No. 36

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

CENTER FOR INDUSTRIAL STANDARDIZATION, MINISTRY OF INDUSTRY
THE REPUBLIC OF INDONESIA

STUDY
ON
MASTER PLAN OF INDUSTRIAL STANDARDIZATION AND PROMOTION OF QUALITY CONTROL
IN
THE REPUBLIC OF INDONESIA

AUGUST 1995

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JAPANESE STANDARDS ASSOCIATION

TOKYO, JAPAN

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Preface

In response to a request from the Government of the Republic of Indonesia, the Government of Japan decided to conduct the Study on Master Plan for Industrial Standardization and the Promotion of Quality Control.

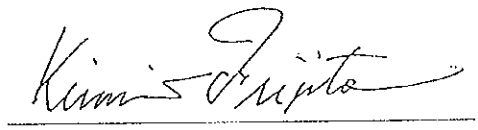
JICA sent a study team, led by Mr. Tetsuo Inooka of UNICO International Corporation (UNICO) and organized by UNICO and Japanese Standards Association to the Republic of Indonesia three times from September 1994 to June 1995.

The team held discussions with the officials concerned of the Government of the Republic of Indonesia, and conducted related field surveys. After returning to Japan, the team conducted further studies and compiled the final results in this report.

I hope this report will contribute to the promotion of the plan and to the enhancement of friendly relations between our two countries.

I wish to express my sincere appreciation to the officials concerned of the Government of the Republic of Indonesia for their close cooperation throughout the study.

August 1995



Kimio Fujita
President
Japan International Cooperation Agency

August 1995

Mr. Kimio Fujita

President
Japan International Cooperation Agency
Tokyo, Japan

Dear Mr. Fujita

Letter of Transmittal

We are pleased to submit to you the final report on the Study on Master Plan of Industrial Standardization and Promotion of Quality Control in the Republic of Indonesia. The report contains analysis of the present status and issues of industrial standardization and quality control in the industrial sector, particular of which are subsectors of automotive components, agricultural machinery, electric appliances and machinery, electronic appliances, and ceramic building materials. The report also contains analysis of present situation and issues on national standardization, and the program recommendation on industrial standardization and promotion of quality control.

The industrial standardization is not successfully disseminated and established among its industry at present, despite the intensive efforts of the relevant government organizations. The quality control practice, which is fairly common among the large and medium sized companies, is still insufficient in that it is not directly linked with improvement of operational efficiency. Further, the dissemination of quality control among SMEs is still weak.

We recommended ten programs in the report. These programs are categorized into two groups in terms of their integrated implementation. One of the program groups serves to encourage increased involvement of the industry in standard development, and dissemination of standardization and quality control. Another is that which ensure public confidence on standardization project and certification system through complete implementation, and a realization of international mutual recognition of the certification system.

Indonesian side has showed a significant interest in the implementation of these programs. With the implementation of the recommended programs, we are certain that these will contribute significantly to the improvement in efficiency and competitiveness of Indonesian industry, promotion of inter and intra industry linkages, and increase of

international confidence in Indonesian products.

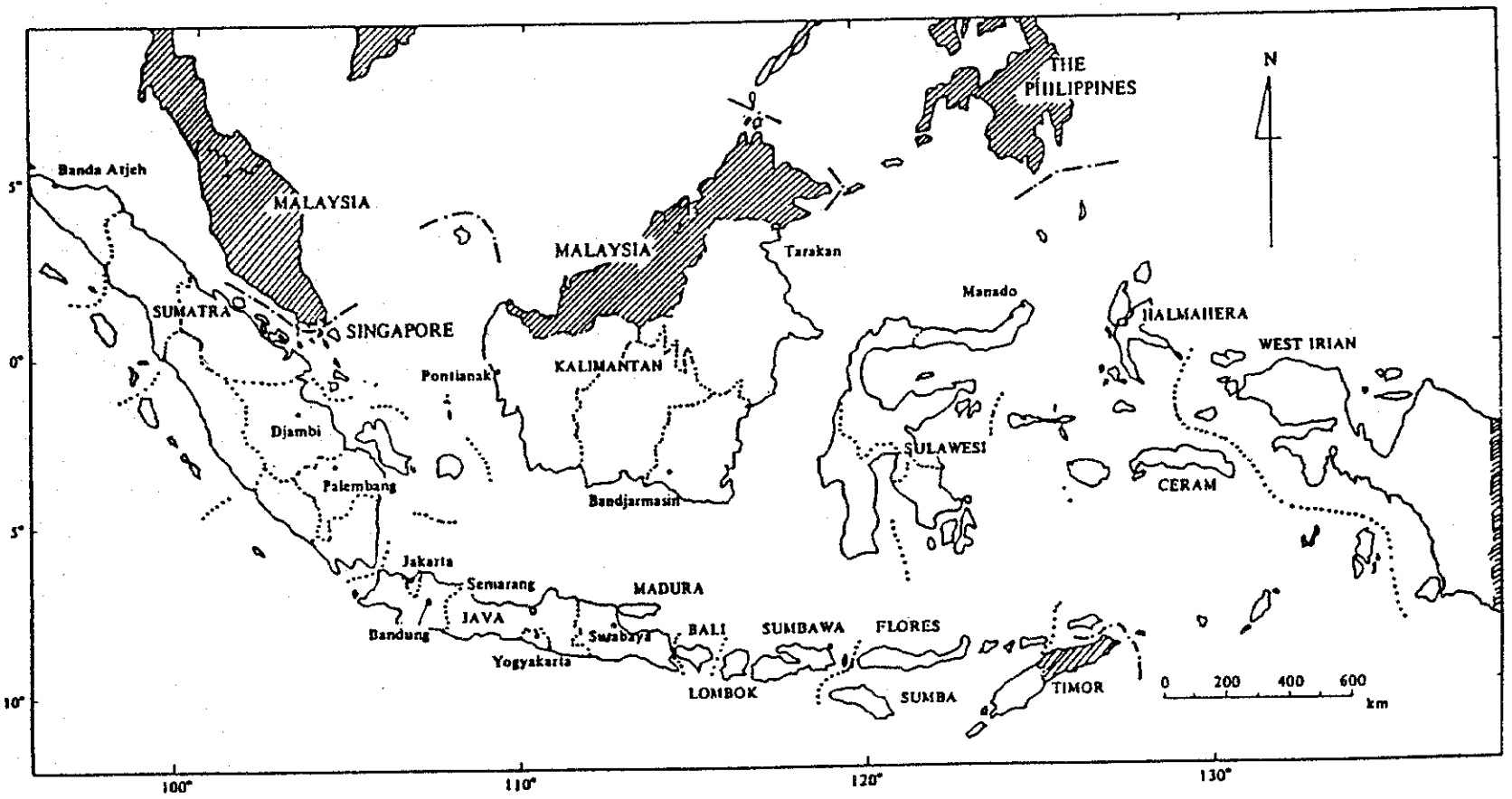
We wish to take this opportunity to express our sincere gratitude to your Agency, the Ministry of Foreign Affairs, and Ministry of International Trade and Industry for valuable advice and support provided on behalf of this study. We also wish to express our deep gratitude to PUSTAN (Center for Industrial Standardization, MOI) and other concerned authorities in the Republic of Indonesia for their close cooperation and substantial assistance rendered to us during the performance of this study.

Very truly yours,

Tetsuo Inooka

Team Leader, Study on
Master Plan of Industrial Standardization
and Promotion of Quality Control
in the Republic of Indonesia

THE REPUBLIC OF INDONESIA



(Source) : Atlas Indonesia, Yayasan Dwidjendra, 1978, Denpasar

Abbreviation (*)

AARD	Agency for Agricultural Research and Development
	(Bandang Penelitian dan Pengembangan Pertanian Departmen Pertanian)
AAS	Atomic Absorption Spectrometer
ABB	Asea Brown Boveri
ABI	Association of Indonesian Internal Combustion Engine Manufacturers
	(Asosiasi Motor Bakar Indonesia)
AC/DC	Alternating Current/Direct Current
AIPSI	Association of Indonesian Pump Industries
	(Asosiasi Industri Pompa Seluruh Indonesia)
ALSINTANI	Association of Indonesian Agricultural Machinery
	(Asosiasi Perusahaan Alat dan Mesin Pertanian Indonesia)
AMDAL	Environmental Impact Assessment
AOTS	The Association for Overseas Technical Scholarship
API	American Petroleum Institute
APLINDO	Association of Indonesian Metal Foundry
	(Asosiasi Industri Pengecoran Logam Indonesia)
APPI	Association of Electrical Industries of Indonesia
	(Asosiasi Produsen Peraltan Listrik Indonesia)
AS	Australian Standard
ASAKI	Indonesian Ceramic Industries Association
	(Asosiasi Aneka Industri Keramik Indonesia)
ASEAN	Association of South East Asian Nations
ASME	American Society of Mechanical Engineers
ASPEP	Association of Indonesian Metalwork and Machinery
	(Asosiasi Pengerjaan Logam dan Permesinan)
ASTM	American Society for Testing and Materials
AWS	American Welding Society
BAKOSURTANAL	The National Coordinating Agency for Survey and Mapping
	(Badan Koordinasi Survey dan Pemetaan National)
BAPEDAL	Environmental Impact Management Agency
BAPPENAS	National Planning Agency
	(Badan Perencanaan Pembangunan Nasional)
BATAN	Agency for National Atomic Energy
	(Badan Tenage Atom National)

(*) Descriptions in parentheses show the names in Indonesian.

BBIK	Institute for Research and Development of Chemical Industries: IRDCI
	(Balai Basar Penelitian Pengambangan Industri Kimia)
BBLM	Institute for Research and Development of Metal and Machinery Industries: IRDMMI
	(Balai Basar Penelitian dan Pengembangan Industri Logan dan Mesin)
BBK	Institute for Research and Development of Ceramic Industries: IRDCRI
	(Balai Basar Penelitian dan Pengembangan Industri Keramik)
BBP ALSINTAN	Center for Development of Agricultural Engineering
	(Balai Basar Pengenbangan Alat dan Mesin Pertanian)
BKPM	Investment Coordinating Board
	(Badan Koordinasi Penaman Modal)
BPBJ	Materials Research and Testing Institute: MRTI
	(Balai Penelitian Bahan DKI Jakarta)
BPCs	Sampling Organization for Export Inspection of MOT
BPIS	Agency of Strategic Industry Management
BPPI	Agency for Industrial Research and Development
	(Balai Penelitian dan Pengembangan Industri)
BPPT	Agency for Assessment and Application of Technology
	(Badan Pengkajian dan Penerapan)
BPS	Central Bureau of Statistics
	(Biro Pusat Statistik)
BS	British Standards
B4T	Institute for Research & Development of Material & Technical Product Industries: IRDMTP
	(Balai Basar Penelitian dan Pengembangan Industri Bahan dan Barang Teknik)
CAD/CAM	Computer Aided Design/Computer Aided Manufacturing International Inc.
CD	Compact Disk
CE Meter	Carbon Equivalent Meter
CICA	Ceramic Industry Club of ASEAN
CIF	Cost, Insurance and Freight
CKD	Completely Knocked Down
CODEX	Codex Alimentarius Commission
CRT	Cathode Ray Tube
CSA	Canadian Standard Association
CTQC	The Center of Testing and Quality Control
	(Pusat Pengujan Mutu Barang : PPMB)
CWQC	Company Wide Quality Control
DG	Directorate General
DIN	Deutches Institut Fur Normung

DOM	Directorate of Metrology
	(Direktorat Metrologi)
DRN	National Research Council
DSN	Standardization Council of Indonesia
	(Dewan Standardisasi Nasional)
DTA/TGA	Differential Thermal Analyzer/Thermogravimetry Apparatus
EC	European Community
EIJA	Standards of Electronic Industries Association of Japan
EN	European Standards
EPTE	Export Oriented Production Entrepots
ESCAP	Economic and Social Commission for Asia and Pacific
FDD	Floppy Disk Drive
FOB	Free on Board
FY	Fiscal Year
GAIKINDO	Automobile Industry Association
GAMMA	Federation of Indonesian Metal Work & Machinery Industries
	(Gabungan Asosiasi Perusahaan Pengerjaan Logam Dan Mesin Indonesia)
GDP	Gross Domestic Product
GE	General Electric Co.
GIAMM	Indonesian Automotive Parts and Components Industries Association
	(Gabungan Industri Alat–Alat Mobil dan Motor)
GNP	Gross National Product
HDD	Hard Disk Drive
IATO	Automobile Technology Association
IEC	International Electrotechnical Commission
IECQ	The IEC Quality Assessment for Electric Components
IETC	Indonesian Export Training Center
	(Pusat Pelatihan Ekspor Indonesia)
IFEAT	International Federation of Essential Oils and Aroma Trades
ILAC	International Laboratory Accreditation Committee
IPO	International Procurement Office
IR	Infra–red
IRA	International Rubber Association
IRDCI	Institute for Research and Development of Chemical Industries
	(Balai Basar Penelitian Pengambangan Industri Kimia : BBIK)
IRDCRI	Institute for Research and Development of Ceramic Industries
	(Balai Basar Penelitian dan Pengembangan Industri Keramik : BBK)

IRDMMI	Institute for Research and Development of Metal and Machinery Industries
	(Balai Basar Penelitian dan Pengembangan Industri Logan dan Mesin : BBLM)
IRDMTP	Institute for Research and Development of Material and Technical Product Industries
	(Balai Basar Penelitian dan Pengembangan Industri Bahan dan Barang Teknik : B4T)
ISA	Instrument Society at America
ISO	International Organization for Standardization
ITQC	Institute for Total Quality Control
	(Lambaga Pengendalian Mutu Terpadu)
JASO	Japanese Automobile Standards Organization
JETRO	Japan External Trade Organization
JICA	Japan International Cooperation Agency
JIS	Japanese Industrial Standards
JNK	National Calibration Network
	(Jaringan Nasional Kalibrasi)
JODC	Japan Overseas Development Corporation
JSA	Japanese Standards Association
KAIT	Technical Accreditation Committee
KAN	National accreditation Committee
KEMA	N.V. tot Keuring van Electrotechnische Mateialen, NETHERLANDS
KIM-LIPI	Pusalitbang Kalibrasi, Instrumentasi & Metrologi
KVA	Kilo-Voltage Ampere
LAPAN	The National Aero Space Institute
	(Lembaga Penerbangan dan Antariksa National)
LHA	Laporan Hasil Analisa
LIPI	Indonesian Institute of Science
	(Lembaga Ilmu Pengetahuan Indonesia)
LKP	Laporan Kebenaran Pemeriksaan
LMK	Electrical Power Research Institute
	(Pusat Penylidikan Masalah Keelistrikan)
LNG	Liquid Natural Gas
LPMs	Local Laboratories of MOT
LSI	Large Scale Integration
MCB	Miniture Circuit Braker
MIDC	Metal Industrial Development Center
MIG	Metal inert gas welding
MITI	Ministry of International Trade and Industry, Japan

MOI	Ministry of Industry
	(Departemen Perindustrian)
MOT	Ministry of Trade
	(Departemen Perdagangan)
MRTI	Materials Research and Testing Institute
	(Balai Penelitian Bahan DKI Jakarta: BPBJ)
NAFTA	North Atlantic Free Trade Area
NATA	National Association of Testing Authorities
NBN	Institut Belge de Normalisation
	(Norm Belge)
NIEs	Newly Industrialized Economies
NIST	National Institute of Standard and Technology
OEM	Original Equipment Manufacturer/Manufacturing
OIML	Organization Internationale de Metrologie Lêgale
OJT	On the Job Training
PARPOSTEL	Ministry of Tourism, Post & Telecommunications
PEB	Pemberitahuan Exsport Barang
PH-DSN	Executive Council of DSN
PH-KAN	Executive Council of KAN
PJP	Long Term (25 years) Development Plan
PJU	Ministry of Public Works
	(Pekerjaan Umum)
PLN	State Electricity Corporation
	(Perusahaan Umum Listrik Negara)
PMA	Penanamah Modal Asing
PMMI	Indonesian Quality Management Association
	(Perhimpunan Manajeman Mutu Indonesia)
PPEI	Indonesian Export Training Centre
	(Pusat Pelatihan Ekspor Indonesia)
PPMB	The Center of Testing and Quality Control : CTQC
	(Pusat Pengujan Mutu Barang)
PROKASIH	Clean River Program
PT	Perseroan Terbatas
PTO	Power Take-out
PUSPIPTEK	Science and Technology Development Center
PUSTAN	Center for Industrial Standardization
	(Pusat Standardisasi Industri)

