JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

MINISTRY OF PUBLIC WORKS
REPUBLIC OF INDONESIA

THE FEASIBILITY STUDY ON URBAN ARTERIAL ROAD SYSTEM DEVELOPMENT PROJECT IN JAKARTA METROPOLITAN AREA

FINAL REPORT

VOLUME I: TEXT

JANUARY, 1995

PACIFIC CONSULTANTS INTERNATIONAL
YACHIYO ENGINEERING CO., LTD.

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

MINISTRY OF PUBLIC WORKS
REPUBLIC OF INDONESIA

THE FEASIBILITY STUDY
ON
URBAN ARTERIAL ROAD SYSTEM
DEVELOPMENT PROJECT
IN
JAKARTA METROPOLITAN AREA

FINAL REPORT

VOLUME I: TEXT

JANUARY, 1995

PACIFIC CONSULTANTS INTERNATIONAL
YACHIYO ENGINEERING CO., LTD.

Note

The exchange rates used in the Study are:

$1.00 = Rp.2,150 = JY100

JY1.0 = Rp.21.5

(as of the end of August 1994)

Preface

In response to a request from the Government of the Republic of Indonesia, the Government of Japan decided to conduct a Feasibility Study on Urban Arterial Road System Development Study in Jakarta Metropolitan Area and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to Indonesia a study team headed by Mr. Nobuwaka Yamakawa, Pacific Consultants International (PCI), and composed of members of PCI and Yachiyo Engineering Co., Ltd. (YEC), three times between April, 1993 and October, 1994.

The team held discussions with the officials concerned of the Government of Indonesia and conducted field surveys and studies at the study area. After the team returned to Japan, further studies were made and the present report was prepared.

I hope that this report will contribute to the promotion of the project 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 extended to the team.

January, 1995

Kimio Fujita
President
Japan International Cooperation Agency

THE FEASIBILITY STUDY ON URBAN ARTERIAL ROAD SYSTEM
DEVELOPMENT PROJECT IN JAKARTA METROPOLITAN AREA

January, 1995

Mr. Kimio Fujita
President
Japan International Cooperation Agency

LETTER OF TRANSMITTAL

Dear Sir,

We are pleased to submit you the final report entitled "THE FEASIBILITY STUDY ON URBAN ARTERIAL ROAD SYSTEM DEVELOPMENT PROJECT IN JAKARTA METROPOLITAN AREA".

This report has been prepared by the Study Team in accordance with the contracts signed on March 5, 1993, November 15, 1993 and June 10, 1994 between Japan International Cooperation Agency and Pacific Consultants International/Yachiyo Engineering Co., Ltd.

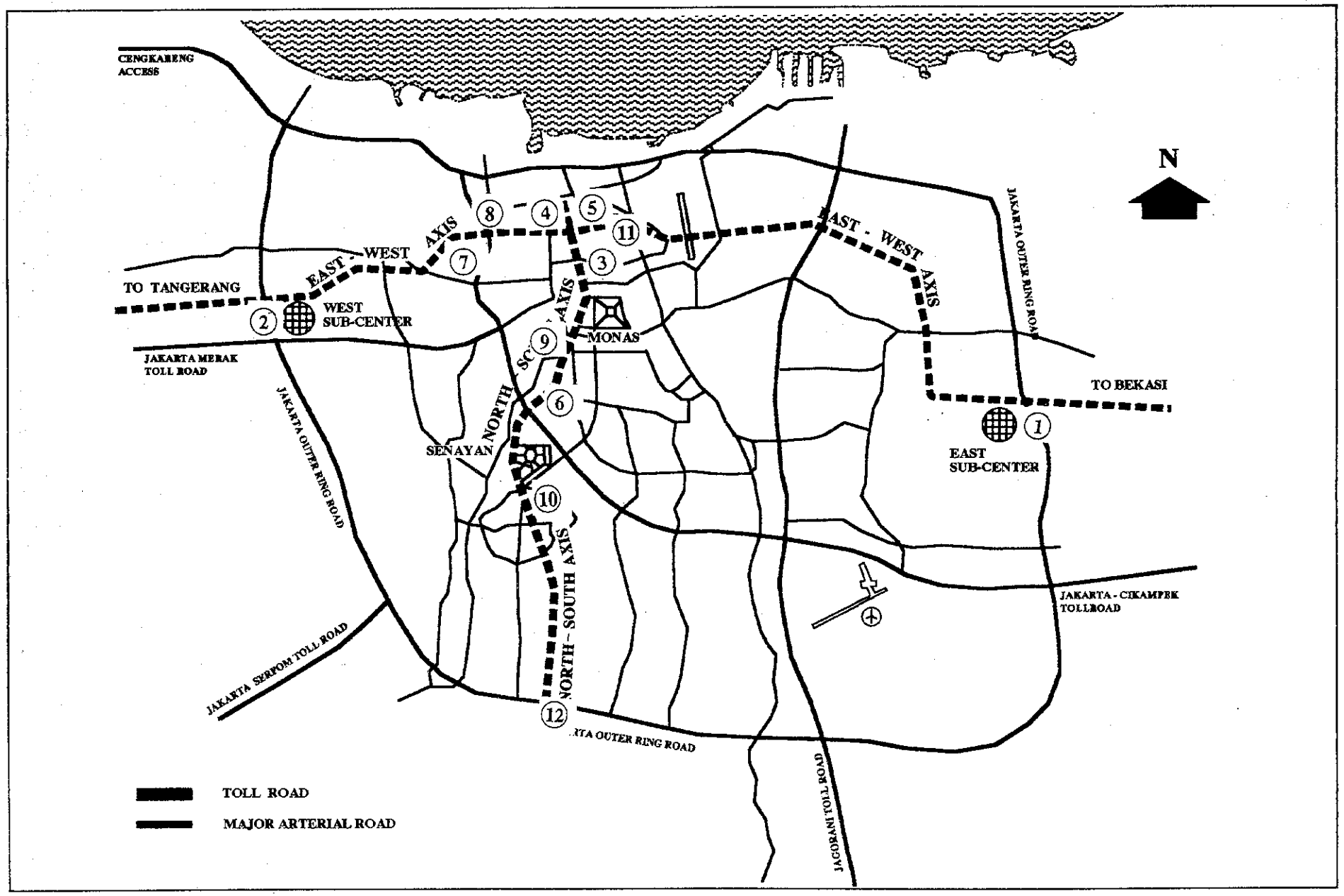
The report examines the existing conditions in DKI Jakarta and surrounding area concerning traffic and transportation, systems, reviews the structure plans and other plans, analyses them and presents the results of a feasibility study.

The report consists of Summary, Text, Appendix and Drawings. The Summary summarizes the results of all studies. The Text presents the results of whole study. The Drawings presents the preliminary engineering designs.

All member of the Study Team wish to express grateful acknowledgment to the personnel of your Agency in Tokyo and in Jakarta, Advisory Committee, Embassy of Japan in Jakarta, and also to officials specially the member of Steering Committee and counterparts of the Government of Republic of Indonesia for their assistance extended to the Study Team. The Study Team sincerely hopes that the results of the study contribute to the realization of the projects.

Yours faithfully,

Nobuwaka Yamakawa
Team Leader

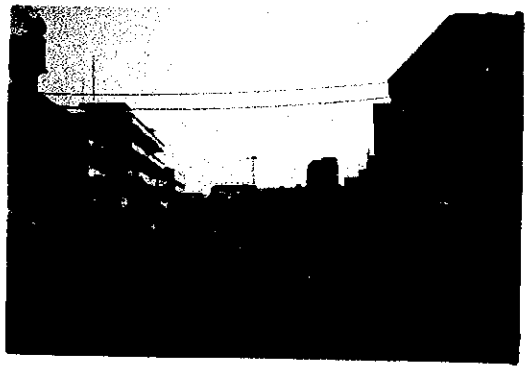


PROJECT LOCATION MAP

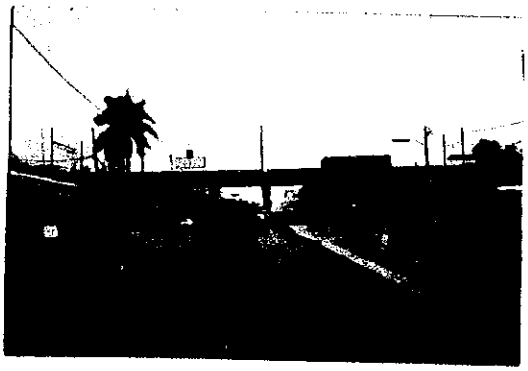
① East Primary Center

② West Primary Center

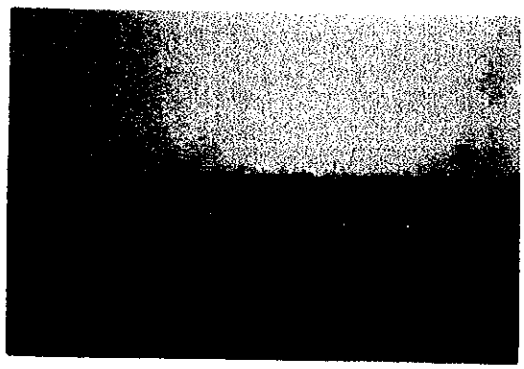
③ Congested Jl. Gajah Mada and Kali Ciliwung



④ Jl. Mangga Besar heading to Mangga Besar Extension



⑤ Elevated Central Railway Line crossing Jl. Mangga Besar



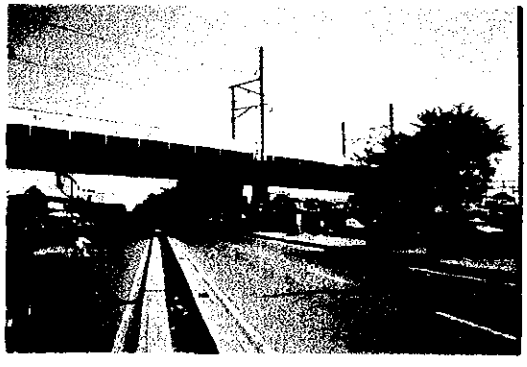
⑥ Kali Malang/Banjir Kanal

⑦ Tangerang Railway Line

⑧ Senayan Statue

⑨ Land Acquisition on Jl. Jati Baru

⑩ Evacuation on Northern Extension of S-W Arc



⑪ Steel Box Girder fabricated in Indonesia

⑫ Construction of Jakarta Outer Ring Road

FEASIBILITY STUDY
ON
URBAN ARTERIAL ROAD SYSTEM DEVELOPMENT PROJECT
IN
JAKARTA METROPOLITAN AREA

FINAL REPORT

VOLUME 1 : TEXT

TABLE OF CONTENTS

VOLUME 2 : APPENDIXES

VOLUME 3 : DRAWINGS

LIST OF TABLES

Page

TABLE

LIST OF FIGURES

Page

FIGURE

Page

FIGURE

Page

FIGURE

Page

FIGURE

Page

FIGURE

Page

FIGURE

ABBREVIATIONS

AASHTO	American Association of State Highway and Transportation Officials
ADT	Average Daily Traffic
ANDAL	Environmental Impact Analysis
APBN	Anggaran Pendapan dan Belana Negara (National budget)
ARSDS	Arterial Road System Development Study in Jakarta Metropolitan Area
ASEAN	Association of Southeast Asian Nations
BAPPEDA	Badan Perencanaan Pembangunan Daerah, Regional Development Planning Board
BARPENAS	Badan Perencaaan Pembanguuan Nasional, National Development Planning Board
B/C	Benefit Cost Ratio
BPS	Biro Pusat Statistik, Central Bureau of Statistics
CBR	California Bearing Ratio
cm, cm^2, cm^3	Centimeter, square centimeter, cubic centimeter
DBM	Dinas Bina Marga
Bina Marga	Directorate General of Highways, Ministry of Public Works
Dia. or ∅	Diameter
DKI Jakarta	Jakarta Special Capital Province
DPU	Department Pekerjaan Umum, Ministry of Public Works
EIRR	Economic Internal Rate of Return
EL	Elevation
F/S	Feasibility Study
GDP	Gross Domestic Product
GOI	Government of Indonesia
GRDP	Gross Regional Domestic Product
IBRD	International Bank for Reconstruction and Development
JABOTABEK	Region comprising Jakarta, Bogor, Tangerange and Bekasi local government administrative areas
Jasa Marga	Indonesia Highway Corporation
JMDP	Jabotabek Metropolitan Development Plan
JMDPR	Jabotabek Metropolitan Development Plan Review
JORR	Jakarta Outer Ring Road
JUDP	Jabotabek Urban Development Project
JICA	Japan International Cooperation Agency
Kab.	Kabupaten (Regency)
Kec.	Kecamantan (Sub-district)
Kel.	Kelurahan (Village)
Kod. or Kodya	Kotamadya (Municipality)
Km	Kilometer
LLAJR	Directorate of Road Transport, PHBD
m, m^2, m^3	Meter, square meter, cubic meter

MHA	Ministry of Home Affairs
MOC	Ministry of Communication
MOF	Ministry of Finance
MPW	Ministry of Public Works
NPV	Net Present Value
OD	Origin and Destination
OECF	Overseas Economic Cooperation Fund
PC	Prestressed concrete
PCC	Portland cement concrete
PCU	Passenger Car Unit
PERMUKA	Perusahaan Umum Kereta Api, Public Corporation of Railways
PHBD	Directorate General of Land Transport and Inland Waterways, MOC
RC	Reinforced concrete
RBWK	District Plan
REPELITA	Rencana pembangunan Lima Tahun, Five-Year Development Plan
ROW	Right-of-way
Rp.	Rupiah
Sta.	Station
TK. I / TK. II	Tingkat I / Tingkat II (First/Second Level of Autonomy)
VOC	Vehicle Operating Cost

CHAPTER 1 GENERAL

CHAPTER 1 GENERAL

1.1 Background

DKI Jakarta, the capital of Indonesia, is among the largest cities in the world that will have 11.2 million population in 2010. It results in growing 1.55% p.a. and 1.4 times as much as 8.2 million in 1990 census. Growth is more outstanding in Jabotabek as a whole. Tangerang and Bekasi, for example, are expected to have 4 times more population and 3.4 times more job opportunities for the coming two decades. Even though it continues to expand her urbanized area toward its surrounding, especially for east and west fringe of the city based on the development policy of Jabotabek Metropolitan, DKI Jakarta still retains the hub of financial, commercial and administrative activities in Indonesia.

Rapid expansion of social and economic activities stimulate motorization in the urban area, and resultingly chronic traffic congestion takes place on major arterial streets in the central business districts as well as on radial roads in the suburbs.

To cope with such traffic situation in Jakarta, the Government of Indonesia has been implementing the various measures such as the expansion of one way traffic controlled area, increase of intersection with no right turning, application of exclusive bus lane and 3 in 1 regulation in the CBD as short term schemes. The Government also has medium and long term improvement plans to construct toll roads and flyovers, to improve the existing railway for commuters and to introduce Light Rail Transit (LRT) system.

The Feasibility Study on Urban Arterial Road System Development Project in Jakarta Metropolitan Area (hereinafter referred as "the Study"), which was one of the major recommendations from Arterial Road System Development Study in Jakarta Metropolitan Area conducted by JICA in 1987 (hereinafter referred as "ARSDS"), aims at formulating a basic road development plan for the North-South Axis and the East-West Axis and examining the feasibility of selected priority sections of the axes.

1.2 Study Objectives

The Study conducted under the above condition is comprised of the following major components :

(1) to formulate a basic road development plan for the East-West corridor between Tangerang and Bekasi (approximately 70 kilometers in length) and North-South corridor between Harbour Road and Outer Ring Road (approximately 20 kilometers in length) in Jakarta Metropolitan Area, and to select priority sections of the two corridors; and

(2) to carry out a feasibility study on the selected sections of the said corridors.

1.3 Scope of the Study and Study Progress

The Study consists of the following three phase :

Phase I (March, 1993 ~ September 1993)	:	Basic Development Plan Formulation,
Phase II (November, 1993 ~ February, 1994)	:	Feasibility Study Part I, and
Phase III (June, 1994 ~ January, 1995)	:	Feasibility Study Part II.

The study approach and phasing are presented in Fig. 1.1.

The study framework were formulated and reports were prepared and submitted to Bina Marga in the course of the study. (Refer to Table 1.1)

1.4 Study Area

The Study covers DKI Jakarta and its environs.

1.5 Organization for Executing the Study

The Study was carried out by the JICA study team and the Indonesian counterpart team jointly organized by Bina Marga, DGLC, Bappeda-DKI and Jasa Marga. The study team was guided by the inter-department Steering Committee and received technical advices from the JICA Advisory Committee. The organization Chart is shown in Fig. 1.2.

