NO.

JAPAN INTERNATIONAL
COOPERATION AGENCY (JICA)

DIRECTORATE GENERAL OF HIGHWAYS
MINISTRY OF PUBLIC WORKS

THE STUDY ON PUBLIC-PRIVATE PARTNERSHIP SCHEME FOR TRANS JAVA TOLL ROAD IN THE REPUBLIC OF INDONESIA

FINAL REPORT

EXECUTIVE SUMMARY

JANUARY 2007

KATAHIRA & ENGINEERS INTERNATIONAL
PRICEWATERHOUSECOOPERS
PwC Advisory Co., Ltd.

SD
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PREFACE

In response to a request from the Government of the Republic of Indonesia, the Government of Japan decided to conduct "The Study on Public-Private Partnership (PPP) Scheme for Trans Java Toll Road in the Republic of Indonesia" and entrusted it to the Japan International Cooperation Agency (JICA).

JICA selected and dispatched a Study Team headed by Dr. Hani Abdel-Halim of Katahira & Engineers International from April 2006 and January 2007. The team held discussions with the officials concerned of the Ministry of Public Works as well as other officials concerned, and conducted field surveys, data analysis and PPP financial scheme. Upon returning to Japan, the team prepared this final report to summarize the results of the study.

I hope that this report will contribute to development in the Republic of Indonesia, and to the enhancement of friendly relationship between our two countries.

Finally, I wish to express my sincere appreciation to the officials concerned of the Government of the Republic of Indonesia for their close cooperation extended to the Study Team.

January 2007,

Kazuhisa MATSUOKA,
Vice President
Japan International Cooperation Agency

Mr. Kazuhisa MATSUOKA,
Vice President
Japan International Cooperation Agency

January 2007

Dear Sir,

Letter of Transmittal

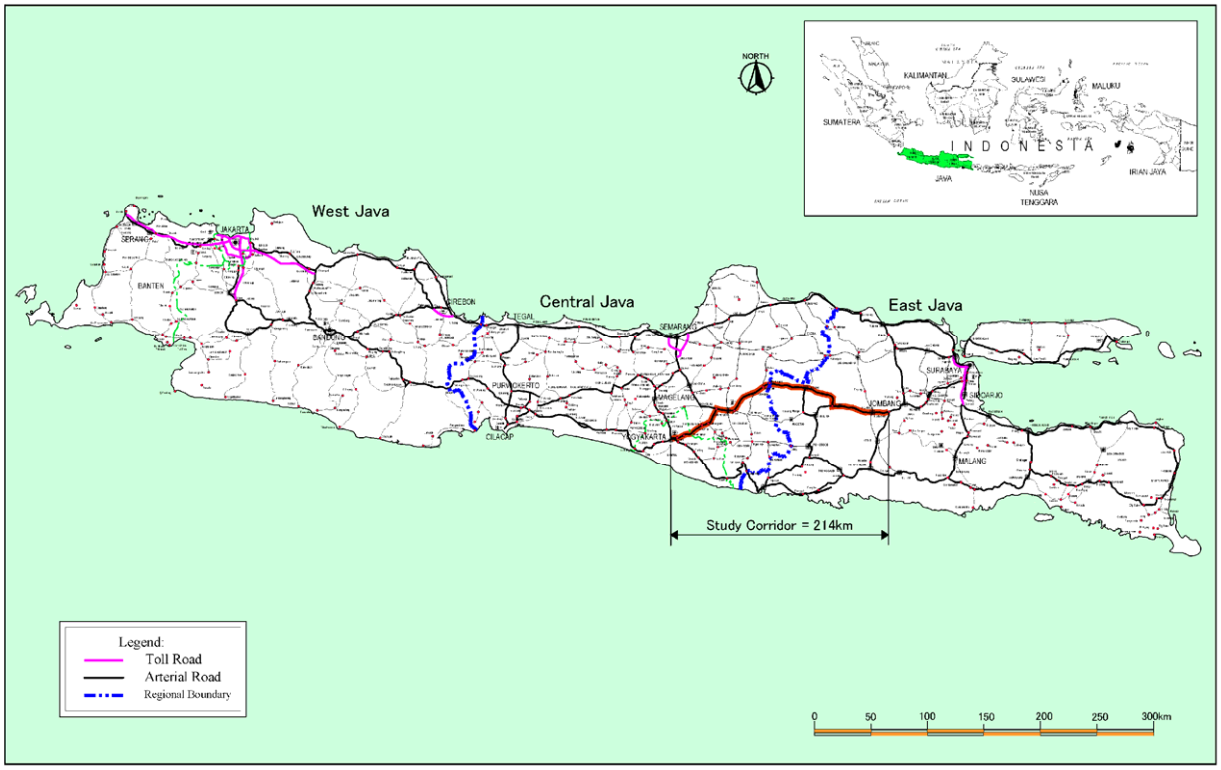
We are pleased to submit herewith the Final Report of "The Study on Public-Private Partnership (PPP) Scheme for Trans Java Toll Road in the Republic of Indonesia". The report compiles the results of the Study and includes the advices and suggestions of the authorities concerned of the Government of Japan and your agency as well as the comments made by the Ministry of Public Works and other authorities concerned in the Republic of Indonesia.

The report includes review of previous feasibility study on the study road, and analyses the present and future road network conditions and demand of transport in Java Island. Revised cost estimate and transport demand are applied for the economic evaluation and financial analysis of six established PPP options. An optimum PPP scheme is recommended based on a comprehensive evaluation and assessment process that takes into consideration the pros and cons of each option and the minimum financial requirements by the Government of Indonesia. In addition, bidding guidelines and implementation plan are included for the smooth and on-schedule implementation of the toll road project.

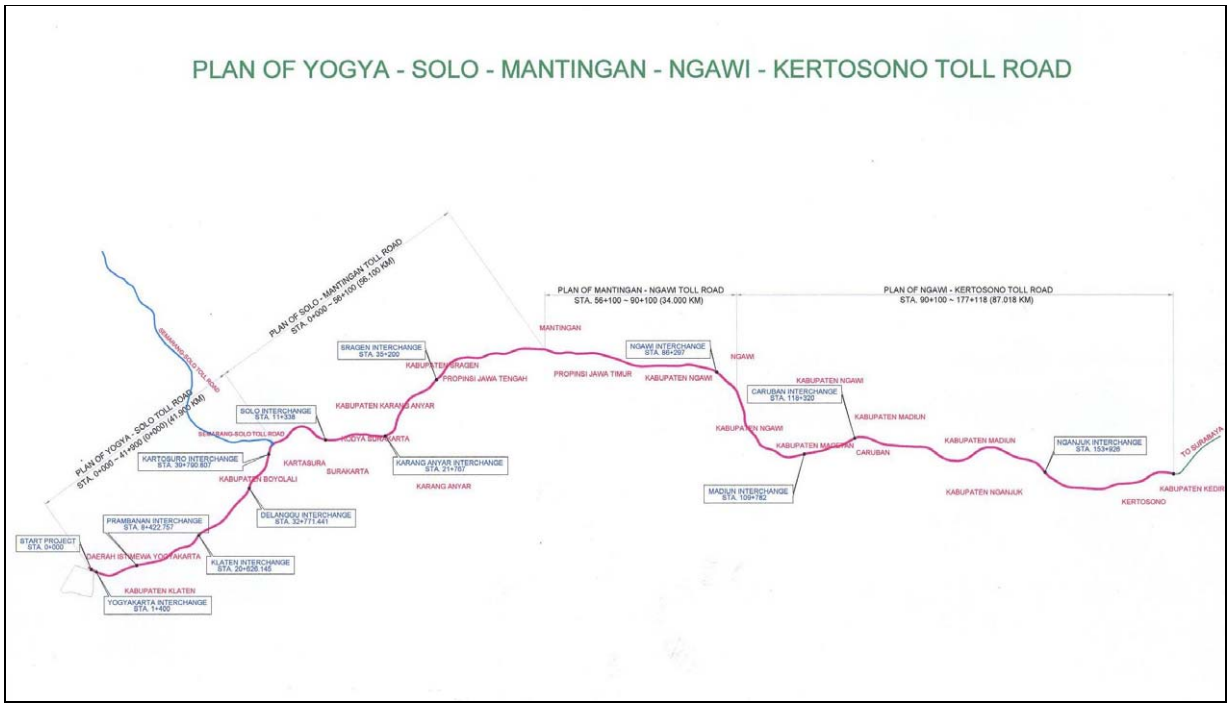
We wish to take this opportunity to express our sincere gratitude to your agency and the Ministry of Foreign Affairs. We also wish to express our deep gratitude to the Ministry of Public Works as well as other Governmental Agencies concerned in the Republic of Indonesia for the close cooperation and assistance extended to us during the Study. We hope this report will contribute to the development of the Republic of Indonesia.

Very truly yours,

Dr. Hani Abdel-Halim
Team Leader,
The Study on Public-Private Partnership (PPP) Scheme for
Trans Java Toll Road in the Republic of Indonesia



Study Area



LOCATION MAP

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Exchange Rate:
JP¥ 1.0 = Rp 77.2
US$ 1.00 = Rp 8,955
US$ 1.00 = JP¥ 116
(As of September 2006)

ABSTRACT

Background

- Java Island is the mainstay of socio-economic activities of Indonesia as well as the nucleus of prospective industrial development and diverse economic investment.
- Economic activities in the Island have been boomed by domestic and international enterprises, which have inevitably induced remarkable development of road network in Java Island.
- Due to the rapid development of economic activities, however, the congestion level of trunk roads has reached to the critical limit in terms of physical capacity and network function, and thus emergent increment of road capacity in duly required.
- To cope with this situation and to support the booming socioeconomic activities and further development in Java Island, many road projects are being implemented to attain substantial enhancement of the road transport system in the island.
- With the existing financial constraints, new and stable sources of fund are required. This financial gap is expected to be filled by the private sector that is also expected to be capable of improving the quality of transport infrastructure services.
- The development of private sector involvement in the provision of public infrastructure services can be achieved through insuring private as well as public benefits.
- The approach of applying PPP schemes in financing toll road projects is currently applied in different countries. In Indonesia, however, it is still new financing mechanism that requires to be carefully studied in order to be successfully applied.

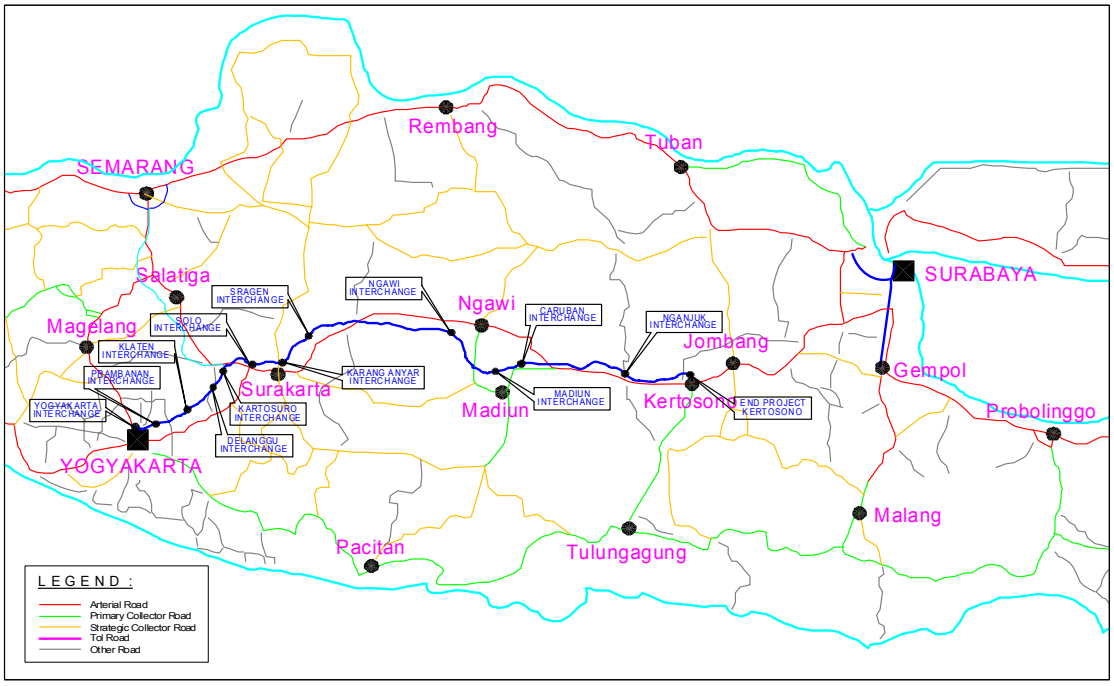
Objectives of the Study

- To propose financially viable PPP scheme for the selected section of Trans Java Toll Road based on the proposed PPP scheme, and;
- To transfer a set of PPP related knowledge and know how to the counterparts during the course of the Study.

Toll Road Project

- The road corridor under this Study is the section of "Yogyakarta ~ Solo ~ Ngawi ~ Mantingan ~ Kertosono" with a total length of 219km, of which a length of about 166 km, forms a part of Trans Java Toll Road between Solo and Kertosono.

