

SUMMARY

Final Report

The Study

on

the Development Scheme

for

the Principal River Ports

in Indonesia



May 2002

Note: The following exchange rate are used in this report

US\$ 1.00 = Indonesian Rp. 9,500 = Japanese Yen 118.-

September 2001

Japan International Cooperation Agency (JICA)
Directorate General of Sea Communication (DGSC)
Ministry of Communications

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The Overseas Coastal Area Development Institute of Japan (OCDI)
Pacific Consultants International (PCI)



Muara Sabak Port (Jambi) Master Plan (2025)



Talang Duku Port (Jambi) Master Plan (2025)



Palaran Port (Samarinda) Master Plan (2025)



Samarinda Port (Samarinda) Master Plan (2025)

PREFACE

In response to the request from the Government of the Republic of Indonesia, the Government of Japan decided to conduct "The Study on the Development Scheme for the Principal River Ports in Indonesia" and entrusted the study to the Japan International Cooperation Agency (JICA).

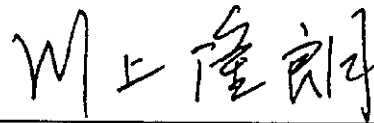
JICA selected and dispatched a study team headed by Mr. Takechiho Tabata of the Overseas Coastal Area Development Institute of Japan (OCDI) and comprised of OCDI and Pacific Consultants International (PCI) to Indonesia four times between February 2001 and May 2002.

The team held discussions with the officials concerned of the Government of Indonesia and conducted field surveys at the study area. Upon returning to Japan, the team conducted further studies and prepared this final report.

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

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

May 2002



Takao Kawakami

President

Japan International Cooperation Agency

LETTER OF TRANSMITTAL

May 2002

Mr. Takao Kawakami
President
Japan International Cooperation Agency

Dear Mr. Kawakami:

It is my great pleasure to submit herewith the Final Report of "The Study on the Development Scheme for the Principal River Ports in Indonesia".

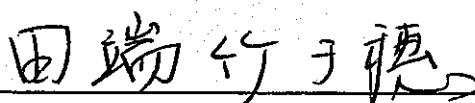
The study team comprised of the Overseas Coastal Area Development Institute of Japan (OCDI) and Pacific Consultants International (PCI) conducted surveys in the Republic of Indonesia over the period between February 2001 and May 2002 according to the contract with the Japan International Cooperation Agency (JICA).

The study team compiled this report, which proposes the future development scenario for the principal river ports and Master Plans and Short-term Plan of Jambi Port and Samarinda Port up to 2025 and 2007 respectively, through close consultations with officials of the Ministry of Communications of the Indonesian Government and other authorities concerned.

On behalf of the study team, I would like to express my heartfelt appreciation to the Ministry of Communications and other authorities concerned for their cooperation, assistance, and heartfelt hospitality extended to the study team.

I am also very grateful to the Japan International Cooperation Agency, the Ministry of Foreign Affairs, the Ministry of Land, Infrastructure, and Transport, and the Embassy of Japan in Indonesia for valuable suggestions and assistance during the course of the study.

Yours faithfully,



Takechiho Tabata

Team Leader

The Study on the Development Scheme
for the Principal River Ports in Indonesia

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EXECUTIVE SUMMARY

1. Selection of the Priority Ports

The Study Team carried out preliminary socioeconomic studies and data gathering on the natural/environmental conditions for the seven river ports. Based on the preliminary traffic forecasts, the Team prepared preliminary development scenarios for the seven ports.

Table 1-1 Major Projects Envisaged in the Study Ports (Sumatra)

Region	Port	Project site	Project profiles
Sumatra	Pekanbaru	Pekanbaru	Expanding the Siak Haska Terminal
		Perawang	Improving the access road Providing CPO handling capacity Expanding the container terminal
		Siak River	Installing navigation aids
	Jambi	Talang Duku	Expanding the terminal
		Muara Sabak	Improving the access road Providing yard-side capacity Creating an industrial base Expanding the container terminal
	Palembang	Boom Baru	Procuring additional equipment
		Sungai Lais	Providing CPO handling capacity Creating public terminals
		Musi River	Repairing navigation aids Optimizing maintenance dredging
		Tanjung Api-Api	Creating a deep sea-port and an industrial base

Table 1-2 Major Projects Envisaged in the Study Ports (Kalimantan)