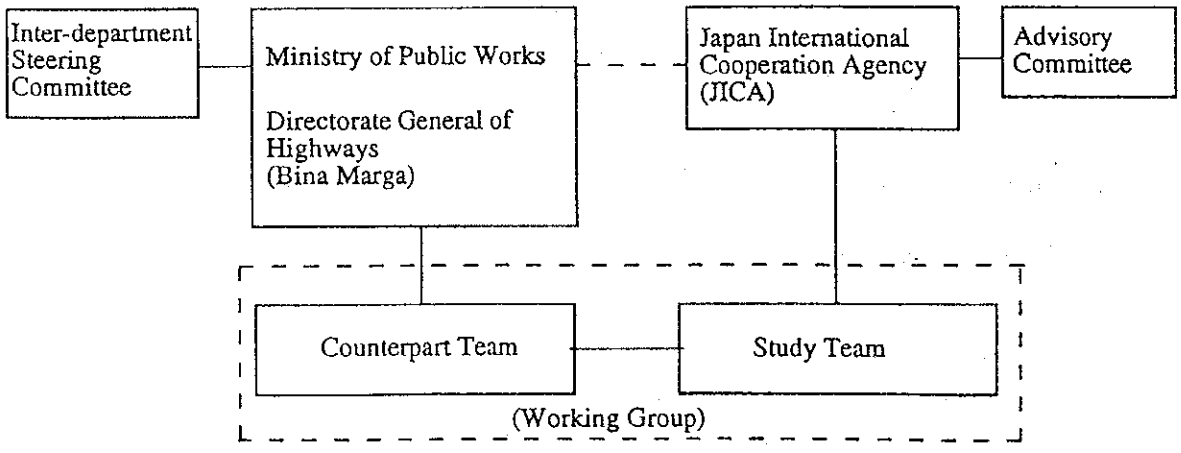


Fig. 1.2 Organization Chart of the Study

Fig. 1.1 Study Approach and Phasing

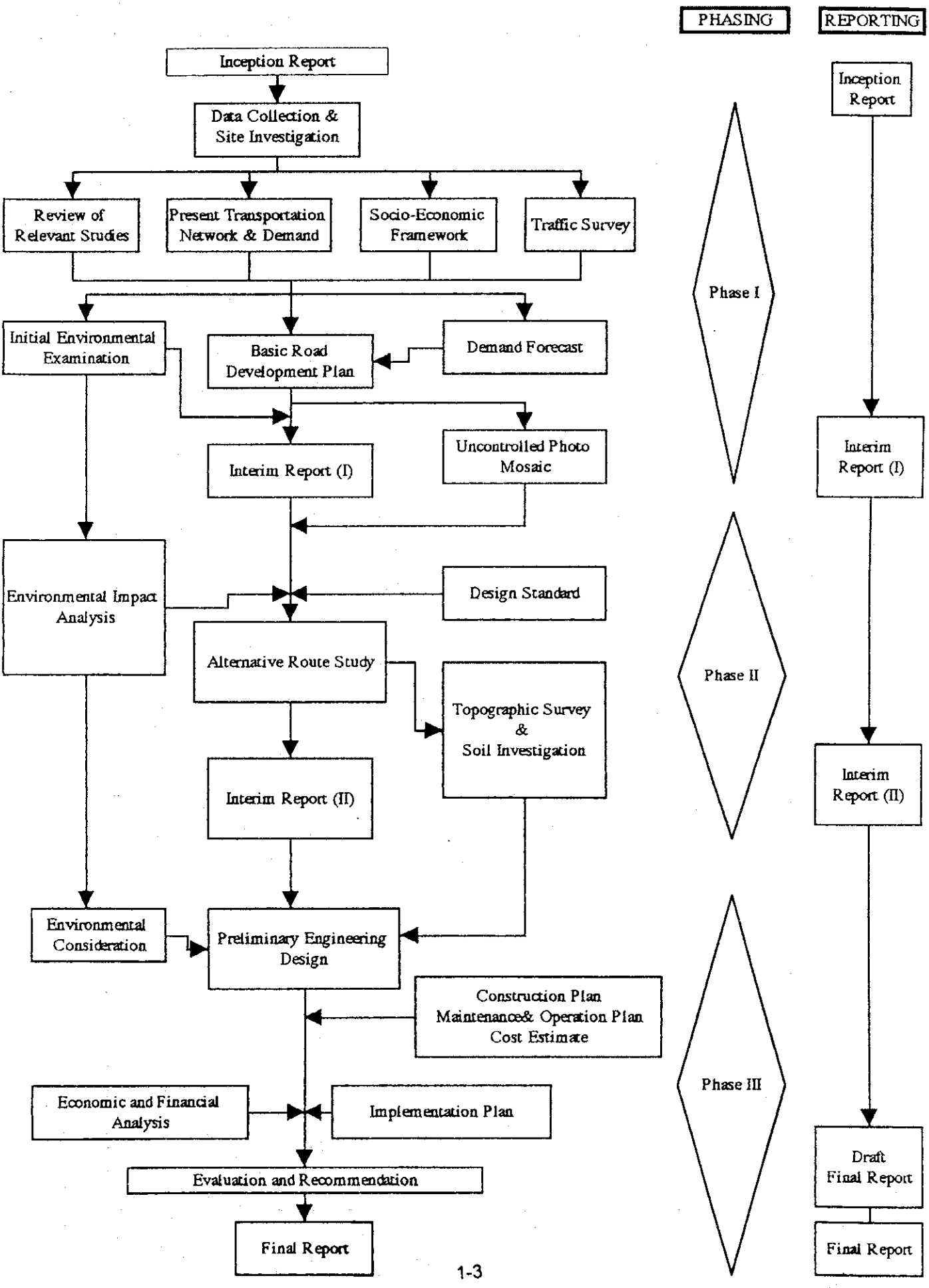


Table 1.1 Study Framework and Reporting

Study Phasing	Major Outputs	Reporting	
Phase I : Basic Development Plan Formulation	1) Determination of socio-economic framework 2) Transportation demand forecast 3) Alternative corridor study 4) Preliminary project cost estimate 5) Preliminary economic analysis 6) Initial environmental examination 7) Selection of priority road sections for the feasibility study, and 8) Preparation, presentation, and discussion of the Interim Report (I).	Inception Report Interim Report (I)	April 1993 September 1993
Phase II : Feasibility Study Part I, and	1) Establishment of design standard 2) Environmental impact analysis (ANDAL) 3) Setting of alternatives for the route study 4) Comparison of alternatives 5) Selection of alignments 6) Topographic surveys and soil investigation, and 7) Preparation, presentation, and discussion of the Interim Report (II).	Interim Report (II)	February 1994
Phase III : Feasibility Study Part II	1) Preliminary design with environmental consideration 2) Construction planning 3) Project implementation plan including the operation and the maintenance plans and programs and the cost estimates for the overall project 4) Economic and financial analysis 5) Overall evaluation of the project and recommendations 6) Preparation, presentation, and discussion of the Draft Final Report, and 7) Preparation and submission of the Final Report	Draft Final Report	October 1994

The member participated in the Study are listed below :

1). Inter-department Steering Committee

Chairman	:	Mr. Sunaryo Sumadji Director of Urban Road Development (Binkot), Directorate General of Highways (Bina Marga), Ministry of Public Works.
Deputy Chairman	:	Mr. Budihardjo Head of Regional Development and Planning Coordination Bureau (Bappeda), DKI Jakarta.
Secretary	:	Mr. Sukawan Mertasudira, MSc. Sub-director of Technical Development, Directorate of Binkot.
Member	:	Mr. Suhartono Tjitrodiwirdjo Sub-director of Central Region, Directorate of Binkot.
Member	:	Mr. Bhudjono Chief of Unit for Tollway Development, Binkot.
Member	:	Mr. Machmuddin Jusuf Bureau of Transportation and Tourism, National Development and Planning Coordination Agency (Bappenas).
Member	:	Mr. Bambang Susanto Priyohadi, MPA Sub-director of City Planning I, Directorate of City and Regional Planning, Directorate General of Human Settlements (Cipta Karya).
Member	:	Mr. Achmad Lanti, MEng. Head of Public Works Regional Office of DKI Jakarta, Ministry of Public Works.
Member	:	Mr. Iskandar Abubakar, MSc. Sub-director of Urban Transportation, Directorate of Traffic and Transportation (LLA), Directorate General of Land Communication, Ministry of Communications.
Member	:	Mr. Irsal Jamal Sub-director, Bappeda DKI Jakarta.
Member	:	Mr. Udin Abimanyu City Planning Bureau, DKI Jakarta.

Member	:	Mr. Soeharto Public Works Bureau, DKI Jakarta.
Member	:	Mr. Oi Godjali Head of Arterial Road Traffic and Transportation Bureau, DKI Jakarta.
Member	:	Mr. Parmin MSc. Technical Director, Indonesia Highway Cooperation (PT Jasa Marga) (Persero).
Member	:	Mr. Maryanto MEng. Sc. Project Manager, Technical Development Planning and Implementation on National Road in DKI Jakarta, Binkot.

2). Indonesian Counterparts

Project Officer	:	Mr. Udhiono Pudjisaroso, Binkot.
Counterpart	:	Mr. Hendri Sarosa, Binkot
Counterpart	:	Mr. Sri Sadono, Binkot
Counterpart	:	Mr. Padri H. Aksah, DGLC
Counterpart	:	Mr. Budirama, Bappeda DKI
Counterpart	:	Mr. Kristianto Adi, Jasa Marga

3). JICA Study Team

Mr. Nobuwaka Yamakawa (Team Leader/Road Planner)
Pacific Consultants International

Mr. Isamu Gunji (Deputy Team Leader/Transportation Planner)
Pacific Consultants International

Mr. Kenji Maruoka (Deputy Team Leader/Highway Engineer)
Pacific Consultants International

Mr. Kano Ito (Urban/Regional Planner)
Pacific Consultants International

Mr. Tomokazu Wachi (Traffic Engineer)
Pacific Consultants International

Mr. Akinori Sato (Environmental Analyst)
Pacific Consultants International

Mr. Yousuke Sasaki (Soils and Geological Specialist)
Yachiyo Engineering Co., Ltd.

Mr. Yuji Sorayama (Structural Engineer)
Yachiyo Engineering Co., Ltd.

Mr. J.H. Hamilton (Construction Plan Specialist/Cost Estimator)
Yachiyo Engineering Co., Ltd.

Mr. Masatoshi Kaneko (Economic and Financial Analyst)
Pacific Consultants International

Mr. Yutaka Kokufu (Aerophoto Mosaic Supervisor/Geodetic Engineer)
Pacific Consultants International

4). JICA Advisory Committee

Mr. Yasuo KASHIMA	(Chariman)
Mr. Seizo HAYASAKA	(Transport Planning)
Mr. Yasuhiro TAKAMATSU	(Road Planning)

CHAPTER 2 PRESENT SOCIO-ECONOMIC AND SPATIAL CONDITIONS

CHAPTER 2 PRESENT SOCIO-ECONOMIC AND SPATIAL CONDITIONS

2.1 Geographical Conditions and Administrative Structure

2.1.1 Geographical Conditions

(1) Geography

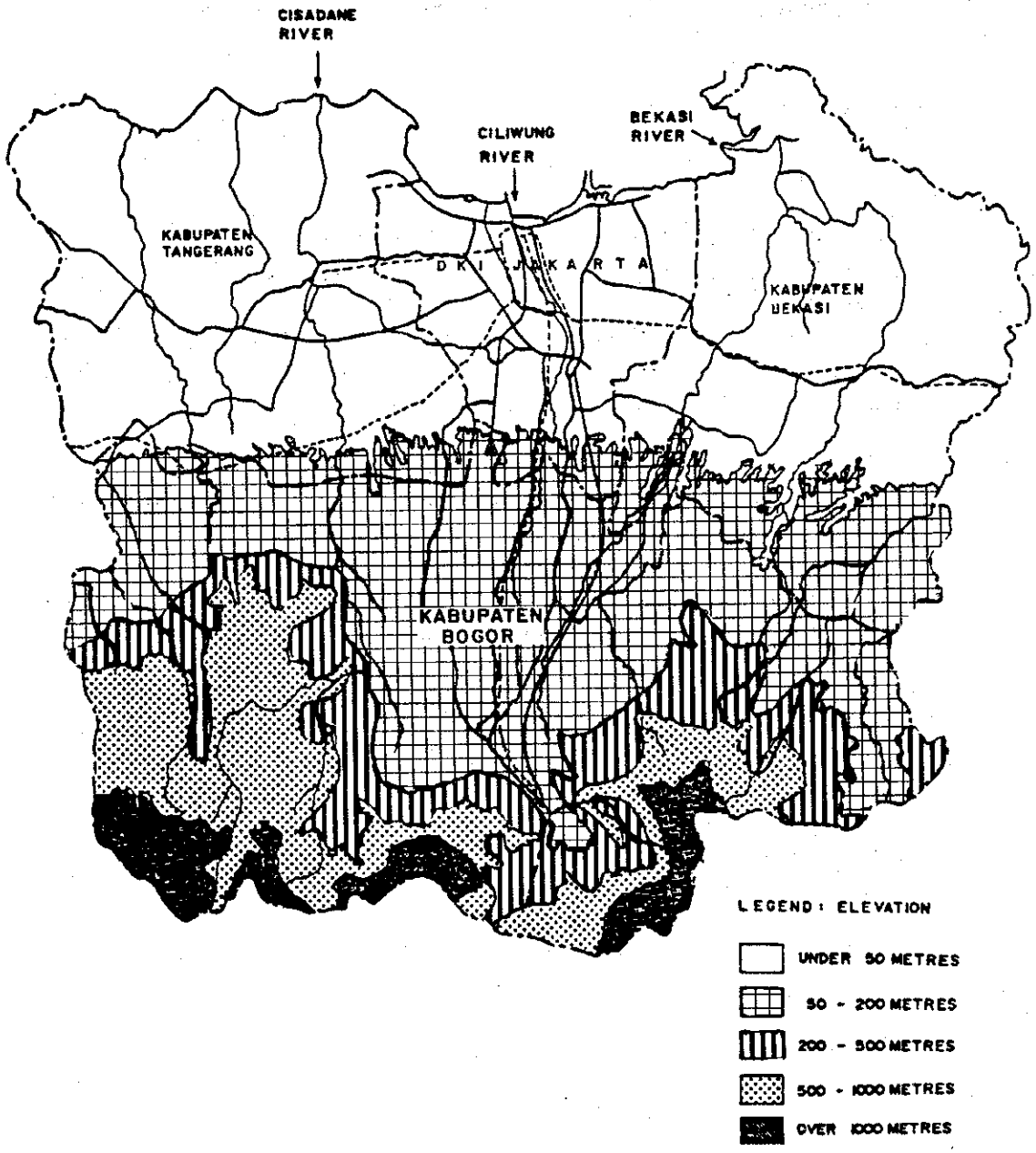
The study area, Jabotabek, is situated at the north-west region of Java Island facing the Java Sea, approximately 6°12' in south latitude and 106°48' in east longitude.
The urban areas of DKI Jakarta, Kab. Tangerang and Kab. Bekasi are spread out on the flat alluvial plain no more than 50 m above sea level and the southern part of Jabotabek is on the diluvial plateau (see Fig. 2.1.1)

The geographical features of the study area are generally flat in the north and flat/rolling in the south with the altitude rising between 0 to 10 and 10 to 50 metres above mean sea level respectively.

There are several rivers in the study area the major being Kali Angke, Kali Pesanggrahan, Kali Ciliwung and Kali Sunter.

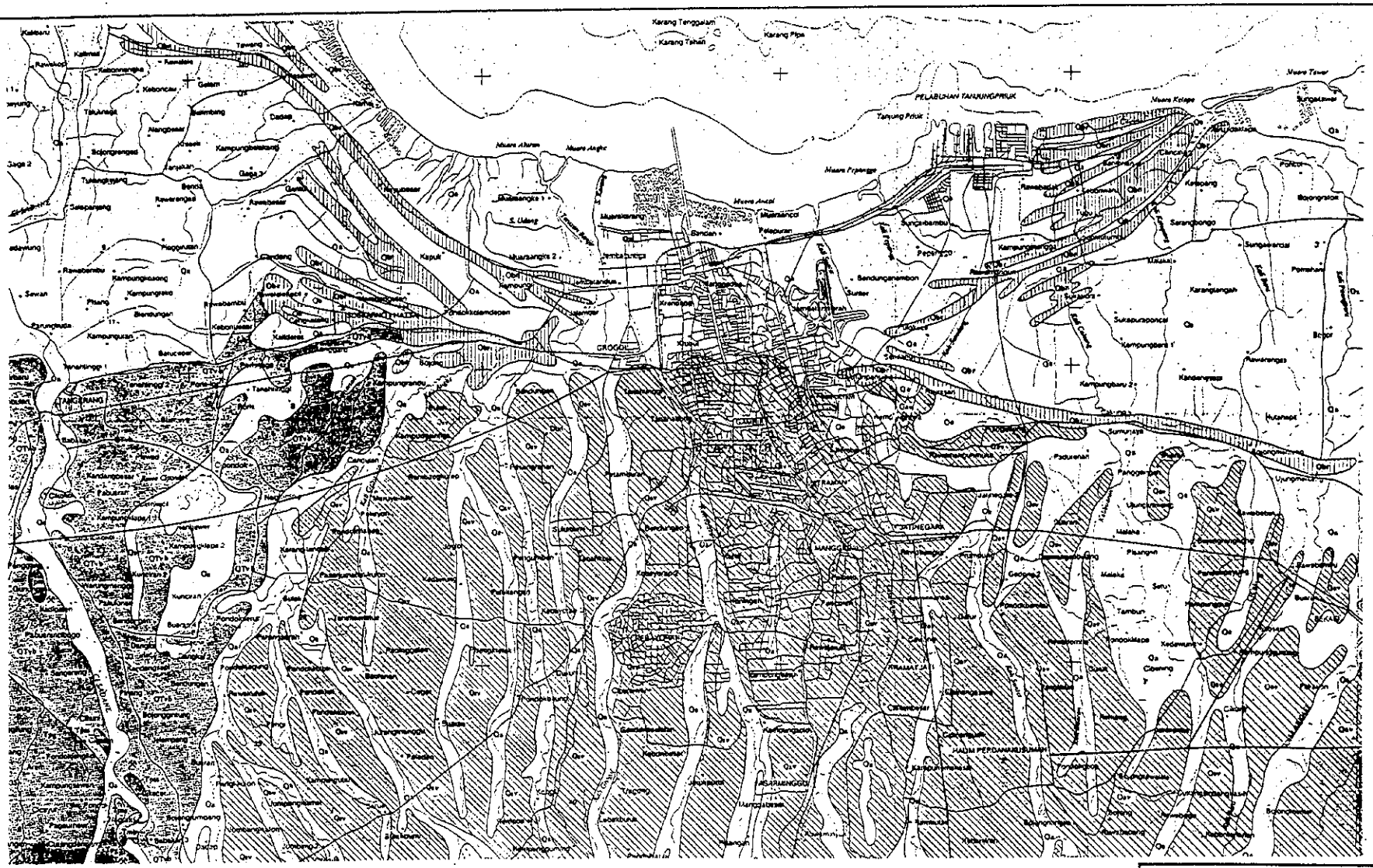
The study area is basically formed of sedimentary rocks of the tertiary era, overlayed with volcaniclastic materials of the quaternary diluvial epoch comprising clay, silty or sandy clay, sandy soils, gravel and such mixtures. Along the river banks, alluvial layers are accumulated, but tertiary rocks are not outcropped. In the study area the upper layers are considerably stratified and composed mainly of clayey soils which have weathered under the high temperature and humidity environment to an extensive depth, forming purplish-red to brown lateritic clay in parts with very high water content. Where weathering has not progressed, the volcaniclastic materials are mainly of black and gray cohesive soils which have hardened.