The Study Corridor



Major Characteristics of the Project Road

Road Section	Length (Km)	Daily Traffic	Cost (Rp billion)			EIRR (%)	FIRR (%)
			Land	Const.	Total		
Yogyakarta – Solo	53.24	13,929	532	1,312	1,844	26.7	
Solo – Kertosono	165.79	7,797	1,750	4,466	6,216	24.5	13.1
Yogyakarta – Kertosono	219.03	9,288	2,281	5,778	8,059	28.2	

- The project has been declared in the RPJM (Mid-Term Development Plan 2005-2009) and also has been stated in the following:
  - Strategic Plan of the Ministry of Public Works, 2005-2009
  - Minister of Public Works Decree No. 369/KPTS/M/2005 on National Road Network Master Plan to include toll road network master plan.
  - GOI has launched the Toll Road Acceleration Development Program through Indonesia Infrastructure Summit I, January 2005.
- The Solo - project scope is:
  - No. of Interchanges: 8 Interchanges (7 segments for Solo – Kertosono section)
  - Road Carriageway: Divided - 2 lanes in each direction
  - Right-of-Way: 60-70 meters
- Tasks of the project includes the followings:
  - Detailed Engineering Design of toll road
  - Land acquisition
  - Construction of toll road
  - Operation
  - Maintenance

Traffic Demand Forecast

- The present and future OD matrices for Java Island zones bare basically applied after revision and calibration based on traffic count and OD surveys.
- Traffic assignment techniques are applied using JICA STRADA models to estimate future traffic demand on the toll road and the ordinary network as well.
- Parameters of disaggregate model are estimated based on results of WTP survey to estimate traffic shifted from ordinary network to toll road after completion.
- Applying the socially accepted toll rate of Rp 200/km, shows that about 65% of the traffic volume will be diverted to the toll road, while applying the maximum revenue toll level of Rp 400/km gives a shifted rate of 42% for traffic diverted to the toll road.
- Results of the traffic assignment show that the project road will accommodate an ADT in 2010 of about 14,000 vehicles on Yogyakarta - Solo section, 7,800 vehicles on Solo – Kertosono section and 9,300 vehicles on the whole project road of Yogyakarta - Kertosono.
- Economic analysis on Solo – Kertosono section shows high economic viability (EIRR = 24.5%), but
- Financially, the road project is less than marginal financial viability [Definition of marginal financial viability is considered at about 18-19% in Indonesia].
- It can be concluded that the project is not applicable for MOF Regulation 38 for marginal viable projects and requires new subsidy scheme and payment mechanism.

Formulation of PPP Scheme

- To select the optimum PPP scheme, six PPP options were developed with common issues including the responsibilities of the Government for:
  - Financing and executing land acquisition and;
  - Applying adjustment mechanics on the toll rate based on inflation rates.
- The developed PPP options are:
  - Option 1: Segment dividing; between government and private sector.
  - Option 2: Scope of work dividing; sub-base/base or structures by government and other parts by private sector.
  - Option 3: Government constructs the toll road and leases it to private sector
  - Option 4: DBFO; government provides upfront subsidy during construction.
  - Option 5: DBFO; Government provides service payment during operation.
  - Option 6: DBFO; Government provides upfront subsidy during construction stage and annual service payment during the operation' period.

Pros and Cons of 6 PPP Options

	Option 1	Option 2	Option 3	Option 4	Option 5	Option 6
Public Fund Requirements	C	C	C	A	A	A
Private Sector Development	C	C	C	B	B	A
Legal and Policy Issues	A	B	B	B	B	B
Uncertainty in Process	A	B	B	C	C	C
Life Cycle Cost Reduction	C	C	C	A	A	A
Overall Evaluation	***B***	***C***	***C***	***B***	***B***	***A***

A: Good, B: Medium, C: Bad

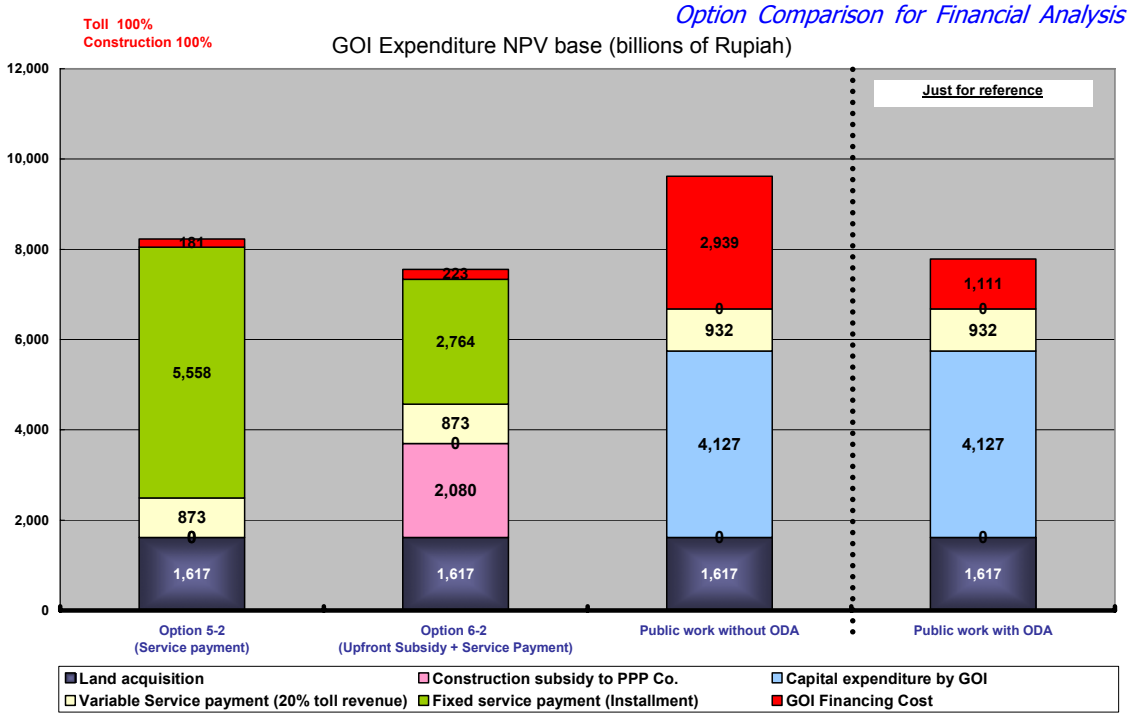
Advantages and Disadvantages of PPP Options

Options	Option 1	Option 4	Option 5	Option 6
Advantage	- Traditional procedures	- One time payment from the Government	-No upfront payment from Government	- Lower Gov subsidy than Op5 -Balanced subsidy mechanism -Attractive to ODA Finance
			-Stipulated long-term payment from Government will encourage long-term financing of private sector	
		- Introducing new PPP mechanism for future road projects (including PSO/BLU for MPW) - Developing private sector capabilities (National Mid-Term Development Plan) - Lower finance risk to Government - Low life cycle cost by involving private sector in all task		
Dis-advantage	- Not attractive to ODA finance - Possible high life Cycle Cost - All finance risk to Gov - No private finance and all CAPEX required upfront and not in-line with Government policy	- Large upfront payment by Government to private sector (similar to Op 1) - Does not meet DSCR of commercial banks	- Long-term Gov. guarantee - Large investment by private sector - Long disbursement period for ODA loans	- Long-term Gov. guarantee
		- PU unfamiliarity with PPP process -Government uncertainty with new PPP schemes -Increase tender cost and period		
GOI Cost (NPV)	**Rp 7,786 billion**	**-**	**Rp 8,230 billion**	**Rp 7,557 billion**
GOI Contribu-tion (NPV)	**Rp 3,419 billion**	**-**	**Rp 3,863 billion**	**Rp 3,190 billion**
B. E. Point	**Year 2027**	**-**	**Year 2025**	**Year 2022**
Financial Evaluation	**Difficult (for ODA loan)**	**Not Bankable**	**Second Best**	**Best**
Major Tasks		**Set-up PPP scheme**		
		- Set-up PSO (Public Service Obligation) Ministerial Decree	**- Set-up PSO and BLU (Public Service Unit) Ministerial Decree**	**-Set-up PSO and BLU Ministerial Decree**

Evaluation and Assessment of Options

- Pros and Cons of 6 options are identified for different involved aspects to exclude options 2 and 3 in first screening because of difficulty in implementation or no utilization of private funds..
- Next, remaining 4 options are investigated in more detailed aspects to conclude their advantages and disadvantages, including the financing performance in case of utilizing soft ODA loans.
- Considering a main objective to introduce PPP to mobilize private sector's funds, the evaluation and assessment results show that Option 6 with both upfront subsidy and service payment is the most recommended PPP scheme to implement this model project.
- Option 6 has more advantages than all other options, such as earlier break-even point year with less total governmental expenditures.

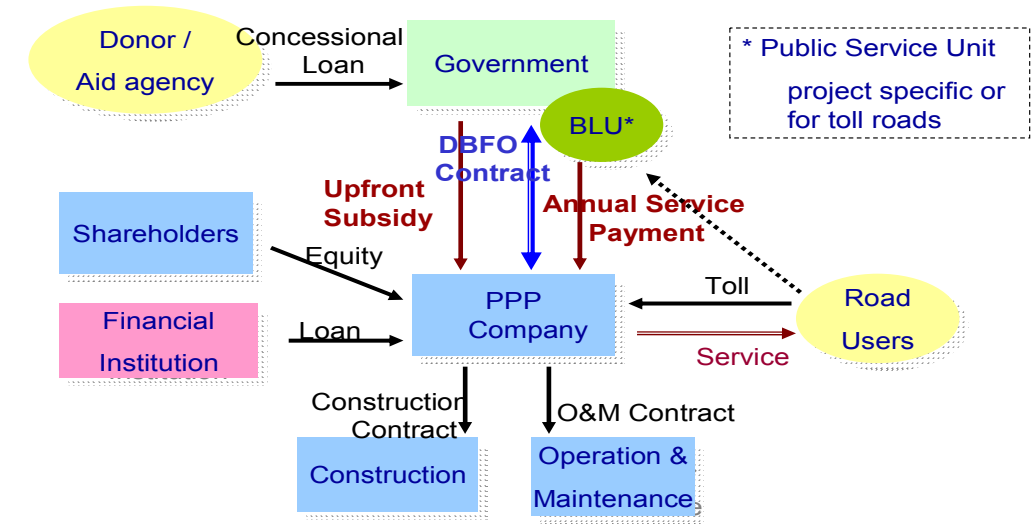
Option Comparison for Financial Analysis



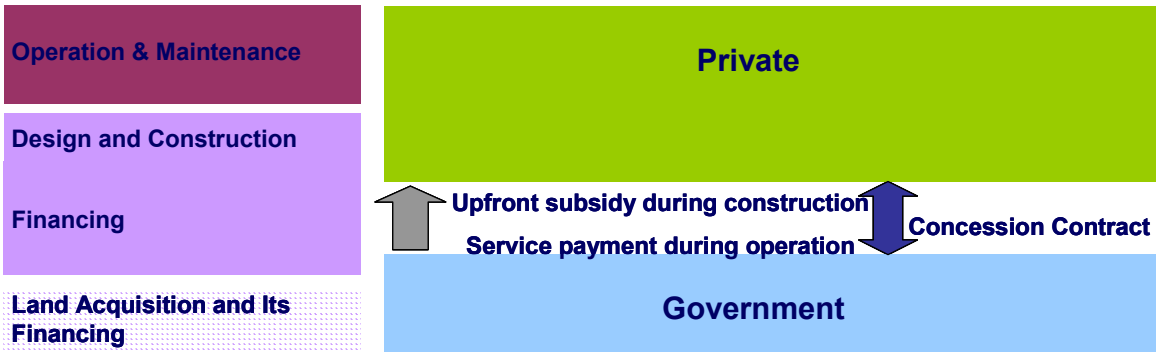
Preliminary Financing Structure

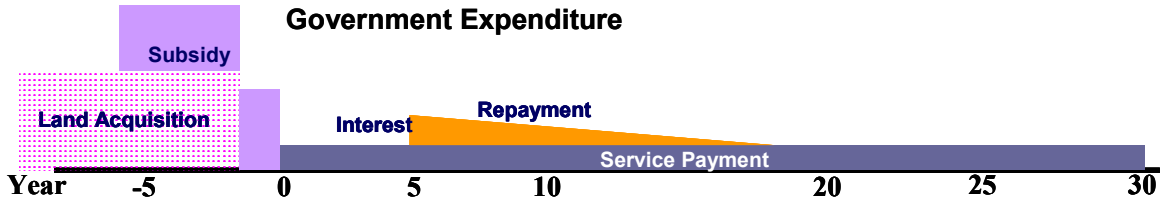
Indonesia Infrastructure PPP study *6*

Structure of DBFO with Upfront Subsidy and Service Payment



Optimum PPP Scheme





Key Issues for Implementation

- Fund Arrangement: based on the formulated PPP scheme and the sharing in the financial responsibilities between both the Government and PPP entities of the private sector, arrangements should be done to secure both public and private funds for different steps of project implementation, starting with funds required for land acquisition. To cover the Government subsidy, bonds are one option. In addition, WB or ADB finance may be used for land acquisition cost, while JBIC finance may be used for upfront subsidy and service payment under the PPP scheme.
- Selection of Consultant: with the utilization of public funds under the PPP scheme, consultants should be selected under the Governmental roles and those of the financing institutions involved in providing funds for the Government.
- Detailed Engineering Design: Due to the large volume and nature of works of the Project, which composes of the construction of a large number of structures including interchanges and bridges as well as the construction of the toll road carriageway, the Project should be divided into several packages that will be designed and implemented simultaneously in order to meet the time frame.
- Land Acquisition: as this task composes a high risk toward the implementation of the project on schedule and it usually requires long time to finalize, it should be started by the Government at earliest possible stages.
- Environmental Impact Assessment: although high negative environmental impacts are not expected, acquiring environmental clearance based on EIA with mitigating measures for any expected impacts is necessary for such large-scale project.
- Tender Documents: The ordinary procedure for the tendering stage is to be conducted after the completion of the detailed engineering design stage which includes the preparation of the tender documents; however, with the adoption of a PPP scheme, early tendering stage is required to select the private sector partner that will handle designated tasks under the scheme.
- Construction: based on the source of utilized funds and the contracting agreement, construction activities are defined under the work sharing concept. With the limited time-frame for construction, the issue of land acquisition should be completely cleared in advance.
- Operation and Maintenance: are the two tasks that are completely carried out by the private sector partner under the proposed PPP scheme of the Study.