QC	Quality Control
R & D	Research and Development
RDE	Research Development and Engineering Services
REPELITA	5 Years Development Plan
	(Rencana Pembangunan Lime Tahunan)
RIHS	Research Institute for Human Settlement
	(Pusat Penelitian dan Pengembangan Pemukiman)
RNAM	Regional Network for Agricultural Machinery
SEM	Scanning Electro Microscope
SGS	Societe General de Surveillance
SII	Standards of MOI
SIR	Standards of MOT
SIRIM	Standards and Industrial Research Institute of Malaysia
SISIR	Singapore Institute of Standards & Industrial Research
SITC	Standard International Trade Classification
SKD	Semi-Knocked Down
SLI	Standar Ketenagalistrikan
SM	Sertifikat Mute
SME	Small and Medium Scale Enterprise
SNI	National Standard of Indonesia
	(Standar Nasional Indonesia)
SP	Ministry of Commerce Standards
SPCC	Cold-rolled Steel Product
SPCN	Ministry of Mines and Energy
SPLN	PLN Standard
SPM	Surat Pernyataan Mutu
SQC	Statistical Quality Control
SRQA	Sucofindo Register for Quality Assurance
SS	Singapore Standards
SSN	National Standardization System
S/W	Scope of Work
TC	Technical Committee
TELEKOM	Telekomunikasi Indonesia
TIG	Tungsten Inert Gas Welding
TKSI	Steering Committee
TQC	Total Quality Control
TV	Television

UL	Underwriters' Laboratories
U.K.	United Kingdom
U.S.	United State of America
VCR	Video Cassette Tape Recorder
WG	Working Group
YDNI	Yayasan Dana Narmalisasi Indonesia

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1 Background, Objective and Scope of the Study

1.1 Background and Objective of the Study

The Republic of Indonesia started its second long-term development plan (PJP II) in 1994, and will end in the year 2018. The first PJP (25 years from 1969 through 1993) is considered to serve as a stage in building the foundation towards achieving the country's self-reliance in the economic development process. On the other hand, PJP II is positioned to serve as blueprint for the take-off period. During this period, all efforts will be mobilized to realize the goal of self-reliance.

In the industrial area, industrialization and lesser dependence on oil shall be emphasized, with the manufacturing sector serving as the core of development.

REPELITA VI, the first five-year plan under PJP II, which commenced in 1994, sets forth the objective of industrial development in "the restructured and soundly established industrial sector." This is in recognition of the strong and modernized industrial sector with the ability to promote an independent and reliable economy, which can only be materialized through a powerful technological capability and reliable economic system. Promotion of industrial standardization, and quality control is one of the essential factors which contributes towards the achievement of a powerful technological capability.

Yet, the standardization system in Indonesia is in the process of restructuring, and is weak to fully meet such industrial development needs.

The standardization has formerly been undertaken separately by individual ministries and agencies. It is now being reorganized into the system led by DSN. Moreover PUSTAN the Ministry of Industry, which has operated SII standards accounting for approximately 80% of standards in the country, is also in the process of reform.

The development of standards will increasingly be pursued in view of harmonization with international standards, in order to meet the needs of industries that are closely linked to the international market. At the same time, efforts to encourage participation of industries in the standards development should be made, which is currently led mainly by government organizations, thus allowing the formulation of standards which will reflect the levels of technology in the country.

Similarly, the development of the certification and accreditation scheme essential in the dissemination of standards is still at the restructuring stage. In particular, the accreditation scheme for organizations and personnel responsible for certification is largely at the preparation stage. Also, the development and reinforcement of testing and inspection organizations are urgent matters to contend with. Further, manpower required

for the promotion of standardization, quality control, testing, and inspection is in short supply.

In total, while the enhancement of industrial standardization and quality promotion in Indonesia are called for, they are faced with diverse problems that cannot be overcome with makeshift improvements on a case-by-case basis. For this reason, the formulation of a master plan for industrial standardization and quality control promotion at this stage of development will certainly play an significant role in its fruitful development.

Under such circumstances, given the informal request from the Government of Indonesia to the Government of Japan for a Study, JICA sent a study team to Indonesia for the selection and verification of projects in September 1993, which discussed the details of the request. Based on the result, JICA conducted a preliminary study in December 1993 to confirm the contents of the request and discuss study items. In March 1994, the preparatory study team visited the country to discuss and agree on the contents of the full-scale study on the basis of the results of the preliminary study, leading to the signing of the Scope of Work (S/W) of the Master Plan Study on Industrial Standardization and Quality Control Promotion with the Indonesian Government.

Based on the Scope of Work, JICA sent a study team consisting of UNICO International Corporation as its leader organization, and Japanese Standards Association as the member organization. This report compiles the results of the Study conducted by the team.

Likewise, according to the Scope of Work, the objective of the present study is to formulate a master plan for the enhancement of the industrial standardization system in Indonesia, thereby improving the quality of the country's industrial products, and contributing to industrial development and export promotion.

1.2 Scope of the Study

The scope of the Study is defined in the Scope of Work (S/W) which has been agreed between the Indonesian Government and the Preparatory Study Team of JICA on March 28th, 1994. The scope includes the following items:

1. To study background and relevant conditions
   1.1 Overall economic situation
   1.2 Present situation of industry

1.3 General status of industrial standardization, quality control, accreditation, certification, and testing and inspection
1.4 Export conditions for industrial products
1.5 Government policies, laws and regulations for the development of industry

2. To study present situation of standardization, quality control, accreditation, certification and testing and inspection, and to identify their problems
2.1 Government policies, laws and regulations
2.2 Execution system and administrative mechanism
2.3 Administrative organizations and their functions
2.4 Testing and inspection facilities, equipment and personnel
2.5 Accreditation and certification process
2.6 Testing and calibration process
2.7 Education and training on standardization, quality control, accreditation, certification and testing and inspection
2.8 Standardization and quality control in the industries

3 To formulate a master plan for the development of industrial standardization and the promotion of quality control
3.1 Institutional and technical aspects of national standardization activities[1)]
3.2.1 Overall recommendations to national standardization activities
3.2.2 Harmonization of national standards with international standards
3.2.3 Dissemination of national standards to the industries
3.2.4 Consolidation of national certification and accreditation scheme
3.2.5 Introduction of quality management system to the industries
3.2.6 Enforcement of certification and testing and inspection activities
3.2.7 Development of human resources and technology transfer
3.3 Expected effect after the master plan is formulated
3.4 Tentative schedule of implementation

The Study covers the industrial sector. The following industrial subsectors are focused on, according to the Minutes of Meeting on the S/W for the Study:

1) Electric appliances and machinery
2) Electronic appliances
3) Automotive components

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1) The following numbering system is based on the S/W.

4) Agricultural machinery
5) Ceramic building materials

2 General Aspects of Indonesian Economy and its Economic Development

This chapter describes general profiles of Indonesia, economic conditions, directions of economic development programs and policies, and the administration system, as the basis of understanding the structure and development direction of the industrial sector.

2.1 General Profiles of Indonesia

2.1.1 Land and population

The Republic of Indonesia has land area of 1,920,000 square kilometers and consists of approximately 13,700 islands, 3,500 of which people reside. The longitudinal territory covers 5,100 km which is close to that of the North American Continent or the European Continent (Chart 2-1).

The population is approximately 179 million (as of October 1990), which account for almost 90% of the combined total of ASEAN nations, South Korea, Taiwan and Hong Kong. The rate of population increase is 1.97% per annum between 1980 and 1990, and is on a declining trend compared to 2.32% in the 1970s.

Indonesia is a nation composed of many races, each of which has its own language and culture, but Indonesian is used as the official language even in for daily life.

Population is unevenly distributed with 60% of total population residing in Java island (including adjacent at northeastern part Madura island) which has a land area of 130,000 square kilometers comprising 7% of total land area. In Java island, there are 4 major cities including the national capital of Jakarta with a population of about 8 million, Surabaya and Bandung having 2 million population each, and Semarang with some 1 million population. In Java island alone, more than 10 million people are unemployed or underemployed, and can become a source of low-cost labor force as well as a huge potential market.

2.1.2 Educational system

In the previous Indonesian educational system, compulsory education was limited to elementary schools. In 1994, it was extended to 9 years covering secondary schools that include industrial technical and agricultural vocational schools. Agricultural schools are under the jurisdiction of the Ministry of Agriculture rather than the Ministry of Education and Culture. In addition, there are (private) elementary and secondary schools under the

Chart 2-1 Major Economic Indicators in ASEAN Countries (*) (1993)

	Unit	Indonesia	Malaysia	Philippines	Singapore	Thailand	Total
1. Land Area	'000 sq.km	1,948	329	300	0.6	513	3,091
2. Population							
1) Gross Population (Mid-year)	million	189.14	19.25	65.65	2.93 1)	58.58	335.55
2) Population Density	persons/'000 sq.km	97	59	219	4,883	114	109
3. GDP							
1) GDP	US$ billion	142.8	64.4	54.1	55.1	123.4	439.8
2) Per Capita GDP	US$	755	3,447	824	18,805	2,106	1,311
3) Percent of GDP by Main Economic Sector	%						
– Agriculture, Forestry and Fishery		17.6	15.8	21.5 1)	n.a. *)	11.9 2)	
– Mining, Quarrying and Manufacturing		41.6	42.0	33.6 1)	27.6	36.4 2)	
– Services		40.8	42.2	41.3 1)	44.8	51.7 2)	
4. External Trade							
– Exports (FOB)	US$ million	36,843	47,080	11,375	73,940	37,111	206,349
% of total to:							
US		14.2	20.3	38.4	20.3	21.6	
Japan		30.3	13.0	16.0	7.5	17.0	
Singapore		9.2	21.7	n.a. *)	–	12.0	
– Imports (CIF)	US$ million	28,333	45,552	17,597	85,161	46,063	222,706
% of total from:							
US		11.5	17.0	20.0	16.2	11.7	
Japan		22.1	27.5	22.9	21.9	30.3	
Singapore		6.3	15.3	5.6	–	6.4	
5. Exchange Rate	Nat'l Currency/US$	2,212	2.5578	25.732	1.4607	25.074	

Notes: (*) Excluding Brunei
1) 1994
2) 1992
*) Not Available

Source: WEIS (World Economic Information Service), "The World 1995"

jurisdiction of the Ministry of Religion. In particular, these account for 44% of total number of students in secondary schools.

The school attendance rate in elementary education reached 99.6% in 1987, but some 30% leave school before completion and the ratio of students going to secondary school has been at a level of about 65%.

The number of graduates from technical colleges (holders of Ingenior) is about 1,500 per year.

2.2 Economic Aspects

2.2.1 Gross Domestic Product (GDP) and current industrial structure

The GDP in 1992 was recorded at Rp. 260 billion (or Rp. 131 billion in 1983 prices[1]), which is Rp. 1,413,500 per Capita. It was equivalent to US$ 128,200 million and US$ 695 per Capita, with conversion rate Rp. 2,033/US $ (the rate prevailing in mid-1992).

The GDP in 1993 expressed in 1983 constant prices was composed of 20.8% share from industrial sector, 17.6% from agriculture and fisheries, and 14% from mining sector. These three sectors accounted for 52.4% of the GDP (Chart 2-2).

Chart 2-2 Gross Domestic Product by Industrial Origin

(Unit: Billion Rp at 1983 Constant Market Prices)

Industrial Origin	1985	1991	1992	1993
1. Agriculture, Livestock, Forestry and Fisheries	19,300.0	22,663.1	24,139.2	24,512.0
2. Mining and Quarrying	15,480.4	19,321.7	18,993.2	19,587.6
3. Manufacturing Industries	13,430.5	24,481.6	26,856.1	29,035.2
4. Electricity, Gas and Water Supply	360.9	842.8	928.2	1,021.6
5. Construction	4,508.0	7,475.0	8,171.0	9,089.4
6. Trade, Hotels and Restaurants	12,398.6	19,606.1	21,103.1	23,113.6
7. Transportation and Communications	4,487.0	6,869.4	7,595.0	8,418.3
8. Banking and Other Financial Intermediaries	3,020.3	5,535.1	6,249.2	10,404.3
9. Ownership of Dwellings	2,461.0	3,119.7	3,249.3	n.a.
10. Public Administration and Defense	6,455.1	9,052.1	9,320.0	9,508.8
11. Services	3,180.2	4,214.5	4,497.3	4,880.0
12. Gross Domestic Product	85,018.9	123,181.1	131,101.6	139,570.8
13. Gross Domestic Product non Petroleum		100,194.0	108,528.2	n.a.

Source: Attached Chart 2.4

[1] Rp. 139.6 billion in 1993 at 1983 prices.

2.2.1.1 Economic growth

In the 1970s, the Indonesian economy showed relatively high growth due to stable oil revenues. In the 1980s, growth slowed down due to the decline in crude oil prices. Until promotion of the structural conversion to non-oil and gas sectors leading to the resumption of growth in the late 1980s.

Nevertheless, the economy maintained a growth rate of more than 5% throughout the period, with an estimated average growth rate during 25 years of the PJP I program being 6.8%. The growth rate of some 7% was estimated to have been achieved during the recent REPELITA V period.

2.2.1.2 Changes in industrial structure

The most remarkable change in industrial structure is a relative decline of the agricultural sector, rapid growth of the industrial sector and a deceleration of the petroleum and gas sector. In other words, the economy has successfully accomplished rapid industrialization while becoming less dependent upon the oil sector.

The share of the agricultural sector in GDP declined from 31% in the early 80s to 18% in 1993. Nevertheless, approximately 70% of population still reside in rural areas, and 60% of rural population are engaged in agriculture.

The share of the industrial sector in GDP rose appreciably in the 1980s, reaching 12-13% in the early 80s. In 1991 it exceeded 21%.

2.2.1.3 Change in investment

Private investment has increased conspicuously in 1994 with the investment value during the first half of the year being almost equivalent to that of the previous year. Foreign investment has accounted for about 30-40% of the total investment on the average in the past three years. The number of foreign investment projects remain almost unchanged compared to the first half of the previous year, but domestic investment increased in the entire previous year. The manufacturing sector accounted for 88% of the total investment, with the investment on the subsectors of pulp and paper[2], food processing and metal products being the major ones.

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[2] The investment on the pulp and paper subsector includes that of a big project invested by Taiwan, but the investment on the subsector remains to be overwhelmingly big compared to others even, despite the exclusion of said investment.

2.3 Current Economic Development Plan and Basic Policy Direction

2.3.1 Background

Indonesia's economic development plan consists of REPELITA (5-year economic plan) which sets forth medium-term policy objectives (or basic policy for economic operation), and 25-year PJP (long term development program) which envisages long term visions. Actual government activities are undertaken based on the national budget compiled each fiscal year[3] in accordance to these two plans.

PJP I which has a planning period of 25 years, started in 1969 and ended in 1993. During the period, REPELITA I to V were undertaken. In 1994, PJP II was launched and is expected to last until 2018 based on which REPELITA VI (between 1994 and 1998) has been ongoing.

2.3.2 PJP II (Second Long Term Development Program)

The previous PJP I period is considered as a preparation stage in the Indonesian economic development process in building the foundation for taking off towards economic self-reliance. The PJP II period meanwhile, is defined to involve the take-off process. The plan calls for mobilization of all the efforts toward the goal of self-reliance, while simultaneously fulfilling the objectives of growth, fairness and stability in the process.