Region	Port	Project site	Project profiles
Kalimantan	Pontianak	Pontianak	Expanding the existing container terminal Relocating the passenger terminal
		Nipah Kuning	Improving yard-side capacity Improving the access road to the site
		New River Port	Creating a new CPO/non-container cargo terminal
	Kumai	Kumai	Procuring additional loading/unloading equipment
		Bumiharjo	Creating a CPO terminal Improving the access road to the site Creating the full-scale CPO and container/general cargo terminal

Kalimantan	Sampit	Sampit	Procuring additional loading/unloading equipment
		Bagendang	Creating a CPO terminal Improving the access road to the site Creating the full-scale CPO and container/general cargo terminal
	Samarinda	Samarinda	Converting the wooden wharf into a new container berth Increasing yard-side capacity, including demolishing old port buildings Relocating the passenger terminal
		Mangku Palas	Providing cargo handling equipment
		New Port (Oceanfront or riverside)	Creating a new container/general cargo terminal Strengthening the linkage between the new port and Samarinda.

2. Comparison of the Seven Ports

The Study Team examined the seven river ports taking into account the projects envisaged there. In comparing the seven ports, the Team applied the following criteria as agreed to by the Indonesian side.

(1) Conformity to the Nation's Goals

PROPENAS identified the following policy goals: decentralization, poverty alleviation, competitive industries, rehabilitation, private sector participation, and improved access to remote areas. After examining the target ports according to these goals, the Study Team concluded that Jambi, Palembang, and Samarinda are slightly more recommendable for further study than four other ports.

(2) Capacity Requirements

The Study Team examined whether the river ports need urgent expansion due to capacity constraints. The Team evaluated berth occupancy ratio, productivity, and demand growth rate of each port and compared them. The Study Team found out that every port had the need for capacity increase.

(3) Impacts on the Regional Economy

The Study Team examined the impacts of river port development on the regional economy in two viewpoints, region's dependence on the port and improvement of the region's economic potential. To evaluate the former aspect, the Team used per capita export value and total international trade volume as indicators. The Study Team concluded that Pekanbaru and Samarinda are slightly more recommendable in this regard.

(4) Transportation Network and Regional Development

The following aspects were evaluated:

- Alternative transportation routes
- Prospects of the key supporting infrastructure
- Prospects of the key regional development

In this regard, Jambi, Palembang, and Pontianak have no reliable alternative transportation modes. On the other hand, Jambi, Palembang, Kumai, and Sampit have already started to develop supporting infrastructure, and thus port development in these ports are more realistic

than the other ports.

(5) Economics of the Port Development

The redevelopment of the existing port is rather costly. It will be even more costly to develop Tanjung Api-Api (Palembang) or Marang Kayu (Samarinda) as supporting infrastructures are not ready. The development of these two sites will also entail a higher economic risk.

(6) Engineering Aspects

From an engineering viewpoint, all candidate sites can be developed. Among the candidate sites, those close to the river mouth such as Muara Sabak have an advantage in the maintenance of the access channel. Port development at Tanjung Api-Api and Marang Kayu could encounter some engineering difficulty as their beaches are advancing. The Marang Kayu development will need a long breakwater as well.

(7) Environmental Consideration

The redevelopment of the existing port will involve relocation of the inhabitants and/or industries. Undisturbed mangrove communities are found at Tanjung Api-Api. Port development at the candidate sites will have some negative impacts on the fishing activity and road traffic around the port.

(8) Overall Evaluation

The Study Team followed the following principles in proposing the two ports for further study.

- 1) Bearing in mind that this Study should give the Indonesian side a guideline for river port development in general, it would be better to study the ports suffering from the most acute symptoms peculiar to river ports, narrow port area, siltation, and draft limitation.
- 2) One priority port in Sumatra and another in Kalimantan should be selected.
- 3) Ports with a current development plan do not have an urgent need for a JICA study at this time.
- 4) For the smooth conduct of the Study, safety at the project sites needs to be guaranteed.

The Team proposed Jambi in Sumatra and Samarinda in Kalimantan for further study. Samarinda was proposed as its port area is the most heavily congested among the seven ports and needs urgent attention. Samarinda has no port master plan either. On the other hand, the other three ports in Kalimantan, Pontianak, Kumai, and Sampit, have their port master plans.

Creation of a new terminal is already underway in Kumai and Sampit. There is also security concern for Kumai and Sampit.

Jambi was proposed as it has the most severe draft limitation, requiring vessels a tidal operation to call at Talang Duku. There is no port master plan covering Jambi Port, Talang Duku, Muara Sabak, and Kuala Tungkal.