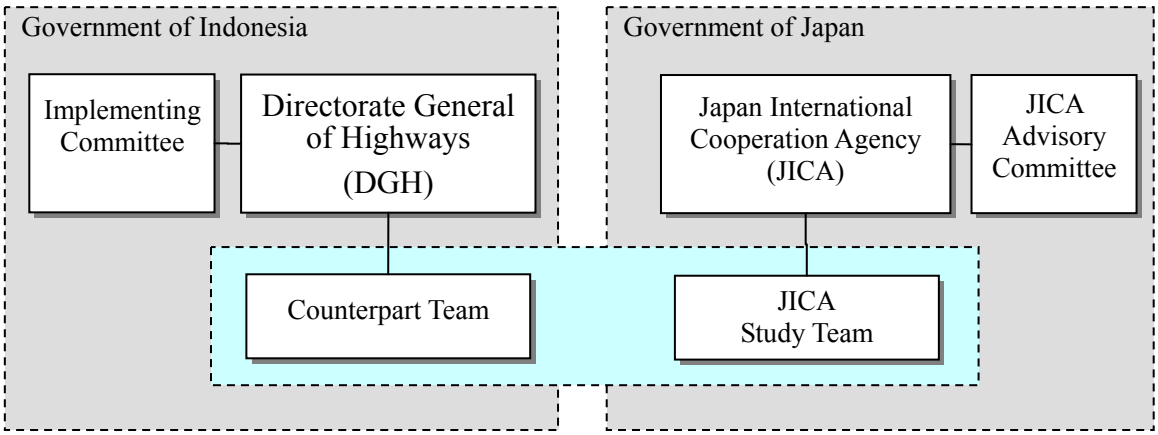
Main Conclusions

- The Project Road meets the targets of national development plans to cope with growth in social, economic and tourism activities and to enhance regional development in central and eastern areas of Java Island.
- The project has been declared in the RPJM (Mid-Term Development Plan 2005- 2009) and other Implementation Plans of the Ministry of Public Works.
- The Project has been declared also as a Model Project for the implementation of toll road projects under PPP schemes during the Indonesian Infrastructure Exhibition and Conference (IIEC), November 2006.
- Implementing only the Trans Java section between Solo and Kertosono, with a length of 165.8 km and cost of Rp. billion 5,902, gives a considerably low and unviable financial indicator of FIRR = 13.1%; and a viable economic indicator of EIRR = 24.51%.
- The Project Road, as economically feasible and financially unviable, can't be implemented under conventional BOT finance and it requires governmental subsidy under a PPP scheme.
- Under PPP approach, the public sector is ultimately accountable for service provisions, although the private sector designs, builds, operates and maintains infrastructure. Applying PPP ensures provision of services by using private-sector management skills and finance capabilities at lower cost and better quality.
- Evaluation results of the established six PPP schemes show that Option 6 (with both upfront subsidy and annual service payments) is the most recommended option as the Optimum PPP. This scheme provides the least governmental contribution of Rp. 3,190 billion in NPV basis and an amount of annual service payments of Rp. 1,390 billion with the earliest break-even point at the target year of 2022.
- PPP involves contracts between the public and private sectors for toll road infrastructure construction and operation where risks are shared between the parties. Risks are allocated to the party which is best able to manage, and therefore minimize, the cost of risks.

Main Recommendations

- As a prior, the PPP program for the implementation of the project road as a pilot PPP road project should be launched by the Government as the political commitment in order to establish legalistic and financial steps required to proceed in the implementation process.
- Details of transfer of finance and businesses from the Government to private sector and risk allocation among the public and the private participants need to be developed and defined in the project agreement. Excess risk transfer to the private sector and weak political commitment are main factors for failed PPPs. In addition, optimal risk allocation and strong political commitment are two key factors making good PPP projects.
- The slow progress has often related to deficiencies in legal and institutional frameworks in various countries and also to questions about whether value for money is being provided in the PPP. However, with many countries now initiating legislative changes and developing institutions to encourage PPP, a surge in transactions elsewhere in the world may be expected.
- For government contribution, it is recommended to utilize concessional loans, such as ODA (Official Development Assistance) funds and national bank loans, to lower financial burden for an organization owns the network. In addition, private sector participation will require capital subsidy from the government and demand risk sharing with the government in order to lower financing requirements of the private sector down to the level affordable by toll revenues.
- Implementation of the road project under PPP scheme should be carried out as scheduled and in complete coordination with other infrastructure and development plans to provide optimum integration and maximum benefits.
- Good understanding and supporting by policy makers and budgeting agencies, such as Bappenas, KKPPI, Ministry of Finance and BPJT, are indispensable for successful implementation of the expressway network. MOPW should exert full effort to obtain understanding of those policy-makers and agencies.

ORGANIZATION



Implementing Committee

Mrs. Sri Apriatini Soekardi	Chairman; Director of General Planning, Directorate General of highways, MPW
Mr. Soebagiono	Secretary; Head of Sub Directorate of Freeways and Toll Road Development, Directorate of Freeways and Urban Road, Directorate General of Highways, MPW
Mr. Nurdin Manurung	Member; Director of Freeways and Urban Road, Directorate General of Highways, MPW
Mr. Muhammad Irian	Member; Secretary of BPJT, MPW
Ms. U. Hayati Triastuti,	Member; Director of Transportation, Bappenas
Mr. Imron Bulkin	Member; Director of PPP Development, Bappenas
Mr. Ceppie Kurniadi Sumadilaga	Member; Director of Bilateral Funding, Bappenas
Mr. Agus Suprijanto	Member; Director of Loan and Grant Management, Ministry of Finance

Counterpart Team

Mr. Herry Trisaputra Zuna	Sub Directorate of Freeways and Toll Road Development
Mr. Dedy Gunawan	Sub Directorate of Freeways and Toll Road Development
Mr. Rahman Arief	Sub Directorate of Planning
Mr. Hardi Siahaan	Toll Road Regulatory Board (BPJT)

JICA Study Team

Dr. HANI Abdel-Halim	Team Leader / PPP Scheme
Mrs. NODA Yumiko	PPP Structure
Ms. OGAWA Mariko	PPP Maintenance and Operation Plan
Mr. OSHITA Soemu	PPP Construction Plan
Mr. Jon SIVERTSON	Bidding Procedure (1)
Mr. ETO Munehiko	Bidding Procedure (2)
Mr. TAKEDA Hiroo	Toll Road Legislation
Dr. GOSE Shingo	Toll Road Plan
Mr. SAKURAI Tatsuyuki	Toll Road Policy Advisor

INTRODUCTION

INTRODUCTION

- Java Island is the mainstay of socio-economic activities of Indonesia as well as the nucleus of prospective industrial development and diverse economic investment.
- Economic activities in the Island have been boomed by domestic and international enterprises, which have inevitably induced remarkable development of road network in Java Island.
- Due to the rapid development of economic activities, however, the congestion level of trunk roads has reached to the critical limit in terms of physical capacity and network function, and thus emergent increment of road capacity in duly required.
- To cope with this situation and to support the booming socioeconomic activities and further development in Java Island, many road projects are being implemented to attain substantial enhancement of the road transport system in the island.
- Previous toll road projects in Indonesia have been implemented by government finance, foreign funds, Jasa Marga fund, BOT schemes and so forth. However, the current economic conditions and financial uncertainty in Indonesia induce certain constraints in project finance by the government.
- With the existing financial constraints, new and stable sources of fund are required. This financial gap is expected to be filled by the private sector that is also expected to be capable of improving the quality of transport infrastructure services.
- The development of private sector involvement in the provision of public services can be achieved through insuring private as well as public benefits. The benefits through private sector participation will be greater when the government clarifies the responsibilities of involved governmental agencies, optimizes risk and work sharing between both public and private sectors and develops supporting policies on required competition and regulations.
- The approach of applying PPP schemes in financing toll road projects is currently applied in different countries. In Indonesia, however, it is still new financing mechanism that requires to be carefully studied in order to be successfully applied.
- In response to the request of the Government of the Republic of Indonesia (GOI), the Government of Japan (GOJ) has decided to conduct "The Study on Public-Private Partnership (PPP) Scheme for Trans Java Toll Road in the Republic of Indonesia".
- Accordingly, JICA organized and dispatched a Study Team, from Katahira & Engineers International (KEI) and PwC Advisory Co., Ltd. (PwC), a member firm of PricewaterhouseCoopers, to Indonesia to commence the Study on April 2006.

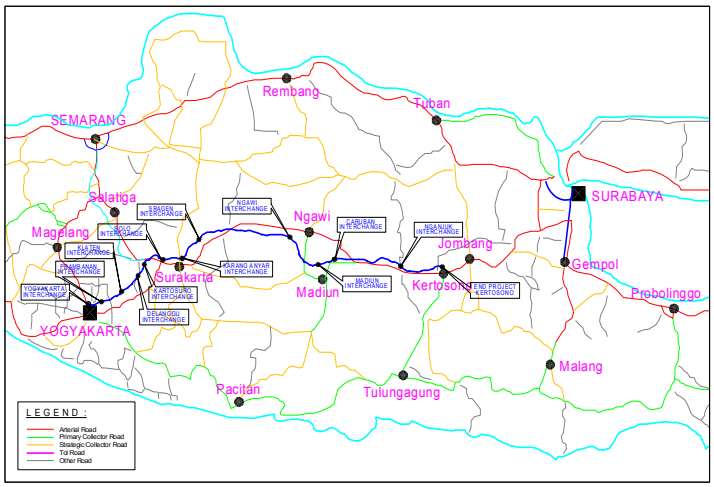
Objectives of the Study

- To propose financially viable PPP scheme for the selected section of Trans Java Toll Road based on the proposed PPP scheme; and
- To transfer a set of PPP related knowledge and know how to the counterparts during the course of the Study.

Study Corridor

The road corridor under this Study is the section of "Yogyakarta ~ Surakarta (Solo) ~ Ngawi ~ Mantingan ~ Kertsono" of Trans Java Toll Road with a total length of 214 km.

Study Corridor



PART I

YOGYAKARTA – SOLO – KERTOSONO TOLL ROAD DEVELOPMENT

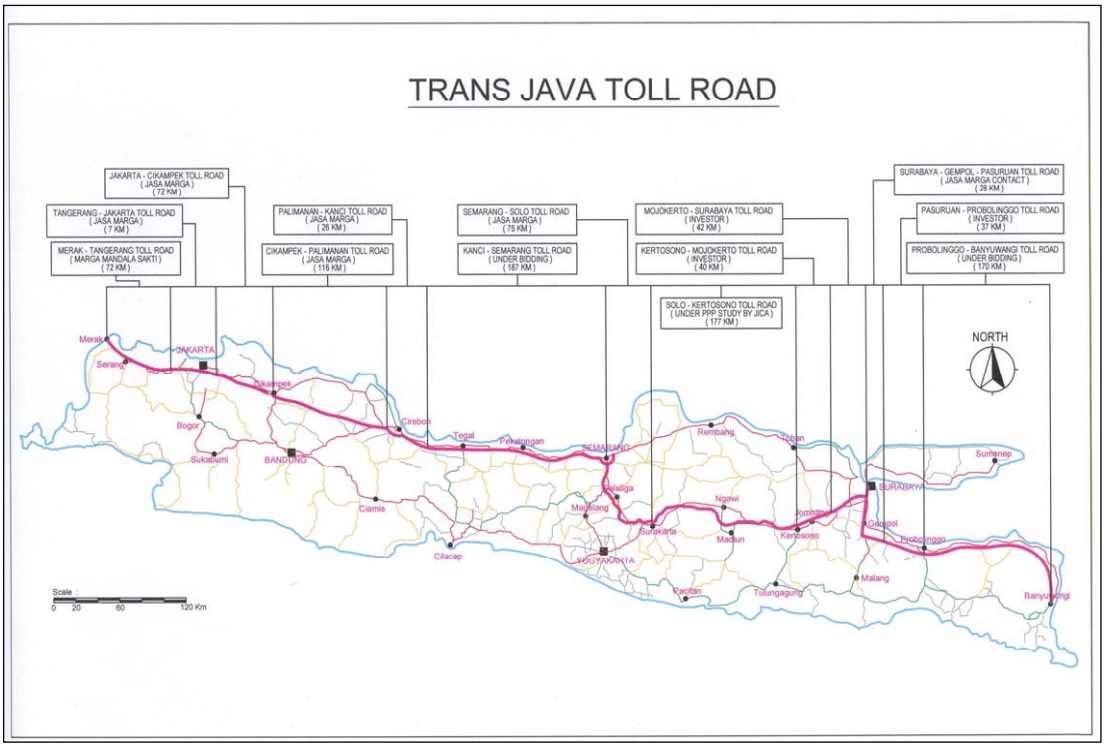
1 PROJECT JUSTIFICATION

Necessity of Trans Java Toll Road

- The Study Road between Yogyakarta and Kertsono is a part of Trans Java Toll Road which connects Merak to the west with Surabaya to the east, with a total length of 863.7 km, connecting the centres of socioeconomic activities in Java Island.
- This road is still far from satisfactory with only small sections that served by toll road and most parts are still marked as bad condition road.
- The Trans Java Toll Road is essential for Java Island from the social, economic and commercial points of view. It is the artery of land transportation in the island used by 50-70 thousand units of vehicles every day and more important than rail and sea transport.
- This East-West main road has been a dream for decades. A notable connection between Jakarta and West Tangirang, as a segment of the road, was completed in 1984. In East Java, another segment was completed in 1986, connecting Surabaya and Gempol. Jakarta Cikampek Toll Road, going eastward from Jakarta, was completed in 1988 to be a busy road along the northern coast of Java.