During this period, the plan sets the target economic growth rates of 6.2% in REPELITA VI and 8.7% in REPELITA X, averaging 7% throughout the period (6.8% during the PJP I period). The plan also aims to achieve a quadruple of GDP per capita[4].

Sector-wise, continued industrialization and less dependence upon the oil sector are emphasized. While the agricultural sector is targeted to grow at 3% in real terms, high growth rates of 9% is set for the manufacturing industry, and 10% for the non-petroleum and non-gas manufacturing sector. As a result, the share of the agricultural sector is expected to be less than 10% in the final stage of PJP II, while that of the manufacturing sector to exceed 30%[5].

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3) Financial year starts from April to March next year.

4) Based on the actual income of $650 in the final year of PJP I, the target income level is $2,600. The present income level of Malaysia is slightly more than $2,000.

5) The share of the manufacturing sector in South Korea and Taiwan is 29% and 34% respectively in 1990. It appears that the plan intends to achieve the same level of industrialization in these countries.

2.3.3 REPELITA VI (6th Five-Year Plan)

2.3.3.1 Evaluation of programs under REPELITA V and remaining issues

While programs under REPELITA V have basically achieved their targets, several issues remain to be resolved for future economic development:

(1) The industrial sector failed to keep pace with the rapid development of the financial sector, which has been encouraged through financial liberalization and deregulation, and massive inflow of foreign capital in response to the improved investment climate. The economy has overheated as a result, and when it normalized, large amounts of non-performing assets have been created in the financial sector. To overcome the situation, the industrial sector needs to improve its productivity.

(2) As industrialization and less dependence on oil has been progressing steadfastly, the industrial base still rests in the light industry and supporting industries which yet to be developed.

(3) In terms of employment structure, the agricultural sector still accounts for a large portion, and the underemployment rate is fairly high.

(4) Private saving remains at a relatively low level, increasing dependency on foreign financial sources for private funds. It is important to increase private savings through the rise in personal income.

2.3.3.2 Goals of REPELITA VI and major issues

(1) Growth target

The plan envisages economic growth of 6.2% per annum over the five-year period.

The major engine for economic growth will be the manufacturing sector with a target growth rate of 9.4%[6], compared to 3.4% of the agricultural sector. As a result, the percentage share of the manufacturing sector in GDP by the end of the plan period will rise to 24.1% (21.3% for the non-oil/gas sector), which is comparable to that of Thailand (26%) and Malaysia (27%) in 1990.

As for the employment structure, the agricultural sector will continue to play an important role as it accounts for 48.2% of total, compared to 12.6% by the manufacturing sector. At the end of the plan period, these shares are forecasted to change to 44.0% and 14.3%, respectively.

(2) Issues related to economic development

REPELITA VI marks the first phase of the take-off period aimed at achieving self-reliance of the economy under PJP II, and sets forth important goals as described below.

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[6] Including the oil and gas sector. 10.3% growth is assumed for the non-oil/gas industry sector alone.

These goals can only be achieved through major endeavors.

1) Parallel achievement of growth, fairness, and stability
2) Acceleration of growth rate

The target growth rate is assumed to accelerate from 6.2% to 6.6% year after year. Such growth will be driven by the manufacturing sector. The increase in economic population is expected to contribute to an accelerated of growth rate and a decline in unemployment rate and an improvement of quality of labor force. However, an accelerated growth rate, and progress toward self-reliance of the economy require the following achievements in overall terms:

a) Increase in the rate of savings
b) Increase in private investment
c) Increase in tax revenues
d) Strengthened government finance
e) Reduction of dependency on foreign capital

3) Improvement of investment/output ratio

To ensure the high growth rate, investment/output ratio must be improved.

4) Reduction of dependency on foreign capital

The plan envisages that 27% of total investment will come from the government sector and 73% from the private sector. If private savings do not increase rapidly, foreign capital will be the only source to be relied on. In fact, as long as rapid increase in private savings appears remote, the dependency on foreign capital for private investment will rise which goes against the plan's objectives.

5) Risk of maintaining steady foreign debt structure

As pointed earlier, high growth needs high investment that tends to increase foreign debt. To avoid this, the maximization of investment/output ratio must be pursued. Another risk factor is the current declining trend in oil price. This may adversely affect trade balance.

2.4 Public Administration System

2.4.1 Outline

The central administration system in Indonesia consists of a cabinet that serves as a support organ to the President. The cabinet consists of ministers who are appointed by the President, including minister coordinators, ministers of ministries, state ministers without portfolio, as well as the Public Prosecutor General, the Governor of the Central Bank and a Commander-in-Chief.

Under the local administration system, there are 27 provinces and 3 special districts

(Jakarta, Aceh, Yogyakarta) as the first level local governments. Then there are prefectures and cities as the second level local governments. The governors of the provinces and special districts are appointed by the President, while the heads of prefectures, cities and counties are appointed by the governors.

2.4.2 Administration system related to the industrial sector

The Ministry of Industry which is in charge of the industrial sector, and the Ministry of Trade and the Ministry of Mining and Energy are closely-related. For medium- and small-sized enterprises, the Ministry of Cooperatives and Small Industry Guidance is responsible in addition to the Ministry of Industry.

A minister coordinator is appointed to coordinate between the Ministry of Industry and the Ministry of Trade.

The organizational chart of the Ministry of Industry is shown in Chart 2-3. Its public administration divisions consist of 4 directorates general and 2 agencies. Two agencies are generally responsible for policy formulation, and 4 directorates for policy implementation.

One agency is BPPI (Agency for Industrial Research and Development) which is in charge of research and development on industry-related, socio-economic environment, technology, and international relations. Another agency is responsible for fostering small enterprises.

Four directorates are in principle organized to oversee particular industrial sectors.

Under BPPI, there are 9 sectoral (central) R&D institutes and 14 regional institutes which are tasked in research and development and technical guidance. PUSTAN (Center for Industrial Standardization) which is responsible for industrial standardization undertakings, also belongs to BPPI.

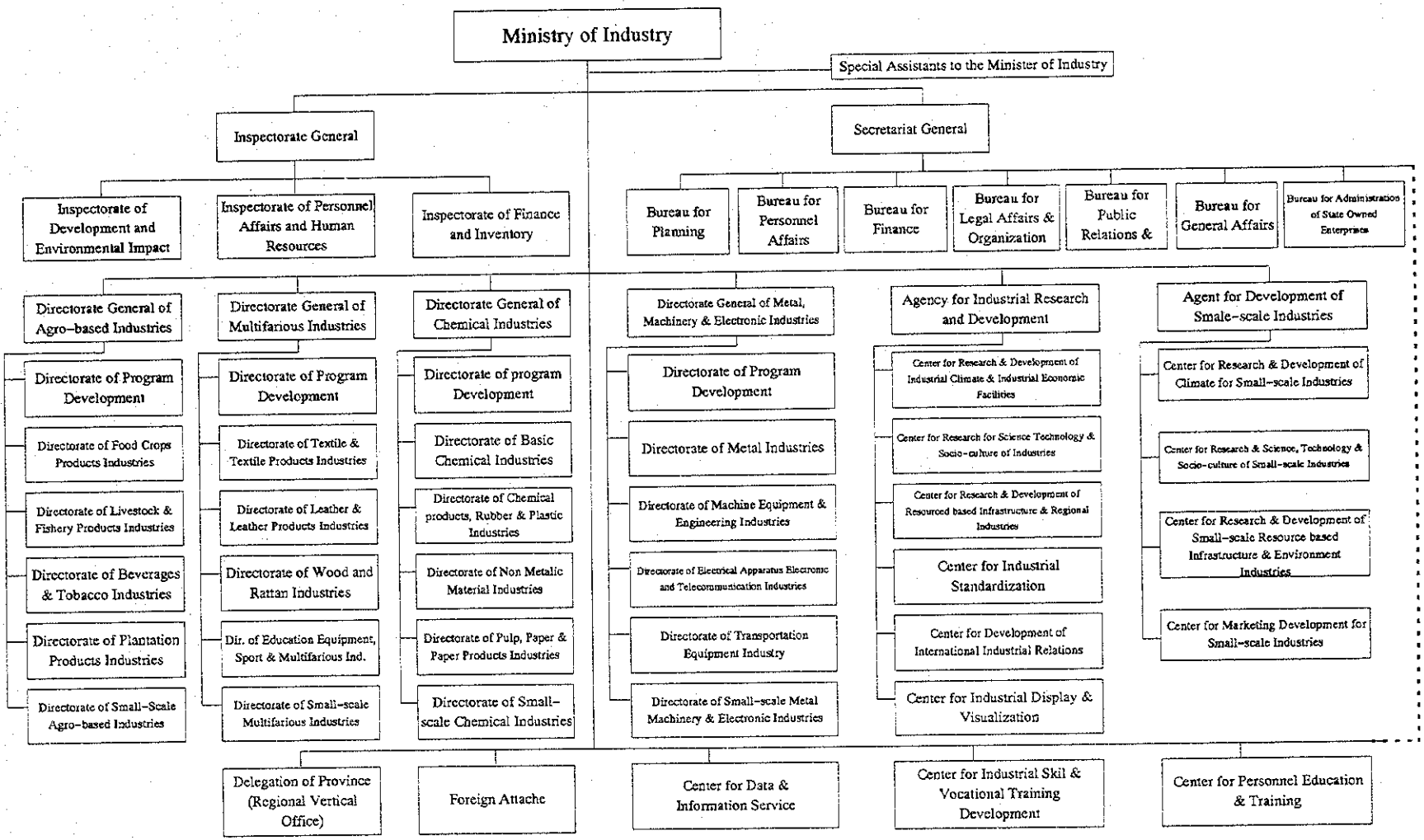
2.4.3 System related to science and technology

Indonesia has the largest organizational or institutional system related to science and technology among ASEAN nations.

Government organizations related to science and technology include the following;

1) The Minister in charge of research and technology and its secretariat
2) Laboratories under ministries (e.g., the Ministry of Industry, the Ministry of Trade, the Ministry of Communication) and laboratories of state-run enterprises
3) LIPI (Indonesian Institute of Science), BATAN (Agency for National Atomic Energy), BPPT (Agency for Assessment and Application of Technology), LAPAN

Chart 2-3 Organization of Ministry of Industry



(The National Aero Space Institute), BAKOURTANAL (The National Coordinating Agency for Survey and Mapping), and BSP (Central Bureau of Statistics), all of which are under direct control of the President

4) Universities and colleges

Further, advisory organs related to science and technology include AIPI (Indonesian Science Academy) reports to the President, and DRN (National Research Council) and DSN (Standardization Council of Indonesia) which report to the state minister for research and technology.

The government has established PUSPITEK (Science and Technology Development Center) which sets up organizations for science and technology, most of which are under direct control of the President, such as LIPI, in Serpong, the suburbs of Jakarta. In addition, a biological and agricultural research and educational city centered around Bogor Agricultural College is being built in Bogor, and an industrial research and educational city centered around Bandung Institute of Technology is under construction in Bandung.

Development of these science and technology institutes, however, is not always based on national science and technology policy. Rather, they rely heavily on assistance from industrialized countries, which makes the function and capability of each institute not always systematically coordinated among institutions.

The number of persons engaged in laboratory and research activities, including university staff in 1988 was about 33,500[7], and only some 1,000 have doctorate degrees.

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7) Including humanities

Attached Chart 2.1 Trend of GDP and per Capita Income at Current Market Prices

Description	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991 x)	1992 x)
1. Gross Domestic Product (Billion Rp)	10,708.0	12,642.5	15,466.7	19,010.7	22,746.0	32,025.4	45,445.7	54,027.0	59,632.6	71,214.7	87,054.8	94,720.8	95,823.1	124,816.9	142,104.8	167,494.7	195,597.2	227,502.3	260,786.3
2. Per Capita Gross Domestic Product (Rp)	83,918.0	96,803.0	115,683.0	138,967.0	162,704.0	223,887.0	310,502.0	360,957.0	389,786.0	455,418.0	545,884.0	581,469.0	576,005.0	734,865.5	829,290.9	958,591.5	1,097,812.2	1,254,257.8	1,413,544.8
3. Gross National Product (Billion Rp)	10,200.9	12,086.8	15,034.5	18,332.2	21,879.3	30,541.0	43,435.0	52,102.1	57,675.1	68,178.8	82,886.6	90,788.8	91,770.5	118,794.9	135,183.1	159,336.0	185,981.7	216,603.0	248,339.5
4. Per Capita Gross National Product (Rp)	79,944.3	92,548.2	112,449.5	134,007.3	156,504.0	213,509.0	296,764.0	348,097.0	376,991.0	436,004.0	519,747.0	557,332.0	551,645.0	699,410.7	788,897.4	911,898.4	1,043,844.1	1,194,168.2	1,346,079.2
5. National Income (Billion Rp)	9,057.9	10,745.8	13,337.7	16,250.9	19,367.6	27,146.8	38,838.3	46,838.1	51,666.5	61,269.2	77,269.4	83,217.2	81,804.9	105,424.3	119,045.0	138,494.0	162,777.7	190,219.7	217,500.2
6. Per Capita Income (Rp)	70,987.0	82,280.0	99,758.0	118,793.0	138,538.0	189,781.0	265,358.0	312,928.0	337,716.0	391,817.0	484,524.0	510,852.0	491,740.0	620,690.6	694,719.2	792,617.2	913,608.9	1,048,712.7	1,178,920.4
7. Gross Domestic Product without Petroleum, Gas and their Products (Billion Rp)											68,313.2	75,693.3	82,461.8	104,920.5	135,183.1	159,336.0	166,518.4	192,956.4	227,972.6
8. Mid-year Population ('000)	127,600.0	130,600.0	133,700.0	136,800.0	139,800.0	143,043.0	146,362.0	149,677.0	152,988.0	156,372.0	159,475.0	162,899.0	166,358.0	169,850.0	171,357.0	174,730.0	178,170.0	181,384.0	184,491.0

Notes: Petroleum, gas and their products consist: crude petroleum, natural gas, LNG and refined petroleum.
x) Preliminary figures

Sources: Biro Pusat Statistik, "Statistical Year Book of Indonesia", (1977 through 1993 editions).

Attached Chart 2.2 Trend of GDP Aggregates and per Capita Income at Constant Market Prices

Description	At 1973 Constant Market Prices									At 1983 Constant Market Prices									
	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991x)	1992x)
1. Gross Domestic Product (Billion Rp)	7,269.0	7,630.8	8,156.3	8,870.9	9,566.5	10,164.9	11,169.2	12,054.6	12,325.4	12,842.2	78,144.4	80,119.6	83,318.2	94,517.8	99,981.4	107,522.8	115,217.3	123,181.1	131,101.6
2. Per Capita Gross Domestic Product (Rp)	56,967.0	58,429.0	61,004.0	64,846.0	68,430.0	71,062.0	76,312.0	80,537.0	80,564.0	82,126.0	490,010.0	491,836.0	500,837.0	556,478.1	583,468.4	615,365.4	646,670.6	679,117.8	710,612.4
3. Gross National Product (Billion Rp)	6,900.0	7,270.5	7,789.8	8,448.2	9,073.3	9,515.7	10,410.5	11,380.9	11,672.7	12,007.1	74,442.3	76,539.2	79,667.5	90,270.1	96,499.7	103,924.9	110,986.3	118,745.5	126,145.9
4. Per Capita Gross National Product (Rp)	54,075.2	55,669.9	58,263.2	61,755.8	64,902.0	66,523.0	71,128.0	76,036.0	76,298.0	76,785.0	466,796.0	469,857.0	478,892.0	531,469.5	563,150.0	594,774.2	622,923.6	654,663.6	683,751.0
5. National Income (Billion Rp)	6,075.8	6,403.9	6,859.9	7,440.8	7,983.1	8,356.5	9,137.7	10,007.3	10,268.2	10,543.7	69,405.4	70,135.0	71,002.4	80,145.2	85,147.4	90,506.4	97,230.9	104,460.3	110,642.5
6. Per Capita Income (Rp)	47,616.0	49,034.0	51,308.0	54,392.0	57,104.0	58,419.0	62,432.0	66,859.0	67,118.0	67,427.0	435,212.0	430,593.0	426,805.0	471,858.7	496,900.6	517,978.6	545,719.8	575,906.9	599,717.6
7. Gross Domestic Product without Petroleum, Gas and their Products (Billion Rp)											60,764.3	63,073.4	65,503.4	75,127.6	80,668.8	87,272.5	94,000.5	100,194.0	108,528.2
8. Mid-year Population ('000)	127,600.0	130,600.0	133,700.0	136,800.0	139,800.0	143,043.0	146,362.0	149,677.0	152,988.0	156,372.0	159,475.0	162,899.0	166,358.0	169,850.0	171,357.0	174,730.0	178,170.0	181,384.0	184,491.0

Notes:Petroleum, gas and their products consist: crude petroleum, natural gas, LNG and refined petroleum.
x) Preliminary figures

Sources: Biro Pusat Statistik, "Statistical Year Book of Indonesia", (1977 through 1993 editions).