The sediment of the northern alluvial plain is composed mainly of cohesive soils with occasional bars of sand as shown in Figure 2.1.2. The geological sequence to be found in the Project Area is as shown in Table 2.1.1.



FEASIBILITY ON
URBAN ARTERIAL ROAD SYSTEM
DEVELOPMENT PROJECT
IN JAKARTA METROPOLITAN AREA

Fig. 2.1.1
TOPOGRAPHICAL CONDITION IN JABOTABEK



EXPLANATION

Qa	ALLUVIAL	: Clay, silt, sand, pebble and boulder
Qbr	BEACH RIDGE DEPOSITS	: Coares sand, well sorted, with molhise shells
Qav	ALLUVIAL FAN	: Bedded fine tuff, sandy tuff, interbedded with conglomeratic tuff
QTvb	BENTEN TUFF	: Tuff, pumice tuff, tuffaceous sandstone

Fig. 2.1.2 Geological Map

FEASIBILITY STUDY ON
URBAN ARTERIAL ROAD SYSTEM
DEVELOPMENT PROJECT
IN JAKARTA METROPOLITAN AREA

Table 2.1.1
GEOLOGICAL SEQUENCE IN PROJECT AREA

Age	Stratigraphy	Soils
Quaternary :		
Holocene	Alluvium	Cohesive Soils Cohesionless Soils Organic Soils
Pleistocene	Diluvium	Lateritic Soils Volcanic Sediment
Plio-Pleistocene	Banten Tuff	Tuff Pumice Tuff Tuffacenous Sandstone
Tertiary :		
Pliocene	Genteng Formation	Pumice Tuff Andesite Breccia Tuffaceous Sandstone

Generally Alluvium (Qa) exist in the form of organic clay, clay, clayey sand, silty clay and sandy clay, the consistency being very soft and plasticity high. The layer thickness of these subsoils is 7 m - 14 m, which makes it necessary to adopt soft ground foundation treatment for stretches where the Toll Road or Frontage Road is planned on high embankments.

Bearing strata consists of conglomerated gravely sand, sandy tuff, sand stone, etc., the consistencies of which are found to be very stiff to hard in depths generally between 15 and 23 meters.

(2) Climate

The climate is tropical monsoon, with two distinct seasons of the rainy season from November to March or April and the dry season from May to October. Monthly rainfall varies from 100 mm to 400 mm during rainy season and is 100 mm at most in dry season. The annual average rainfall is about 1,800 mm and the heaviest monthly rainfall occurs in January with the range of 360 mm to 390 mm per month. Average monthly temperature varies from 25°C to 28°C throughout a year and average relative humidity ranges between 75% and 85%.

(3) Hydrological Condition

There are three major rivers in the study area, the Kali Cisadane in the west, the Kali Ciliwung in the center and the Kali Bekasi in the east. In between these major rivers, its tributaries and minor rivers flow from south to north as shown in Figures 2.1.3 and 2.1.4.

Figure 2.1.5 shows the locations of rainfall observation stations. A number of observation stations exist in the region and have been in operation for varying lengths of time.

Annual rainfall variations and monthly fluctuations of rainfall in Kali Ciliwung basin and surrounding area are shown in Figures 2.1.6 and 2.1.7 which show that beyond Depok (36) located about 30 km from the coastline, annual and monthly rainfall increases with the altitude of the land.

A summary of the analysis is presented in the form of a diagram (Figure 2.1.8) in which the lower half of the figure indicates annual average rainfalls and the distance of the gauge station from the coastline i.e. annual average rainfall increases with the distance from coastline/altitude of the land. The upper half of the figure indicates the altitude of each gauge stations, distance from coastline.

The peak flow of major rivers takes place in January or February to coincide with heavy rainfall in upper stream. The silted-up channels of the lowland area unable to carry the river's floodwater, resulting in periodic flood in Jakarta as shown in Figure 2.1.9.

(4) Impact on Urban Development

The above geographical and climatic conditions have had the following impact on urban development;

- Rivers running from south to north have encouraged a north to south rather than east to west development axis, and

- Floods, heat, water pollution and sea water intrusion into ground water table have led to increasing and continued urbanization toward the higher and upstream southern area.

Fig. 2.1.3
Main River Related to the Project

Legend

Existing Main Rivers

Proposed East Banjir Kanal

FEASIBILITY STUDY ON
URBAN ARTERIAL ROAD SYSTEM
DEVELOPMENT PROJECT
IN JAKARTA METROPOLITAN AREA

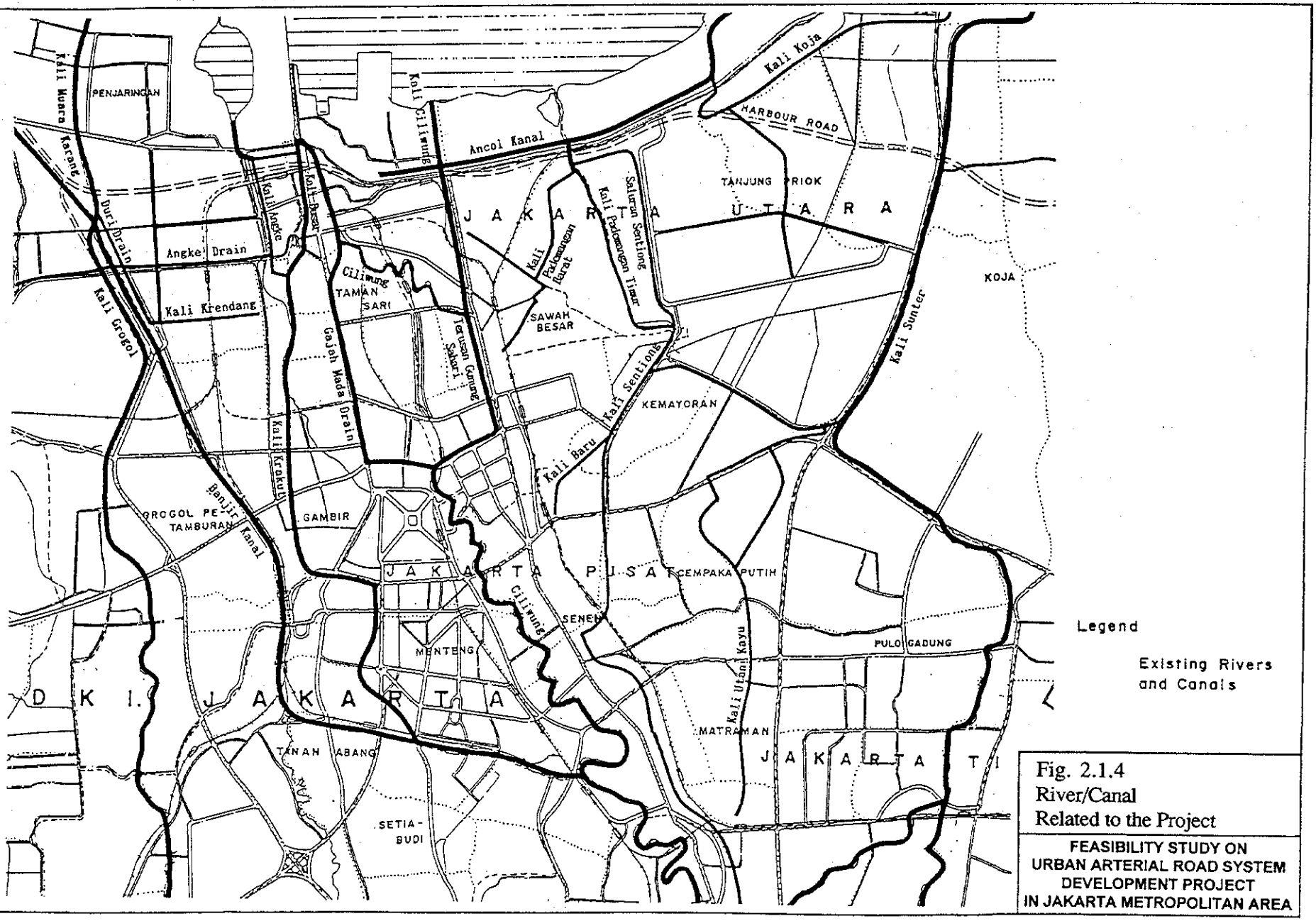
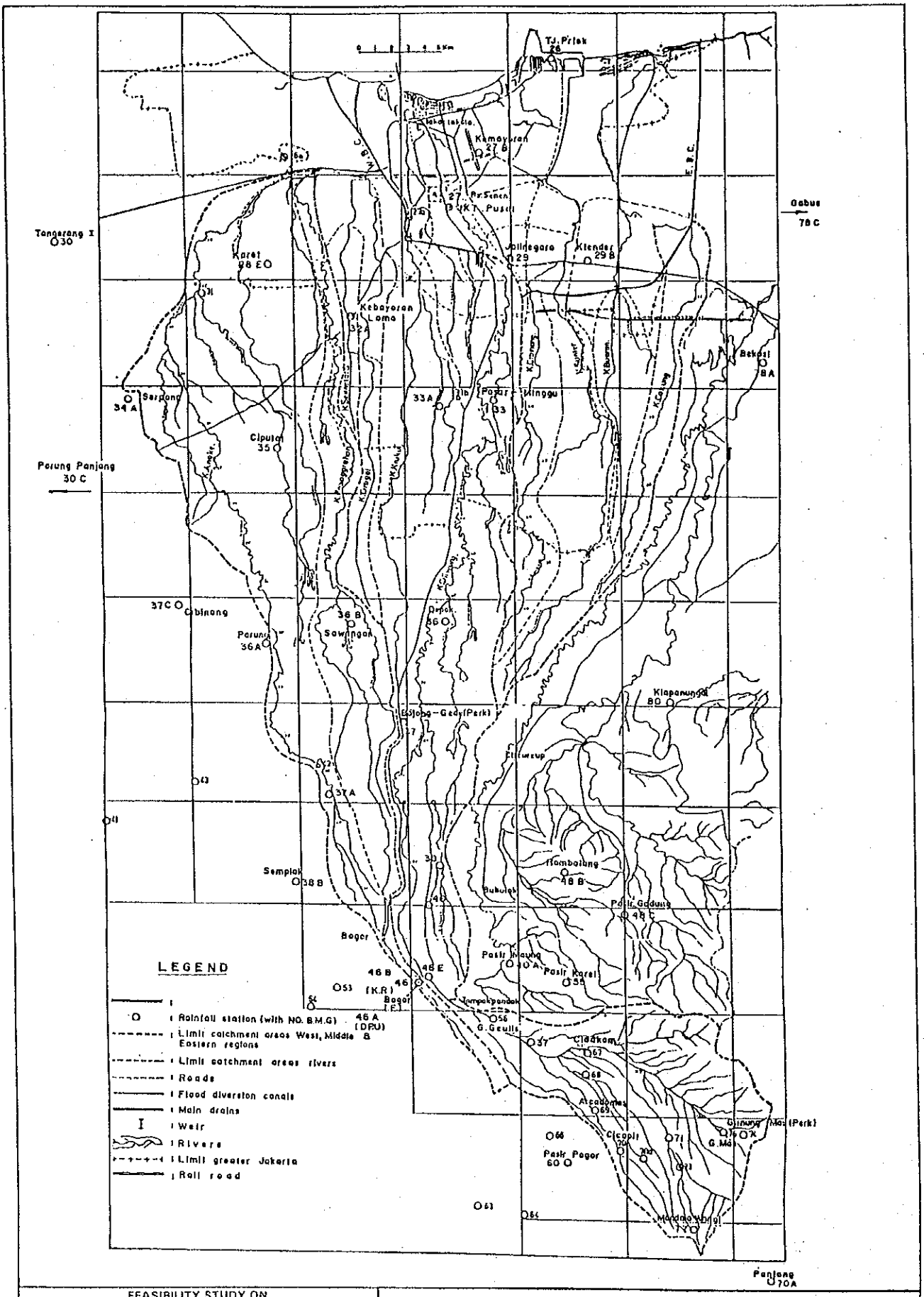
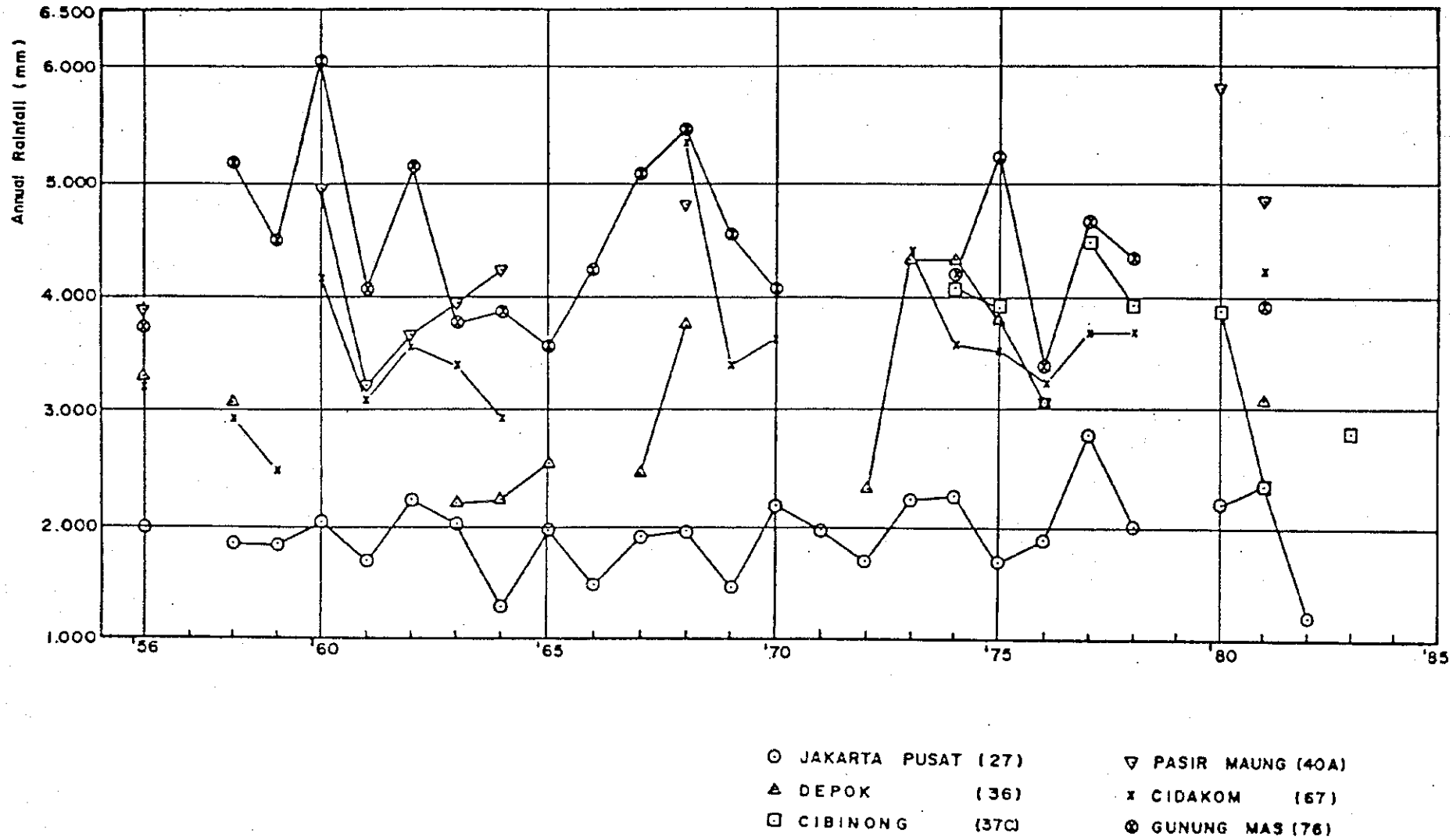