Necessity of PPP

- Previous toll road projects in Indonesia have been implemented by government finance, foreign funds, Jasa Marga fund, BOT schemes and so forth.
- The Project Road, as economically feasible and financially unviable, can't be implemented under conventional BOT finance and it requires governmental subsidy under a PPP scheme.
- Applying PPP scheme on the study road has many objectives and is expected to generate many benefits, including:
  - To provide a pilot PPP project that will open the market for more participation by private sector in financing public infrastructure projects in general.
  - To develop and provide more business opportunities for the private sector in order to carry out more roles in future.
  - To reduce governmental burden in financing public infrastructure projects.
  - To allow the utilization of private sector experience, efficiency, flexibility and advanced technology in implementing and operating public projects.
  - To deliver better services to road users at lower costs.



2 YOGYAKARTA – KERTOSONO TOLL ROAD PROJECT

Project Objectives

- To improve accessibility and capacity of road networks for the movement of people and freight on this transport corridor.
- To promote national and regional socio-economic development in corridor-impact areas and cities along the road in eastern parts of Java Island
- To increase productivity with repression of distributional cost and giving access to regional and international markets.
- To provide an efficient road transport network in Java Island to promote its rapid socioeconomic development.

Planning Process

- The project meets the targets of national development plans to cope with growth in social, economic and tourism activities and to enhance regional development in central and eastern areas of Java Island.
- The project has been declared in the RPJM (Mid-Term Development Plan 2005-2009) and also has been stated in the following:
  - Strategic Plan of the Ministry of Public Works, 2005-2009
  - Minister of Public Works Decree No. 369/KPTS/M/2005 on National Road Network Master Plan to include toll road network master plan.
  - GOI has launched the Toll Road Acceleration Development Program through the Infrastructure Summit I, January 2005, and selected the Project as a Model Project in the Infrastructure Summit II, November 2006.

Project's Major Components

- Ygyakarta – Surakarta (Solo): Yogyakarta is characterised as a student and tourism city that is always busy with both domestic and foreign tourism activities. More than the cultural heritage, the city has beautiful natural panorama. The existing road between the two cities, passing through 4 districts with high agricultural productivity, was widened to 2 lanes in each direction; however, the road is still characterized by traffic congestions due to the high traffic volumes and traffic friction at built-up areas. With the increase of economic activities in the area, the new toll road connection between the two cities is required.
- Surakarta (Solo) – Mantingan: Surakarta is one of the big cities in Central Java and is the centre of trade, industry and other services in the region. The limited-capacity road network in this heavily built-up area with concentration of population density is handling considerable numbers of heavy commodity vehicles.
- Mantingan – Ngawi: Ngawi, neighboring with Kapupaten Sragen, is expected to practice rapid development in the near future. With Mantigan, being a growth center in the district, traffic volumes are growing. Meanwhile, the existing road networks, which need comprehensive rehabilitation and improvement works, can not be well operated in regard to the dominated mixed traffic and resulting heavy side friction.
- Mantingan – Kertosono: The corridor in this region consists of several built up and densely populated areas, and traffic is characterized with heavy commodity vehicles that transport natural products like oil, palms, tea and rubber destined for Kertosono.

Segments of Project Road

Interchange	0.0	Yogya	Prambanan	Klaten	Delanggu	Kartosuro	Solo	Karanganyar	Sragen	Ngawi	Madiun	Caruban	Nganujuk	Kertosono
Length, km	3.413	5.010	12.203	11.648	9.626	11.338	10.449	13.756	50.754	23.485	8.538	35.605	23.193	

Population and Economy in Java Island

Region	Area (km^2)	Population ('000)			Pop. Annual Growth (%)			GRDP (T. Rp-market price)		
		1990	2000	2004	80-90	90-00	00-04	2001	2002	2003
DKI Jakarta	740	8,228	8,361	8,750	2.38	0.17	1.14	219.9	253.4	284.0
Java Barat	36,925	29,414	35,724	38,611	2.57	2.03	1.96	193.3	214.3	234.5
Java Tengah	32,800	28,516	31,223	32,543	1.17	0.94	1.04	136.1	156.4	175.1
DI Yogyakarta	3,133	2,913	3,121	3,223	0.57	0.72	0.81	14.6	16.7	18.8
Java Timur	46,690	32,488	34,766	36,482	1.08	0.70	1.21	195.8	227.0	254.4
Banten	9,019	6,968	8,098	9,129	-	3.21	3.04	50.2	58.3	64.7
Java Island	129,306	107,527	121,293	128,738	1.30	1.21	1.50	809.9	926.1	1,031.4
Indonesia	1,860,360	178,500	205,843	217,854	1.97	1.49	1.43	1,684.3	1,863.3	2,045.9

3 FUTURE TRANSPORT DEMAND

Basic Policy

- The present and future OD matrices for Java Island zones of JARNS are basically utilized in the Study
- OD matrices are revised, calibrated and updated based on results of OD Survey
- Zones are grouped outside the Project Area
- Traffic Volumes are calibrated based on the traffic volume survey and F/S volumes.
- Assignment techniques are applied using JICA STRADA Models.

Traffic Surveys

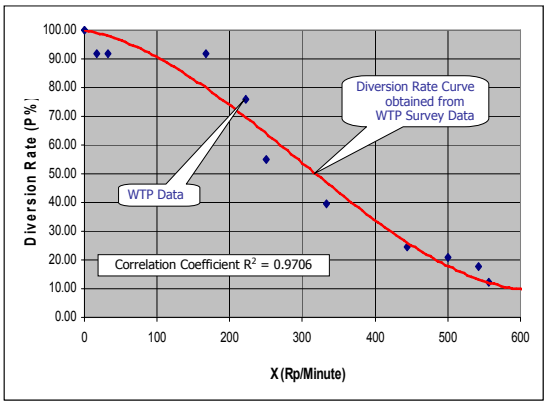
- Three surveys of traffic volume count, OD roadside interview and Willingness-to-Pay (WTP) are conducted in order:
  - To review and update traffic volumes forecast of Feasibility Study previously conducted by Bina Marga.
  - To calibrate and update OD tables of JARNS study those are applied in this study.
  - To estimate parameters applied in disaggregate models for shifted traffic.
  - To carry out simulations for toll levels and revenues.
- Results of traffic count survey show lower values of traffic volume than those counted in the F/S due to seasonal fluctuation and increase in gasoline prices. Calibration was done to adjust counted traffic volumes.
- The previous F/S did not apply OD tables in the forecast process. Here, JARNS OD tables are utilized after calibration using collected data of OD survey.
- Results of WTP survey show a socially accepted toll level of Rp 200/km, while simulation results show maximum revenue at a toll level of Rp. 400/km.

Socioeconomic Framework

- The annual growth rate of the population in Java Island is predicted as 1.12% to the year 2010 and 1.09% to the year 2020, which are less than the growth rates of 1.33% and 1.30% for Indonesia in the same periods.
- The annual growth rate of the GRDP of Java Island is predicted as 6.34% to the year 2010 and 6.91 to the year 2020, which are less than GDP growth rates of 6.60% and 7.12% for the Republic of Indonesia in the same periods.

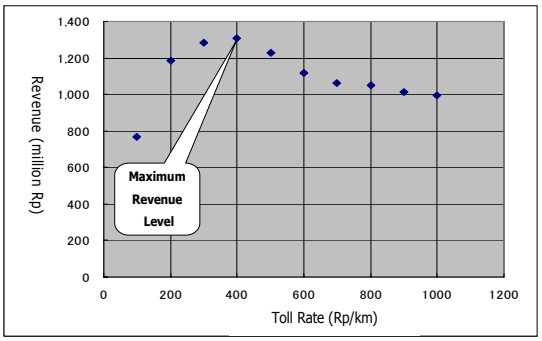
Future Demand Forecast

- The methodology of four-step model is applied to forecast the future demand.
  - Trip-end model (production-attraction)
  - Trip distribution model
  - Modal split model
  - Traffic assignment model
- The zoning system is basically composed of 262 small zones that were grouped outside the project area to produce 89 zones in total.
- Developed desire line charts in 2005 and 2030 show sudden increase in trips in Jakarta area to the west, Surabaya area to the west and at Semerang central area. In addition, the west-east corridor of Trans Java road shows also high growth in the number of future trips.



Diversion Curve

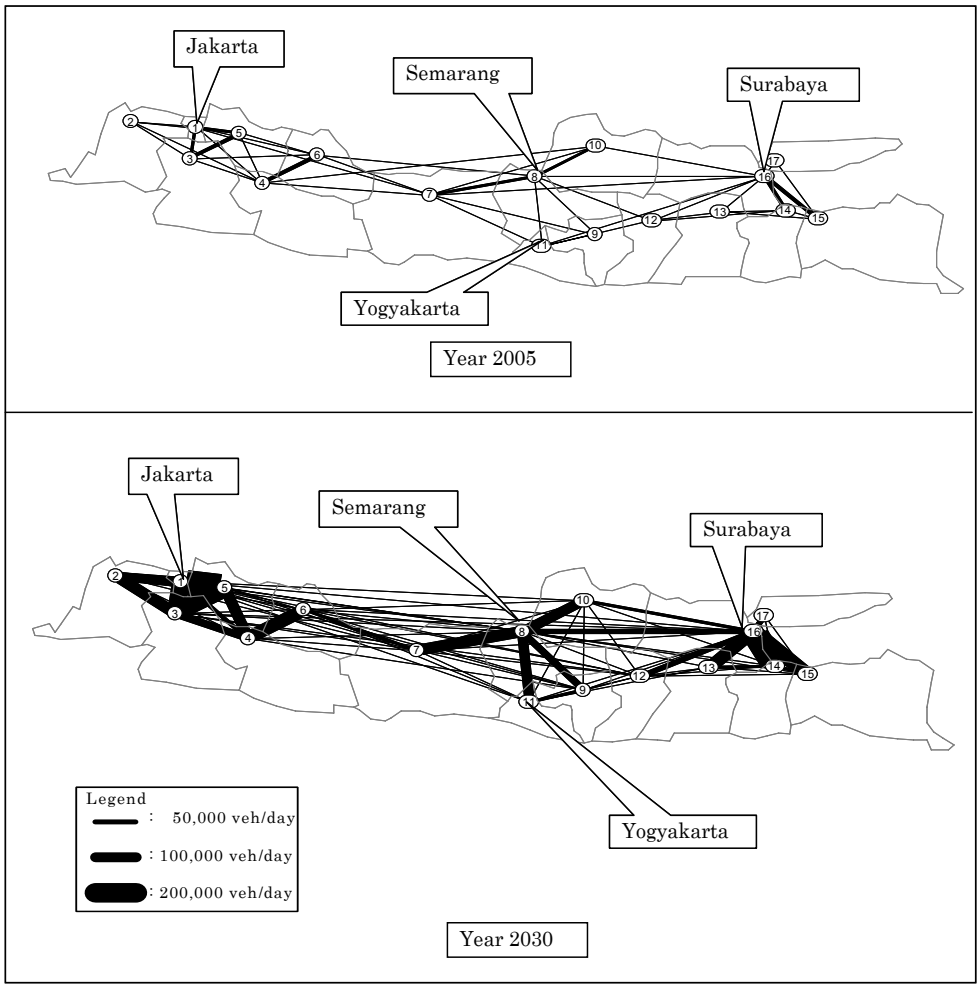
Toll Level Simulation



Assigned Traffic Volumes

- JICA STRADA (System for Traffic Demand Analysis), which is based on the capacity restrain method, is applied to assign the traffic volumes on the road network in two cases of "without project" and "with project".

Present and Future Trip Pattern in Java Island

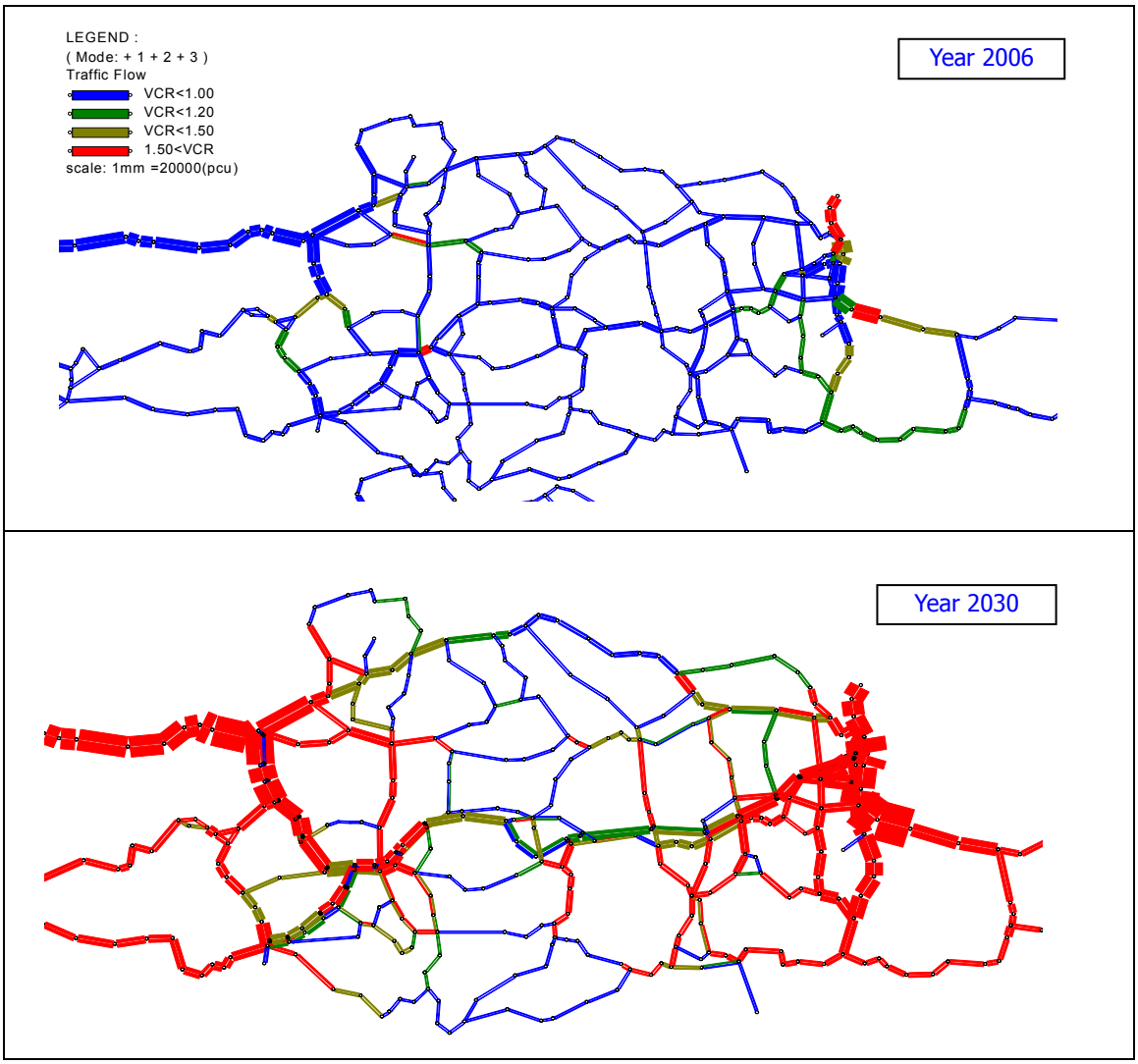


Traffic Volumes on Toll Road (TR) and Ordinary Road (OR)