Attached Chart 2.3 Gross Domestic Product by Industrial Origin at Current Market Prices

(Unit: Billion Rp)

Industrial Origin	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991 x)	1992 x)
1. Agriculture, Livestock, Forestry and Fisheries	3,497.0	4,003.4	4,812.0	5,905.7	6,706.0	8,995.7	11,290.3	13,642.5	15,668.3	17,696.2	20,419.7	22,512.9	24,870.9	29,116.0	34,277.9	39,163.9	42,148.7	46,558.6	50,031.7
2. Mining and Quarrying	2,374.0	2,484.8	2,930.0	3,599.7	4,357.6	6,979.8	11,672.5	12,970.6	11,707.8	16,107.4	16,937.6	13,570.8	11,502.8	17,266.8	17,161.8	21,822.5	26,119.0	31,482.0	30,908.2
3. Manufacturing Industries	890.0	1,123.7	1,453.3	1,816.9	2,420.4	3,310.6	5,287.9	5,821.7	7,680.7	9,896.4	13,112.9	15,503.4	17,184.7	21,150.4	26,252.4	30,323.3	38,910.2	47,544.0	56,560.2
4. Electricity, Gas and Water Supply	52.0	69.8	98.1	105.6	118.3	148.8	225.1	288.2	380.3	313.9	354.2	395.9	647.1	746.9	869.0	1,008.3	1,258.1	1,750.2	2,147.7
5. Construction	406.0	589.6	812.6	1,023.3	1,242.1	1,789.7	2,523.8	3,117.8	3,507.2	4,597.2	4,756.6	5,031.8	5,313.8	6,087.4	7,169.2	8,884.2	10,748.5	13,328.6	16,077.0
6. Trade, Hotels and Restaurants	1,775.0	2,103.7	2,551.9	2,959.0	3,450.2	4,775.1	6,390.9	7,965.7	8,865.1	11,540.7	13,434.5	15,416.9	17,121.8	21,048.3	24,379.2	28,855.5	32,999.7	36,899.5	42,778.9
7. Transportation and Communications	442.0	521.2	662.6	820.6	1,031.6	1,421.5	1,965.3	2,353.2	2,795.2	4,098.1	5,050.8	6,100.3	6,406.9	7,442.6	8,139.7	9,305.5	10,999.6	13,792.4	16,998.0
8. Banking and Other Financial Intermediaries	113.0	151.4	206.5	236.4	395.6	655.1	752.3	1,404.2	1,603.9	2,358.6	3,058.2	3,496.2	4,036.7	4,795.1	5,322.4	6,666.7	8,287.1	10,157.5	12,432.8
9. Ownership of Dwellings	194.0	257.8	318.9	542.2	670.6	914.2	1,199.5	1,439.4	1,702.6	2,355.5	2,572.6	2,775.0	2,976.0	3,349.1	3,736.0	4,151.1	4,890.8	5,924.7	6,595.9
10. Public Administration and Defense	585.0	864.3	10,074.3	1,394.2	1,685.2	2,199.6	3,142.3	3,904.7	4,428.7	5,711.5	6,469.9	7,925.1	8,307.3	8,911.8	9,446.2	11,174.2	12,801.4	14,621.6	17,309.4
11. Services	380.0	472.8	546.5	607.1	668.2	835.3	995.8	1,119.0	1,292.8	3,000.8	3,717.9	3,998.6	4,314.6	4,902.5	5,351.1	5,829.5	6,434.1	7,443.2	8,946.5
12. Gross Domestic Product	10,708.0	12,642.5	15,466.7	19,010.7	22,746.0	32,025.4	45,445.7	54,027.0	59,632.6	77,676.3	89,885.1	96,996.8	102,682.6	124,816.9	142,104.8	167,184.7	195,597.2	227,502.3	260,786.3
13. Gross Domestic Product non Petroleum																	166,518.4	192,956.4	227,972.6

Note: x) Preliminary figures

Sources: Biro Pusat Statistik, "Statistical Year Book of Indonesia", (1977 through 1993 editions).

Attached Chart 2.4 Gross Domestic Product by Industrial Origin at Constant Market Prices

(Unit: Billion Rp)

Industrial Origin	At 1973 Constant Market Prices									At 1983 Constant Market Prices										
	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991 x)	1992 x)	1993 x)
1. Agriculture, Livestock, Forestry and Fisheries	2,811.0	2,811.2	2,943.7	2,981.3	3,134.8	3,255.6	3,424.9	3,593.5	3,669.8	17,696.2	18,512.6	19,300.0	19,799.1	20,223.5	21,213.7	21,917.8	22,356.9	22,663.1	24,139.2	24,512.0
2. Mining and Quarrying	859.0	828.1	952.3	1,070.0	1,048.8	1,046.9	1,034.6	1,069.1	939.8	16,107.4	17,120.1	15,480.4	16,308.6	16,365.5	15,892.9	16,663.8	17,531.7	19,321.7	18,993.2	19,587.6
3. Manufacturing Industries	755.0	847.9	930.0	1,057.7	1,235.6	1,395.3	1,704.6	1,877.8	1,900.7	9,896.4	12,078.8	13,430.5	14,678.1	16,235.3	18,182.3	19,855.7	22,336.9	24,481.6	26,856.1	29,035.2
4. Electricity, Gas and Water Supply	37.0	41.2	46.3	49.0	56.9	68.6	77.9	89.9	105.5	313.9	324.0	360.9	429.8	494.6	548.9	615.6	725.7	842.8	928.2	1,021.6
5. Construction	320.0	364.8	384.5	463.8	528.9	562.8	639.3	720.2	757.8	4,597.2	4,393.8	4,508.0	4,609.0	4,082.9	5,259.1	5,878.0	6,672.9	7,475.0	8,171.0	9,089.4
6. Trade, Hotels and Restaurants	1,224.0	1,293.8	1,350.7	1,438.2	1,530.3	1,681.1	1,851.9	2,042.6	2,158.8	11,540.7	11,811.0	12,398.6	13,398.5	14,356.2	15,656.9	17,338.1	18,568.6	19,606.1	21,103.1	23,113.6
7. Transportation and Communications	288.0	302.7	342.6	427.6	514.2	559.8	609.4	676.9	716.6	4,098.1	4,443.1	4,487.0	4,668.4	4,938.5	5,211.5	5,811.5	6,367.9	6,869.4	7,595.0	8,418.3
8. Banking and Other Financial Intermediaries	88.0	101.6	117.7	151.2	164.6	179.6	207.8	231.4	258.4	2,358.6	2,829.0	3,020.3	3,483.1	3,659.3	3,752.2	4,290.7	4,893.8	5,535.1	6,249.2	10,404.3
9. Ownership of Dwellings	174.0	198.4	209.1	252.2	287.6	306.1	335.8	358.7	377.4	2,355.5	2,411.5	2,461.0	2,545.1	2,653.9	2,762.2	2,877.7	2,998.8	3,119.7	3,249.3	n.a.
10. Public Administration and Defense	443.0	564.1	595.5	689.8	767.9	805.1	917.7	1,075.8	1,114.5	5,711.5	5,996.7	6,455.1	6,862.1	7,366.1	7,932.1	8,396.9	8,783.3	9,052.1	9,320.0	9,508.8
11. Services	270.0	277.0	284.2	290.1	296.9	304.0	311.3	318.7	326.1	3,000.8	3,116.8	3,180.2	3,298.6	3,422.1	3,569.8	3,790.8	3,980.8	4,214.5	4,497.3	4,880.0
12. Gross Domestic Product	7,269.0	7,630.8	8,156.5	8,870.9	9,566.5	10,164.9	11,169.2	12,054.6	12,325.4	77,676.3	83,037.4	85,018.9	90,080.5	94,517.8	99,981.4	107,436.6	115,217.3	123,181.1	131,101.6	139,570.8
13. Gross Domestic Product non Petroleum																	94,000.5	100,194.0	108,528.2	n.a.

Note: x) Preliminary figures

Sources: Biro Pusat Statistik, "Statistical Year Book of Indonesia", (1977 through 1993 editions).

Attached Chart 2.5 Expenditures of Gross Domestic Product at Current Market Prices

(Unit: Billion Rp)

Type of Expenditure	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991 x)	1992 x)
1. Private Consumption Expenditure	7,258.6	8,744.5	10,463.8	12,458.4	13,851.3	19,513.7	27,502.9	35,560.0	41,670.3	47,063.0	54,066.5	57,201.4	63,355.3	71,989.9	81,045.3	88,752.3	106,312.3	125,259.7	137,410.8
2. General Government Consumption Expenditure	841.0	1,253.7	1,590.5	2,077.3	2,658.9	3,733.4	4,688.2	5,787.9	6,831.7	8,077.3	9,121.5	10,893.1	11,328.7	11,763.5	12,755.8	15,697.6	17,572.6	20,784.6	24,731.3
3. Gross Domestic Fixed Capital Formation	1,797.0	2,571.7	3,204.9	3,826.4	4,670.7	6,704.3	9,485.2	11,553.4	13,467.1	19,467.9	20,136.1	22,366.9	24,781.9	30,980.2	36,802.6	45,659.8	55,633.4	65,637.2	74,148.6
4. Change in Stock 1)										2,834.7	3,406.4	4,836.7	4,243.0	8,165.8	8,006.9	13,171.0	15,071.4	14,932.7	18,744.6
5. Export of Goods and Services	3,105.1	2,850.6	3,429.6	4,465.8	4,934.9	9,628.7	13,849.2	14,927.9	13,345.2	19,844.6	22,999.3	21,533.9	20,009.9	29,874.3	34,665.6	42,505.0	51,953.1	62,263.8	75,776.0
6. Less: Import of Goods and Services	2,293.7	2,778.0	3,222.1	3,817.2	3,369.8	7,554.7	10,079.8	13,802.2	15,681.7	19,611.2	19,844.7	19,835.2	21,036.2	27,955.8	31,171.4	38,601.0	50,945.7	61,375.7	70,025.0
7. Gross Domestic Product	10,708.0	12,642.5	15,466.7	19,010.7	22,746.0	32,025.4	45,445.7	54,027.0	59,632.6	77,676.3	89,885.1	96,996.8	102,682.6	123,816.9	142,104.8	167,184.7	195,597.2	227,502.3	260,786.3
8. Net Factor Income from Abroad	-507.1	-555.7	-432.2	-678.5	-892.2	-1,484.4	-2,010.7	-1,924.9	-1,957.5	-3,280.5	4,182.7	3,940.9	4,192.5	6,022.0	6,921.7	8,073.8	-9,615.5	-10,899.3	-12,446.8
9. Gross National Product	10,200.9	12,086.8	15,034.5	18,332.2	21,853.8	30,541.0	43,435.0	52,102.1	57,675.1	74,395.8	85,702.4	93,055.9	98,491.1	118,794.9	135,183.1	159,110.9	185,981.7	216,603.0	248,339.5
10. Less: Net Indirect Taxes	447.0	519.2	690.5	845.6	1,028.9	1,304.8	1,634.6	1,752.2	2,132.5	2,450.8	2,723.4	3,596.5	6,258.7	7,129.8	9,032.7	12,444.5	13,420.1	15,003.5	17,794.6
11. Less: Depreciation	696.0	821.0	1,006.3	1,235.7	1,482.8	2,089.4	2,962.1	3,511.8	3,876.1	3,883.8	4,494.3	4,849.8	5,134.1	6,240.8	7,105.4	8,364.5	9,783.9	11,379.8	13,044.7
12. National Income	9,057.9	10,745.8	13,377.7	16,250.9	19,342.1	27,146.8	38,838.3	46,838.1	51,666.5	68,061.2	78,484.7	84,609.6	86,927.3	105,424.3	119,045.0	138,301.9	162,777.7	190,219.7	217,500.2

Notes: 1) Residual
x) Preliminary figures

Sources: Biro Pusat Statistik, "Statistical Year Book of Indonesia", (1977 through 1993 editions).

Attached Chart 2.6 Expenditures of Gross Domestic Product at Constant Market Prices

(Unit: Billion Rp)

Type of Expenditure	At 1973 Constant Market Prices									At 1983 Constant Market Prices									
	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991 x)	1992 x)
1. Private Consumption Expenditure	5,453.6	5,678.9	6,031.6	6,433.2	6,879.5	7,865.8	8,867.7	10,349.5	106,997.5	47,063.0	48,942.2	49,448.0	50,530.0	52,200.4	54,225.0	56,475.7	62,053.2	66,723.5	69,277.2
2. General Government Consumption Expenditure	641.0	835.5	896.7	1,044.4	1,228.2	1,345.0	1,489.6	1,641.0	1,776.1	8,077.3	8,353.0	8,591.2	9,241.3	9,225.7	9,924.3	10,965.3	11,317.3	12,112.7	12,819.0
3. Gross Domestic Fixed Capital Formation	1,440.0	1,650.2	1,749.2	2,027.5	2,332.9	2,436.0	2,896.0	3,218.5	3,636.7	19,467.9	18,296.5	19,615.8	21,421.7	22,596.8	25,200.9	28,568.1	32,731.5	35,039.6	36,414.8
4. Change in Stock 1)										2,834.7	4,452.0	6,641.3	6,332.8	5,049.1	1,119.9	1,417.2	3,302.8	-104.6	-361.6
5. Export of Goods and Services	1,403.4	1,266.8	1,425.2	1,744.0	1,824.3	1,822.0	1,719.3	1,678.2	1,444.3	19,844.6	21,144.9	19,494.7	22,460.3	25,744.8	26,015.5	28,733.2	28,862.8	35,845.6	42,132.9
6. Less: Import of Goods and Services	1,669.0	1,800.6	1,946.4	2,378.2	2,698.4	3,303.9	3,803.4	4,832.6	5,229.2	19,611.2	18,151.2	19,109.1	19,905.6	20,299.0	16,504.2	18,722.9	23,050.3	26,435.7	29,180.7
7. Gross Domestic Product	7,269.0	7,630.8	8,156.3	8,870.9	9,566.5	10,164.9	11,169.2	12,054.6	12,325.4	77,676.3	83,037.4	85,081.9	90,080.5	94,517.8	99,981.4	107,436.6	115,217.3	123,181.1	131,101.6
8. Net Factor Income from Abroad	-369.0	-360.3	-366.5	-422.7	-493.2	-649.2	-758.7	-673.7	-652.7	-3,280.5	(3,821.7)	3,846.1	3,802.2	4,247.7	3,481.7	3,726.3	-4,231.0	-4,435.6	-4,955.7
9. Gross National Product	6,900.0	7,270.5	7,789.8	8,448.2	9,073.3	9,515.7	10,410.5	11,380.9	11,672.7	74,395.8	79,215.7	81,235.8	86,278.3	90,270.1	96,499.7	103,710.2	110,986.3	118,745.5	126,145.9
10. Less: Net Indirect Taxes	351.7	370.6	399.1	430.8	466.2	495.7	544.3	587.4	600.6	2,450.8	2,515.9	3,154.7	5,727.4	5,399.0	6,356.1	8,021.5	8,112.5	8,123.6	8,945.6
11. Less: Depreciation	472.5	496.0	530.8	576.6	624.0	663.5	728.5	786.2	803.9	3,883.8	4,151.9	4,254.1	4,504.0	4,725.9	4,996.2	5,362.6	5,642.9	6,161.6	6,557.8
12. National Income	6,075.8	6,403.9	6,859.9	7,440.8	7,983.1	8,356.5	9,137.7	10,007.3	10,268.2	68,061.2	72,547.9	73,827.0	76,046.9	80,145.2	85,147.4	90,236.1	97,230.9	104,460.3	110,642.5

Notes: 1) Residual
x) Preliminary figures

Sources: Biro Pusat Statistik, "Statistical Year Book of Indonesia", (1977 through 1993 editions).

