

PROJECT FORMATION STUDY
ON
SURABAYA TOLL RING ROAD CONSTRUCTION
PROJECT

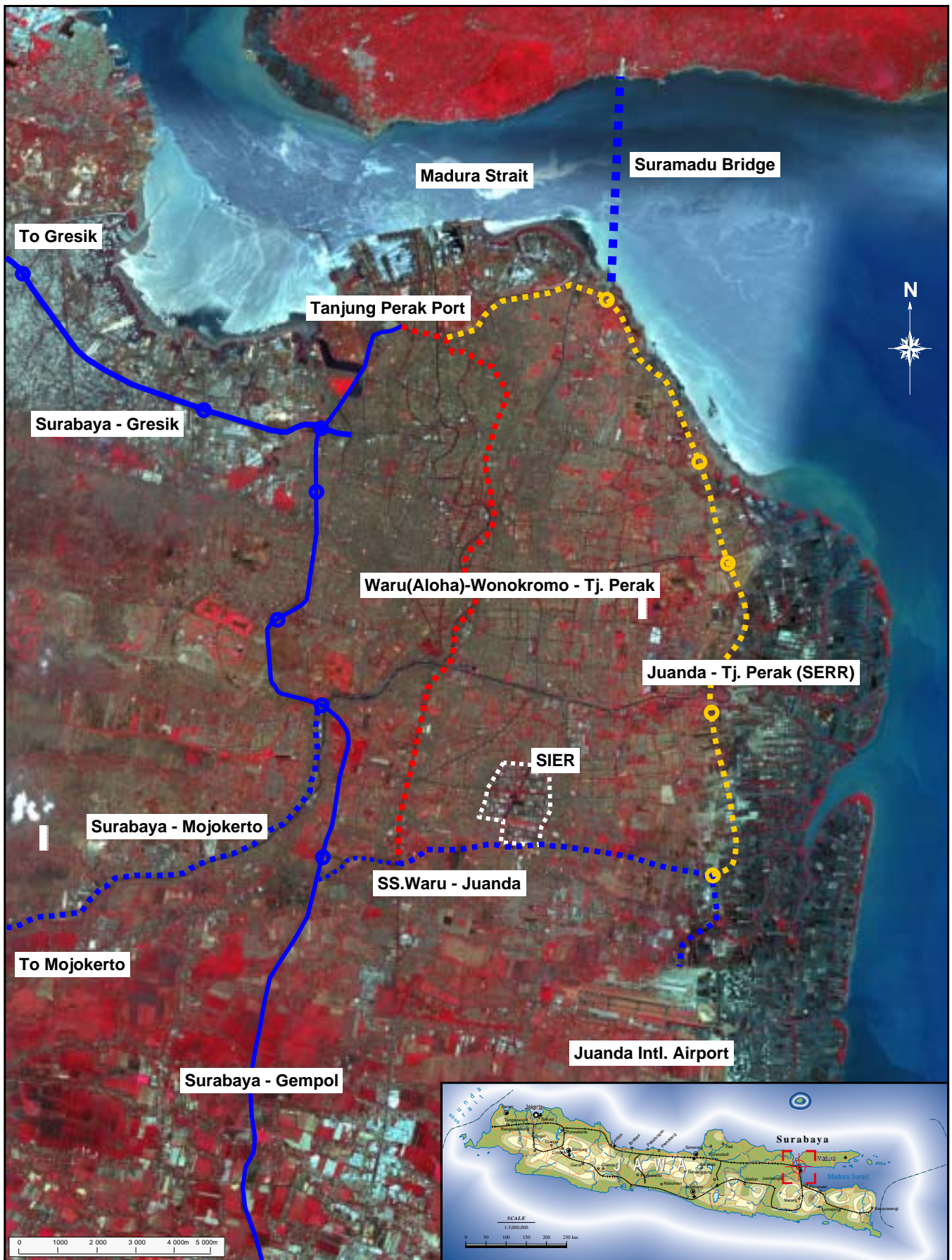
Study Report

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— : in Operation
 - - - : Under Construction
 . . . : Negotiation for Signing of Consession Agreement
 . . . : Tender Preparation

LOCATION MAP

SURABAYA TOLL RING ROAD CONSTRUCTION PROJECT

Photos (1/2)



Pic1. Suramadu Bridge(Perspective)



Pic2. Suramadu Bridge Construction Site



Pic3. Model for development plan of Suramadu
Bridge Approach Area



Pic4. New Juanda Airport (Nov. 06 Open)



Pic5. Existing Tj. Perak Port

Photos (2/2)



Pic6. Existing Toll Road (Surabaya - Gresik)



Pic7. SS.Waru – Juanda Construction Site



Pic8. SERR Proposed construction site
for Inter Change



Pic9. SERR Proposed construction site
for Inter Change



Pic10. Waru (Aloha) - Wonokromo-Tj.Perak Toll
Road Consutruction proposed area 1



Pic11. Waru (Aloha) - Wonokromo-Tj.Perak Toll
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Project Formation Study

Surabaya Toll Ring Road Construction Project

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Abbreviations

AADT	: Average Annual Daily Traffic
AAGR	: Average Annual Growth Rate
ADB	: Asian Development Bank
AMDAL	: Analisis Mengenai Dampak Lingkungan (Environmental Impact Assessment)
APBD	: Anggaran Pendapatan dan belanja Daerah (Regional Budget Revenue and Expenditure)
APBN	: Anggaran Pendapatan dan Belanja Negara (State Budget Revenue and Expenditure)
ASEAN	: Association of South-East Asia Nations
B/C	: Benefit/ Cost ratio
BAPPEDA	: Badan Perencanaan Pembangunan Daerah (Regional Planning Board)
BAPPENAS	: Badan Perencanaan dan Pembangunan Nasional (National Development Planning Agency)
BBO	: Build-Buy-Operate
BOO	: Build-Own-Operate
BOT	: Build-Operate-Transfer
BPJT	: Badan Pengatur Jalan Tol (Indonesian Toll Road Authority)
BPS	: Badan Pusat Statistik
CBD	: Central Business District
DBL	: Design-Build-Lease
DBO	: Design-Build-Operate
DGH	: Directorate General of Highways
DSCR	: Debt Service Coverage Ratio
ECFA	: Engineering and Consulting Firms Association, Japan
EIRR	: Economic Internal Rate of Return
FIRR	: Financial Internal Rate of Return
FS	: Feasibility Study
GRDP	: Gross Regional Domestic Product
GSMA	: Greater Surabaya Metropolitan Area
IC	: Inter Change
JICA	: Japan International Cooperation Agency
MERR	: Middle East Ring Road
N.A.	: Not Available
NPV	: Net Present Value
O & M	: Operation and Maintenance
ODA	: Official Development Assistance
PELINDO	: Pelabuhan Indonesia
PIER	: Pasuruan Industrial Estate Rembang
PPP	: Public-Private Partnership
PSO	: Public Service Obligation
ROE	: Return on Equity
Rp	: Rupiah
SERR	: Surabaya East Ring Road
SIER	: Surabaya Industrial Estate Rungkut
SMA	: Surabaya Metropolitan Area
SPC	: Special Purpose Company
TEU	: Twenty foot Equivalent Unit

Executive Summary

(1) Background and Objectives

1) Background

The Surabaya City is the next largest city after Jakarta in Indonesia and the capital of East Java Province with a population over 2.5 million. At the same time, the Greater Surabaya Metropolitan Area (GSMA) is the centre of political and economic activities not only in the East Java Province but also in more wide areas covering Kalimantan, Surawesi and Nusa Tenggara islands.

The Tanjung Perak Port, an international hub port, is a gateway to GSMA and one of the 25 Strategic Ports in Indonesia handling more than 1 million TEU of containers and 6 million ton of bulk cargo per year. However, facilities of the Tj. Perak Port are old aged and the capacity of terminals is not enough to handle increasing cargo demand. The Master Plan Study for the development of ports in Surabaya is under going by the technical assistance of JICA (Japan International Cooperation Agency). As the East Java Province has potential of plentiful natural resources and agricultural product, many manufacturing/ processing factories not only of local companies but also from foreign countries such as Japan, Taiwan, Korea and other ASEAN countries are located in the GSMA. There is an Industrial Estate, SIER (Surabaya Industrial Estate, Rungkut) that is the largest industrial estate in Indonesia, located in the south of the Surabaya City. The Juanda International Airport is also located in the south of the City.

On the other hand, urban traffic in Surabaya is suffered from chronic and severe congestion preventing smooth transport of passengers and goods/ freight to/from the Tanjung Perak Port, Industrial Estate and Juanda International Airport. In order to cope with this situation, construction of toll road network has been implemented in the GSMA and, at present, north-south arterial toll roads (Surabaya-Gempol Toll Road and Surabaya-Gresik Toll Road) are in operation composing a part of Western Ring Road. However, eastern part of the ring road (**Surabaya East Ring Road: SERR**), the section of Bandara Juanda-Tanjung Perak is not yet implemented and now in the status of tender preparation for private investors.

In order to improve the present urban traffic condition, completion of the whole network of the Toll Ring Road in GSMA and hence construction of SERR is urgently required.

2) Objectives

The objectives of the ECFA Mission consist of the following:

- 1) To clarify roles and functions of SERR from a view point of urban traffic and from the aspect of Spatial Plan of the Surabaya City and to confirm the justification of its implementation.
- 2) To recommend the optimum PPP Scheme (Public-Private Partnership Scheme) for construction and operation of SERR.

- 3) To promote the implementation of SERR under the PPP Scheme in combination with the Japanese ODA (Official Development Assistance).

(2) Existing Conditions of GSMA

Population of GSMA is about 8.2 million (Census 2000) which is 23.5% of the East Java Province and the Surabaya City has 2.6 million population in 2000. Economic growth rate of the East Java Province was 5.1% (2001-2005) and the Surabaya City was 5.7% (2003-2004), slightly higher than national total (4.9% per annum). Regarding the road network in Surabaya City, there is not clear radial and ring road system at present and main economic/ business activities are concentrated to the central area and urbanization expanded to outskirts of the city together with the progress of motorization. Due to this situation, urban area suffers from severe congestion in peak hours. The Surabaya City formulated a Spatial Plan for the target year 2015. In the Spatial Plan, the Toll Ring Road system which is combined with the grid type arterial road network is strategically proposed so as to decentralise business activities to the directions of east, west, south and north of the City. SERR is also placed in the Spatial Plan composing a portion of eastern portion of the Toll Ring Road from Juanda Airport to Tanjung Perak Port. .

The strategic development plans such as expansion of the Tanjung Perak Port, Juanda International Airport and Industrial Estates are essential to pull and to realize the sustainable economic growth in GSMA and East Java Province. In addition, “Integrated Development Project Group” combined with the core project of Suramadu Bridge Construction is also given high priority. SERR is a component of this Group.

(3) Roles and Functions of the Surabaya East Ring Road (SERR)

The roles and functions of SERR are summarized into the following five (5) items:

- 1) Inducement of new land use
- 2) Betterment of urban environment
- 3) Function as a Bypass Road
- 4) Function as distributor of traffic
- 5) Function to support the Strategic Development Plans (Port, Airport, Madura Island development and Suramadu Bridge, Industrial Estates)

From the urban development aspect, SERR will induce new locations of urban facilities along the route and, as a result, it is expected that new urban activities will be developed in the eastern areas of the City. As ring roads have a function to provide the through traffic with detour routes, through traffic and traffic volume in the central area will be significantly reduced. Therefore, air pollution and noise in the urban areas will be also reduced. At the same time, ring roads have functions as distributors of traffic and re-distribute the traffic from a congested radial road to other non-congested radial roads. Furthermore, SERR will provide a smooth/ reliable access to the strategic development projects in GSMA and will support not only the implementation of these projects but also enhance their effects after implementation.

(4) Present Status of the Project Toll Road

In the recent years, there were major alterations related to Toll Road Construction, such as New Road Law No.38 and establishment of BPJT. And the government also held the Infrastructure Summit in 2005 for the sake of publicity and acceleration of Public Sector Participation in the field of infrastructure investment. Under this conditions, Ministry of Public Works had tendered investment tender for 19 links, however not all of projects were to be awarded because of the large burden for private sector.

The SERR is not only one of the 51 planned toll roads which are now regulated by BPJT but also various development plans in Surabaya such as the Integrated Development Project Group. At present, SERR is in the stage of tender preparation. And DGH and BPJT are now seeking not only a private investor but also a foreign loan support including the way to implement SERR under PPP scheme. Feasibility study of this route was completed in 2006 ("Bantuan Teknis Evaluasi Penerusan Proyek Jalan Tol", PT. Perentjana Jaya, DGH own budget (APBN), March 2006) and, in parallel, AMDAL study (Kwarsa Hexagon, BPJT own budget (APBN), January 2007) was also carried out and completed in the beginning of 2007. The summary results of aforementioned Feasibility Study are as follows;

- Total Project Cost	5,029 Rp Billion
-Economic Internal Rate of Return(EIRR)	:25.8%
-Net Present Value (NPV)	:2,973 Rp. Billion
-Benefit/ Cost Ratio (B/C)	:2.26
(Discount Rate)	:(12.75%)
- Implementation Scheme	:BOT bases, no government fund support
- Fund Arrangement	
Equity (30%)	:1,509 Rp. Billion
Loan (70%)	:3,521 Rp. Billion
- Loan Conditions	
Grace Period	:2 years
Repayment Period	:15 years (2011-2025)
Interest Rate	:13-16 % per year
- Break Even Year	: 2018 (9 years after opening)
- Debt Service Coverage Ratio (DSCR)	: 0.92
- Financial Rate of Return (FIRR)	:13.4%
- Net Present Value (NPV)	:131.5 Rp. Billion
- IRR on Equity (ROE)	:15.7%
Discount Rate	:13.23%

However, problems of the F/S report are that no detailed information was presented in the above feasibility study about the economic evaluation such as kinds of benefits estimated, unit values of economic benefit, methodology for benefit estimation, preconditions applied and cash flow tables of costs and benefits. Therefore, it is impossible, at this moment, to trace the process of evaluation based on the original data. In addition, sensitivity tests were not carried out for the financial evaluation by changing the ratio of equity in the total investment cost and for the case of the government subsidies were provided in order to improve the financial conditions of the private sector.

(5) Proposed Implementation Scheme for the Project Toll Road

Previously in Indonesian Road sector, only BOT scheme (BOT scheme and Joint-Venture scheme) has been applied to Toll Road implementation. However, from the viewpoint that there were the cases which no prospective bidders attend at the recent Investor Tendering,

these conventional BOT scheme doesn't function better. To assign heavy burden to the Private Sector was one of the reason for this. Road sector also considers that Pure Public model in the case that BOT scheme can not be applied. However, to select either BOT or Pure Public is not better option.

As shown in the table 5.2.1, there's few options between Pure Public Scheme and BOT scheme. If the application of BOT scheme is justified as difficult, it will be considered to apply PPP forms other than BOT. A preliminary financial analysis in this study warns that the project implementation cost should be around US\$ 100 million or less for SERR to keep probable FIRR and, in fact, its implementation cost will be much higher than it. Accordingly, the likely PPP model that can be applied for SERR is DBL (Design-Build-Lease) or DBO (Design-Build-Operate) because of enough corroborative evidences worldwide for low cash flow projects and nicely demarcation between each Sector's obligations, risks and benefits.

(6) Conclusions and Recommendation

Conclusions

- Based on the analysis on existing conditions of SMA, various development projects it is confirmed that the Project Toll Road (SERR) is essential from the aspects of improvement of urban traffic and enhancement of urban land use.
- According to the results of the feasibility study, economic evaluation of the Project showed a 25.8% of Economic Internal Rate of Return (EIRR). Therefore, the project is economically feasible.
- On the other hand, financial viability of SERR showed a marginal value of rate of return with a 13.4% of FIRR and a 15.7% of ROE, not enough rates to attract private investors.
- Although SERR generates huge economic benefit, financial viability will be a marginal level (near the border line of financially viable) and not enough to attract challengeable private investors. Therefore, it is necessary to re-formulate a implementation scheme. (*) The optimum implementation scheme for SERR will be a PPP based one, not a 100% of private investment.

Recommendations

- It is recommendable to implement SERR in short term from the aspects of its significant impacts.
- It is recommended to carry out a further (supplement) study in order to clarify the remaining issues as explained below;

Recommended Study

To solve the remaining issues and effectively promote the project, the following study is recommended to conduct:

(*) During the stay of the ECFA mission in Indonesia, it was reported that the DGH requested to BAPPENAS for assistance from World Bank to speed up the implementation of SERR. However, detailed information on the concrete contents of the assistance was not obtained at this moment.

Study Title: Feasibility Study for the Surabaya Toll Ring Road Construction Project
Objectives: <ul style="list-style-type: none"> • to clarify remaining issues in previous feasibility study to meet the information requirement by PPP scheme. • to analyze suitable PPP scheme and to confirm and analyze of setting up of institutional arrangement for subsequent foreign loan in consideration of PPP scheme
Major Work Components: <ul style="list-style-type: none"> - Review for the traffic demand with reinforcement of updated traffic data and economic evaluation - Propose the overall toll collection system for smooth transfer to the other toll roads - Supplemental engineering design and cost estimate - Analyze of Optimal PPP scheme and confirm readiness of legal and institutional arrangement - Supplemental Environmental consideration etc.
Cost: App. JPY 50 million
Expected Financial Source: The subsidizing project for feasibility studies for private sector finance to infrastructures in the developing countries, by the Ministry of Economy, Trade, and Industry, Japan.

CHAPTER 1 INTRODUCTION

1.1 Background

The Surabaya City is the next largest city after Jakarta in Indonesia and the capital of East Java Province with a population over 2.5 million. At the same time, the Greater Surabaya Metropolitan Area (GSMA) is the centre of political and economic activities not only in the East Java Province but also in more wide areas covering Kalimantan, Surawesi and Nusa Tenggara islands.

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1.2 Objectives and Scope

The objectives of the ECFA mission consist of the following:

- (1) To clarify roles and functions of SERR from a view point of urban traffic and from the aspect of Spatial Plan of the Surabaya City, and to confirm the justification of its implementation.
- (2) To recommend the optimum PPP Scheme (Public-Private-Partnership) for construction and operation of the Surabaya East Ring Road (SERR).
- (3) To promote the implementation of the Surabaya East Ring Road under the PPP Scheme in combination with the Japanese ODA (Official Development Assistance).

In order to fulfil the above objectives, the scope of work covers the following items:

- 1) To collect information related to the existing national/ provincial/ city development plans and confirm the current status of SERR.
- 2) Analyze the present issues/ problems of the Tanjung Perak Port, Industrial Estates, Juanda International Airport and urban transport of the Surabaya Metropolitan Area through interviewing concerning agencies/ organizations.
- 3) Clarify the existing situation of the Surabaya Toll Ring Road and future development plans by the funds of the private sector based on interviewing related government agencies.
- 4) Collection of the traffic data in the urban area and future projection of traffic demand of the project toll road (SERR).
- 5) Confirm the consistency and relationships of the various development projects such as urban development, Tanjung Perak Port, Industrial Estates with the development of SERR.
- 6) Based on the above analyses, extract issues to be solved for the implementation of SERR under PPP Scheme.
- 7) Meeting with the related stakeholders to grasp the present situation and confirm the necessity of SERR.
- 8) To present the future road network for the development of the Surabaya Metropolitan Area together with the roles and functions of SERR in the whole network.
- 9) Investigate and recommend the optimum PPP Scenario for the formation of toll road network.

1.3 Target Area (Greater Surabaya Metropolitan Area: GSMA)

The target area for the planning is the Surabaya City and Greater Surabaya Metropolitan Area (GSMA) located in the East Java Province as shown in the following figures:



Figure 1.3.1 Target Area (Surabaya Metropolitan Area in East Java Province)

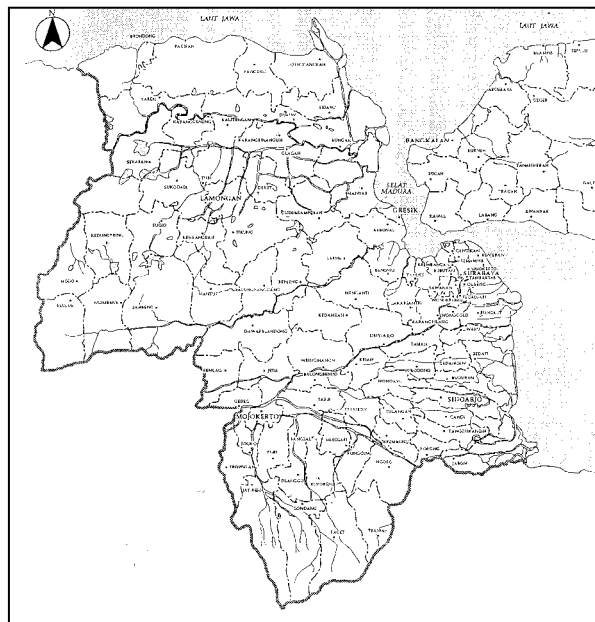


Figure 1.3.2 Greater Surabaya Metropolitan Area (GSMA)

CHAPTER 2. EXISTING CONDITIONS OF SURABAYA METROPOLITAN AREA

2.1 Outline of Socio-Economic Conditions

2.1.1 Population Growth of the Greater Surabaya Metropolitan Area (GSMA)

Definition of GSMA

The Greater Surabaya Metropolitan Area (GSMA) was defined in the past two studies(*) as the Surabaya City and surrounding areas covering the following seven administrative areas:

- 1) Kotamadya (city) Surabaya
- 2) Kabupaten Gresik
- 3) Kabupaten Sidoarjo
- 4) Kabupaten Mojokerto
- 5) Kotamadya Mojokerto
- 6) Kabupaten Lamongan
- 7) Kabupaten Bangkalan

Note (*): "Urban Development Planning Study on Surabaya Metropolitan Area" JICA, 1983
 "A Study for Arterial Road System Development in Surabaya Metropolitan Area"
 JICA, 1997

Population Census (2000)

The results of the Population Census 2000 showed that the population of GSMA was 8.2 million and Kotamadya Surabaya (Surabaya City) was 2.6 million.

Table 2.1.1 Population Census 2000

	Area	Population	Share (%)	
1)	Indonesia (**)	208,600,000		
2)	East Java Province	34,765,998	16.7%	2)/1)
3)	Greater Surabaya (GSMA)	8,171,906	23.5%	3)/2)
4)	Kotamadya Surabaya	2,599,796	31.8%	4)/3)
5)	Kabupaten Gresik	1,005,445		
6)	Kabupaten Sidoarjo	1,563,015		
7)	Kabupaten Mojokerto	908,004		
8)	Kotamadya Mojokerto	108,938		
9)	Kabupaten Lamongan	1,181,660		
10)	Kabupaten Bangkalan	805,048		

Source: Population of Java Timur (Results of the 2000 Population Census, Series: 12.2.14, Badan Pusat Statistics.)

Note (**): Population in 2001, Asian Development Bank (ADB)

The East Java Province shares about 17% of total population of Indonesia and about 24% of population of the East Java Province concentrates to GSMA in 2000. Surabaya City has about 32% of GSMA.

Population Growth of the Surabaya City

The registered population of the Surabaya City grew with a comparatively low rate of 0.98% per annum from 1988 to 2000. However, population of Surabaya turned into higher growth phase with a 2.37% of growth rate from 2000 to 2004 due to the progress of urbanization (Table 2.1.2 and Figure 2.1.1).