Toll Section	Distance (km)	Year 2010					
		WTP: Rp 200/km			Max. Rev: Rp 400/km		
		TR	OR	% TR	TR	OR	% TR
Yogyagarta - Prambanan	8.42	17,188	22,347	0.435	13,483	24,398	0.356
Prambanan - Klaten	12.2	22,942	15,283	0.600	13,437	23,135	0.367
Klaten - Delanggu	11.65	22,446	14,597	0.606	13,134	21,725	0.377
Delanggu - Kartosuro	7.52	22,953	14,090	0.620	13,400	21,458	0.384
Kartosuro - Solo	13.45	28,106	19,271	0.593	15,639	25,945	0.376
Solo - Karanganyar	10.45	19,089	36,139	0.346	11,344	38,709	0.227
Karanganyar - Sragen	13.76	19,727	12,377	0.614	11,544	14,973	0.435
Sragen - Ngawi	50.75	13,744	6,383	0.683	6,978	9,072	0.435
Ngawi - Madiun	23.49	12,964	5,353	0.708	6,537	7,182	0.476
Madiun - Caruban	8.54	14,397	5,317	0.730	7,744	7,152	0.520
Caruban - Nganjuk	35.61	14,353	9,188	0.610	7,625	12,326	0.382
Nganjuk - Kertosono	23.19	14,579	6,893	0.679	7,325	9,199	0.443
Average (Yogya – Kertosono)	219.03	16,789	11,126	0.628	9,276	14,610	0.409
Average (Solo – Kertosono)	165.79	14,748	9,229	0.646	7,797	11,780	0.422

- Assignment cases are based on the assumption that other sections of Trans Java Toll Road will be completed and under operation by the year 2010.
- The procedure of assignment is applied on the cases of constructing only Yogya – Solo, Solo – Kertosono and Yogya – Kertosono, as well as without the whole section of Yogya – Kertosono for the purpose of economic analysis and evaluation.
- Developed Trans Java Diversion Model technique is applied to estimate traffic diverted from the existing non-toll ordinary road to the new Trans Java Toll Road.
- Applying the socially accepted toll rate of Rp 200/km, shows that about 65% of the traffic volume will be diverted to the toll road.
- Applying the maximum revenue toll level of Rp 400/km gives a shifted rate of about 42% for traffic diverted to the toll road.
- Results of the traffic assignment show that the project road will accommodate an ADT in 2010 of about 14,000 vehicles on Yogyakarta - Solo section, 7,800 vehicles on Solo – Kertosono section and 9,300 vehicles on the whole project road of Yogyakarta – Kertosono.

Assigned Traffic Volumes in 2006 and 2030



4 COST ESTIMATE AND ECONOMIC ANALYSIS

Review of F/S Reports

- Reviewing of the Feasibility Study reports shows that, in general, the applied unit cost is reasonable when compared with the unit cost of other similar projects at nearby areas in Java Island.
- Quantities estimated under the preliminary design of the F/S to be used in constructing the project road are accepted for the carriageway road sections only.
- As for structures along toll road, including bridges and interchanges, information in the preliminary design are not enough to accept the estimated cost as many items such as borehole drilling data and soil characteristics are not carefully considered or underestimated.
- In addition, many of the piers don't have piling foundations that may cause easy damage due to scoring during river flooding even with relatively good ground condition.
- Land acquisition cost is estimated based on land value and prices survey through the route alignment and adjacent areas when necessary.
- The estimated land acquisition cost is the same as the market price for buildings, trees/plants and utilities, while it is treated differently for lands with an estimated cost as the average of market price and estimated tax rate.

Revised Project Cost

- The revised cost is estimated based on the segments between interchanges to provide flexibility in road packaging (12 segments). The same process is applied also for the transport demand forecast.
- With the available depths of bearing strata, bridge and interchange substructures will require usually pile foundations.
- In total, project structures include 67 bridges as basic components of the toll road and another 302 bridges required for ordinary roads crossing the toll road, in addition to 12 interchanges, for which the cost is recalculated applying the unit cost used for similar projects constructed in adjacent areas.
- In conclusion, the results of revised cost estimation are 12.4% higher than those of the F/S for the whole road project.

Land Acquisition Cost (Rp. million)

Item/Section	I	II	III	IV
Land	220,338	421,956	182,906	527,322
Buildings	246,959	174,900	97,856	165,475
Trees/Plants	12,932	1,916	3,912	13,617
Utilities	3,041	230	119	205
Teak Trees	-	-	-	229
Sub-Total	483,270	599,002	284,792	706,848
Contingency	48,327	59,900	28,479	70,685
Total Cost	531,597	658,902	313,271	777,533

Revised Project Cost (Rp. million)

Section	(I) Jogjakarta - Solo							(II) Solo - Seragen	
Segment	1		2	3	4	5		6	7
	Starting - Jogyakarta IC	Jogyakarta IC - Pranmanan IC	Pranmanan IC - Klaten IC	Klaten IC - Delanggu IC	Delanggu IC - Kartosuro IC	Kartosuro IC - Kertosuro Jct	Kertosuro Jct - Solo IC	Solo IC - Krang Ayar IC	Krang Ayar IC - Seragen IC
Length (km)	8.42		12.20	11.65	7.52	13.45		10.45	13.76
Length (km)	3.41	5.01	12.20	11.65	7.52	2.11	11.34	10.45	13.76
Main road	1,166	43,912	70,093	74,425	40,770	29,947	135,963	110,858	147,435
Pavement	1,838	68,576	104,688	106,175	81,890	30,827	82,445	83,174	112,772
Bridge	29,130	94,290	187,815	153,105	79,410	34,020	96,938	149,250	109,170
Over bridge	13,508	50,918	121,755	97,335	53,775	7,193	64,170	35,768	74,828
On river	15,623	43,373	66,060	55,770	25,635	26,828	32,768	113,483	34,343
Interchange	7,039	15,572	17,986	17,986	17,986	3,387	0	15,086	15,086
Total (Rp million)	39,176	222,354	380,594	351,702	220,064	98,183	315,357	358,378	384,476
Land Acquisition	43,264	63,563	154,785	147,807	95,408	26,770	132,364	121,976	160,611
Grand Total (Rp million)	82,439	285,918	535,379	499,509	315,472	124,953	447,721	480,353	545,088

Section	(III) Seragen - Ngawi		(IV) Ngawi - Kertosono				Total
Segment	8		9	10	11	12	
	Seragen IC - Mantingan	Mantingan - Ngawi IC	Ngawi IC - Madigan IC	Madiun IC - Caruban IC	Caruban IC - Nganjuk IC	Nganjuk IC - Kertosono	
Length (km)	50.75		23.49	8.54	35.61	23.19	219.03
Length (km)	20.90	29.85	23.49	8.54	35.61	23.19	219.03
Main road	203,085	271,199	235,306	81,494	427,099	222,925	2,095,677
Pavement	157,922	211,273	163,872	65,927	171,942	113,631	1,556,951
Bridge	202,065	187,635	208,800	36,630	214,253	151,695	1,934,205
Over bridge	99,683	144,203	126,698	25,808	160,305	78,128	1,154,070
On river	102,383	43,433	82,103	10,823	53,948	73,568	780,135
Interchange	15,086	0	20,683	15,086	15,086	15,086	191,152
Total (Rp million)	578,179	670,137	628,685	199,145	828,414	503,360	5,777,985
Land Acquisition	243,952	277,813	211,322	76,315	318,216	207,140	2,281,304
Grand Total (RP million)	822,130	947,950	973,791	275,460	1,146,630	710,499	8,059,289

Economic Analysis

- The economic parameters of Benefit/Cost ratio (B/C), Economic Internal Rate of Return (EIRR) and Net Present Value (NPV) are recalculated based values of revised future traffic demand and project cost.
- Operation and maintenance costs applied in the analysis are estimated based on values of similar toll roads under operation; as 5% of the revised construction cost for routine maintenance and 10% as operation and periodic maintenance.
- Applied benefits are savings in both vehicle operating cost (VOC) and travel time cost (TTC); updated from JARNS study to the year 2005, as follows:
  - VOC Group-I: Rp 1,000/km at 80km/hr
  - VOC Group-IIA: Rp 5,348/km at 65km/hr
  - VOC Group-IIB: Rp 3,675/km at 60km/hr
  - TTC Group-I: Rp 21,002/hr
  - TTC Group-IIA: Rp 98,097/hr
  - TTC Group-IIB: Rp 19,604/hr
- Applied assumption are:
  - Project life span: 30 years
  - Price level: 2005
  - Discount Rates: 12.75%, 15.0% and 20% for sensitivity analysis.
- Implementation schedule is assumed as follows:
  - 2007: Land Acquisition and Detailed Design
  - 2008: Construction of 40% of the Project
  - 2009: Construction of 60% of the Project
  - 2010: Operation

Economic Parameters

- The economic analysis is carried out for each of the following three road sections under operation:
  - Yogyakarta - Kertosono
  - Yogyakarta - Solo (without implementing Solo - Kertosono)
  - Solo - Kertosono (without implementing (Yogyakarta – Solo)
- Implementing the whole road sections generate high economic indicators (EIRR = 28.18%) based only on savings in VOC and TCC. Taking other indirect development benefits into account gives the required justification to implement the project.
- Implementing the whole project road provides higher economic parameters than implementing only one section, either Yogyakarta – Solo or Solo – Kertosono.
- Sensitivity analysis under the worst-case scenario of Cost+20% and Benefits-20% show high EIRR of more than 20%.

Economic Parameters (Yogyakarta – Kertosono)

Discount Rate	12.75%	15.00%	20.00%
B/C	2.161	1.887	1.437
NPV (Rp m.)	10,491,465	7,152,916	2,907,368
EIRR %	28.18	28.18	28.18

(Yogyakarta – Solo)

Discount Rate	12.75%	15.00%	20.00%
B/C	2.038	1.779	1.353
NPV (Rp m.)	2,122,829	1,418,426	531,195
EIRR %	26.73	26.73	26.73

(Solo - Kertosono)

Discount Rate	12.75%	15.00%	20.00%
B/C	1.904	1.655	1.246
NPV (Rp m.)	6,047,488	3,917,406	1,223,617
EIRR %	24.51	24.51	24.51

Sensitivity Analysis Results (Yogyakarta-Kertosono)

Map of Sensibility Analysis

Cost	-10%	Cost	0	Cost	+10%			
Benefit	+10%	Benefit	+10%	Benefit	+10%			
Cost	-10%	Cost	0	Cost	+10%			
Benefit	0	Benefit	0	Benefit	0			
Cost	-10%	Cost	0	Cost	+10%			
Benefit	-10%	Benefit	-10%	Benefit	-10%			
Cost	-20%	Cost	0	Cost	+20%			
Benefit	+20%	Benefit	+20%	Benefit	+20%			
Cost	-20%	Cost	0	Cost	+20%			
Benefit	0	Benefit	0	Benefit	0			
Cost	-20%	Cost	0	Cost	+20%			
Benefit	-20%	Benefit	-20%	Benefit	-20%			

Results of Analysis

	Discount Rate	Discount Rate	Discount Rate	Discount Rate	Discount Rate	Discount Rate	Discount Rate	Discount Rate	Discount Rate
B/C	2.386	2.082	1.584	2.377	2.076	1.580	2.532	2.222	1.705
NPV	12,477,957	8,699,230	3,877,386	12,444,321	8,674,419	3,863,750	12,997,886	9,203,998	4,351,198
EIRR	30.75%	30.75%	30.75%	30.73%	30.73%	30.73%	33.24%	33.24%	33.24%
B/C	2.302	2.020	1.550	2.161	1.887	1.437	2.272	1.995	1.532
NPV	11,045,030	7,682,495	3,394,817	10,491,465	7,152,916	2,907,368	10,931,532	7,586,647	3,321,319
EIRR	30.47%	30.47%	30.47%	28.18%	28.18%	28.18%	30.14%	30.14%	30.14%
B/C	2.072	1.818	1.395	1.945	1.699	1.293	2.044	1.795	1.379
NPV	9,092,175	6,160,993	2,438,435	8,538,609	5,631,413	1,950,986	8,978,676	6,065,144	2,364,937
EIRR	27.64%	27.64%	27.64%	25.58%	25.58%	25.58%	27.33%	27.33%	27.33%