Attached Chart 2.7 Balance of Payments [1]

(Unit: US$ million)

Description	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993 [3]
A. Goods and Services (net)	26	-1,164	-951	-72	-1,434	952	2,754	-816	-5,458	-6,442	-2,150	-1,950	-4,099	-2,468	-1,552	-1,280	-3,240	-4,392	-3,122	-639
1. Exports, f.o.b	6,755	6,869	8,615	10,761	11,020	15,907	22,609	23,348	19,747	18,689	20,574	18,527	14,396	17,206	19,509	22,974	26,807	29,635	33,796	8,977
Of which: Oil and Gas	(4,556)	(5,052)	(6,081)	(7,250)	(7,361)	(10,328)	(16,530)	(18,917)	(15,869)	(13,696)	(14,979)	(12,549)	(7,740)	(8,571)	(7,832)	(8,914)	(11,931)	(11,455)	(10,496)	(2,534)
2. Imports f.o.b	-4,632	-5,468	-6,819	-7,473	-8,382	-9,946	-13,456	-16,542	-17,854	-17,726	-15,047	-12,705	-11,938	-12,710	-13,831	-16,310	-21,455	-24,834	-26,774	-6,814
Of which: Oil and Gas	(-1,205)	(-870)	(-1,609)	(-1,603)	(-1,602)	(-2,524)	(-3,392)	(-4,354)	(-4,433)	(-3,830)						(-2,406)	(-3,222)	(-3,370)	(-3,361)	(-1,017)
3. Service, net	-2,097	-2,565	-2,747	-3,360	-4,072	-5,009	-6,399	-7,622	-7,351	-7,405	-7,677	-7,772	-6,557	-6,964	-7,230	-7,944	-8,592	-9,193	-10,144	-2,802
B. Of Private Capital (net)	382	-1,439	237	72	333	-611	-630	148	1,639	1,826	757	68	1,291	1,548	407	314	4,113	4,410	5,359	647
C. Transfer of Government Capital	596	1,778	1,632	1,397	1,491	1,725	2,204	1,963	4,117	4,776	2,865	1,739	3,074	2,104	1,965	2,776	633	1,419	1,112	276
D. Total A through C	1,004	-825	918	1,397	390	2,066	4,328	1,295	298	160	1,472	-143	266	1,184	820	1,810	1,506	1,437	3,349	284
E. Errors and Omissions (net)	-314	-104	-182	-55	-233	-566	-2,057	-1,752	-2,208	494	-709	238	-810	26	-1,141	-1,399	593	-230	-1,606	86
F. Reserves [2]																-371	-2,099	-1,207	-1,743	-370
1. Foreign assets																(-371)	(-2,099)	(-1,207)	(-1,743)	(-370)
2. Foreign liabilities																(-)	(-)	(-)	(-)	(-)

Notes: 1) The analytical presentation
2) Negative indicates increase and positive indicates decrease
3) Second Quarter

Sources: Biro Pusat Statistik, "Statistical Year Book of Indonesia", (1977 through 1993 editions).

Attached Chart 2.8 Gross Regional Domestic Product at Constant Prices, by Province

(Unit: Billion Rp)

Province	1975 1)	% of Total	1980 1)	% of Total	1990 2) x)	% of Total
1. D.I. Aceh	211.52 3)	1.8	534.85	3.1	5,716	5.1
2. Sumatera Utara	688.35	5.8	1,080.02	6.2	5,935	5.3
3. Sumatera Barat	159.55 3)	1.4	279.85	1.6	1,832	1.6
4. Riau	1,806.60	15.3	1,656.54	9.5	8,772	7.9
5. Jambi	86.45	0.7	135.34	0.8	845	0.8
6. Sumatera Selatan	532.84	4.5	809.58	4.7	4,879	4.4
7. Bengkulu	31.71	0.3	61.22	0.4	460	0.4
8. Lampung	232.06	2.0	340.31	2.0	1,920	1.7
9. D.K.I. Jakarta	1,036.91	8.8	1,686.38	9.7	13,665	12.3
10. Jawa Barat	1,720.79	14.6	2,590.08	14.9	17,959	16.1
11. Jawa Tengah	1,289.79	10.9	1,717.12	9.9	12,134	10.9
12. D.I. Yogyakarta	146.21	1.2	187.32	1.1	1,085	1.0
13. Jawa Timur	1,770.35	15.0	2,774.71	16.0	16,737	15.0
14. Kalimantan Barat	167.49	1.4	260.95	1.5	1,575	1.4
15. Kalimantan Tengah	63.82	0.5	129.63	0.7	773	0.7
16. Kalimantan Selatan	131.44	1.1	176.23	1.0	1,374	1.2
17. Kalimantan Timur	449.49	3.8	1,008.81	5.8	5,812	5.2
18. Sulawesi Utara	149.46 4)	1.3	241.59	1.4	957	0.9
19. Sulawesi Tengah	56.83	0.5	93.77	0.5	581	0.5
20. Sulawesi Selatan	358.50	3.0	546.54	3.1	2,785	2.5
21. Sulawesi Tenggara	50.87	0.4	67.13	0.4	526	0.5
22. Bali	153.02	1.3	275.48	1.6	1,604	1.4
23. Nusa Tenggara Barat	100.63	0.9	144.10	0.8	818	0.7
24. Nusa Tenggara Timur	93.49	0.8	144.73	0.8	708	0.6
25. Maluku	102.54	0.9	165.14	1.0	858	0.8
26. Irian Jaya	212.49	1.8	269.82	1.6	1,094	1.0
27. Timor Timur	-		-		140	0.1
Total of above 27 province	11,803	100	17,377	100	111,544	100

Notes: 1) at 1975 prices 2) at 1983 prices 3) in 1973 4) in 1974

x) Preliminary figures

Sources: Biro Pusat Statistik, "Statistical Year Book of Indonesia", (1977 through 1993 editions).

Attached Chart 2.9 Approval of Foreign Capital Investment by Industry

(Unit: US$ million)

Sector	Total of 84–86 [1]						Total of 87–89 [1]						Total of 90–92 [2]					
	New investment		Investment on expansion		Total value		New investment		Investment on expansion		Total value		New investment		Investment on expansion		Total value	
	No.	Value	No.	Value		% of total	No.	Value	No.	Value		% of total	No.	Value	No.	Value		% of total
Agriculture	13	112.4	9	32.0	144.4	4.7	15	255.0	9	30.9	285.9	2.4	6	68.2	9	144.6	212.8	0.8
Forestry	1	1.0	1	1.1	2.1	0.1	–	–	10	43.4	43.4	0.4	1	1.3	3	138.3	139.6	0.5
Fisheries	6	33.2	–	11.9	45.1	1.5	21	199.7	2	6.1	205.8	1.7	17	96.1	6	3.9	100.0	0.4
Mining & Quarrying	41	–	–	–	–	–	60	n.a.	–	–	–	–	1	1,500.0	3	927.5	2,427.5	9
Manufacturing	71	1,720.5	99	694.7	2,415.2	77.8	420	6,505.8	221	2,927.2	9,433.0	79.2	717	7,887.7	349	5,135.5	13,023.2	48.4
Construction	27	232.1	5	10.5	242.6	7.8	20	18.2	3	38.7	56.9	0.5	13	22.4	14	84.1	106.5	0.4
Commercial	–	–	–	–	–	–	2	5.3	4	167.8	173.1	1.5	–	–	–	–	–	–
Hotel	2	84.0	1	55.0	139.0	4.5	37	813.6	1	2.5	816.1	6.9	90	3,701.0	10	3,514.1	7,215.1	26.8
Transportation	2	19.2	–	–	19.2	0.6	5	339.5	1	1.0	340.5	2.9	15	545.9	5	322.4	868.3	3.2
Communication	7	66.5	–	–	66.5	2.1	–	–	–	–	–	–	–	–	–	–	–	–
Other Services	11	89.4	1	4.5	93.9	3.0	68	473.1	3	83.1	556.2	4.7	171	2,737.3	12	103.1	2,840.4	10.5
Total	181	2,292.8	116	809.7	3,102.5	100	648	8,609.9	254	3,300.4	11,910.3	100	1,031	16,559.6	411	10,373.4	26,933.0	100

Note: Investment value includes that of local partners.

Sources: 1) Annex to Presidential Address to the Parliament on National Policy (August 16, 1989)
2) Annex to Presidential Address to the Parliament on National Policy (August 15, 1993)

Attached Chart 2.10 Approval of Foreign Capital Investment on Manufacturing Sector by Subsector

(Unit: US$ million)

Sector	Total of 84–86 [1]						Total of 87–89 [1]						Total of 90–92 [2]					
	New investment		Investment on expansion		Total value		New investment		Investment on expansion		Total value		New investment		Investment on expansion		Total value	
	No.	Value	No.	Value		% of total	No.	Value	No.	Value		% of total	No.	Value	No.	Value		% of total
Manufacturing																		
Food & beverage	4	44.0	7	91.4	135.4	5.6	22	188.2	15	239.7	427.9	4.5	45	346.5	20	331.6	678.1	5.2
Textile & textile products	3	11.7	7	22.8	34.5	1.4	151	756.0	61	322.2	1,078.2	11.4	155	987.1	114	1,122.3	2,109.4	16.2
Wood & wooden products	2	15.8	4	23.1	38.9	1.6	50	179.7	22	77.7	257.4	2.7	45	262.2	12	29.8	292.0	2.2
Paper & paper products	1	55.0	1	18.0	73.0	3.0	9	670.3	7	1,101.6	1,771.9	18.8	14	553.9	8	1,491.9	2,045.8	15.7
Chemicals & chemical products	25	607.6	34	178.1	785.7	32.5	69	3,737.8	49	688.9	4,426.7	46.9	147	2,409.9	67	1,080.3	3,490.2	26.8
Non-metal products	1	12.0	3	26.4	38.4	1.6	13	300.1	13	242.5	542.6	5.8	25	936.9	12	94.1	1,031.0	7.9
Basic metals	6	697.5	–	–	697.5	28.9	8	134.9	9	96.4	231.3	2.5	23	776.8	13	243.1	1,019.9	7.8
Machinery and metal products	27	272.9	40	313.2	586.1	24.3	80	465.5	42	140.2	605.7	6.4	218	1,501.9	93	671.3	2,173.2	16.7
Others	2	4.0	3	21.7	25.7	1.1	18	73.3	3	18.0	91.3	1.0	45	112.5	10	71.1	183.6	1.4
Total	71	1,720.5	99	694.7	2,415.2	100	420	6,505.8	221	2,927.2	9,433.0	100	717	7,887.7	349	5,135.5	13,023.2	100

Note: Investment value includes that of local partners.

Sources: 1) Annex to Presidential Address to the Parliament on National Policy (August 16, 1989)
2) Annex to Presidential Address to the Parliament on National Policy (August 15, 1993)

Attached Chart 2.11 Approval of Foreign Capital Investment by Country

(Unit: US$ million)

Countries	87 *)				88 *)				89 *)				1987–89 Total (value)		90 **)				91 **)				92 **)				1990–92 Total (value)	
	New investment		Investment on expansion		New investment		Investment on expansion		New investment		Investment on expansion				New investment		Investment on expansion		New investment		Investment on expansion		New investment		Investment on expansion			
	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value		% of total	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value		% of total
1. U.S.A.	8	54.0	2	5.3	10	716.8	4	6.8	10	151.9	8	146.5	1,081.3	9.1	17	351.7	2	22.5	9	65.3	2	53.0	14	198.2	2	12.0	702.7	2.6
2. Japan	9	31.4	23	286.9	23	244.6	19	120.8	67	624.3	45	418.6	1,726.6	14.5	83	1,316.4	55	808.5	70	420.8	47	285.8	50	725.1	39	686.7	4,243.3	15.8
3. Korea	14	186.8	5	22.8	36	272.5	4	57.0	75	605.6	9	41.9	1,186.6	10.0	81	409.8	21	49.1	41	184.8	26	88.2	20	486.1	18	109.9	1,327.9	4.9
4. Hong Kong	3	5.9	13	73.8	9	36.5	11	79.9	24	271.9	23	229.6	697.6	5.9	36	806.2	19	163.9	33	786.1	9	75.4	20	193.6	9	73.6	2,098.8	7.8
5. Taiwan	1	1.0	2	246.0	22	57.3	3	614.5	61	264.2	6	12.0	1,195.0	10.0	93	498.0	12	833.9	46	246.6	6	444.9	13	37.3	9	44.5	2,105.2	7.8
6. Singapore	1	2.8	2	3.5	12	76.2	8	172.6	30	188.1	2	57.3	500.5	4.2	34	261.6	5	98.6	48	320.6	4	23.3	29	236.8	4	35.2	976.1	3.6
7. Malaysia	–	–	2	1.7	2	20.1	2	8.7	2	22.2	2	6.8	59.5	0.5	6	24.3	–	–	3	10.1	1	2.3	3	15.8	1	5.1	57.6	0.2
8. Australia	7	358.4	–	–	5	5.0	2	33.9	16	180.9	1	2.5	580.7	4.9	5	11.5	5	34.3	8	43.1	1	1.1	11	30.8	7	38.9	159.7	0.6
9. France	–	–	6	7.2	2	6.0	5	18.7	5	26.3	–	–	58.2	0.5	8	68.4	1	2.2	1	19.2	5	52.2	3	19.9	5	74.2	236.1	0.9
10. Netherlands	4	6.9	2	6.5	5	7.4	2	77.8	9	82.0	2	21.6	202.2	1.7	9	448.2	3	4.7	12	82.2	2	2.2	7	178.4	–	–	715.7	2.7
11. Germany	5	21.1	1	0.7	3	4.8	1	0.3	3	5.2	1	n.a.	32.1	0.3	4	5.0	1	66.9	3	6.7	1	23.0	7	11.4	–	–	113.0	0.4
12. U.K.	1	5.5	–	–	4	30.1	1	10.2	7	39.0	1	2.0	86.8	0.7	13	163.4	3	113.5	17	847.0	6	153.9	16	385.6	4	5.9	1,669.3	6.2
13. Panama	2	3.2	–	–	–	–	1	10.7	1	1.0	–	–	14.9	0.1	2	11.1	5	22.2	–	–	5	12.4	1	1.0	5	14.5	61.2	0.2
Total 1)	155	2,387.1	64	681.6	155	1,849.1	74	1,261.6	337	4,373.7	113	1,354.9	11,908.0		449	6,160.9	159	3,568.7	345	4,021.4	131	4,553.2	237	6,377.3	121	2,251.5	26,933.0	

Notes: 1) Including others

2) Investment value includes that of local partners.