Table 2.1.2 Registered Population of Surabaya City

Year	Population (Surabaya)
1988	2,173,840
1989	2,189,925
1990	2,191,998
1991	2,234,333
1992	2,259,965
1993	2,286,413
1994	2,306,474
1995	2,339,335
1996	2,344,520
1997	2,356,486
1998	2,373,282
1999	2,405,946
2000	2,444,976
2001	2,568,352
2002	2,529,468
2003	2,659,566
2004	2,685,515
AAGR (%)	
1988-2000	0.98%
2000-2004	2.37%

Source: 2004 Surabaya in Focus

Note: AAGR: Average Annual Growth Rate

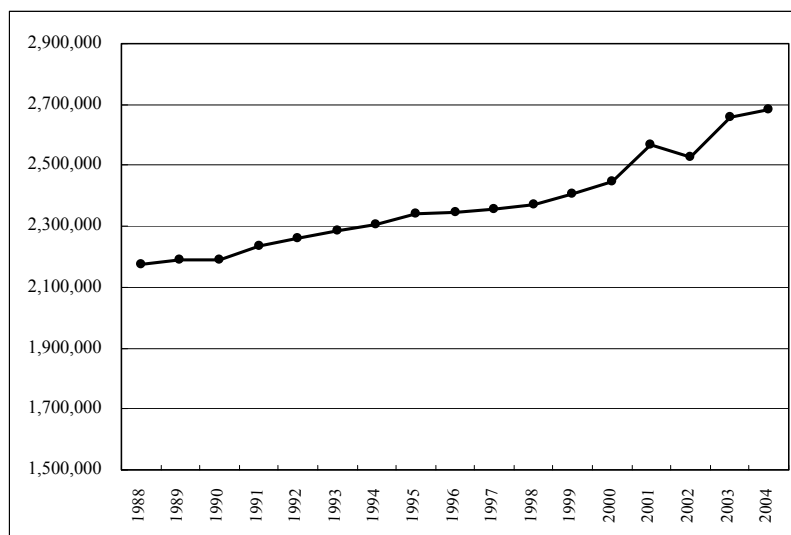


Figure 2.1.1 Population Growth of Surabaya City

2.1.2 Gross Regional Domestic Product (GRDP)

(1) Economic Structure

Gross Regional Domestic Product (GRDP) of the East Java Province in 2004 was 242,227 billion Rupiah at constant 2000 prices and GRDP of Surabaya City was 48,794 billion Rupiah. The shares of GRDP of East Java Province and Surabaya City in total Indonesia were at 14.6% and 2.9% respectively. The share of GRDP of Surabaya City in East Java was at 20% in 2004. As the Surabaya City is the provincial capital and a centre of political and economic activities of the East Java Province, the manufacturing industries and trade and business sectors shares high percentages in GRDP as shown in Table 2.1.3 and Figure 2.1.2.

Table 2.1.3 Gross Regional Domestic Product at Constant 2000 Prices (2004)

Industrial Origin	Indonesia	%	East Java	%	Surabaya	%
1. Agricultural, Forestry & Fishery	252,953	15.2	43,331	17.9	87	0.2
2. Mining & Quarrying	160,655	9.7	4,596	1.9	2	0.0
3. Manufacturing Industries	469,118	28.3	67,520	27.9	15,345	31.4
4. Electricity, Gas & Water Supply	11,066	0.7	4,172	1.7	1,386	2.8
5. Construction	97,467	5.9	8,604	3.6	4,575	9.4
6. Trade, Hotel & Restaurant	271,177	16.3	68,296	28.2	17,098	35.0
7. Transportation & Communication	95,772	5.8	13,830	5.7	4,933	10.1
8. Financial & Business	150,936	9.1	11,783	4.9	3,099	6.4
9. Services	151,435	9.1	20,095	8.3	2,269	4.7
GRDP	1,660,579	100.0	242,227	100.0	48,794	100.0
10. Share in Indonesia			14.6%		2.9%	
11. Share in East Java Province					20.1%	

Source: Java Timur in Figure 2006, Statistics of Java Timur, BPS

Surabaya in Focus 2004, Badan Perencanaan Pembangunan Kota Surabaya

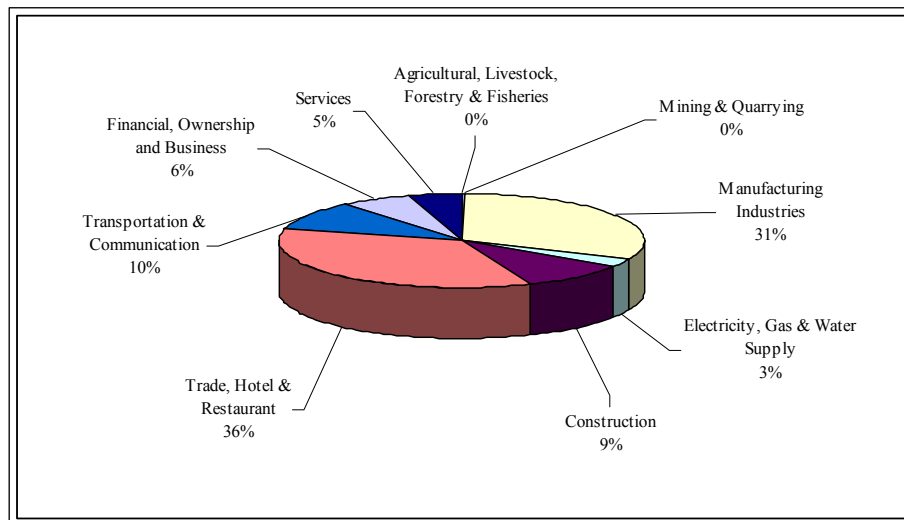


Figure 2.1.2 Industrial Composition of GRDP, Surabaya City 2004

(2) Growth of GRDP and Per Capita GRDP

GRDP of the East Java Province grew at 5.1% per annum from 2001 to 2005. This rate was slightly higher than that of the whole Indonesia. Growth rate of GRDP of the Surabaya City in 2004 was 5.7% which was almost the same rate of East Java

Province in the same period.

On the other hand, Per Capita GRDP of East Java and Surabaya City grew with the rates of 12.8% and 12.2% per annum respectively for the period 2001 to 2004. These growth rates were higher than their GRDP growth rates and higher than that of the whole Indonesia. In addition, Absolute values of Per Capita GRDP of the Surabaya City are higher by 2.2-2.4 times than whole Indonesia and about 3.2 times higher than the average of the East Java Province as shown in Table 2.1.5.

Table 2.1.4 GRDP Growth of Indonesia, East Java and Surabaya City

(Billion Rps. At 2000 constant prices)

Year	(1) Indonesia	(2) East Java Province	(3) Surabaya City
2001	1,442,985	210,449	N.A
2002	1,506,124	218,452	N.A
2003	1,577,171	228,884	46,181
2004	1,660,579	242,229 (*)	48,794
2005	1,749,547	256,375 (**)	N.A
AAGR (%)	2001-05 (4.9% p.a.)	2001-05 (5.1% p.a.) 2003-04 (5.8% p.a.)	2003-04 (5.7% p.a.)

Source: (1): Asian Development Bank (ADB)

: (2): Java Timur in Figures 2006, BPS-Statistics of Java Timur Province

: (3): Surabaya in Focus 2004

Note : (*): Revised figures, (**): Preliminary figures

N.A.: Not Available

Table 2.1.5 Growth of Per Capita GRDP (at Current Prices: 1000 Rps)

Year	(1) Indonesia	(2) East Java	(3) Surabaya City	(3)/(1)	(3)/(2)
2001	8,073	5,494	17,756	2.20	3.23
2002	8,812	6,317	20,038	2.27	3.17
2003	9,505	7,026	22,378	2.35	3.19
2004	10,472	7,880	25,103	2.40	3.19
AAGR (%)	9.1% p.a.	12.8% p.a.	12.2% p.a.		

Source: (1): Asian Development Bank (ADB)

(2) & (3): Surabaya in Focus 2004, Badan Perencanaan Pembangunan Kota Surabaya

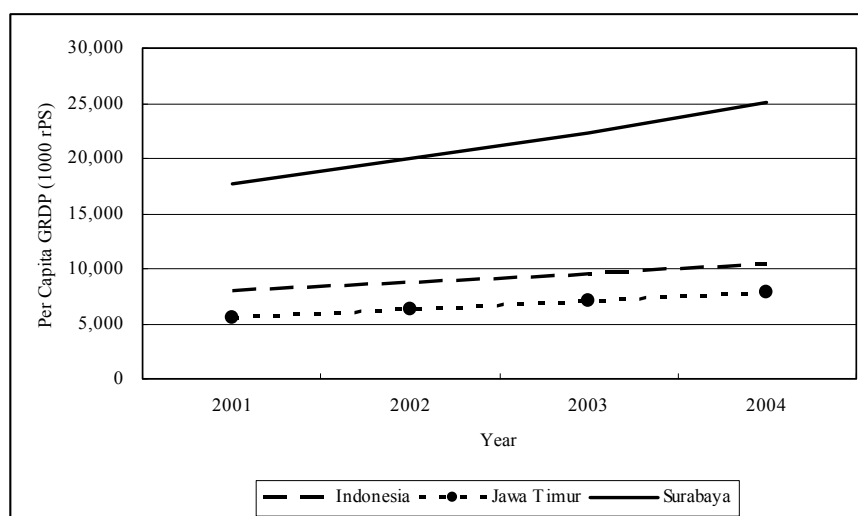


Figure 2.1.3 Growth of Per Capita GRDP

2.1.3 Vehicle Registration of Surabaya City

Motorization in Surabaya City has been progressing moderately for the recent 5 years from 2000 to 2004 with an average increase rate of 0.7% including motorbikes (2.1% excluding motor bikes). Number of motorized vehicles of the Surabaya City is about 924,500 and 34.4 vehicles per 100 persons in 2004. The highest growth rate is observed in buses with 21.9% per annum during the same period. Regarding the vehicle composition in 2004, motorbikes shared more than 70% and followed by station wagons with 9.2% of share.

However, if motorbikes are excluded, the share of sedans is 25.8%, station wagons 36.4% and trucks 25.3%.

Number of vehicles per 100 persons showed decreasing tendency because of higher population growth rate (3.35%) than lower vehicle increase rate (0.7%)

Table 2.1.6 Number of Motorized Vehicles in Surabaya City (2000-2004)

Vehicle Type	2000	2001	2002	2003	2004	AAGR % 2000-04	Composition 2004	Composition Excl.M.bike
1. Sedan	57,213	57,213	58,365	59,167	60,234	1.3%	6.5%	25.8%
2. Jeep	23,209	23,209	24,391	24,750	25,240	2.1%	2.7%	10.8%
3. S.Wagon	70,167	70,167	72,410	84,365	84,987	4.9%	9.2%	36.4%
4. Bus	1,801	1,801	1,923	3,796	3,975	21.9%	0.4%	1.7%
5. Truck	62,552	62,552	64,196	58,045	59,054	-1.4%	6.4%	25.3%
6. M.bike	672,117	672,117	675,395	675,422	678,523	0.2%	73.4%	-
7. Scooter	12,673	12,673	12,547	12,520	12,498	-0.3%	1.4%	-
Total	899,732	899,732	909,227	918,065	924,511	0.7%	100.0%	100.0%
Total excl.M.bike	214,942	214,942	221,285	230,123	233,490	2.1%		
Per 100 persons	36.8	35.0	35.9	34.5	34.4			

Source: Surabaya in Focus 2004, Badan Perencanaan Pembangunan Kota Surabaya

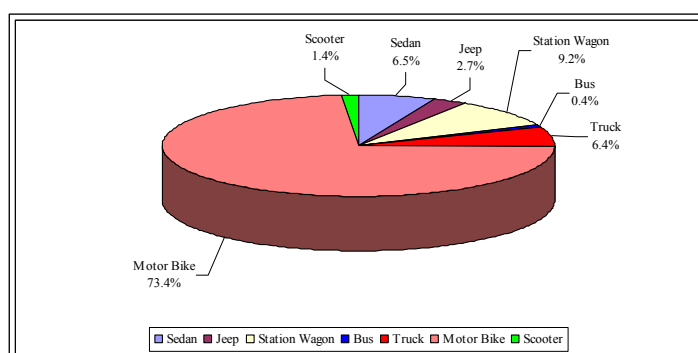


Figure 2.1.4 Vehicle Composition (including Motor Bikes)

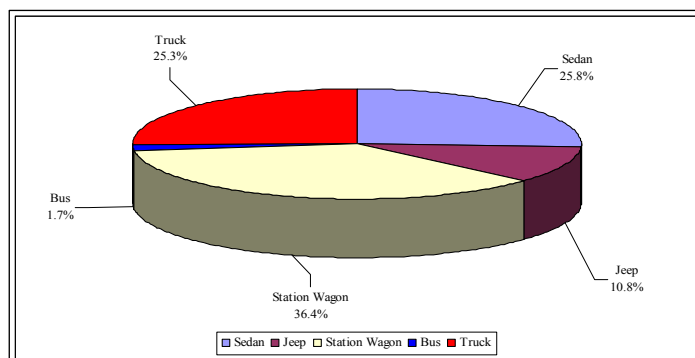


Figure 2.1.5 Vehicle Composition (excluding Motor Bikes)

2.2 Transport Conditions

In this section, existing transport conditions in the Surabaya Metropolitan Area (SMA) will be reviewed in relation to the Project Toll Road (i.e. Surabaya East Ring Road: SERR). Major components of the transportation system in SMA are Road Network, Sea Port (Tanjung Perak Port), International Airport (Juanda Airport). As the roles of the railway network are very limited in SMA, reviewing is focused on the above three (3) transport modes only.

2.2.1 Road Network

(1) National and Provincial Road in East Java Province

Table 2.2.1 indicates the road length of national and provincial roads by road condition in East Java Province in 2005. Length of national road and provincial roads is about 1,900 km and 1,440 km respectively. Therefore, total length of trunk road (national + provincial road) is about 4,340 km in 2005. However, about 10% of road length is in lightly or seriously damaged conditions.

Table 2.2.1 Road Length in East Java by Surface Condition
(National & Provincial Roads: 2005)

Road Condition	National Road (km)	Provincial Road (km)	Total (km)	Composition (%)
Good	812.56	221.99	1,034.55	31.0%
Moderate	949.37	1,031.49	1,980.86	59.3%
Lightly Damaged	122.36	123.01	245.37	7.3%
Seriously Damaged	14.92	62.69	77.61	2.3%
Total	1,899.21	1,439.18	3,338.39	100.0%

Source: Java Timur in Figures 2006, BPS

Original Source: Department of Public Works, Bina Marga of East Java Province

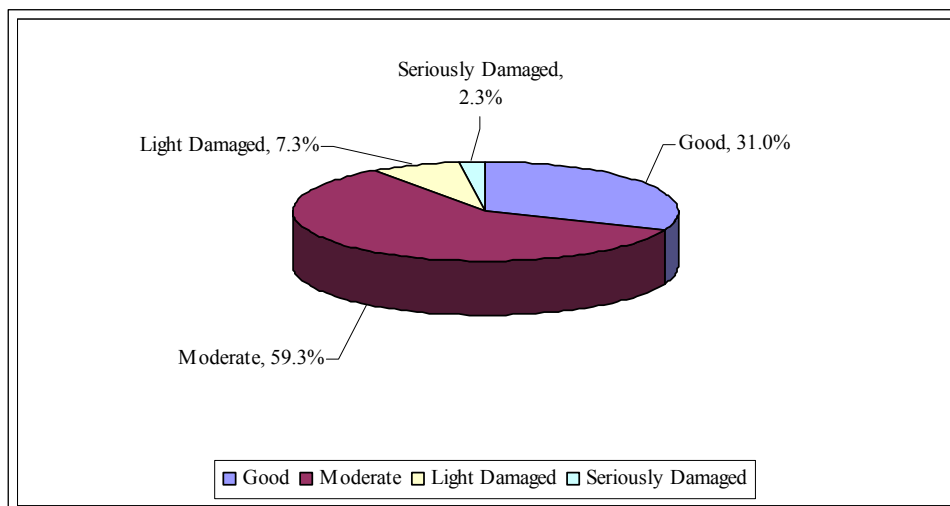


Figure 2.2.1 Road Condition of East Java Province (2005)

(2) Road Length in Surabaya City

Road length of the Surabaya City is about 2,000 km in 2004 and classified into the six (6) categories as shown in Table 2.2.2. The most densely road is the Local Road with a length of 1,404.7 km or about 70% of total road length in Surabaya City. The trunk roads such as primary and secondary roads are only 7.8%.

Table 2.2.2 Road Length in Surabaya City by Road Classification (2004)

Road Classification	Length (km)	%
a. Primary	80.71	4.0%
b. Secondary	76.95	3.8%
c. Primary Collector	158.45	7.8%
d. Secondary Collector	255.88	12.6%
e. Local	1,404.67	69.0%
f. Special	59.29	2.9%
Total	2,035.95	100.0
Road Density (km/km ²)	6.24	

Source: Surabaya in Focus 2004, Badan Perencanaan Pembangunan Kota Surabaya
Original Source: Dinas Bina Marga dan Utilitas Kota Surabaya City

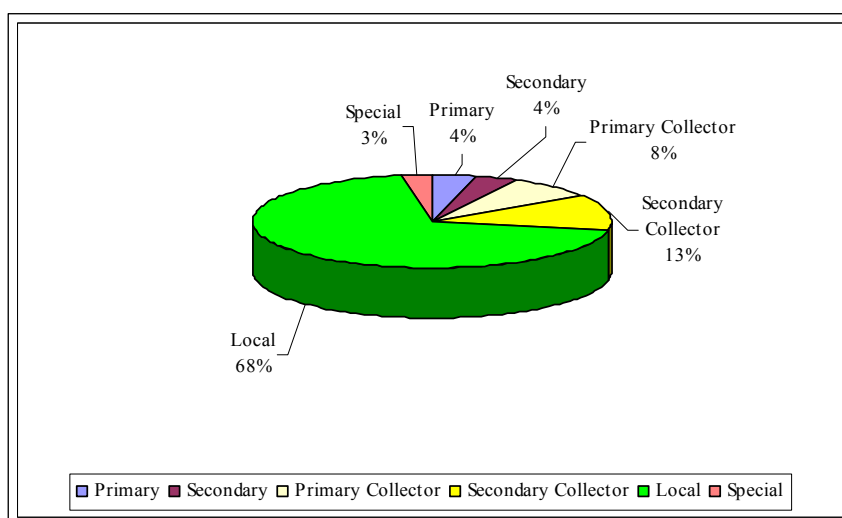


Figure 2.2.2 Composition of Road Classification in Surabaya City (2004)

(3) Road Network Pattern of Surabaya City

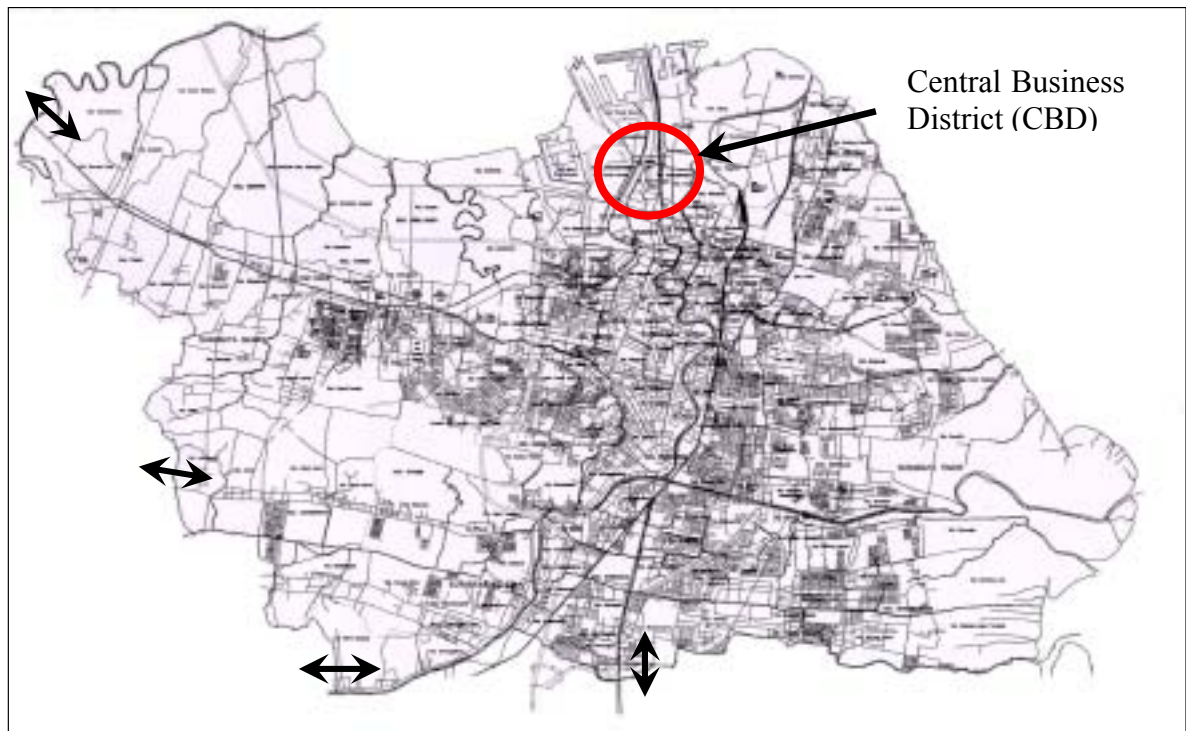
The existing road network in Surabaya City is illustrated in Figure 2.2.3. Although some arterial radial road links are observed from/to the Central Business District (CBD), there are no clear circumferential (ring) roads. Therefore, many through traffic pass through the city centre causing severe congestion in peak hours.

As the Kali Mas River (Kali Surabaya River) is flowing south to north in the centre of the City, linkage of road network is weak in the east-west direction.

There are two (2) arterial roads in the central area running north-south direction (Jalan Epasar Kembang and Jalan Raya Darmo) and one (1) arterial road in the northern area running east-west direction (Jalan Kenjeran). However, there are no other back-bone links in the City Area.

The configuration of street network is inadequate and irregular to connect traffic smoothly to/from the collector streets and/or arterial roads.

The toll roads Surabaya-Gempol and Surabaya-Gresik are in operation serving south-north-west directions respectively. In addition, the Surabaya-Gempol toll road formulates a part of the Western Ring Road.



Source: "Rencana Tata Ruang Wilayah Kota Surabaya" (Surabaya City Spatial Plan)
Badan Perencanaan Pembangunan Kota

Figure 2.2.3 Existing Road Network of Surabaya City

2.2.2 Tanjung Perak Port

The following three (3) sea ports are located in the Surabaya Metropolitan Area:

- Tanjung Perak Port
- Gresik Port
- Kamal Port

The Tanjung Perak Port is one of 25 Strategic Ports and the second largest sea port in Indonesia in terms of cargo handling volumes. The Gresik Port is located in the suburbs of Surabaya City and has many special wharves handling coal and timbers that were handled in the Tanjung Perak Port before. The Kamal Port is located at the opposite side of Surabaya City and an entrance to the Madura Island for the ferry passengers.

(1) Existing Condition of the Tanjung Perak Port

1) Conditions of Port Facilities

The existing zone map of the Tanjung Perak Port is shown in Figure 2.2.4 and conditions of wharves are summarized in Table 2.2.3.

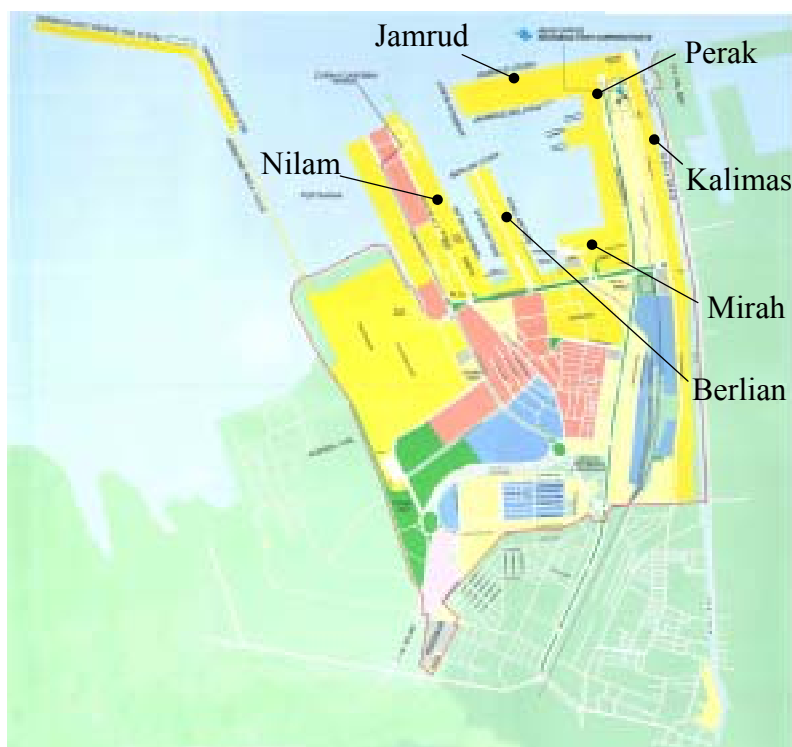
Almost all wharves except for Mirah Wharf are about 100 year aged since they were constructed and some parts of aprons are collapsed or deteriorated

At present, a study for development of the Greater Surabaya Metropolitan Ports is carried out by Japan International Cooperation Agency (JICA).