	Discount Rate	Discount Rate	Discount Rate	Discount Rate	Discount Rate	Discount Rate	Discount Rate	Discount Rate	Discount Rate
B/C	2.955	2.607	2.020	2.593	2.265	1.724	2.310	2.002	1.504
NPV	15,504,307	11,255,081	5,795,029	14,397,176	10,195,922	4,820,131	13,290,045	9,136,762	3,845,234
EIRR	39.28%	0.00%	0.00%	33.22%	33.22%	33.22%	29.00%	29.00%	29.00%
B/C	2.463	2.173	1.683	2.161	1.887	1.437	1.925	1.668	1.253
NPV	11,598,596	8,212,075	3,882,265	10,491,465	7,152,916	2,907,368	9,384,334	6,093,757	1,932,470
EIRR	34.76%	0	0	28.18%	28.18%	28.18%	24.64%	24.64%	24.64%
B/C	1.970	1.738	1.347	1.729	1.510	1.149	1.540	1.334	1.003
NPV	7,692,885	5,169,069	1,969,502	6,585,753	4,109,910	994,605	5,478,622	3,050,751	19,707
EIRR	26.95%	26.95%	26.95%	22.90%	22.90%	22.90%	20.05%	20.05%	20.05%

PART II

FORMULATION OF PPP SCHEME

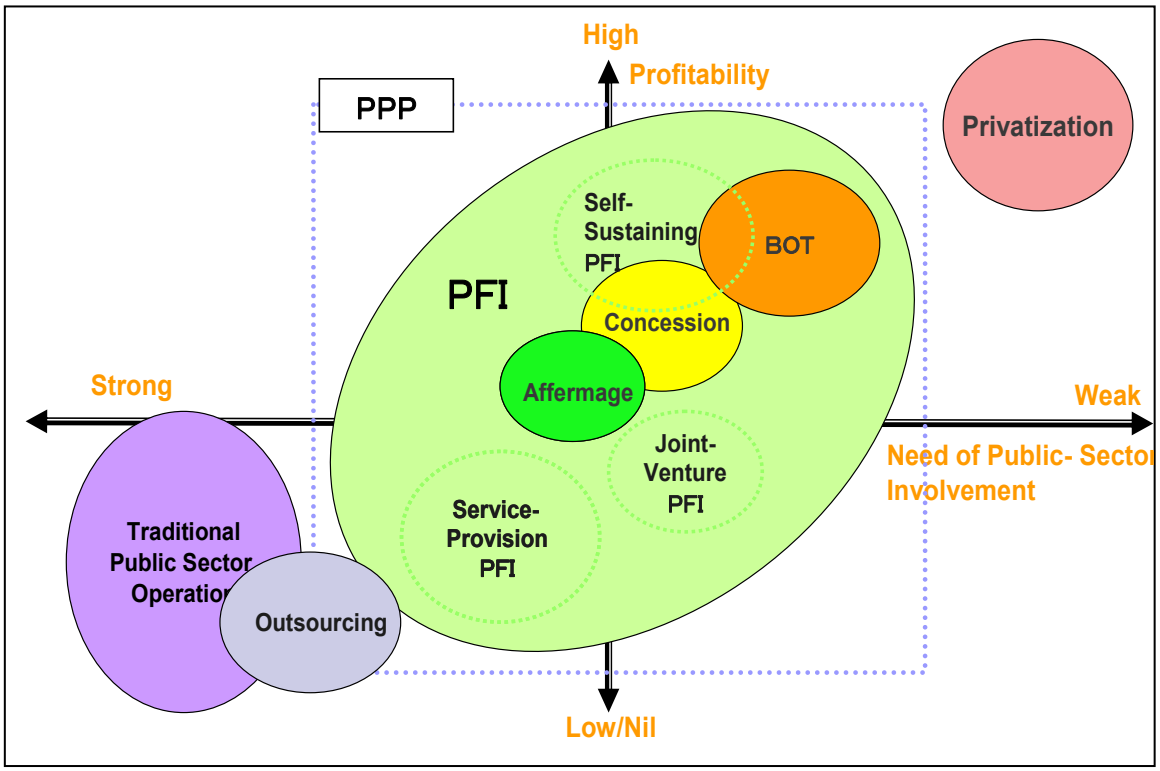
5 OVERVIEW OF PPP

What are PPPs?

- The term "public-private partnership" ("PPP") has been in general use since the 1990s. However, there is no widely agreed, single definition or model of a PPP.
- The term "PPP" covers a range of different structures where the private sector delivers a public project or service. Concession-based transport and utilities projects have existed in EU member countries for many years, particularly in France, Italy and Spain, with revenues derived from payments by end-users, e.g. road tolls. The UK's Private Finance Initiative ("PFI") expanded this concept to a broader range of public infrastructure and combined it with the introduction of services being paid for by the public sector rather than the end-users.
- The use of PPPs has now spread to most EU country and depending on the country and the politics of the time, the term can cover a spectrum of models.
- These range from relatively short term management contracts (with little or no capital expenditure), through concession contracts (which may encompass the design and build of substantial range of services and the financing of the entire construction and operation), to joint ventures and partial privatizations where there is a sharing of ownership between the public and private sectors.
- Under traditional public sector approach, the public sector designs, builds, operates, and maintains infrastructure, and sets level of quantity and standards of service quality, while under privatization approach, the private sector conducts all of these aspects in place of the public sector. Under PPP approach, the public sector is ultimately accountable for service provisions, although the private sector designs, builds, operates and maintains infrastructure. PPP ensures provision of services to general public, but at lower cost and better quality by the use of private-sector management skills and finance capabilities

Conventional BOT vs. PPP

- Under conventional BOT, the public sector plays little role and 'leaves it solely to the private sector.' Risks are often imposed to



the private sector as much as possible regardless of the capacity and capability.
- On the contrary, the prime PPP objective is to achieve Value for Money ("VFM"). In PPP, following a transparent and competitive process, whether to achieve higher quality services at lower cost compared with the traditional public procurement is strictly evaluated, verified and monitored, both quantitatively and qualitatively. If proved otherwise, PPP is dismissed.
- Risks are allocated to the party best able to manage, and therefore minimize the cost of risks. Full utilization of superior private management and expertise, not only the capability of raising finance, is highly encouraged in PPP. Allocation of risks and responsibilities between the public and private is clearly described in PPP contracts

Political Environment for PPP

- There exists considerable variety in development of PPP by countries and sectors.
- While growing interest in PPPs exists globally, experience of PPPs is limited. Progress of countries appears to have more to do with the interest in PPPs and the political will to promote them shown by individual governments. The complexities of procurements and the needs to develop an institutional capability resulted in progress being slow initially.
- The slow progress has often related to deficiencies in legal and institutional frameworks. However, with many countries now initiating legislative changes and developing institutions to encourage PPP, a surge in these transactions elsewhere in the world may be expected.

DBFO Road Experience in UK

- UK has developed a sophisticated PPP structure in the road sector using DBFO (Design, Build, Finance, and Operate) scheme.
- Under the DBFO method of procuring road improvements and maintenance, The UK Highway Agency has achieved value-for-money savings averaging 20%.
- A special purpose company (DBFO Co) will be expected to assume the majority of the risks associated with the design, construction, maintenance, operation and financing of the Project.
- The government will establish whether the proposed levels of payment are justified by the benefits of the Project.
- The Highways Agency pays each DBFO Co an amount, which is based on the number and type of vehicles using the road, with adjustments made for lane closure and safety performance. These are known as shadow tolls as opposed to real tolls, as payment for usage is made by the Highways Agency rather than by the road user.
- By changing a unit payment to the private sector according to the level of traffic, the public sector can share demand risks with the private sector. The public secotr provides additional unit payments for the provision of services when traffic demand is low, and the private sector can mitigate the impact of demand decrease to some extent.

Factors for Success and Failure from International Experience

- Excess risk transfer to the private sector and weak political commitment are main factors for failed PPPs. On the other hand, optimal risk allocation and strong political commitment are two key factors making good PPP projects.

Lessons from BOT Projects in Indonesia

- Four points were raised as lessons from past experience on BOT toll road projects in Indonesia.
- Some projects were not financially feasible and failed to attract the private sector. Feasibility of the project largely depends on the traffic volume and investment scale;
- Macroeconomic, social, and political situation of Indonesia caused an adverse effect on investment climate to the projects;
- No financial support from the government on land acquisition was a big hurdle for the private sector to enter into toll road investment; and
- Concession Agreement did not successfully cover issues which require appropriate risk allocation between the public and private sector.

6 STUDY ON PPP OPTIONS

Objective to Introduce PPP

- Main objectives of the government to introduce PPP are:
  - Construct Yogyakarta - Kertosono Section;
  - Develop optimal government support for finance and implementation to attract the private sector participation and finance;
  - Utilize the private sector's O&M and management skills;
  - Utilize the private sector funds; and
  - Introduce competition and provide better services for users.

Considered Six Options

- Six options were discussed with MPW, considering sharing responsible sections, work, roles, and finances.

Option	Shared	Public Sector	Private Sector
1	Section	Solo-Kertosono	Yogya- Solo
2	Work	Base, Sub-Base	Pavement
3	Role (Lease)	Design, Build and Finance	Operate
4	Finance (DBFO)	Capital Subsidy (a)	The rest of the finances
5		Service Payment (b)	
6		(a) and (b)	

- Option 1: "Section sharing scheme." Financially feasible section is implemented under BOT scheme and not financially feasible sections will be constructed by the public sector and operated by the private sector, while a private company operates the whole sections.
- Option 2: "Work sharing scheme." A private company finances and constructs to the extent it can recover its cost by toll revenue and the public sector is responsible for financing and constructing remaining works, for example base, sub base, interchanges and bridges.
- Option 3: "Role sharing scheme (Lease)." The public sector designs, constructs, and finances whole section and a private company leases to operate.
- Option 4: "DBFO with upfront capital subsidy." A private company designs, constructs, finances, and operates the whole section based on concession right given through competitive bidding process by the Government. The Government makes initial upfront subsidy to PPP Co. to reduce financing requirements for construction and operation to a level supportable by tolls. (Revenue of PPP Co. mainly comes from tolls and PPP Co. bears toll revenue risk.)
- Option 5: "DBFO with annual service payment." The Government makes annual service payment to PPP Co. over the life of the road to reduce financing requirements for construction and operation to a level supportable by tolls. Toll revenue risk can be born by the public sector depending on the mechanism of service payment.
- Option 6: "DBFO with upfront capital subsidy and annual service payment." The Government makes initial upfront subsidy and an ongoing annual subsidy payment over the life of the road to the PPP Co. to reduce financing requirements for construction and operation to a level supportable by tolls. (Combination of Option 4 and Option 5).

Common Issues for All Options

- Land acquisition – Land acquisition is a critical factor for the private sector participation to toll road investment. The government will be required to execute and finance land acquisition in order to attract the private sector.
- Inflation risk – The law allows toll levels to be raised according to the inflation every two years. The government is required to approve toll increase according to the law in a timely manner with continuous strong commitment.
- Financial feasibility of the project – Financial support from the government is necessary to improve financial feasibility since traffic demand of the study sections will not be strong enough to generate sufficient cash to cover capital and operating costs.

Evaluation of Six Options

- Option 1:
  - Option 1 has low impact in leveraging public funds, utilizing private funds and know-how and achieving life cycle cost reduction.
  - Sections the public sector and the private sector are responsible for are separated and it is difficult to leverage the use of government funds effectively.
  - Traditional way of procurement for the public sector will not be suitable for LCC reduction.
  - On the contrary, the use of existing framework and traditional procedure will shorten a project development period, which is an advantage.
- Option 2:
  - The physical implementation of Option 2 is unrealistic.
  - At a construction stage, division of work between the public and the private sectors will be complicated. Strong coordination on schedule and output is required. Latent defect needs to be defined clearly and completion delays are also critical issues.
- Option 3:
  - Option 3 has low impact in leveraging public funds and utilizing private funds and know-how because the government has to mobilize full funds for the initial capital expenditure.
  - A private company will be reluctant to take rehabilitation and maintenance cost risk, requesting higher risk premium and/or lowering a level of service during the operation.
  - The private sector will be willing to participate in the project under this arrangement with manageable risk.
- Option 4:
  - Option 4 has high impact in leveraging public funds and utilizing private funds and know-how, but needs to get approval from KKPPI, MOF and parliament.
  - Competitive bidding of a package including design, construction, finance and operation enforces the private sector to reduce life cycle cost.
  - Division of works is clear and simple.
  - Demand risk will be remained in the private sector although it will be mitigated to some extent by capital subsidy from the government.
- Option 5:
  - Option 5 has high impact in leveraging public funds, utilizing private funds and know-how, and reducing life cycle cost, but needs to get approval from KKPPI, MOF and parliament.
  - Secured long-term payment stream from the government will promote long-term financing of PPP Co. from private financial institutions.
  - Demand risk can be fully mitigated by the government depending on the mechanism of service payment.
  - Division of works is clear and simple.
  - However, the payment from the government will be larger than Option 4.
- Option 6:
  - Option 6 has similar advantages as option 5 and will require less payment at net present value than option 5 by utilizing public financing for initial capital expenditure.
  - The size of funding requirement of the Government at upfront and during the life time of road will be manageable.

Recommendation

Capital Subsidy from GOI to PPP Co.:

- It is recommended that GOI provide PPP Co. with capital subsidy to lower its financial requirements down to the level affordable by toll revenues.
- The level of capital subsidy will be bid by the private sector.
- The source of funds for GOI will be budget allowance, borrowing, and/or government bond.

Stipulated Service Payment from GOI to PPP Co.:

- In order to secure revenues for PPP Co. and promote the private sector's access to long-term financing, it is recommended to provide stipulated service payment from GOI to PPP Co.
- GOI is able to structure a payment mechanism based on PPP Co.'s performance and avoid moral hazard of the private sector.
- The service payment based on performance will provide PPP Co. an incentive for better services and enables GOI to provide with output based subsidy.

PART III

OPTIMUM PPP SCHEME

7 RECOMMENDED PPP SCHEME

PPP Scheme

- DBFO with upfront capital subsidy and annual service payment
- Under option 6, the private company is responsible for design, construct, finance, and operate the whole sections based on concession right given through competitive bidding process by the public sector.
- The Government makes initial upfront subsidy and an ongoing annual subsidy payment over the life of the road to the PPP Co. to reduce financing requirements for construction and operation to a level supportable by tolls.