Sources: *) Annex to Presidential Address to the Parliament on National Policy (August 16, 1991)

**) Annex to Presidential Address to the Parliament on National Policy (August 15, 1993)

Attached Chart 2.12 Trend of Exports and Imports (1980–93)

(Unit: US$ million)

Year	Export (f.o.b.)					Import (c.i.f.)						
	Total	Oil and Gas		Non–oil and Gas		Total	Consumption goods		Raw materials & auxiliary goods		Capital goods	
			% of total		% of total			% of total		% of total		% of total
1980	23,950.4	17,781.6	74.2	6,168.8	25.8	10,834.4	1,414.4	13.1	7,931.6	73.2	1,488.4	13.7
1981	25,164.5	20,663.2	82.1	4,501.3	17.9	13,272.1	807.1	6.1	10,445.8	78.7	2,019.2	15.2
1982	22,328.3	18,399.1	82.4	3,929.2	17.6	16,858.9	1,236.3	7.3	12,590.7	74.7	3,031.9	18.0
1983	21,145.9	16,140.6	76.3	5,005.3	23.7	16,351.8	1,726.2	10.6	11,732.0	71.7	2,893.6	17.7
1984	21,887.8	16,018.1	73.2	5,869.7	26.8	13,882.1	825.3	5.9	10,482.3	75.5	2,574.5	18.5
1985	18,586.7	12,717.9	68.4	5,868.8	31.6	10,259.1	380.5	3.7	8,159.9	79.5	1,718.7	16.8
1986	14,805.0	8,276.6	55.9	6,528.4	44.1	10,718.4	448.2	4.2	8,363.9	78.0	1,906.3	17.8
1987	17,135.6	8,556.1	49.9	8,579.5	50.1	12,370.3	460.6	3.7	9,474.1	76.6	2,435.6	19.7
1988	19,218.5	7,681.6	40.0	11,536.9	60.0	13,248.5	469.4	3.5	10,222.9	77.2	2,556.2	19.3
1989	22,158.9	8,678.8	39.2	13,480.1	60.8	16,359.6	688.6	4.2	11,905.5	72.8	3,765.5	23.0
1990	25,675.3	11,071.1	43.1	14,604.2	56.9	21,837.1	877.0	4.0	14,893.1	68.2	6,067.0	27.8
1991	29,142.3	11,071.1	38.0	18,071.2	62.0	25,868.8	958.4	3.7	17,233.8	66.6	7,676.6	29.7
1992	33,967.0	10,670.9	31.4	23,296.1	68.6	27,279.6	1,212.8	4.4	18,700.0	68.5	7,366.8	27.0
1993e)	39,005.4	10,300.5	26.4	28,704.9	73.6	27,955.9	1,144.6	4.1	19,713.3	70.5	7,098.0	25.4

Note: e) Estimated figures

Source: Biro Pusat Statistik, "Statistical Year Book of Indonesia", 1993 edition

3 General Aspects of the Industrial Sector and Direction of Industrial Development

This chapter analyzes the current development status and issues of the industrial sector in Indonesia, particularly the subsectors subject of study. These analyses shall facilitate an understanding of the intensity of needs for industrial standardization and promotion of quality control and its impediment factors as outlined in Chapter 7.

3.1 General Aspects of the Industrial Sector

3.1.1 Major characteristics of the industrial sector

3.1.1.1 Industrial structure

Indonesian industries produce a wide variety of items and cover almost all types of subsectors. Products are not limited to consumable goods and basic materials, but extend to capital goods. Furthermore, manufacturing is expanding not only to labor-intensive goods, but to material-intensive and capital-intensive goods as well. The situation is mainly due to the huge potential market for domestic production which the government is actively promoting, not to mention the abundance of resources and labor force in Indonesia.

Since its independence, the government has been stressing on the reinforcement of economic power and encouragement of domestic production, rather than depending entirely on import. While industries have basically been entrusted to private enterprises, the areas where (1) private enterprises are not able to undertake, (2) a lot of initial investment is involved, (3)it takes longer period to recoup investment and only a low rate of profit is expected, are directly undertaken by the government.

Nonetheless, Indonesian industries lagged behind in the upstream industries of electronics and petrochemicals. In the production of electronic and electrical products, the country's industries have concentrated on low-end products utilizing low technology compared to neighboring countries (Thailand, Malaysia, Singapore). In the petrochemical sector, there is no ethylene center and aromatic center being set up.

3.1.1.2 Characteristics viewed from market

From the market standpoint, the dependence on domestic demand appears to mainly characterize the country's industrial sector. This is due to a huge domestic market and large crude oil and gas revenues which make it feasible to manufacture products for the domestic market using imported materials.

However, due to diminishing expectation for crude oil and gas revenues, economic

framework shifted and labor-intensive and export-oriented industries are emerging.

3.1.1.3 Characteristics viewed from business ownership

Viewed from the type of ownership, the existence of a large number of state-run enterprises should be noted. This is mainly attribute to history when the government took over Dutch, as well as foreign enterprises after independence, and later converting them into state-run enterprises. In addition, as previously stated, the government itself promoted the industrialization process in areas where private enterprises cannot be relied on.

The private sector is characterized, as having been composed of corporate groups. This was made possible because of the rapid progress of industrialization over a short period of time. When there were a lot of business opportunities but with quite limited funds among major corporation were attracted into a variety of fields.

3.1.1.4 The role of foreign investment

(1) Importance of foreign investment in Indonesia

The amount of foreign investment in the Indonesian manufacturing industry weighs much less than that in Malaysia and Singapore. This is due to: 1) the delay in the start-up of industrialization by introduction of foreign capital, not to mention that foreign capital policy was not open and active, 2) the percentage share of traditional industries undertaken mainly by private enterprises as clove tobacco, food, fiber and etc. was high, 3) the percentage share of state-run enterprises in the basic material sector was high.

Recently however, foreign capital has been playing an increasing role in some industries. Particularly, it has been seen in such labor-intensive industries as apparel and textile, leather products, and industries requiring sophisticated technology as machinery and tools, electrical equipment and transportation equipment.

Although it is hard to identify from statistics, many local manufacturers were found to receive technical assistance from foreign enterprises. In particular, major portions of machinery and tools and electric equipment are produced under license.

(2) Investment in Indonesia viewed from foreign investors

Major countries investing in Indonesia are Japan, U.S., South Korea and Taiwan.

Investment by Japan in Indonesia account for 4% of Japan's foreign investment and rank fourth after the U.S., the United Kingdom and Canada. The number of projects invested by Japan, however, is less than that in Singapore and Thailand among ASEAN countries. This is because Japanese investment involves large projects such as the development of natural resources which include LNG.

In view of the specialization in the Asian region which Japanese enterprises are now promoting, Indonesian industries lagged behind in terms of horizontal specialization. In electric and electronic industries, Singapore functions as procurement and production bases, while Thailand and Malaysia are positioned as export production bases. Indonesian industries started mainly from the production for the domestic market because of the localization policy and insufficient infrastructure to speak of, not to mention its large size. In the future, the country is expected to realize the importance of an export base, by increasing the number of companies engaging in export expansion while maintaining their domestic sales. This will pave the way for new investments in export-oriented industries.

Foreign investment by Taiwan has been rapidly increasing after 1986, the increase in its domestic labor cost, and production cost due to foreign exchange adjustment and the promotional effect of deregulation on foreign investment as a measure to reduce large surplus in international balance of payments. Taiwan's foreign investment first went to Thailand, then Malaysia and the Philippines. Investment in Indonesia increased in the 1990s, but it is smaller than the 3 countries mentioned.

South Korea, faced with the same situation as Taiwan, has been boosting foreign investment since 1986. Among South Korea's investment to ASEAN nations, the percentage share of Indonesia was extremely high, probably because a major factor in investment decision of Korean companies is the availability of low-cost labor force. The investment on plywood and footwear sectors are the main ones, while the investments by large scale enterprises in home appliances have also increased.

Investments by the U.S. in Indonesia have been the largest among other ASEAN countries, and second after Hong Kong in Asia and Pacific regions. The petroleum industry holds an overwhelming share of slightly less than 90%. In Malaysia and Thailand, the petroleum industry also captured high percentages but only at a 30% level, with the concentration of U.S. investment being on electric equipment production. In contrast, chemical industry in Indonesia takes up 64% of the manufacturing sector.

3.1.2 Production technology and market

Indonesian industries can be classified into the following five types, according to technology and market characteristics[1].

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1) Norio Mihira and Yuri Sato, "Industrialization in Indonesia: Results of Fully Covered Industrialization", (1992: Institutes of Developing Economies, Tokyo), PP. 13-17.

(1) Cottage industry

They are seen in handicraft production and food processing. Using traditional production techniques and simple tools, these industries are labor-intensive in nature. They are rarely concerned with productivity improvement and enhancement of value-added. Nevertheless, it absorbs huge labor force, accounting for more than 50% of industrial workers.

(2) Traditional labor-intensive industry

This type of industry is mainly seen in food processing, clove tobacco, sugar, looming, spinning, and woodworking. Many of them have grown to major industries and/or export industries such as the textile industry.

(3) Basic material industry

The basic material industry uses advanced production technology that is incorporated in production equipment and can be imported. Chemical fertilizers, papermaking, cement, and steelmaking belong to this category. Because of large investment and high risk involved, many industries have been initiated by the government. Industries such as cement and papermaking have attracted private capital, and private enterprises now account for a majority of production capacity in these industries.

(4) Assembly-type import substitution industry and its parts suppliers

This industry is divided into custom type of production such as shipbuilding and aircraft, and the volume type of production such as automobiles and home appliances. Both types use the technology transferred from foreign companies. The former mainly consists of government enterprises and local enterprises, whereas the latter is dominated by foreign-affiliated joint ventures and local enterprises receiving technical assistance from foreign companies. Most industries principally serve the domestic market, with a very small portion being exported.

(5) Export-oriented, labor-intensive industry

There are two types: industries that have originally emerged to serve the domestic market, including plywood and apparel; and those that have grown as a result of relocation of production bases from the NIEs, such as sporting shoes and toys. Since technology is incorporated into the production process and equipment and can be imported, entry to this industry can be made relatively easily. For this reason, many local enterprises are seen in these industries in addition to foreign-affiliated companies.

Today, the industrial structure of Indonesia is shifting its center of gravity from cottage industries and traditional labor-intensive industries to basic material, assembly-type, import substitution, and export-oriented, labor-intensive industries.

3.1.3 Export

In the 1970s, oil was a central commodity in Indonesian exports. Then since 1981, industrial products have been playing an increasingly important role, partly due to the decline in oil exports. The percentage share of industrial products in total value of exports surged from 40% - 45% in the 1970s to a 60% level in the early 1980s, and exceeded 80% in 1989.

One of major factors in increased exports of industrial products is the improved export environment led by the series of Rupiah's devaluation. This has not only strengthened the price competitiveness of Indonesian products, but prompted labor-intensive, export-oriented industries operating in neighboring countries, to reduce their cost competitiveness by moving to Indonesia. It further contributed to increase in driving exports.

Originally, export items were limited to wood and textile products. Until industrialization which emphasized on import substitution triggered diversification, leading to the emergence of many new items by 1986.

Major importers of Indonesian products are Japan, the U.S., the EC, and Singapore. It should be noted, however, that Indonesian share of export to other countries have grown rapidly after 1987, particularly South Korea and the Middle East.

Industrial products for export are divided into the following 3 types:

1) Processed primary products, which have been previously exported either without processing, or with a low level of processing, including plywood, rattan, and processed palm oil.
2) Products manufactured by labor-intensive, export industries that have relocated from NIEs to other areas for cost competitiveness, including apparel, sporting shoes, and toys.
3) Industries that have grown from import substitution, and have attained surplus production capacity for export, including cement, steel and iron, and paper products.

3.1.4 Industrial infrastructure

Electricity is principally supplied by PLN (Persahaan umum Listrik Negara), a public power company under the supervision of the Ministry of Mining and Energy. Indonesia had installed capacity of 16,390MW and generated 65,800Gwh at the end of 1990, of

which PLN accounted for 57% and 51% respectively. PLN's installed capacity has grown steadily. While electricity production has also been on the rise, supply and demand situation is very tight due to growth of demand beyond forecast. Meanwhile, energy loss in transmission and distribution is high at 16%.

Telecommunications business is supervised by PARPOSTEL (Ministry of Tourism, Post and Telecommunications). Domestic communication service is exclusively operated by TELEKOM (TELEKOMUNIKASI INDONESIA) while international communication service is provided by PT INDOSAT, covering basic services including telephone, telegram, telex, and private line. Non-basic domestic communication service allows participation from the private sector. The number of telephone units owned exceeded 1 million by the end of 1990, leveling with other ASEAN countries, but the number of installation per 100 persons is still very low at 0.57. The fact that it takes 3-5 years to install a telephone, makes it a major obstacle to economic development. Connection rate is 30% (or one of three calls is connected), equipment failure rate is 8-9 per 100 subscribers per month, and the average period required for repair is 6 days.

Transportation is dominated by road transport that accounts for 87% of passenger transport and 53% of freight transport demand. The road pavement rate is 80% for national highways, 60% for provincial roads, and 30% for prefectural roads. As for arterial roads, the percentage is high compared to other ASEAN countries. Construction of highway networks is progressing rapidly, but still lower than the target. The government has decided to undertake the highway network construction by way of BOT utilizing the capital from private sector. The delay of construction, however, is feared due to the low investment interest of the private sector. Motor vehicles have been growing dramatically in number, with old vehicles being replaced with new ones. This has resulted to serious traffic congestion in urban areas, especially in Jakarta.

Railways are exclusively operated by PERUMKA which operates approximately 6,500km of line, 80% of which are on Java and others in Sumatra. Most railways are single track, except for some sections in Java (200km long). Railways are a minor mode of transport and account for 10% of passenger transport demand and 5% of freight transport demand (1990). The operating rate of rolling stock is very low due to maintenance problems.

Major ports and harbors are located in Jakarta, Medan and Surabaya, where gantry cranes are installed. At other ports, crane barges and small cranes are used for handling.

Industrial estates are developed mainly in and around Jakarta. A total of 13 is constructed along with new highways, including Tangerang and Bekasi. Recently, an increasing number of industrial parks is being developed by the private sector.

Export processing zones are in 4 locations, including Batam island, Nusantara, and

Tanjun Priok. In addition, various incentives are provided, including exemption from import duties on goods re-exported by companies operating in industrial estates, and the ownership of bonded warehouses by private enterprises which are 100% export-oriented.

3.2 Direction of Industrial Development Programs and Policies

3.2.1 Industrial development under PJP I

Major thrusts of the economic sector in PJP I (1959-1993) include meeting the basic needs of national life and building a balanced economic structure aimed at developing the industrial sector supported by growth in the agricultural sector.

REPELITA VI summarizes the achievements of industrial development during the PJP I period as follows:

1) Increased production volumes and value-added; annual rate of growth of 12%
2) Enhanced production of quality products
3) Diversification of industries; from 28 to 399
4) Increase in the ratio of export of non-oil and gas industrial products; from 15.2% in 1983 to 58.8% in 1992 of total export value

As factors contributing to the progress of industrialization, REPELITA VI also points out the following:

1) Established and stable macro economy
2) Improved investment climate; deregulation and debureaucratization measures enacted since 1983
3) Availability of improved economic and financial facilities
4) Enhanced capacity of the business community to take advantage of available business opportunities

It should be noted that there was a major turnaround between the industrial policies under REPELITA I through III and the one that followed after 1983. The industrial development policy before 1983 focused on the development of import-substituting industries mainly serving the domestic market on the basis of the government's extensive protection policy to bolster revenues from oil exports. Then, the leveling-off and decline in oil prices after 1981, and worldwide recession in 1983 that deteriorated the country's international balance of payments and government budget due to sluggish exports prompted changes in the government policy, i.e., the reinforcement of the ongoing economic transformation toward less dependence on oil, and the shift of industrialization strategy from import substitution to export orientation.

The policy change was manifested in the devaluation of Rupiah, and institutionalization of financial and fax reforms. It was in 1986 when their effect was visibly seen.