Table 2.2.3 Conditions of Facilities of Existing Tanjung Perak Port

Name of Wharf	Type of Handling Cargo	Length of Wharf (m)	Sea Depth(m)	Year Constructed
1. Kalimas	General Cargo	2,534	3-4	1910
2. Jamrud	General Cargo, Passenger	2,209	6-10	1910
3. Perak	Passenger	140	7-8	1910
4. Mirah	General Cargo, Container	600	6	1985
5. Berlian	Bulk, Container	1,655	7-9	1910
6. Nilam	General Cargo, Bulk, Timber	930	8	1910

Source: Pelabuhan Indonesia III (PELINDO III)



Source: Pelabuhan Indonesia III (PELINDO III)

Figure 2.2.4 Zone Map of Existing Tanjung Perak Port

2) Export and Import through the Tanjung Perak Port (2004)

Table 2.2.4 shows the export and import value (US\$ Million) by main port of Indonesia in 2004. The Tanjung Perak Port is handling the second largest amount of export and import values in the whole Indonesia, next to the Tanjung Priok Port of Jakarta, with percentage shares of 8.3% and 10.5% for export and import. It is noted that the two strategic ports, Tanjung Priok and Tanjung Perak Ports, dominate about 40% of export and 60% of import value of the whole country. Main export commodities from the Tanjung Perak Port are Papers, industrial product, timbers, furniture, wire and chemical product. On the other hand, main import commodities are wheat, residual of copra, refined fuel oil, rice. Indonesia was one of export countries of petrol, oil and gas before. Now the Indonesia shifted to a import country of the petrol product.

Table 2.2.4. Export and Import Value by Main Port (2004)

Export Value					Import Value				
No.	Province	Port	Value (US\$ Million)	%	No.	Province	Port	Value (US\$ Million)	%
1	Jawa	Tanjung Priok	21,696.6	30.3%	1	Jawa	Tanjung Priok	22,141.2	47.6%
2	Jawa	Tanjung Perak	5,974.3	8.3%	2	Jawa	Tanjung Perak	4,882.3	10.5%
3	Sumatera	Dumai	4,542.0	6.3%	3	Jawa	Merak	2,518.6	5.4%
4	Sumatera	Belawan	3,648.2	5.1%	4	Kalimantan	Balikpapan	2,488.4	5.3%
5	Jawa	SeMelang	2,001.3	2.8%	5	Jawa	Tanjung Emas	998.0	2.1%
6	Kalimantan	Balikpapan	1,408.4	2.0%	6	Sumatera	Belawan	832.7	1.8%
7	Irian Jaya	Amamapare	853.5	1.2%	7	Tenggara	Amamapare	414.0	0.9%
8	Kalimantan	Banjarmasin	808.9	1.1%	8	Sumatera	Panjang	138.0	0.3%
9	Sumatera	Panjang	667.8	0.9%	9	Sulawesi	Ujung Pandang	134.6	0.3%
10	Kalimantan	Pontianak	414.3	0.6%	10	Kalimantan	Banjarmasin	99.0	0.2%
11	Sulawesi	Ujung Pandang	319.1	0.4%	11	Kalimantan	Pontianak	37.1	0.1%
12	Sulawesi	Bitung	205.7	0.3%	12	Sumatera	Teluk Bayur	15.6	0.0%
13	Sumatera	Palembang	163.2	0.2%	13	Sumatera	Jambi	10.0	0.0%
14	Kalimantan	Tarakan	102.6	0.1%	14	Sulawesi	Bitung	3.1	0.0%
15	Sumatera	Tanjung Pinang	68.2	0.1%	15	Sumatera	Kertapati	1.6	0.0%
16	Irian Jaya	Ambon	38.9	0.1%	16	Sumatera	Rumbai	1.0	0.0%
17	Bali, Nusa	Benoa	18.9	0.0%	Indonesia Total			46,524.5	100.0%
18	Jawa	Cirebon	1.0	0.0%					
19	Sumatera	Pk. Susu	0.1	0.0%					
20	Bali, Tenggara	Kupang	0.0	0.0%					
Indonesia Total			71,584.6	100.0%					

Source: Monthly Statistical Bulletin, Economic Indicators, March 2005, BPS

Table 2.2.5 Export and Import Commodities at Tanjung Perak Port (2004)

Export Commodity			Import Commodity		
Category	Commodity	Ton	Category	Commodity	Ton
III. Others	Paper	836,193	Others	Wheat	1,074,024
III. Others	Industrial product	672,635	IV. Non Oil & Gas	Residu of copra	631,026
I. Strategic Goods	Timber	405,335	III. Oil & Gas	Refined fuel oil	614,927
II. Non Oil & Gas	Furniture	243,217	I. Principal Goods	Rice	550,676
I. Strategic Goods	Wire	234,625	II. Strategic Goods	Steel/ Iron	511,414
III. Others	Chemical product	165,207	II. Strategic Goods	Old iron	363,181
II. Non Oil & Gas	Plywood	120,372	Others	Chemical product	327,004
III. Others	Bran	112,292	Others	Receptacle paper	314,594
II. Non Oil & Gas	Glass	93,698	Others	Industrial product	309,976
I. Strategic Goods	Steel/ Iron	86,224	II. Strategic Goods	Fertilizer	293,149
II. Non Oil & Gas	Fresh fish	79,545	Others	Pulp	212,322
II. Non Oil & Gas	Palm oil	77,142	IV. Non Oil & Gas	Corn	199,221
II. Non Oil & Gas	Rubber	76,153	Others	Equipment/ Machines	150,396
III. Others	Agricultural product	66,500	Others	Soda ash	138,371
III. Others	Textile	58,765	II. Strategic Goods	Aluminum	95,547
III. Others	Cooking spices	55,985	II. Strategic Goods	Wire	73,604
III. Others	Dried cassava	44,313	IV. Non Oil & Gas	Plastic ore	43,194
I. Strategic Goods	Aluminum	43,184	I. Principal Goods	Sugar	29,141
III. Others	Household equipment	40,737	Others	Paper	23,705
III. Others	Food & beverage	37,809	Others	Logs wood	21,240
III. Others	Feeder	33,003	Others	Feeder	19,460
II. Non Oil & Gas	Coffee	32,932	IV. Non Oil & Gas	Tobacco	16,017
III. Others	Rattan	31,683	Others	Cotton	12,473
II. Non Oil & Gas	Chocolate	29,451	Others	Mining product	11,964
III. Others	Resin	24,987	Others	Others	2,967,250
III. Others	Seaweed	24,948	TOTAL		9,003,876
II. Non Oil & Gas	Tobacco	23,465			
II. Non Oil & Gas	Shrimp	23,217			
III. Others	Shoes	16,121			
II. Non Oil & Gas	Corn	10,656			
III. Others	Salted fish	4,739			
III. Others	Pellet	4,258			
III. Others	Tea	1,290			
III. Others	Others	2,285,791			
TOTAL		6,096,472			

Source: Surabaya in Focus 2004

Original Source: Port Administrator of Tanjung Perak Surabaya

Past trends of export and import values at the Tanjung Perak Port are shown in Table 2.2.6 and Figure 2.2.5. Export value at the Tanjung Perak Port increased at 6.6% per annum for the past ten (10) years, slightly higher than that of whole Indonesia.

Table 2.2.6 Past Trend of Export & Import Value at Tj. Perak Port (1994-2004)

EXPORT VALUE (US\$ Million)								
Port & Area Year	Tanjung Priok (1)	Tanjung Perak (2)	Jawa & Madura (3)	Indonesia (4)	(1+2)/(3) %	(1+2)/(4) %	(2)/(3) %	(2)/(4) %
1994	11,317.2	3,163.9	17,805.0	40,053.4	81.3%	36.2%	17.8%	7.9%
1995	12,808.5	3,464.8	19,447.4	45,418.0	83.7%	35.8%	17.8%	7.6%
1996	14,082.6	3,706.1	21,357.0	49,814.8	83.3%	35.7%	17.4%	7.4%
1997	15,459.6	3,876.2	23,781.6	53,443.6	81.3%	36.2%	16.3%	7.3%
1998	15,170.1	4,497.2	25,335.2	48,847.6	77.6%	40.3%	17.8%	9.2%
1999	13,718.1	4,259.9	23,553.7	48,665.4	76.3%	36.9%	18.1%	8.8%
2000	18,817.0	5,418.9	31,412.3	62,124.0	77.2%	39.0%	17.3%	8.7%
2001	17,567.5	5,507.7	29,022.6	56,320.9	79.5%	41.0%	19.0%	9.8%
2002	17,574.5	4,989.1	28,648.1	57,158.8	78.8%	39.5%	17.4%	8.7%
2003	17,999.4	5,282.4	29,671.6	61,058.3	78.5%	38.1%	17.8%	8.7%
2004	21,696.6	5,974.3	34,705.7	71,584.6	79.7%	38.7%	17.2%	8.3%
AAGR % 1994-04	6.7%	6.6%	6.9%	6.0%				

IMPORT VALUE (US\$ Million)								
Port & Area Year	Tanjung Priok (1)	Tanjung Perak (2)	Jawa & Madura (3)	Indonesia (4)	(1+2)/(3) %	(1+2)/(4) %	(2)/(3) %	(2)/(4) %
1994	18,714.2	3,355.5	26,093.5	31,983.5	84.6%	69.0%	12.9%	10.5%
1995	23,313.6	4,859.0	34,448.5	40,628.7	81.8%	69.3%	14.1%	12.0%
1996	22,524.5	5,354.3	35,773.4	42,928.5	77.9%	64.9%	15.0%	12.5%
1997	19,118.5	6,164.0	34,138.8	41,679.8	74.1%	60.7%	18.1%	14.8%
1998	14,397.6	2,857.0	21,751.5	27,336.9	79.3%	63.1%	13.1%	10.5%
1999	9,076.3	2,907.1	17,802.5	24,003.3	67.3%	49.9%	16.3%	12.1%
2000	15,637.2	3,511.1	26,805.0	33,514.8	71.4%	57.1%	13.1%	10.5%
2001	14,653.4	3,279.7	24,847.2	30,962.1	72.2%	57.9%	13.2%	10.6%
2002	14,763.7	3,433.5	25,349.6	31,288.9	71.8%	58.2%	13.5%	11.0%
2003	14,668.4	3,710.1	26,649.0	32,550.7	69.0%	56.5%	13.9%	11.4%
2004	22,141.2	4,882.3	39,153.6	46,524.5	69.0%	58.1%	12.5%	10.5%
AAGR % 1994-04	1.7%	3.8%	4.1%	3.8%				

Source: Monthly Statistical Bulletin, Economic Indicators, March 2005, BPS

Note: AAGR: Average Annual Growth Rate per annum

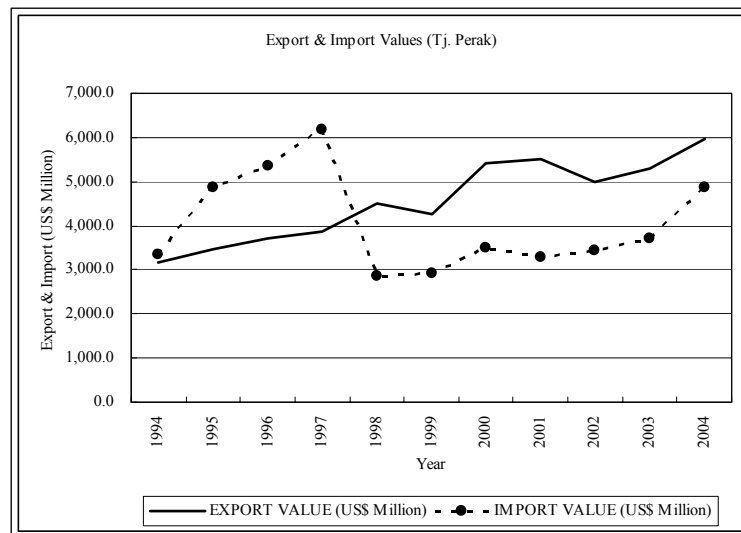


Figure 2.2.5 Export & Import Value at Tj. Perak Port (1994-2004)

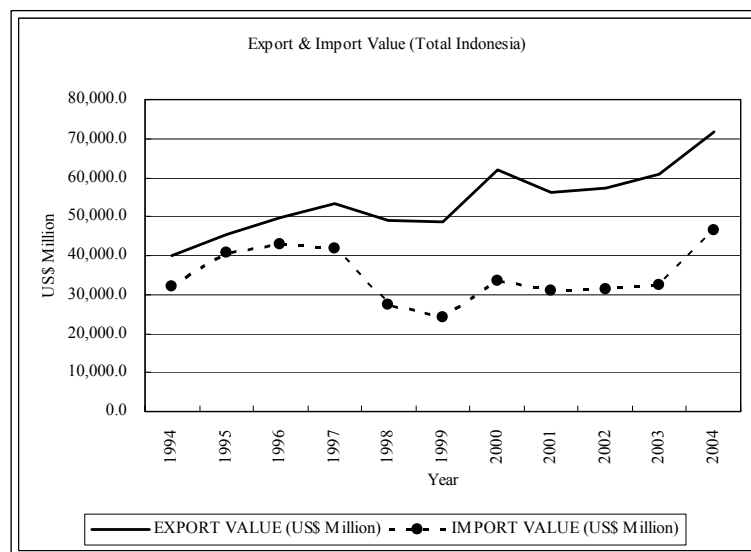


Figure 2.2.6 Export and Import Value of Whole Indonesia) 1994-2004)

Due to the big devaluation of Indonesian Rupiah since the economic crisis from 1997, total export value of Indonesia has been constantly higher than the import value for the past ten years (1994-2004) as shown in Figure 2.2.6. With the same reason, import value at the Tanjung Perak Port turned into lower than the export value after 1997 as presented in the above Figure 2.2.5.

3) Cargo Volume by Form/Shape

Cargos handled at the Tanjung Perak Port are mainly dominated by General Cargo (20.5%), Dry Bulk (26.1%) and Gasoline/ Oil (34.6%) in 2005 (Figure 2.2.7). However, volumes of general cargo, bag cargo and liquid bulk are in decreasing tendency whereas the dry bulk and gasoline/ oil are in increasing trend (Figure 2.2.8).

Table 2.2.7 Cargo Volume by Form/Shape at Tj. Perak Port

Type of Cargo Form	Unit	Year					AAGR % (2001-05)	% in 2005
		2001	2002	2003	2004	2005		
Container (Foreign Trade)	TEU's	488,884	590,262	682,147	764,727	962,795	18.5%	77.3%
Container (Domestic Trade)	TEU's	201,987	275,902	261,583	342,179	282,239	8.7%	22.7%
Total		690,871	866,164	943,730	1,106,906	1,245,034	15.9%	100.0%
General Cargo	Ton	8,927,099	6,361,346	5,757,147	5,460,095	3,645,171	-20.1%	20.5%
Bag Cargo	Ton	1,657,374	3,126,470	2,776,606	1,914,266	1,464,766	-3.0%	8.2%
Dry Bulk	Ton	3,226,692	3,501,829	4,571,137	5,238,866	4,640,236	9.5%	26.1%
Liquid Bulk	Ton	2,599,874	2,504,160	1,868,169	1,340,446	1,879,034	-7.8%	10.6%
Gasoline, Oil Fuel	Ton	4,960,517	4,711,729	4,923,937	5,452,292	6,157,805	5.6%	34.6%
Total	Ton	21,371,556	20,205,534	19,896,996	19,405,965	17,787,012	-4.5%	100.0%

Source: Tanjung Perak Port Master Plan, PELINDO III

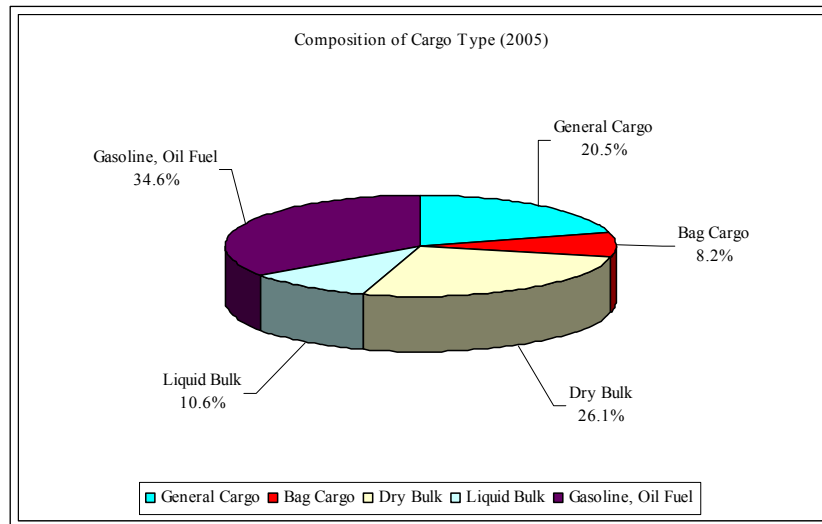


Figure 2.2.7 Composition of Cargo Form/ Shape

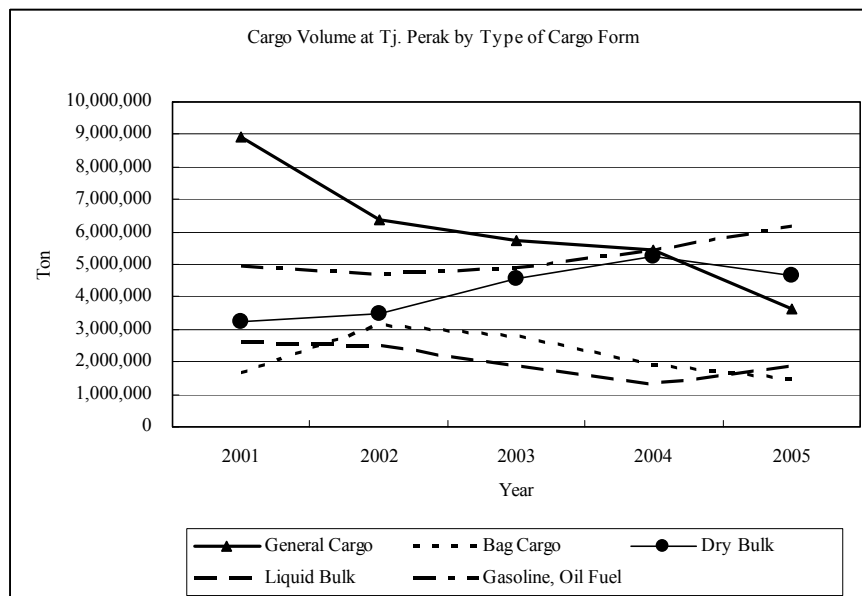


Figure 2.2.8 Cargo Volume by Cargo Form at Tj. Perak Port

4) Container Handling Volume

The container handling volume at the Tanjung Perak Port increased rapidly from 691,000 TEU in 2001 to 1,245,000 TEU in 2005 with a 15.9% of average annual growth rate (Table 2.2.7) of which about 77% are international containers. Under the situation, replacement of warehouses for general cargo with the container yards is now in progress in the Tanjung Perak Port.

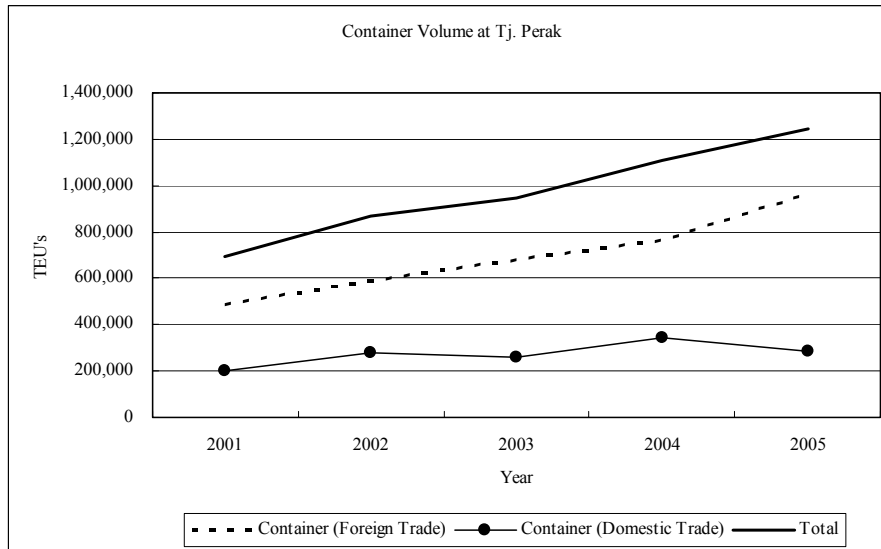


Figure 2.2.9 Container Handling Volume at Tj. Perak Port

2.2.3 Surabaya International Airport, Juanda

The Juanda International Airport is located in the south suburbs of the Surabaya City, about 20 km south from the City centre. This is the only one airport in SMA and international airport connecting the East Java Province directly with the foreign countries such as Singapore, Kuala Lumpur, Jeddah, Hong Kong, Taipei and Brunei.

It should be noted also that the Project Toll Road (SERR) will provide an alternative access to the Juanda Airport to/from the eastern parts of the Surabaya City and to/from the Madura Island (through the Suramadu Bridge which is under construction at present). The location of the Juanda Airport is shown in Figure 2.2.10 with the existing and planned toll road network. .



Surabaya East Ring Road(SERR)

Source: PT Citra Margatama Surabaya
Presentasi Realinyemen Jalan Tol Waru-Bandara Juanda

Figure 2.2.10 Location of Juanda Airport and Toll Road Network

(1) Existing Airport Facilities

The airport is expanded and renovated recently (in November 2006). The existing facilities of the Juanda Airport is summarised in Table 2.2.8.

Table 2.2.8 Existing Facilities in Juanda International Airport

Facility	Figures
1. Aircraft Maximum	B 747-400
2. Runway	3000m x 45m
3. Runway Strip	3200m x 300m
4. Parallel Taxiway	3000m x 30m
5. Apron	
(Large Jet)	2
(Medium Jet)	9
(Small Jet)	6
(Propeller)	1
Total	18
6. Passenger Terminal	
Domestic	30,000m ²
International	22,000m ²
Total	52,000m ²
7. Cargo Terminal	
Domestic	6,000m ²
International	7,700m ²
Total	13,700m ²

Source: ANGKASA PURA I

(2) Passenger Traffic

Past trend of the passenger traffic at the Juanda Airport is shown in Table 2.2.9 and Figure 2.2.11. An average annual growth rate of total passengers of the past fifteen years (1990-2005) is 9.8%. However, the passenger traffic particularly domestic passengers dropped sharply from 1997 to 1999 due to the economic crisis. An average growth rate of domestic passengers from 1990 to 1999 was minus 2.0% (-2.0%) whereas the international passengers grew with the rate of 22.8% for the same period. After 1999, the domestic passenger traffic strongly increased with an average growth rate of 28.3%.

It is noted that the current capacity of the passenger terminal is 6 million passengers per year. Therefore, passenger traffic demand was already exceeded the terminal capacity in 2003. Total passenger traffic in 2005 was 8,217,400, about 1.4 times of the capacity.

