills: Negotiations with a preferred bidder are very important to set the final risk sharing for mutual benefits. The government officials need to improve the negotiation skills with private sectors including financial institutions.
- Project Finance Knowledge: In order to manage the project effectively, improvement of knowledge and understanding of project finance is necessary.
- Project Monitoring and Evaluation Skills: Achieving “financial closure” is not the end of the deal but the starting point. The most important thing is to appropriately monitor the project and assure that the quality of services and other obligations are met as stipulated in the agreed contract.

Successful PPP projects require sufficient knowledge and skills of public officials in charge of the projects. Human resource development plays a key role in this regard.

Chapter 4 Current Status, Issues and Development Programs for the Major Infrastructure Sector

4.1 Transportation Sector

4.1.1 General Information of Transportation Sector

(1) Present Condition of Transportation Sector in Indonesia

1) Current Issues of Transportation Sector

The present condition of transportation sector in Indonesia can be focused on the following five issues:

- Insufficient budget allocation for infrastructure development to meet minimum service standards for the transportation sector;
- Low quality of existing transportation infrastructures, such as inefficiency of operation, insufficiency of maintenance, and lack of safety aspects;
- Poor traffic integration in view of sub-sector coordination and regional integration;
- Inadequate legal and regulatory framework for the enhancement of private sector participation; and
- Far from global/international corridor development framework

Budget insufficiency seems to be the most critical issue for transportation sector development. The priority in budget allocation should be the procurement of spare parts and maintenance activities to maintain the existing capacity and quality of transportation infrastructure, facilities and equipment.

The new development activities for transportation infrastructure are therefore regarded as the second priority in budget allocation and consequently, a big gap between the requirement and available budget might exist. As a result, the new development activities will become highly dependent on private investors.

The Government of Indonesia encourages the PPP scheme for transportation infrastructure development such as toll road, urban mass transit system, coal transportation railway and so on. On the other hand, the risk sharing system for encouraging private investors would be essential and accordingly, certain financial preparation would be required.

2) International Comparison of Infrastructure Quality of Indonesia

Table 4.1.1 compiles the result of the global competitiveness analysis carried out by the World Economic Forum. The quality of infrastructure condition of Indonesia is assessed through comparison with other countries.

Table 4.1.1 International Comparison of Quality of Infrastructure

Global Competitiveness Index		Country	Key Indicators			Ranking for Infrastructure Quality				
Rank	Score		Population (millions)	GDP (bil.US$)	GDP/capita (US$)	Overall	Roads	Railway	Port	Air
5	5.5	Singapore	4.4	161.3	35,162.9	2	3	10	1	1
9	5.4	Japan	128.3	4,382.8	34,312.1	16	19	3	25	49
11	5.3	Hong Kong	7.2	206.7	29,649.5	8	5	5	2	2
13	5.3	Korea	48.1	957.1	19,750.8	18	13	7	29	26
17	5.2	Taiwan	22.7	383.3	16,606.0	22	20	9	18	32
21	5.0	Malaysia	26.2	186.5	6,947.6	19	17	17	16	20
30	4.7	China	1,331.4	3,250.8	2,460.8	58	51	28	54	74
34	4.6	Thailand	65.3	245.7	3,736.8	35	32	48	48	28
50	4.3	India	1,135.6	1,098.9	977.7	90	87	21	93	66
51	4.3	Russia	141.9	1,289.6	9,075.1	78	104	32	76	88
55	**4.3**	**Indonesia**	**228.1**	**432.9**	**1,924.7**	**96**	**105**	**58**	**104**	**75**
64	4.1	Brazil	191.3	1,313.6	6,937.9	98	110	86	123	101
70	4.1	Vietnam	86.4	70.0	818.1	97	102	66	112	92
71	4.1	Philippines	85.9	144.1	1,624.7	94	94	85	100	89
109	3.5	Cambodia	14.6	8.6	600.0	82	80	97	91	87

Source: The Global Competitiveness Report 2008-2009, 2008 World Economic Forum

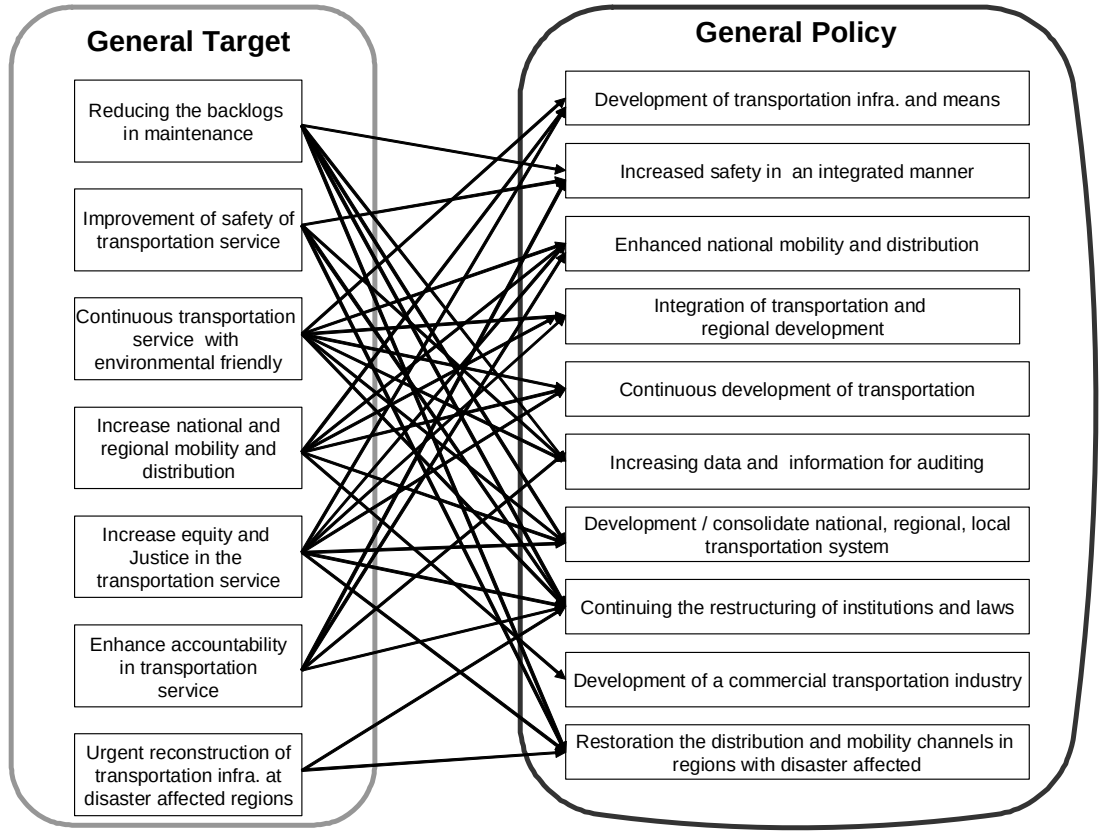
Indonesia is ranked 55th out of 134 countries in the Global Competitive Index, which was evaluated using 12 different categories, namely : i) institution, ii) infrastructure, iii) macroeconomic stability, iv) health and primary education, v) higher education and training, vi) goods market efficiency, vii) labor market efficiency, viii) financial market sophistication, ix) technological readiness, x) market size, xi) business sophistication, and xii) innovation.

The infrastructure index is one of the 12 categories, and there are 8 survey items under infrastructure. Based on the result, Indonesia's overall ranking in infrastructure is 96th which is much behind its overall global ranking of 55th. The infrastructure ranking of Indonesia is far behind those of neighboring countries such as ASEAN countries, India and China, e.g., Malaysia (19th), Thailand (35th), China (58th), Cambodia (83th), India (90th), Philippines (94th) and Vietnam (97th). Philippines, Indonesia and Vietnam have almost the same level with low quality transportation infrastructures. It means that the infrastructure quality of Indonesia is comparatively worse than the other categories of global competitiveness.

Among the transportation modes, it was found that the qualities of road and sea transportation are rather low ranked at 105th and 104th respectively.

(2) Current RPJM 2005-2009

Transportation sector development is generally considered as a catalyst of economic growth and regional development. It is also a unifying element in the unitary state of the Republic of Indonesia. In the current RPJM 2005-2009, various targets and policies are presented as following Figure 4.1.1:



Source: RPJM 2005-2009

Figure 4.1.1 General Target and Policy for Transportation Development in RPJM 2005-2009

The transportation sector policy of RPJM 2005-2009 is focused on the following: i) development of infrastructure, ii) upgrading safety, ii) development of consolidated transportation system, iv) integration with regional development, v) development of commercial transportation industry, and vi) restoration of disaster-affected regions.

(3) Concept of the Next RPJM 2010-2014

Based on the draft concept of the subsequent RPJM 2010-2014, the general issues and strategies for transportation sector development are identified as follows:

1) Overall Concept of RPJM 2010-2014

i) Integrated national and regional planning
ii) Financial capacity
iii) Enhancement of private and public roles
iv) Effective decentralization and regional autonomy
v) Global compatibility demand

It is understood that the identified issues seem to focus on strengthening the linkages among the islands to form a united Indonesia. Another point of discussion is how to satisfy the minimum

standards of infrastructure quantity and quality under the limitation of financial capability. The participation of private investors is emphasized in the next RPJM 2010-2014.

2) Policy and Strategies of Transportation Sector

Based on the overall concept of RPJM 2010-2014, the development policy and strategies for the transportation sector are set up in the following manner:

Transportation Sector Development Policy

i) Improvement of facilities and infrastructure standards to comply with minimum service standards,
ii) Supporting the improvement of real sector competitiveness
iii) Improvement of government and private partnership

Based on the above three development policies, it can be summarized that the transportation sector policy for the next RPJM is focused on direct linkage with real sector development and promotion of PPP schemes.

Development Strategies for Transportation Sector

i) Improvement of facilities and infrastructure standards to comply with minimum service standards
   a) Reducing the maintenance backlog of transportation infrastructure and facilities
   b) Improving the conditions of road infrastructure services in accordance with minimum service standards
   c) Improving safety and quality of transportation services
   d) Enhancing the professionalism of transportation human resources
   e) Supporting the development of sustainable transportation in the context of mitigation and adaptation to climate change
   f) Improving urban public transportation management
   g) Increasing the capacity and speed of early acts of search and rescue for victims of accidents and disasters
ii) Supporting the improvement of real sector competitiveness
   h) Improving the quality of fan capacity transport services to support the smooth distribution of goods and services and to support the development of tourism areas and centers of agricultural and industrial production
   i) Encouraging efficient transportation of goods and passengers
   j) Improving transport services strategy to be more competitive in between-mode and among-mode
   k) Improving fluency, capacity and service quality in the cross borders and corridors that have been saturated and the continuity of severed land transportation in island (rivers and lakes) and inter-island with point-to-point services

l) Developing affordable and efficient urban mass and rail-based public transport in the metropolitan area

m) Promoting technological developments that meet international conditions

iii) Improvement of government and private partnership

n) Encouraging private sector's role in the transportation sector through institutional reforms and legislation that enables the provision of infrastructure

o) Encouraging cooperation and capacity building of central and local governments in planning, preparing, and conducting the Knowledge Products and Services (KPS) transportation projects

p) Bundling and unbundling KPS transportation projects and providing support and feasibility facilities for more interesting projects for the private sector.

3) Infrastructure Budget Allocation for Transportation Sector

As of end October 2009, the JICA Study Team received the draft infrastructure budget allocation, which is still on request basis, prepared by BAPPENAS reflecting the development target for the next 5 years.

The requested bases of the draft budget allocation are shown in the following Table 4.1.2:

Table 4.1.2 Draft Budget Allocation for 2010-2014 for Infrastructure Investment

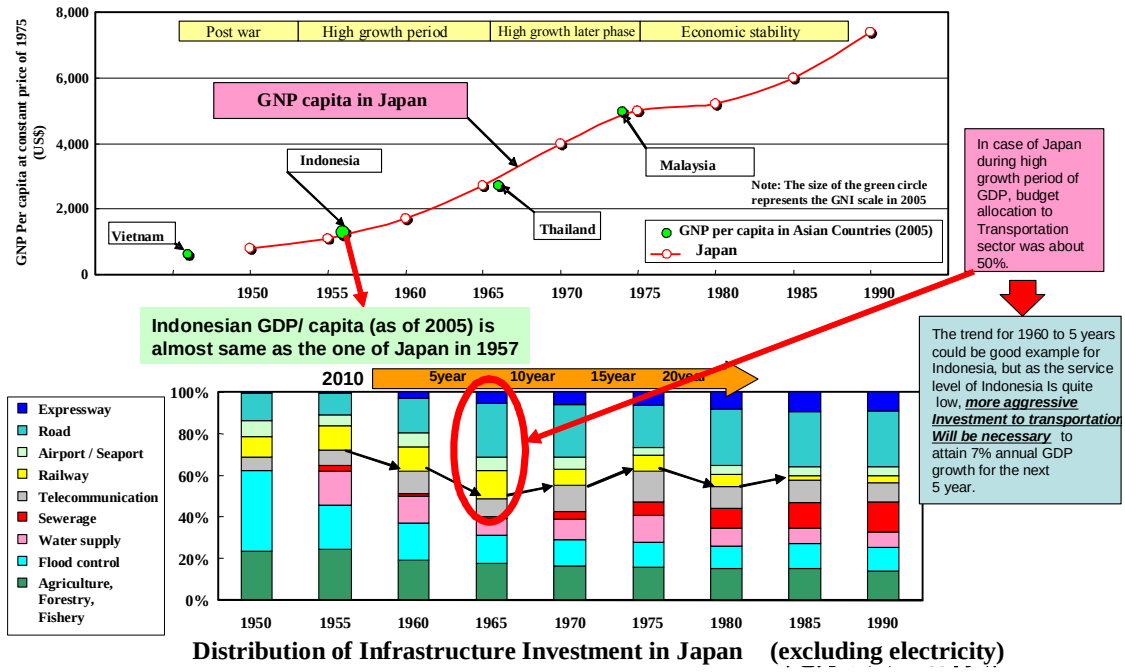
No.	Sector	Budget (Request Base 2010 - 2014)			Share		
		Public (bil.Rp.)	Private (bil.Rp.)	Total (bil.Rp.)	Public	Private	Total
1	Water Resources and Irrigation	114,649	0	114,649	11.6%	0.0%	8.0%
2	Transportation	470,954	299,802	770,756	47.7%	67.9%	53.9%
	(1) Road	226,873	182,260	409,133	23.0%	41.3%	28.6%
	(2) Land Transportation (River/Ferry)	23,445	258	23,703	2.4%	0.1%	1.7%
	(3) Railway	96,726	100,491	197,217	9.8%	22.8%	13.8%
	(4) Sea Transportation (Port)	90,640	6,425	97,065	9.2%	1.5%	6.8%
	(5) Air Transportation (Airport)	33,270	10,368	43,638	3.4%	2.3%	3.1%
3	Water Supply, Sewerage and Housing	100,590	7,735	108,325	10.2%	1.8%	7.6%
4	Energy, Telecommunication and Information	301,875	134,093	435,968	30.6%	30.4%	30.5%
	(1) Energy and Electricity	272,834	134,093	406,927	27.6%	30.4%	28.5%
	(2) Communication and Information	29,041	0	29,041	2.9%	0.0%	2.0%
5	TOTAL	988,068	441,630	1,429,698	100.0%	100.0%	100.0%

Source: Daftar Kegiatan Proyek PHNL, October 2009, BAPPENAS

The transportation sector is considered as the most important sector where more or less 50% of the total infrastructure budget, including private investment, is allocated. The 30% allocation on electricity also reflects the present crisis of electricity shortage, the resolution of which is vital to economic activities including private investment.

Taking into account the new target GDP growth of 7% per year for the next 5 years in accordance with RPJM 2010-2014, the prioritization of transportation and energy in the budget allocation would be reasonable. Particularly, the current service level, quantity and quality of transportation infrastructure are far below the standard of countries in attaining high GDP growth for the next period.

The Japanese experience in its previous infrastructure investment and GDP growth could be used as reference to assess the budget allocation in Indonesia for the next 5 years. The following Figure 4.1.2 shows the trend of GDP growth and budget allocation for infrastructure investment in Japan (excluding energy sector).



Source: "Research paper on economic and social long-term view and infrastructure development (March 1999)" Ministry of Construction of Japan
GNP per capita of Asian country : United Nations

Figure 4.1.2 Relationship between GDP Growth and Infrastructure Budget Allocation (Japanese Example: for reference)

The economic status of Indonesia (as of 2005) is almost the same level as that of Japan in 1957 with a per capita GDP of about US$1,500. During this period, the national economy rapidly grew with a high GDP growth rate of about 10% per year. At the beginning of this high growth period, an intensive investment on transportation infrastructure was carried out. As a result, around 50% of the total infrastructure budget was allocated to the transportation sector, particularly for road. It is noted that investment in the railway sector in Japan was carried out far before the high growth period, but it was carried out during the formulation of the country's framework in the beginning of the 20th century. Therefore, railway investment during the high growth period is small.

Based on the Japanese experience, the budget allocation of 50% to infrastructure, excluding the electricity sector, seems to be reasonable for targeting annual GDP growth of 7% in the next 5 years. However, taking into account the poor conditions of service level, quantity and quality of the current transportation infrastructure, more intensive investment to transportation infrastructure in the coming 5 years will be necessary for smooth economic development.

Another Japanese experience shall be introduced for the assessment of infrastructure investment in Indonesia for the next 5 years. The effects on GDP growth of infrastructure investment during the high growth period was analyzed by the Japanese Government. The results are shown in the following Figure 4.1.3:

Effect on Infrastructure Investment to GDP Growth ~ Japanese Experiences (**for reference**) ~

Period	GDP per capita of Japan during the period (US$)	Effect on GDP growth		
		1st Year	2nd Year	3rd Year
1954 ~1967	1080 ~ 2730	2.02	4.27	5.01
1957 ~ 1971	***1306 ~ 3713***	***2.27***	***4.77***	***4.42***
1960 ~ 1973	1645 ~ 4512	1.85	3.34	
1965 ~ 1975	2341 ~ 5307	1.34	2.32	2.77
1967 ~ 1977	2730 ~ 6756	1.27	2.25	2.72

Reference for Indonesia for the next 5 year (2010-2014)

Source: Nomura Research Institute (NRI),
News Release, Mid-term outlook for the Japanese economy 2002-2006. (November, 2001)

According to Japanese past experiences, economic effect are estimated by means of following multiplier effects, which indicates the ratio of infrastructure investment and the effect on GDP growth.
The table shows multiplier effects from 1954 to 1977 in Japan.
The current GDP per capita of Indonesia is the same lelel to Japanese GDP per capita for 1957 - 1971, hence ***the effects on infrastructure investment to GDP Growth for the next 5 year in Indonesia is very roughly expected as 2.27 for the 1st Year and 4.42 for the accumulated for the 3 years after infrastructure investment.***

Figure 4.1.3 Effect of Infrastructure Investment on GDP Growth

As explained above, the high return on infrastructure investment was experienced in Japan during the high growth period for more or less 15 years. It can also be said that the intensive infrastructure investment could lead to high GDP growth and sustainable economic growth after the high growth period. In the case of Japan, about 4.4 times of GDP increase through infrastructure investment was realized during the 3rd year after the beginning of the high growth period. As the current Indonesian economy is almost at the same stage, high effects of infrastructure investment would be expected if proper budget allocation is made at this moment.

4.1.2 Present Performance of Transportation Sector

(1) Freight Transportation

1) International Comparison of Freight Transportation of Indonesia

Indonesia is the world's largest archipelagic state, consisting of 17,508 islands, with a total land area of 1,919,440 km^2. With an estimated population of around 240 million, Indonesia is ranked as the world's fourth most populous country.

Sea transportation sub-sector plays an important role for freight transportation between islands since there are a lot of islands across the territory of Indonesia. However, transportation volume, which is much smaller than those of Malaysia, Thailand, China, the Philippines, and Vietnam, is small in terms of per capita basis as shown in Table 4.1.4 and Figure 4.1.4.

Table 4.1.3 Base Data of Freight Transportation Volume by Each Sub-sector

Country	Population (persons)	Land Area (km^2)	Goods hauled million ton-km (ton-km)			Container (x 1,000 TEU)	Statistical Year
			Road	Railway	Air	Sea	
Indonesia	240,271,522	1,919,440	2,514	4,430	3,290	5,783	2005/6
Cambodia	14,494,293	181,040	3	92	2	NA	2005/6
Malaysia	25,715,819	329,750	NA	1,178	6,608	13,419	2005/6
Philippines	97,976,603	300,000	NA	1	286	3,596	2005/6
Thailand	65,905,410	514,000	NA	4,037	7,258	5,574	2005/6
Vietnam	86,967,524	329,560	NA	2,928	269	3,000	2005/6
China	1,338,612,968	9,596,960	709,950	2,170,700	28,848	108,225	2005/6
India	1,166,079,217	3,287,590	NA	407,398	6,306	6,190	2005/6
Japan	127,078,679	377,835	327,632	22,632	21,706	18,274	2005/6

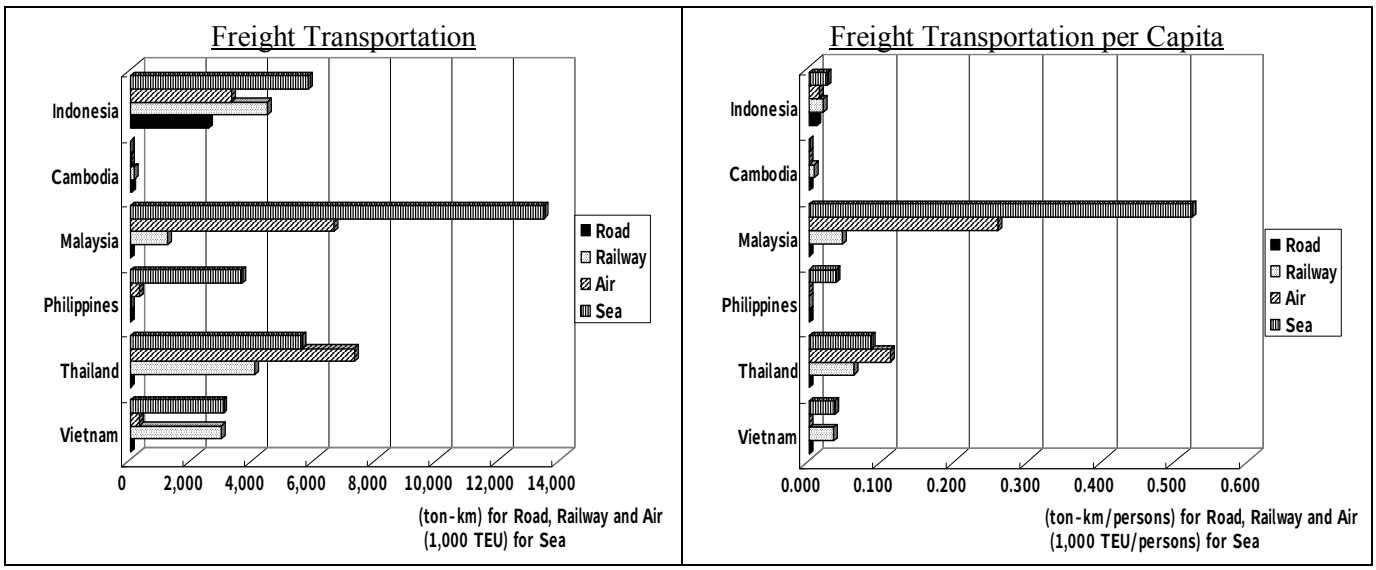
Source : http://www.exxun.com/ and 2008 World Development Indicators and World Road Statistics 2005

Table 4.1.4 Freight Transportation Volume per Capita by Each Sub-sector

Country	Population (persons)	Land Area (km^2)	Goods hauled million ton-km per capita (ton-km/1,000 persons)			Container per capita (x 1,000 TEU)	Statistical Year
			Road	Railway	Air	Sea	
Indonesia	240,271,522	1,919,440	0.010	0.018	0.014	0.024	2006
Cambodia	14,494,293	181,040	NA	0.006	NA	NA	2006
Malaysia	25,715,819	329,750	NA	0.046	0.257	0.522	2006
Philippines	97,976,603	300,000	NA	0.000	NA	0.037	2006
Thailand	65,905,410	514,000	NA	0.061	0.110	0.085	2006
Vietnam	86,967,524	329,560	NA	0.034	NA	0.034	2006
China	1,338,612,968	9,596,960	0.530	1.622	0.022	0.081	2005
India	1,166,079,217	3,287,590	NA	0.349	0.005	0.005	2006
Japan	127,078,679	377,835	2.578	0.178	0.171	0.144	2006

Source : http://www.exxun.com/ and 2008 World Development Indicators and World Road Statistics 2004

The comparison of the indicators in the above table is shown in the following Figure 4.1.4:



Source: http://www.exxun.com/ and 2008 World Development Indicators and World Road Statistics 2005

Figure 4.1.4 Freight Transportation Volume

The total volume of land freight transportation in Indonesia is not so small, but the volume per capita for all sub-sectors is very small compared with other countries based on available data. This is the same with the characteristics of sea freight transportation. The poor transportation service is considered as one of the major factors for this stagnant performance as pointed out in the previous Table 4.1.1.

2) Modal share of Indonesian freight transportation

The modal share of ton-base freight transportation in Indonesia is shown in the following Table 4.1.5:

Table 4.1.5 Modal Share of Freight Transportation in Indonesia (ton-base)

No.	Mode	Volume (ton)	Share (%)
1	Road	2,514,150	91.2%
2	Railway	17,250	0.6%
3	Ferry between Islands	27,400	1.0%
4	Sea	194,810	7.1%
5	Air	1,370	0.0%
6	Inland	280	0.0%
	Total	2,755,260	100.0%

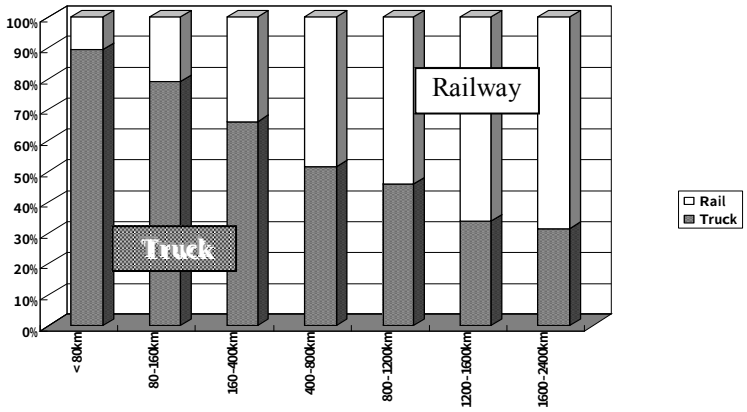
Source: Workshop for German-Indonesia Cooperation 2006 (Directorate General of Railway)
Notes: Ferry between Island: freight transportation by track on ferry
Sea: Freight transportation by container or bulk on ship
Inland: Freight transportation such as coal/wood/others by river.

Table 4.1.5 indicates that freight transportation is highly dependent on road, which has a share of more than 90%. On the other hand, railway share of freight transportation is only 0.6%. Therefore, inland freight transportation is also dependent on road. .

In the case of long distance and large volume transportation using existing road and railway, these transportation systems are selected by users based on many factors such as tariff, time,

serviceability, safety, security, punctuality and others. As a reference, the result of past records in the United States of America (U.S.A.) is introduced in the following Figure 4.1.5. The transition point from truck transportation to railway is between 400 km and 800 km in the continental country.

For freight transportation between seaport and destination in a rod shaped island less than 400 km wide, truck transportation has an advantage over railway. Development of road networks should be the first priority in a rod shaped island when an effective transportation mode is considered. But bulk transportation is not included.