3.2.2 Industrial policy after 1986

During the period, a number of deregulation packages were introduced with a view to less dependence on oil, acceleration of industrialization, and export promotion. In fact, the subsequent policies have been managed in line with this direction. Major deregulation packages are as follows:

(1) Devaluation of Rupiah

On September 12, 1986, the currency's value was depreciated from Rp. 1,134 per dollar to Rp. 1,644, a 30% decline based on the effective rate. This has rapidly increased exports of industrial products and attracted foreign investment in export-oriented industries.

(2) Incentives for export-oriented industries

The government designated companies which export products above a specific level[2] as export-oriented industries, and granted them a variety of incentives, including eligibility of tenancy in the bonded export processing zone, preferential treatment in purchase of raw materials, approval of higher ratio of foreign capital participation[3], authorization to employ foreign experts, and exemption from import duties and value added tax on imports of machinery, equipment and spare parts by companies not eligible under the Foreign Investment Act.

(3) Tax exemption for imports of raw materials for export products

Tax exemption was introduced to replace the refund of import duties.

(4) Authorization of foreign capital participation in export business

Previously, Indonesia banned foreign investment in the commerce sector. The new policy authorized the establishment of joint ventures with foreign companies for exports of Indonesian products. Also, foreign-affiliated manufacturers are allowed to directly export their own products as well as third party products.

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2) Originally defined as a company exporting 85% or more of its production, which was then lowered in 1987 to 65% for industries other than apparel.

3) 75% for export-oriented companies, compared to 25% approved for general financial assistance, and 49% for export promotion.

(5) Diversification of business areas opened to foreign investment

Foreign investment are allowed in the field of industrial infrastructure including the development of industrial estates.

(6) Authorization of re-investment

Foreign-affiliated companies can invest their profits in the country.

(7) Relaxation of local capitalization requirements

Joint ventures were required to raise the equity share of the Indonesian side to above 51% within 10 years after their establishment. The period has been extended to 15 years.

These incentives are less favorable for foreign capital than those in Thailand and Malaysia. Nevertheless, with the rise in labor cost in neighboring countries, rapid increase in foreign investment in Indonesia is due to it large population that comprises a large potential market. The country has been successfully expanding non-oil industrial exports.

3.2.3 Deregulation of foreign investment in 1993 and 1994

The Foreign Investment Act in Indonesia has been less favorable for foreign companies than in other ASEAN countries. As a result, investment by Japan and Asian NIEs, except for that targeting the Indonesian market, were diverted to Malaysia and Thailand, and recently to China and Vietnam.

The government recognized the importance of foreign investment in its industrial development, and relaxed restrictions on foreign investment two times each in 1993 and 1994. With these deregulation measures, investment climate of Indonesia seems to have improved significantly. Major points of improvement are summarized as follows:

1) Capital structure: Previously, wholly owned foreign-affiliated companies were approved on exception. The deregulation has authorized both joint ventures and wholly owned companies. At the same time, the equity participation rate of Indonesian capital in joint ventures has been reduced from 20% to 5%.
2) Minimum investment: Previously, the minimum amount of investment was US$ 1 million. At present, the minimum amount is not specified and determined according to the total value of investment.
3) Operating period: Possibility of extension of the initial operating period (30 years) which has not been clear in any law, can now be specified through a certain procedure with BKPM.
4) Obligation to transfer a majority of share: Previously, joint ventures and wholly

owned subsidiaries were required to transfer a majority of shares to the Indonesian side within 20 years after the commencement of commercial production. The provision has been revised to the effect that "the company is encouraged to raise the Indonesian equity ratio gradually", without indicating of any definite period. Also, wholly owned subsidiaries are required to transfer a part of their share to the local partners 15 years later, but the percentage to be transferred is not specified any more.

5) Treatment of existing foreign investment: The above deregulation measures are also applicable to ongoing foreign investment projects.
6) Exemption of import duties on raw materials and intermediate goods for increased investment: Imports of raw materials and intermediate goods for additional capital investment have not been eligible for tax exemption. Now, exemption from import duties is applied for 2 years to additional investment in case of increase in production capacity for more than 30%.

3.2.4 REPELITA VI

Under PJP II (25 years from 1994), the industrial sector is positioned as a central force of economic development, and its development is expected to become a source of employment growth.

REPELITA VI sets the major goal of industrial development in "the industrial sector restructured and soundly established." This goal leads to the target under PJP II, to establish a powerful and modern industrial sector that can promote a sustainable and reliable economy. The powerful and modern industrial sector is understood to be achieved solely on the foundation of the powerful technical capability and the reliable economic system.

Also, the goal of restructured and sound industrial sector is the reflection of the awareness to enhance and improve the many respects of the present industrial sector, as the economy enters the take-off period. The restructured industrial sector by definition, include the industries which are 1) powerful, 2) deep, 3) enhanced, 4) expanded, and 5) dispersed throughout the country. These attributes are characterized by the strengthening the linkage among upper, intermediate, and lower streams of the industries; large-, medium-, small-sized industries, and traditional industries; and the industrial and other sectors of the economy. Other factors contributing to the goal are significantly high growth rates and value added, and the increases in employment opportunity and export products.

The average growth rates are set at 9.4% for the oil and gas related industry sector and 10.3% for the non-oil and gas industry sector. These are the major indices measuring the

level of development. As a result, percentage shares of the two sectors in GDP will increase from 20.8% to 24.1%, and from 17.6% to 21.3%, respectively by the end of REPELITA VI. Meanwhile, industrial product exports will grow at 17.8% annually and will reach US$ 56.2 billion at the end of REPELITA VI.

In establishing the development goal, REPELITA VI pointed out the following factors affecting the rapid changes in world economic structure, and consequently, the industrial sector in Indonesia:

1) Globalized trade and economic practices, and
2) Rapid advance in technology.

In view of the above, the plan pointed out that the comparative advantage of Indonesia, namely, a huge labor force and abundant natural resources can no longer be relied on, because of the following:

1) More and more technologies available in Indonesia are fastly becoming obsolete, with rapid advance in technology. This translates to shorter life span of industrial products;
2) Natural resources are depleting in types, volumes and qualities;
3) Investment funds are becoming scarcer;
4) Human resources availability become a more determining factor in winning a competition

Under such situation, the challenges on the following points need to be addressed to establish the competitive edge of Indonesia:

1) Reduction of production costs, and product diversification through improvement of human resources quality
2) Increase in capability of experts and technicians to master and acquire various technologies by motivating the work force and enhancing their creative and innovative skills, in order to cope with faster change and shorter life span of technology
3) Mobilization of public funds and its application to productive investments in the industrial sector, and ensuring that it is invested to generate multiple impacts in capital accumulation (the existing cost-effective industrial workers and abundant natural resources could no longer be depended upon in attracting foreign investments, especially, the oriented industries)
4) Creation of institutional instruments which will enable the industrial sector to, respond to and possesses the capacity to deal with developments and changes
5) Acceleration of targeted, integrated and effective growths by small and medium

industries, enabling them to function as the backbone of national industry

6) Determination of policies which accurately enable sustainable industrial development and appropriately protect the environment

Based on the above viewpoints, development policy will focus on the following areas:

1) Development of a business and investment climate
2) Enhancement of industrial capacities
3) Development of small and medium industries
4) Dispersion of industrial sites

Then, priority industry sectors are designated as follows, together with development policy for each sector:

1) Agro-industries
2) Machinery and capital goods manufacturing industries, electronics and components manufacturing industries, sub-assembling industries of strategic products with high value-added
3) Export commodity manufacturing industries of skill intensive (including textiles and textile products)

Based on the above viewpoints, the following industrial development programs are set forth:

(1) Core programs

1) Development of cottage, small and medium industries
   a) Human resource quality improvement
   b) Development of cottage and rural industries
   c) Development of small and medium industries
   d) Development of systems to support small and medium industries
2) Programs on upgrading of industrial technologies
   a) Development of product and manufacturing technologies
   b) Development of industrial planning and engineering
   c) Development of environmentally sound industries
   d) Transfer and dissemination of technology
   e) Standards, certification and accreditation
3) Restructuring the industry
   a) Expanding and strengthening production base
   b) Development of export-oriented industries
   c) Development of industrial human resources

d) Development of industrial organizations

e) Expanded dispersion of industries

(2) Support programs

1) Environmental control

2) Development of information on industries

3) Education, training and counseling on industry

4) Research and development of industry

3.3 Current State of Subsectors under the Study and Major Issues Related to Development[4)]

3.3.1 Automobile and automotive parts manufacturing sub-sector

3.3.1.1 Size and structure of the sub-sector

At present, automobile production in Indonesia is carried out by company groups that are formed through foreign and local capital. In many cases, these company groups consist of a sole agent of local capital, an assembly company, a body press company, and a components supplier including engines. The sole agents are primarily responsible for imports of parts and raw materials, procurement of locally available parts, and sales and marketing of complete cars. The assembly company assembles cars not only for the group company, but also for the different manufacturers by using parts furnished by respective sole agents. The assembly companies are also owned by local capital and mainly engaged in assembly and painting.

The sole agents are exclusively responsible for procurement of automotive parts used by their assembly manufacturers. There are three types of parts manufacturers in Indonesia; 1) Japanese-affiliated local parts manufacturers, who do not belong to any specific automobile manufacturer groups, and manufacturers of generic and standard parts, such as tires, battery, wheels, and paintings, 2) parts manufacturers, who are affiliated by, or belong to the group of Japanese automobile manufacturers, and manufacture functional parts such as body panels, engines, and steering, and 3) local parts manufacturers, without capital participation from foreign manufacturers, who manufacture propeller shafts, brakes, clutches, and transmissions. Parts not locally available, equipment and materials needed for localization are imported from parent companies of foreign partners.

Japanese companies are investing also in the foundry and forging industries.

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4) The development issues and recommended measures for subsector development by subsector under study are summarized in Charts 3-1 through 3-6.

Metalworking subcontracts related to automotive parts are mostly ordered to such Japanese-affiliated companies, except for some parts of simple design.

The sole agents and car assembling companies are local companies, while others in the above groups are joint ventures with foreign capitals. There are only five automotive manufacturing groups in Indonesia, and technology assistance is intensively provided to the car assembling companies by the foreign car manufacturers.

3.3.1.2 Development issues

(1) Higher production costs of local parts

As localization of parts production has progressed steadfastly, it resulted to higher costs, and high domestic prices of automobiles surfacing as major problems. The relatively high prices of Indonesian cars seem to have been attributed to the following factors:

1) High production costs due to flexible production system requiring the supply of a variety of cars in a relatively limited domestic market: In particular, resultant cost disadvantages for press, welding and machining processes are subject to scale of economy.
2) High import costs of materials and parts: Most of materials (accounting for 70-80% of total cost) are still dependent upon imports. Then import costs have increased due to the rise of the yen and the fall of Rupiah.
3) Low productivity and high percentage of defects in production of local parts, including waste of materials associated with domestic procurement: While localization reduces import costs, additional cost impacts more than compensate for such saving.
4) Pricing in the closed market: In a closed market, a manufacturer having a special process or supplying a functional component can enjoy a monopolistic position, including price setting, due to a fairly limited number of competitors. Their customers, assembly manufacturers, also tend to accept high prices in such a market of insufficient price competition.

To lower prices of locally produced cars given the above factors, efforts should be undertaken in several areas. First of all, competition needs to be induced among manufacturers in order to promote cost reduction and quality improvement. Secondly, effective measures should be taken to encourage volume production by manufacturers. To this end, various institutional changes are called for including export and import practices and procedures, and taxation systems to allow automakers operating in ASEAN, Japan, and other Asian countries to perceive tangible benefits from exports, and complementary

supply of parts among neighboring countries. The third area is the establishment of industrial standards that will provide the technological basis for developing the local metalworking industry, thereby accomplishing cost reduction through integrated production.

(2) Ensuring safety in operation of automobiles and related measure in the replacement parts market

Along with the increase in number of cars, various problems in relation to the operation of automobiles (including the related maintenance and inspection requirements) become a national issue and require immediate attention for policy considerations.

In the case of repair parts in particular, measures are necessary in eliminating imitation parts and substandard products from the market. For example, by affixing the SNI mark to those who have maintained in conformity with standards.

3.3.2 Agricultural machinery subsector

3.3.2.1 Industry size and structure

The agricultural machinery industry is divided into: 1) farming machinery, 2) irrigation pumps, and 3) diesel engines used for prime movers of the former two. The value of production by the industry amounts to Rp. 168.5 billion (as of 1993). The number of establishments totals 25 for those producing farming machinery (companies registered with MOI and actually doing production), 12 producers of irrigation pumps, and 5 diesel engines manufacturers.

Due to the abundant supply of labor force in the agricultural sector, and partly to an insufficient farm road network, farming machinery for rice cultivation, such as large tractors, rice planters, combines, and reapers/binders are not widely used. Instead, hand-operated tractors are commonly used.

Farming machinery produced in the country is mainly shipped to the domestic market, with some portions being exported. Export is divided into two types. One is spot export where quantity is unstable. Another type of export is made through the marketing route of group companies in neighboring country of foreign affiliated manufacturers. Although the size of export is not very large, it is done on a continuous basis.

With liberalization of imports, imports of pumps and diesel engines grow rapidly, reaching US$ 140 million and US$ 130 million respectively in 1992. Imports from China account for major portions due to low prices. However, Chinese products have frequent failure, large vibration, and are heavy in weight so that their application becomes relatively

limited. Pumps and diesel engines are also imported on a component basis for local assembly. Imported products are estimated to account for more than 50% of the products sold in the local market, at least in the case of diesel engines.

There are five diesel engine manufacturers which are heavily dependent upon foreign technology. Three companies are joint ventures with Japanese companies, one is a government enterprises receiving license from a German company, and a Chinese-affiliated company.

On the other hand, farming machinery and irrigation pump manufacturers are divided into a handful of joint ventures and local enterprises having foreign partners, and a large number of local enterprises.

3.3.2.2 Current state of development and major issues

Joint ventures and local companies having foreign partners adopt production equipment and systems furnished by parent companies or partners, while still some companies develop their own models that are suitable to local conditions.

On the other hand, local enterprises without foreign partners have been expanding facilities and equipment with an increase in production. However, facility layout is not planned in a well organized manner with the acquisition of more equipment.

Some local companies produce their own brands. They conduct performance tests when they change their production processes or components. Production of small-and-medium-sized enterprises, however, are mostly limited to production of imitations of foreign products.

In the farming machinery industry, local models are being developed while the localization of components and parts production is increased.

The situation is opposite in the diesel engine and irrigation pump area. The domestic market is more sensitive to price than quality and performance as pointed out earlier. This has made Chinese products to increase their share. To improve competitiveness of local companies, it is essential to : 1) minimize percentage of defects, and improve productivity by modernization of facilities and equipment, and; 2) reduce costs through local procurement of materials and parts. Also, it is important to establish a complementary supply system on parts with neighboring countries for the purpose of achieving economics of scale (volume production capability) for cost reduction. Finally, the production system needs to be established to assure product quality acceptable in the international market.

3.3.3 Electrical machinery and equipment subsector

The electrical machinery and equipment industry is divided into: 1) industrial electrical machinery and equipment (including heavy electrical apparatuses[5], watt-hour meters, and cables and wires); and 2) home appliances[6].

3.3.3.1 Industrial electrical machinery and equipment subsector

(1) Industry size and structure

The industrial electrical machinery and equipment subsector produces a wide range of products from power generation equipment, power transmission and distribution equipment and cables (including communication cables) for factories, office and home, and small generators and motors used at factory.

Import substitution in the industrial electrical machinery and equipment industry was promoted under a general localization policy launched during the period of REPELITA IV. The Indonesian government intends to foster the industries manufacturing motors, circuit-breakers, and watt-hour meters into export industries.