Table 2.2.9 Past Trend of Passenger Traffic at Juanda International Airport

Year	International Pax	Domestic Pax	Transit	Total
1990	69,265	1,872,576	73,956	2,015,797
1991	92,053	1,940,252	101,493	2,133,798
1992	149,906	2,029,839	186,283	2,366,028
1993	200,385	2,222,419	221,668	2,644,472
1994	285,962	2,658,941	257,773	3,202,676
1995	433,099	3,179,210	242,952	3,855,261
1996	620,564	3,417,941	308,323	4,346,828
1997	619,704	3,405,576	268,371	4,293,651
1998	488,631	1,809,608	183,999	2,482,238
1999	438,831	1,560,917	137,605	2,137,353
2000	504,624	2,049,615	157,835	2,712,074
2001	618,076	2,483,456	199,903	3,301,435
2002	649,400	3,617,278	479,435	4,746,113
2003	594,668	5,169,199	820,844	6,584,711
2004	770,122	7,258,348	534,277	8,562,747
2005	814,534	6,972,374	430,507	8,217,415
AAGR %				
1990-05	17.9%	9.2%	12.5%	9.8%
1990-99	22.8%	-2.0%	7.1%	0.7%
1999-05	10.9%	28.3%	20.9%	25.2%

Source: Rencana Induk Bandar Udara Juanda-Surabaya, Angkasa Pura I

Note: AAGR : Average Annual Growth Rate

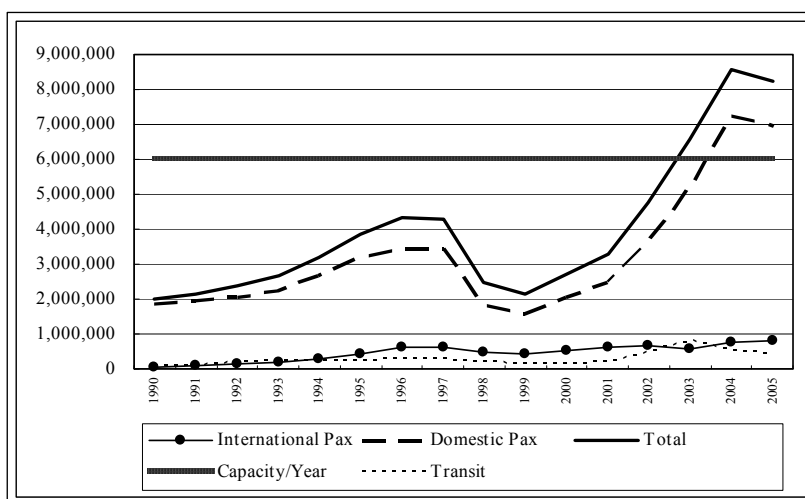


Figure 2.2.11 Past Trend of Passenger Traffic at Juanda Airport

(3) Cargo Handling Volume at Juanda Airport

Cargo handling volume at the Juanda Airport was also affected by the economic crisis in 1997. Cargo volumes of 60,000 tons in 1997 decreased by about 50% in 2000, to 31,200 tons. However, after 2000, volume of domestic cargo increased with a high rate of 12.6% per year. Total cargo volume in 2005 was about 51,000 tons.

Table 2.2.10 Past Trend of Cargo Volume at Juanda Airport
(Ton/year)

Year	International	Domestic	Total
1990	2,243	18,507	20,750
1991	2,963	18,983	21,946
1992	5,184	18,952	24,136
1993	7,155	18,760	25,915
1994	8,489	23,924	32,413
1995	10,978	26,676	37,654
1996	16,614	33,106	49,720
1997	19,657	40,415	60,072
1998	16,739	30,021	46,760
1999	15,561	24,988	40,549
2000	10,648	20,537	31,185
2001	14,240	23,527	37,767
2002	16,170	26,919	43,089
2003	10,258	32,652	42,910
2004	12,686	51,264	63,950
2005	13,540	37,107	50,647
AAGR %			
1990-05	12.7%	4.7%	6.1%
1990-00	16.9%	1.0%	4.2%
2000-05	4.9%	12.6%	10.2%

Source: Rencana Induk Bandar Udara Juanda-Surabaya, Angkasa Pura I

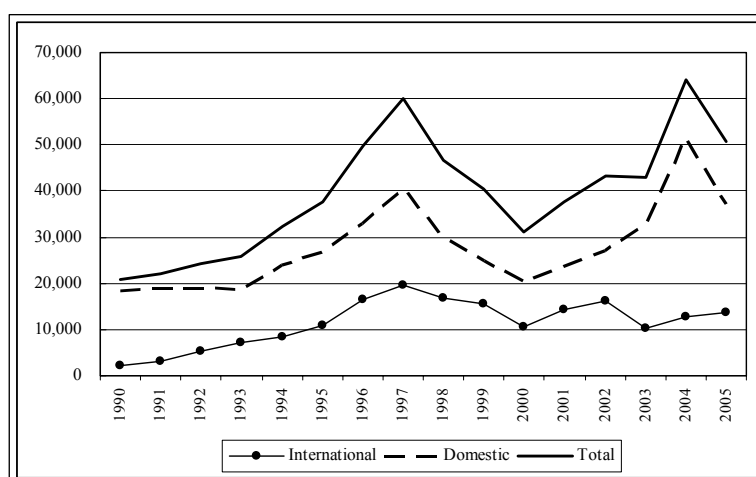


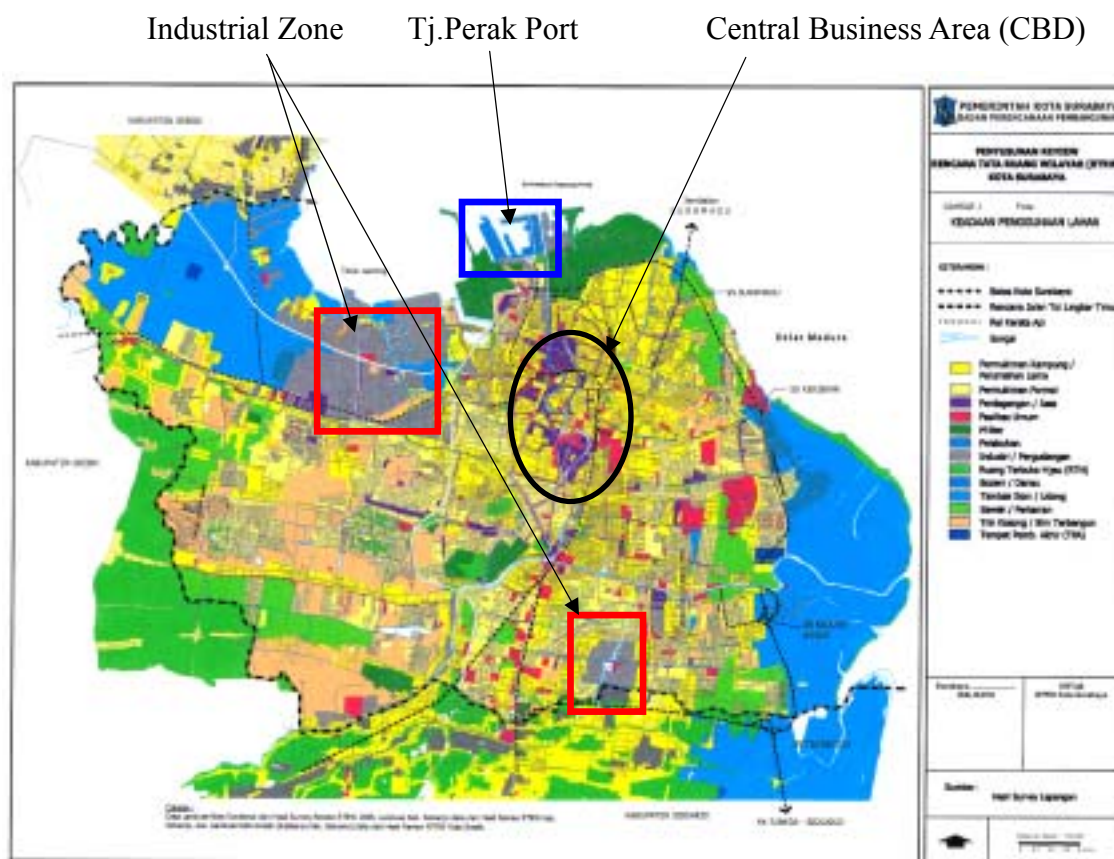
Figure 2.2.12 Cargo Handling Volume at Juanda Airport

2.3 Existing Development Plans

2.3.1 Spatial Plan for Surabaya City

(1) Existing Land Use in Surabaya City

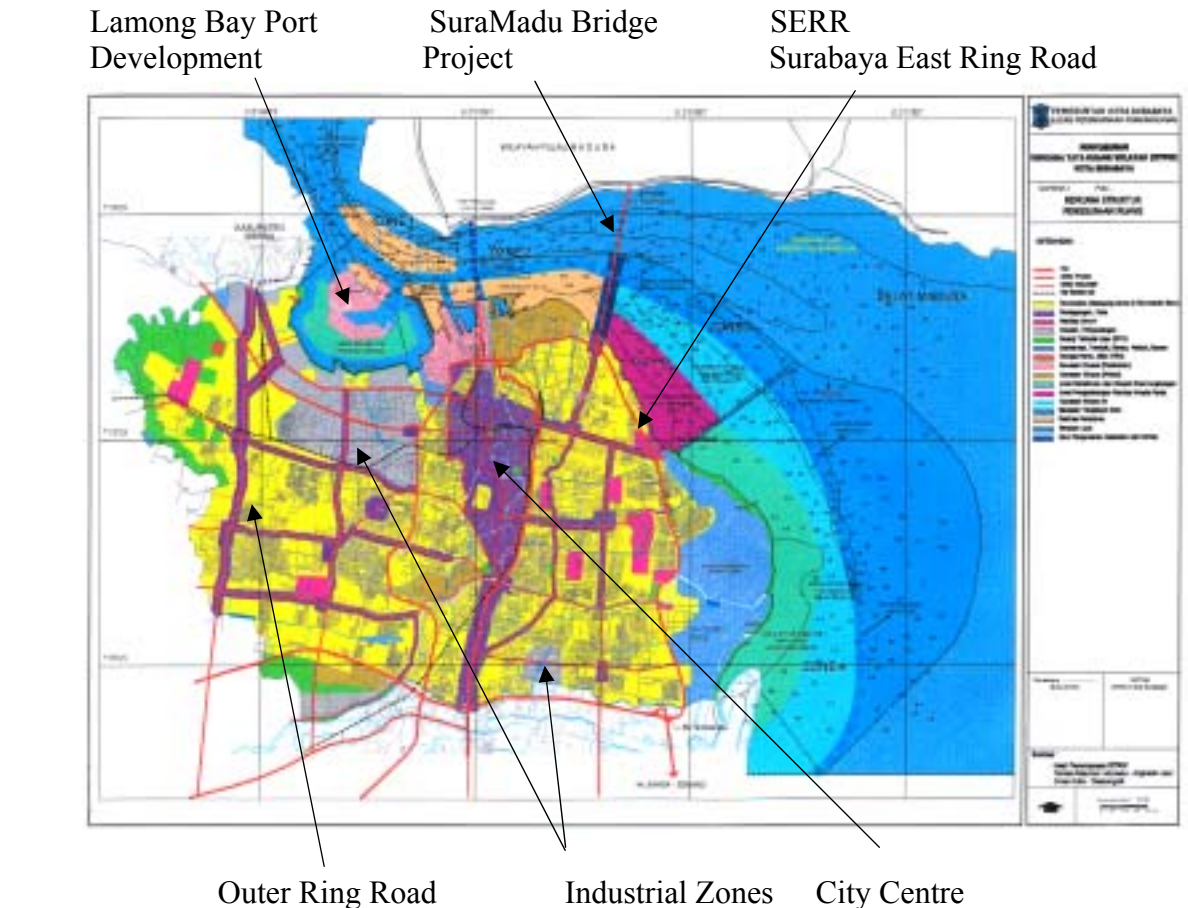
Figure 2.3.1 shows the existing land use of Surabaya City. Main economic/ business activities are concentrated in the north area near the Tanjung Perak Port and there are no other specific core zones except for the industrial area adjacent to the Port. In addition, no clear road hierarchy is given to the existing road network. Due to the above reasons, the central area of the City is severely congested in peak hours.



Source: BAPPEDA Kota Surabaya

Figure 2.3.1 Existing Land Use in Surabaya City

In order to improve the existing situation, the Surabaya City formulated a Spatial Plan (Master Plan) targeted to the year 2015 as shown in Figure 2.3.2.



Source: BAPPEDA Kota Surabaya

Figure 2.3.2 Spatial Plan of the Surabaya City (2015)

The main basic policy of the Spatial Plan is to decentralize the business activities from the central area to the west, east and south in the City so as to mitigate congestion in the central area and to realize the balanced growth in the whole city. In the Spatial Plan, city area is divided into twelve (12) Planning Units and the road network is formulated to connect each Planning Unit.

Development Projects inside and outside the City are briefly explained below (although the projects outside the City are not included in the Spatial Plan of the City).

2.3.2 Road Network Development Plan

(1) Road Development Plan of the Greater Surabaya Metropolitan Area (GSMA)

The road network development plan covering the Greater Surabaya Metropolitan Area (GSMA) targeted to 2018 is presented in Figure 2.3.3. It is consisted of combination of radial and ring roads to/from the Surabaya City together with toll roads connecting each Kabupaten/ Kotamadya in GSMA.



Source: Dinas Praswil Kota Surabaya

Figure 2.3.3 Road Network Development Plan in GSMA (2018)

(2) Road Development Plan in the Surabaya City

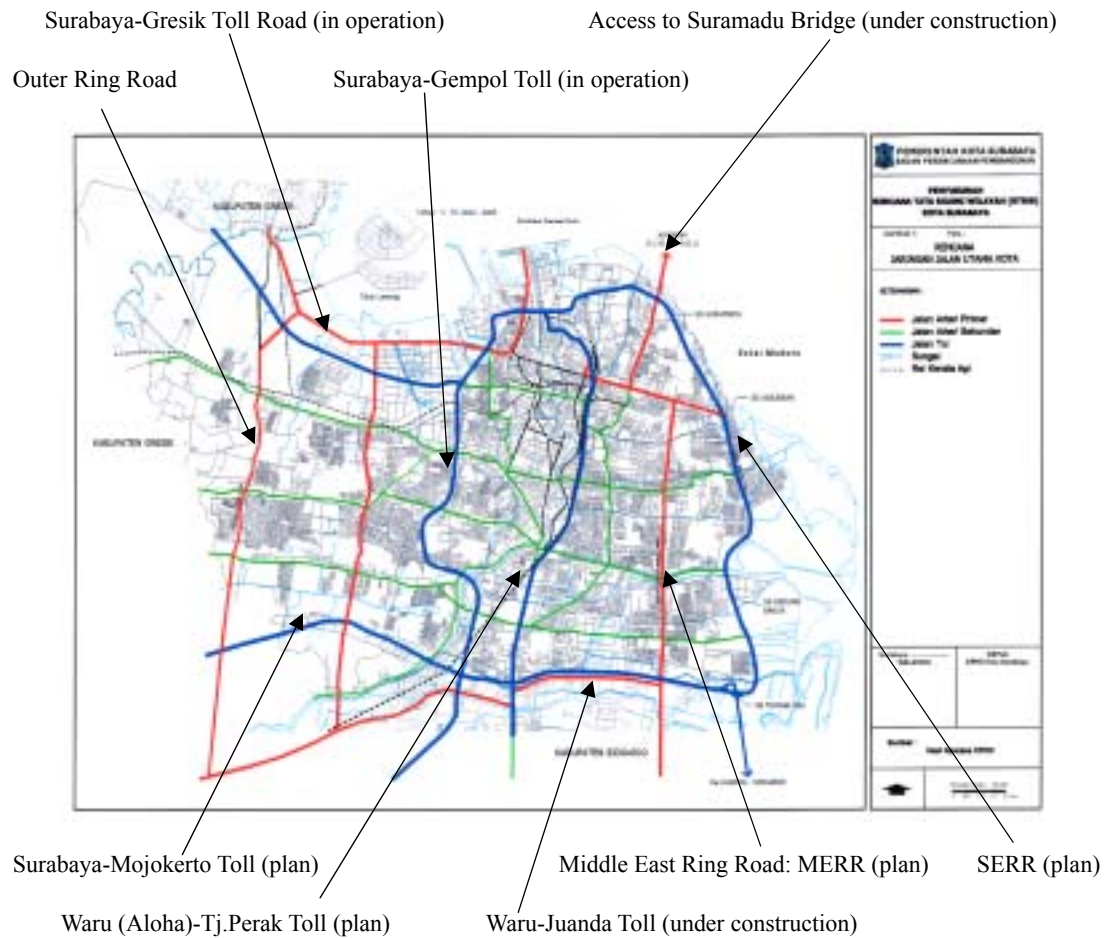
The future road network of the Surabaya City which was presented in the Spatial Plan is illustrated in Figure 2.3.4. The network consists of combination of general roads (non-toll) and toll roads with the functional structure formulated by radial and ring roads. The network pattern of non-toll roads is a grid type to distribute traffic to major city centres. Toll roads and non-toll roads supplement each other. Main road components are as follows:

1) Toll Roads

- Surabaya – Gempol Toll Road (in operation)
- Surabaya – Gresik Toll Road (in operation)
- Waru – Juanda Airport (under construction, scheduled to be opened in 2008)
- Waru (Aloha) – Tanjung Perak Port (plan)
- Surabaya – Mojokerto Toll Road (plan)
- Surabaya East Ring Road : SERR (plan)
- Suramadu Bridge (under construction)

2) Non-Toll Roads

- Outer Ring Road
- Middle East Ring Road: MERR
- Access Road to Suramadu Bridge



Source: BAPPEDA Kota Surabaya

Figure 2.3.4 Road Network Plan in Surabaya City

2.3.3 Development of Tanjung Perak Port

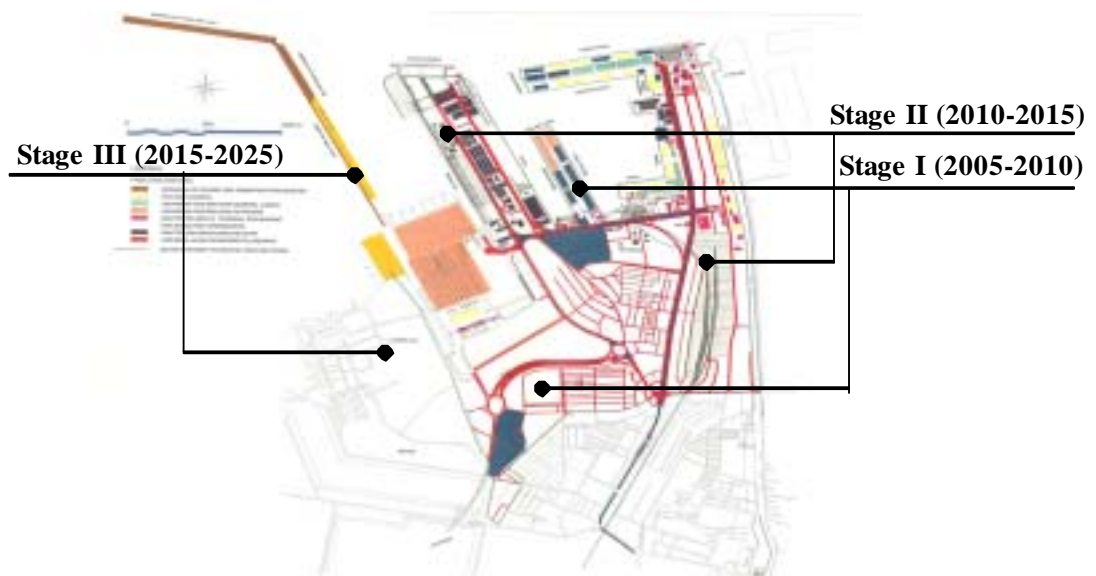
(1) Improvement of Existing Port Facilities

The capacity of existing Tanjung Perak Port is not enough to handle the demand of sea transport. The productivity of loading and unloading of containers is comparatively low from the aspect of competitiveness (24 boxes/ hour). The use of wharf is not effective because ships must wait for completion of loading and unloading before mooring. In addition, recent trend shows the steady increase of container demand. However, expansion of the existing port area to the surrounding areas is difficult. Under the situation, improvement of existing port facilities including replacement of warehouses for general cargo with container yards is under progressing. Improvement planned in the Master Plan of the Tj. Perak Port up to 2025 is summarized in the following three (3) stages and shown in Figure 2.3.5.

- 1) Stage I (2005-2010)
 - Dismantling old warehouses
 - Construction of wide container and general cargo yards
 - Construction of terminal for dry bulk
 - Construction of truck parking area and spaces for utilities

- 2) Stage II (20010-2015)
 - Construction of cargo terminal
 - Expansion of conventional container wharf
 - Construction of wharves for liquid bulk and dry bulk
 - Strengthen the structure of wharf caisson

- 3) Stage III (2015-2025)
 - Construction of wharves for container
 - Expansion of container yard



Source: Rencana Induk Pelabuhan Tj. Perak (Master Plan for Tanjung Perak) Port, Departemen Perhubungan

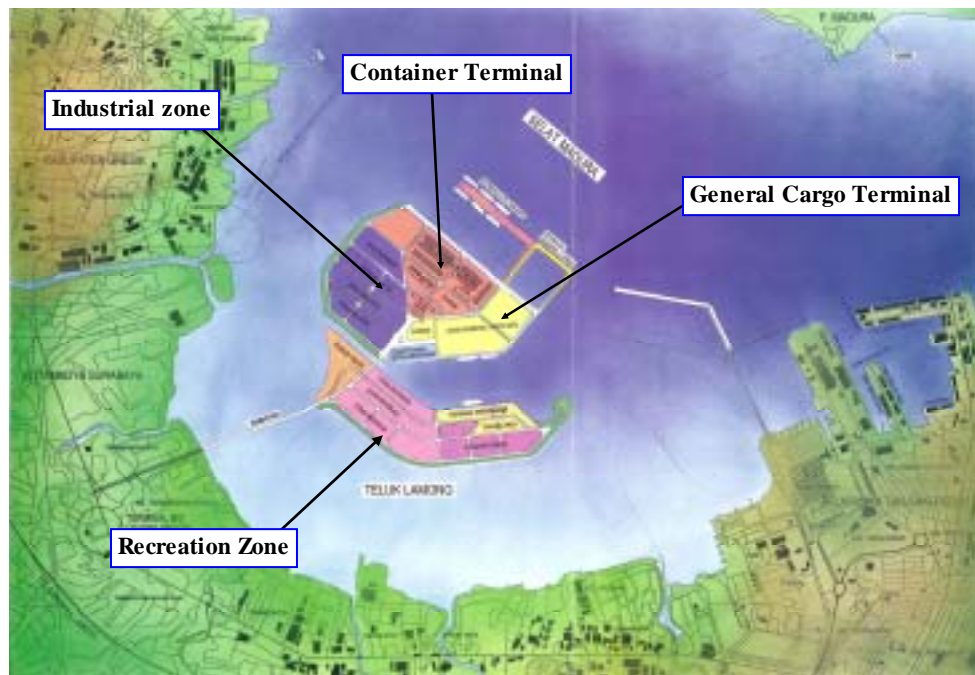
Figure 2.3.5 Improvement Plan of Tj. Perak Port

(2) New Port Construction Projects

As explained above, expansion of the existing Tanjung Perak Port to adjacent area is very limited and therefore, two (2) different plans for construction of the new port for Tj. Perak are formulated by the City Administration and PELINDO III in addition to the plan of the Provincial Government of East Java.

The development plan of the former (Surabaya City and PELINDO III) is to construct

new port reclaiming the Lamong Bay about 340 ha as illustrated in Figure 2.3.6. However, mainly due to the environmental reason, the development of reclamation area was limited to 50 ha and approved by the Governor of the Province.



Source: PELINDO III

Figure 2.3.6 Lamong Bay New Port Construction Project

On the other hand, the plan recommended by the latter (Provincial Government of East Java), is to construct a new port for container traffic in the north of the Madura Island (Tanjung Bumi) in addition to the approved 50 ha development in the Lamong Bay. The development of a new container terminal in the Madura Island is explained again in later section in this report.

The Comprehensive Study covering the short and long term strategic plan for the port development in the Greater Surabaya Metropolitan Area is now carried out by JICA and the best conclusions/ recommendations are expected to be presented in the results of the Study.

2.3.4 Development of Juanda International Airport

In order to overcome the present situation of over-capacity passenger demand, the Master Plan for the development of the Juanda International Airport is formulated by the Departemen Perhubungan (ANGKASA PURA I) target to the year 2020. The airport expansion plan is divided into two (2) phases and two (2) stages by each phase as shown in Table 2.3.1 and in layout plan of Figure 2.3.7.

According to the Master Plan, the passenger terminal will be expanded to be able to accommodate passenger traffic in 2020 (15 million passengers per year), 2.5 times of

the present capacity (6 million passengers in 2005).

The runway length will be extended from present 3000m in 2005 to 3600m in 2020.