Note: This graph is only reference, because ratio is changed by nationality, value of time, transport charge and others in each country.
Source: Commodity Flow Survey 2002, US Census Bureau

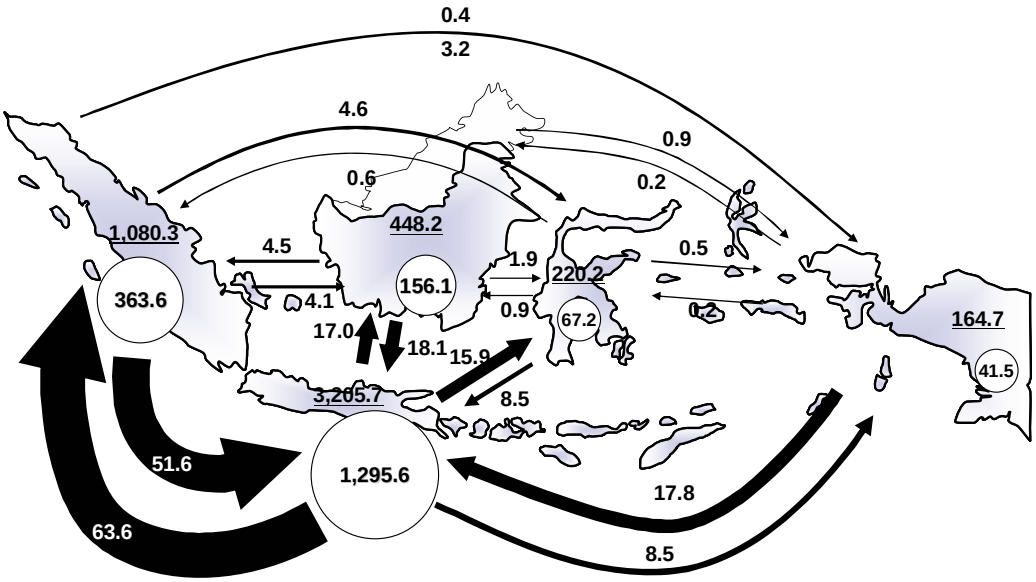
Figure 4.1.5 Reference Graph for Modal Shift for Freight Transportation

Almost all the freight transportation between islands is done by sea and ferry transportation, but their shares in the total freight transportation in the country is only 7.1% and 1.0% by ton-base. It means that freight transportation between islands is quite small compared with land freight transportation. It is assumed that no strong economic linkage exists between the islands in Indonesia.

For strengthening the sea transportation network in Indonesia, integration with regional development such as industrial/natural resources development should be introduced together with port and ferry terminal development.

3) Regional freight transportation condition

Regional production and transfers between regions based on the inter-provincial input-output table in 2005 is shown in the following Figure 4.1.6. Java and Sumatra Islands greatly outweighs transfers to each other, and they form a major economic bloc. In contrast, transfer amounts among islands, except Java, are very small.



Source: Socioeconomic Study for Assisting Formulation of New JICA's County Assistance Strategy for Indonesia

Figure 4.1.6 Production and Transfers of Each Region, 2005 (Units: trillion Rp.)

Table 4.1.6 Share of Production and Transfer of Each Region

From / To	Java	Sumatra	Kalimantan	Sulawesi	East Indonesia
Java	60.6%	3.0%	0.8%	0.7%	0.4%
Sumatra	2.4%	17.0%	0.2%	0.2%	0.0%
Kalimantan	0.8%	0.2%	7.3%	0.1%	0.0%
Sulawesi	0.4%	0.0%	0.0%	3.1%	0.0%
East Indonesia	0.4%	0.1%	0.0%	0.0%	1.9%

Source: Socioeconomic Study for Assisting Formulation of New JICA's Country Assistance Strategy for Indonesia

Table 4.1.6 indicates the characteristics of freight transportation in Indonesia as follows:

a) The major freight transportation is found within the island. For example, a freight value of Rp.201 trillion is transported from/to outside Java, but a freight value of Rp.1,295.6 trillion is transported within Java, which is around 6.4 times bigger than the freight value transported from/to outside Java.
b) Similar characteristics of freight transportation values are found in Sumatra and Kalimantan Islands. The value of inland freight transportation is much higher than the inter-island freight transportation values.
c) Inter-island freight transportation mainly occurs between Java and the other islands since Java functions as the production and consumption center of Indonesia with a population of 129 million.

4) Indonesia's competitiveness of logistics performance

The condition of the logistics system is one of the most important factors for investors when they choose which country to invest because it would significantly affect the investors' operation and profit. There is a logistics performance index (LPI) surveyed and evaluated for about 800 companies in 150 countries every year by the World Bank (WB). International LPI ranking and

scores of Indonesia together with neighboring ASEAN, China, India and Japan are shown in the following Table 4.1.7.

Indonesia is 43rd out of 150 countries in the international LPI rankings, which is lower than Thailand and Malaysia. The infrastructure score of Indonesia is only 2.83 and this is ranked at 45th. Indonesia is inferior to two major competitors in the region, i.e., Thailand and Malaysia, in all other indicators as shown in the table.

Table 4.1.7 International Logistics Performance Index (LPI) Ranking

Int. LPI Rank	Country	LPI	Customs	Infra-structure	International shipments	Logistics competence	Tracking & tracing	Domestic logistics costs	Time-lines
1	Singapore	4.19	3.90	4.27	4.04	4.21	4.25	2.70	4.53
6	Japan	4.02	3.79	4.11	3.77	4.12	4.08	2.02	4.34
27	**Malaysia**	**3.48**	**3.36**	**3.33**	**3.36**	**3.40**	**3.51**	**3.13**	**3.95**
30	China	3.32	2.99	3.20	3.31	3.40	3.37	2.97	3.68
31	**Thailand**	**3.31**	**3.03**	**3.16**	**3.24**	**3.31**	**3.25**	**3.21**	**3.91**
39	India	3.07	2.69	2.90	3.08	3.27	3.03	3.08	3.47
43	**Indonesia**	**3.01**	**2.73**	**2.83**	**3.05**	**2.90**	**3.30**	**2.84**	**3.28**
53	Vietnam	2.89	2.89	2.50	3.00	2.80	2.90	3.30	3.22
65	Philippines	2.69	2.64	2.26	2.77	2.65	2.65	3.27	3.14
81	Cambodia	2.50	2.19	2.30	2.47	2.47	2.53	3.21	3.05
Rank for each item			44	45	44	50	33	92	58

Logistics Performance Index (LPI) is the simple average of the country scores on the seven key dimensions:

- Customs : Efficiency and effectiveness of the clearance process by Customs and other border control agencies
- Infrastructure : Quality of Transport and IT infrastructure for logistics
- International shipments : Ease and affordability of arranging shipments
- Logistics competence : Competence in the local logistics industry (e.g., transport operators, customs: brokers)
- Tracking & tracing : Ability to track and trace shipments
- Domestic logistics costs : Domestic logistics costs (e.g., local transportation, terminal handling, warehousing)
- Timeliness : Timeliness of shipments in reaching destination

Source: World Bank LPI 2007

Table 4.1.7 shows that domestic logistics cost of Indonesia is far expensive than the other neighboring countries such as Malaysia, China, Thailand, India, Vietnam and Philippines. The ranking of this category is 92nd which is far below the overall logistics performance ranking of Indonesia of 43rd. Domestic logistics cost may include local transportation cost, terminal handling charge, and warehousing cost. Improvement of the logistics system to decrease domestic logistics cost should be done to encourage freight transportation activities.

(2) Passenger Transportation

1) International comparison of passengers transportation of Indonesia

In Indonesia, about 60% of the population lives in Java Island. However, the area is less than 7% of the total land. Such uneven distribution of population is one of the issues in Indonesia.

On the other hand, Indonesia has a vast undeveloped land particularly in Sumatra and Kalimantan Islands. In this sense, the role of transportation sector will become more important to support the

development plan. Air transportation sub-sector already plays an important role as a means to connect islands. However, Indonesia needs to address several remaining issues related to passenger transportation infrastructure development to be competitive with other ASEAN countries, China, India and Japan as shown in the following Tables 4.1.8 and 4.1.9:

Table 4.1.8 Base Data of Passenger Transportation Volume by Each Sub-sector

Country	Population (persons)	Land Area (km^2)	Passengers carried million passenger-km (km)			Passenger (1,000 persons)	Statistical Year
			Road	Railway	Air	Sea	
Indonesia	240,271,522	1,919,440	2,514	14,345	32,055	16,215	2005/6
Cambodia	14,494,293	181,040	201	45	NA	NA	2005/6
Malaysia	25,715,819	329,750	NA	1,181	43,817	NA	2005/6
Philippines	97,976,603	300,000	NA	144	NA	42,556	2005/6
Thailand	65,905,410	514,000	NA	9,195	56,378	NA	2005/6
Vietnam	86,967,524	329,560	48,797	4,558	NA	971	2005/6
China	1,338,612,968	9,596,960	769,560	666,200	234,505	NA	2005/6
India	1,166,079,217	3,287,590	NA	575,702	60,815	NA	2005/6
Japan	127,078,679	377,835	955,412	245,957	151,394	11,802	2005/6

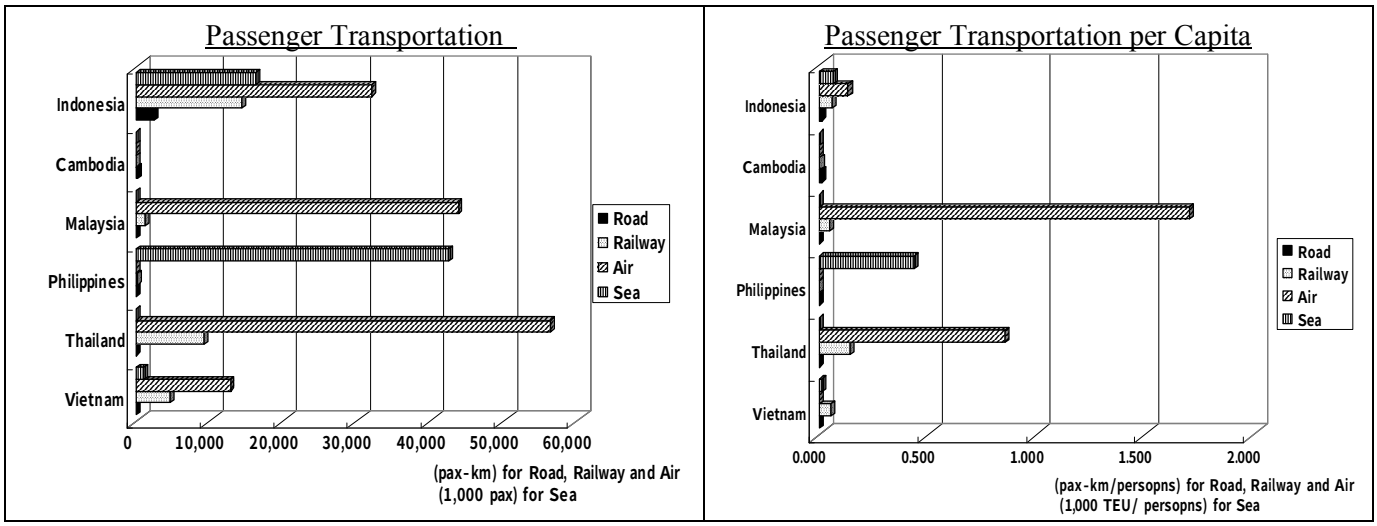
Source : http://www.exxun.com/ and 2008 World Development Indicators and World Road Statistics 2005

Table 4.1.9 Passenger Transportation Volume per Capita by Each Sub-sector

Country	Population (persons)	Land Area (km^2)	Passengers carried million passenger-km per capita (1,000 km/persons)			Passenger per capita (x 1,000 persons)	Statistical Year
			Road	Railway	Air	Sea	
Indonesia	240,271,522	1,919,440	0.010	0.060	0.133	0.067	2005/6
Cambodia	14,494,293	181,040	NA	0.003	NA	NA	2005/6
Malaysia	25,715,819	329,750	NA	0.046	1.704	NA	2005/6
Philippines	97,976,603	300,000	NA	0.001	NA	0.434	2005/6
Thailand	65,905,410	514,000	NA	0.140	0.855	NA	2005/6
Vietnam	86,967,524	329,560	971	0.052	NA	0.011	2005/6
China	1,338,612,968	9,596,960	0.575	0.498	0.175	NA	2005/6
India	1,166,079,217	3,287,590	NA	0.494	0.052	NA	2005/6
Japan	127,078,679	377,835	7.456	1.935	1.191	0.093	2005/6

Source : http://www.exxun.com/ and 2008 World Development Indicators, World Road Statistics 2004, ICAO Annual Report of the Council and Directorate of Port and Dredging, Directorate General of Sea Transportation, Ministry of Transportation

The comparison of the indicators in the above table is shown in the following Figure 4.1.7.



Source: http://www.exxun.com/ and 2008 World Development Indicators and World Road Statistics 2005

Figure 4.1.7 Passenger Transportation Volume

The volume of passenger transportation in Indonesia is comparatively large, but the volume per capita for all the sub-sectors is very small compared with other countries. The poor transportation service, especially poor safety and uncompetitive prices, is one of the major factors for the sector's low performance.

2) Modal share of passenger transportation of Indonesia

Table 4.1.10 compares the passenger transportation modes in Indonesia. Road transportation is the most popular in Indonesia which has a share of 84.1% of the total number of passengers. Railway is widely used particularly in JABODETABEK area and Java Island, but the share of 7.3% is still minor compared to road passenger transport.

Table 4.1.10 Modal Share of Passenger Transportation in Indonesia

No.	Mode	Passenger (1000 persons	Share (%)
1	Road	2,021,075	84.1%
2	Railway	175,896	7.3%
3	Ferry between Islands	116,033	4.8%
4	Sea	42,340	1.8%
5	Air	36,542	1.5%
6	Inland	10,311	0.4%
	Total	2,402,197	100.0%

Source: Workshop for German -- Indonesian Cooperation 2006
(Directorate>> General of Railways : DGR)

The person-based share of road transportation is 84.1%, which is about 12 times bigger than that of railway and 55 times that of air as shown in Table 4.1.10. On the other hand, the person-km based share of road passenger transportation is very small, which is only 17.5% that of railway and 7.8% that of air in accordance with Figure 4.1.8. Comparing with Table 4.1.10 and Figure 4.1.7 above, it was found that road passenger transportation seems to be only for short distances.

3) Regional passenger transportation characteristics

Figure 4.1.8 illustrates the origin-destination volume of passenger transportation in Indonesia. The cumulative annual volume of passenger transport is calculated at 2.24 billion/year.

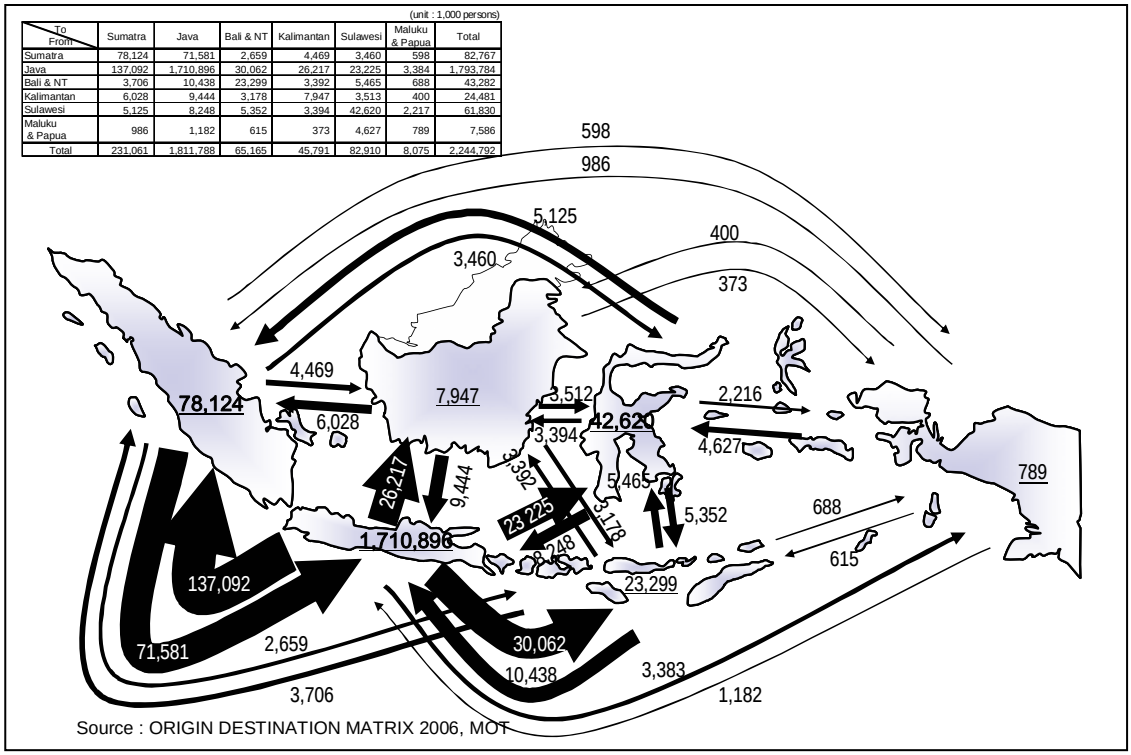


Figure 4.1.8 Origin-Destination of Passenger Transport in Indonesia (2006)

Table 4.1.11 Share of Passenger Transportation in Indonesia

From / To	Sumatra	Java	Bali & NT	Kalimantan	Sulawesi	Maluku&Papu
Sumatra	3.5%	3.2%	0.1%	0.2%	0.2%	0.0%
Java	6.1%	76.2%	1.3%	1.2%	1.0%	0.2%
Bali & NT	0.2%	0.5%	1.0%	0.2%	0.2%	0.0%
Kalimantan	0.3%	0.4%	0.1%	0.4%	0.2%	0.0%
Sulawesi	0.2%	0.4%	0.2%	0.2%	1.9%	0.1%
Maluku&Papua	0.0%	0.1%	0.0%	0.0%	0.2%	0.0%

Source: Origin Destination Matrix 2006, MOT

It was found that 76% of annual passenger transport is within Java, amounting to 1.71 billion/year. Most of this is road transportation which has a modal share of around 84% in Java.

The passenger transportation of 208 million/year between Java and Sumatra is also vital. This shares around 9% of the total passenger transportation volume and is around 2.6 times larger than the share of passenger transportation within Sumatra Island.

In Sulawesi Island, the inland passenger transportation of 42 million/year is relatively high with a share of around 2%. The inter-island transportation from/to Sulawesi is 57.4 million/year which is 1.4 times higher than the inland passenger transport.

In Kalimantan Island, the inland passenger transport is very small compared with the inter-island passenger transport. The inter-island passenger transport is counted at 59.2 million/year, which is about 7.5 times bigger than the inland passenger transport of 7.9 million/year.

(3) Urban Transportation

1) DKI Jakarta

Jakarta is the political and economic center of Indonesia. It has been driving the economic growth of the country. The population of Jakarta is about 9 million, approximately 3.8% of the total population of Indonesia, in an area of only 664 km^2. Meanwhile, this area has some grave problems in the transportation sector such as heavy traffic congestion and ineffective logistics transportation system especially in the central business district. For reducing traffic congestion, some major roads have a three-in-one rule during rush hours since 1992, and Trans Jakarta Bus Rapid Transit (BRT) service operates on seven reserved busway corridors since 2004. In addition, the design stage of Jakarta Mass Rapid Transit (MRT) system has just commenced from November 2009. Despite these efforts, heavy traffic congestions, especially in the central business district area, still remain unresolved.

It is noted that the heavy traffic congestion issue is aggravated by flooding. In Jakarta, the travel time by road is much longer during or after a rain since a part of the road network is inundated and traffic is concentrated in the part of the road which has flood protection measures.

To assess the transportation condition in Jakarta, a preliminary comparison of transportation services with capital cities of neighboring ASEAN countries, China and India has been prepared based on selected indicators as shown in the following Table 4.2.12:

Table 4.2.12 Indicators for Transportation Service of Capital Cities in Asian Countries

City	Country	Population (1,000 persons)	Road Density / General Road (m/ha)	Road Density / Expressway (m/ha)	Road Density Index (m/√(ha) /√(persons)	Average Travel Speed (km/h)	Urban Railway Service
Jakarta	**Indonesia**	9,161	**115.21**	**1.29**	**9.79**	**18.6**	**BRT, MRT (plan)**
Bangkok	Thailand	6,685	81.02	1.87	12.44	15.0	MRT, Monorail (plan)
Kuala Lumpur	Malaysia	3,774	87.83	3.94	24.15	28.1	MRT, LRT, Monorail
Manila	Philippines	9,447	107.26	0.74	8.81	18.0	LRT
Ho Chi Minh	Viet Nam	4,811	94.91	0.00	19.80	25.2	MRT(design)
Shanghai	China	9,570	61.70	0.62	9.05	20.0	MRT, LRT
Delhi	India	11,300	N.A.	N.A.	N.A.	23.1	MRT, Monorail (plan)
Tokyo	Japan	32,343	351.95	0.89	72.05	26.1	MRT, LRT, Monorail

Note : For slightly older data, there are differences with numbers in other tables.
Source : International Association of Public Transport (UITP), 2001

The investigation of transportation services in the above capital cities revealed major findings as follows:

i) Jakarta ranks 5th in terms of road density index:

Road density is comparatively higher than the other cities, but road density index only ranks 5th. It means that the ***road network system in Jakarta is not well developed***.

ii) Jakarta ranks 6th in terms of average travel speed:

Average travel speed is lower than in other cities. It is attributed not only to insufficient road network but also to other factors such as the delay of adopting Transportation Oriented Development (TOD) and Transportation Demand Management (TDM), chaotic intersections and interchanges, unconnected urban expressway including the Jakarta Outer Ring Road (JORR) and others.

iii) Public transportation service:

DKI Jakarta strongly promoted the TOD policy and introduced the BRT service and three-in-one rule. The monorail system, however, was suspended at the initial stage of construction for a long time and the first phase of the Mass Rapid Transit (MRT) project, which was planned more than fifteen years ago, is still under the basic design stage. Meanwhile, other cities have developed urban railway systems almost steadily.

2) Other Main Cities

Seven megacities, with more than one million population, including the Jabodetabek metropolitan area are listed in the following Table 4.2.13. Four cities are located in Java Island, two cities in Sumatra Island and one city in Sulawesi Island. The total population of these cities is approximately 25 million, about 10% of Indonesia's total population, living only in an area of 3,000 km^2, which is 0.15% of the country's land area. In these cities, traffic congestion during the morning and evening rush hours is one of the social issues. The following Table 4.2.13 shows general data and transportation information of these cities.

Table 4.2.13 General Data and Transportation of Main Cities

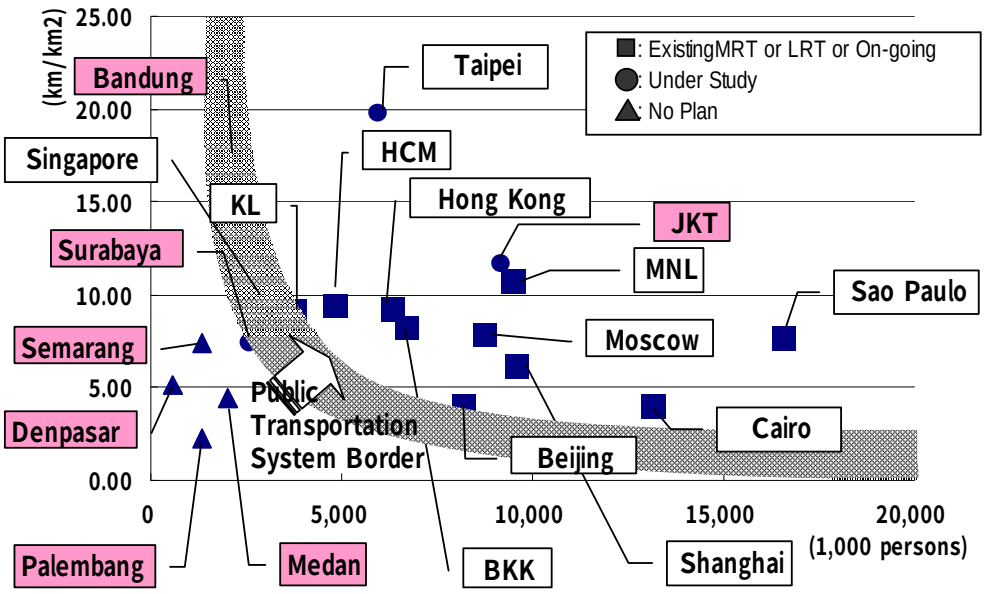
City / Island / Aspect	Jabodetabek / Java	Surabaya / Java	Bandung / Java	Semarang / Java	Medan / Sumatra	Palembang / Sumatra	Makassar / Sulawesi	Denpasar / Bali
Population								
Population (persons)	14,401,754	2,611,506	2,288,570	1,352,869	2,029,797	1,323,169	1,168,258	574,610
Density (person/km^2)	11,251	9,529	13,649	3,620	7,657	3,304	6,647	4,635
Area (km^2)	1,280	274	168	374	265	401	176	124
Distance from JKT(km)	---	674	128	423	1,402	408	1,413	
Road								
Road Length (km)	14,136	2,035	2,951	2,763	1,179	899	1,539	633
Road Density Index	0.104	0.076	0.150	0.123	0.051	0.039	0.107	0.835
Railway								
MRT or LRT or others	No Design	No Study	No Study	No	No	No	No	No
Sea								
Freight transport vol. (million ton)	42	3	0	32	19	11	11	
Air								
Passenger transport vol. (1,000 pax/year)	18,951	5,566	253	793	2,705	815	1,983	
Master Plan	O	O	O	-	-	-	O	-

Source: Badan Pusat Statistik, Republik Indonesia (web) statistical year 2005, Wikipedia and others

Generally, the process of transportation system development in a city starts from road network improvements, followed by the city government or private sector's introduction of public transportation system such as bus and taxi services along the road network. The public

transportation services would be developed in accordance with the demand and the transit scale is increased to BRT, LRT and MRT in the future.

The following Figure 4.1.9 shows the relationship between the population and road density in major cities of ASEAN countries.



Country	City	Population (1,000 persons)	Area (km^2)	Road Length (km)	Road Density (km/km^2)
Indonesia	Jakarta	9,161	662	7,709	11.65
Indonesia	Surabaya	2,612	274	2,035	7.43
Indonesia	Bandung	2,289	168	2,951	17.57
Indonesia	Semarang	1,353	374	2,763	7.39
Indonesia	Medan	2,030	265	1,179	4.45
Indonesia	Palembang	1,323	401	899	2.24
Indonesia	Denpasar	575	124	633	5.11
Thailand	Bangkok	6,685	1,577	13,074	8.29
Malaysia	Kuala Lumpur	3,774	2,853	26,185	9.18
Philippines	Manila	9,447	638	6,888	10.80
Singapore	Singapore	2,987	648	6,197	9.57
Taiwan	Taipei	5,961	2,324	45,999	19.79
Viet Nam	Ho Chi Minh	4,811	2,094	19,871	9.49
China	Shanghai	9,570	2,057	12,819	6.23
China	Beijing	8,164	4,568	18,486	4.05
China	Hong Kong	6,311	1,096	10,153	9.26
Brazil	Sao Paulo	16,562	8,051	61,840	7.68
Egypt	Cairo	13,144	1,436	5,835	4.06
Russia	Moscow	8,700	1,091	8,621	7.90
Japan	Tokyo	32,343	13,553	478,196	35.28
Japan	Osaka	16,829	14,891	573,318	38.50
South Korea	Seoul	20,576	11,748	260,428	22.17

Source : International Association of Public Transport (UITP), 2001 and information on internet

Figure 4.1.9 Relationship between Population and Road Density per Area

Most of the cities with more than three million population have developed or planned an MRT system and many cities with more than two million people need to introduce it soon. On the other

hand, the cities with less than two million population have lower road density and therefore, a denser road network development would be required prior to the introduction of the MRT system.

4.1.3 Regional Characteristics and Development Policy of Transportation Infrastructure

(1) Market Size of Indonesia from the Global Viewpoint

As shown in the following Figure 4.1.10, the scale of the Indonesian economy is almost the same as that of the Greater Mekong Subregion (GMS) excluding China. GMS consists of Thailand, Vietnam, Cambodia, Lao, Myanmar, Yunan province and Guangxi Zhuang Autonomous Region in China. Its total population and area excluding China are almost the same as those of Indonesia. The size of annual economic activities is almost similar, i.e., US$285 billion in Indonesia and US$250 billion in GMS.

Indonesia v.s. GMS

Indonesia		GMS Region (excluding China)
219 million	Population (2005)	218 million
1.9 million km^2	Area	1.9 million km^2
285 billion US$	GDP (2005)	250 billion US$

- Indonesia is the almost same scale with GMS Economic Development Region
- "INDONESIA" could be considered as ***" one of the major Economic Development Zone"*** in the World with remarkable population, land availability and rich natural resources.
- ***Strengthening Inter-Regional Transportation Network (including among islands)*** will be a key issue for the next 5-year development plan.