Fig. 2.1.4
River/Canal
Related to the Project

FEASIBILITY STUDY ON
URBAN ARTERIAL ROAD SYSTEM
DEVELOPMENT PROJECT
IN JAKARTA METROPOLITAN AREA

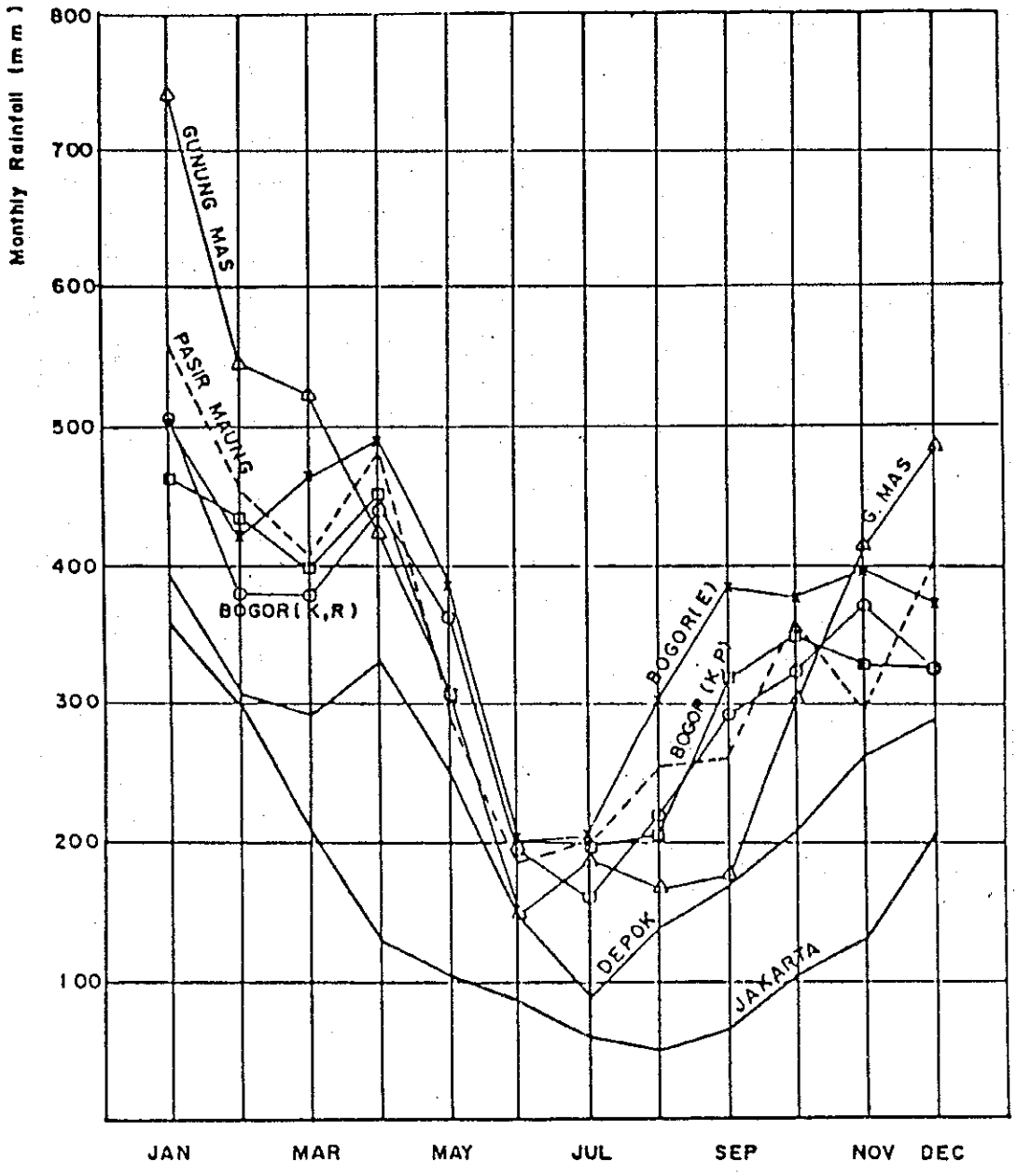


FEASIBILITY STUDY ON URBAN ARTERIAL ROAD SYSTEM DEVELOPMENT PROJECT IN JAKARTA METROPOLITAN AREA	Fig. 2.1.5 Catchment Areas and Rainfall Stations



FEASIBILITY STUDY ON
URBAN ARTERIAL ROAD SYSTEM DEVELOPMENT PROJECT
IN JAKARTA METROPOLITAN AREA

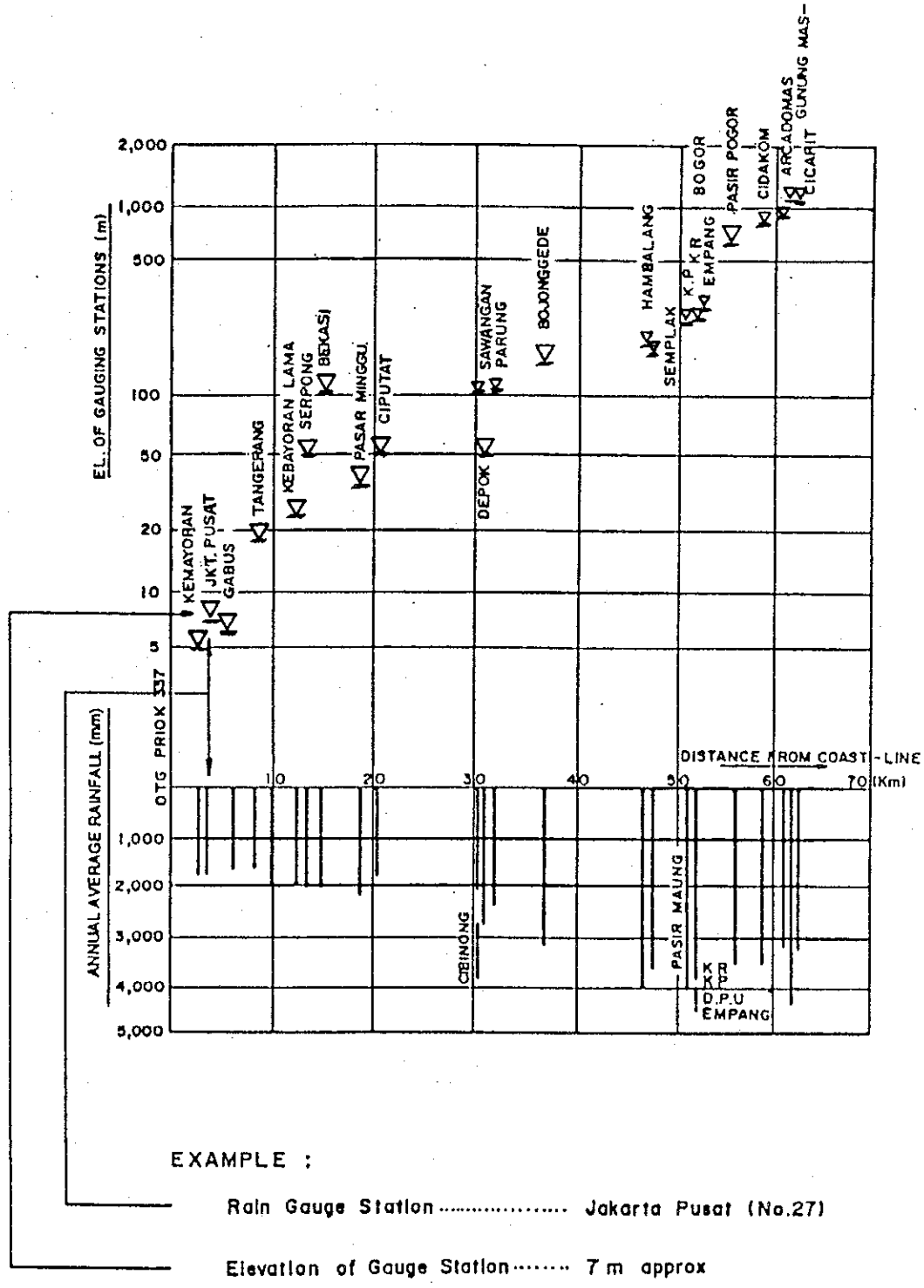
Fig. 2.1.6 Annual Rainfall in Kali Ciliwung Catchment



No.	Name of Station	Annual Average (mm)
27	JAKARTA PUSAT	1,797
36	DEPOK	2,870
40 A	PASIR MAUNG	4,157
46	BOGOR (EMPANG)	4,497
46 B	BOGOR (KEB.RAYA)	3,949
48 D	BOGOR (KEB.PERT)	3,941
76	GUNUNG MAS	4,412

FEASIBILITY STUDY ON URBAN ARTERIAL ROAD SYSTEM DEVELOPMENT PROJECT IN JAKARTA METROPOLITAN AREA

Fig. 2.1.7 Monthly Rainfall in Ciliwung Basin and Surrounding Area



FEASIBILITY STUDY ON URBAN ARTERIAL ROAD SYSTEM DEVELOPMENT PROJECT IN JAKARTA METROPOLITAN AREA	Fig. 2.1.8 Summary of Rainfall Analysis

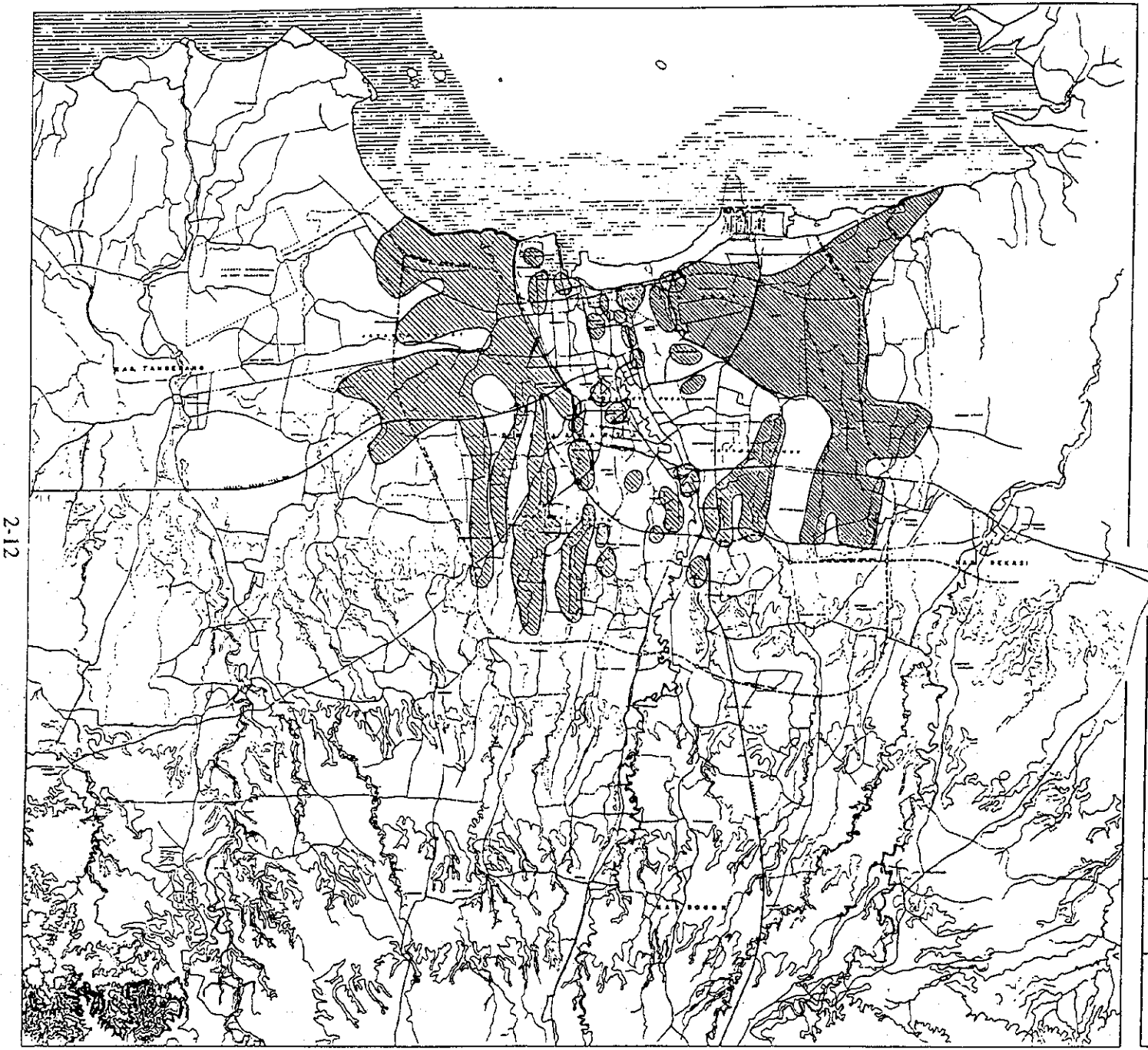


Fig. 2.1.9
Flood Prone Area in Jakarta

Legend

Flood Prone Area

N

FEASIBILITY STUDY ON
URBAN ARTERIAL ROAD SYSTEM
DEVELOPMENT PROJECT
IN JAKARTA METROPOLITAN AREA

2.1.2 Administrative Structure

Indonesia is composed of over 13,000 islands large and small and has a total area of some 2,000,000 square kilometres.

Administratively, the Republic of Indonesia has 5 levels of hierarchy. At national level, the country is divided into 3 Special Districts (D.I. Aceh, DKI Jakarta and D.I. Yogyakarta) and 24 provinces each of which possesses the same first level of autonomy (Tingkat I). The Island of Java is composed of 2 Special Districts (DKI Jakarta and D.I. Yogyakarta) and 3 provinces (East Java, Central Java and West-Java).

DKI Jakarta is enclosed by West Java province which is further divided into 20 Kabupaten (Regencies) and 4 Kotamadya (Municipalities) each of which possesses the same second level of autonomy (Tingkat II). Jabotabek consists of DKI Jakarta, Kab. and Kod. Bogor, Kab. Kod. Tangerang and Kab. Bekasi (Figure 2.1.10).

DKI Jakarta as the capital city (province) is so dominant that the existing urban development of Jakarta is expanding over her administrative boundary into Botabek Region. In order to overcome the administrative discrepancy between DKI Jakarta and West Java province and to create a comprehensive development plan for Jabotabek, the Jabotabek Development Coordination Board (BKSP Jabotabek) was established by Presidential Decree No. 13 in 1976.

DKI Jakarta is divided into 5 Wilayah (Municipalities) further subdivided into 43 Kecamatan (Sub-Districts) including the Thousand Islands in the Java Sea.

In Jabotabek the Cities of Bekasi and Depok are given the status of "Kota Administrative (Kotif.): which is the intermediate administrative level between Kabupaten and Kecamatan and headed by mayor. Like the DKI mayoralties they do not have a Peoples Representative Council (DPRD).

2.2 Present Demographic Conditions

2.2.1 Population

(1) National Level

The Republic of Indonesia has the fifth largest population in the world with approximately 180 million recorded in the 1990 census after China, India, Ex-Soviet Union and the United States of America.

The population of Indonesia grew annually at 1.5% from 1930 to 1960, 2.1% in the 1960's, 2.4% in the 1970's and 2.0% from in the 1980's (Table 2.2.1) and although the annual growth rate started to decline slightly in the 1980's, it is still high.

District	(ha)	No. of Kec.
DKI Jakarta	65,570	43
Kabupaten Bogor	335,792	29
Kabupaten Tangerang	109,551	16
Kabupaten Bekasi	128,423	20
Kotamadya Bogor	2,275	5
Kotamadya Tangerang	16,426	5
Total Jabotabek	658,037	118

FEASIBILITY ON
URBAN ARTERIAL ROAD SYSTEM
DEVELOPMENT PROJECT
IN JAKARTA METROPOLITAN AREA

Fig.2.1.10 Administrative Structure in Jabotabek

If the 2% growth rate continues, Indonesia will have to accept another hundred million inhabitants in the next 20 to 30 years.

This high population growth since the late 1960's has led to increasingly rapid urban growth and according to the population census in 1971 and 1980, the share of urban population in Indonesia rose from 17.3% in 1971 to 22.4% in 1980, and 30.9% in 1990 (Table 2.2.2). The annual growth rate of urban population from 1980 to 1990 was 5.4%, which was almost the same (5.3%) from 1971 to 1980, and it was more than twice the national population growth rate. This implies that some 70% of the population increase during the period from 1980 to 1990 took place in urban areas. It was 44% during 1971 to 1980.

(2) Java

At regional and provincial level, the population is unproportionally concentrated in Java as shown in terms of share and density (Table 2.2.1). The population of Java in the 1990 census was about 60% of the total (107,527,000 persons), although the area occupies only about 7% of the whole country. The proportion of urban population in Java is also the highest among the islands reading about 35% in the 1990 Census.