Table 2.3.1 Summary of Expansion Projects in Master Plan of Juanda International Airport

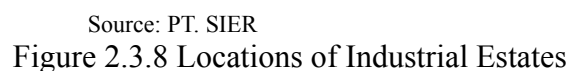
	Description	Year			
		2005	2010	2015	2020
		Phase I		Phase II	
		Stage I	Stage II	Stage I	Stage II
	<u>Design Traffic (Capacity)</u>				
	Passengers				
	- International (persons/year)	1,000,000	1,500,000	2,000,000	3,000,000
	- Domestic (passengers/year)	5,000,000	6,500,000	9,000,000	12,000,000
	Total	6,000,000	8,000,000	11,000,000	15,000,000
	Cargos				
	- International (ton/year)	60,000	100,000	130,000	190,000
	- Domestic (ton/year)	60,000	100,000	140,000	210,000
	Total	120,000	200,000	270,000	400,000
	<u>Facility</u>				
	1. Aircraft Maximum	B.747-400	B747-400	B747-400	B747-400
	2. Runway	3000m x 45m	3600m x 45m	3600m x 45m	3600m x 45m
	3. Runway Strip	3200m x 300m	3820m x 300m	3820m x 300m	3820m x 300m
	4. Parallel Taxiway	3000m x 30m	3540m x 30m	3540m x 30m	3540m x 30m
	4. Apron				
	(Large Jet)	2	2	4	6
	(Medium Jet)	9	12	16	22
	(Small Jet)	6	11	13	19
	(Propeller)	1	1	1	1
	Total	18	26	34	48
	<u>Terminal size</u>				
	Passenger Terminal				
	- International	30,000m ²	36,000m ²	45,000m ²	55,000m ²
	- Domestic	22,000m ²	25,000m ²	29,000m ²	40,000m ²
	Total	52,000m ²	61,000m ²	74,000m ²	95,000m ²
	Cargo Terminal				
	- International	6,000m ²	7,700m ²	10,700m ²	13,400m ²
	- Domestic	7,700m ²	9,400m ²	14,700m ²	18,700m ²
	Total	13,700m ²	17,100m ²	25,400m ²	32,100m ²

Source: ANGKASA PURA I



(1) General

(PIER). Locations of each industrial estate are shown in Figure 2.3.8.



The Sidoarjo Industrial Estate was continuously expanded from SIER to the south beyond the city boundary and included in SIER. All three industrial estates are operated and managed by one government owned company, Surabaya Industrial Estate Rungkut (SIER), PT (Persero). PT. PIER was established in 1974 utilizing the funds from the Central Government (50%), Provincial Government of East Java (25%) and City Government of Surabaya (25%).

(2) Present Status of the Industrial Estates

The current situations of the three industrial estates are summarized as below:

- Company Status PT. SIER: State Owned Company (Limited Liabilities)

- Approximate distance from major points:

- **Rungkut Surabaya & Berbek Sidoarjo**

From Tanjung Perak Port: 19km (30 minutes via toll road)

From Juanda International Airport: 7km (15 minutes)

From Railway Station: 10km (30 minutes)

From the City Centre of Surabaya: 15km (35 minutes)

- **Rembang Pasuruan**

From Tanjung Perak Port: 60km (70 minutes via toll road)

From Juanda International Airport: 45km (50 minutes via toll road)

From Railway Station: 50km (60 minutes via toll road)

From the City Centre of Surabaya: 50km (60 minutes via toll road)

- Current Status

	Industrial Estate	Total Area (ha)	General Facilities in ha (%)	Sold Area in ha (%)	Available to sale in ha (%)	No. of Companies in Operation (*)
1	Rungkut Surabaya	245	62.4 (25.5%)	181.3 (74.0%)	1.2 (0.5%)	310
2	Berbek Sidoarjo	87	18.5 (21.3%)	68.03 (78.2%)	0.47 (0.5%)	110
3	Rembang Pasuruan	500	150 (30.0%)	65.0 (13.0%)	285 (57.0%)	97

Source: PT. SIER

Note: (*): As of September 2006, listed in "Daftar Investor"

The areas of Rungkut Surabaya and Berbek Sidoarjo are respectively 99.5% occupied already. There are 310 companies in Rungkut Surabaya and 110 companies in Berbek Sidoarjo presently in operation. On the other hand, Rembang Pasuruan has still vacant spaces of 285 ha (57%) and waiting for new investors.

- Type of Industries in Operation

As the Rungkut Surabaya and Berbek Sidoarjo are located in the city area and near the housing zones, all industries in the Estates are light industries and types of environment friendly ones such as TV assembling, paper product, carpet, medicine, timber furniture, cosmetic, plastic packing, frozen food, printing, cooking oil, etc.

Rembang Pasuruan is the same.

• Countries Origin of Companies

Countries of companies operating are as follows: An about 68% of companies are from foreign countries in Rembang Pasuruan.

Country Origin	Number of Companies by Country		
	Rungkut Surabaya	Berbek Sidoarjo	Rembang Pasuruan
Japan	3	3	27
France	2		
India	6	1	1
USA	3	4	4
Korea	1	2	1
Hong Kong	2	2	2
Singapore	3	7	3
Australia	4		2
China	1		
Holland	2	2	
Germany			1
UK			2
Swiss			1
Belgium			5
Italy			8
Taiwan			9
Indonesia	283	89	31
Total	310	110	97

Source: "Daftar Investor" September 2006, PT.SIER

• Benefits/ Advantages/ Incentives for Investors

SIER and PIER provide not only infrastructures, land, water and electricity supply, etc. but also supports for import/ export activities inside areas. Bonded Zone to store commodities is found in the area and other benefits to take one point permissions are available.

According to the information from PT. SIER, about 60% of commodities produced in the Estates are for export oriented through the Tanjung Perak Port. Due to their locations in south of the City, it is essential to construct the access roads to/from the Port via existing toll road (Surabaya – Gempol Toll Road) and planned Surabaya East Ring Road (SERR) to avoid transportation in the congested city centre.



Photo (1) Surabaya Industrial Estate Rungkut (SIER)



Photo (2) Pasuruan Industrial Estate Rembang (PIER)

2.4 Problems and Issues in Surabaya Metropolitan Area

From the results of analyses on existing conditions above, problems and planning issues in Surabaya Metropolitan Area (SMA) are summarised as below:

2.4.1 Urban Development Aspect

At present, main business activities are concentrated to the City Centre and there is no clear zoning system in SMA. This situation causes severe congestion in and around the City Centre especially in every day peak hours. It is necessary, therefore, to establish some sub-centres with clear zoning system connected by arterial and collector roads together with the Toll Road Network.

2.4.2 Road Network Aspect

Through traffic tends to go through urbanized areas due to the existing road network pattern without combination of radial and ring road system. It is urgently required to create toll ring road system and to adopt grid pattern street system in SMA. In addition, the linkage of road network in east-west direction is weak. It is also necessary to strengthen the east-west linkage by developing the east-west corridors for encouraging the East and West Sub-centres.

2.4.3 Strategic Development Projects in SMA

The strategic development projects such as Tanjung Perak Port, Juanda International Airport and Industrial Estates are essential to realize the sustainable economic growth in SMA and East Java Province. The common problems of each development project other than the difficulty of land acquisition for expansion, shortage of funds and environment constraints are lack of reliable smooth road network to support their further development.

For example, existing Tanjung Perak Port has no access from the eastern part of Surabaya City and from the southeast area of East Java Province. In case of the Juanda International Airport and the Industrial Estates (SIER and PIER), as they located in the southern area of the City, improvement of the access road to/from their

locations to/from the City Centre and Tj. Perak Port are preconditions of further development.

Therefore, it is necessary to construct/ maintain a strong road network to connect above important projects each other keeping the urban environmental considerations.

CHAPTER 3 ROLES AND FUNCTIONS OF THE PROJECT TOLL ROAD

Based on the results of above analyses on the existing conditions of SMA and reviews of development plans, the roles and functions of the project toll road (i.e. Surabaya East Ring Road: SERR) are summarized as follows:

3.1 Contribution to Urban Development

3.1.1 Inducement of New Land Use

The Surabaya East Ring Road (SERR) is clearly placed in the Spatial Plan of the Surabaya City as one of important arterial toll roads. The Spatial Plan for the Surabaya City is aimed at to decentralise business activities concentrated now in the existing central area to the east, west, south and north areas in the city. In order to realize the Plan, it is necessary to formulate an arterial road network to induce new locations of urban facilities such as housings, shopping centres, industrial parks, etc. along roads or around interchanges at the peripheral areas of the city. Therefore, construction of SERR will provide opportunities to develop new locations in the east areas of the city by improving accessibility and raising the development potential of these areas.

3.1.2 Betterment of Urban Environment

The route of SERR is planned so as to avoid the reservation areas in the east coast of the City. Furthermore, air pollution and noise in the central area will be reduced due to the changes in urban structure in long term and due to reduced traffic in the central area in short term as explained below. .

3.2 Improvement of Traffic Condition in Urban Area

3.2.1 Function as a Bypass Road

SERR composes a part of total ring road together with the Surabaya Gempol Toll Road (in operation), Waru – Juanda Toll Road (under construction) and Outer Ring Road. In general, a ring road has two (2) functions. One is the function as bypass road for through traffic and the other is the function as distributor of traffic to/from the central area. SERR will function as one of bypasses for through traffic from north to south direction (for, example from the Madura Island to the Juanda Air Port/ SIER Industrial Estate) and, as a result, traffic congestion in urbanized area will be mitigated.

3.2.2 Function as a Distributor of Traffic

SERR will provide alternative routes for the traffic to enter/ exit the central area of the City. This function is called as a distributor of traffic. If a road network consists of only radial roads and non-ring roads combined, vehicles can not choose and can not shift to other alternative routes from a congested radial route. Therefore, the function of SERR as a distributor of traffic is also important to improve present and future condition of urban traffic.

3.3 Function to Support Strategic Development Projects

There are some large scales and strategic development projects along SERR as listed below and illustrated in Figure 3.3.1.

- 1) Tanjung Perak Port Development Project (including Lamong Bay New Port Project)
- 2) Development of the Madura Island and Construction of the Suramadu Bridge
- 3) SIER Industrial Estate
- 4) Juanda International Air Port Development Project
- 5) PIER Industrial Estate

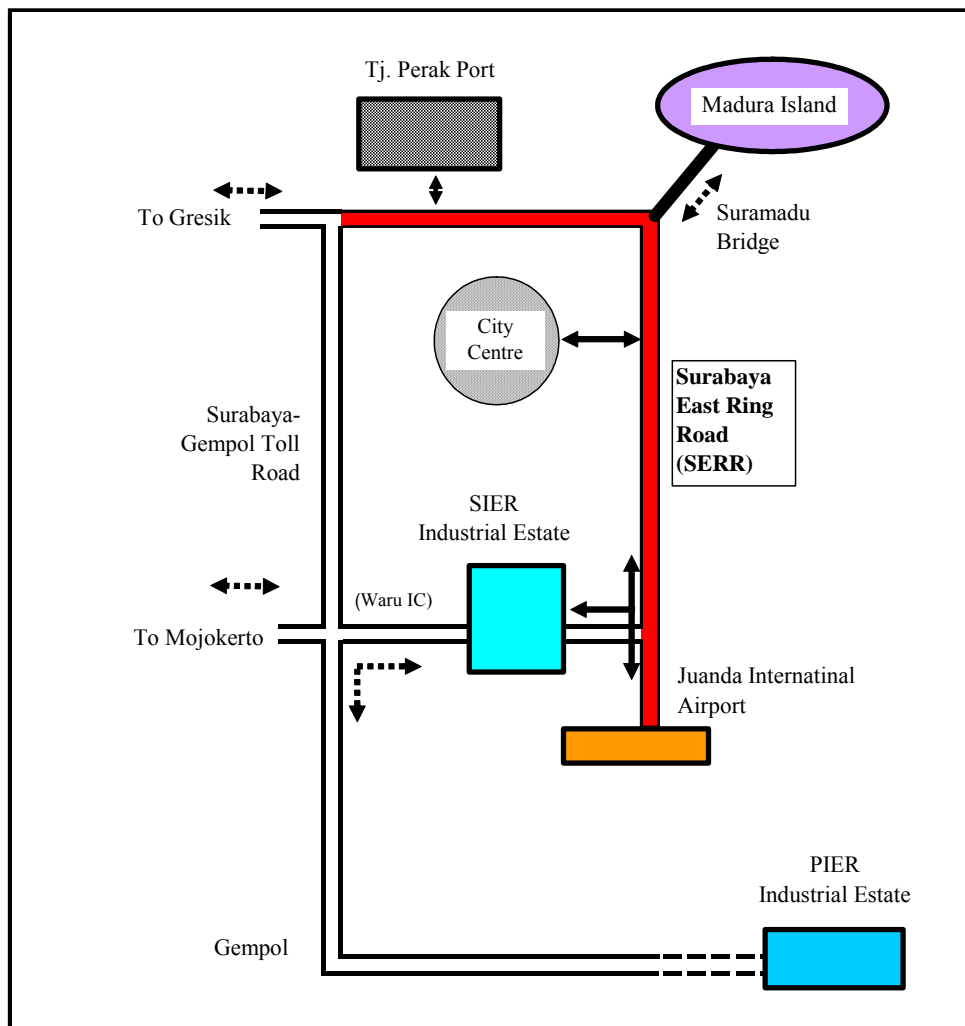


Figure 3.3.1 Relationships of SERR and Strategic Development Projects

These development projects are directly connected with SERR (Tj. Perak Port, Suramadu Bridge and Juanda International Airport, for example) or indirectly combined with SERR (SIER and PIER Industrial Estates). Effects and economic benefits of these projects will not be sufficiently realized without SERR because the smooth and reliable access roads are essential for these projects. It should be noted, therefore, that SERR will support the implementation and effective operation of the strategic projects in SMA.

CHAPTER 4 PRESENT STATUS OF THE PROJECT TOLL ROAD

4.1. Toll Road System of Indonesia

4.1.1 History of Toll Road Construction

The toll road construction in Indonesia has been proceeding since 1978 in which the first section of Jagorawi was implemented. At present 20 sections of toll road are in operation and these are not only in Jakarta but also in regional core cities, such as Surabaya and Semarang. Detailed list of toll road in operation is shown in the Table 4.1.1.

Table 4.1.1 The List of Toll way in Operation

	No	Toll Road Link	TOLL ROAD LENGTH (KM)	OPEN TO TRAFFIC	INVESTOR
Toll Road Managed by Jasa Marga	1	Jagorawi	59.00	1978	PT Jasa Marga
	2	Semarang	24.75	1983-1998	PT Jasa Marga
	3	Jakarta - Tangerang	33.00	1984	PT Jasa Marga
	4	Prof. Dr. Sedyatmo	14.30	1985	PT Jasa Marga
	5	Surabaya - Gempol	49.00	1986	PT Jasa Marga
	6	Belmera	42.70	1986	PT Jasa Marga
	7	Jakarta - Cikampek	83.00	1988	PT Jasa Marga
	8	Dalam Kota Jakarta	23.55	1989-1996	PT Jasa Marga
	9	JORR	16.77	1990-2005	PT Jasa Marga
	10	Padalarang - Cileunyi	64.40	1991	PT Jasa Marga
	11	Palimanan - Plumbon - Kanci	26.30	1998	PT Jasa Marga
	12	Pondok Aren -Bintaro Viaduct - Ulujami	5.55	2001-2003	PT Jasa Marga
	13	Cikampek - Padalarang	58.50	2003-2005	PT Jasa Marga
		Sub Total	500.82		
Toll Road Managed by Private Company	1	Tangerang - Merak	73.00	1983-1996	PT Marga Mandalasakti
	2	Ir. Wiyoto Wiyono, MSc (Cawang - Tj. Priok)	15.50	1990	PT CMNP
	3	Surabaya - Gresik	20.70	1993-1996	PT Margabumi Matraraya
	4	JORR S (Pd. Pinang - Taman Mini)	14.25	1995-1996	PT Jalan Tol Lingkar Luar Jakarta
	5	Harbour Road (Pluit-Ancol-Jmbt Tiga)	11.55	1995-1996	PT CMNP
	6	Ujung Pandang Stage I	6.05	1998	Bosowa Marga Nusantara
	7	Serpong - Pondok Aren	7.25	1999	PT Bintaro Serpong Damai
			148.30		

(Source : BPJT Investment Opportunities Toll Road In Indonesia)

During the early period, toll road projects have been fully financed by government with application of foreign loan. And at the same time that PT. Jasa Marga, was formed based on the Government Regulation No. 4 in 1978 as a state-own-company whose business includes the construction, management and maintenance of toll roads.

In 1980s, the toll road construction progressed by two step loan that government issues subsidiary loan agreement to PT. Jasa Marga. Accordingly, reflecting the economic growth in 1980s, strategy for construction of toll road was shifted to consideration of public sector participation. In the years leading up to the 1997, private companies were very active in the development of toll roads in Indonesia. In 1995 and 1996, for example, private companies won build-operate- transfer (BOT) concessions for as many as 19 toll road projects aimed at constructing around 800 kilometres. But the East Asia economic crisis stalled the development of the Indonesian transport sector. Many projects by the private sector participation were cancelled or deferred because of financial difficulties.

Just recently, as the economy recovers from the abovementioned crisis and traffic flows expand again, the toll road sector is attracting growing interest among foreign

and domestic investors in these years. And the Government of Indonesia has been also expecting to boost up the implementation of toll road construction.

4.1.2 Toll Road Development Plan

From the past, the toll road construction has been essential issue to provide an efficient transportation system and contribute sustainable economic growth. And it has also been longstanding desire since 1970s. In the recent years, the Government has planned approximately 1,600km of new toll road route which has been stated in the RPJM(Mid –Term Development Plan 2005 – 2009), the Strategic Plan of the Ministry of Public Works for 2005 – 2009 and Ministerial Decree No.369/KPTS/M2005 on National Road Network Master Plan respectively. The planned Toll Road network in Java island and their present status are shown in the Figure 4.1.1 and detailed lists for the aforementioned toll road are shown in the Table 4.1.2. The routes which the investors are already assigned are 27 routes of total 51 routes. In the above formulated routes, almost all private investors other than PT. Jasa Marga were awarded before 1997, economic crisis and their concession contract was recently reviewed and approved.

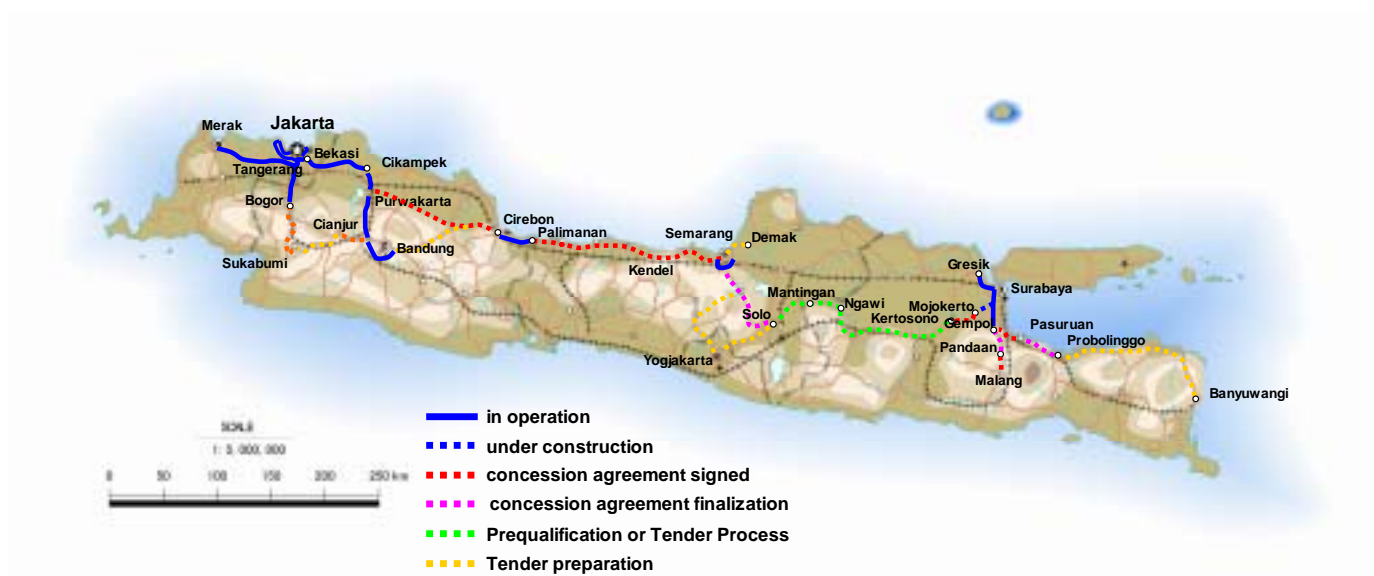


Figure 4.1.1 Toll Road Development Plan in Java Island

(Source : BPJT)

Table 4.1.2 Project Status for Toll Road Development

No	Toll Road Link	Toll Road Length(Km)	Investment	Investor
Under Construction				
1	JORR E3 (Cakung - Cilincing)	4.60	430.36	PT.Jasa Marga
2	JORR E1 North (Section4)	4.05	202.46	PT.Jasa Marga
3	SS Waru - Tg. Perak Tahap I (Bandara Juanda)	13.50	777.00	PT Citra Margatama Sby
4	Surabaya - Madura Bridge	17.50	700.00	by Government
5	Surabaya -Mojokerto	37.00	2,231.82	PT Marga Nujyasumo Agung
6	JORR Seksi W1	9.70	1,628.00	PT Jalantol Lingkar Baratsatu
7	Makassar Section IV (PT Bosowa Marga Nusantara a	11.60	440.14	PT.Jalan Tol Seksi Empat
Signed the Concession Agreement(CA)				
1	JORR W2 North (Ulujami - Kebon Jeruk)	7.00	1,411.00	PT.Jasa Marga
2	Cikampek -Palimanan	116.00	5,906.27	PT.Lintas Marga Sedaya
3	Kanci -Pejagan	35.00	2,094.95	PT.Semesta Marga Raya
4	Pejagan -Pemalang	57.50	3,235.81	PT.Pejagan Pemalang Tol Road
5	Pemalang -Batang	39.00	2,292.90	PT. Pemala Batang Tol Road
6	Semarang -Batang	75.00	3,634.64	PT. Marga Setiapuritama
7	Kertosono -Mojokerto	41.00	2,211.72	PT. Marga Hanurata Intrinsic
8	Pandaan -Malang	37.00	2,852.00	PT.Setdoco Intrinsic Nusantara
9	Gempol -Pasuruan	32.00	1,800.00	PT.Jasa Marga
10	Bogor Ring Road	11.00	1,577.00	PT.Jasa Marga
11	Depok - Antasari (Consortium Citra Waspphutowa = C	21.70	2,247.58	PT.Citra Waspphutowa
12	Cinere - Jagorawi (Consortium Translingkar Kita Jaya	14.70	1,713.96	PT.Trans Lingkar Kita Jaya
Finalization of Concession Agreement(CA)				
1	Waru (Aloha)-Wonokromo-Tg.Perak	17.72	3,107.00	PT.Margaraya Jawa Tol
2	Gempol -Pandaan	14.00	926.00	PT. Margabumi Adhikaraya
3	Ciranjang -Padalarang	33.00	1,824.00	Bina Puri Holding Bhd
4	Bekasi -Cawang -Kp. Melayu	20.42	3,648.00	PT Kresna Kusuma Dyandra Marga
5	Ciawi -Sukabumi	54.00	4,923.70	PT Bukaka Marga Utama
6	Pasuruan -Probolinggo	56.30	3,314.60	PT Bukaka Teknik Utama
7	Semarang -Solo	75.70	6,135.00	PT Jasa Marga
8	Cikarang - Tanjung Priok (part of JORR 2)	33.92	2,358.00	MTD - Nusa Cipta
Tender In Process				
1	Solo -Mantingan - Ngawi	90.10	4,464.94	-
2	Ngawi -Kertosono	84.00	3,631.67	-
3	Tol Serpong -Cinere	10.14	1,590.00	-
4	Cenkareng - Batu Ceper - Kunciran	15.22	2,636.00	-
5	Kunciran - Serpong	11.19	1,847.00	-
6	Cimanggis - Cibitung	25.39	3,539.00	-
Tender Preparation				
1	Sedyatmo Widening	-	410.00	-
2	Pasirkota -Soreang	15.00	520.00	-
3	Pekanbaru -Kandis	40.00	2,000.00	-
4	Serangan -Tanjung Benoa (Bali)	7.50	515.00	-
5	Medan -Kualanamu -Tebing Tinggi	60.00	2,600.00	-
6	Cileunyi -Sumedang	25.00	1,839.00	-
7	Semarang -Demak	25.00	841.00	-
8	Medan -Binjai	15.80	964.00	-
9	Manado -Bitung	46.00	1,800.00	-
10	Tegineneng - Babatan	51.00	2,800.00	-
11	Palembang -Indralaya	22.00	497.00	-
12	Cilegon -Bojonegara	8.80	400.00	-
13	Sukabumi -Ciranjang	31.00	1,483.00	-
14	Jogja -Solo	40.49	2,330.00	-
15	Bandara Juanda -Tanjung Perak *	23.00	750.00	-
16	Probolinggo -Banyuwangi	156.00	6,086.00	-
17	Kandis -Dumai	50.00	2,000.00	-
18	Sumedang -Dawuan	33.50	2,465.00	-

Note* :The route with “*” is the study route.