DGSC, the counterpart agency of the Study, selected Jambi and Samarinda following the discussions on the Team's proposal at the steering committee.

3. Master Plan and Short-term Plan of Jambi

(1) Master Plan

The regional income of Jambi still mainly relies on primary products such as mining, oil and gas, agriculture, and forestry products. Between 1990 and 1999, exports showed an increase of 158% in volume and an increase of 95% in value. Jambi Province has the potential for food crops, horticulture, plantation, livestock, and forestry.

Despite this, river ports in Jambi Province suffer from shallow stream and many sharp bends. The river ports in Jambi therefore need to be improved to respond to the growing demand. Jambi province does not have a public port with a sufficient draft, while neighboring South Sumatra and Riau provinces have deep ports at Palembang and Dumai. Since lack of a deep port is hindering the development of the regional economy, development of Jambi port will have quite favorable impacts on the province.

The development targets for Jambi Port can be summarized as follows:

- 1) To help achieve a smooth and economical flow of cargo to/from Jambi Province.
- 2) To act as an impetus for the development of new industries in Jambi Province.
- 3) To decrease dependence on the government sector
- 4) To be developed as a feeder port of Singapore and Port Klang.
- 5) To be developed as a regional trunk port in accordance with the national network plan.

The Jambi master plan is prepared to respond to the future port traffic as well as the needs of the hinterland economy. Distribution of public cargoes is summarized below.

Table 2 Jambi Throughput Summary

Port	Cargo	2000	2007 (Short-term)	2025 (Long-term)
Talang Duku	Container (TEUs)	13,000	10,000	71,000
	General Cargo (t)	86,000	41,000	84,000
Muara Sabak	Container (TEUs)			
	Base Case	-	18,000	132,000
	High Public Case	-	26,000	213,000
	General Cargo (t)	-	76,000	225,000
Kuala Tungkal	Passenger	134,000	245,000	590,000

Out of the three areas of Jambi, Talang Duku is 150 km away from the river mouth and the water depth can be as shallow as 3m during the dry season. Bearing in mind that deepening the long access channel is unrealistic, the future port development in Jambi should be focused

on Muara Sabak. Since Kuala Tungkal is located along the Tungkal River, away from the Batang Hari River where a lot of private wharves are in operation, Kuala Tungkal cannot serve the Batang Hari Basin as a transportation infrastructure.

1) Talang Duku

Main components of the plan are shown in Table 3. Two berths for container will be created in the long-term between the existing container wharf and general cargo wharf. If coal exceeds the expected capacity of the new jetty (600,000 t/year), the coal terminal will be expanded to upstream. If CPO greatly increases and hinders the container handling, a wharf dedicated to CPO needs to be created either within or outside the IPC land area.

Table 3 Master Plan for Talang Duku (2025)

Major Facility	Dimensions
Additional Berths	2 Pontoons: 125m
Container Terminal	
Total Terminal Area	4 ha
Ground Slots	480 TEU
CFS	1,600m ²
General Cargo Terminal	
Shed	1,350m ²
Open Storage	2,500m ²
Container Handling Capacity	80,000 TEU/year
Construction Costs	Rp.126 billion

2) Muara Sabak

Main components of the plan are shown in Table 4. Three-four berths for container will be needed depending on the traffic scenarios. Two general cargo terminals need to be created as well. Some area is reserved for bulk cargo handling. The initial dredging costs of the inner channel are included in the construction costs.

Table 4 Master Plan for Muara Sabak (2025)

Major facility	Base case	High case
Additional Container Berths	3: 125m/berth, Draft 6m,	4: 125m/berth, Draft 6m
Container Terminal		
Total Terminal Area	7.5 ha	10 ha
Ground Slots	753 TEU	1,152 TEU
CFS	2,880 m ²	4,480 m ²
Container Handling Capacity	154,000 TEU/year	224,000 TEU/year
Additional General Cargo Berths	1	
Access Channel	Width = 110m, Depth = 6m	
Construction costs	Rp.626 billion	Rp.747 billion

3) Maintenance Dredging

Together with the port development at Muara Sabak, an improvement plan of the navigation channel is proposed in the estuary of Batanghari River (depth: -6.0 m, width: 110 m, extension of channel: 26 km). The maintenance dredging volume of the channel is estimated as 1,350,000 m³/year, an increase of 1 million m³/year over the current volume.