(3) Jabotabek

In Java the population is concentrated in DKI Jakarta as shown in the steadily increasing share, density and growth rate (Table 2.2.1). The growth rate is declining slightly from 4.4% (1951-1970) to 4.0% (1971-1980), and distinctively to 2.4% (1980-1990). DKI Jakarta is still growing faster then the rational average, but likely to steadily slow down. This growth suggests that DKI Jakarta could possibly reach a population of 12 million in the year 2005 which is eventually the same figure planned by the Jakarta Structure Plan 2005. In the 1990 census the share of population in DKI Jakarta is 7.7% of Javanese and 4.6% of national population. The 1990 Census shows that the urban population of DKI Jakarta accounted for approximately 15% of the national urban population which was lowered from about 20% in 1980 (Table 2.2.2).

Table 2.2.1 Population in Indonesia

Unit : 1,000 persons, (%)

Islands	1961 Census	1971 Census	1980 Census	1990 Census
Sumatra	15,739 (16.2)	20,808 (17.5)	28,016 (19.0)	36,472 (20.3)
Java	63,060 (65.0)	76,086 (63.8)	91,270 (61.9)	107,527 (60.0)
DKI Jakarta	2,973 (3.1)	4,579 (3.8)	6,503 (4.4)	8,210 (4.6)
West Java	17,615 (18.1)	21,624 (18.1)	27,454 (18.6)	35,382 (19.7)
Other Provinces	42,472 (43.8)	49,883 (41.9)	57,313 (38.9)	63,935 (35.7)
Other Islands	18,287 (18.8)	22,314 (18.7)	28,204 (19.1)	35,249 (19.7)
Indonesia	97,086 (100%)	119,208 (100%)	147,490 (100%)	179,248 (100%)

Islands	Density Persons/km^2 1990	Annual Growth Rate (%) 1961/1971	1971/1980	1980/1990
Sumatra	77	2.8	3.4	2.7
Java	814	1.9	2.0	1.7
DKI Jakarta	12,495	4.4	4.0	2.4
West Java	765	2.1	2.7	2.6
Other Provinces	749	1.6	1.6	1.1
Other Islands	27	2.0	2.6	2.3
Indonesia	93	2.1	2.4	2.0

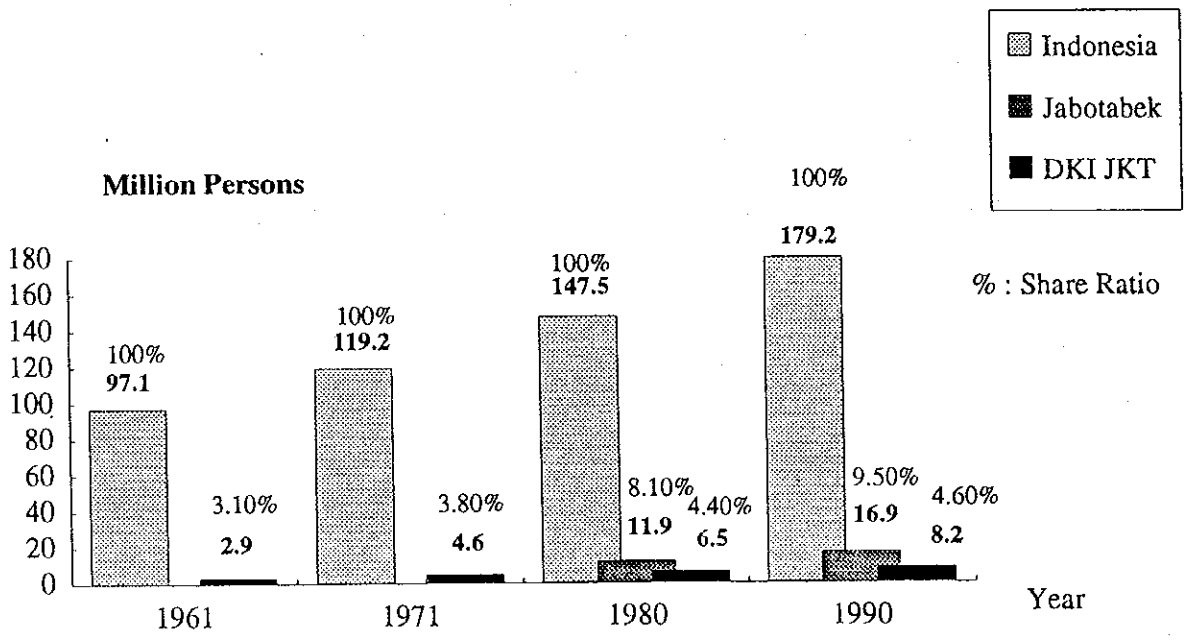


Fig. 2.2.1 Trend of Population

Table 2.2.2 Urban and Rural Population Growth in Jabotabek and Indonesia

Unit : 1,000 persons, (%)

Region	1980		1990		Annual Growth Rate 1980/1990 (%)		
	Urban	Total	Urban	Total	Urban	Rural	Total
DKI Jakarta	6,503 (100) (19.8)	6,503 (100%) (4.4)	8,228 (100) (14.8)	8,210 (100%) (4.6)	2.4	0.0	2.4
Botabek	1,295 (23.9) (3.9)	5,413 (100%) (3.7)	4,894 (56.0) (8.8)	8,746 (100%) (4.9)	14.2	-0.7	4.9
Jabotabek	7,798 (65.4) (23.7)	11,916 (100%) (8.1)	13,122 (77.3) (23.7)	16,956 (100%) (9.5)	5.3	-0.7	3.6
Indonesia	32,846 (22.4) (100%)	146,776 (100%)	55,434 (30.9) (100%)	179,248 (100%) (100%)	5.4	0.8	2.0

Source : Sensus Penduduk DKI Jakarta, Jawa Barat, Indonesia 1980, 1990
(Biro Pusat Statistik and Kantor Sensus dan Statistik Bandung)

In Botabek and Jabotabek the population growth rate from 1980 to 1990 shows 4.9% and 3.6%, respectively (Table 2.2.3), trends which suggest that Botabek could have around 18 million and Jabotabek as a whole could possibly have as much as 29 million inhabitants in the year 2005.

The share of urban population in Botabek and Jabotabek increased rapidly from 23.9% and 65.4% in 1980 to 56.0% and 77.3% in 1990, respectively (Table 2.1.2). Botabek's urban population growth from 1980 to 1990 was 14.2% per annum which implies that nearly 8% of the population decrease in Botabek from 1980 to 1990 took place in rural areas.

A population movement took place between the census of 1971 and that of 1980 whereby the residential population of the central area of DKI Jakarta decreased, while simultaneously the population in the outskirts and fringe areas surrounding DKI Jakarta, especially in the south and south-western areas steeply increased (Figure 2.2.2).

Table 2.2.3 Population in Jabotabek

Unit : 1,000 persons, (%)

Region	Area km²	Population Census		
		1971	1980	1990
DKI Jakarta	655.7	4,579 (54.9)	6,503 (54.6)	8,210 (48.4)
Botabek	5,924.7	3,761 (45.1)	5,413 (45.4)	8,746 (51.6)
Bogor	3,380.7	1,863 (22.3)	2,741 (23.0)	3,949 (23.3)
Tangerang	1,259.8	1,067 (12.8)	1,529 (12.8)	2,724 (16.1)
Bekasi	1,284.2	831 (10.0)	1,143 (9.6)	2,073 (12.2)
Jabotabek	6,580.4	8,340 (100%)	11,916 (100%)	16,956 (100%)

Region	Density 1990 Persons/ha	Annual Growth Rate (%)	
		1971/1980	1980/1990
DKI Jakarta	125.2	4.0	2.4
Botabek	14.8	4.1	4.9
Bogor	11.7	4.4	3.7
Tangerang	21.6	4.1	5.9
Bekasi	16.1	3.6	6.1
Jabotabek	25.8	4.0	3.6

Source : Sensus Penduduk Jawa Barat 1971, 1980 & 1990

Although direct data are limited, there is compelling evidence of a trend toward increasing separation of residence and work place and of resultant rapid increase in the commuting volume, notably across the boundaries of DKI Jakarta from the rapidly growing urban fringe.

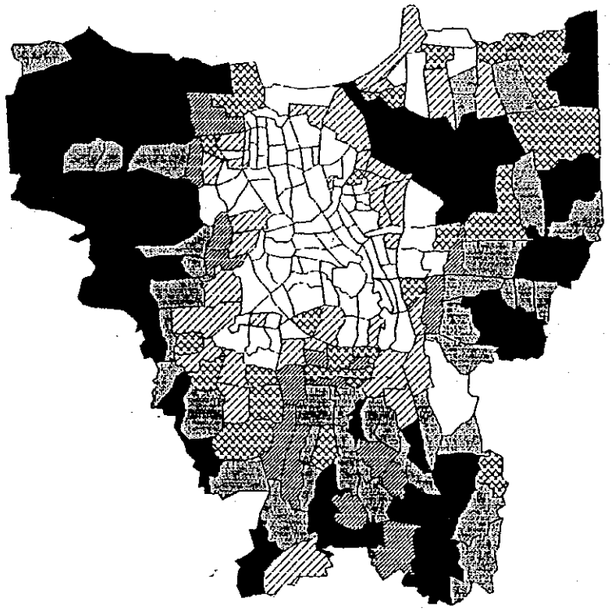
Table 2.2.4 shows estimates of five-year in, out and net-migration of population aged 5 years and over for DKI Jakarta over the periods from 1975 to 1980 and from 1985 to 1990 based on Census sources. The data shows a massive upsurge in out-migration from DKI Jakarta during the latter part of the 1980s. More significant, the great majority of this upsurge is reflected in migration to areas in the province of West Java and in particular to its urban area.

According to these data, this latter flow averaged over 100,000 persons per year between 1985 and 1990 and this does not include movement of young children (under age 5) who are excluded from these numbers. Although other metropolitan centers (notably Bandung) would have captured some of these migrants, there seems little doubt that most of this urban directed out-migration would have been to Botabek. On the other hand, the data also suggest that in-migration varied little, at least in terms of volume, over the 15 year period covered by the table, with, if anything, a marginal increase between the late 1970s and 1980s.

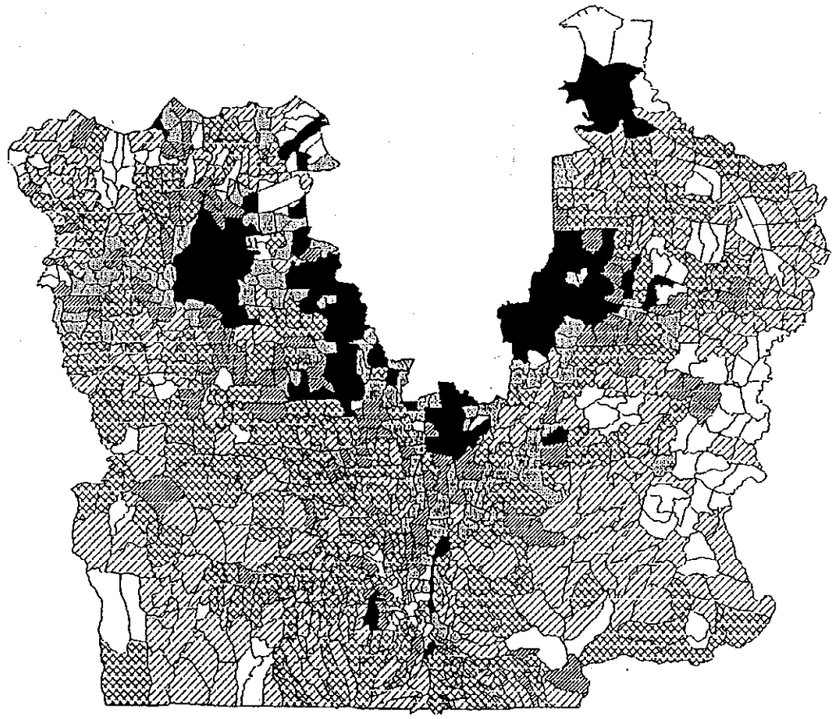
Table 2.2.4 Numbers of In and Out-Migrants 5 Years of Age and Over to and from DKI Jakarta by Place of Origin/Destination, 1975-1980 and 1985-1990 (numbers in thousands)

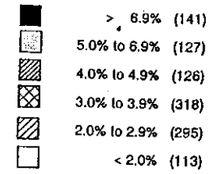
Parameter, Region and Time Period	Status of Present Residence		
	Urban	Rural	Total
Place of Origin (In-migrants)			
West Java			
1975-1980	-	-	212
1985-1990	-	-	213
Other Regions			
1975-1980			535
1985-1990			606
Total Indonesia			
1975-1980	-	-	747
1985-1990	-	-	820
Place of Destination (Out-migrants)			
West Java			
1975-1980	88	159	247
1985-1990	538	157	695
Other Regions			
1975-1980	74	61	136
1985-1990	148	150	298
Total Indonesia			
1975-1980	161	221	382
1985-1990	686	307	993

Source : 1980 and 1990 Censuses.

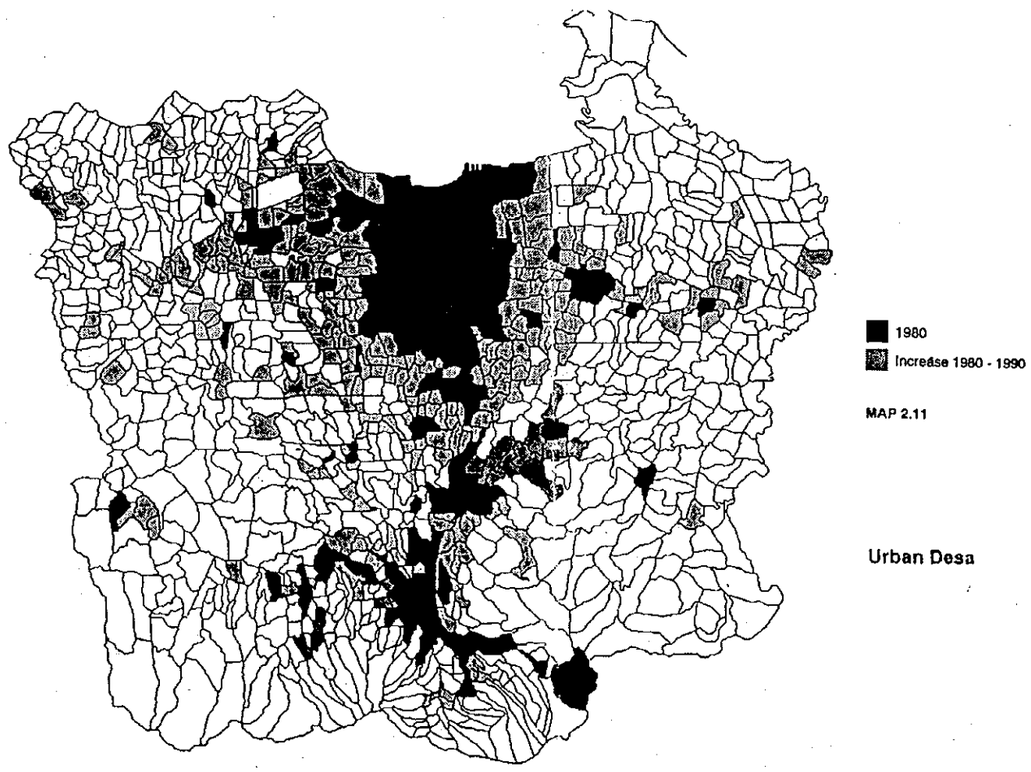


Rates of Pop. Growth
DKI Jakarta 1980-1990





Rates of Pop. Growth
Botabek 1980-1990



1980
Increase 1980 - 1990

MAP 2.11

Urban Desa

Fig. 2.2.2

POPULATION GROWTH RATES
AND URBANIZATION 1980-1990

FEASIBILITY STUDY ON
URBAN ARTERIAL ROAD SYSTEM
DEVELOPMENT PROJECT
IN JAKARTA METROPOLITAN AREA

2.2.2 Employment

(1) Labour Force

In the Indonesian census, the population aged 10 years and over is divided into "economically active" and "economically non active" groups. The former is defined as the "labour force" and is further sub-divided into "employed" and "unemployed" groups. The "economically non active" group is sub-divided into "attending school", housekeeping", and "other" groups.

According to the population census in 1990, the labour force participation rates (labour force divided by population aged 10 and over) in DKI Jakarta and Botabek were 48.7% and 45.9%, respectively, which, although quite similar, are lower than the Indonesian average of 57.3% as given in Table 2.2.5. This is because in Jabotabek, the rural population which generally provides higher labour force participation is smaller and the urban area which has bigger "attending school" population is larger than the average of Indonesia.

Table 2.2.5 Employment Situation in Jabotabek and Indonesia

Unit:1,000 persons, %

Region	Population		Population aged 10 and over		Labour Force	
	1980	1990	1980	1990	1980	1990
DKI Jakarta	6,503	8,210	4,684	6,473	2,001	3,151
Botabek	5,413	8,746	3,622	6,330	1,516	2,905
Jabotabek	11,916	16,956	8,306	12,803	3,517	6,056
Indonesia	147,490	179,248	104,454	135,714	52,110	77,802

Region	Employed		(a) Labour Force Participation Rate		(b) Unemployment Rate	
	1980	1990	1980	1990	1980	1990
DKI Jakarta	1,924	2,926	42.7%	48.7%	3.8%	7.1%
Botabek	1,486	2,781	41.9%	45.9%	2.0%	4.3%
Jabotabek	3,410	5,707	42.3%	47.3%	3.0%	5.8%
Indonesia	51,192	75,851	49.9%	57.3%	1.8%	2.5%

(a) : (Labour Force)/(Population aged 10 and over) x 100
(b) : (Unemployed Population)/(Labour Force) x 100

Source : Technical Report "Demography" of JMDPR, January 1993

(2) Employment by Industrial Sector

Agricultural employment share in both DKI Jakarta and Botabek showed a steady decline from 1980 to 1990, and the agricultural employment itself disclosed negative growth (0.84 times) in DKI Jakarta and only the slight growth (1.08 times) over the same period (Table 2.2.6).