According to the industrial statistics, there were 112 enterprises of medium-size[7] or larger in the industry in 1991. Among them, the cable and wire subsector is the largest by the number of enterprises (29) and the value of production (Rp. 710.2 billion), followed by the motor and generator subsector, with 8 companies and production value of Rp. 34.5 billion. Other subsectors are very small, with the average number of employees ranging between 66 and 173.

The industry estimates the total value of production at US$ 700 million.

More than 70% of enterprises in the industrial electrical machinery and equipment industry concentrate in Jabotabek District around Jakarta (consisting of Jakarta, Bogor, Tangerang, and Bekasi). The industrial concentration is also seen in industrial zones in Surabaya and Medan.

An industrial association organized in the industrial electrical machinery and equipment industry called APPI, has membership of 82 companies, 14 of which are joint ventures with foreign companies. Five are German-affiliated, whereas 4 have affiliations with Japanese, 2 American, 1 British, 1 Swedish, and 1 French. Other

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5) Includes equipment related to power generation, transmission, and distribution including generators, motors, switchboards, and transformers. It includes plant facilities in general, but plant facilities are not produced in Indonesia.

6) Recently, an increasing number of home appliances use electronic components, making it difficult to distinguish the electrical equipment industry from the electronics industry, particularly in the case of consumer electronic equipment. This study is based on conventional classification and home appliances refer to refrigerators, washing machines, electrical fans, irons, rice cookers, and air-conditioners.

7) Enterprises having 20 or more employees

member companies which are local enterprises or state enterprises, mostly receive technical assistance from foreign partners including Japan. In particular, those manufacturing motors and transformer receive technical assistance, or have under license agreements with German, British and Japanese companies.

Of the US$ 700 million worth of total production, exports amount to US$ 128 million. Thus, the industry primarily relies on the domestic market, the main customers being PLN, factories, construction projects, and buildings. PLN is the single largest customer.

Imports total US$ 1,026 million because a relatively small number of items are locally produced, whereas supply of many products relies on imports.

PLN, the largest customer, provides a favorable treatment for local products in its tender process by establishing quota and the favorable treatment factor. Similar measures are observed also in neighboring countries. As a result, the industry's exports become fairly limited in general.

(2) Current state of development and major issues

The industry principally relies on the domestic market. It has been fostered under the localization policy that provides relatively intensive protection. As a result, the industry still uses technology and equipment introduced during its initial stage of operation, without major upgrading or improvement. This is reflected on high percentage of defects and refitting work resulting to poor productivity, while little progress has been made to diversify into new product areas. Technical standards required by the domestic market are lower than international ones, showing that the industry does not have an urgent need for technological improvement.

Similarly, few efforts have been made to develop inter-industrial linkage, i.e., to nurture subcontractors through the procurement of parts and materials from domestic sources.

In the case of industrial electrical machinery and equipment industry in industrialized nations, they have constantly promoted technological development contributory to the creation of seeds for new products. Thus, most companies in this sector have developed into either specialized manufacturers in technology specific to certain product parts, or integrated electrical and electronics manufacturers.

To promote further development of the industry in Indonesia, a primary target should be set to spur technological improvement efforts of individual companies by introducing competition. Only then will support will become necessary to improve productivity and promote local procurement of raw materials.

3.3.3.2 Home appliance subsector

(1) Industry size and structure

The home appliance subsector in Indonesia consists of: 1) home appliances including refrigerators, air-conditioners, electric fans, irons, and rice cookers, and lamps; 2) dry battery, and 3) small equipment and devices used for wiring for home appliances. While the dry battery industry is export oriented, the other two subsectors mainly serve the domestic market.

The home appliance industry emerged in the early 1970s under the government policy to promote localization, that entails export restriction and high tariff rates. While product items are diverse, the market size is relatively small, as well as the production size.

Japanese companies that have large influence in the ASEAN region became active in 1985 and onward, in establishing production networks among Asian countries realigning their businesses operation in the region. In the process, standardization has progressed among group companies within the region, and joint undertaking of production/procurement of parts has expanded with specialization in parts production to a specific company group in the region, thereby accomplishing and enjoying economies of scale. It should be noted however that, compared to other ASEAN countries, joint ventures in Indonesia have deployed their operation in a somewhat different manner. In Indonesia, they focused their attention to the domestic market partly because that the localization policy was vigorously promoted, and that the country offers a huge potential market opportunity. As a result, investment was confined to product areas that are protected by the government, while are small in production size. Although export was promoted later, horizontal integration of industries in the region has already been completed, and Indonesia had to specialize in low-cost and low value added products such as electric fans, batteries and black and white TV sets.

Recently, Singapore, Malaysia, and Thailand encounter the shortage of labor, accompanied by a rise in labor cost, forcing all the foreign manufacturers operating in these countries - not only Japanese but, Korean, European, and American have turned their attention to Indonesia, China, and Vietnam. Since 1990, Japanese and Korean companies have started to invest in Indonesia. In fact most companies making new investment are electronic equipment and parts manufacturers.

Most home appliances can be produced locally. There are only two joint ventures (Matsushita and Sanyo), but most local enterprises manufacture their products under technical assistance or license agreement with foreign companies. They are sold under foreign brands.

Many companies produce and sell diverse products, but operating rates are generally low. Nevertheless, large population still represents huge market potential.

Most products in the subsector are consumed within the country.

There are 12 companies manufacturing incandescent and fluorescent lamps. Top three or four companies are large in size and export their products, albeit small in quantity. Lower-tier companies are not capable of manufacturing products with reliable quality and their rejection rate is very high.

8 companies are operating in the dry battery industry, of which 3 are foreign-affiliated companies with large production capacities. Indonesia accounts for approximately 8% of worldwide battery production (1,428 million units in 1992). The country's dry battery production grew rapidly after 1991.

(2) Current state of development and major issues

The home appliance market has huge growth potential with the continuing progress in electrification, increase in household income, and growth of the middle class. At the same time, the industry which was previously protected by the government policy to foster local industries, will be exposed to competition from foreign products as market opening policy is accelerated and the launching of AFTA is fast tracked leading to lower tariff rates of home appliance products.

The industry has to strengthen their competitiveness by improving their capacity utilization rate, reducing percentage of defects, and promoting the procurement of locally manufactured components and parts.

More specifically, the procurement of locally produced components and parts holds the key. However, components and parts produced in the country are very limited in number and variety, and most of them are currently imported. In particular, large group companies have regional procurement offices (IPOs) in Singapore, which collect components and parts produced in neighboring countries, and distribute them to production bases.

Although manufacturers attempt to procure local products, these are mainly individual components and parts, rather than subassemblies. This reflects the fact that there is no production base where different suppliers work together to combine different technologies and products to develop advanced products as supporting industry. Efforts should be focused on the sharing of component production from the viewpoint of developing the international production system.

3.3.4 Electronic equipment and components industry

3.3.4.1 Industry size and structure

Products supplied by the electronics industry are classified as follows:

1) Consumer electronic equipment (video equipment, audio equipment, and other consumer products)
2) Industrial electronic equipment (telecommunications, data processing, and other business and industrial equipment)
3) Electronic components (active components, passive components, electro-mechanical parts, and discrete electronic components and parts)

The electronic equipment and components industry in Indonesia is classified into the following three types: 1) local enterprises selling products under their own brands; 2) Japanese-affiliated companies and their licensees that manufacture and sell products under Japanese and other foreign brands to the Indonesian market; and 3) other export-oriented foreign enterprises.

Companies in the second category have entered the market with expectation for domestic demand growth, and in response to economic expansion after 1973 and the development of industrial infrastructure.

Those in the third category have emerged in the early 1980s when the government announced its policy of promoting labor-intensive, export-oriented industries, including Japanese and Korean manufacturers of audio and visual equipment for export which have established in the country after 1990.

While foreign companies investing in Indonesia are currently attracted by the country's advantage as a export production base with low labor cost, they also expect the potential of the country's market to produce large domestic demand in the future.

The sector's total output in 1993 was US$ 2,098 million, with imports and export values being US$ 2,048 million and US$ 1,137 million, respectively. Nominal demand[8] amounted to US$ 3,010 million, with a self-sufficiency rate of 70%.

As for the number of enterprises, 52 are engaged in consumer electronics production, followed by 36 in manufacture and assembly of electronic components. Employment in consumer electronics production is over 21,000. The value of production totals Rp. 687.7 billion (US$ 354 million).

Most of companies in the subsector are private enterprises, except for the state enterprise, PT Inti, that monopolizes the telecommunications business.

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8) Production + imports - exports

An increasing number of electronics companies invests in Batum Island, receive parts supply from Singapore to carry out labor-intensive production, and ship their products to Singapore. Almost all of them are characterized as offshore operation, making the island an industrial area led by IPOs in Singapore. Major electronic equipment and components produced are wire harnesses, printers, FDD heads, and VCRs.

Domestic demand for industrial electronic equipment accounts for the largest share – 46% – of electronic equipment and parts demand, while domestic production accounts for 34%. It holds the lowest share in exports compared to consumer electronic equipment and electronic components. The segment of industrial electronic equipment with the highest production volume is communication equipment including telephones, telephone exchanges, and PABXs. However, domestic production is very small and satisfies only 30% of total demand. The telephone market for general consumers, including cellular phones, products bearing Japanese, European, and American brands command a high share in particular.

Production of electronic components is dominated by mechanical parts. Production of active and passive components is still limited in quantity, and imports are a major supply source. Growth of electronic component production primarily comes from that of consumer electronics production, mainly TV sets and other equipment for exports.

Production of semiconductor devices which is prevalent in Malaysia and Thailand is not seen in Indonesia as one manufacturer already ceased operation in the country. Nevertheless, semiconductor demand is increasing, particularly for home appliances.

Production of electronic equipment involves many stages of processing and assembly. For example, production of electronic components relies on a variety of machining and shaping techniques including metalworking and plastics processing.

In Indonesia, since the it is insufficient formation of supporting industries capable of supplying parts with adequate quality, CKD operations of importing all the parts from parent companies or affiliates become common. Some companies have their own plastics processing and/or metalworking equipment. Also, some subcontract plastic molded components and parts that do not require high levels of accuracy but their quantity is very limited.

Most consumer equipment manufacturers are joint ventures or local companies under a licensing agreement with Japanese and Korean companies. A handful of large local companies have introduced foreign technology at the initial stage of production.

Industrial equipment manufacturers are primarily doing assembly operations, while

only a few companies are engaged in volume production. Manufacturers in the communication equipment subsector manufacture commodity products under the technical assistance of leading foreign makers. Commodity telephone receivers are mostly manufactured by CKD.

As for electronic components, functional components and working parts are made by local companies who receive technical assistance from foreign-affiliated companies making thus their own product development and design capabilities fairly limited. A few number of companies produce passive and active components, which are mostly foreign-affiliated companies and joint ventures. As seen in manufacturers in the consumer equipment subsector, companies use production equipment furnished by foreign partners who also provide product designs.

3.3.4.2 Current state of development and major issues

The development of the electronic equipment and components industry in Indonesia with the international market as target started in the early 1990s under the government's market opening policy and promotion of foreign investment. It depends on foreign sources including IPOs in Singapore for supply of most materials and parts. Foreign-affiliated manufacturers operating in Indonesia are considering increased local procurement of raw materials and parts for cost reduction. To meet such demand, the country is expected to promote the development of local capabilities in supplying materials and parts that satisfy quality and performance requirements, including machining operation.

3.3.5 Metalworking subsector

3.3.5.1 Foundry subsector

(1) Industry size and structure

The foundry industry is comprised of approximately 150 companies with varying size. In addition, around 340 small enterprises and micro enterprises are concentrated in Ceper in Central Java which have organized cooperatives. Furthermore, more small foundries not reflected in statistics seem to operate throughout the country. Foundry production in 1993 totaled 196,000 tons, of which iron castings were 92,000 tons.

Castings can be classified into three types according to application. The first type include castings that are used as final products such as ductile cast iron pipes, pipe joints, manhole covers, fire hydrants, brake shoes, and anchors. The second type consists of machined castings used as components of automobiles, agricultural machinery, machine tools, and electrical equipment. The third type of castings is used as part of production equipment such as dies for metal press.

Castings of the second and third types as well as larger sized in the first type are manufactured by large enterprises that are mainly located in industrial estates in the suburbs of Jakarta and in major cities of Java. However, castings requiring high levels of precision and reliability, such as engine cylinder blocks, crank cases, and cylinder heads for automobiles and agricultural machinery, are rarely produced locally and mostly imported.

Small castings of the first type, without strict quality and dimensional requirements, such as manhole covers, brake shoes, fire hydrants, and hand-operated well pumps, are manufactured by small-and-medium-enterprises as well as micro enterprises, which are concentrated in specific areas of Ceper, Tegal, and Sukabumi.

Foundry makers are divided into four types according to size and ownership: 1) joint ventures established by foreign-affiliated assembly manufacturers of automobiles, pumps and construction equipment as a supply source of castings for their own projects; 2) local large enterprises which manufacture castings of the second and third types as well as large castings of the first type, under technical assistance or licensing from foreign companies; 3) large local enterprises which manufacture malleable cast iron pipe joints and ornamental castings such as fences, and 4) small-and-medium-sized enterprises and micro enterprises servicing their surrounding regional markets.

(2) Current state of development and major issues

Joint ventures and local large enterprises having foreign partners produce industrial castings, some of which are exported. While foundry technology has steadily improved, there is but one company, a foreign-affiliated one, which can produce castings for important automotive parts.

Other joint ventures and local enterprises still have to improve their production techniques, as evidenced from a high percentage of defects at a rate of around 10%.

Recently, agricultural machinery makers are increasingly procuring castings from small enterprises and micro enterprises responding to the request of the government for local purchase. However, small foundries have many problems related to technology and quality. Their production equipment have small capacity and are obsolete. Accuracy is rarely checked by measuring instruments and empirical judgment of workers is normally relied on. Products are inspected only visually. As a result, the percentage of defects and the refitting rate are very high.

At the same time, a small production lot constrains investment in expensive and latest equipment for production of high-grade castings. This will likely lead to the further backwardness of the foundry industry relative to the competing neighboring

countries. Effective measures that will address this situation should be taken to enable the industry to serve the international as well as the domestic markets, thereby to increasing the size of operation.

3.3.5.2 Metal press subsector

(1) Industry size and structure

The industry serves assembly manufacturers that are joint ventures or local companies having foreign partners. Their localization rate is also relatively high. The metal press industry consists of: 1) joint ventures established by assembly manufacturers producing stamping press parts for automobiles and motorcycles, having welding equipment and purpose-built die making shops with high levels of production equipment and quality control; 2) locally-owned large enterprises manufacturing press parts for automobiles, agricultural machinery, panels, and refrigerator cases on a contract basis, which have design offices and die making shops for the design, manufacture, and repair of dies for self-use as well as for other companies; and 3) local medium-sized enterprises that stamp or bend small press parts for automobiles and electrical equipment, many of which are also doing machining, die making or plating.

(2) Current state of development and major issues

This subsector is the most localized among the metalworking industry and has relatively high levels of production technology. There are large manufacturers specializing in press work using a 4,000-ton hydraulic press and a 2,000-ton mechanical press capable of producing chassis and other large automotive parts. The industry as a whole seem to rank high in Southeast Asia in terms of production technology.

Dies of varying size and shape are locally produced, while those of complex shapes or requiring a high level of precision are imported from Japan and elsewhere.

Another area requiring further improvement is locally produced steel plates which vary in dimension and composition, thus affecting the quality of final products.

3.3.5.3 Forging subsector

(1) Industry size and structure

The industry consists of 12 companies including specialized manufacturers, of which 5 are joint ventures and local companies having foreign partners, and 2 government enterprises. Annual production is estimated at 50,000 tons. 4 companies are registered with the Ministry of Industry (as of 1993).

All companies besides a joint venture, have been established to supply forgings to Japan, and are aiming to produce automotive parts. At present, they produce industrial