4) Siltation Prevention Measures

The degree to which river structures can decrease the dredging volume is very limited. The reduction of the maintenance dredging volume by closing dykes (extension: 800 m, construction cost: 5.6 million USD) along the Batanghari River is estimated as 150,000 m³/year (about 0.20 million USD/year). The construction cost of the dyke is equivalent to the reduction of the maintenance dredging cost over 28 years.

The benefit of the siltation prevention measures is very small considering the fact that these measures will impede the smooth traffic and the accompanying environmental risks.

(2) Short-term Plan

The master plan proposes that a major part of the port activity be transferred from Talang Duku to Muara Sabak after Muara Sabak becomes fully operational. Accordingly, urgent projects are proposed only in Muara Sabak. Main components of the plan are shown in Table 5.

Table 5 Short-term Plan for Muara Sabak (2007)

Major Facility	Base Case (Opened in 2008)	High Case (Opened in 2007)
Additional Container Berths	1: 125m/berth, Draft 6m,	
Container Terminal		
Total Terminal Area	2.5 ha	2.5 ha
Ground Slots	257 TEU	371 TEU
CFS	320 m ²	640 m ²
Container handling capacity	47,000 TEU/year	
Additional General Cargo Berths	1	
Access Channel	Width = 80m, Depth = 4.5m	
Construction Costs	Rp. 242 billion	

(3) Project Evaluation

The proposed master plan and short-term plan are viable both financially and economically. In

the financial analysis, the dredging costs of the channel are distributed between the central government and IPC (see the Recommendations). FIRR will significantly improve if IPC is exempted from the entire dredging costs (See Section 24.6, Case 4).

Table 6 Project Evaluation for Jambi

Plan	FIRR (Financial Internal Rate of Return)	EIRR (Economic Internal Rate of Return)
Master Plan	6.0%(Base Case) 8.7%(High Case)	19.2%(Base Case) 18.1%(High Case)
Short-term Plan	6.8%(Base Case) 7.1%(High Case)	19.8%(Base Case) 18.2%(High Case)

4. Master Plan and Short-term Plan of Samarinda

(1) Master Plan

The regional income of East Kalimantan still mainly relies on primary products such as mining, forestry and agricultural products. Between 1991 and 1995, export showed an increase of 80% in volume and an increase of 28% in value. East Kalimantan Province has the large potential for crude oil, coal, forest product, and agricultural plantation.

Despite this, river ports in East Kalimantan Province, especially in Samarinda are hindered by the long, shallow stream. The river ports in Samarinda therefore need to be improved to respond to the growing demand.

The development targets for Samarinda Port can be summarized as follows:

- 1) To help achieve a smooth and economical flow of cargo to/from East Kalimantan Province.
- 2) To act as an impetus for the development of new industries in East Kalimantan Province.
- 3) To decrease dependence on the government sector
- 4) To be developed as a feeder port of Surabaya and Tanjung Priok.
- 5) To be developed as a regional trunk port in accordance with the national network plan.

The Samarinda master plan is prepared to respond to the future port traffic as well as the needs of the hinterland economy. Distribution of public cargoes is summarized below.

Table 7 Samarinda Throughput Summary

Port	Cargo	2000	2007 (Short-term)	2025 (Long-term)
Palaran	Container (TEUs)	-	160,000	399,000
Samarinda	Container (TEUs)	69,000		
	General Cargo (ton)	344,000	455,000	1,065,000
	Passenger (persons)	197,000	277,000	-
Selili	Passenger (persons)	-	-	472,000

1) 6-berth Scenario

Main components of the plan are shown in Table 8. The Study Team proposes to create a new modern container terminal at Palaran. This requires land acquisition by the relevant organizations.

Table 8 Master Plan for Samarinda (2025)

Major Facility	Dimensions
Container Berth (New)	6 Berths: 125 m/berth, Draft 6 m
Container Terminal	
Total Terminal Area	19 ha
Ground Slots	2,304 TEU
CFS	8,320 m ²
Container Handling Capacity	442,000 TEU/year
General Cargo Berth (Redevelopment)	9 Berths, Draft 6 m
General Cargo Terminal	
Shed	6,800 m ²
Open Storage	31,300 m ²
Passenger Terminal	1 Berth: 120 m, Draft 3.7 m
Terminal Area	1 ha
Construction Costs	Rp. 931 billion

2) 4-berth Scenario

Main components of the plan are shown in Table 9. Four-berth scenario is examined just in case large land area cannot be acquired. This scenario assumes 24-hour operation and higher productivity of the terminal in order to make up for the shorter quay length.