Source: Compiled by the JICA Study Team based on various internet information

Figure 4.1.10 Comparison between Indonesia and GMS (excluding China)

Taking into account the present economic condition of Indonesia, which could be defined as the beginning stage of the high growth period as discussed in the previous Sub-section 4.1.1, it is recommended to strengthen inter-regional transportation network including among islands. Because the market size of Indonesia, as one of the major global markets, is quite big and its potential resources development and consumption capacity is remarkable, targeting the economic growth of Indonesia at 6-7% per year for the next 5 years would be possible through the construction of a strong transportation network.

(2) Regional Transportation at the Island Level

Indonesia is composed of five main islands, namely : Java, Sumatra, Kalimantan, Sulawesi, and Papua, and about 17,500 small islands. Each island has a characteristic for landscape, population, gross regional domestic product (GRDP), industry and transportation sub-sectors. In this study, six regions, namely: Java Island, Sumatra Island, Bali & Nusa Tenggara Islands, Kalimantan Island, Sulawesi Island and Maluku & Papua Islands, are classified based on their location.

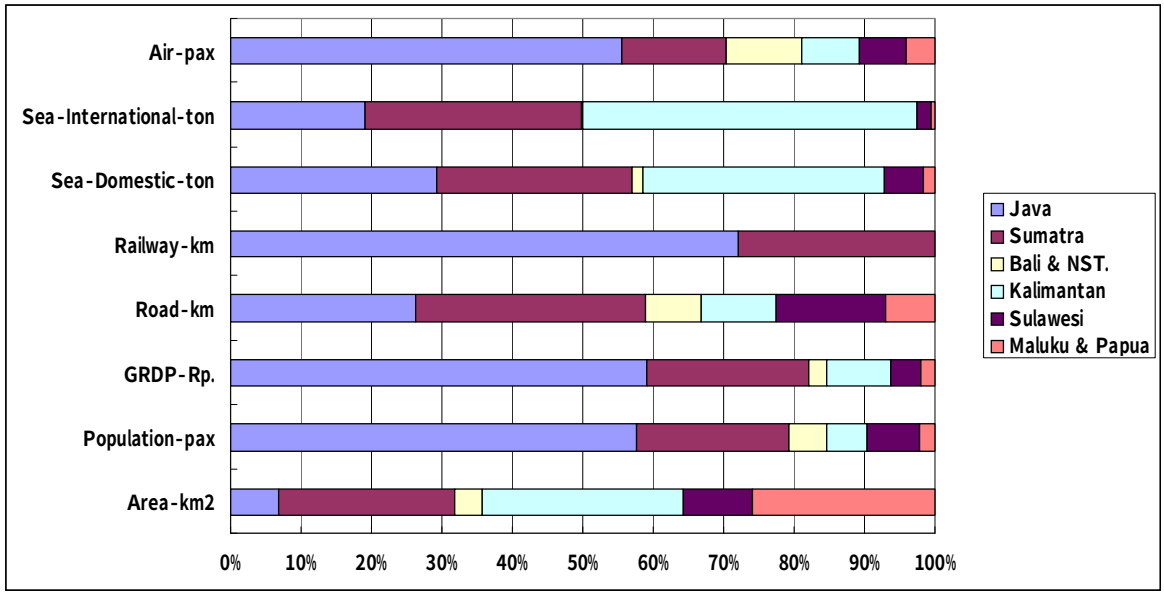
The following Table 4.1.14 shows general data and transportation sub-sectors information for each region.

Table 4.1.14 General Data and Transportation of Each Island

Aspect \ Island	Java	Sumatra	Bali & Nusa Tenggara	Kali-mantan	Sulawesi	Maluku & Papua	Total
Landscape							
Area (km^2)	480,793	129,438	73,070	544,150	188,522	494,957	1,910,931
Shape	Rod-shaped (1,000 km x max. 200km)	Streamline-shaped (1,700 km x max. 400km	Small island group	Massive-shaped	K-shaped	K-shaped & Massive-shaped	
Population							
Population (1,000 persons)	129,438	480,793	12,414	12,848	16,531	5,067	228,523
Density (person/km^2)	1,026	102	170	24	88	10	120
GRDP							
Total GRDP (trillion Rp.)	2,080.4	810.3	95.0	321.9	144.2	74.6	3,526.3
GRDP per capita (million Rp.)	15.8	16.9	7.8	25.5	8.9	15.0	15.6
Main cities with more than one million people	4 Jabodetabek, Surabaya, Bandung, Semarang	2 Medan, Palembang	0	0	1 Makassar	0	7
Industry							
Primary (%)	11.1	22.1	25.2	15.1	32.2	22.5	
Secondary (%)	37.0	44.4	37.0	56..9	24.5	46.8	
Tertiary (%)	51.9	33.5	37.7	28.0	43.4	30.7	
Road							
Length (km)	104,567	128,959	31,569	41,855	61,824	27,588	396,362
Density Index	0.797	0.842	1.048	0.501	1.107	0.551	0.600
Stable road length (km)	66,472	84,024	20,647	26,102	39,858	16,647	253,777
Stable ratio (%)	63.6%	65.2%	65.4%	62.4%	64.5%	60.4%	64.0%
Railway							
Length (km)	3,370	1,305	0.0	0.0	0.0	0.0	4,675
Freight transport vol. (million ton-km)	894	3,531	0.0	0.0	0.0	0.0	4,425 (Y2007)
Pass. transport vol. (million pax-km)	15,090	782	0.0	0.0	0.0	0.0	15,872 (Y2007)
Sea							
Freight transport	80,330	76,199	4,322	93,837	15,450	4,409	274,547

Aspect \ Island	Java	Sumatra	Bali & Nusa Tenggara	Kali-mantan	Sulawesi	Maluku & Papua	Total
Inter-island (ton)							
Freight transport International (ton)	36,458	58,817	91	90,663	3,905	1,130	191,064
Air							
Pass. transport vol. (1,000 pax)	26,604	7,087	5,173	3,881	3,137	1,986	47,868

GRDP : Gross Regional Domestic Product
Source : Statistical Yearbook of Indonesia 2008 and JICA Study Team



Source: Statistical Yearbook of Indonesia 2008 and Study Team

Figure 4.1.11 Regional Infrastructure Characteristics

Figure 4.1.11 compares the regional characteristics of available transportation infrastructure. Around 60% of the population and economic activities are concentrated in Java even though the area is only 6% of the whole Indonesia. The road length in Java is around 25% of the total in Indonesia but in terms of road density index (which is calculated as: road length / √area/√population), the value of Java is lower than those of Sumatra and Sulawesi (see Table 4.1.14).

Sumatra Island seems to have well balanced transportation infrastructures including road, railway, sea-transport and air-transport. The road network is relatively developed with 32.5% of the total length in Indonesia but the road density index is still not enough.

Sea transportation in Kalimantan is active in both domestic and international freight transportation. It seems that mineral resources such as coal, oil and natural gas are the main items transported. On the other hand, the road density in Kalimantan is the lowest among the islands of Indonesia and inland transportation development is highly required to encourage regional development as well as mineral resources development.

The road density index of 1.048 in Sulawesi Island is the highest in Indonesia but it still seems not enough for the smooth transportation of agriculture products to the main market at Makassar, which is located at the southern edge of the island. Integration of sea transportation with road network development would be a key issue for Sulawesi Island.

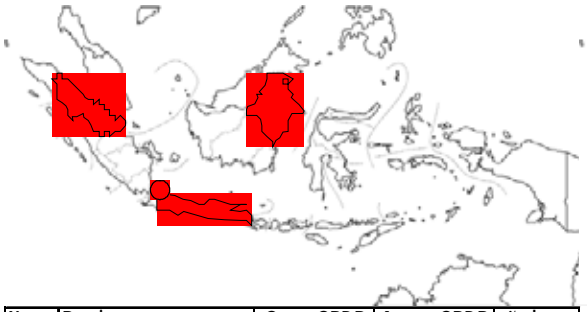
Regarding air transportation, which plays an important role in passenger transportation between islands, the regional passenger distribution is almost the same as the population distribution.

(3) Regional Economic Characteristics

A transportation infrastructure development plan should be well-linked with the regional economic characteristics and the development strategies. Prior to assessing the regional development strategy for transportation infrastructures, the regional economic characteristics shall be summarized as follows:

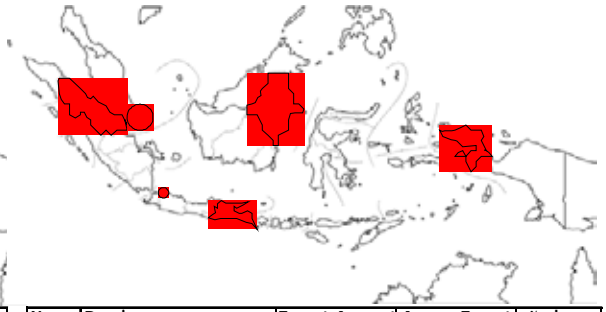
The following Figure 4.1.12 indicates the provinces with high Gross GRDP and value of exports.

High Gross GRDP



No.	Province	Gross GRDP (bil.Rp.)	Accum.GRDP (bil.Rp.)	% share
1	**DKI Jakarta**	**501,572**	**501,572**	**16%**
2	**Jawa Barat**	**473,560**	**975,132**	**31%**
3	**Jawa Timur**	**470,621**	**1,445,753**	**47%**
4	Jawa Tengah	281,994	1,727,747	56%
5	Riau	214,016	1,941,763	63%
6	Kalimantan Timur	198,553	2,140,315	69%
7	Sumatera Utara	160,028	2,300,343	74%
	Indonesia		3,102,840	100%

Export Oriented Provinces

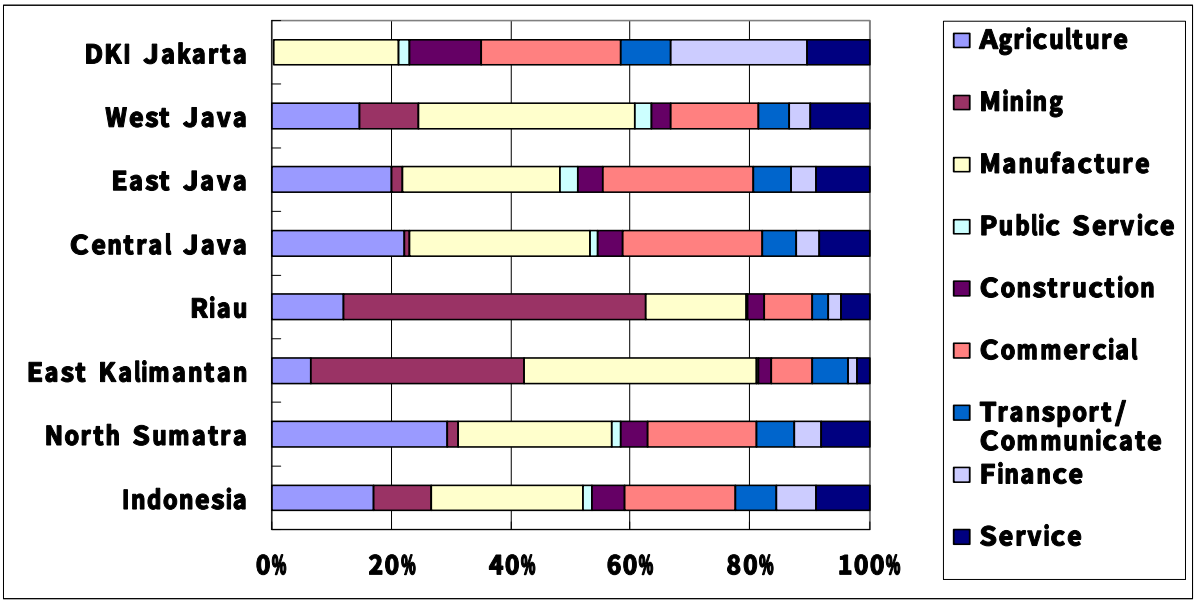


No.	Province	Export Amount (mil.US$)	Accum.Export (mil.US$)	% share
1	**DKI Jakarta**	**29,810**	**29,810**	**30%**
2	**Kalimantan Timur**	**16,481**	**46,291**	**46%**
3	**Jawa Timur**	**9,158**	**55,448**	**55%**
4	Riau	8,695	64,143	64%
5	Kepulauan Riau	6,073	70,216	70%
6	Sumatera Utara	5,524	75,740	75%
7	Papua Barat	3,519	79,259	79%
	Indonesia		100,799	100%

Source: Badan Pusat Statistik, 2007

Figure 4.1.12 Leading Regions for the National Economy

In terms of high gross GRDP, Jakarta and Java, which earned about 56% of the national GDP in 2007, are the leading provinces. Apart from Java, the northern part of Sumatra, including Riau and North Sumatra Provinces, and East Kalimantan Province also marked high values of GRDP.



Source: Produk Domestik Regional Bruto Propinsi-Propinsi di Indonesia 2001-2005

Figure 4.1.13 GRDP Shares of Highly Ranked Provinces

Figure 4.1.13 shows the sectoral shares of GRDP for the high performing provinces. In Java, manufacturing and commercial are the major economic activities followed by agriculture. North Sumatra Province has similar characteristics as Java.

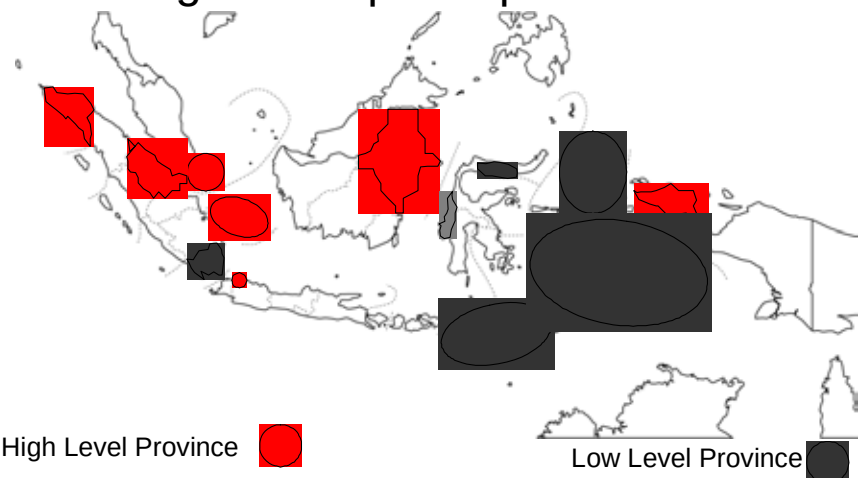
On the other hand, Riau and East Kalimantan highly depend on mining and manufacturing industries. In Riau, oil and gas are the major industries but plantation activity is also vital. In East Kalimantan, the economy highly depends on mineral resources such as oil, gas, coal and gold.

In Indonesia, the GRDP shares by industrial origin have basically the same pattern as those of Java.

The leading sector is manufacturing followed by commercial and agriculture sectors.

Regarding exports, the leading provinces are almost same as those with higher GRDP. Riau province, located just south of Singapore, accommodates various economic activities such as manufacturing, commercial and tourism, ultimately contributing to national economic growth. Western Papua Province, like East Kalimantan, highly depends on the mining sector such as oil, gas and gold.

Figure 4.1.14 shows the top and bottom five provinces in terms of per capita GRDP, through which the regional balance of economic activities is assessed in this study.



No.	Province	GRDP p.c. (mil.Rp.)	Population (1,000)	% from Average
1	**Kalimantan Timur**	**67,627**	2,936	**456%**
2	**DKI Jakarta**	**55,960**	8,963	**377%**
3	**Riau**	**35,079**	6,101	**236%**
4	Kepulauan Riau	34,545		233%
5	Papua Barat	23,762		160%
6	Nanggroe Ache	18,057	4,073	122%
7	Bangka Belitung	14,754	1,075	99%
	Indonesia	14,841		

No.	Province	GRDP p.c. (mil.Rp.)	Population (1,000)	% from Average
1	**Maluku Utara**	**3,066**	919	21%
2	**Nusa Tenggara Timur**	**3,841**	4,355	26%
3	**Maluku**	**3,997**	1,271	27%
4	Gorontalo	4,315	941	29%
5	Sulawesi Barat	5,168		35%
6	Nusa Tenggara Barat	6,673	4,257	45%
7	Lampung	6,760	7,212	46%
	Indonesia	14,841		

Badan Pusat Statistik, 2007

Figure 4.1.14 Comparison of Per Capita GRDP

The gap in per capita GRDP is huge. The difference is 20 times between the highest province (Kalimantan Timur) with Rp 67,627 million and the lowest (Maluku Utara) with Rp 3,066 million. The provinces with high per capita GRDP are mainly driven by oil and gas production, except DKI Jakarta. The four provinces in Sumatra Region, namely: Riau, Kepulauan Riau, Nanggaroe Ache, and Bangka Belitung, are again listed as high economic performers. They are expected to undertake further industrial development to lead the country's growth together with DKI Jakarta and Java.

Western Papua Province has the fifth highest per capita GRDP and is the second highest in the East Indonesia region. Mining activities are the main source of economic growth in East Indonesia but it would be difficult to distribute the benefits to the surrounding area as the mining products are generally exported directly from the production area.

(4) Regional Development Strategy for Transportation Infrastructure

Reflecting the former assessment results related to i) Freight Transportation, ii) Indonesia's Competitiveness of Logistics Performance, iii) Passenger Transportation, iv) Regional Transportation at the Island Level, v) Urban Transportation, and vi) Regional Socio/Economic Characteristics, the regional development strategy for transportation infrastructures is formulated.

Figure 4.1.14 indicates a possible regional development policy taking into account the vision of the long-term development plan and current situation of each region.

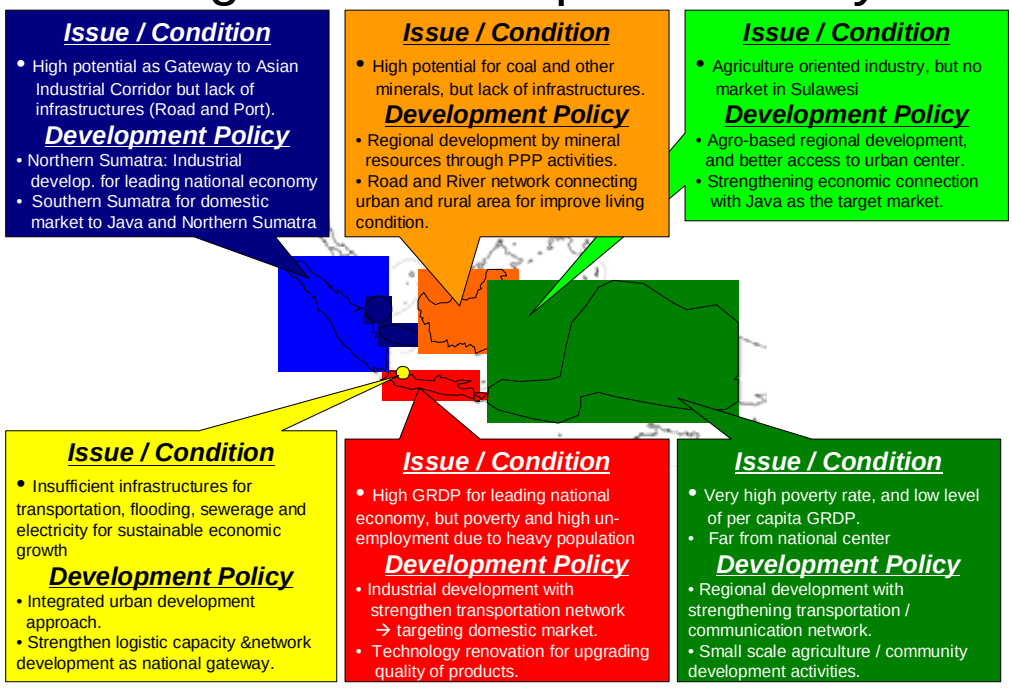


Figure 4.1.15 Suggested Regional Development Policy

(related to Transportation Development strategy formation)

Traffic congestion is the most serious issue of the transportation sector in DKI Jakarta. But the issues of urban infrastructure service quality and safety are more serious as a whole and transportation is a part of the complex and integrated issues in DKI Jakarta. For example, heavy traffic congestions always occur in Jakarta after a heavy rain since the major part of the road network is not functional due to inundation. Infrastructure in DKI Jakarta and the expanded JABODETABEK area, with a population of more than 20 million, should therefore be upgraded from the safety and environmental viewpoints. An integrated approach should be taken including transportation network development, flood control, environmental improvement and urban development.

Robust economic performance in Java and Sumatra is required to continue the sustainable growth to lead the national economy. A strong physical linkage of road and railway infrastructures is needed to promote the economic activities in Java and Sumatra such as Trans Java Highway Corridor, Trans Sumatra Highway Corridor and Trans Java High Speed Railway. These infrastructures will ultimately strengthen the linkage between Java and Sumatra.

Kalimantan has high development potential for coal mining in addition to the oil and gas industry. Thus, heavy traffic mode development such as coal transportation railway could be expected under a PPP scheme. Development of river transportation together with inland road network is another means for the mining industry. At the same time, rich natural resources in wetlands and rainforests should be well conserved and good resources management needs to be conducted.

Sulawesi highly depends on the agriculture sector and is now required to produce high quality products. Thus, agro-processing industry may be developed targeting the upscale market in Java. Strengthening the road network among urban centers, Makassar and the rural area could be taken into account.

East Indonesia is still entrenched in poverty and income-earning activities may be limited compared with other regions. Small-scale community development projects in many places should continue to improve living conditions. Provision of community infrastructures, such as clean water supply, rural road, communication measures, and electricity, is the utmost priority.

(5) Proposed Transportation Development Policy

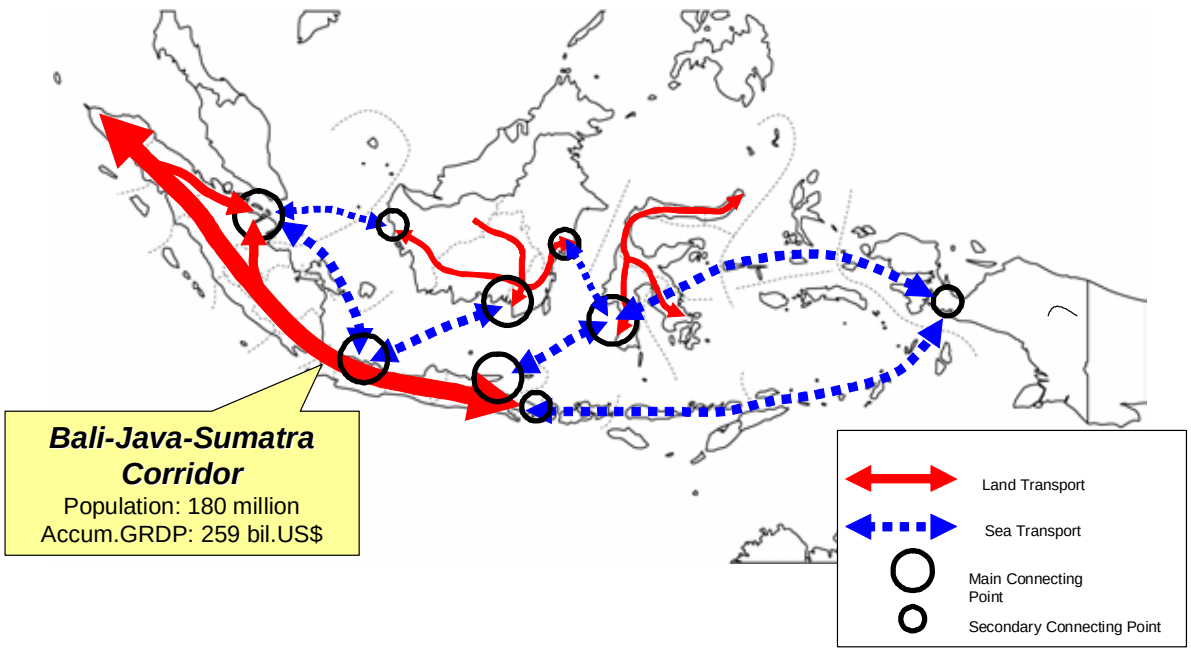
1) Strengthening Inter-Regional Connection

When the regional development strategy for transportation infrastructures is formulated, a strategy for regional integration should be taken into account.

Figure 4.1.16 illustrates the vision of the transportation network development in Indonesia for the next five years. As explained in the previous sub-section, Indonesia could be considered as one of the major economic activity zones in the world, and strengthening the inter-regional network is essential for accomplishing equitable and sustainable national economic development to share the economic benefits among the people in the whole of Indonesia.

A strong land transportation corridor would be required along Sumatra and Java Islands. For the integration of the two islands, mineral resources in Sumatra and large human resources in Java should be well leveraged, and a physical connection by bridge or tunnel would be needed in the future for the efficient mobilization of significant resources. The Trans Sumatra and Trans Java expressway network and railway corridor should also support wealth on the Java-Sumatra Corridor.

The development of main connecting points between islands is essential for strengthening inter-regional connection. Port and logistics facilities should be developed at the main and secondary connecting points. The access road network to the connecting points (port area) should be included in the development activities.



Source: JICA Study Team

Figure 4.1.16 Main Axis of the Transportation Network in Indonesia

2) Strengthening Global Networking Linkage with Growth Corridors

In addition to strengthening inter-regional connection, which is really important for the next 5 years, the global networking linkage should also be taken into account from the mid-term and long-term economic development viewpoints. There are several economic corridor development concepts such as the ASEAN Highway, Indonesia-Malaysia-Thailand Growth Corridor (IMT-GT), and Davao-Macassar-Surabaya Corridor. As Indonesia is an island country, it is important to define the gateway points in the global network connection.

i) ASEAN Highway

ASEAN Highway is defined by ASEAN countries as an important infrastructure and logistics component in achieving ASEAN's goal of closer economic and cultural integration. There are 26 highway routes identified in the ASEAN Highway, five of which are located in Indonesia, namely: AH2 (Thailand – Malaysia /Singapore – Merak – Jakarta – Denpasar), AH25 (Banda Aceh – Medan – Pekanbaru – Jambi – Palembang – Lampung – Merak), AH150 (Borneo Inland Ring Road), AH151 (Tebintinggi – Padan – Bangko – Lubuklingau – Terbangi Busar), and AH152 (Jakarta – Bogor – Sukabumi – Bandung – Yogjakarta – Kartasana).

ii) Indonesia – Malaysia – Thailand Growth Corridor: IMT-GT

IMT-GT currently consists of eight provinces in southern Thailand, eight states in Peninsular Malaysia, and the island of Sumatra in Indonesia. The basic strategies for IMT-GT are the following: a) Promotion of intra- and inter-IMT-GT trade and investment, b) Promotion of growth of agriculture, agro-industry and tourism, c) Strengthening of infrastructure support and connectivity, d) Human resources development/environmental concerns, and e) Institutional support including public-private partnership.

There are four corridors identified as the framework of the IMT-GT as follows:

- Extended Songkhla – Penan – Medan Economic Corridor
- Strait of Melaka Economic Corridor
- Banda Aceh – Medan – Dumai – Palembang Economic Corridor
- Melaka – Dumai Economic Corridor

iii) Davao – Macassar – Surabaya Corridor

Davao – Macassar – Surabaya corridor is newly identified by the Philippines and Indonesia. The corridor is connected by a combination of sea and road transportation. The basic strategies for the corridor are to promote agro-industry, particularly based on fishery, marine resources development, and tourism development.