In DKI Jakarta, the tertiary sector (Trade plus other Services) dominates with over 75% in 1980 and 70% in 1990, and the manufacturing industry largely extend its share from 14.9% in 1980 to 20.5% in 1990.

In Botabek, the tertiary sector accounts for about a half of the total employment, followed in 1980 by the agricultural sector (29.0%), but in 1990 by the manufacturing sector (24.0%). If totaled both manufacturing and other industry, the 1990 share (32.5%) becomes higher than the 1980 agriculture share (29.0%). It is envisaged that Botabek is more rapidly changing its employment structure with favor to the secondary industrial sector.

Table 2.2.6 Employment by Industrial Sector, 1980 and 1990

(x 1000 persons)

Industrial Sector	DKI Jakarta			Botabek			Jabotabek		
	1980	1990	1980/ 1990	1980	1990	1980/ 1990	1980	1990	1980/ 1990
1. Agriculture	37 (1.9%)	31 (1.1%)	0.84 (0.55)	426 (29.0%)	459 (16.5%)	1.08 (0.57)	463 (13.7%)	490 (8.6%)	1.06 (0.63)
2. Manufacturing	285 (14.9%)	599 (20.5%)	2.10 (1.37)	229 (15.6%)	667 (24.0%)	2.91 (1.54)	514 (15.2%)	1,266 (22.2%)	2.46 (1.46)
3. Other Industry*	154 (8.1%)	224 (7.7%)	1.45 (0.95)	94 (6.4%)	235 (8.5%)	2.50 (1.32)	248 (7.3%)	459 (8.0%)	1.85 (1.09)
4. Trade	471 (24.7%)	778 (26.6%)	1.65 (1.08)	331 (22.5%)	596 (21.4%)	1.80 (0.95)	802 (23.7%)	1,374 (24.1%)	1.71 (1.01)
5. Other Services*	963 (50.4%)	1,294 (44.2%)	1.34 (0.88)	388 (26.4%)	823 (29.6%)	2.12 (1.12)	1.351 (40.0%)	2.117 (37.1%)	1.57 (0.93)
6. Total	1,910 (100%)	2,926 (100%)	1.53 (1.00)	1,468 (100%)	2,780 (100%)	1.89 (1.00)	3,378 (100%)	5,706 (100%)	1.69 (1.00)

Source : Sensus Penduduk DKI Jakarta, Jawa Barat, 1980 and 1990

Note : Other industry includes mining; electricity; gas and water; construction.
Other services includes public/private services; transport; finance; other.

(3) Commuter Movements

Based on the 1985 cordon interview survey and the 1993 traffic (passenger) count survey, person trips with "To Work" purpose (commuters) were analyzed and compared between the two years as shown in Table 2.2.7.

Table 2.2.7 Commuters between DKI Jakarta and Botabek

Direction		1985	1993	Growth
From	To	(Persons/day)	(Persons/day)	93/85
Bogor	Jakarta	27,100	102,500	3.78
Tangerang	Jakarta	20,866	74,800	3.58
Bekasi	Jakarta	19,825	100,500	5.07
Total to Jakarta		67,791	277,800	4.10
Jakarta	Bogor	10,883	32,100	2.95
Jakarta	Tangerang	9,512	29,900	3.14
Jakarta	Bekasi	8,418	28,300	3.36
Total to Botabek		28,813	90,300	3.13

Net In-Commuters to Jakarta from	1985	1993	Growth 93/85
Bogor	16,217	70,400	4.34
Tangerang	11,354	44,900	3.95
Bekasi	11,407	72,200	6.33
Total from Botabek	38,978	187,500	4.81

Source : ARSDS and analysis result of 1993 traffic count survey.

Commuters from Botabek to Jakarta in 1993 was estimated at 277,800 persons per day, which was 4.1 times as much as those in 1985. Commuters from Bekasi has increased distinctively compared to the other two directions.

Commuters to Botabek in 1993 was about one-third of those to Jakarta, and they grew directionally, more or less, even about 3 times as much as those in 1985.

Net in-commuters to Jakarta estimated here indicates the balance of job opportunities and employed population either in DKI Jakarta or Botabek.

(4) Number of Jobs

Based on the employed population and the net in-commuters to Jakarta, numbers of jobs in DKI Jakarta and Botabek were estimated as shown in Table 2.2.8. Distribution of commuters' attribute to industrial sectors was assumed as follows :

- Commuters into Jakarta are proportionally distributed by the number of occupations in (1) Professional/Technical related worker, (2) Administrative/Managerial worker, (3) Clerical related worker, (4) Sales worker and (5) Service worker.

- Commuters out of Jakarta are proportionally distributed by the number of occupations in (1) to (3) above.

- Occupation-industrial sector matrix of DKI Jakarta, which is derived from the 1990 census data, is based to re-distribute the commuters of a particular occupation to industrial sectors.

As the consequence, the number of jobs by industrial sector was estimated for Jabotabek as shown in Table 2.2.8.

Table 2.2.8 Estimated Number of Jobs by Industrial Sector in Jabotabek, 1993

Parameters & Region	Industrial Sector (x 1000)					
	Agriculture	Manuf.	Other Industry	Trade	Other Service	Total
Employed Population :						
DKI Jakarta	28.0	711.0	238.0	859.0	1,368.0	3,204.0
Botabek	457.0	891.0	301.0	689.0	1,039.0	3,377.0
Bogor	201.0	377.0	141.0	295.0	434.0	1,448.0
Tangerang	148.0	292.0	90.0	227.0	344.0	1,101.0
Bekasi	108.0	222.0	70.0	167.0	261.0	828.0
Jabotabek	485.0	1,602.0	539.0	1,548.0	2,407.0	6,581.0
Net In-Commuters to Jakarta :						
DKI Jakarta	0	7.9	2.0	104.3	73.3	187.5
Botabek	0	-7.9	-2.0	-104.3	-73.3	-187.5
Bogor	0	-3.1	-0.8	-38.6	-27.9	-70.4
Tangerang	0	-1.3	-0.2	-27.6	-15.8	-44.9
Bekasi	0	-3.5	-1.0	-38.1	-29.6	-72.2
Jabotabek	0	0	0	0	0	0
Number of Jobs :						
DKI Jakarta	28.0	718.9	240.0	963.3	1,441.3	3,391.5
Botabek	457.0	883.1	299.0	584.7	965.7	3,189.5
Bogor	201.0	373.9	140.2	256.4	406.1	1,377.6
Tangerang	148.0	290.7	89.8	199.4	328.2	1,056.1
Bekasi	108.0	218.5	69.0	128.9	231.4	755.8
Jabotabek	485.0	1,602.0	539.0	1,548.0	2,407.0	6,581.0

Source : JICA Team's estimate.

2.3 Present Economic Conditions

Indonesia experienced a high growth rate during the 1970s because of the increase in oil price but a decline of the oil price in the beginning of the 1980s hit the national economy very hard. Since the second half of the 1980s, Indonesian economy has been recovering and maintaining a steady with non-oil/gas products at 1983 constant prices (6.8% p.a. during 1984-1990) as shown in Table 2.3.1.

The regional economic growth is relatively high in Sumatra compared to Java and other major islands in terms of non-oil/gas products. Inside Java island, West Java province keeps the highest growth, among other four provinces, which averages 8.0% p.a. during 1984-1990. Jakarta's average growth was incidentally the same as Indonesia's (6.8% p.a.) over the period 1984-1990, and being improved in the late 1980s.

Regional shares of GDP remain almost the same, in terms of non-oil/gas products at current price comparison, showing a dominant share of Java being about 60%, Sumatra 19%, West Java 16% and Jakarta 14%, as presented in Table 2.3.2.

Table 2.3.1 GRDP and Annual Growth

Regions*	Year (Billion Rupiah at 1983 Constant Prices)							
	1984	84/86 (% p.a.)	1986	86/88 (% p.a.)	1988	88/90 (% p.a)	1990	84/90 (% p.a.)
Sumatra	11,708	(6.1)	13,173	(8.4)	15,478	(8.5)	18,211	(7.6)
Java	38,874	(6.4)	44,012	(6.2)	49,681	(8.1)	58,020	(6.9)
DKI Jakarta	9,205	(5.1)	10,164	(6.2)	11,469	(9.2)	13,681	(6.8)
West Java	9,760	(8.4)	11,471	(7.0)	13,142	(8.5)	15,481	(8.0)
Other Province	19,909	(6.0)	22,377	(5.8)	25,070	(7.3)	28,858	(6.4)
Other Islands	12,853	(3.6)	13,808	(6.1)	15,555	(6.7)	17,723	(5.5)
Indonesia*	63,435	(5.8)	70,993	(6.6)	80,714	(7.9)	93,954	(6.8)
Indonesia**	83,037	(4.2)	90,080	(5.4)	99,981	(7.3)	115,110	(5.6)

Source : Statistical Year Book of Indonesia, 1992
Note * Excluding oil and its products
** Including oil and its products

Basic socio-economic indicators are compared among regions as summarized in Table 2.3.3.

Table 2.3.2 GRDP and Regional Distribution

	Year (Billion Rupiah at Current Prices)							
Regions*	1984	(%)	1986	(%)	1988	(%)	1990	(%)
Sumatra	12,906	(18.4)	16,439	(18.6)	23,565	(19.4)	31,076	(18.6)
Java	42,687	(60.8)	54,518	(61.7)	74,525	(61.3)	101,379	(60.1)
DKI Jakarta	10,211	(14.5)	12,680	(14.4)	16,796	(13.8)	22,855	(13.7)
West Java	10,707	(15.2)	14,264	(16.2)	20,534	(16.9)	27,945	(16.7)
Other Province	21,769	31.0)	27,574	(31.2)	37,195	(30.6)	50,579	(30.3)
Other Islands	14,656	(20.9)	17,340	(19.6)	23,516	(19.3)	34,547	(20.7)
Indonesia*	70,249	(100%)	88,297	(100%)	121,606	(100%)	167,002	(100%)
Indonesia**	89,885	(128%)	102,683	(116%)	142,105	(117%)	196,919	(118%)

Source : Statistical Year Book of Indonesia, 1992, BPS
Note * Excluding oil and its products
** Including oil and its products

Table 2.3.3 Basic Socio-Economic Indicators

Development Region	Population, 1990 (Census data, totals rounded)	Av.Ann.Growth Rate (+% p.a) 71-80	80-90	GRDP (Rp.Million)	GRDP per capita ('90 prices) (Rp rounded)
Botabek	8,876,390	4.1	5.1	6,754,628	760,970
Banten	3,202,920	2.6	2.6	3,424,353	1,069,130
Bandung Raya	9,499,780	2.6	2.1	8,313,412	875,120
Sukabumi	1,967,700	2.5	1.9	956,443	486,070
Purwasuka	3,261,700	2.2	1.7	2,488,013	762,800
Cirebon	5,275,990	2.4	1.7	(*)7,317,976	1,387,030
Priangan Tim	3,293,890	1.7	1.1	2,103,246	638,530
Sub-Total West Java	35,378,370	2.7	2.6	31,358,071	886,360
DKI Jakarta	8,254,040	3.9	2.4	22,855,440	2,769,010
Total, West Java and Jakarta	43,632,410	2.9	2.5	54,213,511	1,242,500
Total Jabotabek	17,130,430	4.0	3.7	29,610,068	1,728,510
Total Indonesia	179,379,000	2.4	2.0	196,919,200	1,097,780
Jakarta As % of Total DKI/West Java	18 %			42 %	x2.23
Jabotabek As % of Total DKI/West Java	39.3 %			55 %	x 1.39
Jabotabek As % of All Indonesia	9.5 %			15 %	x1.57

Source : Technical Report "Economy" of JMDPR, January 1993
Note (*) excludes oil
National figures are preliminary only.

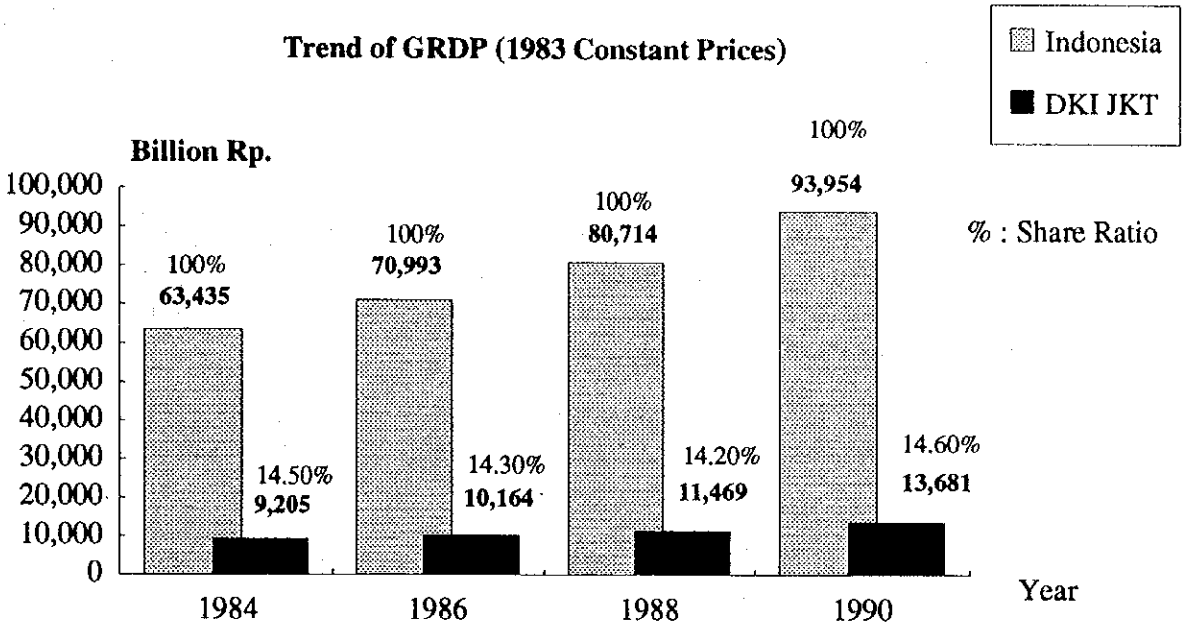


Fig. 2.3.1 Trend of GRDP (1983 Constant Prices

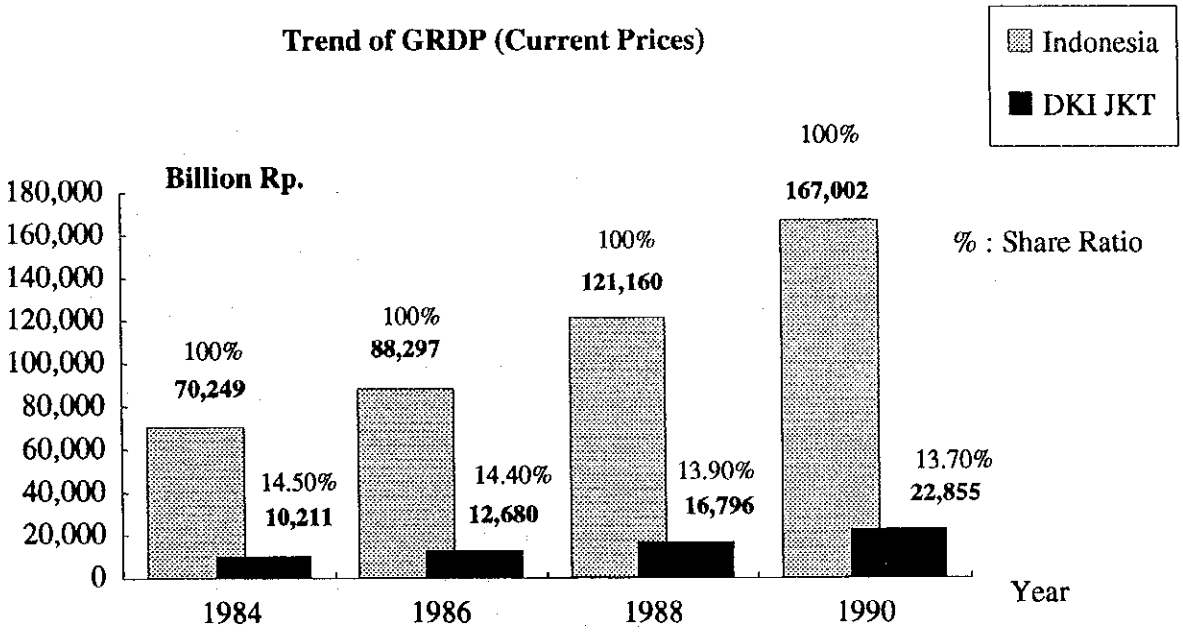


Fig. 2.3.2 Trend of GRDP (Current Prices)

2.4 Present Land Use

2.4.1 General

Very few data are available concerning urban land uses in Jabotabek areas. BPN (National Land Agency) has been recording land use changes with particular concern in estimating agricultural harvest, which is not so pertaining to urban and transport planning.