Pros and Cons

Positive aspect:

- Division of works between the public sector and the private sector is clear and simple.
- Government subsidy and service payment (which is similar to revenue guarantee) will be utilized to attract the private funds.
- LCC reduction will be considered by the private sector.
- Secured long-term payment stream from the government will promote long-term financing of PPP Co. from private financial institutions.
- Upfront subsidy and service payment will mitigate demand risk for the private sector.

Negative Aspects:

- It will be required that parliament endorses upfront subsidy and service payments after necessary consultation process with KKPPI and MOF.
- The government has to mobilize certain extent of funds while the government has tightened budgetary expenditure.
- Financing costs of the private sector will be higher than the public sector and the Government tends to compensate for the higher financing costs.
- It is necessary to create a new framework with coordination inside GOI (especially, upfront subsidy to PPP Co. and long term commitment for service payment), which is sometimes time consuming.

Finances (Solo-Kertosono)

Investment Cost (Rp. billion)

Main road	1,900
Pavement	1,208
Bridge	1,409
Interchange	124
Subtotal	4,642
Land acquisition	1,617
Financing cost for fund raising	100
Design	186
Construction supervision	186
Total	6,731

Finances of capital expenditure (Rp. billion)

Necessary funds for toll road construction		5,190
Public financing :Upfront subsidy		3,633
	Budget expenditure (30%)	1,090
	Concessional loan (70%)	2,543
Private financing		1,557
	Equity (30%)	467
	Debt (70%)	1,090
Land acquisition Cost (GOI responsibility		1,617
Total amount of financing		6,807

Revenue and Operating Costs:

- Fixed service payment by the Government
- 20 % of toll revenue (variable portion)
  - Fixed portion is paid by the Government for 15 years and level of fixed portion is calculated to achieve 20% project internal rate of return
- Annual operating expense is presumed at 20% of annual revenue.

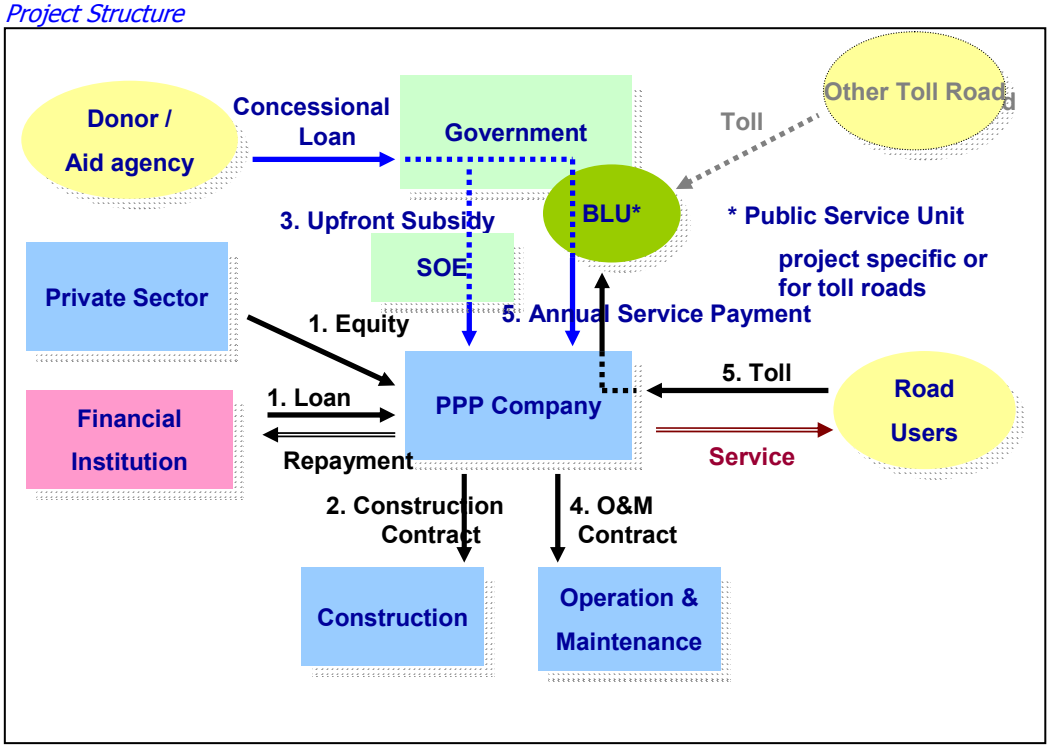
Results of financial projection:

- PPP Co. receives 20% of toll revenues, upfront subsidy and service payment. SPC would finance remaining amount, that is, the total capital expenditure less upfront subsidy from GOI, however, PPP Co. would receive sufficient cash to meet internal rate of return of 20 %.
- The Government will be required to raise funds for initial capital expenditure of Rupiah3.6 trillion (or US$371 million) and funds for land acquisition of Rp.1.6 trillion (or US$165 million). The fixed service payment from the government will amount to about Rp. 353 billion (or US$36 million), however, the toll revenue is expected to offset the cash outflow after 7 years of the operation.

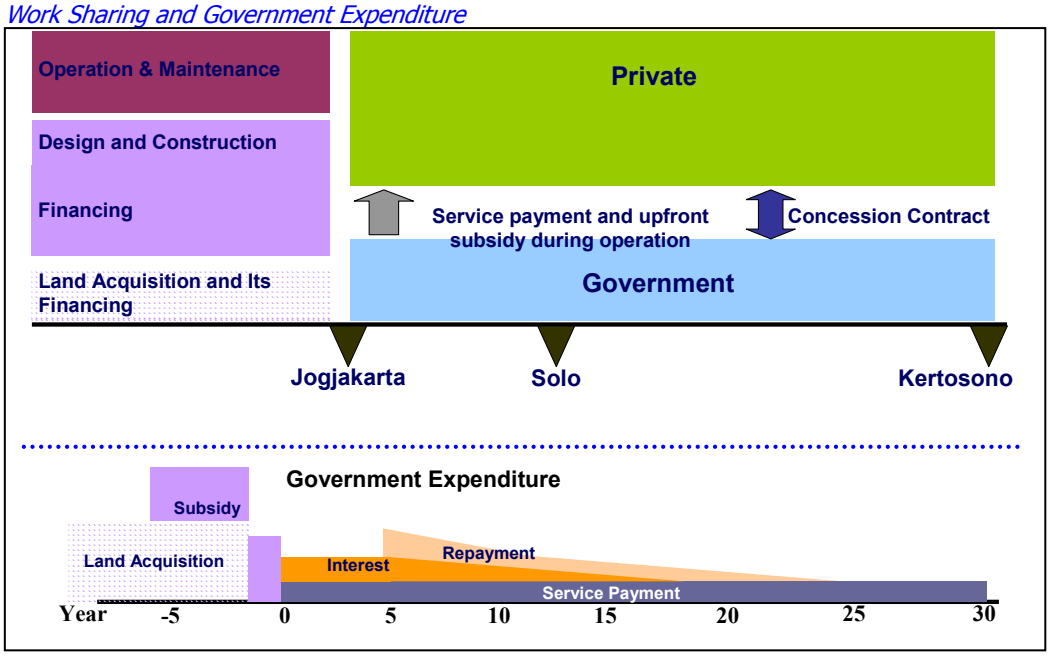
Payment Mechanism:

- It will be required to set up a subsidy scheme which is called Public Service Obligation (PSO) for upfront subsidy and service payment mechanism. MPW is required to formulate PSO for toll roads complying with its policy and consulting with KKPPI and Risk Management Unit of MOF.

Project Structure



Work Sharing and Government Expenditure



8 BIDDING GUIDELINES

General

- In the tendering process, the "Invitation to Tender (ITT)" should be available only to pre-qualified parties invited to tender based on a "Confidentially Agreement".
- MOPW should not accept any liability for the accuracy or completeness of information provided in the ITT.
- It should be noted that ITT is not intended to provide basis of any investment decision by the private sector.
- ITT includes instructions and guidance to Tenderers regarding:
  - Financial Matters
  - Programme
  - Land
  - Construction and Hand-back Requirements
  - Quality Management
  - Operation and Maintenance
  - Representatives
  - Third Parties
  - Payments
  - Insurance
  - Force Majeure
  - Change
  - Records and Reports
  - Disputes Resolution Procedure
  - Liaison Procedures
  - Communications and Toll Collection Requirements
  - Penalty Points
  - Statutory Undertakers
  - Pre-Commencement Works
  - Security of the Site
  - Re-Financing

Instructions to Tenderers

- Tenderers should be instructed on all arrangements regarding:
  - Liaison and coordination
  - Site Inspections Process
  - Surveys Procedures
- Submission of Tenders, on Standard Bid, in 3 separate parts:
  - Commercial
  - Technical
  - Financial, which should contain pricing information
- Tenders Evaluation Process、Timetable and Criteria to award the contract on the basis of the most economically advantageous offer.

Guidance to Tenderers

- Sub-Part A: Explanation of the Contract Management Requirements
  - Partnering:
    - With the Department and Relevant
    - Authorities
    - With third parties, such as
    - Contractor, Designer, Operator and Advisors
  - Management Plan:
    - 5-Year Performance Indicators
    - 5-Year Performance Target (minimum
    - Annual Target)
    - Arrangements for Measuring and
    - Monitoring
    - Annual Performance Report
- Sub-Part B: Explanation of Technical Requirements
  - Proposals for Construction Requirements
  - Review during Tender Period (for proposed alternatives)
  - Design Certification Procedure (independent checker)
  - Operation and Maintenance
  - Quality Management (design – construction - finance - operation): Quality Plans and DBFO Co. Quality Director
  - Communications and Toll Collection Requirements: Traffic control and monitoring system
  - Archaeology, Landscaping and Ecology
  - Hand-back Requirements: Joint inspection (5 years before contract expiry)
- Sub-Part C: Explanation of Commercial Requirements
  - Risk Transfer and Optimum risk sharing, risk matrix, traffic demand and payment mechanism and Force Majeure
  - Payment Mechanism: Payment schedule, construction period payment (upfront), Congestion management payments (deduction and bonus), Monitoring and Safety Performance Adjustment
  - Change Procedure: Eligible changes, Changing payment levels and Compensation events
  - Guarantee: Performance Guarantee
  - Refinancing
  - Taxation
  - Insurance (risks in design, construction and operation)

- Sub-Part D: Explanation of Tenders Required
  - Stipulating DBFO payments structure and timing
  - Standard Bid complying with core requirements and setting out proposed DBFO payments, key dates and interest rates
  - Variant Bids on the basis of different allocations of risk or alternative commercial terms
  - DBFO company profile including corporate structure, associations, capital structure, stakeholders' agreement, equity ownership and latest detailed accounts.
  - Principal contractual arrangements with levels and nature of experience and quality control monitoring procedures.
  - Details of major projects undertaken over the past 5 years.
  - Financial structure of DBFO Co., that not depends on governmental guarantees, commitments or support other than as specifically described in the ITT. Sources of financing should be submitted.
  - Traffic demand forecasts and congestion predictions including forecast procedure, key inputs and outputs, parameters, OD matrices, assignment modelling and traffic growth rates.
  - Financial model and projections with a form complying with guidelines on detail transactions. Financial projections include cash-flow, balance sheet, profit and losses, revenue, design and construction cost, operation and maintenance expenditure and capital of financial model.
- Sub-Part E: Evaluation of Tenders
  - Technical Evaluation
    Requirements of: construction – communications and toll collection – O&M – quality management – safety compliance
  - Financial and Commercial Evaluation
    NPV calculations – congestion management – risk transfer – inflation assumptions – non-user benefits – financial structure – variant bids

Project Specific Information

- Project description and road description: general overview of the project
- Details of Tenderers: names of short-listed bidders from the PQ process
- Financial Information: Base price date
- Department's design agents
- The road project: description, overview of statutory process and DBFO Co.'s roles in the statutory process.
- Payment from the department: Overview of type, timing and process for making payments to the DBFO Co.
- Contact persons: in respect of liaison with interested parties, site surveys, inspections and investigations.
- Submission of Tenders: latest date for submission
- Available data and information
- Advance works
- Land acquisition arrangements: details of land acquisition to comfort bidders that the land required for the road is available.
- Significant Hazards: list of any significant hazards.
- Environmental impact mitigation: identify any noise issues relevant to the road
- Traffic sensitive streets: any particular streets that must be considered in the design, such as residential streets which should not be accessed from the road.
- Traffic control, toll collection and communication systems: overview that to be developed by the Department and technical advisors.
- Rail-tracks: to identify any special considerations related to railways and particularly rail crossing
- Waterways: to identify any significant waterways this might be affected by the road.