The location and route of global corridors and the Indonesian gateways to the international market are presented in the following Figure 4.1.17:

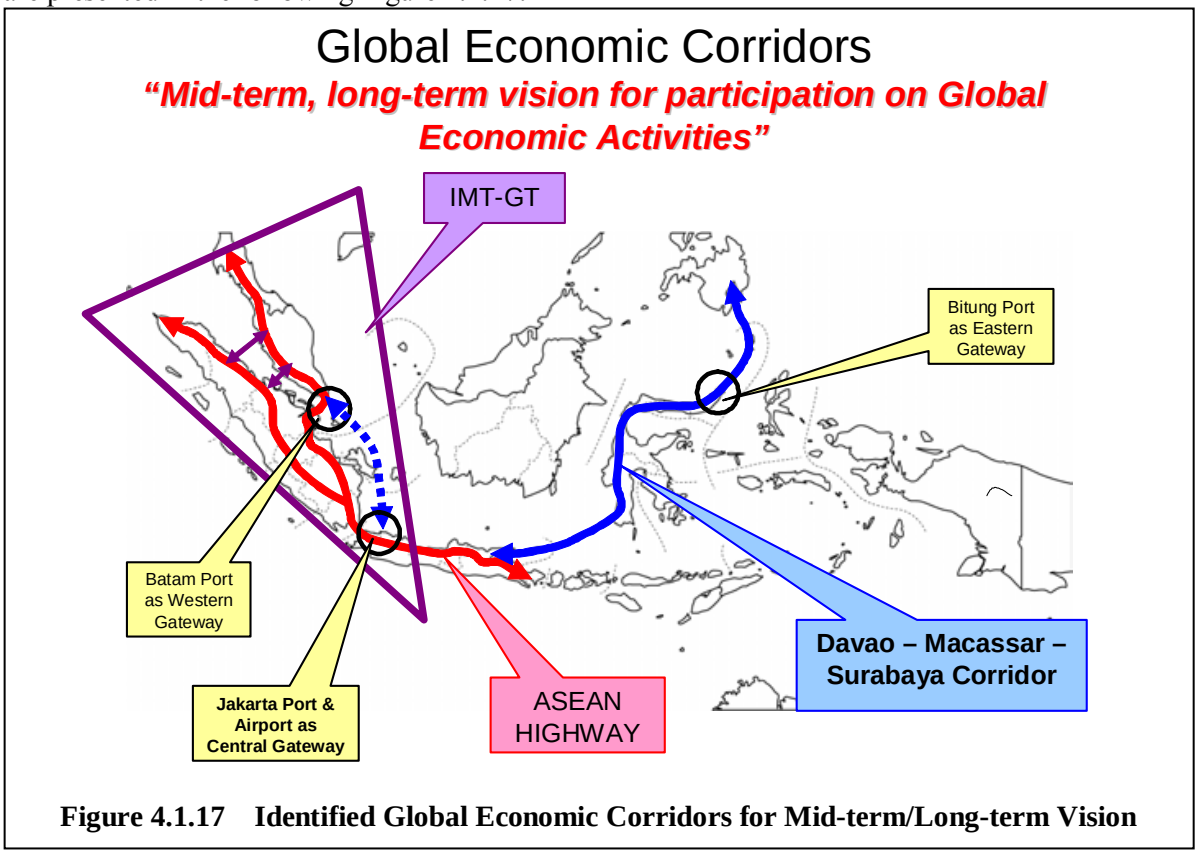


Figure 4.1.17 Identified Global Economic Corridors for Mid-term/Long-term Vision

4.1.4 Development Framework for Transportation Infrastructure

The previously mentioned development policy, "Strengthening Inter-Regional Connection", contributes to national and regional economic growth, reduction in regional disparity, poverty reduction and enhancement of national governance. For logistics transportation, the sea transportation sub-sector has the most important role for the insular country of Indonesia. For passenger transportation, the air transportation sub-sector has the most important role for traveling between the islands.

Although the areal impacts of the urban transportation issues are limited, the impact to the national economy is significant, especially in the Jabodetabek metropolitan area. Enhancement of transportation services is one of the most important factors for solving this problem. Thus, urban railway transportation should be considered to integrate with other transportation systems.

An Action Plan for the Transportation Sector shall be formulated along with the identified three focus areas, which were discussed in Chapter 2.3 of this report as follows:

1) Building Strong Backbone Infrastructure
2) Upgrading Infrastructure in the Main Cities
3) Provision of Basic Infrastructure Services in Depressed Areas

Based on the above three key areas, regional development strategies, and current issues and conditions of the transportation infrastructure, an Action Plan for transportation is prepared as summarized in the following Table 4.1.15.

Table 4.1.15 Action Plan for Transportation Infrastructure Development

Region	Issue / Condition	Regional Development Policy	Building Strong Backbone Infrastructure	Upgrading Infrastructure in the Main Cities and Regional Growth Poles	Provision of Basic Infrastructure Services in Depressed Areas
DKI Jakarta	➢ **Insufficient infrastructures for transportation, flooding, sewerage and electricity for sustainable economic growth**	➢ **Integrated urban development approach for sustainable development** ➢ **Strengthening logistics capacity and network development as National gateway**	➢ New Hub Port development other than Tanjung Priok Port ➢ New International Airport/Upgrading of Soekarno-Hatta International Airport ➢ Access road to main seaports ➢ Jakarta MRT Network Development ➢ International Airport Access Railway	➢ Jakarta Outer Ring Road (Highway construction) ➢ Improvement of heavy congestion interchanges and intersections ➢ Installation of ITS system in Jakarta ➢ Construction of DDT of Jabodetabek Railway ➢ Upgrading/modernization of JABODETABEK Railway System, including development of urban centers around the Junction Stations ➢ Improvement /upgrading Tanjung Priok Port	➢ Resettlement activities for illegal settlers within the ROW limit along railway (for safety purpose)
JAVA	➢ **High GRDP for leading national economy but poverty and high unemployment due to heavy population**	➢ **Industrial Development with strengthening of transportation network** **→ Targeting domestic market** ➢ **Technology renovation for upgrading quality of products**	➢ Improvement and Upgrading of Java North / South Railway Lines. ➢ Trans Java High Speed Railway Development (Jakarta – Semarang – Surabaya) ➢ Trans Java Highway Corridor Network (PPP Projects) ➢ Upgrading/Improvement of Tanjung Perak (Surabaya) port as gateway of Eastern Indonesia.	➢ Improvement of highway network in the main cities (Bandung, Surabaya and Semarang) ➢ Development of Urban Railway system (MRT/LRT) in Bandung and Surabaya ➢ Installation of ITS in main cities ➢ Upgrading/improvement of Tanjung Eman (Semarang) Port.	➢ Development of rural road network access from production area to market
SUMATRA	➢ **High potential as the Gateway to the Asian Industrial Corridor but lack infrastructures (Road and Port)**	➢ **Northern Sumatra: Industrial development for leading national economy** ➢ **Southern Sumatra: Regional development targeting the domestic market of Java and Northern Sumatra**	➢ Super long span bridge between Java and Sumatra ➢ Trans-Sumatra Highway corridor development ➢ Upgrading of Belawan and Dumai Port as Western Gateway ➢ Access Road to main seaports and airport ➢ Construction of New Medan International Airport as Western Hub Airport ➢ Improvement of coal transportation railway in Sumatra (together with Musi River transportation development).	➢ Urban road network improvement in main cities (Medan and Palembang) ➢ Installation of LRT/MRT in Medan	➢ Feeder road network development
KALIMANTAN	➢ **High potential for coal and other minerals but lack infrastructures**	➢ **Regional development by mineral resources through PPP activities** ➢ **Road/River network connecting urban and rural areas for improving living condition**	➢ Trans Kalimantan road development (West – Central – South – East Kalimantan) ➢ Central Kalimantan Coal Transportation Railway ➢ Construction of Deep Seaport in South/East Kalimantan	➢ Access road to main seaport and airport ➢ Major bridges construction for improvement of regional road network	➢ Sea port development in West and South Kalimantan ➢ River transportation network development ➢ Feeder road network development
SULAWESI	➢ **Agriculture-oriented industry, but no market in Sulawesi**	➢ **Agro-based regional development and better access to urban center** ➢ **Strengthening economic connection with Java as the target market**	➢ Improvement of Makassar Port as Eastern Hub Port of Indonesia ➢ Improvement of Bitung Port as Eastern Gateway to international corridor ➢ Trans Sulawesi Road corridor development (South – Central – North Sulawesi)	➢ Upgrading of Makassar International Airport ➢ Urban road network development in Makassar	➢ Rural fishery port improvement activity ➢ Market access road for agriculture sector
BALI & NUSATENGGARA And MALUKU and PAPUA	➢ **Very high poverty rate and low level of per capita GRDP**	➢ **Regional development with strengthening of transportation and communication networks** ➢ **Small-scale agriculture/ community development activities**	➢ Super long span bridge between Java and Bali	➢ Road Network Development in Papua ➢ Upgrading of airport for tourism development	➢ Upgrading of ferry terminal and sea port ➢ Access road to seaport and airports in each island.

Source: JICA Study Team (for further discussion)

4.1.5 Road Transportation

The road transportation system is the most suitable transportation mode on land to carry short-distance travel of small volume freight or passengers availing of door-to-door service. This system has versatile functions and roles such as to form the backbone in the national transportation network, to ensure accessibility in the whole of Indonesia, to support development plans, to integrate inter-modal transportation networks, and to support basic human needs.

(1) Current Development Program

1) Current RPJM 2004-2009

The development programs on road development are set out in the current RPJM 2004-2009 as follows:

i) Program for the Rehabilitation and Maintenance of Road Transport Infrastructure
ii) Program for the Construction of Road Transport Infrastructure
iii) Program for Increasing Accessibility to Road Transport Services
iv) Program for the Restructuring of Road Transport Institutions and Infrastructure
v) Program for the Rehabilitation of National Disaster-Affected Regions

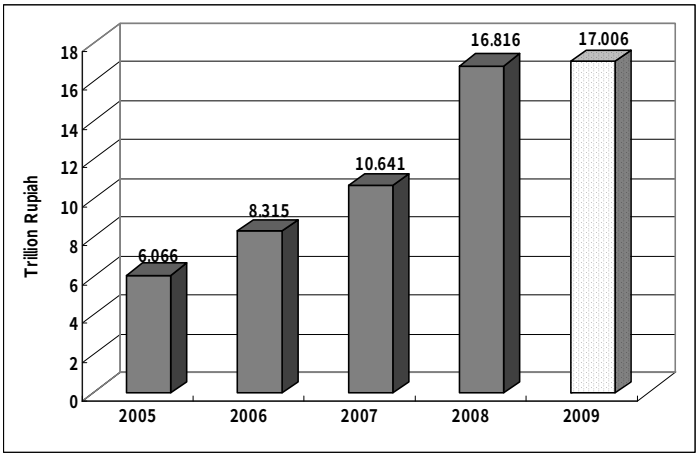
The key issues in formulating the above five programs are enumerated below.

i) Poor road conditions
ii) High degree of road degradation attributed to excessive traffic load that could result in economic losses
iii) Poor quality and insufficient general transportation facilities, in spite of the annual increase of general transport route permits (inter-city and inter-province bus route permits)
iv) High number of fatal accidents due to undisciplined road users, low standard vehicles, inadequate road safety signs and facilities, lenient enforcement of traffic regulations and lack of traffic education
v) Limited mobility, particularly the low mobility due to road transportation distribution
vi) Problems on the affordability and inequality of road transportation services
vii) Insufficient regulations and institutions
viii) Limited human resources for road transportation
ix) Adverse environmental impacts causing air and noise pollution
x) Low quality and insufficient public transportation, especially for urban transport services

2) Budget Allocation in 2005-2009

Total budget allocated for road transportation in 2005-2009 is Rp 58.844 trillion. The annual funding allocation in Anggaran Pendapatan dan Belanja Negara (APBN or the national revenue

and expenditure budget) and Dana Pinjaman dan Hibah Luar Negeri (PHLN or foreign loan and grant) is shown in the following figure.



Source: National Road Network in Indonesia 2008 (Revision 03 April 2009), Bina Marga

Figure 4.1.18 Annual Budget Allocation 2005-2009 in APBN and PHLN

(2) Progress of Development

The activities related to road development include modifications to the road lane length, road and bridge maintenance, road improvement, and bridge replacement. The performance indicators include average speed and national road conditions. The progress of achievements for these activities and indicators under the current RPJM 2005-2009 and the planned achievements until 2009, based on the National Road Network in Indonesia 2008 (Revision 03 April 2009), are shown in the following table. All targets of activities and indicators under the current RPJM 2005-2009, except for bridge maintenance, are expected to be basically completed by 2009.

Table 4.1.16 Achievement and Performance Target of Current RPJM 2004-2009

Indicator / Activity	Unit	RPJM 2004- 2009		2007		2008-2009		2004-2009 Total	
		Target		Achievement until 2007		Plan		Planned Achievement	
		Qty	%	Qty	%	Qty	%	Qty	%
Average Speed	km/hr	48		47		48		48	100.0%
National Road Condition (Stable)	km	30,820	(89%)*	29,781	(83.2%)*	1,039	(5.8%)*	30,820	(89%)* 100.0%
Lane Length	km	84,985		82,190	96.7%	2,795	3.3%	84,985	100.0%
Road Maintenance	km	101,880		97,765	96.0%	32,163	31.6%	129,928	127.5%
Road Improvement	km	4,346		6,119	140.8%	1,869	43.0%	7,988	183.8%
Bridge Maintenance	m	584,065		89,282	15.3%	34,701	5.9%	123,983	21.2%
Bridge Replacement	m	38,882		31,178	80.2%	8,977	23.1%	40,155	103.3%

*: Number in parentheses is the target percentage for all national road length, while the others are achievement ratios.
Source: National Road Network in Indonesia 2008 (Revision 03 April 2009), Bina Marga

(3) Remaining Issues

1) Key Remaining Issues for Next RPJM 2010-2014

According to the draft concept of the next RPJM 2010-2014, BAPPENAS addressed the following remaining issues:

i) Fulfillment of road to meet Standar Pelayanan Minimal (SPM or Minimal Standard Services)

It is reported that the current condition of the existing road network is poor. For the national road, 83% of its total length is stable. On the other hand, only 62% of the total length of the provincial and rural road networks is reported to be in stable condition (details see Tables 4.1.21 and 4.1.22). In the next RPJM, the improvements of the existing road condition and maintenance activities are proposed to increase the length of existing road network in stable condition.

ii) Natural disaster

Urgent restoration works of road network, which was damaged by earthquake, landslide, flooding and so on, should be timely carried out.

iii) Synchronization with spatial plan

As the road development will have high impact on the land development potential along the planned route, the plan formulation should be synchronized with the spatial plan as part of the integrated regional development master plan.

iv) Orderliness in road use and utilization (side disturbance)

Poor practices in road utilization, including side disturbances due to existing residential buildings and car parking, are observed. These seriously decrease transportation capacity and become the main cause of traffic congestion. Some measures of regulation and legal approach should be taken into account to solve these matters.

iv) Excessive loads of cargo transportation

Overloading of cargo trucks seriously damaged the road condition. Thus, this should be well-controlled to improve the road condition.

v) Implementation of land acquisition

The Trans-Java toll road corridors are ready to develop all the sections through concessionaires, under a BOT scheme. However, most of the projects became stagnant due to delays in land acquisition. To accelerate the BOT toll road projects, support of the government is essential for the land acquisition. The new schemes developed promote the participation of the government in providing assistance to private concessionaires for the implementation of land acquisition and construction activities.

vi) Limited resources (human resources, financing, etc.)

Continuous capacity development of the local staff and encouraging private investment to the road sector will be necessary for the sustainable operation and maintenance activities.

Meanwhile, Bina Marga set the objectives in the National Road Network in Indonesia 2008 (Revision 03 April 2009) as follows:

i) To decrease the poverty rate and develop regions as well as increase the distribution of development and outcomes evenly, between regions, through spatial planning,

ii) To improve food availability and enhance national economic growth, and

iii) To improve professionalism, productivity and accountability in administering public works.

2) Indonesia's Competitiveness in the Road Transportation Sector

All activities in the road transportation sector (except for bridge maintenance) planned in the current RPJM 2005-2009 will be almost entirely achieved at the end of 2009. However, the current road transportation service level in Indonesia has not yet been evaluated based on known indicators. Therefore, a preliminary comparative analysis of road transportation services with neighboring ASEAN countries, China and India has been prepared based on selected indicators. Base data on road transportation shown in the following table were collected from available information sources, including the internet sites, statistic yearbooks and other reliable sources.

Table 4.1.17 Base Data on Road Transportation Sector

Country	Population (1,000 persons)	Population Density (persons/ km^2)	Area (km^2)	Road Length (km)	Paved Road Length (km)	Unpaved Road Length (km)	Express-way Length (km)	Tunnel Length (km)	Statistical Year
1. Indonesia	240,272	132	1,919,440	391,009	216,714	174,295	676	0.0	2005
2. Cambodia	14,495	83	181,040	38,257	2,406	35,851	51	0.0	2004
3. Malaysia	25,716	79	329,750	98,721	80,280	18,441	1,821	3.9	2004
4. Philippines	97,977	329	300,000	200,037	19,804	180,233	1,258	0.0	2003
5. Thailand	65,905	129	514,000	180,053	177,352	2,701	450	0.0	2006
6. Vietnam	86,968	268	329,560	222,179	42,167	180,012	120	6.8	2004
7. China	1,338,613	144	9,596,960	1,930,544	1,575,571	354,973	41,005	835.0	2005
8. India	1,166,079	393	3,287,590	3,316,452	1,571,998	1,744,454	200	5.1	2006
9. Japan	127,079	340	377,835	1,196,999	949,101	247,898	7,383	2,905	2006

Source: http://www.exxun.com/, statistical yearbook and others

Road and expressway densities were used as indicators for road network condition. Meanwhile, paved road densities and ratios were utilized as indicators for road condition. Indicators presented in the following table are estimated in order to compare Indonesia with its neighboring countries.

Table 4.1.18 Indicators for Road Transportation Service

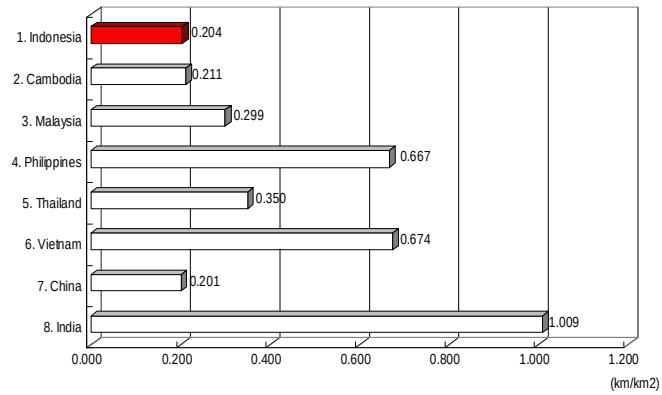
Country	Road Density		Road Density Index[1]	Paved Road Ratio (%)	Paved Road Density		Expressway Density	
	(km/ km^2)	(km/ 1,000 per.)			(km/km^2)	(km/ 1,000 persons)	(km/1,000 km^2)	(km/10,000 persons)
1. Indonesia	0.204	1.627	0.018	55.4%	0.113	0.902	0.352	0.003
2. Cambodia	0.211	2.639	0.024	6.3%	0.013	0.166	0.282	0.035
3. Malaysia	0.299	3.839	0.034	81.3%	0.243	3.122	5.522	0.708
4. Philippines	0.667	2.042	0.037	9.9%	0.066	0.202	4.193	0.128
5. Thailand	0.350	2.732	0.031	98.5%	0.345	2.691	0.875	0.068
6. Vietnam	0.674	2.555	0.042	19.0%	0.128	0.485	0.364	0.014
7. China	0.201	1.442	0.017	81.6%	0.164	1.177	4.273	0.306
8. India	1.009	2.844	0.054	47.4%	0.478	1.348	0.061	0.002
9. Japan	3.168	9.419	0.137	79.3%	2.512	7.469	19.540	0.581

Source: JICA Study Team

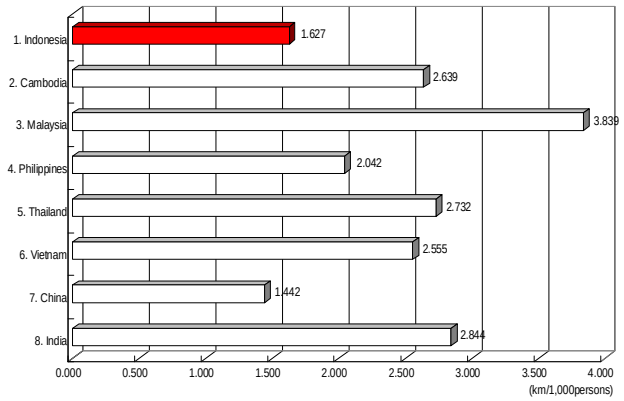
[1] Road density index (RDI)is the value of road density considering the size of area and population
RDI = Road Length / (Area)^(1/2) / (Population)^(1/2))

Comparative column graphs of all indicators from the above table are shown in the following figures.

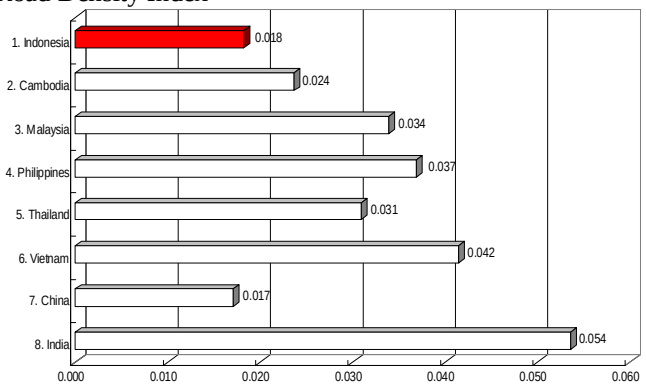
Road Density (km/km^2)



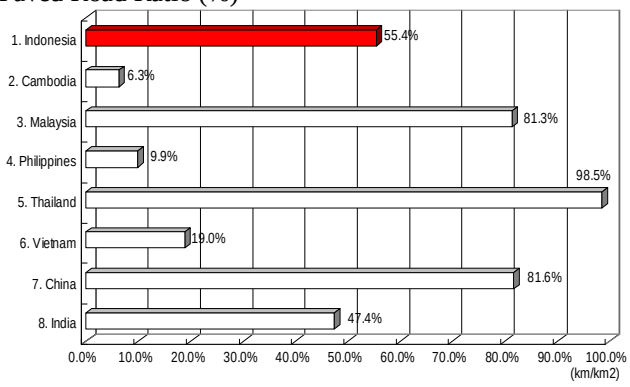
Road Density (km/1,000 persons)

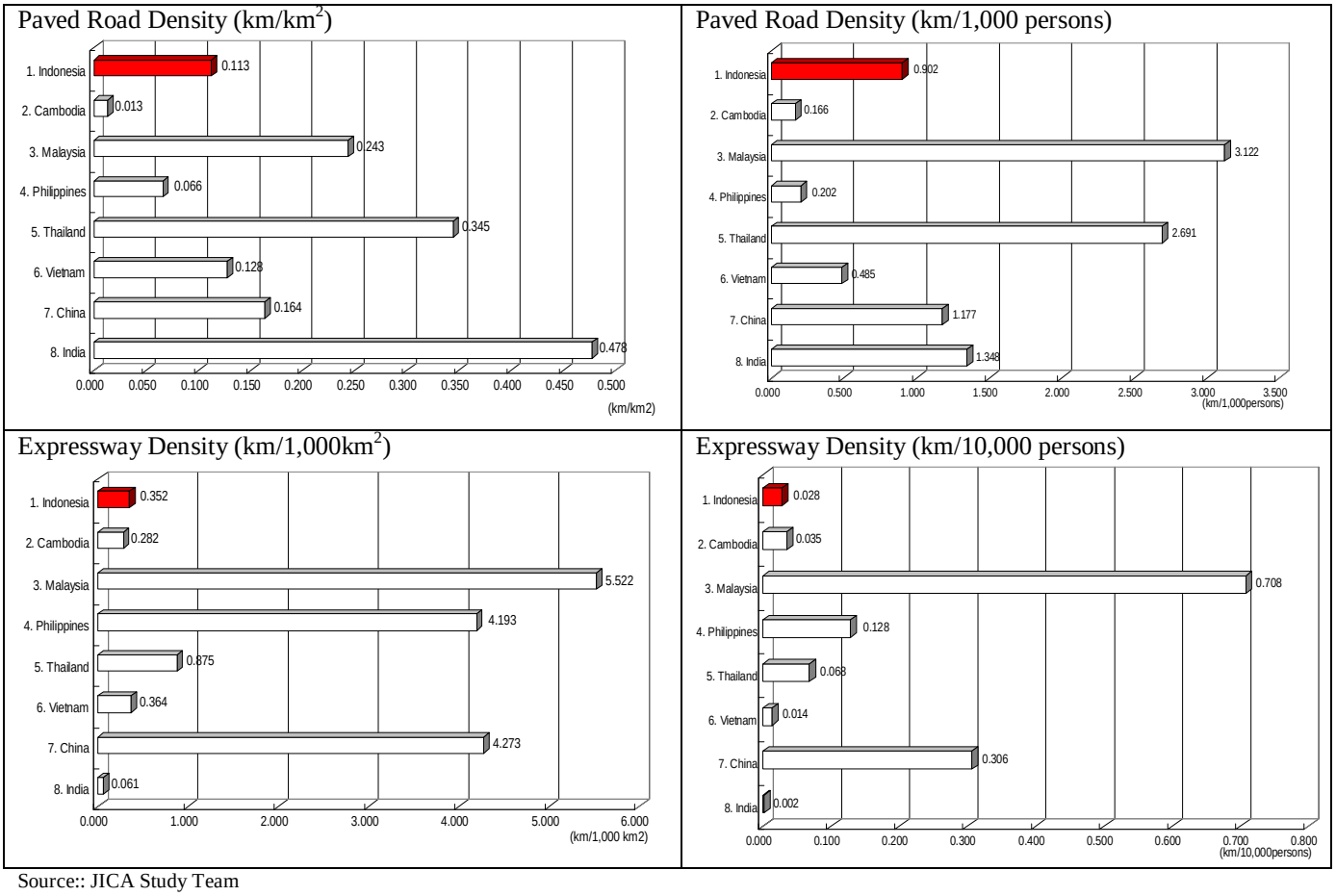


Road Density Index



Paved Road Ratio (%)





Source:: JICA Study Team

Figure 4.1.19 Comparison of Competitiveness of Indonesia

The preliminary investigation for road transportation services of the above countries revealed major findings as follows:

i) Indonesia ranks 7th among the eight countries in terms of road densities and road density index:
Low road densities suggest that the road network system in Indonesia is insufficient and its road accessibility for public services is the lowest.

ii) Indonesia is 4th, 5th and 6th in terms of paved road ratio, paved density and road density, respectively:
The results indicate that the road condition in Indonesia is fair. However, paved road densities are noted to be lower than that of other countries.

iii) Indonesia is 6th among its neighboring countries on expressway densities :
This implies that expressway network as backbone of national transportation is inadequate, and is significantly lower than that of Malaysia, the Philippines, Thailand and China.

iv) Road tunnel of Indonesia:
Road tunnels do not exist in Indonesia as in Thailand, the Philippines and Cambodia.

v) Ranks of Thailand and Malaysia are better than Indonesia in all aspects:

Thailand and Malaysia have achieved significant economic growth in recent decades, with the concurrent developments of their road infrastructures.

3) Outstanding Regional Issues by Island

In the National Road Network in Indonesia 2008 (Revision 03 April 2009), the islands are classified into the following three development regions:

i) Developed Region : Java, Bali and Sumatra Islands
ii) Developing Region : Kalimantan, Sulawesi and Nusa Tenggara Islands
iii) New Developing Region : Maluku and Papua Islands

Regional disparity is noted as one of the major issues in Indonesia. Therefore, the preliminary comparison among the six main islands, considering road transportation services, has been done based on relevant indicators. Base data of the road transportation sector, as shown in the following table, were collected from the statistics yearbook, National Road Network in Indonesia 2008 (Revision 03 April 2009), Bina Marga and Transportation and Communication Statistics, 2007, and other reliable sources.