Beside the JMDPR, the Directorate General of Cipta Karya has commissioned other two projects under the JUDP III loan No. 3246-IND from the World Bank, that is :

- Land Use Map Updating for Botabek and the Establishment of a Development Monitoring System

- Urban Fringe Area Planning Studies

The former project analyzed LANDSAT imaginary data in their due course of the study, and measured land cover with several categories in 1988 and 1992. In a broad sense, therefore, this land cover data has been used to describe general land use patterns and changes in the respective Jabtoabek components.

2.4.2 Land Cover Data

Land cover data derived from 1988 and 1992 were summarized in Table 2.4.1 through 2.4.4, which classify the land cover into several categories.
During the last 4 years from 1988 to 1992, the "Structure, Residential Area" increased by 12,806 ha, and which were compensated by the decrease of "Unstructure, Residential Area" (-4,145 ha), "Non-irrigated Agriculture" (-4,141 ha) and "Bare Land" (-4,384). Besides "Structure, Residential Area", "Industrial Area" and "Urban Infrastructure" land cover increased but the remaining land cover categories were all decreased. Green and other natural environment remain only 19% of the total area, and the base land has almost vanished in 1992.

The land cover in Bogor is dominated by High-dense vegetation (35.6% in 1988 and 32.4% in 1992) followed by Non-irrigated agriculture (24.1%) in 1988 or Grass, Bush, Low-dense vegetation (26.9%) in 1992, which expanded the share largely from 61,705 ha in 1988 to 89,226 ha in 1992. The irrigated agriculture land increased together with urban infrastructure, though it is curious that residential areas both structure and unstructure declined in Bogor.

In Tangerang, the residential areas, the unstructure in particular expanded its share from 19.8% in 1988 to 29.3% in 1992, though a dominant land cover is occupied by the irrigated agriculture (38.2%) with its increase in area by 11,328

ha over the same period. On the contrary, the base land and the non-irrigated agriculture decreased their shares.

Bekasi also decreased a share of the non-irrigated agriculture and that of the base land, but adversely increased that of combined residential areas (marginally about 9,800 ha) and that of the irrigated agriculture (marginally about 9,000 ha).

Industrial areas marginally increased more than 1,000 ha either one of Jakarta, Tangerang or Bekasi, but strangely decreased in Bogor. As the same tendency is found in the residential land coverage, it may be safe not to rely on the result of the imaginary data analysis for Bogor before clarification is made pertaining to this interpretation of land cover measurement.

Table 2.4.1 Land Cover DKI Jakarta, 1988 and 1992

Land Cover Category	1988		1992		Change
	Ha	(%)	Ha	(%)	1992-1988 (Ha)
1. Structure, Residential Area	8,357	32.9	21,163	13.0	+12,806
2. Unstructure, Residential Area	28,092	37.2	23,947	43.7	-4,145
3. Industrial Area	771	3.0	1,926	1.2	+1,155
4. Urban Infrastructure	2,332	7.8	5,031	3.6	+2,699
5. Irrigated Agriculture	4,947	5.6	3,622	7.7	-1,325
6. Non-irrigated Agriculture	6,406	3.5	2,265	10.0	-4,141
7. High-dense Vegetation	101	0.1	82	0.2	-19
8. Grass, Bush, Low-dense Vegetation	5,411	6.4	4,123	8.4	-1,288
9. Bare Land	4,656	0.4	272	7.2	-4,384
10. Fishpond & Sedimentated Water	1,462	2.1	1,346	2.3	-116
11. Water Bodies	1783	0.9	557	2.8	-1,226
12. Cloud	39	0.0	23	0.1	-16
Total	64,356	100.0	64,356	100.0	0

Source : DTKTD Cipta Karya

Table 2.4.2 Land Cover Bogor, 1988 and 1992

Land Cover Category	1988		1992		Change
	Ha	(%)	Ha	(%)	1992-1988 (Ha)
1. Structure, Residential Area	1,636	0.5	2,428	0.7	-792
2. Unstructure, Residential Area	29,749	9.0	31,893	9.6	-2,144
3. Industrial Area	306	0.1	427	0.1	-121
4. Urban Infrastructure	1,573	0.5	194	0.1	+1,379
5. Irrigated Agriculture	24,483	7.4	21,746	6.6	+2,737
6. Non-irrigated Agriculture	73,203	22.1	79,843	24.1	-6,640
7. High-dense Vegetation	107,372	32.4	117,877	35.6	-10,505
8. Grass, Bush, Low-dense Vegetation	89,226	26.9	61,705	18.6	+27,521
9. Bare Land	1,087	0.3	8,413	2.5	-7,326
10. Fishpond & Sedimentated Water	117	0.0	482	0.2	-365
11. Water Bodies	1,150	0.4	1,769	0.5	-619
12. Cloud	1,324	0.4	4,450	1.3	-3,126
Total	331,226	100.0	331,226	100.0	0

Source : DTKTD Cipta Karya

Table 2.4.3 Land Cover Tangerang, 1988 and 1992

Land Cover Category	1988		1992		Change
	Ha	(%)	Ha	(%)	1992-1988 (Ha)
1. Structure, Residential Area	530	0.4	4,215	3.1	+3,685
2. Unstructure, Residential Area	27,119	19.8	40,269	29.3	+13,150
3. Industrial Area	388	0.3	1,302	1.0	+914
4. Urban Infrastructure	801	0.6	1,561	1.1	+760
5. Irrigated Agriculture	41,118	30.0	52,446	38.2	+11,328
6. Non-irrigated Agriculture	22,889	16.7	11,136	8.1	-11,753
7. High-dense Vegetation	2,434	1.8	386	0.3	-2,048
8. Grass, Bush, Low-dense Vegetation	19,096	13.9	18,603	13.6	-493
9. Bare Land	15,406	11.2	1,948	1.4	-13,458
10. Fishpond & Sedimentated Water	4,001	2.9	3,859	2.8	-142
11. Water Bodies	2,902	2.1	1,537	1.1	-1,365
12. Cloud	579	0.4	0	0.0	-579
T o t a l	137,262	100.0	137,262	100.0	0

Source : DTKTD Cipta Karya

Table 2.4.4 Land Cover Bekasi, 1988 and 1992

Land Cover Category	1988		1992		Change
	Ha	(%)	Ha	(%)	1992-1988 (Ha)
1. Structure, Residential Area	1,018	0.7	3,834	2.6	+2,816
2. Unstructure, Residential Area	14,557	9.8	21,618	14.6	+7,061
3. Industrial Area	123	0.1	1,136	0.8	+1,013
4. Urban Infrastructure	148	0.1	686	0.5	+538
5. Irrigated Agriculture	55,189	37.3	64,142	43.4	+8,953
6. Non-irrigated Agriculture	27,163	18.4	13,074	8.8	-14,089
7. High-dense Vegetation	1,428	1.0	1,631	1.1	+203
8. Grass, Bush, Low-dense Vegetation	24,387	16.5	31,254	21.1	+6,867
9. Bare Land	12,905	8.7	2,467	1.7	-10,438
10. Fishpond & Sedimentated Water	6,397	4.3	4,516	3.1	-1,881
11. Water Bodies	4,574	3.1	3,531	2.4	-1,043
12. Cloud	0	0.0	0	0.0	0
T o t a l	147,889	100.0	147,889	100.0	0

Source : DTKTD Cipta Karya

2.4.3 Transformation of Land Cover

The land use map updating project further analyzed how the previous land cover underwent a transformation to the present one. This is explained using matrices presented in Table 2.4.5 through 2.4.8.

A general tendency of the land cover transformation can be summarized as follows:

- A residential area is marginally increased by the transformation largely from the high-dense vegetation, agriculture and base land;

- Industrial area is expanding by the penetration into the above three categories but residential area; and

- Agriculture is mostly expanded by the development of base land

According to these transformation matrices it can be said that:

- Residential land cover increased more than double during 1988-1992 for the respective Botabek components, but it only increased about 20 percent for DKI Jakarta.

- Industrial area increased more than 1,000 ha in Jakarta, Tangerang and Bekasi but only 277 ha in Bogor, which looks unlikely compared with the manufacturing sector growth in the GRDP of Bogor. More detailed analysis will be required to use Bogor figures in particular.

Table 2.4.5 Transformation of Land Cover, DKI Jakarta 1988-1992

1992 (To) / 1988 (From)	Res.	Ind.	Agr.	H.D.V.	Bare L.	Oth.	W.B	Total
1. Residential	40,553	1,109	-	-	43	-	-	41,705
2. Industrial	-	425	-	-	-	-	-	425
3. Agriculture	2,754	48	1,742	-	-	-	-	4,544
4. High-dense Veg.	4,030	77	-	1,342	-	-	-	5,449
5. Bare Land	3,361	221	562	-	5	-	-	4,149
6. Others	-	-	-	-	-	-	-	7,528
7. Water Bodies	-	-	-	-	-	-	-	557
Total	50,698	1,880	2,304	1,342	48	7,528	557	64,357
Increment	+8,993	1,455	-2,240	-4,107	-4,101	0	0	0

Source : DTKTD Cipta Karya

Table 2.4.6 Transformation of Land Cover, Bogor 1988-1992

1992 (To) / 1988 (From)	Res.	Ind.	Agr.	H.D.V.	Bare L.	Oth.	W.B	Total
1. Residential	50,471	97	-	-	379	-	-	50,947
2. Industrial	-	21	-	-	-	-	-	21
3. Agriculture	6,019	27	10,890	-	-	-	-	16,936
4. High-dense Veg.	44,766	94	-	130,643	-	-	-	175,503
5. Bare Land	3,532	59	1,709	-	192	-	-	5,492
6. Others	-		-	-	-	-	-	81,176
7. Water Bodies	-		-	-	-	-	-	1,150
Total	104,788	298	12,559	130,643	571	81,176	1,150	331,225
Increment	53,841	277	-4,337	-44,860	-4,921	0	0	0

Source : DTKTD Cipta Karya

Table 2.4.7 Transformation of Land Cover, Tangerang 1988-1992

1992 (To) / 1988 (From)	Res.	Ind.	Agr.	H.D.V.	Bare L.	Oth.	W.B	Total
1. Residential	28,681	471	-	-	546	-	-	29,698
2. Industrial	-	80	-	-	-	-	-	80
3. Agriculture	8,340	187	29,841	-	-	-	-	38,368
4. High-dense Veg.	13,122	234	-	7,347	-	-	-	20,703
5. Bare Land	5,977	316	6,492	-	202	-	-	12,987
6. Others	-	-	-	-	-	-	-	33,888
7. Water Bodies	-	-	-	-	-	-	-	1,537
Total	56,120	1,208	36,333	7,347	748	33,888	1,537	137,261
Increment	26,422	1,208	-2,035	-13,356	-12,239	0	0	0

Source : DTKTD Cipta Karya

Table 2.4.8 Transformation of Land Cover, Bekasi 1988-1992

1992 (To) / 1988 (From)	Res.	Ind.	Agr.	H.D.V.	Bare L.	Oth.	W.B	Total
1. Residential	18,105	238	-	-	350	-	-	18,693
2. Industrial	-	9	-	-	-	-	-	9
3. Agriculture	9,607	116	40,197	-	-	-	-	49,920
4. High-dense Veg.	8,119	530	-	16,007	-	-	-	24,656
5. Bare Land	2,548	234	5,340	-	558	-	-	8,680
6. Others	-	-	-	-	-	-	-	42,399
7. Water Bodies	-	-	-	-	-	-	-	3,531
Total	38,379	1,127	45,537	16,007	908	42,399	3,531	147,888
Increment	19,686	1,118	-4,383	-8,649	-7,772	0	0	0

Source : DTKTD Cipta Karya

CHAPTER 3 PRESENT TRAFFIC AND TRANSPORTATION CONDITIONS

CHAPTER 3 PRESENT TRAFFIC AND TRANSPORTATION CONDITIONS

3.1 Government Budgets and Road Administrative Jurisdiction

3.1.1 Government Budgets

(1) Central Government Budgets

1) Receipts

Table 3.1.1 shows the recent trend of the receipts of central government budgets.

The receipt of central government comprises Routine Receipt and Development Receipt. While the routine receipt ranges about 80% of the total receipt during the fiscal year 1990/91-1992/93, the development receipt ranges about 20%.

The routine receipts is composed of Oil & Gas Receipt (accounting for 26% of the total receipt in the fiscal year 1992/93) and Non Oil & Gas Receipt (55%).

Of the non oil & gas receipt, the income tax (accounting for 20% of the total receipt in the fiscal year 1992/93) and value added tax (18%) are main components.

The development receipts are the total amount of aid programs and aid projects by foreign countries.

During the fiscal year 1989/90 - 1992/93, the total amount of the routine receipts has increased, largely contributed by the increase of the non-oil & gas receipts amount.
On the other hand, for the same period, while the total amount of the development receipts has slightly increased, its share ratios to the total receipts has stagnated.

Compared with before, receipts from oil & gas have been declined, mainly because of stagnant trend of oil prices, and these now account for about 26% (down from 62% in 1981/82) of the total government receipts in the fiscal year 1992/93. On the contrary, the share of receipts of the non oil & gas has increased.

In the planned budget of the fiscal year 1993/94, such a tendency of share reduction of oil & gas receipts is proceeded; while the share of receipts from oil & gas accounts for about 24% (down from 26% in 1992/93), the share of receipts from non oil & gas accounts for about 60% (up from 55% in 1992/93) of the total budgeted receipts in 1993/94. The share

Table 3.1.1 Central Government Receipt

(Unit: Billion Rp.)

	('81/'82) (Actual)		'89/'90 (Actual)		'90/'91 (Actual)		'91/'92 (Actual)		92/'93 (Actual)		93/'94 (Budget)	
Routine Receipt	12,274	(88.3%)	28,740	(75.3%)	39,546	(80.0%)	41,585	(80.0%)	47,452	(81.6%)	52,769	(84.7%)
1) Oil & Gas Receipt	8,575	(61.7%)	11,252	(29.5%)	17,712	(35.8%)	15,039	(28.9%)	15,330	(26.4%)	15,128	(24.3%)
2) Non Oil & Gas Receipt	3,699	(26.6%)	17,488	(45.8%)	21,834	(44.2%)	26,546	(51.1%)	32,122	(55.2%)	37,641	(60.4%)
- Income Tax			5,488	(14.4%)	6,755	(13.7%)	9,580	(18.4%)	11,913	(20.5%)	14,848	(23.8%)
- Value Added Tax			5,837	(15.3%)	7,463	(15.1%)	8,926	(17.2%)	10,714	(18.4%)	11,682	(18.7%)
- Land Tax			590	(1.5%)	811	(1.6%)	875	(1.7%)	1,101	(1.9%)	1,320	(2.1%)
- Import Duties			1,587	(4.2%)	2,486	(5.0%)	2,133	(4.1%)	2,652	(4.6%)	3,106	(5.0%)
- Other Taxes			1,924	(5.0%)	2,204	(4.5%)	2,545	(4.9%)	2,749	(4.7%)	3,102	(5.0%)
- Non Tax Receipt			2,062	(5.4%)	2,115	(4.3%)	2,487	(4.8%)	2,993	(5.1%)	3,583	(5.7%)
Development Receipt	1,626	(11.7%)	9,429	(24.7%)	9,905	(20.0%)	10,409	(20.0%)	10,716	(18.4%)	9,553	(15.3%)
- Aid Program			1,007	(2.6%)	1,397	(2.8%)	1,563	(3.0%)	512	(0.9%)	427	(0.7%)
- Aid Project			8,422	(22.1%)	8,508	(17.2%)	8,846	(17.0%)	10,204	(17.5%)	9,126	(14.6%)
Total	13,900	(100.0%)	38,169	(100.0%)	49,451	(100.0%)	51,994	(100.0%)	58,168	(100.0%)	62,322	(100.0%)

Source: Statistical Year Book of Indonesia, 1984 and 1993, Central Bureau of Statistics

ratio of development receipt has decreased to 15% in the 1993/94 budget, compared to previous trends (ranging 18-20% during the actual 1990/91-1992/93).

2) Expenditures

Table 3.1.2 shows the recent trend of the expenditure of central government budgets.

The expenditure of central government comprises Routine Expenditure and Development Expenditure. The share ratios of routine expenditure and development expenditure to the total expenditure amount are about 60% and 40% respectively.

In the breakdown of the development expenditure, the expenditures for Road Facilities amount 679 billion Rp., 972 billion Rp. and 1,225 billion Rp. in the fiscal year 1990/91, 1991/92 and 1992/93 respectively. The share ratios of the expenditure for road facilities to the total expenditure amount and to the total development expenditure amount ranges about 1% - 2% (1.4% in 1990/91, 1.9% in 1991/92 and 2.1% in 1992/93) and about 4% - 5% (3.5% in 1990/91, 4.5% in 1991/92 and 5.1% in 1992/93) respectively, representing a steady increase tendency during the fiscal year of 1990/91 - 1992/93.

The breakdown of development expenditure by sector (18 sectors) shows that the expenditures of the Sector of Transportation and Tourism amount 3,042 billion Rp., 3,968 billion Rp. and 4,385 billion Rp. in the fiscal year 1990/91, 1991/92 and 1992/93 respectively, representing the share ratios to the total development expenditure, 16%, 18% and 18% for the said respective fiscal year.