(Source : Investment Opportunities Toll Road Indoensia)

4.1.3 Road Law No.38

In parallel with the above planning for the Toll Road, the Government has directed a policy of toll road construction with reforming new Road Law No.38/2004. And as a result of this reforming of law, the Indonesian Toll Road Authority (BPJT) was established under Ministry of Public Works in 2005, to speed and boost up implementation of Toll Road. The Road Law No.38/2004 allows the development of toll road through Public Private Partnership program. The major alternation points are summarized as follows;

1. Government establishes Master Plan of Toll Road Network as a guidance of toll road development, while the toll road links will be determined by the Minister.
2. Government holds authority of toll road development, whereas parts of the authority concerning toll road business are being executed by Indonesia Toll Road Authority (BPJT). Task and authorities of BPJT are described in Minister of Public Works regulation No.295/PRT/M/2005.
3. Toll Road business can be financed by the Government and/or qualified business entity. Financing by Government is for the toll road links that economically feasible, but not financially feasible. Financing by business entity is for toll road links which are both economically and financially feasible.
4. Under particular conditions, where the toll road can not be developed by business entities, the Government will take proper action in accordance with the authorities:
5. Initial tariff will be established by Minister as stated in concession agreement.
6. The tariff will be adjusted every two years based on inflation index, and determined by the Minister.
7. Procurement of either part or all aspects of toll road operation will be done through an open and transparent tender process.
8. Land Acquisition is the responsibility of the Government however the budget can be provided by Government and/or business entity.

4.1.4 Indonesian Toll Road Authority (BPJT)

Aforementioned BPJT is established under Minister of Public Works and held accountable to the Minister. And BPJT has the authority to execute of the Government's authority in managing the toll road, comprising the regulation, business management, and supervision of Enterprise engaging in the business of toll road thus it can generate maximum benefit for the state for the greater welfare of the people. After the abovementioned Road Law alternation and newly forming of No.285/PRT/M/2005, regulation of Ministry of Public Works, BPJT is going to be a Regulator and PT. Jasa Marga is defined as a one of the investors and operators.

The organisation of BPJT is as follows;

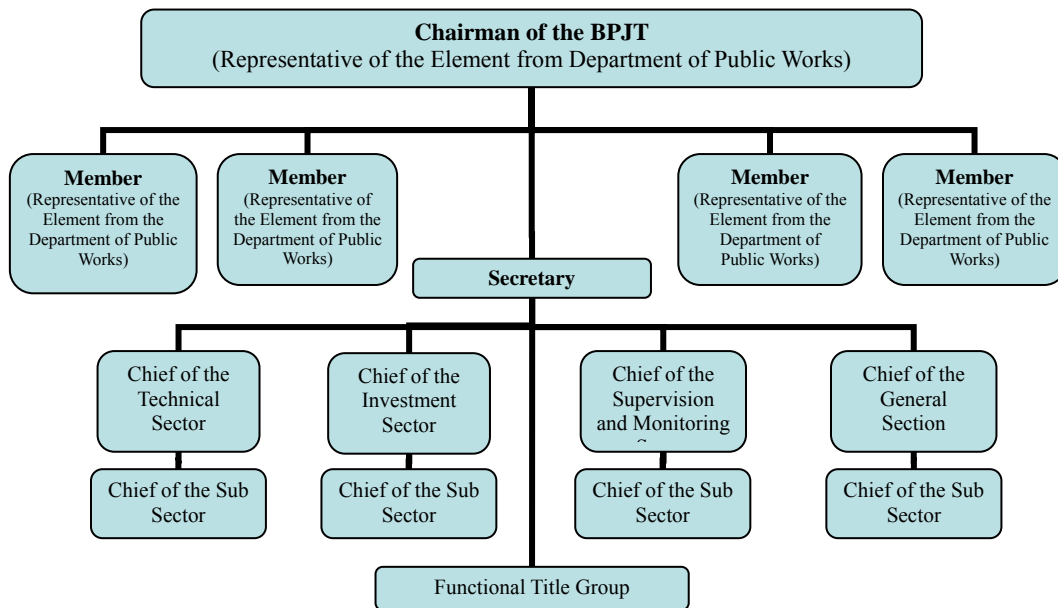


Figure 4.1.2 The organization of BPJT

The main functions of BPJT are as follows;

1. To recommend initial tariff and tariff adjustment to the Minister;
2. To takeover toll road development rights following the expiry of the concession period, and to recommend further operation thereof to the Minister;
3. To takeover of temporary toll road development right that has failed starting with the concession, for re-tendering of the development;
4. To make preparations for the toll road development right which include analysis of financial feasibility, feasibility study, and preparation of environment impact assessment;
5. To seek investment in toll roads through transparent and open tenders;
6. To assist in the land acquisition process if there is guarantee of availability of fund from the Enterprise and to prepare the mechanism of the use thereof;
7. To monitor the activities of planning and execution of construction works as well as the operation and maintenance of toll roads by the Enterprise; and
8. To supervise the Enterprise of the fulfilment of all the obligations under the toll road development agreements and to report the results thereof periodically to the Minister.

4.1.5 Public Sector Participation

The policy of investment such as the attitude of government's investment for the project implementation cost is clearly mentioned in the new Road Law 38/2004 as can be seen in the previous sub-chapter, item no.3. It is mentioned that the project which has enough viability for both economic (e.g. EIRR) and financial (e.g. FIRR) should be always implemented by Private Sectors in accordance with that policy. Moreover, in the case of only EIRR is viable, to apply Public Sector Participation will be considered. The positive policy for Public Sector Participation is revealed from the above.

In this regards, the government held the Infrastructure Summit in 2005 for the sake of publicity and acceleration of Public Sector Participation for total 91 projects for transportation, telecommunication, gas-pipeline and water supply sector. In toll road sectors, total 38 projects were raised up as the prioritised route including Trans Java toll road. Subsequently, Ministry of Public Works had tendered investment tender for 6 links of toll road in Java, Sumatra and Surawesi as "Batch 1". In the year 2005-2006 13 links of toll road has also been tendered as "Batch 2". However, as a result of tender, only 4 projects were formulated because legal and institution arrangement for government support was insufficient for investors. The same result has applied to the other sectors' tender. The Government has been aware that large-scale private sector participation (PSP) – preferably through public-private partnership (PPP) – cannot be taken for granted, unless serious structural and institutional reforms are implemented from the above mentioned experience during 2005 and 2006. And now BPJT is now trying to rectify the conditions in Tender for PPP scheme.

4.2 Present Status of the Project

4.2.1 Profile and Present status of the related routes

In Surabaya Metropolitan Area, two toll road, Gresik – Surabaya toll road (20.5km) and Surabaya – Gempol toll road (43km), are in operation up to present. Planned toll road are Suramadu bridge(5.4km), Surabaya – Mojokerto (36.6km), SS.Waru – Juanda (12km), Waru(Aloha) – Wonokromo – Tj.Perak (18.4km) and project road, Juanda – Tj. Perak (23km) (refer to Fig.4.2.1). Route profile and present status are described as follows;

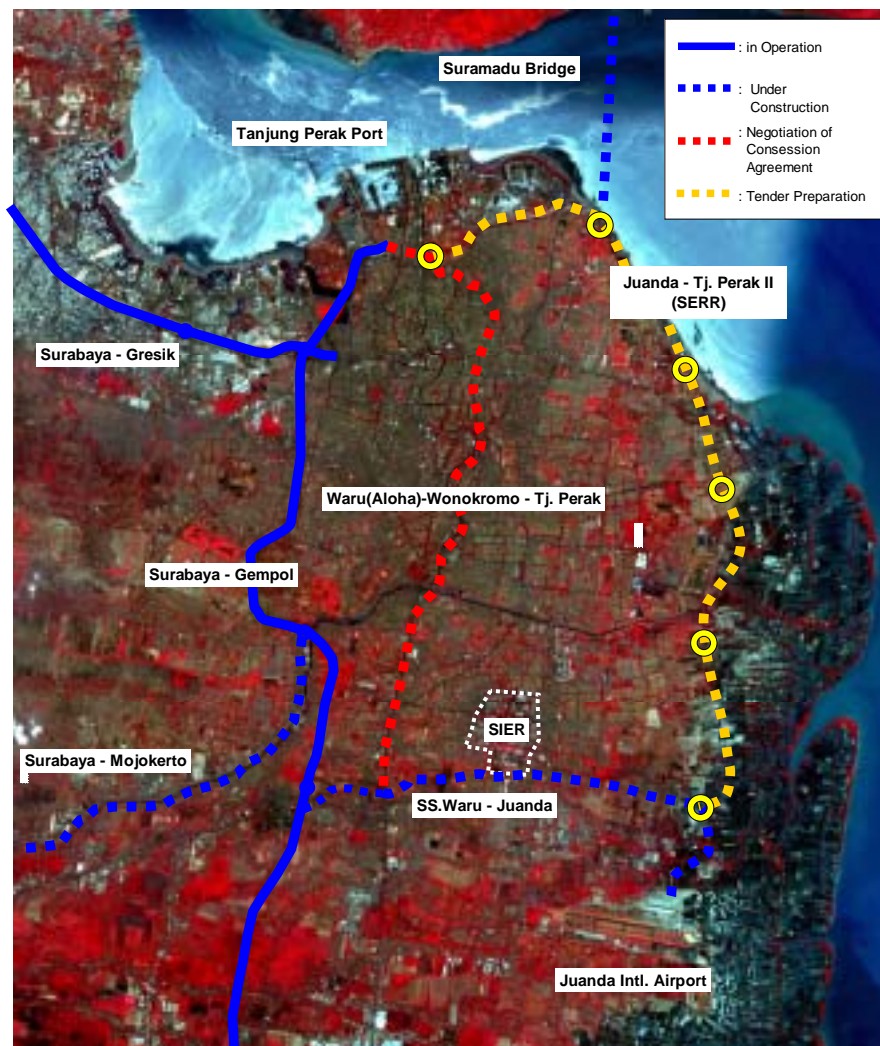


Figure 4.2.1 Toll Road in Surabaya Metropolitan Area

Surabaya – Gempol route

Surabaya – Gempol Toll Road is the first toll road in Surabaya Metropolitan Area. And it subjected to link the area among Gempol., Polong, Sidoarjo, Waru and Tj.Perak. In addition, this corridor could be an alternative route to support the transportation efficiency from and to north harbour area. This section was constructed by using foreign fund in 1986 and is now operated by PT. Jasa Marga.

Gresik – Surabaya route

The section of Gresik – Surabaya Toll Road is the connection between Gresik industrial area and Surabaya city. This section was constructed by PT. Marga Bumi Matra Raya with shareholders PT. Jasa Marga and PT.Tirtobumi Adyatunggal and was completed in 1996. This section was implemented with application of conventional BOT scheme with 25 years' concession period (1991 -2016).

Suramadu Bridge

Suramadu Bridge is planned to connect Java Island and Madura Island by crossing Madura Straits with length of 5,438m as an alternative of existing ferry. The Construction of Suramadu Bridge is intended to industrial and residential

development in accordance with master plan of East Java Province. The budget for both approach bridges and causeway are borne by APBN and APBD. The budget for Main Bridge are borne by Loan from China. Construction of Suramadu Bridge was started in August, 2003 and the target for completion is now expected as the end of 2008. The detailed information and figures are as follows;

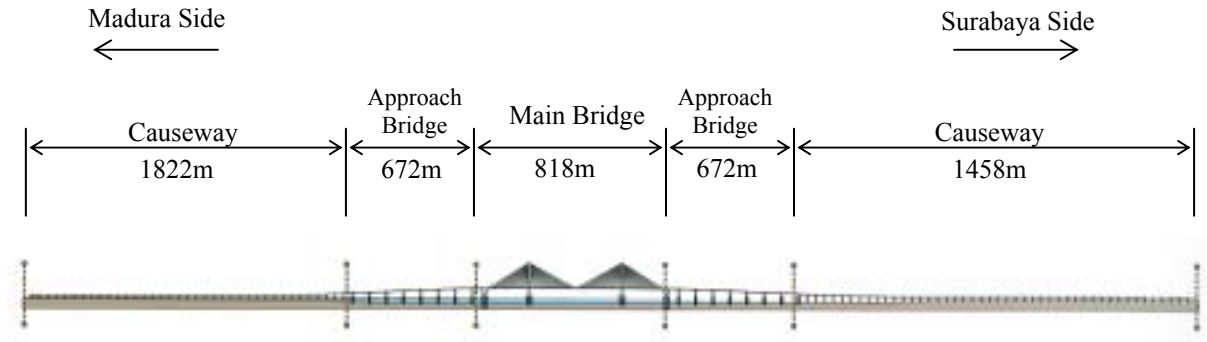


Figure 4.2.2 Side View of Suramadu Bridge

SS.Waru – Juanda

This route is now under construction in the section between Waru to near SIER, and the section in Kecamatan Rungkut. The investor for this route is PT. Citra Margatama Sby with its shareholders, PT Jasa Marga and PT. Citra Marga Nusaphala, Tbk. This toll road is intended as an alternative access for the traffic from and to the Juanda International Air Port and to increase accessibilities in the eastern side of Surabaya and Sidoarjo. The route will be starting from Waru Interchange and ending to new airport terminal.

Waru (Aloha) – Wonokromo - Tj.Perak

This route is passing through the centre of Surabaya city which has much potential for traffic. The Presidential Decree (Keppres) 39 of 1997 which specified the cancellation status for the development of this toll road. Pt Jasa Marga and PT Margarayaya Java Tol has made re-negotiation for continuation of this project and Ministerial decree to proceed the construction of this project has been issued. At present, still further negotiation is remaining for signing of concession agreement. Through the interview from officials of Dinas Bina Marga Kota Surabaya, difficulties for land acquisition will be expected because of existing dense slam area along the proposed alignment.

Surabaya – Mojokerto

Surabaya – Mojokerto toll road is a link between Kabupaten Mojokerto located in south-west of Surabaya and Waru in Surabaya city. This route becomes a one of the section of Trans Java Toll Road network that is from western edge of Java Island, Merak and eastern edge of Java Island, Banyuwangi. The investor of this route is PT.Marga Nujyasumo Agung after review of the tender result in 1997. Land acquisition has been started from the end of December, 2005 and construction started in August, 2006.

Juanda – Tj.Perak (SERR)

The functions of this route are not only to connect from north area to Juanda airport but also to relief congested traffic in the center of Surabaya city as a part of ring road. From the interview of BPJT and DGH, this route is in the stage of project preparation at present. They are seeking not only private investor but also a foreign loan support including the way to implement such as PPP scheme. During our site survey, DGH requested to BAPPENAS to start negotiation with World Bank for asking loan support. Feasibility study of this route was completed in 2006 and, in parallel, AMDAL study was also carried out and completed in the first of 2007.

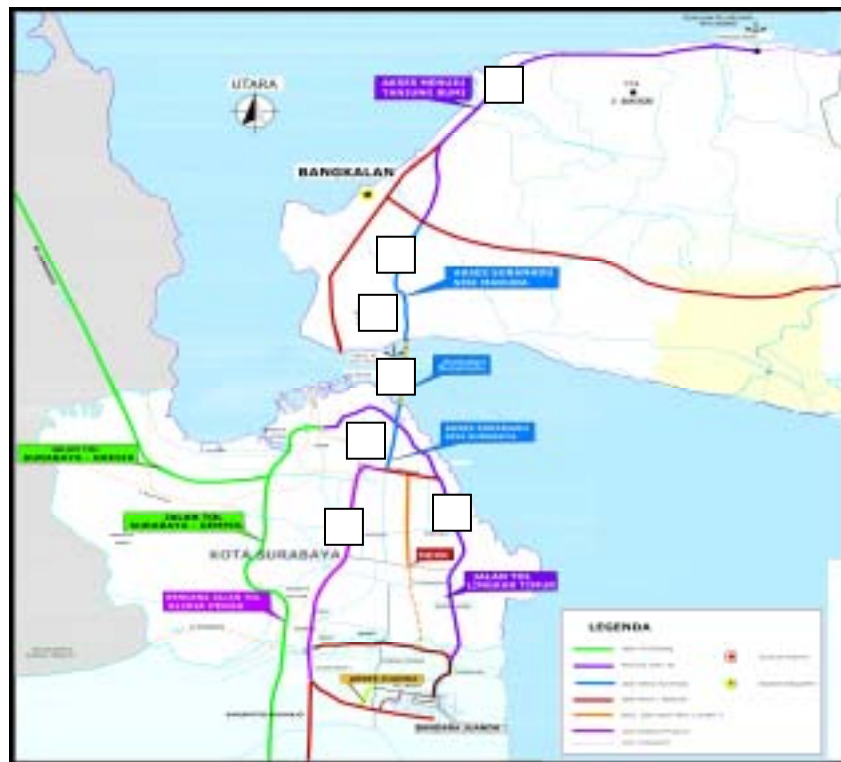
Table 4.2.1 Present Status of Toll Road in Surabaya Metropolitan Area

Route Name	Surabaya – Gempol	Gresik – Surabaya route	Suramadu Bridge	SS, Waru – Juanda	Surabaya – Mojokerto	Waru (Aloha) – Wonokromo - Tj. Perak	Juanda – Tj. Perak (SERR)
Status	In Operation			Under Construction			Tender Preparation
Total Length	49.0km	20.5km	Bridge : 5.4km Access Road : 1.5km(Surabaya side), 4.4km(Madura side)	12.0km	36.6km	18.4km	23.0km
Section Detail	Dupak - Banyu Urip - Kota Satelit - Gunung Sari - Waru – Sidoarjo – Porong – Gempol	Manyar – Kebomas – Romo Kalisali – Tandus (West & East) – Dpak	-	Waru - Brebek - Tambaksumur - Juanda	Waru - Western Ring Road – Driorejo – Krian – Wringin Anom - Mojokerto	N/A	Tj. Perak – Suramadu – Kenjeran – Kedung Baruk – Juanda
Open Year / Target for Completion	1986	1993-1995	the end of 2008(plan)	2009(Plan)	2009(Plan)	-	-
Implementation Scheme	Government Budget	BOT	APBN& APBD(Causeway and approach bridge) Loan from China(Main Span)	BOT	(concession agreement signed on April, '06)	BOT	-
Concession Period	-	25 years	-	35years	35years	35 years	-
Operator	PT. Jasa Marga	PT. Margabumi Matra	-	-	-	-	-
Investor	-	PT. Margabumi Matra Raya	-	PT. Citra Margatama Sby	PT Marga Nujiyasumo Agung	PT. Margara Jawa Tol	-
Shareholder	-	PT. Jasa Marga PT. Tirtobumi Adyatunggal	-	PT. Jasa Marga PT. Citra Marga Nusaphala	- PT Jasa Marga - PT Induco Matra - PT Moeladi - PT Dressa Cipta - PT Kaliurang	PT. Jasa Marga,	-
Lane	(Dupak – Waru) 2 x 3 lanes@ 3.6m width (Waru – Gempol) 2 x 2 lanes@ 3.6m width	2 x 2 lanes@ 3.6m width	carriageway 2 x 2lanes@3.5m emergency lane 1 x 2 @2.25m moto cycles lane 1 x 2 @2.75m	(1st phase) 2 x 2 lanes@ 3.5m width (2nd phase) 2 x 3 lanes@ 3.5m width	(1st phase) Urban section 2 x 2 lanes@ 3.5m width Rural section 2 x 2 lanes@ 3.5m width (2nd phase) Urban section 2 x 4 lanes@ 3.5m width Rural section 2 x 3 lanes@ 3.5m width	(1st phase) 2 x 2 lanes@ 3.5m width (2nd phase) 2 x 3 lanes@ 3.5m width	(1st phase) 2 x 2 lanes@ 3.5m width (2nd phase) 2 x 3 lanes@ 3.5m width
Tariff System	Dupak – Waru (Open) Waru-Gempol (Close)	Close	-		Close	-	-

4.2.2 Integrated Development Project Group in Surabaya Metropolitan Area

Considering sustainable development of Surabaya Metropolitan Area, it should be necessary to discuss about bilateral development between Surabaya city and Madura island from the viewpoint of future potential of Madura island. From way back, not only government of Indonesia but also other regional government is such as Java Timur Province have wanted industrial development in Madura island. Recently, the momentum for this development strategy is going to increase by construction of Suramadu Bridge. In this circumstance, both central and regional governments are planning the Integrated Development Project Group in Surabaya Metropolitan Area as shown in Fig. 4.2.2 This framework consists of the following six projects,

1. Suramadu Bridge construction project
2. Eastern Ring Road
3. Tj. Bumi Port
4. Access road to Tj. Bumi Port
5. Central Toll Road
6. Development of Suramadu Bridge Approach areas



(Source : DGH)

Figure 4.2.2 Integrated Development Project Group in Greater Metropolitan Area

As shown in the above, the Project route, Surabaya East Toll Ring Road (SERR) is also listed in the priority projects. Considering significance and urgency for the abovementioned projects, the government of Indonesia made a schedule to establish the Special Authority Body in 2007 by arrangement of the Presidential Decree related

to these projects' development. This Special Authority will be a kind of horizontal organization directly under President with participation of related line Ministries.

4.3 Stakeholders

The anticipated stakeholders for toll road construction with reference to the planning and implementation will be considered as the following organizations.

- Directorate General of Highways (DGH), Ministry of Public Works
- Badan Pengatur Jalan Tol (BPJT), Ministry of Public Works
- Provincial Government of East Java (Pemrintah Provinsi Jawa Timur)
- City Government of Surabaya (Pemerintah Kota Surabaya)

In consideration of the project route's impact for development of Surabaya Metropolitan Area and practical implementation work such as land acquisition, Provincial Government of East Java (Pemrintah Provinsi Jawa Timur) and City Government of Surabaya (Pemerintah Kota Surabaya) should be also members of stakeholders.

The stakeholders other than the above are investors of toll roads, communities in/near te ROW(Right of Way) including people who may be probably affected by the construction of the project toll road in various ways.

4.4 Review of the Past Feasibility Study

The Feasibility Study for the Project Toll Road (Surabaya East Ring Road: SERR,"Jalan Tol Bandara Juanda – Tanjung Perak) was carried out by Indonesian consultants and the Final Report was submitted in March 2006 ("Bantuan Teknis Evaluasi Penerusan Proyek Jalan Tol", PT. Perentjana Jaya, DGH own budget (APBN), March 2006). Review of the Feasibility Study was made and summarized as follows:

(1) Traffic Demand Forecast

Forecast of future traffic demand for the Project Road was carried out based on the results of traffic surveys by previous studies and applying traffic growth rates up to 2025 decided from past studies as below

Traffic Growth Rate

- 2005-2010: 4.94% per annum
- 2010-2015: 6.37% per annum
- 2015-2025: 5.65% per annum

The future OD matrices were assigned to future road network applying the so-called "capacity constrained equilibrium trip assignment model". The estimated traffic volumes are as shown below: An average growth rate of traffic is 8.0% per year for the period 2009-2025.