Table 4.1.19 Base Data of National Roads for Each Island of Indonesia

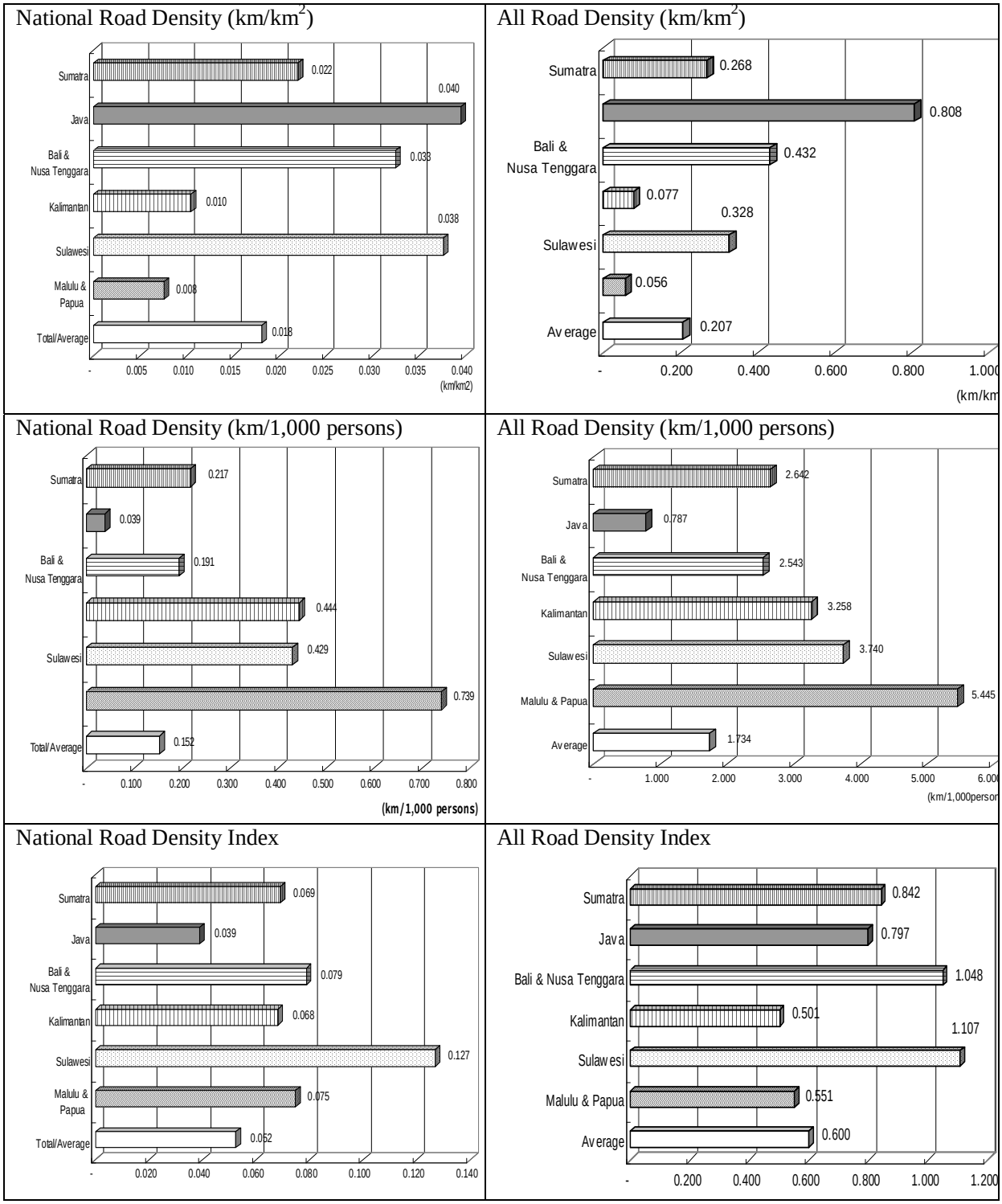
Island	Land Area (km^2)	Population (1,000 per.)	Percent of total Pop. (%)	Pop. Density (per./km^2)	National Road Length (km)	National Road Density		National Road Density Index
						(km/km^2)	(km/1,000 per.)	
Sumatra	480,793	48,807	21.40%	102	10,588.91	0.022	0.217	0.069
Java	129,438	132,857	58.10%	1,026	5,119.12	0.040	0.039	0.039
Bali & Nusa Tenggara	73,070	12,414	5.40%	170	2,376.50	0.033	0.191	0.079
Kalimantan	544,150	12,848	5.60%	24	5,705.97	0.010	0.444	0.068
Sulawesi	188,522	16,531	7.20%	88	7,091.50	0.038	0.429	0.127
Maluku & Papua	494,957	5,067	2.20%	10	3,746.83	0.008	0.739	0.075
Total/Average	1,910,931	228,523		120	34,628.83	0.018	0.152	0.052

Source: Statistical Yearbook of Indonesia 2008, National Road Network in Indonesia 2008 (Revision 03 April 2009), Bina Marga and JICA Study Team

Table 4.1.20 Base Data of All Roads for Each Island of Indonesia

Island	Road Length	Road Density		Road Density Index
	(km)	(km/km^2)	(km/1,000 persons)	
Sumatra	128,959	0.268	2.642	0.842
Java	104,567	0.808	0.787	0.797
Bali & Nusa Tenggara	31,569	0.432	2.543	1.048
Kalimantan	41,855	0.077	3.258	0.501
Sulawesi	61,824	0.328	3.740	1.107
Maluku & Papua	27,588	0.056	5.445	0.551
Total / Average	396,362	0.207	1.734	0.600

Source : Statistik Perhubungan 2007 (Transportation and Communication Statistics 2007)



Source: JICA Study Team

Figure 4.1.20 National Road Densities in Each Island of Indonesia

Based on the preliminary comparison of road transportation services among islands in Indonesia, the major findings were identified as follows:

i) Road densities :

About 130 million people (60% of the total population) live in Java Island, with 23 million (10% of the total population) concentrated in Jabodetabek Metropolitan Area.

This metropolitan area is only 7,315 km^2 (0.4% of the country's area), making it the 2nd most densely populated city in the world.

Hence, the national road density index and national road density per capita in said metropolitan area are the lowest among the islands. This means that the road network system in Java Island is insufficient to meet the increasing traffic demand and public transportation services.

ii) Road Density Indexes :

National road density index of Java Island is lower than national average because it is densely populated. All road density indexes of Kalimantan, Maluku & Papua Islands are lower than the national average. This means that the accessibilities to road transportation network in said islands are inadequate.

Table 4.1.21 National Road Condition in Each Island of Indonesia

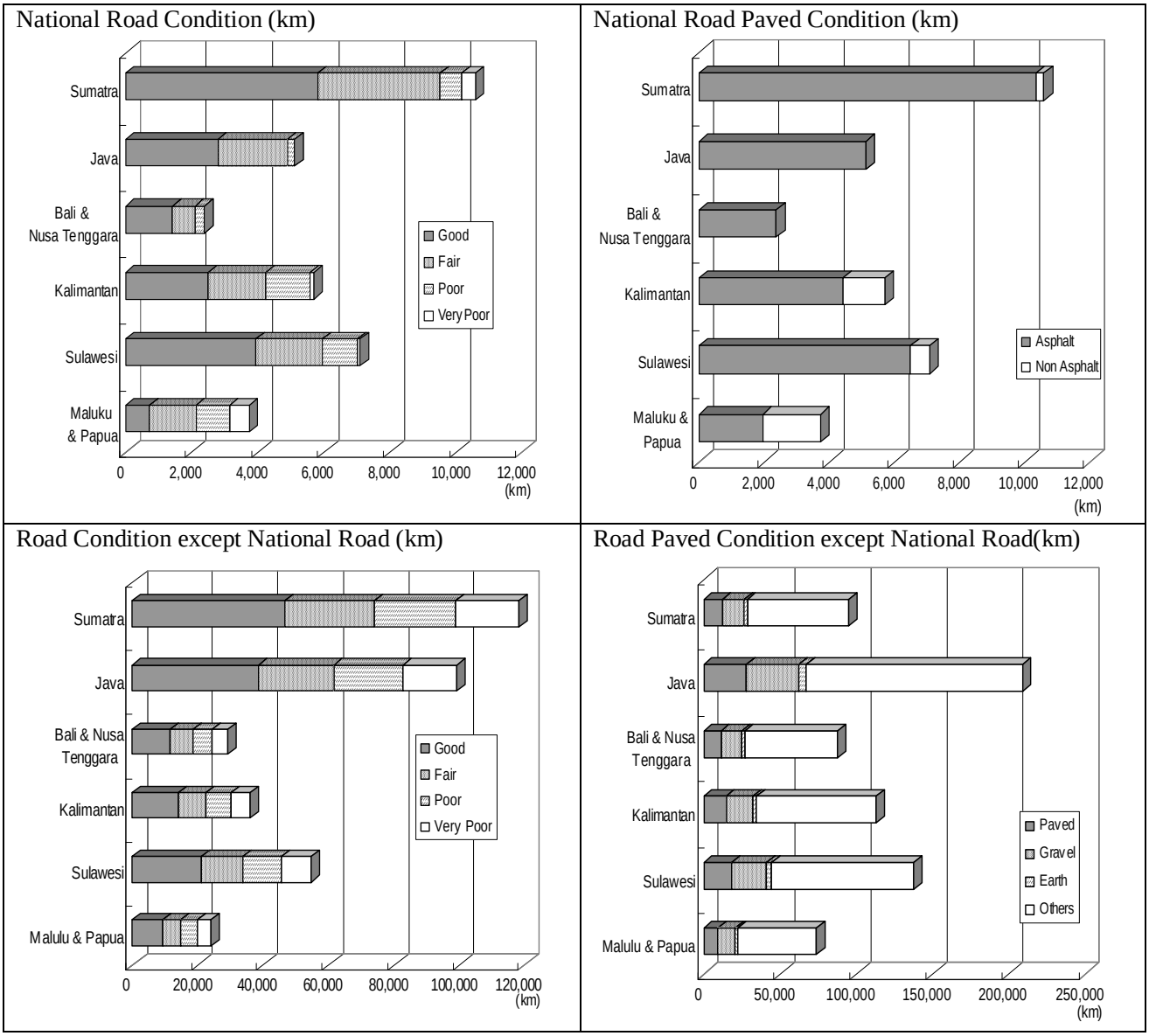
Island	Stable			Unstable			Asphalt	Non-asphalt
	Good	Fair	%	Light Damaged	Heavy Damaged	%		
	km	km		km	km		km	km
Sumatra	5,817.04	3,705.42	89.93	652.46	413.99	10.07	10,355.70	233.22
Java	2,789.29	2,094.07	95.39	235.76	0.00	4.61	5,119.12	0.00
Bali & Nusa Tenggara	1,426.45	670.91	88.25	279.14	0.00	11.75	2,373.11	3.38
Kalimantan	2,496.66	1,746.56	74.36	1,354.07	108.68	25.64	4,423.64	1,282.33
Sulawesi	3,937.20	2,012.54	83.90	1,078.27	63.49	16.10	6,499.91	591.59
Maluku & Papua	734.24	1,390.70	56.71	1,018.20	603.69	43.29	1,982.26	1,764.57
Total/Average	17,200.88	11,620.20	83.23	4,617.90	1,189.85	16.77	30,753.74	3,875.09

Source: National Road Network in Indonesia 2008 (Revision 03 April 2009), Bina Marga

Table 4.1.22 Road Condition (except National Road) in Each Island of Indonesia

	Road Length	Stable			Unstable			Paved	Gravel	Earth	Others
		Good	Fair	(%)	Damaged	Heavy Damaged	(%)				
	(km)	(km)	(km)		(km)	(km)		(km)	(km)	(km)	(km)
Sumatra	118,370	46,488	27,471	62.5%	25,028	19,383	37.5%	12,253	14,440	1,994	66,526
Java	99,448	38,527	22,982	61.9%	21,338	16,601	38.1%	28,131	34,504	4,872	141,546
Bali & Nusa Tenggara	29,194	11,627	6,805	63.1%	6,079	4,683	36.9%	11,411	13,592	1,890	60,763
Kalimantan	36,151	14,098	8,371	62.2%	7,702	5,980	37.8%	14,776	17,704	2,492	78,008
Sulawesi	54,730	21,254	12,660	62.0%	11,710	9,106	38.0%	18,537	22,746	3,226	93,257
Malulu & Papua	23,841	9,429	5,546	62.8%	5,005	3,861	37.2%	9,541	11,306	1,566	51,432
Total / Average	361,734	141,423	83,835	62.3%	76,862	59,614	37.7%	94,649	114,292	16,040	491,532

Source: National Road Network in Indonesia 2008 (Revision 03 April 2009), Bina Marga



Source: JICA Study Team

Figure 4.1.21 National Road Condition in Each Island of Indonesia

Based on the preliminary comparison of road transportation services among islands in Indonesia, the major findings were identified as follows:

i) National road conditions :

National road conditions, particularly the paved conditions in Kalimantan, Maluku, and Papua Islands, are not satisfactory. Road network maintenance, including rehabilitation and improvement, should be conducted in these islands to reduce regional disparity.

ii) Road conditions except national road:

The road and paved conditions of the sub-national roads in the whole of Indonesia are quite poor. It is necessary to rehabilitate the pavements for the satisfaction of Indonesian motorists and the riding public.

Table 4.1.23 Road Accident Data in Each Island of Indonesia

	Population (thousand)	Road Accident (no.)	Road Fatalities (persons)	Road Fatality Rate (fatalities/ 100,000 population)
Sumatra	48,807	8,883	4,989	10.2
Java	132,857	30,030	7,409	5.6
Bali & Nusa Tenggara	12,414	2,726	1,084	8.7
Kalimantan	12,848	3,309	1,466	11.4
Sulawesi	16,531	4,064	1,751	10.6
Maluku & Papua	5,067	541	256	5.1
Total / Average	228,523	49,553	16,955	7.4

i) Road accidents:

The number of road accidents and fatalities in Java Island is extraordinarily high as population is concentrated in this island. Meanwhile, road fatality rates in Sumatra, Kalimantan and Sulawesi Islands are over ten per 100,000 persons. National road conditions of these islands are slightly better than other islands, except Java.

4) Outstanding Regional Issues in Urban Concentration Areas

As shown in the following table, there are ten urban concentration areas in Indonesia with over one million population. Jakarta, Bekasi, Tangerang and Depok form part of the Jabodetabek Metropolitan Area, with a total population of 23 million. It ranks as the 2nd largest metropolitan area in the world in terms of population.

Severe traffic congestion is often observed in the urban areas and radial highways, especially in the morning and afternoon peak hours. Increasing transportation demand has caused traffic congestion, resulting in longer travel time on the roads.

Table 4.1.24 Urban Concentration Areas

No.	City Name	Province	Island	MU CI 2005 (persons)	Area (km^2)	Pop. Density (persons/km^2)
1	Jakarta	DKI Jakarta	Java	8,839,247	661.52	13,362
2	Surabaya	East Java	Java	2,611,506	274.06	9,529
3	Bandung	West Java	Java	2,288,570	167.67	13,649
4	Medan	North Sumatra	Sumatra	2,029,797	265.1	7,657
5	Bekasi	West Java	Java	1,940,308	210.49	9,218
6	Tangerang	West Java	Java	1,451,595	164.54	8,822
7	Semarang	Central Java	Java	1,352,869	373.67	3,620
8	Depok	West Java	Java	1,339,263	200.29	6,687
9	Palembang	South Sumatra	Sumatra	1,323,169	400.5	3,304
10	Makassar	South Sulawesi	Sulawesi	1,168,258	175.77	6,647

Source: Badan Pusat Statistik, Republik Indonesia (web). and Wikipedia

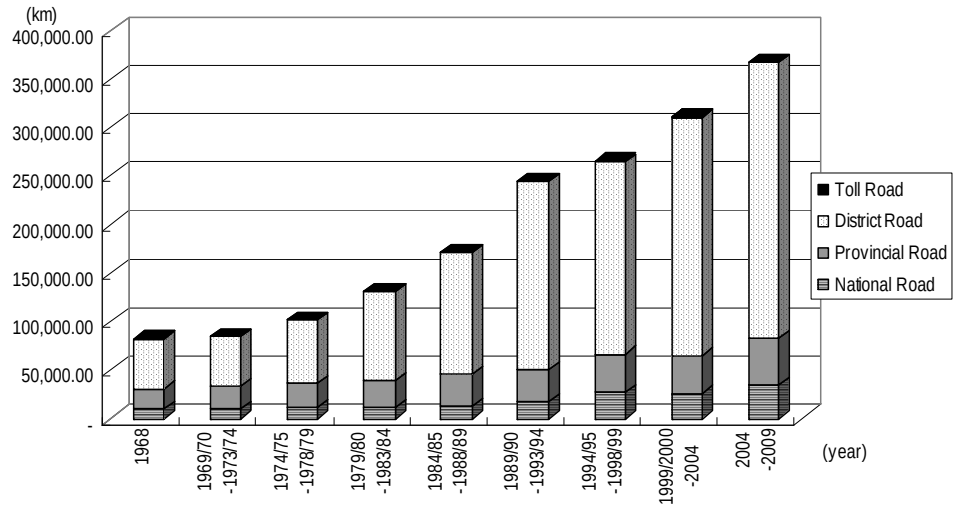
Figure 4.1.22 Urban Concentration Areas

5) Outstanding General Issues

Indonesia's road network has steadily been developed every year as shown in the following table and figure.

Table 4.1.25 Road Network Development in Indonesia

Year	National Road (km)	Provincial Road (km)	District Road (km)	Toll Road (km)	Total (km)
1968	9,780.00	21,116.00	51,031.00	0.00	81,927.00
1974	10,167.00	22,682.00	51,448.00	0.00	84,297.00
1979	10,945.00	25,878.00	64,435.00	50.00	101,308.00
1984	11,500.00	27,500.00	91,776.00	67.16	130,843.16
1989	12,594.00	33,393.00	124,771.00	257.16	171,015.16
1994	17,800.00	32,250.00	194,114.00	402.49	244,566.49
1999	26,853.00	39,745.70	198,131.62	460.14	265,190.46
2004	26,271.03	38,913.56	244,844.00	460.14	310,488.73
2009	34,628.83	48,681.00	283,323.00	649.12	367,281.95



Source: National Road Network in Indonesia 2008 (Revision 03 April 2009), Bina Marga

Road and bridge maintenance costs will increase in the future, in proportion with road lengths. Meanwhile, a new traffic bill has made the Indonesian government liable for road damages, injuries and deaths. As a result, the responsibility for road maintenance became more critical. Maintenance management should therefore be initiated in an effective and efficient manner, through the implementation of asset management system and capacity-building.

Another serious issue is land acquisition for toll road construction in Java. The Trans-Java highway corridor is planned to be developed through the BOT scheme, and most of the sections are under concessionaire contracts. However, many of the sections are still not progressing due to stagnant land acquisition activities. The government therefore developed new schemes to facilitate land acquisition and provide financial assistance to the private investors for land acquisition, in order to accelerate the progress of Trans-Java toll road corridor development.

(4) Action Plan to Address the Issues

1) The next RPJM 2010-2014

BAPPENAS indicated the following policies and strategies to address the unresolved issues in the draft concept of the next RPJM 2010-2014:

- Policy
  - i) Routine and periodic maintenance of roads and bridges
  - ii) Rehabilitation/widening/strengthening and replacement of bridges
  - iii) Upgrading of road structures/reconstruction
  - iv) Upgrading of capacity and road development
  - v) Development of grade separation, freeways, and long bridges
- Strategy
  - i) Sub-sector and islands-based infrastructure development
  - ii) Finalization of the transportation master plan for each island
  - iii) Supporting the PLT 10,000 Megawatt*
  - iv) Focusing on infrastructure in urban areas of Java Island
  - v) Focusing on sea infrastructure in the Eastern Region of Indonesia (KTI)*
  - vi) Presidential instructions in Papua*
  - vii) Involvement of the banking sector for the financing of transportation facilities and infrastructure development*
  - viii) Deregulation of the transportation sector for private involvement

* : These strategies are still under discussion between BAPPENAS and the line ministries.

2) National Road Network in Indonesia 2008 (Revision 03 April 2009)

Bina Marga mentioned the following missions, objectives and goals to address the unresolved issues indicated in the National Road Network in Indonesia 2008 (Revision 03 April 2009):

- Mission
  - i) Perform road development effectively, efficiently and continuously
  - ii) Improve human resources to promote professionalism and attention to support road network development
  - iii) Develop efficient, appropriate and competitive technology, as well as increase the quality of road infrastructure
  - iv) Encourage participation of stakeholders in road network development
- Objectives
  - i) To decrease the poverty rate and develop regions as well as enhance the distribution of progress and outcomes among regions through spatial planning.
  - ii) To improve food availability and enhance national economic growth.
  - iii) To improve professionalism, productivity and accountability in administering public works.
- Goals
  - i) Improve services in urban areas and control the growth of major cities and metropolitan areas.
  - ii) Provide support to regions through the development of the national road network and strategic non-toll road in border areas, areas prone to natural disasters, isolated areas, and remote areas.
  - iii) Improve efficiency and comfort for the mobility of people, goods, and services through the enhancement of load capacity and service quality of road infrastructure, and increase regional accessibility.
  - iv) Improve the quality of supervision and professionalism in public works management, through better human resources, to support leadership tasks. These shall be implemented through various workshops and technical guidance in the field.
  - v) Improve institutional quality, performance and public works management through good governance.

3) Action Plan

The approach of the road transportation sub-sector to the focus area is the same in transportation sector. The relationship between the focus area and the previous issues, the action plan to address these issues, and performance indicators are shown in the following table.

Table 4.1.26 Action Plan and Performance Indicators on Road Transportation Sector

	Issues	Action Plan	Indicators
1. Strong Economic Growth			
1.1 Building Strong Backbone Infrastructure			
(1) Improvement of Logistics Transportation	**Insufficient Road Transportation Service** 1) Poor expressway network 2) Insufficient road network 3) Poor road condition 4) Incomplete integration with other transportation sub-sectors	a) Development of expressway b) Development of road network c) Improvement of road condition d) Improvement of access road to seaport, inland transportation and others	i) Expressway density ii) Road density index iii) Paved road density iv) Total freight transportation volume v) Annual average daily traffic (AADT)
(2) Improvement of Passenger Transportation	**Insufficient Road Transportation Service** 1) Poor expressway network 2) Insufficient road network 3) Poor road condition 4) Incomplete integration with other transportation sub-sectors	a) Development of expressway b) Development of road network c) Improvement of road condition d) Improvement of access road to airport, inland transportation and others	i) Expressway density ii) Road density index iii) Paved road density iv) Total passenger transportation volume v) Annual average daily traffic (AADT)
1.2 Upgrading Infrastructure in the Main Cities			
(1) Freedom from Urban Transportation Issues	**Incomplete Road Network and Excessive Traffic Volume** 1) Traffic congestion in Jabodetabek Metropolitan Area 2) Traffic congestion in the main cities	a) Development of ring road b) Upgrade of intersections c) Improvement of interchanges d) Improvement of access road to airport, railway system and others e) Installation of Intelligent Transportation System (ITS) f) Enhancement of Traffic Control System (TCS)	i) Average travel speed ii) Congestion length during peak hours iii) Time saving iv) Annual average daily traffic (AADT)

	Issues	Action Plan	Indicators
2. Poverty Reduction			
2.1 Provision of Basic Infrastructure Services in Depressed Areas			
(1) Reduction of Regional Disparity	**Regional Disparity of Road Transportation Service** 1) Regional disparity of road density 2) Regional disparity of road condition 3) Regional disparity of road accident incidence	a) Development of road network b) Improvement of road conditions c) Installation of road safety facilities	i) Road density index ii) Paved road density iii) Road accident ratio iv) Access time to reach destination iv) Annual average daily traffic (AADT)
3. General			
	1) Huge road maintenance cost 2) High road accident ratio 3) Lack of experience on new technology 4) Insufficient transportation network master plan	a) Installation of asset management system b) Capacity-building c) Installation of road safety facilities d) Road safety education e) Development of road tunnels f) Development of long-span bridge g) Study of transportation network master plan	i) Maintenance cost ii) Road accident ratio iii) Annual average daily traffic (AADT) iv) Time savings

Source: JICA Study Team

The proposed action plan is assessed in view of urban transportation issues and of freight and passenger transportation for the whole of Indonesia. The issues are listed up from each viewpoint and the actions to be taken to address the issues are proposed as shown in the above Table 4.1.26.

Based on that the table above, the action plans are re-arranged by region and grouped into three focus areas. Moreover, the concrete projects are proposed in each region with the focus areas of the projects. The results are summarized as shown in the following Table 4.1.27.

Table 4.1.27 Action Plan for Road Transportation Infrastructure Development

Region	1. Building Strong Backbone Infrastructure	2. Upgrading Infrastructure in the Main Cities	3. Provision of Basic Infrastructure Services in Depressed Areas
Jakarta	(1) Development of access road to main seaports (2) Improvement of access road to main airport	(1) Connection of 2nd Jakarta Outer Ring Road (2) Improvement of congested interchanges	---

Region	1. Building Strong Backbone Infrastructure	2. Upgrading Infrastructure in the Main Cities	3. Provision of Basic Infrastructure Services in Depressed Areas
	(3) Improvement of access road to railway stations	(3) Upgrading of congested intersections (4) Installation of Intelligent Transportation System (ITS) (5) Enhancement of Traffic Control System (TCS)	
Java	(1) Development of Trans-Java Highway Corridor (2) Construction of tunnel in mountainous areas for next generation	(1) Urban road network improvement in Bandung, Surabaya and Semarang (2) Installation of Intelligent Transportation System (ITS)	(1) Development of rural road network access from production areas to the market
Sumatra	(1) Trans-Sumatra Highway Corridor Development (2) Development of super long-span bridge between Java and Sumatra	(1) Urban road network improvement in Medan and Palembang	(1) Feeder road network development
Kalimantan	(1) Trans-Kalimantan road development (West – Central – South – East Kalimantan)	---.	(1) Feeder road network development
Sulawesi	(1) Trans Sulawesi Road corridor development (South – Central – North Sulawesi)	(1) Urban road network development in Makassar	(1) Development of market access road for agriculture sector
Bali & Nusa Tenggara and Maluku & Papua	---.	---.	(1) Development of access road to seaport and airport in each island

Source: JICA Study team

The suggested criteria for selection of priority projects in the road transportation sub-sector are the same as the transportation sector in general, and road projects should focus on the following:

b) The projects which could solve the serious insufficient supply capacity as compared to the demand (the deficit of the supply capacity seriously affects the national economic growth and requires immediate solution):

i) Development of main transportation network in Java Island
(Trans Java, access road to expressway, etc.)

ii) Projects that contribute to reducing traffic congestion in the Jabodetabek Metropolitan Area
(Improvement of interchange, upgrade of intersection, improvement of access road to MRT station, and others)

c) The projects which have high development potentials in view of the national economy:

i) Development of coal railway system in Kalimantan Island
(Improvement of road between mining site and railway loading station)

ii) Improvement of coal railway system in Sumatra Island
(Improvement of road between mining site and railway loading station)

d) The projects which require improvement of service quality from the safety, environmental and social viewpoints:

i) Projects that contribute in reducing traffic congestion in the main cities: Surabaya , Bandung and Semarang
(Ring road, improvement of interchange, upgrading of intersection, and so on)

ii) Development of road tunnel in the mountainous area of Java Island, super long-span bridge, and others

e) The projects which are expected to contribute to regional economy by strengthening the accessibility between the regional urban centers and rural areas.

i) Projects that contribute in reducing traffic congestion in the main cities, Medan, Palembang and Makassar without Java Island
(Ring road, improvement of interchange, upgrade of intersection, and so on)

ii) Improvement of sea ports at Medan, Surabaya, Makassar and Banjarmasin (Improvement of the ports' access roads)

iii) Development of regional road and high priority projects evaluated by BAPEDA

iv) Improvement of regional airports and sea ports to contribute to the economic growth in Eastern Indonesia
(Improvement of the ports' access roads)

f) The projects with non-structural activities for the improvement of transportation efficiencies, including ITC, human resources development, introduction of asset management, and so on:

(3) Establishment of an asset management system
(4) Capacity-building (maintenance management technology & planning, and others)

4.1.6 Railway Transportation

The characteristics of the railway transportation system is that it is the most efficient transportation mode on land for long-distance travels, carrying large volume or many passengers at one time along a dedicated line. While railway is one of the backbone transportation systems, its services are limited to point-to-point basis. Therefore, effective railway systems require complimentary supports of various transportation modes and other facilities such as the integration of inter-modal transportation networks and feeder services.

(1) Current Development Program

1) Current RPJM 2004-2009

The development programs on railway development are set out in the current RPJM 2004-2009 as follows:

i) Program for the Rehabilitation of Railway Infrastructure and Facilities
ii) Program for Enhancing and Constructing Railway Infrastructure and Facilities
iii) Program for Enhancing Accessibility to Railway Transportation
iv) Program for Restructuring and Reforming Railway Institutions

The key issues in said RPJM for formulating the above four programs are enumerated below:

i) There are still many railway infrastructures that have exceeded their design life. There are also several backlogs in the maintenance of the infrastructure with bottleneck sections in various main routes.
ii) The quality of railway facilities declined due to inefficient maintenance system.
iii) The high rate of railway accidents is generally attributed to maintenance backlogs and to the lack of discipline of road users at railway crossings.
iv) Many railway crossings pose hazards to the safety of railway operations and limit the capacity of trains in terms of frequency and speed.
v) Low safety, discipline and existence of many obstructions at stations and along the railway lines.
vi) Limited transport mobility due to sub-optimal inter-mode integration.
vii) Poor railway productivity.
viii) Ineffective institutions and regulations of railways.
ix) Ineffective policies in applying the Public Service Obligation (PSO), Infrastructure Maintenance and Operation (IMO), and Track Access Charges (TAC) funding schemes.
x) Inadequate role of the BUMN (state-owned corporation) in railways and of private participation.
xi) Underdeveloped railway technology and national railways industry.