Table 9 Master Plan for Samarinda (4-berth Scenario)

Major Facility	Dimensions
Container Berth (New)	4 Berths: 125 m/berth, Draft 6 m
Container Terminal	
Total Terminal Area	15 ha
Ground Slots	2,304 TEU
CFS	8,320 m ²
Container Handling Capacity	404,000 TEU/year
General Cargo Berth (Redevelopment)	9 Berths, Draft 6 m
General Cargo Terminal	
Shed	6,800 m ²
Open Storage	31,300 m ²
Passenger Terminal	1 Berth: 120 m, Draft 3.7 m
Terminal Area	1 ha
Construction Costs	Rp. 705 billion

3) Maintenance Dredging

The maintenance dredging volume in the Mahakam River channel was about 1,000,000 m³/year in the year 2001 (up to -5 m of the channel depth). In order to secure a channel depth of 6m to accommodate the port development at Palaran, the incremental volume of 600,000 m³/year is needed.

4) Siltation Prevention Measures

The degree to which river structures can decrease the dredging volume is very limited. The reduction of the maintenance dredging volume by closing dykes (extension: 900 m, construction cost: 9.0 million USD) along the Mahakam River is estimated as 250,000 m³/year(about 0.35 million USD/year). The construction cost of the dyke is equivalent to the reduction of the maintenance dredging cost over 26 years.

The benefit of the siltation prevention measures is very small considering the fact that these measures will impede the smooth traffic and the accompanying environmental risks.

(2) Short-term Plan

The master plan proposes that all container cargo handling activities of the port be transferred from the existing Samarinda Port to Palaran after Palaran becomes fully operational. Accordingly, urgent projects are proposed only in Palaran. Main components of the plan are shown in Table 10.

Table 10 Short-term Plan for Samarinda (2007)

Major Facility	6-berth Scenario	4-berth Scenario
Container Berth	3: 125 m/berth, Draft: 6 m	2: 125 m/berth, Draft: 6 m
Container Terminal		
Total Terminal Area	9.4 ha	7.5 ha
Ground Slots	913 TEUs	913 TEUs
CFS	3,520 m ²	3,520 m ²
Container Handling Capacity	173,500 TEU/year	168,000 TEU/year
General Cargo Terminal	3 Mobile Cranes	3 Mobile Cranes
Access Channel	Width = 80 m, Depth = 6 m	
Total Cost	Rp. 431 billion	Rp. 330 billion

(3) Project Evaluation

The proposed master plan and short-term plan is viable both financially and economically.

Table 11 Project Evaluation for Samarinda

Plan	FIRR (Financial Internal Rate of Return)		EIRR (Economic Internal Rate of Return)	
	6-berth Scenario	4-berth Scenario	6-berth Scenario	4-berth Scenario
Master Plan	7.7 %	10.9 %	17.2 %	21.8 %
Short-term Plan	7.0 %	11.0 %	18.8 %	22.1 %

5. Environmental Consideration

- 1) The soil erosion due to deforestation will continue in the future. According to the Team's estimate, oil palm plantation will cause the influx of 1.3 million tons of soil into the river in 2011. During the same period, 5.9 million tons of soil flows into the river from the entire Jambi province. Soil erosion prevention measures such as covering bare land with weeds or fallen leaves are indispensable.
- 2) Relocation of the inhabitants is expected only in Palaran site among the 4 proposed areas. An appropriate program of relocation and compensation should be enforced when the development plan is implemented.
- 3) Water treatment facilities should be established in order to prevent the inflow of oil, grease, heavy metals, coals and soil into the river. Construction of the port facilities will be accompanied by some negative impacts such as air pollution, noise and vibration. Appropriate countermeasures are therefore needed. In addition, environmental management and monitoring should be carried out according to the environmental management and monitoring plan formulated in the AMDAL study.
- 4) The traffic volume of the access roads will increase during the construction and operation phase of the project. Therefore the contractor should raise awareness about traffic safety among the residents through a series of meetings and publications. Traffic wardens should be posted at the congested intersections.
- 5) Jambi provincial government should continue the monitoring of the water quality in the Batanghari River. East Kalimantan province should start monitoring the water quality in the Mahakam River. Both provinces should try to raise awareness about the conservation of the river environment among the residents.