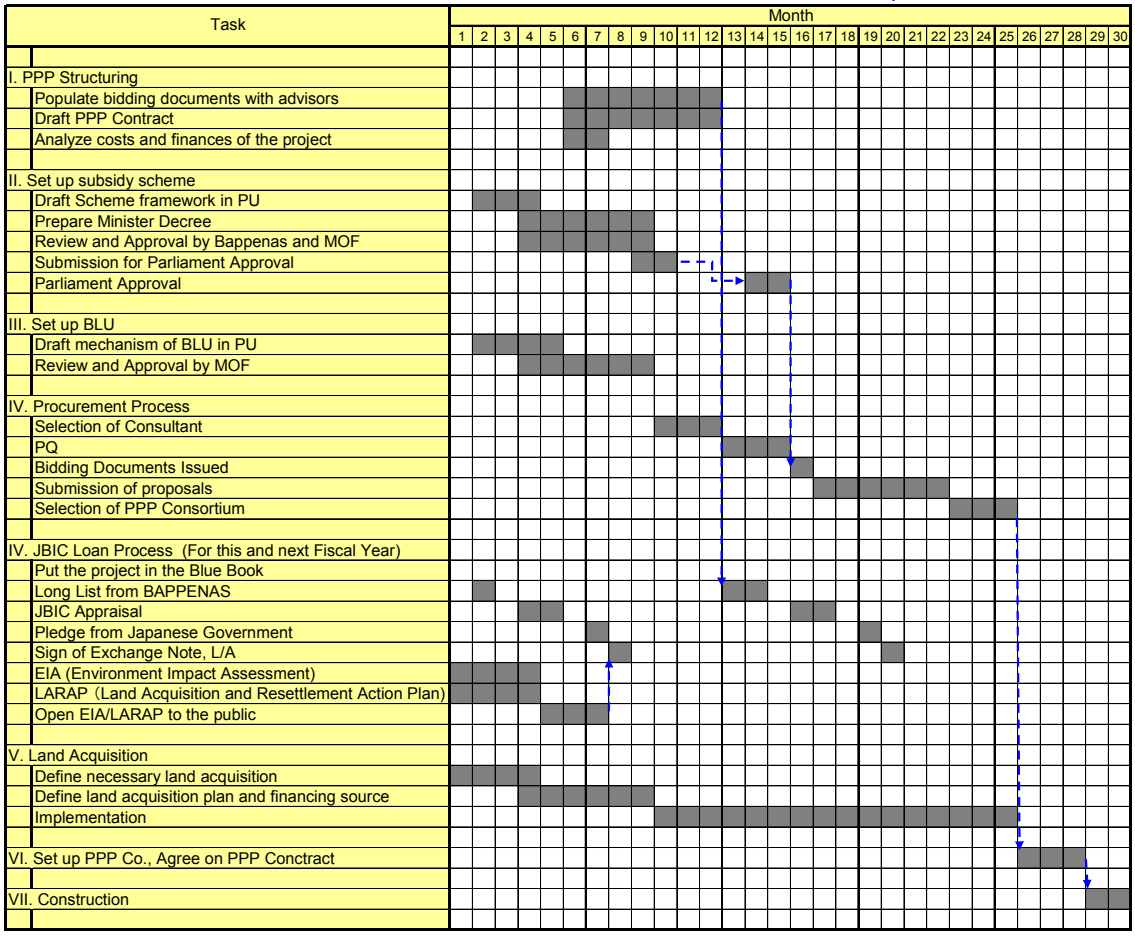
Differences from Current Bidding Documents

- Basic contents of ITT are similar to current bidding documents. However, some concept is different.
- ITT assumes that the Government is the one who pays for the provision of services and monitors performance of the private sector.
- ITT provides technical requirements based on output specifications and payment mechanism based on the private sector's performance.
- ITT requests tenderers to provide detail commercial and financial information in order to secure quality of services to the public.

9 IMPLEMENTATION PLAN

- The implementation plan and schedule of this project are designed to meet the target dates of completing and operating Trans Java Toll Road to accelerate development in Java Island.
- Optimizing both risk and task sharing is the key for successful implementation of the PPP scheme.
- Optimal risk sharing between the public and private sectors minimizing the risk management cost of the project.
- Tasks should be shared based on the party who can better handle each task without interference in responsibilities.
- It should be noted that the private sector can be used as a good tool in financing, developing and operating toll road projects but PPP can't turn a bad investment into a good one.
- The on-schedule implementation of the project depends mainly on:
  - Mobilizing strong and consistent political commitment is required to introduce and successfully implement PPP schemes for road infrastructure projects.
  - Setting-up the required payment mechanism for both up-front subsidies at the construction stage and annual service payment during operation.
  - Accelerating the land acquisition issue as a major factor for smooth and fast implementation process.
- Providing legislation system and financial resources and allocating the budget required for both land acquisition and government upfront subsidy and service payment.

Implementation Schedule



CONCLUSIONS
AND
RECOMMENDATIONS

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Project Justification:

- The Project Road between Yogyakarta and Kertosono is basically a part of Trans Java Toll Road that connects Merak at the west to Surabaya at the east connecting the centres of socioeconomic activities in Java Island with a total length of about 864 kilometres.

- The project meets the targets of national development plans to cope with growth in social, economic and tourism activities and to enhance regional development in central and eastern areas of Java Island.

- The project has been declared in the RPJM (Mid-Term Development Plan 2005-2009) and also has been stated in the following:
  - Strategic Plan of the Ministry of Public Works, 2005-2009
  - Minister of Public Works Decree No. 369/KPTS/M/2005 on National Road Network Master Plan to include toll road network master plan.
  - GOI has launched the Toll Road Acceleration Development Program through Indonesia Infrastructure Summit I, January 2005.

- The Project has also been declared as a Model Project for the implementation of toll road projects under PPP schemes during the Indonesian Infrastructure Exhibition and Conference (IIEC), November 2006.

- The project road condition is still far from satisfactory with only small sections that served by toll road and most parts are still marked as bad condition road.

- The Trans Java Toll Road is the backbone of Java Island road network and is essential for the island from the social, economic and commercial points of view. As the artery of land transportation in the island, it is used by 50-70 thousand units of vehicles every day and handles higher shares than other transport sectors of rail and sea.

- This East-West main road has been a dream for decades. A notable connection between Jakarta and West Tangirang, as a segment of the road, was completed in 1984. In East Java, another segment was completed in 1986, connecting Surabaya and Gempol. Jakarta Cikampek Toll Road, going eastward from Jakarta, was completed in 1988 to be a busy road along the northern coast of Java.

- Implementing Yogyakarta – Kertosono Toll Road has the main objectives of:
  - Improving the accessibility and capacity of road networks for the movement of people and freight on this transport corridor.
  - Promoting both national and regional socio-economic development in corridor-impact areas and cities along the road in eastern parts of Java Island
  - Increasing productivity with repression of distributional cost and giving access to regional and international markets.
  - Providing an efficient road transport network in Java Island to promote its rapid socioeconomic development.

Economic Evaluation:

- Results of the economic analysis show that the project road between Yogyakarta and Kertosono, with a total length of about 219km and cost of Rp. billion 8,059, is economically feasible with the following economic indicators (based on an annual discounted rate of 15% and constant 2006 prices):

  B/C: 1.887
  NPV: Rp. million 7,152,916
  EIRR: 28.18%

- Implementing only the Trans Java section between Solo and Kertosono, with a length of 165.8 km and cost of Rp. billion 5,902, gives a considerably low and unviable FIRR of 13.1% with the following viable economic indicators:

  B/C: 1.655
  NPV: Rp. million 3,917,406
  EIRR: 24.51%

Toll Rate Setting:

- The results of Willingness-to-Pay (WTP) survey showed that a toll rate of Rp. 200/km is socially accepted on the first operation year of 2010 for passenger vehicles. On the other hand, toll simulation results show that the maximum revenue will be generated at a toll rate of Rp. 400/km, which is recommended for this road project. The toll rates of Rp. 600/km and 800/km are applied for the two larger categories of vehicles.

- The applied toll rates for future years are subject to an adjustment mechanism that considers an annual inflation rate of about 7.2% that doubles the toll rate every a period of 10 years.

Future Traffic Demand:

- Traffic assignment results for the first operation year of 2010 show that the traffic shifted from the ordinary road to the new toll road has a ratio of about 65% when applying the socially accepted toll rate of Rp. 200/km, and the ration of 42% when applying the maximum-revenue toll rate of Rp. 400/km.

- The socially accepted toll rate will produce an average daily traffic volume (ADT) of 16,789 vehicles on the whole project road between Yogyakarta and Kertosono, and 14,748 vehicles on the Trans Java section between Solo and Kertosono.

- The maximum-revenue toll rate will produce an average daily traffic volume (ADT) of 9,276 vehicles on the whole project road between Yogyakarta and Kertosono, and 7,797 vehicles on the Trans Java section between Solo and Kertosono.

Necessity of PPP:

- The Project Road, as economically feasible and financially unviable, can't be implemented under conventional BOT finance and it requires governmental subsidy under a PPP scheme.

- Applying PPP scheme on the study road has many objectives and is expected to generate many benefits, including:
  - To provide a pilot PPP project that will open the market for more participation by private sector in financing public infrastructure projects in general.
  - To develop and provide more business opportunities for the private sector in order to carry out more roles in future.
  - To reduce governmental burden in financing major public infrastructure projects.
  - To allow the utilization of private sector experience, efficiency, flexibility and advanced technology in implementing and operating public projects.
  - To deliver better services to road users at lower costs.

PPP Scheme:

- At the end of 1980s, the Government of Indonesia invited the private sector to take part in the development of the toll road network through BOT schemes. However, BOT schemes can't be applied on financially unviable toll road projects with low traffic volumes. Such toll road projects, when economically feasible, require governmental contribution (subsidy) to be materialized under PPP schemes.

- Under PPP approach, the public sector is ultimately accountable for service provisions, although the private sector designs, builds, operates and maintains infrastructure. Applying PPP ensures provision of services by using private-sector management skills and finance capabilities at lower cost and better quality.

- To select the optimum PPP scheme to be applied on the project road, six PPP options were developed with common issues including the full responsibility of the Government for financing and executing land acquisition, applying adjustment mechanics on the toll rate that depends on inflation rates.

- The developed PPP options are:
  - Option 1: Segment dividing between government and private sector

- Option 2: Scope of work dividing; sub-base/base or structures by the government
- Option 3: Construction by government and lease to private sector
- Option 4: Upfront subsidy by the government during construction
- Option 5: Service payment by the government during operation
- Option 6: Upfront subsidy during construction and service payment during operation by government.

- PPP options are evaluated and assessed from all related aspects such as the practicability of physical and institutional implementation, attractiveness for private sector participation, financial projection and cash flow analysis, lifecycle cost reduction and least required government contribution.

- Evaluation results show that Option 6 is the most recommended option as the Optimum PPP scheme to be applied for project implementation. This scheme provides the least government contribution of Rp. 3,190 billion in NPV basis and amount of annual service payments of Rp. 1,390 billion with the earliest break- even point at the year 2022.

- PPP involves contracts between the public and private sectors for toll road infrastructure construction and operation where risks are shared between the parties. Risks are allocated to the party which is best able to manage, and therefore minimize, the cost of risks.

Recommendations

PPP Promotion:

- As a prior, the PPP program for the implementation of the project road as a pilot PPP road project should be launched by the Government as the political commitment in order to establish legalistic and financial steps required to proceed in the implementation process.

- With the high cost of land acquisition and implementing the road project, it is the most appropriate approach to utilize concessional loans, such as ODA funds with low interest rates, to finance the governmental subsidy portion under the selected PPP scheme.

- Details of transfer of finance and businesses from the Government to private sector and risk allocation among the public and the private participants need to be developed and defined in the project agreement. Excess risk transfer to the private sector and weak political commitment are main factors for failed PPPs. On the other hand, optimal risk allocation and strong political commitment are two key factors making good PPP projects.

- It will be effective to have legal and institutional framework on PPP. The slow progress has often related to deficiencies in legal and institutional frameworks in various countries. However, with many countries now initiating legislative changes and developing institutions to encourage PPP, a surge in these transactions elsewhere in the world may be expected.

- It is recommended to have a regulatory framework which allows a long-term payment commitment by the Government for PPP Projects in order to ensure systematical and smooth implementation of projects.

Optimum PPP Scheme:

- Option 6 is recommended as the Optimum PPP Scheme to implement Solo – Kertosono Toll Road, in which the government contribution is divided into upfront capital subsidy and annual service payment.

- Capital Subsidy from GOI to PPP Co.
  - It is recommended that GOI provide PPP Co. with capital subsidy to lower financial requirements of PPP Co. down to the level affordable by toll revenues.
    - · The level of capital subsidy will be bid by the private sector.
    - · The source of funds for GOI will be

budget allowance, borrowing, and/ or government bond.

- Annual Service Payment from GOI to PPP Co.
  - In order to secure revenues fro PPP Co. and promote the private sector's access to long-term financing, it is recommended to provide annual service payment from GOI to PPP Co.
    - GOI is able to structure a payment mechanism based on performance of the PPP Co. and to avoid moral hazard of the private sector.
    - The service payment based on performance will provide PPP Co. an incentive for better services and enables GOI to provide with output based subsidy.

- With regard to PPP procedure, it is recommended to assure competitive procedure enables optimal conditions for economy, transparency and efficiency. At the same time, it is desirable to take into account characteristics of the PPP approach which involves a long-term contract, requires the private sector a wide range of responsibilities, and encourages the private sector's free ideas for better services at lower costs.

- For government contribution, it is recommended to utilize concessional loans, such as ODA (Official Development Assistance) funds and national bank loans, to lower financial burden for an organization owns the network. In addition, private sector participation will require capital subsidy from the government and demand risk sharing with the government in order to lower financing requirements of the private sector down to the level affordable by toll revenues.

- Main factors for the success of PPP projects with regard to legislative issues can be summarized in three areas: (i) appropriate and effective transfer of businesses from the public sector to the private sector; (ii) effective and efficient selection process of proposals from the private sector; (iii) appropriate risk allocation among the public sector and private participants.

- The next step for PU is to draft a proposal on the subsidy scheme with long-term guarantee, funding resources and project implementation plan, setting up required payment mechanism and propose to BAPPENAS, KKPPI and MOF for approval.

Coordination with other related Agencies:

- Implementation of the road project under PPP scheme should be carried out as scheduled and in complete coordination with other infrastructure and socioeconomic development plans and major projects to provide optimum integration and maximum benefits.

- Good understanding and supporting by policy makers and budgeting agencies, such as Bappenas, KKPPI, Ministry of Finance and BPJT, are indispensable for successful implementation of the expressway network. MOPW should exert full effort to obtain understanding of those policy-makers and agencies.

- The preparation of an Environmental Impact Assessment and Resettlement / Compensation Action Plan with measures mitigating any negative impact on both natural and social environmental conditions, and coordination with the environmental agencies are important to be done throughout the different stages of project implementation.