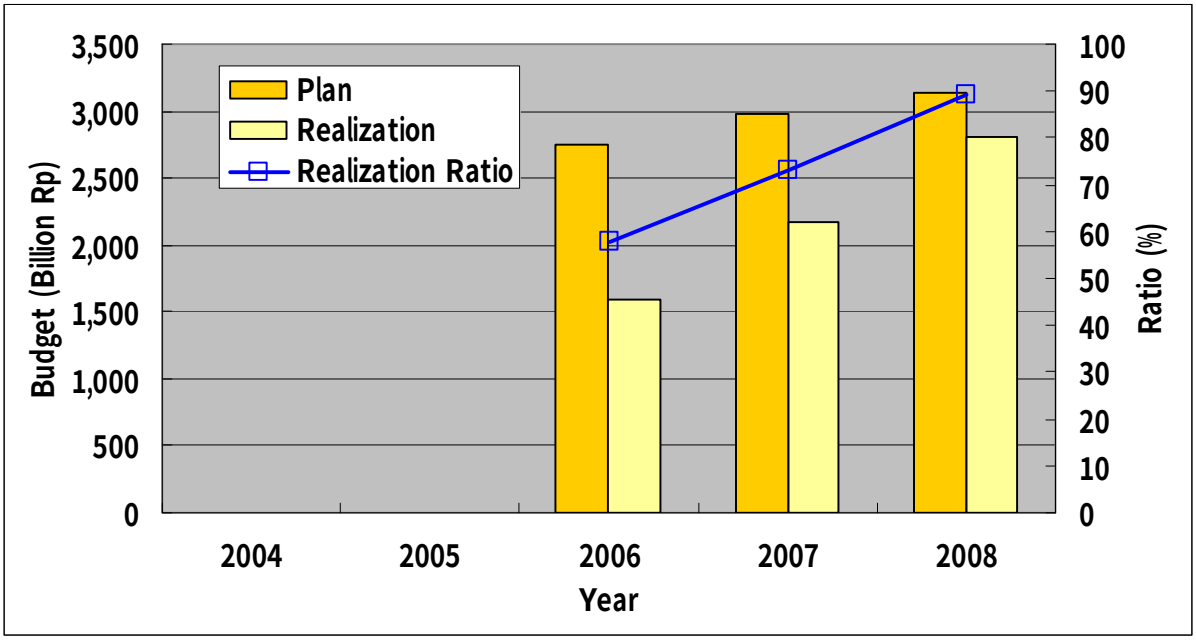
2) Budget Allocation in 2005-2009

The budget allocation under APBN, based on the 2005-2009 strategic plan of the Directorate General of Railways (DGR) of the Ministry of Transportation (MOT), is shown in the following table:

Table 4.1.28 Evaluation of APBN Budget based on 2005-2009 Strategic Plan of the MOT – Railway Sub-sector

Program	Target APBN Budget (Billion Rp.)	Allocation of APBN Budget (Billion Rp.)	%
Rehabilitation of Railway Infrastructure and Facility	301.81	172.14	57.04
Improvement & Development of Infrastructure and Facility	33,177.76	11,536.09	34.77
Enhancement of Accessibility to Railway Transportation	1,514.55	2,449.72	161.75
Institutional Restructuring and Reform	418.16	445.73	106.59
Total	35,412.29	14,603.68	41.24
Infrastructure Investment (APBN)	31,353.16	10,922.60	34.84
Facility Investment (APBN)	2,419.95	1,110.68	45.90

Source: Strategic Plan of DGR, 2010-2014 and Evaluation Result



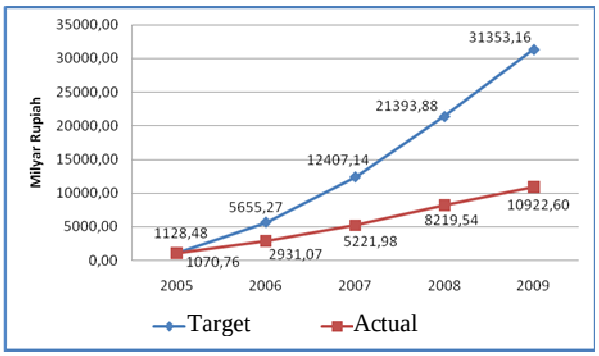
Source: Finance Bureau, Ministry of Transport (LEMTEK Draft-Final Report)

Figure 4.1.23 National Budget (APBN) of Railway Transportation

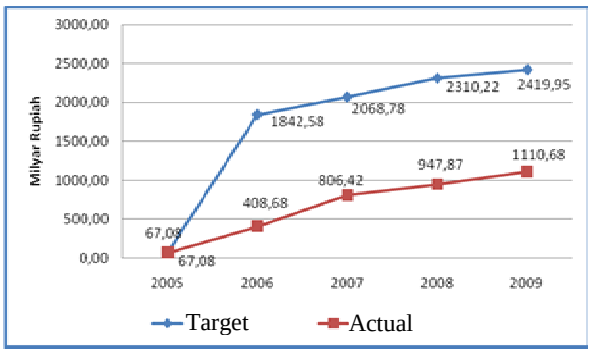
The budget allocation of Rp 14.60 trillion is only 41.24% of the APBN target budget (Rp 35.41 trillion) as per the Strategic Plan of the MOT of 2005-2009. It is noted that the allocated APBN budget for the improvement and development of railway infrastructure and facilities is 34.77% only, due to the limited funds and delayed implementation caused by land acquisition issues. Therefore, many aging railway facilities have already exceeded their design life and are being operated under low capacities.

Meanwhile, the annual budget allocation (2005-2009) for railway infrastructure and facilities is shown

in the following figure:



Infrastructure Investment



Facility Investment

Source: Strategic Plan of DGR, 2010-2014

Figure 4.1.24 Budget Allocation for Infrastructure and Facility Investment

(2) Progress of Development

The targets and achievements for the development activities in the railway transportation sector for 2005-2009 are shown in Table 4.1.29. Some activities are expected to be more than 100% achieved by 2009. Some components related to the modernization of electricity/signaling and procurement/replacement of facilities will be more than 200% accomplished. Meanwhile, accomplishment of some activities intended for railway infrastructure and track improvement and development are expected to be less than 50% completed by 2009. Planned targets for other activities, including telecommunication/electricity rehabilitation, train in railway facilities, connection plate procurement, and locomotive facilities procurement/replacement could not to be achieved due to lack of budget. Development of the East Kalimantan railways is not progressing as well as it is still waiting for the support of the private sector and regional government participation.

Table 4.1.29 Target and Realization of Each Activity for the Railway Sector (2005-2009)

Program	Activities		Unit	Total 2005-2009		
				Target	Achievement	Percentage
Rehabilitation of railway facilities and infrastructure	1. Railway Infrastructure					
	a	Railway Track Rehabilitation (backlog)	km	0	32.26	N.T.
	b	Bridge Rehabilitation	Unit	0	0	N.T.
	c	Signal Rehabilitation	Package	7	1	**14.30%**
	d	Telecommunication Rehabilitation	Package	19	0	**0.00%**
	e	Electricity Rehabilitation	Package	5	0	**0.00%**
	f	Crossing Gate Repair	Lks/Pck	95	7	**7.40%**
	2. Railway Facilities					
	a	Train (K3)	Unit	100	0	**0.00%**
	b	Electric Multiple Unit (KRL)	Unit	5	6	120.00%
	c	Diesel Multiple Unit (KRD)	Unit	34	21	61.80%
Improvement & development of infrastructure and facilities	1. Railway track improvement & development					
	a	Improvement of railway track capacity	km	1,145.52	1,446.21	126.20%
	b	Bridge improvement	Unit	34	85	250.00%
	c	Railway track development	km	643	296.57	**46.10%**
	d	Rail track procurement	Ton	550,489	142,311	**25.90%**
	e	Connection plate procurement	Unit	111	0	**0.00%**
	f	Railway switch procurement	Unit	245	100	**40.80%**
	g	Land acquisition	Package	19	22	115.80%
	h	Bridge construction	Unit	55	72	130.90%
	2. Modernization of electrical and signaling system					
	a	Signal	Package	29	69	237.90%
	b	Telecommunication networks	km	15	38.38	255.90%
	c	Upper current electricity (LAA)	Package	14	13	92.90%
	d	Warning devices	Package	40	30	75.00%
	e	Crossing gate	Package	4	11	275.00%
	3. Facilities procurement/replacement					
	a	Electric Multiple Unit (KRL)	Set	10	54	540.00%
	b	KRDE	Unit	15	40	266.70%
	c	Locomotive	Unit	50	0	**0.00%**
	4. Revitalization & development of Jabotabek region railways transportation		Package	4	9	225.00%
	5. East Kalimantan railways development		Package	2	0	**0.00%**
Improvement of railways transportation service accessibilities	1. Economy class railway procurement		Unit	90	151	167.80%
	2. Subsidy for economy class railway transportation		Package	5	5	100.00%
Organizational restructuring and reform	1. STD		Package	110	181	164.50%
	2. Data and SIM development		Package	45	7	**15.60%**
	3. Administration		Package	5	5	100.00%

Source: Strategic Plan of DGR, 2010-2014

The following table summarizes the sub-sector performance on transportation productivity consisting of passenger and cargoes transportation. All the transportation productivities, except for the non-Jabodetabek passengers, have steadily increased over the years. However, it is assumed that

railway users still have not recognized that railway services are superior and more efficient than road transportation.

The future demand for utilizing the railway may decrease as it competes with the efficiency of expressway travels. For instance, railway passengers in the Jakarta-Bandung line have decreased after the completion of the Jakarta-Bandung (Cipularang) expressway in 2005. Hence, a master plan or regional development plan study on transportation network should be initially prepared considering all transportation sectors, in collaboration and coordination among the ministries and agencies concerned. High priority routes should be identified to optimize expenditures.

Net PSO (IMO-TAC+PSO)[1] increased by more than 98% from Rp 270 billion in 2005 to Rp 535 billion in 2009 (See Table 4.1.30 below). It means that while the government expenses for railway operation, such as subsidy, is increasing yearly, PSO subsidy for economy class was dominantly in short trip railway services, including urban and commuter trips. Revision of fares should be urgently studied to improve finances and for sustainable railway operations in the future.

Table 4.1.30 Railway Transportation Performance of 2005-2009

Description	Unit	Year				
		2005	2006	2007	2008	2009*
Transportation Productivity						
Passenger Transportation						
• Passenger – Km	mill. pass–km	14,345.31	15,438.21	15,871.94	18,510.58	18,619.09
• Passenger	mill. pass.	151.49	161.29	168.21	197.77	201.84
• Jabotabek Passenger	mill. pass.	100.97	104.42	111.84	126.70	133.03
• Non Jabotabek Passenger	mill. pass	50.52	56.87	56.36	71.07	68.81
• Commercial	mill. pass	22.02	21.88	26.22	32.71	33.69
• Economy	mill. pass	129.47	139.41	141.98	154.70	157.40
• Economy AC	mill. pass	-	-	-	10.36	10.75
Cargo Transportation						
• Cargo – Km	mill. ton–km	4,152.00	4,388.40	4,360.40	4,337.20	5,353.39
• Cargo	mill. ton	17.33	17.48	16.82	19.55	18.95
• Nego Cargo	mill. ton	16.53	16.86	16.23	17.49	18.46
• Non Nego Cargo	mill. ton	0.80	0.62	0.59	2.06	0.49
NET PSO（IMO- TAC+PSO）	Bill. Rp	270.00	350.00	425.00	544.67	535.00

Source: Strategic Plan of DGR, 2010-2014

(3) Remaining Issues

1) Key Remaining Issues for the Next RPJM 2010-2014

According to the draft concept of the next RPJM 2010-2014, BAPPENAS addressed the following remaining issues

i) A lot of aging infrastructures that exceeded the design life and have maintenance backlogs

ii) Large number of railway facilities that are no longer operational (design life exceeded compounded with lack of maintenance)

[1] PSO= Public Service Obligation, IMO=Infrastructure Maintenance and Operation cost, TAC=Track Access Charge

iii) Single track sections not well-installed

iv) Low safety and security and frequent disturbances at the stations and along the railway tracks

v) Limited transportation mobility (non-optimal inter-modal service integration)

On the other hand, DGR has mentioned the issues in its strategic plan of 2010-2014 as follows,

i) Many infrastructures are already obsolete with maintenance backlogs,

ii) Degraded quality of railway transportation facilities,

iii) Bottlenecks occurring in several main traffic sections due to imbalanced increase of traffic capacity against the increase in frequency of railway services,

iv) Limited public funds and lack of private participation in the railway sector,

v) High rate of railway accidents especially related to maintenance backlogs,

vi) Low safety and orderly condition, with many disturbances at stations along the railway track,

vii) Limited transportation mobility due to sub-optimum inter-modal transportation integration,

viii) Ineffective policy for application of PSO, IMO, TAC, and the functional and mechanism weakness in planning, monitoring, evaluation, institution, data and information systems,

ix) Pre-maturity of basic industry to support railway technology,

x) Ineffective railway institution due to unapproved regulations on railways as outlined under Law No. 23 of 2007, and

xi) Limited role of BUMN for railways, with lack of private participation.

2) Indonesia's Competitiveness in the Railway Transportation Sector

The activities of the railway transportation sector planned in the current RPJM 2004-2009 (Table 4.2.29) will not be completely achieved. Lack of inventory data and other statistical information limits the understanding of the current railway transportation conditions. Hence, preliminary indicators were carefully chosen to compare Indonesia's railway transportation services with that of other ASEAN countries, China and India. The base data, collected from the internet, statistical yearbooks and other sources, are shown in the following table. Railway density was used as an indicator of railway network condition.

Table 4.2.31 Base Data and Indicators for the Railway Transportation Sector

Country	Population (1,000 persons)	Population Density (persons/km^2)	Area (km^2)	Railway Length (km)	Railway Density		Statistical Year
					(km/ 100 km^2)	(km /1,000 persons)	
1. Indonesia	240,272	132	1,919,440	6,458	0.336	0.027	2006
2. Cambodia	14,495	83	181,040	602	0.333	0.042	2006
3. Malaysia	25,716	79	329,750	1,890	0.573	0.073	2006
4. Philippines	97,977	329	300,000	897	0.299	0.009	2006
5. Thailand	65,905	129	514,000	4,071	0.792	0.062	2006
6. Vietnam	86,968	268	329,560	2,600	0.789	0.030	2006
7. China	1,338,613	144	9,596,960	75,438	0.786	0.056	2005

8. India	1,166,079	393	3,287,590	63,221	1.923	0.054	2006
9. Japan	127,079	340	377,835	27,191	7.197	0.214	2009

Source: http://www.exxun.com/, statistical yearbook and others

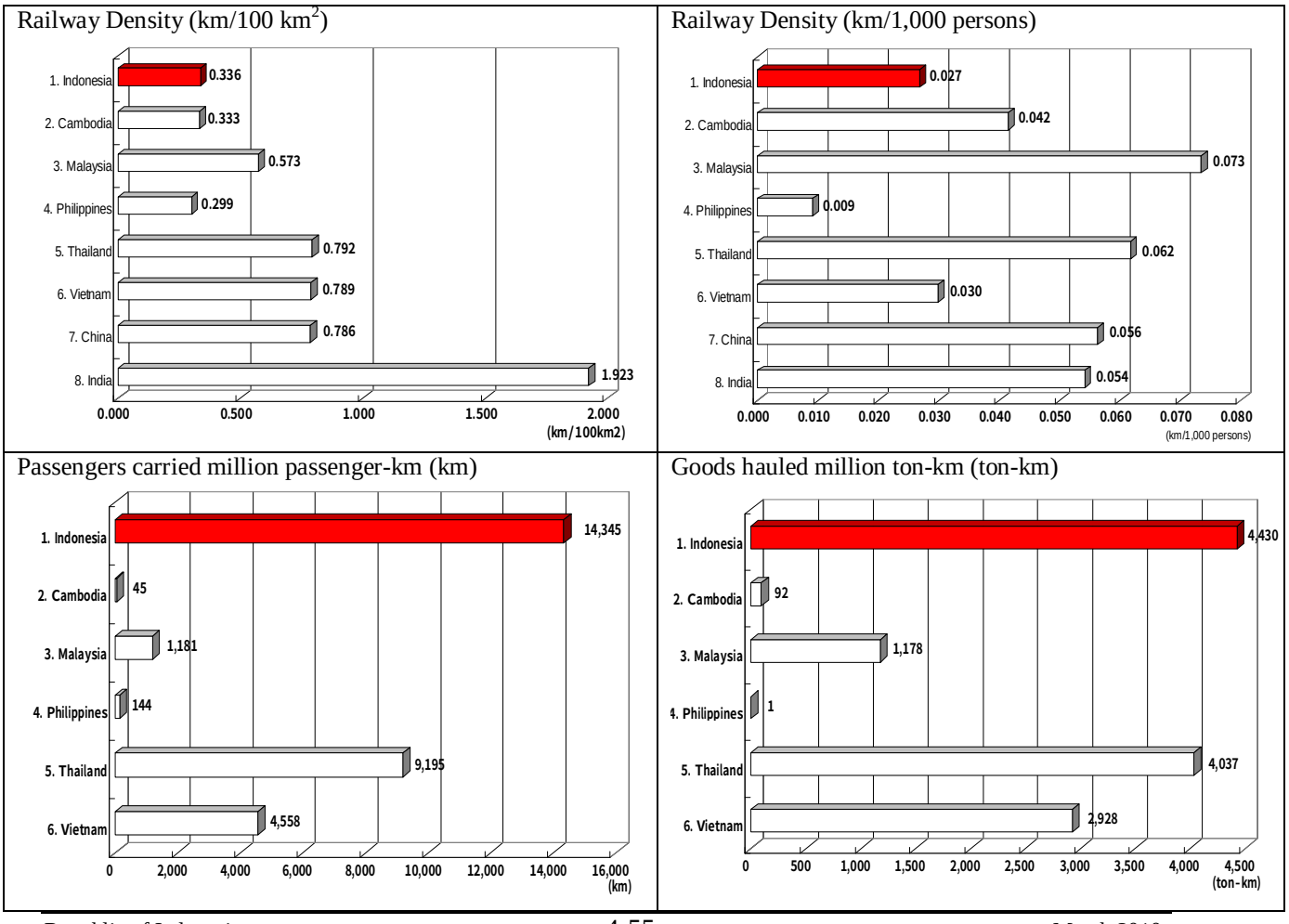
Passengers carried and goods hauled per capita are the indicators for railway transportation service for railway users and forwarders, respectively.

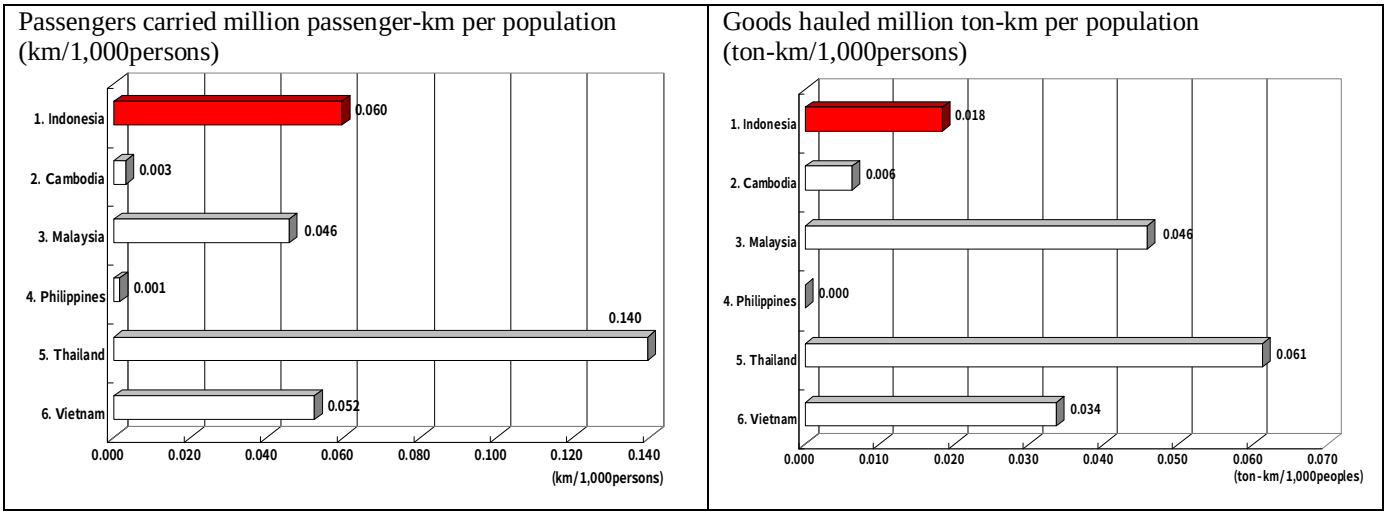
Table 4.2.32 Base Data for the Railway Transportation Sector

Country	Passengers carried million passenger-km (km)	Passengers carried million passenger-km per population (km/1,000 persons)	Goods hauled million ton-km (ton-km)	Goods hauled million ton-km per population (ton-km/1,000persons)	Statistical Year
1. Indonesia	14,345	0.060	4,430	0.018	2008
2. Cambodia	45	0.003	92	0.006	2008
3. Malaysia	1,181	0.046	1,178	0.046	2008
4. Philippines	144	0.001	1	0.000	2008
5. Thailand	9,195	0.140	4,037	0.061	2008
6. Vietnam	4,558	0.052	2,928	0.034	2008
7. China	666,200	0.498	2,170,700	1.622	2008
8. India	575,702	0.494	407,398	0.349	2008
9. Japan	245,957	1.935	22,632	0.178	2008

Source: http://www.exxun.com/ and 2008 World Development Indicators

Comparative graphs of all indicators mentioned in the above table are shown in the following figures. China and India are excluded in the last four comparative graphs since the passengers and goods hauling data in both these countries are enormously higher than the other countries.





Source: http://www.exxun.com/ and 2008 World Development Indicators

Figure 4.1.25 Comparison of Competitiveness of Indonesia in the Railway Sector

The investigation for railway transportation services of seven countries revealed major findings as follows:

i) Ranks 6th and 7th considering railway densities :
Low railway densities mean that railway network service in Indonesia is insufficient and its accessibility is one of the lowest among other countries.

ii) Ranks 1st on passengers carried and goods hauled volumes among the ASEAN countries:
This indicates that Indonesia occupies the largest land area, relatively the most populous country, and has the longest railway network.

iii) Ranks 2nd and 4th on passengers carried and goods hauled per capita among the ASEAN countries:
Although it ranks as 1st in terms of passengers carried and goods hauled volumes, it ranks 2nd and 4th, respectively in terms of per capita units. This means that railway transportation service in Indonesia is insufficient to accommodate railway users and forwarders.

Another comparison was made for the railway development condition in the island areas in countries such as Indonesia, Japan and UK. The results are as follows:

Table 4.2.33 Base Data and Indicators of Railway Transportation Sector (Island Countries)

Country Base	Population (1,000 persons)	Population Density (per. /km^2)	Area (km^2)	Railway Length (km)	Railway Density		Statistical Year
					(km / 100 km^2)	(km /1,000 persons)	
Indonesia	240,272	132	1,919,440	6,458	0.336	0.027	2009
Japan	127,079	340	377,835	27,191	7.197	0.214	2009
UK	61,113	253	244,820	16,567	6.767	0.271	2009
Island Base							
Java Island , Indonesia	132,857	1,026	129,438	4,184	3.232	0.031	2009
Honshu Island , Japan	118,300	519	227,963	20,814	9.130	0.176	2009
Great Britain (GB) Island , UK	58,900	281	209,331	16,210	7.744	0.275	2009

Source: http://www.exxun.com/, statistical year book and others

Java Island in Indonesia is one of the most populous and densely populated island in the world, more congested than Honshu Island in Japan and Great Britain Island in the UK. However, the railway length in Java Island is only 20% of that in Honshu Island and 25% of that in Great Britain Island. Railway densities are also very low compared with others.