Table 4.4.1 Traffic Projection (2009 – 2025: Vehicles/day)

Vehicle Type Year	I Sedan, Wagon, Minibus	IIA 2-axle Truck, Bus	IIB 3-axle Truck & more axles	Total
2009	54,391	4,315	7,127	65,833
2010	63,094	4,919	7,982	75,995
2015	116,201	8,285	12,505	136,991
2020	180,415	11,729	17,539	209,683
2025	193,044	12,432	18,592	224,068
Average Growth (%)	8.2%/year	6.8%/year	6.2%/year	8.0%/year

(2) Engineering Aspects

1) Main features for Design of Feasibility Study

The study route between Juanda – Tj.Perak is a part of toll ring road in SMA with a total length 23.1km (from Sta.8+200. to Sta.31+273). This section was planned as a seamless route, which was Waru – Tj.Perak before economic crisis. That is the kinds of reason why the designation of station is continued from start point Waru.

The study route is laid on two main geographical characteristics. The southern section of study route is passing in the agricultural area represented by aquaculture in eastern coastal area. The northern section of study route is passing in the urbanized area after Suramadu Interchange. The southern section in the agricultural area is planned as At Grade with embankment average 3 meters high, and the northern section in the urbanized area is planned as elevated concrete bridges with 25 meter span.

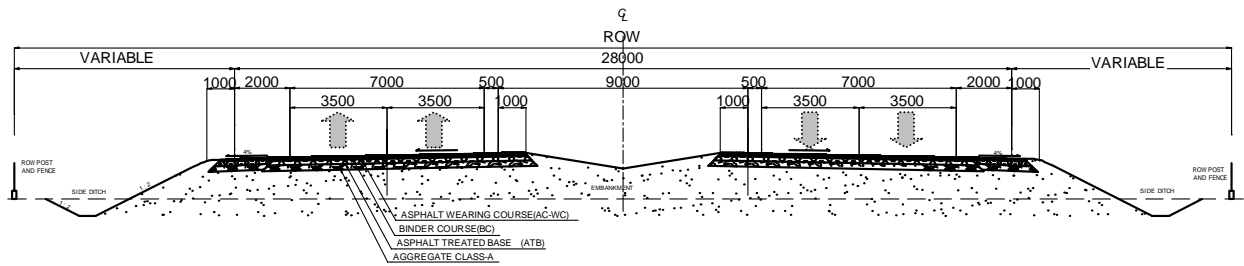
Route selection

In route selection, the simplicity of land acquisition is taken in consideration. The southern section is planned on the border between residential area and fishpond area, because most of costal area is appointed as a conservation area. In the case of northern section, the centreline after Suramadu IC is passing along canal named Pegilikan considering the prospective location for single pier for bridges.

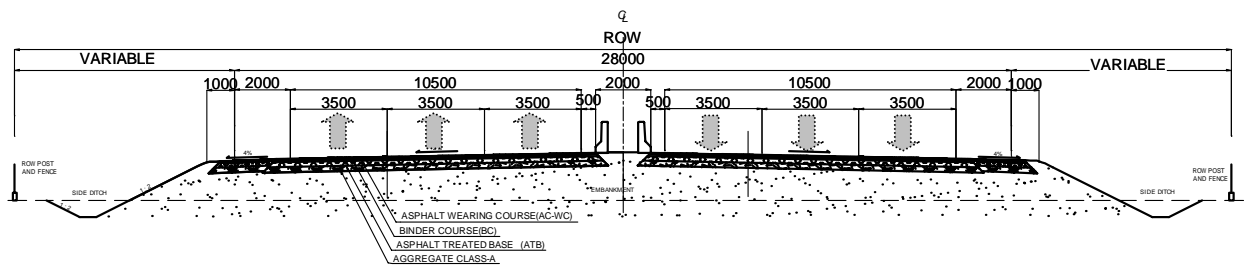
Location of Junction and Interchange

The study route also include two Junctions (connection between toll roads) and four Interchanges (connection between toll road and ordinary road). The both two junctions are planned as 3-leg junction and located at the edge of the study route to connect Waru – Juanda section and Waru(Aloha) – Wonokromo – Tj Perak section respectively. The location of Interchanges are Kedung Baruk, Laguna, Kenjeran and Suramadu. These location of Interchanges are planned considering the connection to the ordinary road which is the main access road to the city center from the eastern area.

Cross Section



(a) Typical Cross Section for Initial Stage (2way - 4lanes)



(b) Typical Cross Section for Ultimate Stage (2way – 6lanes)

Figure 4.4.1 Typical Cross Section in F/S (initial & ultimate)

In the F/S, estimate of traffic volume in every section between IC has been calculated. As the result of F/S, the maximum traffic volume is 146,517pcu/day in the section between Kenjeran IC and Suramdu Bridge IC in 2025. On the other hand, the maximum capacity of the study route is calculated as around 130,000 pcu/day on the condition of the above cross sections. Normally, considering the scale of investment, it is reasonable to suppose that some excess of traffic capacity is tolerated with decrease of service level.

2) Considerable Point for Actual Implementation

Risk for Consolidation of Soft Ground in At Grade Section

For At Grade section, although there's no detail descriptions in the F/S report, it is understood that the soft ground countermeasure using vertical drain and sand mat is adopted for F/S. In Surabaya area, there's high possibility that a soft soil such as clay of Alluvium Deposit exists with over 10 ~ 20 meters from the top surface. Accordingly, the countermeasure for soft ground will become considerable point for not only construction cost but also future risk for its stabilization. In the construction site of Waru – Juanda section, the investor choose the Piled Slab method for At Grade section to decrease future risk for consolidation of embankment although the construction cost is higher than embankment(refer to the Pic (3)). Considering participation of private sector, it should be avoided to choose the construction method which contain future risk.



Photo (3) Piled Slab for Waru – Juanda construction site

Demarcation between the Study Route and the Adjacent Toll Road by different investors

In the F/S, the structure of junction for the beginning and ending point are adopted “3-leg junction”. However, during actual construction, the demarcation between the Study route and the adjacent toll road such as Waru – Juanda section and Waru(Aloha) – Wonokromo - Tj.Perak section, should be clearly decided as a construction limit. In the F/S, the both design and quantities for the above transition section are not sufficient. For implementation, it should be needed to design the lamp way structures in more detail.

From another viewpoint, the toll collection system is also important aspect for the structure of junction. Generally, tollbooth should be located at the lamp way from the other toll road routes in the case that there’s no common rule between operators. The toll roads connected to SERR will be operated by different operators. In that case, the large number of tollbooths should be installed and it would also result in more traffic congestion. The overall toll collection system to avoid the above condition should be established. However, the consensus of existing expressway operators would be a critical issue.

(3) Project Costs

Construction Cost

In the Feasibility study, the Cost Estimate has been made based on the quantities from preliminary Design Drawings. The dominant work items for this project are “Earth works” and “Concrete Structure”, both two items reached about 85% of total construction cost. The proof check has been made in these items by checking of the recent unit price and the quantity calculation basis. It has not been found remarkable errors in these major items at a preliminary design level. Therefore, the cost estimate in this F/S is considered as reasonable for the moment. However, it should be noted that there is potential risk for cost increase against item related to soft ground (e.g. total pile length (average about 30m in F/S), countermeasures for stability of embankment on soft ground (volume of sand mat and vertical drain)).

The Summary of Cost Estimate in F/S report are as shown in the Table. 4.4.2.

Table 4.4.2 Summary of Cost Estimate in F/S

Section No.	Work Item	Total (RP.)
I	General	9,710,690,629
II	Site Clearance	4,354,625,680
III	Demolish Works	334,632,910
IV	Earth Works	449,656,373,946
V	Structure Excavation	6,925,399,756
VI	Drainase	59,873,673,820
VII	Subgrade	2,136,030,592
VIII	Subbase And Base Course	24,340,192,393
IX	Asphalt Pavement	187,125,275,733
X	Concrete Structure	1,814,319,496,649
XI	Steel Structure	0
XII	Other Works	54,762,348,686
XIII	Lighting Works	17,152,400,972
XIV	Toll Plaza	17,640,535,873
XV	Relocation of Existing Utilities	1,185,000,000
XVI	Toll Facilites And Tool Gate Office	18,228,070,744
(A)	SUB TOTAL	2,667,744,748,383
(B)	VAT 10%	266,774,474,838
(C)	GRAND TOTAL	2,934,519,223,221

Total Project Cost

The total project cost are summarized as shown in the Table 4.4.3 with adding the cost of the other items. This estimated total cost has been utilized in economic analysis in F/S.

Table 4.4.3 Total Project Cost

Item	Cost (Mill.Rp)
Land Acqusition Cost	728,628
Construction Cost	2,665,062
Operation Cost	25,277
Toll Collection Equipment	6,775
Design & Supervision Fee	35,040
Contingencies	134,517
Escalation	420,384
VAT and other related cost	411,806
Interest	601,332
Total Project Cost	5,028,821

(4) Environmental Consideration

In parallel to the F/S, the Environmental Impact Assessment (AMDAL) study has been carried out by another national consultant using the budget of BPJT. The AMDAL committee Surabaya was established with participating from Provincial

BAPPEDALDA, Kabupaten Sidoarjo and Kota Surabaya.

In the southern section in the agricultural area, it has been taken consideration that soft ground, damaged irrigation, inundation by flood and violation of mangroves as natural environmental consideration. For social environmental consideration, no large resettlement with household is not envisaged.

In the northern section in the urbanized area, the main consideration for environmental aspect is land acquisition and resettlement. Less than 40 house holds' resettlement is envisaged in the section between Sta.26km and the end of project(Sta.28+300). The public consultation to the affected citizens has been already held and, as the hearing from the consultant, there are not any strong deprecation from them at present.

(5) Economic/ Financial Evaluation

1) Economic Evaluation

Although no detailed explanations were given about the economic evaluation in the F/S Report, the results are shown as below:

-Economic Internal Rate of Return (EIRR)	: 25.8%
-Net Present Value (NPV)	: 2,973 Rp. Billion
-Benefit/ Cost Ratio (B/C)	: 2.26
(Discount Rate)	: (12.75%)

Above results indicate that the Project is economically feasible with a 25.8% of high EIRR.

2) Financial Evaluation

Financial analysis was also carried out in the feasibility study assuming the BOT bases and establishing the following conditions:

- Implementation Scheme	: BOT bases, no government fund support
- Fund Arrangement	
Equity (30%)	: 1,509 Rp. Billion
Loan (70%)	: 3,521 Rp. Billion
- Loan Conditions	
Grace Period	: 2 years
Repayment Period	: 15 years (2011-2025)
Interest Rate	: 13-16 % per year

The results of financial analysis are shown as below:

- Break Even Year	: 2018 (9 years after opening)
- Debt Service Coverage Ratio (DSCR)	: 0.92
- Financial Rate of Return (FIRR)	: 13.4%
- Net Present Value (NPV)	: 131.5 Rp. Billion
- IRR on Equity (ROE)	: 15.7%
Discount Rate	: 13.23%

A 13.4% of FIRR and 15.7% of ROE are not enough to attract investors to this Project. Therefore, further analysis is necessary for alternative implementation schemes such

as PPP bases and other fund arrangements including the support from the Government.

However, problems of the F/S report are that no detailed information was presented in the above feasibility study about the economic evaluation such as kinds of benefits estimated, unit values of economic benefit, methodology for benefit estimation, preconditions applied and cash flow tables of costs and benefits. Therefore, it is impossible, at this moment, to trace the process of evaluation based on the original data. In addition, sensitivity tests were not carried out for the financial evaluation by changing the ratio of equity in the total investment cost and for the case of the government subsidies were provided in order to improve the financial conditions of the private sector.

CHAPTER 5 PROPOSED IMPLEMENTATION SCHEME FOR THE PROJECT TOLL ROAD

5.1 Business Model and Financing

5.1.1 PPP Scheme in Indonesian Road Sector

(1) Previous PPP Forms in Contracts

In the Toll Road construction in Indonesia, as mentioned in the previous chapter, three infrastructure project models has been practically applied to toll road projects; i) Pure Public Model, which is applied to projects financially not viable at all, ii) BOT Model, which is for ones financially viable with high probability, and iii) Joint-Venture Model, which is for ones between i) and ii). This Joint-Venture Model has been broadly, in Indonesia, known as the formation of the consortium between the private company and PT. Jasa Marga before. The actual business model for this Joint – Venture scheme can be defined as “a modified BOT”.

As often seen in the developing countries, it is understood such that the private participation into the road projects is only with a BOT model.

(2) Strengthening of SPC in BOT Model

The Public-Private Joint-venture Scheme often applied can be referred to as one of the PPP measures to strengthen an SPC (Special Purpose Company) in the BOT Model. As the public asset (tangible or intangible) is expected to be brought into SPC, this joint-venture scheme may be a strong driving force behind the private financing for the road development. However, it would not dramatically improve the project’s cash flow in many cases. Therefore its workability may be limited to the case such that the original financial viability reaches some level, say FIRR over 12% or the like. In other words, if a project does not have enough financial viability, application of this model would not be a perfect solution.

(3) Decrease of Private Sector’s Responsibility in Construction

The other PPP measures discussed/planned in Indonesia is the Physical Hybrid in the BOT Model. It is physical and financial collaboration work by the Public Sector and Private Sector often during construction.

Typical Hybrid models are shown in Figure 5.1.1. Application of (a) the vertical separation mainly aims at reduction of the initial investment by the Private Sector and may be effective, when the investor’s return estimated is not attractive enough. The other option, (b) the sectional separation, is often applied when construction risk of some sections is evaluated too high for the Private Sector or is beyond the contractor’s capability.

The Physical Hybrid can be good enough, if it is nicely programmed, to decrease the Private Sector’s burdens of construction difficulty and initial investment as well. However, one may see some demerits in synchronization of the development speed by the two Sectors and financial plus institutional burdens loaded to the Public Sector. As

the procedures necessary for the project development are different each other in the Public and Private Sectors, synchronization of the two different progresses may easily be mismatched. As the Public Sector is responsible for some part of the project implementation in this model, capability of the same sector is essential as much as in the Pure Public Model for financing, engineering and/or project management.

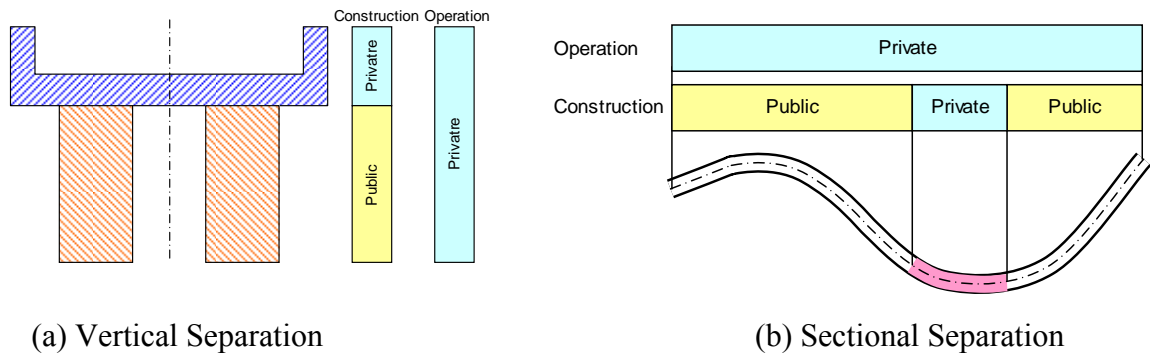


Figure 5.1.1 Image of Hybrid PPP

(4) Public Sector's Support Required

There must be a number of possible features of the Public Sector's support towards the Private Sector. Examples are i) business concession issued from the Central Government and ii) subsidy input to the project by using the Central Government Budget. The two examples are totally different. The former example is the *Public Sector's Facilitation* that are always necessary for successful private sector involvement regardless of the project's financial viability, while the latter is the *Public Sector's Subsidy* that is supplemental Government Support to the project only for the case such that enough return cannot be expected by the Private Sector.

The *Public Sector's Facilitation* needs to support in the following risks that could be beyond the Private Sector's capacity:

- | | |
|---------------------------------|--|
| • Legislation Risk | The Private Sector cannot take the legislation risks. |
| • Political Risk | The Private Sector cannot take the political risks. |
| • License Risk | The Private Sector cannot take the license/concession related risks. |
| • Taxation change Risk | The Private Sector cannot take the taxation change risks. |
| • No Government Support Risk | The Private Sector cannot implement the project without Governmental Support. |
| • Project Affected People Risk | The Private Sector cannot take the risks of which mitigation plans are built by the Public Sector. |
| • Environmental Impact Risk | The Private Sector cannot take the risks of which mitigation plans are built by the Public Sector. |
| • Stakeholder Disagreement Risk | The Private Sector cannot take the risks of which mitigation plans are built by the Public Sector. |

- Land Acquisition Risk The Private Sector cannot fully take the risks of land acquisition.
- Accessibility Risk The Private Sector cannot take the risks related to right-of-way and accessibility.
- Competitor Infrastructure Risk The Private Sector cannot take the risks that may substantially changes business environment.
- Demand Forecast Risk Depending on the conditions set, the Public and Private Sectors should have demarcation of risk taking.
- Unreasonable Toll Risk The Private Sector should be protected and free from unreasonable toll setting.
- Force Majeure Risk The Private Sector cannot fully take the risks of Acts by God.

If the project is financially not viable, the *Public Sector's Subsidy* may additionally be put into the project in a manner like:

- Up-front Subsidy To ease the initial investment, the up-front subsidy might need to be put in.
- Output-Based Aid To complement the sales income, public compensation might be paid to the Private Sector, only when the public services are nicely provided by the Private Sector.

However, there are no many precedents for the successful Public Sector's Subsidy by using the multi or bilateral soft loans. The greatest attention shall be paid, if these supports are planned.

5.2 Optimal PPP Scheme for SERR

In the previous sub-chapter, we have learnt that the Indonesian PPPs in road sector substantially focuses only two alternatives; the BOT or the Pure Public. However, it is of paramount importance to discuss all possible options for PPP achievement.

Introducing the risk allocation concept between the Public and Private Sectors, one can compare six business schemes as tabulated in Table 5.2.1. The same table suggests that we would have different options that have not been focused ever in the Indonesian road sector.

Table 5.2.1 Risk Allocation to Public and Private Sectors in Major PPP Contracts

Business Models	Financing Risk	Asset Ownership	Market risk	Construction Risk*	Operation Risk**
1. Pure Public	Public	Public	Public	Public	Public
2. O&M Contract	Public	Public	Public	Public	Private
3. DBO	Public	Public	Public	Private	Private
4. DBL	Public	Public	Private	Private	Private
5. Reverse BOO	Public	Private	Private	Private	Private
6. BOT	Private	Private	Private	Private	Private

* Including design risk and delayed completion risk

** Including performance risk and working capital risk

Pure Public is not a PPP and shown for a comparison purpose.

DBO: Design- Build-Operate

DBL: Design- Build- Lease

Reverse BOO = BBO: Build-Buy-Operate

BOT: Build-Operate-Transfer

Table 5.2.2 Basic Features of DBO, DBL, Reverse BOO, and BOT

<p>DBO: A single contract is awarded to a private company for the design, construction, and operation of a capital improvement. Title to the facility remains with the public sector.</p> <p>A simple design-build approach creates a single point of responsibility for design and construction and can speed project completion by facilitating the overlap of the design and construction phases of the project.</p> <p>The operations phase is normally handled by the public sector under a separate operations and/or maintenance agreement.</p> <p>Combining all three passes into a DBO approach maintains the continuity of private sector involvement and can facilitate private-sector financing of public projects supported by user fees generated during the operations phase.</p>	<p>DBL: In a DBL, a private company designs, constructs and manages operation and maintenance. The public sector provides financing for its design and construction. Title to the facility remains with the public sector.</p> <p>After construction is complete the private company connects customers to the network and, for the remainder of the contract period, collects the tariff.</p> <p>Part of the tariff will be paid as a lease fee to the public sector to repay the loan for asset construction, and the remainder will be retained by the private company to cover their operational costs and profit.</p> <p>If the lease fee covers debt service of the public sector, then full-cost recovery is possible.</p>
<p>Reverse BOO: Also referred to as BBO or Build-Buy-Operate.</p> <p>Reverse BOO approach calls for initial public sector financing, followed by private enterprise construction and operation, leading to ultimate full private enterprise acquisition of the facilities through periodical payments.</p> <p>In comparison with conventional BOO projects, reverse BOO approach has the advantages of lower risk, smaller construction and insurance costs, lower product price and more efficient operations.</p> <p>However, this scheme is rather new and one would not see enough corroborative evidences.</p>	<p>BOT: Under BOT contracts, public authorities grant to a private contractor a long-term concession contract, during which the government has a regulatory and monitoring role, to finance, build and operate works.</p> <p>After the concession period, the project facilities are transferred back to the government normally at no cost.</p> <p>BOT is sometime called as BOOT (build, own, operate, transfer) or BOMT (build, operate, maintain, transfer).</p> <p>If BOT contracts do not have the transfer feature, it can be referred to as BOO or a perpetual franchise.</p>

To discuss and choose the best PPP model out of the six options compared in Table 5.2.1, the following assumptions are made for the SERR based on the F/S:

- 25 years of the commercial operation,
- 1,000 Rp/km for Class I, 1,500 Rp/km for Class IIA, and 2,000 Rp/km for Class IIB tariff in the commissioning year,
- 75,630 vehicle-km/day, 59,999 vehicle-km/day, and 99,102 vehicle-km/day demand in the commissioning year,
- 5% p.a. of income increase due to tariff increase and traffic increase, and
- 15% of FIRR (financial internal rate of return) as the desired value for the private finance initiative.

A preliminary financial analysis with the above assumptions demands that the project implementation cost be around US\$ 100 million or less, if the project is developed with enormous private investment. Because the F/S estimates much higher implementation costs, it is of paramount risk to apply a simple private business model

like BOT that requests the Private Sector to take full financial risk. Because of the very same reason, the Public-Private Joint-venture Scheme, which is substantially same as the BOT, seems risky for the East Ring Road.

As too much responsibility and obligation is attributable to the Public Sector, the Pure Public and O&M Contract models are neither top priority options. The Reverse BOO model, which does not have so far enough corroborative evidences, cannot be highly recommended either. Therefore, the likely PPP model that can be applied for the project is DBL (Design-Build-Lease) or DBO (Design-Build-Operate). Monetary and services flows of these two models are illustrated in Figure 5.2.1.

Because of enough corroborative evidences worldwide against the project which financial viability can not be expected, the DBL and DBO options can surely and nicely demarcate each Sector's obligations, risks and benefits. Despite full financing responsibility by the Public Sector, it can be understood as a modified means of the Public Service Obligation (PSO) of the country. Additionally, it may be possible for the above schemes (DBL and DBO) to apply the Japanese ODA such as JBIC soft loan without any reforming of concept for framework of financial system.

In DBL and DBO, contractual relationship between the Public and Private Sectors is very similar. The both Sectors' roles to play are exactly identical in DBL and DBO if the project stage is before the commercial operations; the Public Sector as an employer and the Private Sector as a construction contractor. The largest difference between DBL and DBO is who takes the market risk during the operations. If the risk is mainly taken by the Private Sector, it is often the case of DBL. If it is taken 100% by the Public Sector, it may become DBO. The basic features of DBL and DBO are compared in Table 5.2.1.