(2) DKI Jakarta Government Budgets

1) Receipts

The recent trend of the receipts of DKI Jakarta government budgets is shown in Table 3.1.3. The net receipts of DKI Jakarta government comprise Local Taxes, Transfer from Central Government and Development Receipt.
Of these receipt components, the share ratio of local taxes ranges about 55% of the total receipt amount during the recent fiscal years.

2) Expenditures

The recent trend of the expenditures of DKI Jakarta government budgets is shown in Table 3.1.3.

Table 3.1.2 Central Government Expenditure

(Unit: Billion Rp.)

	'90/'91 (Actual)			'91/'92 (Actual)			'92/'93 (Actual)		
Routine Expenditure	29,998	(60.7%)		30,227	(58.1%)		34,031	(58.5%)	
Development Expenditure	19,452	(39.3%)		21,765	(41.9%)		24,135	(41.5%)	
Total	49,450	(100.0%)		51,992	(100.0%)		58,166	(100.0%)	
Breakdown of Development Expenditure	19,452		(100.0%)	21,765		(100.0%)	24,135		(100.0%)
- Development Subsidy to Villages	181	(0.4%)	(0.9%)	250	(0.5%)	(1.1%)	327	(0.6%)	(1.4%)
- Development Subsidy to Regencies	392	(0.8%)	(2.0%)	583	(1.1%)	(2.7%)	825	(1.4%)	(3.4%)
- Development Subsidy to Provinces	486	(1.0%)	(2.5%)	573	(1.1%)	(2.6%)	701	(1.2%)	(2.9%)
- Road Facilities	679	(1.4%)	(3.5%)	972	(1.9%)	(4.5%)	1,225	(2.1%)	(5.1%)
- Aid Project	8,508	(17.2%)	(43.7%)	8,846	(17.0%)	(40.6%)	10,204	(17.5%)	(42.3%)
- Others	9,206	(18.6%)	(47.3%)	10,541	(20.3%)	(48.4%)	10,853	(18.7%)	(45.0%)
Breakdown of Development Expenditure by Sector	19,452		(100.0%)	21,765		(100.0%)	24,135		(100.0%)
1) Agriculture	2,392		(12.3%)	2,817		(12.9%)	2,955		(12.2%)
2) Industry	447		(2.3%)	493		(2.3%)	520		(2.2%)
3) Mines & Energy	1,973		(10.1%)	2,446		(11.2%)	3,013		(12.5%)
4) Transportation & Tourism	3,042		(15.6%)	3,968		(18.2%)	4,385		(18.2%)
5) Commerce	244		(1.3%)	288		(1.3%)	313		(1.3%)
6) Manpower	556		(2.9%)	745		(3.4%)	886		(3.7%)
7) Regional Development	1,873		(9.6%)	2,409		(11.1%)	2,919		(12.1%)
8) Religion	35		(0.2%)	52		(0.2%)	67		(0.3%)
9) Education & Culture	2,065		(10.6%)	2,503		(11.5%)	3,002		(12.4%)
10) Social/Health	592		(3.0%)	782		(3.6%)	955		(4.0%)
11) Public Housing	729		(3.7%)	833		(3.8%)	959		(4.0%)
12) Law	41		(0.2%)	55		(0.3%)	74		(0.3%)
13) Defence & Security	982		(5.0%)	1,085		(5.0%)	1,120		(4.6%)
14) Information & Communication	65		(0.3%)	73		(0.3%)	80		(0.3%)
15) Science & Techonogy	406		(2.1%)	502		(2.3%)	567		(2.3%)
16) Government Institution	143		(0.7%)	236		(1.1%)	324		(1.3%)
17) Business Enterprises	339		(1.7%)	377		(1.7%)	390		(1.6%)
18) Natural Resouces	301		(1.5%)	334		(1.5%)	383		(1.6%)
DIPDAL (Carry Over)	3,227			1,767			1,223		

Source: Statistical Year Book of Indonesia 1993, Central Bureau of Statistics

Table 3.1.3 Receipt and Expenditure of DKI Jakarta Government

(Unit: Million Rp.)

(A) Receipt	'89/'90 (Actual)		'90/'91 (Actual)		'91/'92 (Actual)		'92/'93 (Actual)		93/'94 (Estm.Actual)		94/'95 (Budget)	
Previous Year Surplus	57,662	(8.1%)	96,221	(9.7%)	192,505	(15.5%)	180,315	(13.1%)	149,067	(9.2%)	267,463	(12.8%)
Local Taxes	429,660	(60.5%)	618,554	(62.7%)	700,599	(56.4%)	774,980	(56.1%)	919,858	(57.0%)	1,159,254	(55.4%)
Transfer from Central Government	209,714	(29.5%)	250,192	(25.3%)	314,134	(25.3%)	383,374	(27.8%)	480,644	(29.8%)	513,543	(24.5%)
- Tax & Non-Tax Distribution									(150,040)		(201,746)	
- Donation & Subsidy									(330,604)		(311,797)	
Development Receipt	13,414	(1.9%)	22,193	(2.2%)	34,401	(2.8%)	42,439	(3.1%)	63,599	(3.9%)	153,295	(7.3%)
Total	710,453	(100.0%)	987,161	(100.0%)	1,241,639	(100.0%)	1,381,108	(100.0%)	1,613,168	(100.0%)	2,093,555	(100.0%)
(Annual Net Receipt)	652,791		890,940		1,049,134		1,200,793		1,464,101		1,826,092	

(B) Expenditure	'89/'90 (Actual)		'90/'91 (Actual)		'91/'92 (Actual)		'92/'93 (Actual)		93/'94 (Estm.Actual)		94/'95 (Budget)	
Routine Expenditure	332,620	(55.0%)	445,290	(56.8%)	593,380	(56.4%)	715,810	(58.1%)	818,230	(58.3%)	1,145,300	(54.7%)
Development Expenditure	272,110	(45.0%)	338,690	(43.2%)	458,010	(43.6%)	516,230	(41.9%)	584,960	(41.7%)	948,200	(45.3%)
Total	604,730	(100.0%)	783,980	(100.0%)	1,051,390	(100.0%)	1,232,040	(100.0%)	1,403,190	(100.0%)	2,093,500	(100.0%)

Source: Rancangan, Anggaran Pendapatan dan Belanja Daerah (RAPBD), DKI Jakarta, Fiscal Year 1993/94 and 1994/95
(Budget Plan of Receipt and Expenditure of DKI Jakarta, Fiscal Year 1993/94 and 1994/95)

The expenditure of DKI Jakarta government is composed of Routine Expenditure and Development Expenditure. While the routine expenditure accounts for 58% of the total expenditure amount in the fiscal year 1993/94, the development expenditure accounts for 42%.

Table 3.1.4 shows the breakdown of the development expenditure by sector in the fiscal year 1993/94 (estimated actual) and 1994/95 (budget). The classification of breakdown items are different by the fiscal year 1993/94 (18 sectors) and 1994/95 (21 sectors). The expenditure of the Sector of Transportation and Tourism (including the arterial road development) in the fiscal year 1993/94 amounts 142,826 million Rp., representing a share ratio of 22% to the total expenditure amount. The expenditure of the sector of Transportation (including the arterial road development) in the fiscal year 1994/95 (budget) amounts 143,796 million Rp., representing a share ratio of 18% to the total expenditure amount.

(3) Jabotabek Development Budget Tabulation by JMDPR

The study of Jabotabek Metropolitan Development Plan Review (JMDPR) refers to public financings related to the governments of Jabotabek area.

Table 3.1.5 shows the tabulation prepared by JMDPR related to the details of development budgets by sector (18 sectors) for the government of DKI Jakarta, Kotamadya Bogor, Kabupaten Bogor, Kabupaten Tangerang and Kabupaten Bekasi for the fiscal year 1992/93.

Table 3.1.4 Breakdown of Development Expenditure by Sector of DKI Jakarta Government

(Unit: Million Rp.)

(Sector)	'93/'94 (Estm. Actual)	
1) Agriculture	30,169	(4.7%)
2) Industry	1,480	(0.2%)
3) Mines & Energy	8,874	(1.4%)
4) Transportation & Tourism	142,826	(22.3%)
5) Commerce	2,291	(0.4%)
6) Manpower	5,500	(0.9%)
7) Regional Development	76,759	(12.0%)
8) Religion	9,400	(1.5%)
9) Education & Culture	65,126	(10.2%)
10) Social/Health	40,510	(6.3%)
11) Public Housing	47,738	(7.5%)
12) Law	1,848	(0.3%)
13) Defence & Security	21,533	(3.4%)
14) Information & Communication	2,576	(0.4%)
15) Science & Techonogy	6,430	(1.0%)
16) Government Institution	94,729	(14.8%)
17) Business Enterprises	44,258	(6.9%)
18) Natural Resouces & Environment	37,170	(5.8%)
(Sector Total)	639,217	(100.0%)
DIPDAL (Carry Over)	120,923	
Total Development Expenditure	760,140	

Note: Data of Fiscal Year 1993/94 : Not Available of Audited Data

(Unit: Million Rp.)

(Sector)	94/'95 (Budget)	
1) Industry	1,768	(0.2%)
2) Agriculture	6,799	(0.8%)
3) Watewr Resouces & Irrigation	11,916	(1.4%)
4) Manpower	4,320	(0.5%)
5) Commerce & Business Enterprise	70,508	(8.6%)
6) Transportation	143,796	(17.5%)
7) Mines & Energy	1,602	(0.2%)
8) Tourism & Telecommunication	14,565	(1.8%)
9) Regional Development	164,173	(20.0%)
10) Environmental & Spatial Plan	7,212	(0.9%)
11) Education & Culture	44,129	(5.4%)
12) Demography & Family Planning	1,015	(0.1%)
13) Social / Health	41,292	(5.0%)
14) Public Housing	105,926	(12.9%)
15) Religion	16,225	(2.0%)
16) Science & Techonogy	30,124	(3.7%)
17) Law	2,868	(0.3%)
18) Government Institution	124,016	(15.1%)
19) Information & Communication	13,137	(1.6%)
20) Defence & Security	16,451	(2.0%)
21) Social Aids	421	(0.1%)
(Sector Total)	822,263	(100.0%)
DIPDAL (Carry Over)	125,913	
Total Development Expenditure	948,176	

Source: Rancangan, Anggaran Pendapatan dan Belanja Daerah (RAPBD), DKI Jakarta, Fiscal Year 1994/95 (BAPPEDA DKI Jakarta) (Budget Plan of Receipt and Expenditure of DKI Jakarta, Fiscal Year 1994/95)

Table 3.1.5 1992/93 Development Expenditure Budget for JABOTABEK Area (Tabulated by JMDPR)

(Unit: Billion Rp.)

	DKI Jakarta	Kodya. Bogor	Kab. Bogor	Kab. Tangerang	Kab. Bekasi	BOTABEK Total	JABOTABEK Total
(Sector)							
1) Agriculture	25.76	0.09	0.72	1.13	0.31	2.25	28.01
2) Industry	1.05	0.02	0.08	0.05	0.01	0.17	1.22
3) Mines & Energy	8.27	0.00	0.19	0.11	0.21	0.51	8.78
4) Transportation & Tourism	151.73	3.79	23.97	17.10	12.91	57.77	209.50
5) Commerce	0.82	0.07	0.12	2.13	0.25	2.56	3.38
6) Manpower	4.06	0.01	0.28	0.08	0.02	0.39	4.45
7) Regional Development	63.31	0.46	5.42	5.18	4.34	15.40	78.71
8) Religion	6.73	0.20	0.61	0.26	0.16	1.23	7.96
9) Education & Culture	64.87	1.75	4.83	4.18	6.24	17.00	81.87
10) Social/Health	30.00	0.35	1.71	3.45	2.38	7.89	37.89
11) Public Housing	51.61	6.50	0.52	0.40	0.37	7.79	59.40
12) Law	1.46	0.02	0.87	0.03	0.05	0.97	2.43
13) Defence & Security	16.07	0.03	0.25	0.21	0.25	0.74	16.81
14) Information & Communication	2.12	0.17	0.18	0.03	0.06	0.43	2.55
15) Science & Techonogy	9.37	0.00	0.11	1.32	0.56	1.98	11.35
16) Government Institution	90.46	2.32	8.42	2.19	3.20	16.13	106.59
17) Business Enterprises	23.54	0.55	0.30	0.19	0.15	1.10	24.64
18) Natural Resouces	36.81	0.00	1.11	0.34	0.21	1.66	38.47
(Sector Total)	588.03	16.33	49.68	38.37	31.67	136.04	724.07
Subsidy	0.00	0.00	0.38	3.50	0.50	4.38	4.38
Total Development Budget	588.03	16.33	50.06	41.87	32.17	140.42	728.45

Source: JABOTABEK Metropolitan Development Plan Review (JMDPR), Third Planning Report, July 1993 (Draft)
Note : Figures of "JABOTABEK Total" are calculated by the Study Team.

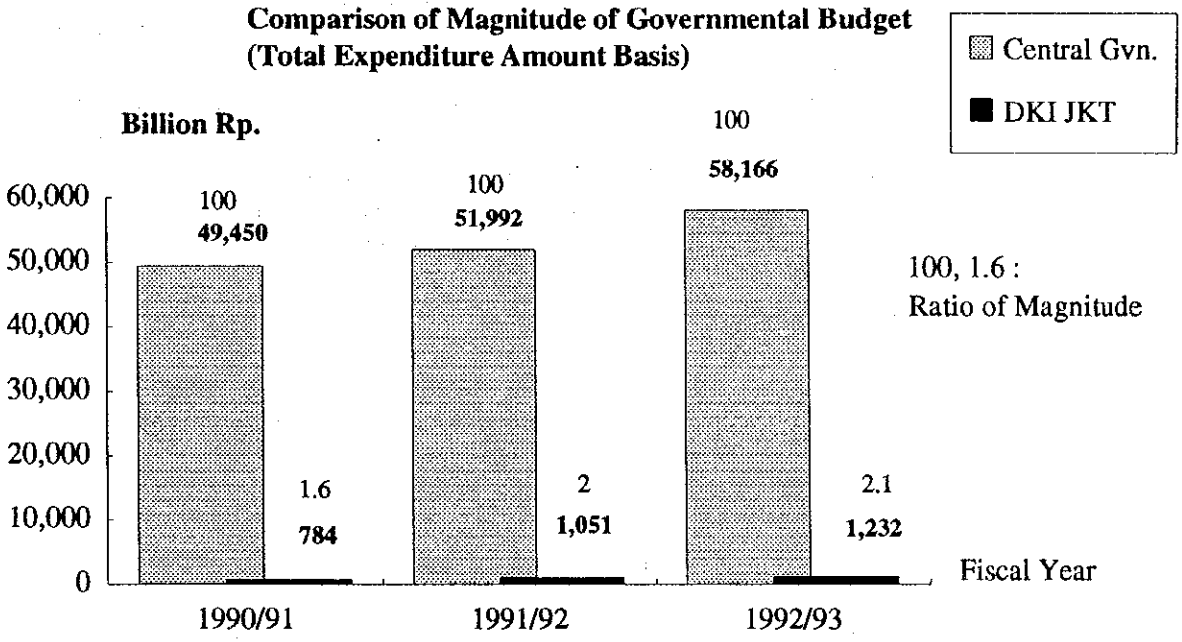


Fig. 3.1.1 **Comparison of Magnitude of Governmental Budget (Total Expenditure Amount Basis)**

3.1.2 Road Administrative Jurisdiction

Each governmental agency is involved in the following phase of project implementation of road construction and improvement/rehabilitation of public road, maintenance of public road and maintenance/operation of toll road in DKI Jakarta and Jabotabek in accordance with their jurisdiction.

(1) Studies (Masterplan, Feasibility Study)

Directorate General of Highways (Bina Marga), Ministry of Public Works is responsible for executing studies in principle. Directorate General of Human Settlement (Cipta Karya) is responsible for formulating spatial plans integrated improvement plans of all sectors concerning to public works such as structure plan in coordination with agencies concerned. Each agency such as DKI Jakarta and West Java Province is in charge to formulate a masterplan in line with such spatial plan and to publish it after the concurrence of Minister of Home Affairs. A concept of road development masterplan, therefore, is prepared by Bina Marga prior to formulating a spatial plan and handed to Cipta Karya. Bina Marga is in charge to conduct a feasibility study based on a masterplan. Directorate of Urban Road Development (Binkot) is responsible for conducting a feasibility study in urban area including DKI Jakarta, while Directorate of Highway Planning (Bipran) is responsible for rural area.

(2) Detailed Design

Bina Marga, PT. Jasa Marga (Indonesian Highway Corporation) and provincial government such as DKI Jakarta and West Java Province are responsible for conducting detailed design for national road, toll road and provincial road respectively.

(3) Construction and Maintenance

National roads in Jakarta Metropolitan Area is to be constructed by Regional Betterment Office No. 9 (RBO 9) under Bina Marga. Maintenance works for national roads in Jakarta Metropolitan Area are constructed by DKI Jakarta and West Java Province respectively according to their jurisdiction. However, in case that Five-Year Development Plan is designated to construct certain provincial roads Governor may request Minister of Pubic Works to construct a part of such provincial road. As for the development of toll road by BOT scheme, PT. Jasa Marga selects a successful investor and Minister of Public Works appoints the concessionaire. The appointed concessionaire undertakes construction, operation and maintenance of toll road.