3) Outstanding Regional Issues by Urban Concentration Area

Metropolitan cities of over two million population and constructed subway systems in the world are summarized in the following table. It is noted that four cities in Indonesia, namely Jakarta, Surabaya, Bandung and Medan, have no existing subway systems. Considering the sizes of these cities and that their most problematic issues are traffic congestion and air pollution, public transportation systems (Mass Rapid Transit (MRT), Light Rail Transit (LRT), Bus Rapid Transit (BRT) systems and others) should be built accordingly

Table 4.1.34 List of Metropolitan Areas and Big Cities

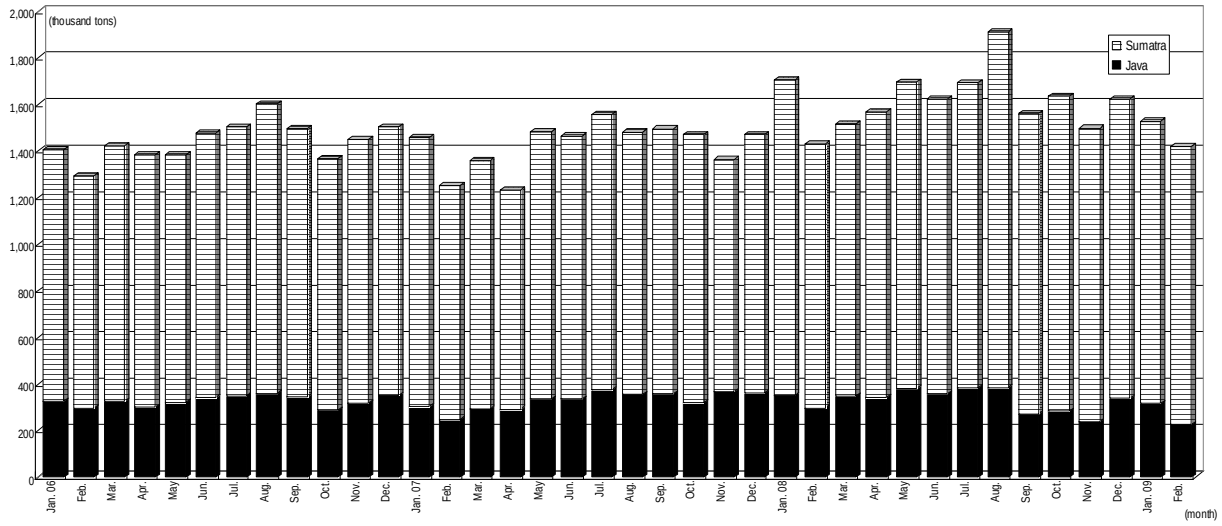
No.	City	Country	Population (persons)	Area (km^2)	Population Density (persons/km^2)	Railway (km)	Subway (km)
1	Tokyo metropolitan	Japan	29,301,000	6,448	4,544	2,246	289
2	Jabodetabek metropolitan	Indonesia	23,650,350	7,315	3,233	150	0
3	Keihanshin area	Japan	15,785,000	5,387	2,930	1,503	165
4	Bangkok metropolitan	Thailand	10,061,726	7,762	1,296	23	21
5	Paris	France	9,319,367	2,377	3,921	595	568
6	Jakarta	Indonesia	8,839,247	662	13,362	N.A.	0
7	Tokyo's 23 wards	Japan	8,221,000	621	13,238	605	273
8	Chukyo area	Japan	7,656,000	3,866	1,980	932	78
9	New York	USA	7,333,253	800	9,167	407	393
10	Kuala Lumpur metropolitan	Malaysia	7,200,000	244	7,388	8.6	56
11	London	UK	7,007,091	1,680	4,171	462	408
12	Hong Kong	China	6,310,000	150	39,000	130	82
13	Singapore	Singapore	4,737,000	707.1	6,489	---	89
14	Toronto	Canada	4,306,309	5,584	771	143	56
15	Berlin	Germany	3,471,418	891	3,896	320	144
16	Yokohama	Japan	3,468,200	434	7,991	245	39
17	Los Angeles	USA	3,448,613	1,216	2,836	86	19
18	Montreal	Canada	3,324,194	3,509	947	65	65

No.	City	Country	Population (persons)	Area (km^2)	Population Density (persons/km^2)	Railway (km)	Subway (km)
19	Madrid	Spain	2,947,228	6,058	487	121	121
20	Chicago	USA	2,731,743	589	4,638	171	171
21	Rome	Italy	2,693,383	1,499	1,797	94	34
22	Osaka	Japan	2,611,600	221	11,817	269	104
23	Surabaya	Indonesia	2,611,506	274	9,529	N.A.	0
24	Bandung	Indonesia	2,288,570	168	13,649	N.A.	0
25	Nagoya	Japan	2,179,200	326	6,685	184	78
26	Lisbon	Portugal	2,160,000	3,125	819	72	19
27	Medan	Indonesia	2,029,797	265	7,657	N.A.	0

Source: "City and Public Transportation" and Wikipedia

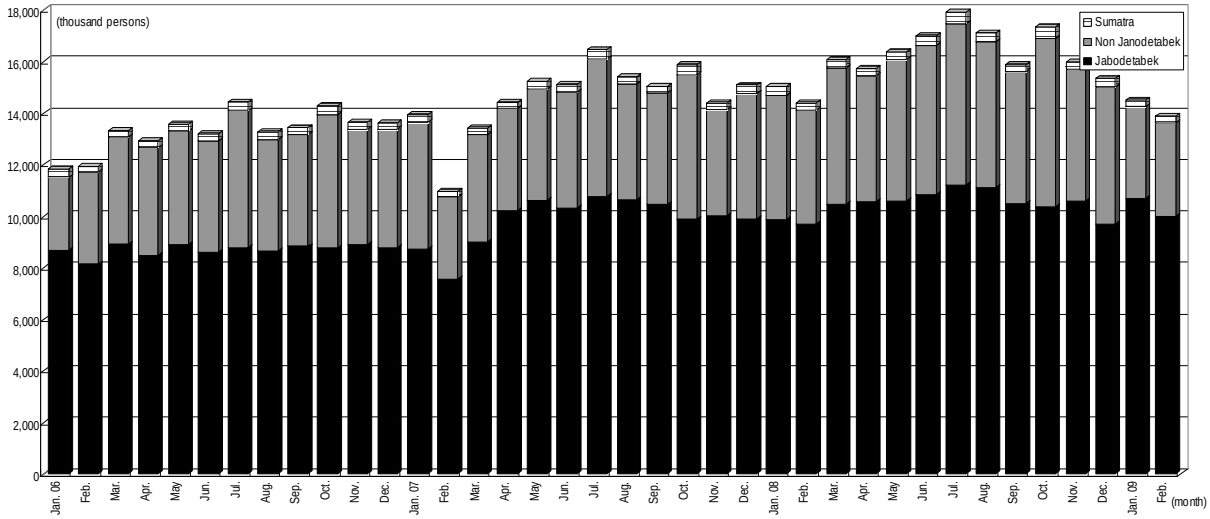
4) Outstanding Regional Issues by Island Basis

Railway networks in Indonesia have been developed only in Java and Sumatra Islands. A new coal railway plan in Kalimantan is under consideration by the private sector, but there are no plans of any new railway development in the other islands, such as in Sulawesi, Papua, Maluku, Bali and Nusa Tenggara. As shown in the following figures, passenger-oriented system is dominant in Java Island, while in South Sumatra, freight system is mainly utilized,



Source: Head Office of State-Owned Railways Company

Figure 4.1.26 Volume of Cargo in Railway Transportation by Region, 2006-2009



Source: Head Office of State-Owned Railways Company

Figure 4.1.27 Number of Passengers of Railway Transportation, 2006-2009

(4) Action Plan to Address the Issues

1) The next RPJM 2010-2014

BAPPENAS addressed the following policies and strategies for the previous issues in the draft concept of the next RPJM 2010-2014:

- Policy
  - i) Intensification of transportation safety, service quality and recovery of service conditions of railway transportation;
  - ii) Implementation of audit on performance of railway infrastructure, facilities and human resources;
  - iii) Improvement of transportation service strategy for inter-modal competitiveness;
  - iv) Intensification of the capacity and quality of saturated corridor services;
  - v) Implementation of integrated and sustainable planning, financing and evaluation of railway performance;
  - vi) Continuation of railway institution and BUMN reform and restructuring;
  - vii) Intensification of participation of the regional government and private entities in the railway sector; and
  - viii) Intensification of the role of national and local railway transportation.
- Strategy
  - i) Sub-sector and per island basis infrastructure development
  - ii) Finalize master plan on island transportation
  - iii) Support PLN 10,000 megawatt*
  - iv) Focus on urban infrastructure for Java Island
  - v) Focus on sea infrastructure for the eastern region of Indonesia*
  - vi) Initiate presidential instructions for Papua*

vii) Involve the banking sector for the financing of transportation facilities and infrastructure development*

viii) Deregulation of transportation sector for private involvement

*: These strategies are still under discussion between BAPPENAS and the line ministries.

2) Strategic Plan of DGR, 2010-2014

On the other hand, DGR has mentioned the following issues in its strategic plan 2010-2014:

- Policy Direction
  - i) Preparation and enforcement of regulation in a form of conclusion of legislative regulation and preparation of other supporting regulation/guidelines in the railway sector, including the regulation to support the implementation of multi-operator railways;
  - ii) Following-up of institutional reforms and restructuring as well as realization of the government's involvement as regulator for railway implementation;
  - iii) Increasing the role of regional government and private sector in the railway sector;
  - iv) Improvement of railway human resources and development of national railway technology;
  - v) Improvement of transportation safety and service quality through the recovery of railway transportation infrastructure and facilities' condition;
  - vi) Implementation of audit of infrastructure and facilities, and railway operator human resources;
  - vii) Increasing the role of national and local railway transportation, and enhancement of the transportation service strategy to achieve a better intra- and inter-modal competition power;
  - viii) Enhancement of the line capacity, transportation capacity, and service quality, especially at over-capacity corridors and along strategic corridors that need to be developed in Java, Sumatra, Kalimantan, Sulawesi, and Papua;
  - ix) Increasing the frequency and accessibility of railway transportation service;
  - x) Implementation of planning, finance and evaluation of the integrated railway performance, supported with more accurate data and information system development.
- Strategy
  - i) Government will act as the regulatory body on railway implementation
  - ii) Promote safe service
  - iii) Provide complete facility
  - iv) Increase track line capacity
  - v) Improve accessibility
  - vi) Develop new lines

3) Action Plan to Address the Issues

Approach in the railway transportation sub-sector to focus area is the same as that in the general transportation sector. The relationship between the focus area and the previous issues, as well as the action plan for these issues and indicators, are shown in the following table.

Table 4.1.35 Action Plan and Indicators on Railway Transportation

	Issues	Action Plan	Indicators
1. Strong Economic Growth			
1.1 Building Strong Backbone Infrastructure			
(1) Improvement of Logistics Transportation	**Insufficient Railway Transportation Network** 1) Insufficient railway capacity 2) Poor railway facilities 3) No railway network	a) Enhancement of existing railway network b) Improvement of railway facilities c) Development of railway network (Coal railway, seaport access railway link and others)	i) Total freight transportation volume ii) Number of running trains iii) Operation ratio
(2) Improvement of Passenger Transportation	**Insufficient Railway Transportation Network** 1) Insufficient railway capacity 2) Poor railway facilities 3) No railway network	a) Enhancement of existing railway network b) Improvement of railway facilities c) Development of railway network (Airport access railway link and others)	i) Total passenger transportation volume ii) Number of running trains iii) Operation ratio
1.2 Upgrading Infrastructure in the Main Cities			
(1) Freedom from Urban Transportation Issues	**No Urban Railway System** 1) Traffic congestion in Jabodetabek metropolitan area 2) Traffic congestion in the main cities	a) Establishment of MRT or LRT or other public transportation system b) Integration with other transportation modes	i) Total passenger transportation volume ii) Number of running trains iii) Operation ratio
2. Poverty Reduction			
2.1 Provision of Basic Infrastructure Services in Depressed Areas			
(1) Reduction of Regional Disparity	---	---	---

	Issues	Action Plan	Indicators
3. General	1) Useless backlog of facilities 2) Huge subsidy 3) High railway accident ratio 4) Lack of experience on new technology 5) Insufficient transportation network master plan	a) Procurement of facilities b) Integration with other transportation modes c) Development of asset management system d) Capacity-building e) Installation of new maintenance facilities f) Installation of new system (signaling & communication system, control center, maintenance facilities and others) g) Study of transportation network master plan	i) Operation ratio ii) Total subsidy iii) Total passenger transportation volume iv) Railway accident ratio

Source: JICA Study Team

Based on the above, action plans are re-arranged by region and grouped into three focus areas. Furthermore, specific projects are proposed in each region with the focus areas of the projects. The results are summarized in the following Table 4.1.36.

Table 4.1.36 Action Plan for Railway Transportation Infrastructure Development

Region	1. Building Strong Backbone Infrastructure	2. Upgrading Infrastructure in the Main Cities	3. Provision of Basic Infrastructure Service in Depressed Areas
Jakarta	(1) Development of circular railway line (2) Development of access railway system to main seaports (3) Development of access railway to main airport	(1) Development of MRT Lines (North-South) (2) Development of MRT Lines (East-West) (3) JKT Monorail development (4) Development of Dukhu Atas Junction Station (5) Upgrading of JABODETABEK railway lines.	---
Java	(1) Improvement or upgrading of existing railway system	(1) Urban railway electrification in Bandung (2) Urban railway electrification in Surabaya (3) Regional railway development in Central Java (Semarang, Yogyakarta, Solo)	---
Sumatra	(1) Improvement of existing railway system (2) Improvement of coal railway system	---	---
Kalimantan	(1) Development of coal railway system	---	---
Sulawesi	---	---	---

Region	1. Building Strong Backbone Infrastructure	2. Upgrading Infrastructure in the Main Cities	3. Provision of Basic Infrastructure Service in Depressed Areas
Bali & Nusa Tenggara and Maluku & Papua	---	---	---

Source: JICA Study Team

The suggested criteria for selecting the priority railway transportation projects are also the same as that in the road transportation sector. However, railway projects are focused on the following key aspects:

a) The projects, which could solve the serious insufficiency in supply capacity as compared to the demand, are as follows. The deficit of the supply capacity seriously affects the national economic growth and should be immediately solved.

   i) Projects that contribute to the improvement of the inadequate capacity and international hub function of Tanjung Priok Seaport
   (Rehabilitation of seaport link)

   ii) Projects that contribute to the improvement of the inadequate capacity and international hub function of Soekarno-Hatta International Airport
   (Development of airport link)

   iii) Development of main transportation network in Java Island
   (Improvement of the existing railway network, and assessment of the future railway corridor by high speed rail link (Jakarta – Surabaya))

   iv) Projects that contribute to reducing traffic congestion in the Jabodetabek metropolitan area
   (MRT, LRT, Circular Line and others)

b) The projects which have high development potentials in view of the national economy are as follows:

   i) Development of a Coal Railway System in Kalimantan Island

   ii) Improvement of the Coal Railway System in Sumatra Island

c) The projects which could improve service quality in terms of safety, environmental and social viewpoints are as follows:

   i) Projects that contribute to reducing traffic congestion in the main cities: Surabaya , Bandung and Semarang, except the Jabodetabek Metropolitan area
   (MRT, LRT and others)

d) The projects which are expected to contribute to regional economy by strengthening the accessibility between the regional urban centers and rural areas are as follows:

   i) Projects that contribute to reducing traffic congestion in main cities: Medan, Palembang and Makassar, except Java Island

(MRT, LRT and others)

e) The projects with non-structural activities for improvement of efficiencies in transportation, including human resources development, introduction of asset management and so on, are as follows:

i) Development of Asset Management System
ii) Capacity-Building (Maintenance Management Technology & Planning and others)
iii) Installation of Maintenance Equipment

4.1.7 Air Transportation

Air transportation administration in Indonesia is mainly operated by the Ministry of Transportation (MOT), particularly the Directorate General of Civil Aviation (DGCA) as the responsible organization. In addition, the air transportation sub-sector has several organizations such as PT. (Persero) Angkasa Pura I (AP-I) and Angkasa Pura II (AP-II) under the Ministry of State-Owned Enterprises (MOSOE).

DGCA is the national authority responsible for implementing directions and guidelines for air transport operation for all Indonesian aviation working units and stakeholders to maintain the sustainability of national air transport development.

The primary function of DGCA is to regulate air transportation as mentioned above. It also functions as an airport operator and Air Navigation Services (ANS) provider. DGCA operates 162 relatively minor airports in the country and ANS is provided in some of these airports.

AP-I and AP-II are responsible for the airport services to the following major airports as an operator, and ANS service provider for each airport and Flight Information Region (FIR).

Table 4.1.37 Airports and FIR Managed by AP-I and AP-II

Angkasa Pura I (AP-I)		Angkasa Pura II (AP-II)	
Airport			
1	Bali	1	Jakarta - Soekarno-Hatta
2	Surabaya	2	Jakarta -Halim Perdana Kusuma
3	Makassar	3	Palembang
4	Balikpapan	4	Pontianak
5	Biak	5	Medan
6	Manado	6	Padang
7	Yogyakarta	7	Pekanbaru
8	Solo	8	Bandung
9	Banjarmasin	9	Banda Aceh
10	Semarang	10	Tanjung Pinang
11	Ambon	11	Jambi
12	Mataram	12	Pangkal Pinang
13	Kupang		
Flight Information Regions			
Ujung Pandang FIR		Jakarta FIR	

(1) Current Development Program

1) Current RPJM 2004-2009

The key issues in the current RPJM 2004-2009 are enumerated below:

i) Improvement of flight safety from the side of development of infrastructure, checking

of navigation system, and other facilities in isolated areas.

ii) Improvement of flight safety and navigation in accordance with International Civil Aviation Organization (ICAO) standard.

iii) Improvement of infrastructure management of all airport facilities, including the international terminal, in order to obtain an airport operational certificate.

iv) Development of infrastructure and capacity building including airports in isolated regions, border regions, and local regions.

v) Rehabilitation and maintenance of air transportation infrastructure.

vi) Service of pioneer flight and compensation of fuel subsidies in pioneer flight.

vii) Improvement of training for inspectors.

viii) Completion of the Kualanamu Airport in Medan and Hasanuddin Airport in Makassar.

ix) Finishing revision of Law No 15/1992, which is a regulation related to flights.

Key issues and challenges on air transport as stated in the RENSTRA of DGCA are:

i) Improvement of safety, security and accessibility on the services mainly for the remote and border areas

i) Inadequate society purchasing power as compared to the operational and investment cost, which consequently need subsidy and investment support from the government

ii) Institutional reform (deregulation and reposition of government institutions) to clearly define the role and tasks of the government as the regulator is separated from the function of operator for the efficient, accountable, competitive and professional transport services

iii) Improvement of infrastructure and facilities, human resources and law enforcement

The development programs on air transportation are set out in the current RPJM 2004-2009, as follows:

ii) Program for the rehabilitation and maintenance of air transport infrastructure

iii) Program for the development of air transport infrastructure

iv) Program for the institutional and regulatory restructuring of the air transport sub-sector

DGCA stipulated five programs to achieve the objectives and targets of 2005-2009 as stated in its strategic plans:

i) Program for the air transport institutional restructuring and regulatory reform;

ii) Program for the rehabilitation and maintenance of air transport infrastructures;

iii) Program for the development of air transport;

iv) Program for rehabilitation and reconstruction of airports in disaster areas;

v) Program for the implementation of good governance.

2) Budget Allocation in 2004-2008

Annual budget allocation in the national revenue and expenditure budget (APBN) for air transportation in 2004-2008 is shown in the following figure. The budget allocation has increased constantly for the past three years since 2006.

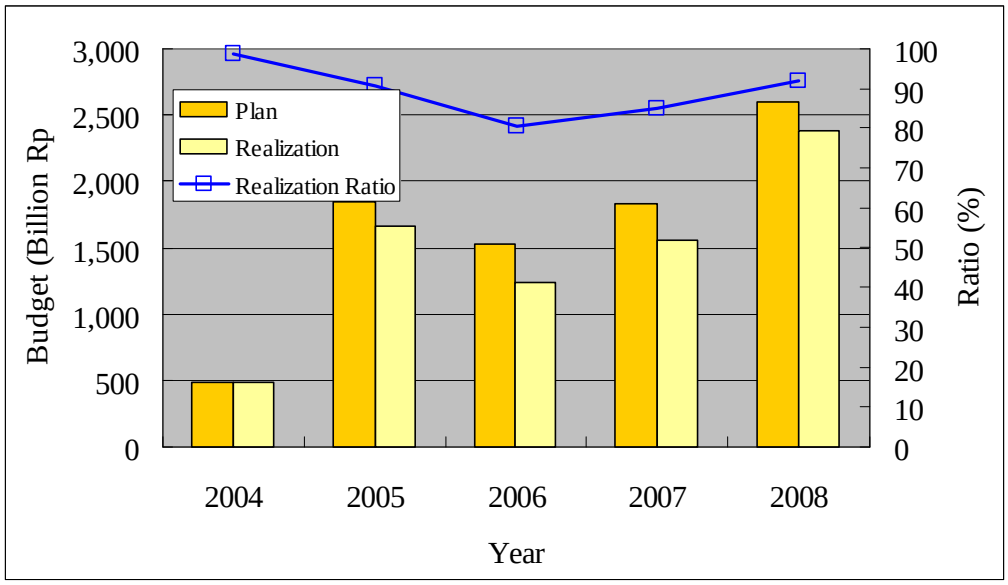


Figure 4.1.28 Annual Budget Allocation 2004-2008 in APBN and Realization

(2) Progress of Development

The activities related to airport developments include rehabilitation of runways, airport and terminal facilities, and construction of part of the runway, passenger terminal and apron.

The progress of achievements for these activities and indicators under the current RPJM 2004-2009, and the planned achievement until 2009, are shown in the following table. All the construction indicators will be achieved by 2009, but the accomplishment for the rehabilitation will be below the 2009 target.

Table 4.1.38 Achievement and Performance Target of Current RPJM 2004-2009

Indicator / Activity	Unit	RPJM 2004- 2009			Achievement				
		Target	Achievement up to 2008		2004/2005	2006	2007	2008	2009 Plan/ Achieved
		Qty	Qty	%	Qty	Qty	Qty	Qty	Qty
Runway Rehabilitation	m^2	2,820,000	2,137,734	75.8	648,341	745,920	330,752	412,721	425,000 (90.9%)
Airport Facility Rehabilitation	m^2	143,038	57,373	40.1	7,823	29,579	11,708	8,263	73,000 (91.1%)
Terminal Facility Rehabilitation	m^2	231,013	156,489	67.7	37,450	58,062	2,253	58,724	3,000 (69.0%)
Runway Construction	1000 m^2	682	6670	978	431	1,281	2,584	2,374	682 (>100%)
Passenger Terminal Construction	m^2	171,085	20,293	11.9	1,811	6,562	2,253	9,667	150,792 (100%)
Apron Construction	m^2	938,150	631,239	67.3	32,741	29,579	149,144	419,775	306,911 (100%)

Source: RPJM Evaluation Book 2005- 2008, Ministry of Transportation

(3) Remaining Issues

1) Key Remaining Issues for the Next RPJM 2010-2014

According to the draft concept of the next RPJM 2010-2014, BAPPENAS addressed the following remaining issues.

i) Flight safety and security aspect as the air transport's main issues
ii) Non-integrated inter-sectoral transportation planning between the central and local governments
iii) Inadequate participation of the private sector in the provision of air transport infrastructure
iv) Human resources competencies and professionalism
v) Decentralization and regional autonomy

Meanwhile, DGCA set the following objectives in the RENSTRA 2010-2014:

i) Realization of DGCA's human resources with international qualifications and professionalism, and the establishment of an optimum and effective institution, which can support a reliable and competitive air transport provision,

ii) Institutional restructuring and regulatory reform in the field of air transport in order to provide fair opportunity for the public and private sectors to participate in providing air transportation, in accordance with good governance principles,

iii) Completion of air transport infrastructure and facilities as stipulated in the development plan, in order to provide maximum support for sustainable national economic growth,

iv) Provision of transportation service accessibility in the border, remote and disaster-vulnerable areas,

v) Provision of qualified, safe, secure and comfortable air transport services,

vi) Realization of multi-operators for airports,

vii) Establishment of a strong and competitive flag carrier in the international market,

viii) Decrease in pioneer flights with more than 30% and replaced by commercial and charter flights,

ix) Improvement of aviation fleet and safety instrument worthiness and decrease of the number of flight accidents,

x) Attainment of a free and competitive business market in the national aviation industry, which ensure business sustainability, and

xi) Establishment of education facilities for the public to promote professionalism and improve human life quality.

2) Indonesia's Competitiveness in the Air Transportation Sector

It is relevant for the next RPJM 2010-2014 to realize Indonesia's ranking in the transportation sector among its neighboring ASEAN countries, China and India within the current 2004-2009. Based on data regarding air passenger and cargo issued by ICAO, international and domestic air passenger in Indonesia moved up gradually and ranked as No. 23 in 2006, next to Malaysia as shown in Table 4.1.39. Annual air cargo handled in Indonesia moved down every year and ranked as No.28 in 2006, which is the same as Malaysia and Thailand. China and India, meanwhile, remarkably moved to higher ranks in the past five years.

Table 4.1.39 Position of Indonesia on Air Passenger and Air Cargo in Asian countries

	International $ Domestic Passenger (million persons km)							International $ Domestic Cargo (million ton km)						
	2000	2001	2002	2003	2004	2005	2006	2000	2001	2002	2003	2004	2005	2006
1. Indonesia	16,764 28	16,169 27	18,419 28	21,274 27	28,447 24	28,243 23	32,055 23	413 21	424 25	405 26	350 25	2,963 26	2,924 27	3,290 28
2. Cambodia	- <30	- <30	- <30	- <30	- <30	- <30	- <30	- <30	- <30	- <30	- <30	- <30	- <30	- <30
3. Malaysia	37,939 18	35,658 19	36,897 18	38,415 19	44,665 18	49,578 19	43,817 21	1,864 13	1,775 12	1,924 12	2,179 12	6,672 16	7,103 16	6,608 17
4. Philippines	- <30	- <30	- <30	- <30	- <30	- <30	- <30	- <30	- <30	- <30	- <30	- <30	- <30	- <30
5. Thailand	42,236 17	44,142 16	48,337 16	45,449 16	51,564 16	50,809 17	56,378 17	1,713 16	1,669 14	1,824 13	1,764 13	6,579 17	6,646 17	7,258 16
6. Vietnam	- <30	- <30	- <30	- <30	- <30	- <30	- <30	- <30	- <30	- <30	- <30	- <30	- <30	- <30
7. China	90,960 6	105,870 6	123,908 5	124,591 5	176,268 3	201,961 2	234,505 2	3,900 10	4,232 9	5,014 8	6,385 6	22,912 3	25,765 2	28,848 2
8. India	25,909 23	25,708 23	27,929 22	31,196 20	38,638 20	47,023 21	60,815 16	548 20	519 24	546 25	580 26	4,238 20	5,046 20	6,306 19
9. Japan	174,149 2	162,290 2	164,773 2	146,856 4	154,362 5	153,289 5	151,394 5	8,672 2	7,614 2	8,102 2	8,281 2	22,027 5	21,992 5	21,706 5

Source : ICAO Annual Report of the Council

Note: Number under each data is rank in the world

From the viewpoint of capital city airport in 2008, passenger movement of Jakarta Soekarno - Hatta International Airport (SH) ranks as highest, which is at same level as Narita International Airport (Japan). Aircraft movement is also ranked high as compared with other countries. The reason is that deregulation of air transport market significantly affected the air transport industries. Many new small and medium airlines (Low Cost Carriers: LCC) entered the market. Airfare has drastically reduced and air traffic grew very fast over the recent years. The comparison on aviation data for capital city airport in ASEAN is shown Table 4.1.40 and Figure 4.1.29.

Table 4.1.40 Comparison on Aviation Data for Capital City Airports in Asian Countries

Country Name	Capital/ Airport code	Passenger (Million)		Aircraft Movements (thousand)		Cargo (thousand tons)	
Indonesia	Jakarta/ CGK	32.2		250		472	
Cambodia	Phnom Penh/ PNH	1.7		25		23	
Malaysia	Kuala Lumpur/ KUL	27.5		210		649	
Philippines	Manila/MNL	22.3		205		355	
Thailand	Bangkok/ BKK	41.2		262		1,210	
Vietnam	Hanoi/ HAN	7.0		50		391	
India	New Delhi/ DEL	22.8		230		430	
China	Beijing/ PEK	55.9		432		1,366	
Japan	Narita/ NRT	33.5	100.2	193	478	2,059	2,908
	Haneda/ HND	66.7		285		849	

Source: Web data and JICA Study Team

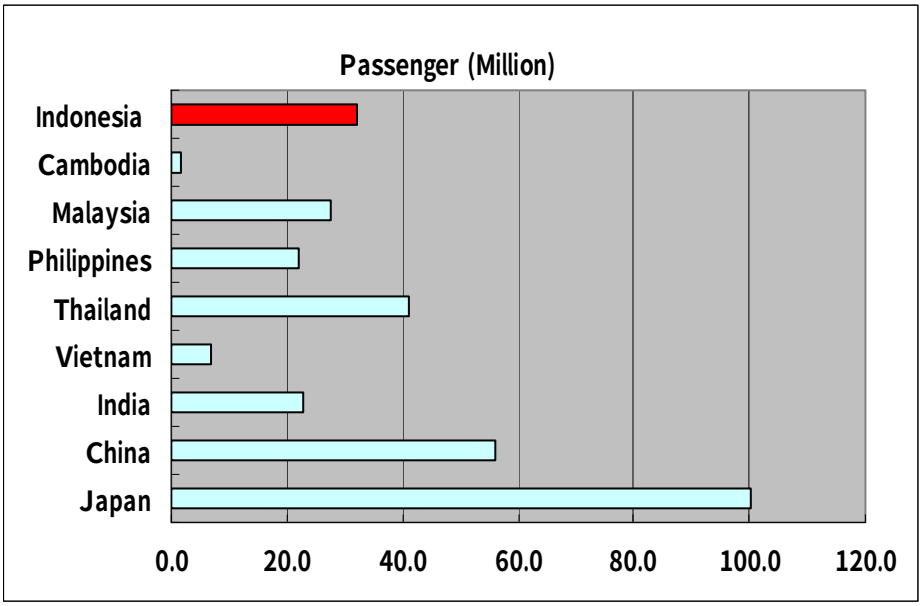
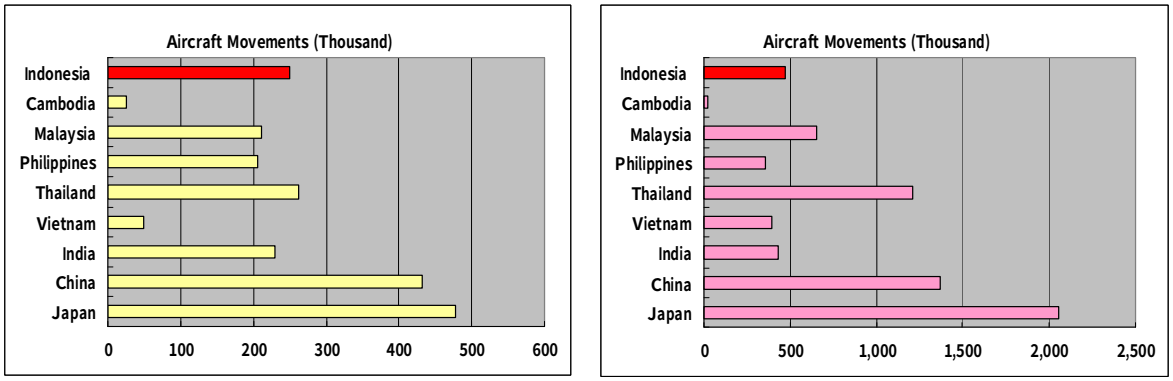


Figure 4.1.29 Comparison on Air Passenger for Capital City Airports (2008)

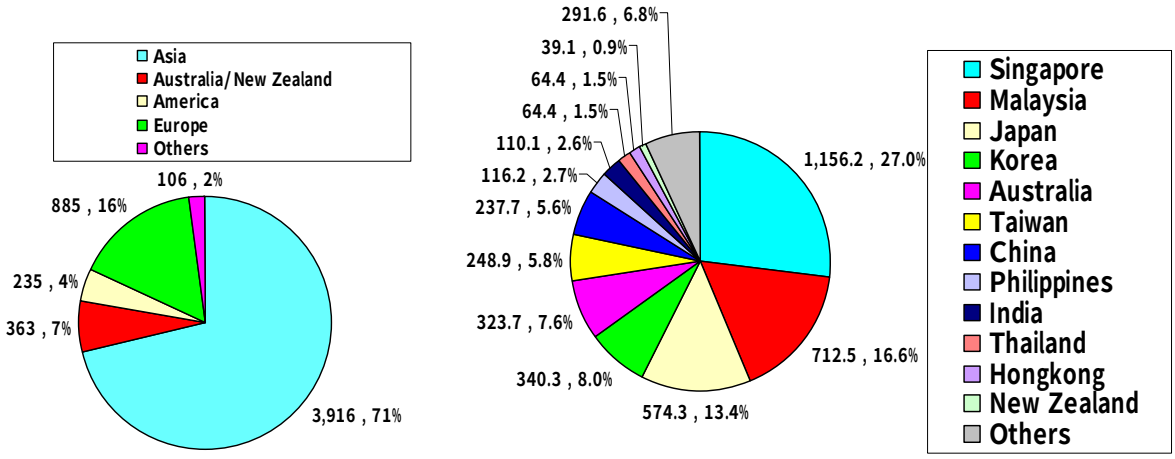


Source: Web data and JICA Study Team

Figure 4.1.30 Comparison on Aircraft Movements and Cargo for Capital City Airports (2008)

Indonesia has rich tourism resources, including Asia's leading resort Bali and world heritage Borobudur. These are among those which fascinated plenty of overseas tourists and served major role in the tourism industry in Indonesia. Approximately 80% of the tourists come from Asia (especially Singapore, Malaysia, Korea and Japan), Australia and New Zealand as shown in Figure 4.1.31. In addition, air transportation is absolutely imperative for Indonesian Muslim pilgrims to Mecca (Haji).