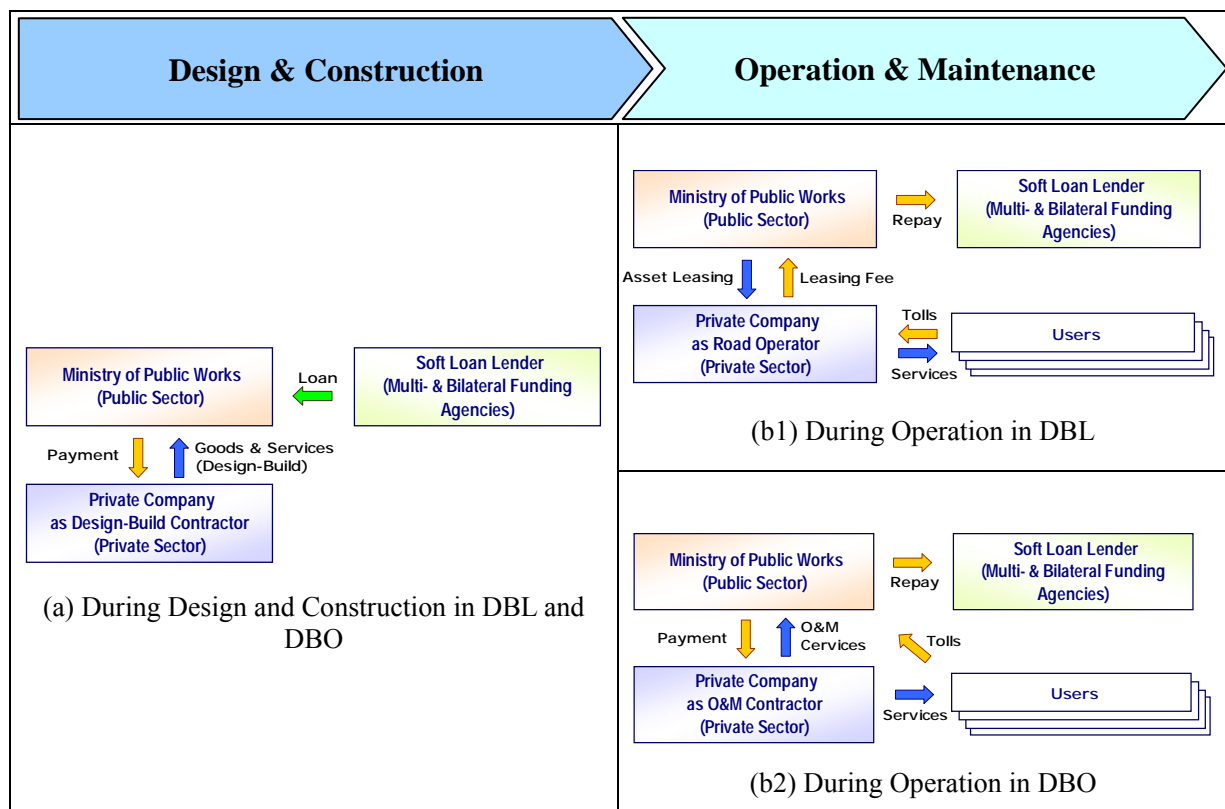


Figure 5.2.1 Flows of Investment, Payments and Services

Table 5.2.3 Job Descriptions of Public and Private Sectors in DBL and DBO

Stage	Public Sector		Private Sector	
Planning Stage	Regardless of a PPP model applied, the Public Sector has duty and obligation to execute and complete the project planning.		There is no specific task of the Private Sector in this stage.	
Tender Stage	The Public Sector should be responsible for fair and transparent tender for both of construction and operations. If the PPP model and its particulars specified in the tender are not attractive enough by the Private Sector, the tender may be unsuccessful. Such risk should be borne by the Public Sector.		The Private Sector, if he is interested, should form a good joint venture/consortium to execute and complete both of construction and operations. The tender rejection risk must be taken by the Private Sector.	
Land Acquisition	In any PPP models, the land acquisition may be a serious issue in the project. It is recommended that the Public Sector be responsible for the issue not only in management but in cost.		The Private Sector should be supportive to the Public Sector by carefully reviewing the project plan, so that the land to be acquired can be necessary and sufficient space for the project.	
Design and Construction Stage	As the Project Owner and Employer, the Public Sector should supervise/ manage the Design-Build works by the Private Sector. Professional consultants are expected to support the Public Sector's jobs.		The Private Sector should work as a Design-Build contractor.	
Operation Stage	DBL	DBO	DBL	DBO
	The Public Sector is not directly responsible for the operation and management activities. Instead, management related to the leasing contract is demanded. Resources required are much less than that in DBO. Repayment of the Public Sector's soft loan will be made by i) the leasing fees and ii) the National Budget as the Public Service Obligation.	The Public Sector is still responsible for the operation and maintenance. Capability and resources, much greater than DBL, are demanded for supervising the Private Sector. Repayment of the Public Sector's soft loan will be made by i) the toll income and ii) the National Budget as the Public Service Obligation.	The Private Sector takes all of risks related to the operation and maintenance. O&M related private investment is also possible. As tolls directly relate the income, the right of toll change should be entitled to the Private Sector.	The Private Sector takes limited risks. The O&M Contract is not directly related to the tolls.

5.3 Recommendations

- Detailed features of the DBL and DBO models be discussed and assessed for the optimal role demarcation between the Public and Private Sectors,
- Additional business concessions, like gas stations, service molls, etc., that may improve the project cash flow be discussed and assessed,
- Application of the Hybrid Model in addition to the DBL and DBO Models be discussed, and
- The time scheduling be discussed and assessed based on the proposed PPP model.

Table 5.3.1 Proposed Risk Allocation Between Public Sector and Private Sector

Stage	Types of Risks		Descriptions	Public Sector	Private Sector
Common	Political Risk	Legislation Risk	Nature of PPP related laws	X	
		Political Risk	Government changes	X	
		License Risk	Procedures change	X	
		Taxation Risk	Taxation changes	X	
		Governmental Support Risk	No Government support	X	
	Social Risk	Project Affected People Risk	Negative campaign	X	
		Environmental Risk	Negative environmental impacts	X	
	Partner Risk		Lack of capability		X
	Force Majeure		Force majeure	X	X
Planning & Tender Stage	Planning Risk	Investigation Risk	Faulty planning	X	
		Plan-Change Risk	Disagreement by society	X	
		Demand Forecast Risk	Poor estimation	X	
	Bidding Risk		Bid rejection		X
Design & Construction Stage	Financial Risk	Price Escalation Risk	Inflation / deflation		X
		Interest Risk	Increase of financing costs	X	
		Currency Exchange Risk	Exchange rates		X
		Financing Risk	National budgets	X	
	Design Risk		Faulty design		X
	Construction Risk	Land Acquisition Risk	Acquisition failure/delay	X	
		Accessibility Risk	Ill accessibility to the site	X	
		Construction Delay Risk	Delay of completion		X
		Cost Overrun Risk	Increase of construction cost		X
		Performance Risk	Incompliant to specification		X
		Facility Damage Risk	Accidents		X
Operation Stage	Financial Risk	Price Escalation Risk	Inflation / deflation		X
		Interest Risk	Increase of financing costs		X
		Currency Exchange Risk	Exchange rates		X
		Financing Risk	Private financing		X
	Competitor Risk		Alternative infrastructures	X	
	Market Risk	Traffic volumes	Less traffic volumes		X
		Tolls	Reasonable tolls		X
	Operation Risk	Operation Cost Risk	Increase of operational costs		X
		Facility Damage Risk	Accidents		X
	Default Risk		Contract breach	X	X
			SPC's failure		X

- Notes:
1. The DBL (Design-Build-Lease) model is assumed for the entire road section.
 2. SPC is assumed to act as the toll road operator.
 3. The Sector with "X" is proposed to take the associated risk. When both Sectors are supposed take a risk, the responsibility demarcation should be clearly specified in the contract.

CHAPTER 6 CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

- (1) Based on the analyses on the existing conditions in Surabaya Metropolitan Area (SMA) and planned various development projects (such as Tanjung Perak Port Development, Juanda International Airport Development, SIER and PIER Industrial Estates, and Integrated Development Project Group related to the Suramadu Bridge Construction Project, for example), it is clearly confirmed that the Project Toll Road i.e. Surabaya East Ring Road (SERR) is essential from the aspects of improvement of urban traffic and enhancement of urban land use.

As SERR has functions as bypass and distributor for the traffic in urban area, it will reduce traffic congestion in the central area. SERR has also a function to induce/ enhance land use in the eastern areas of the City so as to meet the policy of decentralization raised in the Spatial Plan of Surabaya City.

- (2) According to the results of the feasibility study, economic evaluation of the Project showed a 25.8% of Economic Internal Rate of Return (EIRR). This high EIRR indicates that the Project is economically feasible and justified from the view point of national economy.
- (3) On the other hand, financial viability of SERR showed a marginal value of rate of return with a 13.4% of FIRR and a 15.7% of ROE, not enough rates to attract private investors.
- (4) The difficulty of Land Acquisition for the SERR is lower than the Waru (Aloha) – Wonokromo – Tj. Perak (Central Toll Road). Considering the risk of delay of implementation of Central Toll Road, short term implementation of SERR is needed in response to urgent needs for effective Urban Transportation system.
- (5) Considering the result of the feasibility study, the optimum implementation scheme for SERR will be a PPP based one, not a 100% of private investment but the combination of public-private partnership with the support from the Government.

6.2 Recommendations

- (1) It is recommendable to implement SERR as early as possible from the aspects of its significant impacts on improvement of traffic condition, and betterment of urban environment.
- (2) Although SERR generates huge economic benefit, its financial viability will be a marginal level (near the border line of financially viable) and not enough to attract challengeable private investors. According to the new road law and the regulation (Law No.38/2004 and Regulation No.15/2005), the implementation scheme of toll roads are classified into the following three (3) categories:
 - 1) If the toll road links are economically feasible, but not financially viable, that can be financed by the Government (100% public investment).

2) If the toll road links are both economically feasible and financially viable, that is financed by the investment of private sector (100% of private investment).

3) If the toll road links are economically feasible but near the border line of financially viable, that will be financed by the mixed funds of the Government and private investor(s). This is the case of the PPP (Public-Private Partnership).

Therefore, it will be necessary to re-formulate a implementation scheme, not like the BOT bases assumed in the feasibility study but on the bases of PPP scheme.

(3) It is recommended to carry out a further (supplement) study in order to cover the following items:

1) To investigate the effects of the stage construction (starting from $2 \times 2 = 4$ lanes and expanded to $2 \times 3 = 6$ lanes at the optimum timing) on traffic demand and results of the financial viability.

2) To carry out an additional financial analysis for the case of PPP scheme.^(*)

3) It is also necessary to investigate the financial viability for the case of application of the soft loan (lower interest rate and longer repayment period) that may be provided by foreign assistance to the Government.

4) To recheck the social impacts particularly the size of resettlements.

5) To analyse the optimum toll rate in accordance with the decision rules (users benefits such as savings of vehicle operating cost, users willingness to pay and investment cost recovery).

6) To formulate the overall toll collection system to avoid complex junction structures and to keep smooth transfer to the other adjacent toll road

7) To present the operation and maintenance Plan.

Recommended Study

As mentioned in the previous chapters, there are some remained issues both Technical and Economic aspect. For realization of the Surabaya Toll Ring Road project, supplementary study should be conducted with all the factors explained above. The outline of the required feasibility study is summarized below:

<i>Project Title:</i> Feasibility Study for the Surabaya Toll Ring Road Construction Project	
<i>Sector:</i> Urban Transportation	<i>Implementation Body:</i> Partnership between the Government of Indonesia and Private Sector Investors

^(*) During the stay of the ECFA mission in Indonesia, it was reported that the DGH requested to BAPPENAS for assistance from World Bank to speed up the implementation of SERR. However, detailed information on the concrete contents of the assistance was not obtained at this moment.

<p><i>Objectives of F/S:</i></p> <ul style="list-style-type: none"> - to clarify remaining issues in previous feasibility study to meet the information requirement by PPP scheme. - to analyze suitable PPP scheme and to confirm and analyze of setting up of institutional arrangement for subsequent foreign loan in consideration of PPP scheme 																							
<p><i>Scope of Work for F/S:</i></p> <ol style="list-style-type: none"> 1) Conduct a review of traffic demand forecast of the project route by identifying the relation between toll rate and anticipated traffic volume using the result of the above mentioned supplementary survey and traffic analysis 2) Workout the economic and financial evaluation. 3) Review and reinforce the engineering design as preliminary level for the Design-Built tender 4) Workout cost estimate in consideration of construction risk using updated unit rate 5) Analyze applicability of optimal PPP scheme including legal and institutional arrangement and fund arrangement 6) Check and confirm the existing Environmental Study 																							
<p><i>Input:</i></p> <table> <tr> <th>Experts</th><th>M/M</th></tr> <tr> <td>1) Team Leader/Road Planning</td><td>1.5</td></tr> <tr> <td>2) PPP specialist</td><td>2.0</td></tr> <tr> <td>3) Financial & Economic Analysis</td><td>1.5</td></tr> <tr> <td>4) Transport Planning</td><td>2.0</td></tr> <tr> <td>5) Bridge Planning</td><td>2.5</td></tr> <tr> <td>6) Highway Engineer</td><td>2.5</td></tr> <tr> <td>7) Bidding Process advisor for Tender Documents (DB base)</td><td>1.5</td></tr> <tr> <td>8) Construction Planning / Cost Estimate</td><td>1.5</td></tr> <tr> <td>9) Environmental Consideration</td><td>2.0</td></tr> <tr> <td>Total</td><td>17.0</td></tr> </table>		Experts	M/M	1) Team Leader/Road Planning	1.5	2) PPP specialist	2.0	3) Financial & Economic Analysis	1.5	4) Transport Planning	2.0	5) Bridge Planning	2.5	6) Highway Engineer	2.5	7) Bidding Process advisor for Tender Documents (DB base)	1.5	8) Construction Planning / Cost Estimate	1.5	9) Environmental Consideration	2.0	Total	17.0
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<p><i>Estimated Cost:</i></p> <p>USD 400,000-</p>	<p><i>Expected Financial Source for F/S:</i></p> <p>Subsidizing project for preparation F/S for infrastructure development projects by the public-private partnership scheme in the developing countries, Ministry of Economy, Trade and Industry, Japan.</p>																						

スラバヤ環状有料道路建設計画

和文要約

和文要約

(1) 調査の目的と背景

1) 調査の背景

スラバヤ市は東ジャワ州の州都であり、首都ジャカルタに次ぐ第2の都市で、250万人以上の人口を擁する。また、スラバヤ都市圏 (Greater Surabaya Metropolitan Area: GSMA) は東ジャワ州のみならず、カリマンタン、スラウェシ、ヌサテンガラ諸島に跨るより広域圏の政治経済活動の中心でもある。

国際ハブ港であるタンジュンペラク港はスラバヤ大都市圏へのゲートウェイであり、インドネシア全国に25ある重点港湾 (Strategic Port) のひとつとなっている。コンテナ貨物の取扱量は年間100万トン (TEU) 以上、バルクの取扱量は年間600万トン以上に達している。しかしながら、港湾施設の老朽化と急増する貨物需要に対して容量が十分でないことが課題となっており、現在、我が国の(独)国際協力機構 (JICA) の協力によるスラバヤ大都市圏港湾整備に係るマスタープラン策定調査が進行中である。東ジャワ州は天然資源と農産物に恵まれているため、インドネシア国のみならず日本、台湾、韓国等のASEAN諸国から多くの製造業・加工業などの企業がGSMAに立地している。インドネシア最大の工業団地であるSIER (Surabaya Industrial Estate Rungkut)が市の南部に位置し、またジュアング国際空港もまた市の南部にある。

一方、スラバヤの都市交通に目を向けると、慢性的に激しい混雑に悩まされており、タンジュンペラク港や工業団地、ジュアング空港関連の旅客・貨物の円滑な輸送が妨げられている。この問題に対処するため有料道路網の建設が進められており、現在、南北の幹線有料道路 (スラバヤ～グンボル有料道路およびスラバヤ～グレスイク有料道路)が市の西環状道路の一部として供用されている。しかしながら、環状道路の東区間 (Surabaya East Ring Road: SERR)、すなわち、ジュアング空港～タンジュンペラク港の区間が未整備であり、現在、民間投資家のための入札準備の段階である。

スラバヤ都市圏の交通状況を改善するため、GSMAにおける有料環状道路全体の実現、従ってスラバヤ東環状道路 SERR の早期建設が望まれている。

2) 調査の目的

本調査の目的は下記の3項目に要約される。

- (i) スラバヤ東環状道路 SERR の役割・機能を都市交通の観点及びスラバヤ市の空間計画 Spatial Plan の側面から明確にすると共にその妥当性を確認する。
- (ii) スラバヤ東環状道路 SERR の建設・維持管理運営を官民協調事業形式 (Public-Private Partnership: PPP)で実施するための最適なスキームを提言する。

- (iii) SERR の建設を上記 PPP スキームと日本の政府開発援助とを組み合わせた事業方式により実施することを促進する。

(2) スラバヤ都市圏の現況

スラバヤ大都市圏 GSMA の人口は約 820 万人 (2000 年センサス)であり東ジャワ州全体人口の 23.5%に相当する。平均経済成長率は東ジャワ州が 5.1% (2001 年～2005 年)、スラバヤ市が 5.7% (2003 年～2004 年)であり、インドネシア全体の成長率 4.9% (2001 年～2005 年)より若干高い。スラバヤ市内の道路網に関しては、放射・環状道路網体系が現在明確になっておらず、且、経済商業活動が市の中心部に集中し、モーターレーゼーションの進行とともに都市地域が市の外周部へと拡大している。このような状況を反映して都市部におけるピーク時は深刻な混雑に悩まされている。スラバヤ市は 2015 年を目標年次とした空間計画 Spatial Plan を策定しており、その中で環状有料道路とグリッドタイプ (格子状)の一般幹線道路の組み合わせによる道路網体系が戦略的に提案されている。それによって、商業活動を市の中心部一極から東、西、南、北の各方向へ分散するとしている。スラバヤ東環状道路 SERR も市の空間計画の中で位置付けられており、環状有料道路の東側区間を構成し、ジュアンダ空港とタンジュンペラク港とを連絡する。

タンジュンペラク港及びジュアンダ空港の拡張計画や、工業団地開発等の重点開発プロジェクトは GSMA 及び東ジャワ州の持続的経済発展を実現し牽引していくために必須である。さらにスラマドゥ橋建設計画を核とした一体的開発プロジェクト群 “Integrated Development Project Group”もまた高い優先順位が与えられており、SERR はこれらプロジェクト群の一要素ともなっている。

(3) スラバヤ東環状道路の役割と機能

SERR の役割と機能は下記の 5 項目に要約される。

- (i) 新規土地利用の誘導
- (ii) 都市環境の改善
- (iii) バイパス道路としての機能
- (iv) 交通の分散機能
- (v) 重点的開発プロジェクト (港湾、空港、マドウラ島開発とスラマドゥ橋、工業団地)を支援する機能

都市開発の面では、SERR はルート沿道に都市施設の新規立地を誘導し、その結果、市の東部地域において新しい都市活動の展開が期待される。環状道路は一種のバイパス道路の連続体と考えられ、通過交通の処理とその結果都心部における交通量を著しく減少させることが可能となる。さらに環状道路により、ある混雑した放射道路の交通を他の混雑していない放射道路へシフトさせる分散導入効果の機能も有する。また、SERR は GSMA における重点開発プロジェクトの実現を支援するとともに、プロジェクト実施後も円滑かつ信頼性の高いアクセスの提供によって個別プロジェクトの効果を高める機能がある。

(4) 対象有料道路の現況

近年、新道路法(2004 年 38 号)の改正、有料道路管理庁 (BPJT) の設立など、有料道路建設に関する制度改革が行われている。さらにインドネシア政府はインフラ整備に対する民間セクターからの参画を広く求め、促進する目的で 2005 年にインフラサミットを開催している。このような状況下、公共事業省は 19 路線の有料道路に対する出資者選定の入札を行ったが、その投資リスクの大きさから全ての路線において出資者決定には至らなかった。

SERR は BPJT が定める全 51 路線の中の 1 路線として計画され、かつスラマドゥ橋・マドゥーラ島を中心とした一体的整備計画の 1 つとしても位置づけられている。現在同区間の出資者は決定されておらず、道路総局および BPJT 共に民間出資者だけでなく官民パートナーシップ手法も視野に入れた外国借款による支援も模索中である^(*)。同区間はフィージビリティ調査 (“Bantuan Teknis Evaluasi Penerusan Proyek Jalan Tol”, PT. Perentjana Jaya, 道路総局予算 (APBN)) が 2006 年に実施され、それと並行して環境影響調査もこの 2007 年には終了する予定である。フィージビリティ調査の概要を以下に示す。

- 事業費	50,290 (億ルピア)
- 経済内部収益率(EIRR)	:25.8%
- 純現在価値 (NPV)	:29,730 (億ルピア)
- 費用便益比率 (B/C)	:2.26
(割引率)	:(12.75%)
- 想定実施スキーム	:BOT, 政府保証無し
- 事業資金内訳	
自己資本(30%)	:15,090 (億ルピア)
借入金 (70%)	:35,210 (億ルピア)
- 借入条件	
据置期間	:2 years
返済期間	:15 years (2011-2025)
金利	:13-16 % per year
- 損益分岐年	: 2018 (供用開始後 9 年)
- デット・サービス・カバーレージ・レシオ (DSCR)	: 0.92
- 財務的内部収益率 (FIRR)	:13.4%
- 純現在価値 (NPV)	:1,315 (億ルピア)
- 自己資本収益率 (ROE)	:15.7%
割引率	:13.23%

しかしながら、上記フィージビリティ調査の最終報告書には経済評価の具体的内容 (計測された便益項目と便益額、便益単価、計測方法、前提条件、経済費用、便益・費用のキャッシュフロー、等) について全く記述されていないため、現段階では元データに遡って内容の精査が出来ないという問題点がある。また、財務評価に関しては、出資金比率の変化、政府の補助金の有無、等の条件変化に対応する感度分析が実施されておらず、従って民間投資者の財務状況をより

^(*) ECFA 調査団による現地調査において、道路総局が BAPPENAS に対して SERR の実施促進の為に、世銀からの支援を要請することを提案している。しかし、具体的な要請内容は現時点得られていない。

改善する提案もなされていない、という課題が残されている。

(5) 対象有料道路の最適実施スキーム

インドネシア道路セクターで実績のある PPP 形態は、BOT (純粋民間運営による形態および官民ジョイント型運営による形態の 2 種存在する) に限られる。事業者入札で応札者が出ないケースが見受けられる等、同国 PPP の切り札とはなっていない。民間企業に過度な負担を求めたことが要因のひとつとして挙げられるだろう。同セクターでは、BOT による事業実施が難しいと判断された場合、民間活用を断念し純粋な公共事業に回帰することも考えているが、BOT と純粋公共事業のみが事業実施の選択肢ではない。

表 - 5.2.1. に示すとおり、BOT と純粋公共事業の間に位置する PPP 形態は複数存在し、BOT による事業実施が難しいと判断された場合、一挙に純粋公共事業に戻るのではなく、BOT 以外の PPP 形態の適用が考慮される。SERR における本調査の概略財務検討によれば、BOT 実施を念頭に置いた場合、事業費は 1 億ドル程度を下回る必要があるのに対し、実際にはその事業費は大きくそれを上回る。よって、大きな財務収支が期待出来ない案件において実績があり、かつある程度の民間関与が期待できる DBL (Design-Build-Lease) および DBO (Design-Build-Operate) を、SERR の実施スキームとして適用するのが良い。

(6) 結論と提言

1) 結論

- SERR は、様々な開発プロジェクトに位置づけられ、都市交通の改善と都市内の土地利用状況の向上に不可欠な案件であることが確認された。
- フィージビリティ調査において、経済的内部収益率(EIRR)は 25.8% と計算されており、経済的にフィジブルである。
- しかしながら、財務的内部収益率(FIRR)は 13.4%、自己資本収益率(ROE)は 15.7% を示し、民間セクター誘致にとって十分な収益率ではない。
- SERR は高い経済便益が期待できるが財務的に厳しい為、SERR の最適実施スキームは、BOT 等の過大な民間セクターに対する負担による実施ではなく、官民パートナーシップを基本とすべきである。

2) 提言

- SERR はその重要性から判断して早期実施を考慮する必要がある。
- 官民パートナーシップにて実施するために、補完調査を行うことを提言する。

3) 提案する調査

官民パートナーシップにて、本案件を実施するために以下の調査を提案する

調査名: スラバヤ環状有料道路建設計画可能性調査
目的: ・PPPスキームに求められる条件を満たすため、既存F/S調査の補足調査を行う ・最適なPPPスキームを選定した上で、政府借款の活用を前提とした案件実施に向けての法体制・組織体制の確認・分析
主な業務内容: <ul style="list-style-type: none">- 追加調査データからの交通需要のレビューおよび経済・財務分析- 他路線との円滑交通化はかる料金収受システムの提案- 補足設計および概算工事費積算- 最適PPPスキームの分析、法体制・組織体制の確認・分析- 補足環境影響調査等
費用: 約5,000万円
予想される資金源: 運営段階から、政府機関(道路総局・BPJT)および民間セクターとの共同事業になることから、調査の資金源としては、経済産業省(METI)の民活型インフラ整備プロジェクトF/S 事業を想定する。