Indonesia had experienced several bombing attacks and aircraft accidents in the past years. Currently, DGCA ensures the aviation security and safety all over the Indonesian air territory.



Source: Statistical Year Book of Indonesia ~ 2007, BPS 2008

Figure 4.1.31 Number of Tourists Visiting Indonesia in 2007 from Regions in the World

Air transportation services in Indonesia are categorized into commercial and non-commercial air transport. The commercial air transport is divided into scheduled and non-scheduled flights. There are 48 registered airlines operating in Indonesia in 2009 with aircrafts having more than 30 seats and of various aircraft types such as B747, DC10, B727,B737, F28, F100, A330, A310, and DC10, as shown in Table 4.1.41. It is remarkable that currently, there appeared many new airlines which will be very influential in the poor safety and security of Indonesian air transport sector.

Table 4.1.41 Lists of Airline Companies

Year		2009	
No.	Airline Companies	Numbers of operating Aircraft	Registered Aircraft Types
1	Garuda Indonesia	54	B747, A330, B737
2	Merpati Nusantara Airlines	71	A300, B737, F28, CN235, CN212, DHC6
3	Kartika Airlines	36	B737, A319, A320
4	Mandala Airlines	15	A319, B737, A320, Airbus A3
5	Metro Batavia	0	
6	Pelita Air Services	44	F28, F50, DHC7, C212, others
7	Lion Mentari Airlines	34	B737, MD82, MD90
8	Indonesian AirAsia	15	B737, A320
9	Wing Abadi Airlines	15	MD82, DHC, MD83, DC9
10	Cardig Air	2	B737
11	Riau Airlines	7	F27, F50, BAE 146
12	Tri MG Intra Asia Airlines	5	B737, B727, LET
13	Ekspres Transportasi Antarbenua	8	F-28, B1900, CESSNA, Others
14	Manunggal Air Service	2	BAE, TRANSALL
15	Sriwijaya Air	20	B737
16	Travel Express Airlines	3	D328, B737
17	Republic Express Airlines	3	B737
18	Trigana Air Service	20	ATR72, DHC6, B737, DHC4A,Others
19	Megantara Air	2	B727, B737
20	Indonesia Air Transport	21	EC155, AS365, ATR42, F-27, Others
21	Kal Star Aviation	2	ATR 42
22	Republic Express	3	B737
23	Airfast Indonesia	19	B737, DHC6,DC-3,BAE, others
24	Asco Nusa Air	2	CESSNA, R44
25	Sri Pudjiastuti	14	CESSNA, DIAMOND, PC6, DA42
26	Aviastar Mandiri	10	BELL, DHC6, BAE, BO

Year		2009	
No.	Airline Companies	Numbers of operating Aircraft	Registered Aircraft Types
27	Dabi Air Nusantara	18	CESSNA, SD3, BELL, PA31T, C212
28	Deraya Air Taxi	0	
29	Derazona Air Service	6	BELL
30	Dirgantara Air Service	6	C212, BN2A
31	Eastindo	6	AS350, F-100, AT602
32	Gatari Air Service	8	F-28, BK-117, BELL 212
33	Intan Angka Air Service	9	BELL, SA315, MD369, AT502, Others
34	Kura-Kura Aviation	6	GA8, CESSNA
35	Mimika Air	2	PILATUS, DO28
36	National Utility Helicopter	11	EC 130, BELL, AS350
37	Nusantara Buanan Air	3	CASA 212, HUGHES369
38	Nyaman Air	2	AS350
39	Penerbangan Angkasa Semesta	2	CESSNA560, BELL407
40	Pura Wisata Baruna	4	BELL206, KINGAIR, R44, PA31
41	Sabang Merauke Raya Air Charter	4	C212, BN 2A
42	Sayap Garuda Indah	2	PAA2, PA31
43	Transwisata Prima Aviation	6	AS 332, F-100, F-28, BELL 407, BEECH
44	Travira Air	22	B737, B1900, CESSNA, DHC-8, Others
45	Sky Aviation	0	
46	Johnlin Air Transport	0	
47	Balai Kalibrasi	3	KINGAIR, TBM700, LEARJET
48	Sampoerna Air Nusantara	2	CESSNA560, BELL427

Source: DGCA, STATISTIK PERHUBUNGAN 2008, BPS 2008

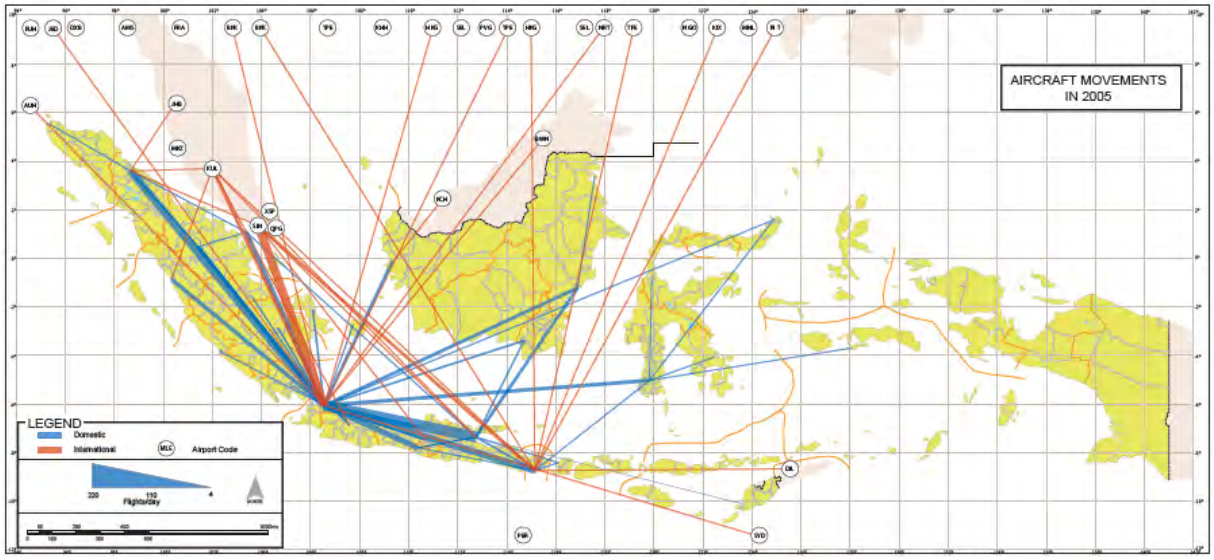
3) Regional Air Transportation Sector

The regional air transportation sector can be separated into three functional categories as shown below:

a. Inter regional / DKI Jakarta and Bali
b. Regional main city/ managed by AP-1, 2 (Surabaya, Medan, Makassar, Balikpapan and others)
c. Disaster-vulnerable area and border area/ managed by DGCA

The domestic air transport demand is highly concentrated in Jakarta SH Airport at present. SH is a major origin-destination of air travel, reflecting the prime status of the metropolitan area in Indonesia.

The next major airports are Surabaya, Bali, Medan, Makassar and Balikpapan, as the capital city in the regional area for drawing the hub and spoke. As shown in red line in Figure 4.1.32, the business gateway is DKI Jakarta while the tourism gateway is Bali for international flights. The most frequent air route is between Jakarta and Surabaya, which is 50 flights per direction per day as indicated by the blue bold line in the same figure.



Source: The Feasibility Study for the Strategic Implementation of CNS/ATM System (JICA 2008)

Figure 4.1.32 Aircraft Movements Route Network (2005)

(City-Pairs with More than 4 Movements per Day)

From the above current situations, Jakarta SH Airport plays a major role in Indonesia. In 2008, SH Airport recorded about 250 thousand aircraft movements. This means that the airport capacity will be saturated in the near future and it is necessary to construct an additional runway. The existing SH Airport is controlled by AP-2 and maintained through its own budget. In 2008, AP-2 constructed the domestic terminal building for LCC to cope with increased air traffic. Therefore, DGCA and AP-2 are considering a new airport in the DKI Jakarta region, instead of the SH Airport which is surrounded by residential areas.

On the other hand, from the national standpoint, it is necessary to improve and develop the regional airports which are still under the control of DGCA, for the disaster-vulnerable and border areas.

The "Airport Improvement and New Construction Plans (2005-2009)" presents the updated current situation as shown in Table 4.1.42. In 2008, the new Hasanuddin Airport in Makassar opened, while in Lombok and Medan, new airports will start their operation soon.

Table 4.1.42 Priority in Airport Improvement and New Construction Plans

No.	Airport	Proposed Activities	Purpose	Latest Condition (After 4 years)
1	Hasanuddin (Makassar)	Improvement of existing airport facilities	The activities are continuing the previously delayed French aid program due to the economic crisis.	The improvement program has been completed.
2	Kualanamu (Medan)	Construction of new airport	The existing Polonia Airport will be difficult to be expanded due to its location in the center of the city and the presence of an obstacle.	Construction work is still on-going.
3	Lombok Tengah	Construction of new airport	To anticipate the increase in tourism and be a alternative airport	Construction work has been completed.
4	Sorong Daratan	Construction of new airport	Replacement of the existing airport (Jefman), which is located on an island. The runway facility has been constructed by national (APBN) and regional (APBD) budget.	The construction work has been completed. At present, is still under construction of runway extension from 1,850 m to 2,000 m.
5	Sultan Babullah/Ternate	Improvement of existing airport facilities	To anticipate the increasing demand due to Ternate as a capital city of North Maluku Province.	The improvement program (runway extension) has been completed.
6	Achmad Yani (Semarang)	Improvement of existing airport facilities	To anticipate demand, including international passengers	The taxiway extension program is now continuing.
7	Sinak/Puncak Jaya	Construction of new airport	To smoothen transportation for commodities and basic goods.	Still under land preparation work.
8	Airports located in areas susceptible to disaster and boundary areas	Improvement of existing airport facilities	To smoothen transport services if disaster occurs and for national defense and safety.	DGCA will propose for the next blue book 2010-2014.

Source: Long-term development plan of DGCA, 2005, Draft RENSTRA 2010-2014

Forty-six significant Indonesian airports, known as the National Airports System (NAS) airports, are maintained as priorities. The air transportation activities by region are described in Table 4.1.43.

DKI Jakarta region has the most frequent air transport activity in terms of both domestic and international flights in Indonesia. The next region with frequent air transportation activities for domestic flights is Sumatra, and for international flights, the Bali and Nusa Tenggara regions.

Table 4.1.43 Aviation Data for NAS Airports in 2008

				Aircraft Movements		Air Passengers (000)		Air Cargo (ton)	
				Domestic	Int'l	Domestic	Int'l	Dom.	Int'l
No	Region	City	Airport	Year 2008	Year 2008	Year 2008	Year 2008	Year 2008	Year 2008
1	D.K.I. Jakarta	Jakarta	Halim Perdana K.	16,093	2,219	189	8	599	2,706
2		Cengkareng	Soekarno-Hatta	201,931	48,242	23,654	7,058	224,032	248,253
		Region Total		***218,024***	***50,461***	***23,843***	***7,066***	***224,631***	***250,959***
3	Jawa	Bandung	Husein S.	3,092	1,542	194	165	668	18
4		Semarang	Akhmad Yani	16,067	506	1,372	38	8,032	387
5		Surakarta/ Solo	Adi Sumarno	6,999	1,794	521	220	2,306	316
6		Yogyakarta	Adi Sucipto	23,206	936	2,661	91	11,552	76
7		Surabaya	Juanda	76,388	9,262	7,499	1,054	46,131	16,158
		Region Total		***125,752***	***14,040***	***12,247***	***1,569***	***68,689***	***16,955***
8	Sumatra	Banda Aceh	Sultan Iskandar	5,784	745	501	67	3,274	0.114
9		Medan	Polonia	42,019	10,384	3,371	934	30,004	4,768
10		Padang	Tabing,Minankabau	12,149	1,078	1,522	121	12,224	31
11		P. Batam	Hang Nadim	23,286	3,496	2,474		24,535	3,507
12		Tg. Pinang	Kijang	3,318		124		940	
13		Pakan Baru	SultanSyarifKasim II	17,222	2,426	1,719	96	12,677	161
14		Jambi	Sultan Thaha	6,166		670		4,417	
15		Tg. Pandan	Buluh Tumbang	2,270				915	
16		Bangka	Pangkal Pinang	7,064		791		5,325	
17		Palembang	S.M.Badaruddin	14,658	938	1,516	94	9,133	82,598
18		Bengkulu	Pd. Kemiling	4,971					
19		Tg. Karang	Raden Inten II	4,442		379		676	
		Region Total		***143,349***	***19,067***	***13,068***	***1,313***	***104,121***	***91,066***
20	Kalimantan	Pontianak	Supadio	13,863	472	1,355	31	9,351	2
21		Ketapang	Rahadi Usman	1,318		40		135	
22		Palangka Raya	Tjilik Riwut	1,412		113		830	
23		Pangkalan Bun	Iskandar	410		17		57	
24		Banjarmasin	Syamsuddin Noor	15,292	88	1,753	12	13,019	
25		Kalimaru Sbg.Al	Berau	1,246				137	
26		Tarakan	Juwata	570	0	33		412	
27		Balikpapan	Sepinggan	45,036	1,482	3,488	54	24,149	3,027
28		Samarinda	Temindung						
		Region Total		***79,147***	***2,042***	***6,799***	***97***	***48,090***	***3,029***
29	Sulawesi	Manado	Sam Ratulangi	13,392	678	1,109	47	9,743	221
30		Gorontalo	Jalaluddin	1,890		188		1,688	
31		Palu	Mutiara	5,022		440		4,166	
32		Kendari	Wolter Mongonsidi	-		-		-	
33		Makassar	Hasanuddin	48,768	522	3,329	54	32,352	57
		Region Total		***69,072***	***1,200***	***5,066***	***101***	***47,949***	***277***
34	Bali &Nusa	Denpasar	Ngurah Rai	44,689	23,879	4,143	4,203	19,519	37,503
35		Ampenan	Selaparang	16,008	1,069	972	72	5,674	45
36		Kupang	El Tari	10,691	235	723	1	4,575	
37		Maumere	Waioti	1,288		30		140	
		Region Total		***72,676***	***25,183***	***5,868***	***4,276***	***29,909***	***37,548***
38	Papua & Maluku	Ambon	Patimura	7,492	31	522		3,065	
39		Ternate	Babullah	4,070		170		521	
40		Biak	Frans Kaisepo	9,695	102	217		1,095	193
41		Sorong		5,723		225		963	
42		Merauke	Mopah	4,713		134		407	
43		Nabire	Nabire	15,703		238		6,261	
44		Manokwari	Rendani	6,090		114		11,982	
45		Jayapura	Sentani	17,174		428		21,051	
46		Jayawijaya	Wamena	22,343		140		50,209	
		Region Total		***93,003***	***133***	***2,188***	***0***	***95,554***	***193***
	Grand Total			**801,023**	**112,126**	**69,079**	**14,423**	**618,943**	**400,027**
	AP-1	**AP-2**	**DGCA**						

Source: Statistics by DGCA, AP-I, AP-II

4) Current General Issues of the Air Transportation Sector

i) Safety and Security

Deregulation of transportation has been affecting the air transportation market significantly. Hence, a lot of small and medium airlines entered the market. The air transportation tariff decreased drastically and traffic grew fast over recent years. Consequently, aviation accidents and incidents increased. In particular, there is a great concern for general aviation safety in Papua region, where aviation is often the only transport means for access to remote and isolated areas. However, air navigation infrastructure is very limited for this region. Under such circumstances, aircraft accidents are frequent.

Together with the increasing air traffic volume, the necessity of expansion of Air Navigation Services (ANS) for realizing safe and efficient air transportation systems has also increased. Moreover, ANS in Indonesia are provided by three different organizations, namely DGCA, AP-1 and AP-2. This unique system generated disharmony among air traffic controllers, resulting to poorer level of services. Therefore, DGCA, as the single authority for air transport services in the future, is challenged to implement the development of ANS.

Meanwhile, due to the terrorist attacks in the United States on 11 September 2001, states all over the world have taken extreme actions to strengthen their aviation security. In particular, Indonesia experienced six terrorist bombings from 2002 to 2009. The unlawful actions by terrorists caused tremendous damages, not only to airline businesses but also to the entire Indonesian economy. Consequently, it will take many years to recover from such grave damage. Therefore, DGCA had already implemented the enhancement of aviation security from 2005, with the cooperation of donor countries including Japan.

Preventing and decreasing aircraft accidents are the major concerns of the air transport sector. DGCA is now dealing with institutional strengthening, including human resource development, and improvement of facilities and equipment such as metal detectors and x-ray machines.

ii) Infrastructure in Depressed Area

The reduction of regional disparity is a major concern of DGCA/ MOT at the eastern region area, where air transportation infrastructure still remains to be developed. Recently, DGCA considers improving the air transportation infrastructure which consists of airport facilities such as runway, taxiway, apron and terminal building as well as the Rescue and Fire Fighting (RFF) facilities as high priority projects.

Furthermore, DGCA started to discuss the strengthening of air network including the pioneer flight in the region. A pioneer flight is intended to support the growth and development of potential regions whose existing air flights could not operate commercially. Consequently, this could boost development of the other sectors. The operation of a pioneer flight is subsidized and compensated

by the government. There were 90 pioneer flight routes connecting 81 cities within 13 provinces. These were launched in 2005 and have increased to 95 pioneer flight routes connecting 90 cities in 2009. However, a total fleet to serve the pioneer flight decreased from 30 fleet in 2005 to 19 fleet in 2009.

(4) Action Plan to Address the Issues

1) The next RPJM 2010-2014

The direction of the national policy on air transportation sector is to meet the international security and flight safety standards issued by ICAO. This aims to improve aviation safety in the region of Indonesia both during flights and while at airports.

BAPPENAS addressed the following policies and strategies to resolve previous issues stated in the next RPJM 2010-2014:

- Policy
  - i) Clear separation between the functions of regulator, operator and (airline) owners of the air transportation management,
  - ii) Improvement of capacity for airport infrastructure to improve flight safety and security,
  - iii) Compliance with the international aviation safety standards,
  - iv) Strengthening the quality and capacity of human resources in the field of air transportation,
  - v) Strengthening the regulation and institution of air transportation sector,
  - vi) Improvement of bilateral or multilateral cooperation in the field of air transportation, and
  - vii) Being the priority mode of transport for long-distance passengers (the short and medium distances are prioritized by railway and road transports).
- Strategy
  - i) Development of an integrated service system in airports,
  - ii) Development of facilities in strategic airports,
  - iii) Delegating the management of feeder airports to local government to reduce the supervision/ control gap, and the number of employees, and
  - iv) Development of airport infrastructures in the provincial/district capital.

2) The next RENSTRA 2010-2014

DGCA has addressed the following policies, strategies and priority programs to resolve previous issues stated in the next RENSTRA of 2010-2014:

- Policy

i) Compliance with the flight safety and security standards in accordance with ICAO standards,
ii) Establishment of a transparent and accountable business competition for the national aviation industry,
iii) Implementation of the institutional restructuring and regulatory reforms for the air transportation sub-sector,
iv) Implementation of the National Transportation System (SISTRANAS) and national airport system, and
v) Provision of pioneer flight services.

- Strategy

i) Air Transport Management

This strategy is directed to manage the National Transportation System in line with the strategic environmental changes, either at local or global scales, and procurement of infrastructures in disaster-vulnerable areas, remote and border areas, in order to support the integrity of the Republic of Indonesia.

ii) Air Transport Development

This strategy is directed to improve the capacity and quality of the services in the framework to provide the accessibility of air transport services to the public, either nationwide or globally.

- Priority Program

i) Opening the market for multi operators through the improvement of safety, security and services supervision and guidance to each air transport operator,
ii) Maintenance and rehabilitation of air transport infrastructures and facilities to comply with the aviation safety and security standards,
iii) Development of air transport infrastructures and facilities,
iv) Providing flight navigation facilities and air transports service facilities in small islands, mainly in the border areas,
v) Improvement of air transport human resources competencies and professionalism,
vi) Development of airports for B737 aircrafts for the provincial capital city, and development of eco-airport in anticipation towards the climate change,
vii) Development of airports in isolated and border areas, especially in remote and disaster vulnerable areas, and
viii) Complying with the air transport service's current and future demand based on the demand-capacity analysis.

3) Action Plan to Address the Issues

In order to meet world standards in the air transportation sector, the GOI had taken actions and exerted efforts to implement regulations for enhancing the safety and security of flight services to

passengers. Accordingly, the GOI launched its slogan, "3S + 1C," which means Safety-Security-Services plus Compliance.

In order to improve safety and security of flight services, the following key actions should be completed during the next RPJM 2010-2014.

a) Implementation of good governance

- Legislate restructuring of the MOT
  - Focus on the regulation
  - Designate authority to enforce the regulations
  - Separate aviation policy from other regulations
- Legislation and restructuring of the operator
  - Air navigation service providers (ANSP) to be regarded as a single institution
  - Creation of single air navigation service operator/ provider
  - ANSP restructuring
- Defining the process of planning and funding
  - To ensure the sustainability of ATM
  - To ensure DGCA's finance
  - To guarantee cost transparency and price determination

b) Improvement of operational safety and security

- Evaluate legislative and regulatory gaps using ICAO SARP, result of ICAO USOAP and other reviews, and best practices to develop applicable and sustainable safety and security programs
- Develop a system on safety management and prepare the safety manual for each airline, airport operator and ANSP
- Implement a safety culture and behavior that supports the transparent/open reporting and root causes analysis
- Develop safety and security plans, including training, certifications, licensing, and auditing
- Determine and use appropriate facilities for reporting and analysis of safety data
- Develop training programs and capabilities to identify gaps between the required skills and those performed by the staff
- Ensure that all staffs have complied to the requirements on aviation English proficiency
- Implement the exchange of experts, trainings and comparative studies
- Improve communication between the management and staff of the MOT, airlines, operator and ANSP provider.

c) Improve operation and services efficiency

- Improve the airlines' standards of services, airport operators and ANSP through the integrated management system in each entity
- Organize service-based framework to enable the supervision on the performance that has been achieved by MOT, airline, airport and ANSP
- Reduce the impact of aviation on the environment by improving the quality, integrity and access to all static or dynamic aeronautics data

- Establish a national aviation planning committee which consists of representatives from the MOT, airport operator and ANSP provider, in order to establish an agreement on the changes of services, process and technology
- Improve airport capacity, including arrival and departure processes.

d) Accelerate the implementation of technology

- Perform a review on landing strip and taxiway deficiencies, and the improvement programs
- Perform a review to identify airline and airport safety improvements
- Perform a review to improve the communication infrastructure from land-to-air and land-to-land
- Perform a review on flight observations to identify the improvement of alerts on the en-route and terminal phases
- Utilize the alternative approaches in obtaining investment for infrastructure and services delivery
- Identify regional cooperation projects for various types of infrastructures

Table 4.1.44 Action Plan on Air Transportation Sector

	Issues	Action Plan
1. Strong Economic Growth		
1.1 Building Strong Backbone Infrastructure (DKI Jakarta)		
	Insufficient Air Transportation Service 1) Insufficient airport facility 2) Insufficient air network 3) Incomplete integration with other transportation sub-sectors	 a) Improvement of airport facility b) Development of air network c) Strengthening of access from airport to consider for land transportation
1.2 Upgrading Infrastructure in the Main Cities		
	Incomplete Air Network 1) Insufficient airport facility 2) Insufficient air network 3) Incomplete integration with other transportation sub-sectors	 a) Improvement of airport facility b) Development of air network c) Strengthening of access from airport to consider for land transportation
2. Poverty Reduction		
2.1 Provision of Basic Infrastructure Services in Depressed Areas		
	Regional Disparity of Air Transportation Service 1) Regional disparity of airport 2) Regional disparity of air network	 a) Development/ Improvement for airport b) Strengthening of air network
3. General issue and Nation wide		
	1) Vulnerable institution/ organization 2) Incident and accident of air transportation 3) Inefficient air services 3) Lack of experience on new technology	a) Restructuring of institution b) Improvement of safety and security c) Improvement of air services d) Accelerate the implementation of technology

Source: JICA Study Team

Table 4.1.45 Region-wise Action Plan for Air Transportation Infrastructure Development

Region	1. Building Strong Backbone Infrastructure	2. Upgrading Infrastructure in the Main Cities	3. Provision of Basic Infrastructure Service in Depressed Areas
Jakarta	(1) Improvement/ Development of airport in the Metropolitan area	---	---
Java	(1) Improvement/ Development of airport	(1) Improvement/ Development of airport	---
Sumatra	---	(1) Improvement/ Development of airport	---

Region	1. Building Strong Backbone Infrastructure	2. Upgrading Infrastructure in the Main Cities	3. Provision of Basic Infrastructure Service in Depressed Areas
Kalimantan	(1) Improvement of airport	(1) Improvement/ Development of airport	(1) Improvement of airport
Sulawesi	(1) Improvement/ Development of airport	(1) Improvement/ Development of airport	(1) Improvement/ Development of airport
Bali & Nusa Tenggara and Maluku & Papua	---	---	(1) Improvement/ Development of airport (2) Development of pioneer flight network
Nation wide	(1) Improvement of aviation safety (ILS, RFF) (2) Enhancement of aviation security (3) Development of new CNS/ATM		

Source: JICA Study Team

The suggested criteria for the selection of priority projects in the air transportation sub-sector are the same as those in the transportation sector in general. Such projects should focus on the following six viewpoints;

i) To enhance aviation safety and security

- Improvement of aviation safety ; Development of new CNS/ATM, Procurement of Landing Facility, Procurement of Rescue and Fire Fighting, Establishment of Single ANS provider and others)
- Development of aviation security (Procurement of security equipment and facilities)

ii) To support the national economy as a gateway or international hub airport

- Improvement of Soekarno Hatta Airport (Current gateway airport)
- Development of DKI Jakarta Metropolitan Area Airport

iii) To support regional economy as a strategic airport

- Improvement of Halim Airport, Surabaya Airport, Bandung Airport, Semarang Airport, Solo Airport, Jambi Airport, Pekanbaru Airport, Palembang Airport, Padang Airport, Tanjung Pinang Airport, Pangkal Pinang Airport, Sepinggan Airport, Banjarmasin Airport, Putussibau Airport, Tarakan Airport, Manado Airport, Kendari Airport, Denpasar Airport
- Development of New Kertajati Airport, New Panimbang Banten Airport, New Yogyakarta Airport, New Samarinda Airport

iv) To support depressed areas

- Improvement of Dumatuban Airport, Seram Airport, Sorong Airport, Temate Airport, Wamena Airport, Sentani Airport
- Development of New Waghete Airport
- Development of pioneer flight network
- Procurement of aircraft for pioneer flight

v) To preserve environment

-Establishment of environmentally-friendly airport (Eco-airport)