6. Recommendations

(1) Improvement of the Principal River Ports

All the seven ports covered in this Study are playing important roles in supporting the regional economy. At the same time, each port has problem areas requiring urgent attention. Accordingly, the Study Team recommends that the pertinent Indonesian authorities, the central government, regional governments, and IPCs, should respond to the development needs of those ports, taking account of the problems and the preliminary scenarios identified in this Study.

The Study Team expects that the Indonesian side will apply the recommendations of this Study (distribution of the responsibilities and the review of the port working area) to those ports other than the selected priority ports.

(2) Implementation of the Short-term Projects

It is necessary to prepare for the implementation of the short-term projects in Jambi and Samarinda (See section 1 and 2).

As for Jambi, the Study Team recommends that the Indonesian side start the preparation assuming the base case. This is because the base case entails less risk while the difference with the high case in the short-term is insignificant. Further development should be started taking into account the cargo growth following the opening of Muara Sabak.

For Samarinda, the Study Team recommends the six-berth scenario since this scenario is more likely to happen as far as the terminal service is concerned. Therefore, the pertinent authorities including the provincial government and IPC should take necessary measures to acquire the land area needed for the port development.

Together with the decentralization process, Indonesia is changing the way it handles foreign loans. A system to effectively handle foreign loans is indispensable as the proposed port development projects need concessionary loans to make them feasible.

(3) Port Management

In accordance with the Regional Government Law (Law No.22/1999) and the Financial Balance Between Central and Regional Government Law (Law No.25/1999), the Indonesian government is moving towards decentralization. MOC (DGSC) has revised the port regulation to respond to the decentralization process.

DGSC is examining how the central government and local governments should share the responsibility of port management. Accordingly, the study team introduced the practices of burden sharing in foreign countries and identified the following areas which need the attention of DGSC.

1) Review of the Port Working Area and the Port Interest Area

The port working area and the port interest area should be reviewed in accordance with the new port regulation and the proposed master plans of Jambi and Samarinda. The Study Team proposed that the existing port working area should be separated into two: the area managed by the port authority (IPC) and the area administered by the central government. A new port working area should be established in the new development sites of Jambi and Samarinda.

2) Relocation of Port Offices

Port related offices in the existing Samarinda port should be relocated to make room for cargo handling. The port offices remaining in the old Jambi port need to be relocated to Talang Duku or Muara Sabak.

3) Improvement in the Port Administrative Service

In order to improve the port administrative services, it is necessary to expedite and simplify the procedures needed to get various permissions. Therefore it is necessary to simplify the related formats and introduce an EDI system.

4) Establishment of Cost-sharing Scheme

An appropriate cost-sharing scheme should be established in accordance with the new port working areas. The Study Team proposes that IPC should take care of the areas inside the river with the central government taking care of the areas outside the river mouth.

5) Staff Training

Responding to the decentralization process, an appropriate training system should be established to strengthen the port staff in the local authorities.

Table 12 Proposed Distribution of Responsibilities

Channel	Port Area	Owner of the Channel	Responsibility for the Channel Management	Harbor Master	Revenue from the Anchorage Fee	Responsibility for the Channel Dredging	
						Initial Dredging	Maintenance Dredging
River Channel	Port Working Area	Port Authority (IPC)	Port Authority (IPC)	Central Government (ADPEL)	Port Authority (IPC)	Port Authority (IPC)	Port Authority (Local governments and users may be requested to bear a part of the costs)*
Outer Channel	Port Interest Area	Central Government (DGSC)	Port Authority (Entrusted by the central government)	Central Government (ADPEL)	Port Authority (IPC)	Central Government	Central Government and Port Authority (Their share of the expenses needs to be negotiated between the two parties)

Change from the previous practices

- * 1 . The share of the local governments needs to be determined after the magnitude of the balance fund available for the port sector is made clear
- 2 . The share of the users should be determined taking into account their need of a deep draft

(4) Siltation Prevention and Dredging Program

1) Measurement for Management of Navigation Channel

The discharge from the river shows a great yearly fluctuation. The riverbed changes caused by the sediment transport and siltation are not constant. It is therefore necessary to conduct the bathymetric surveys in the entire reach of the channel over several years. Through these surveys the water level fluctuation and the concentration of suspended solid in the water will be analyzed and the characteristics of the riverbed changes can be identified.

Although it is necessary to measure the river flow on a regular basis, measuring the flow in the estuary is usually very difficult. To obtain the exact location data for the bathymetric survey in the navigation channel, the national coordination system or GPS (UTM; WGS 1984) will be quite useful.

A part of the river channel of Batanghari River and Mahakam River runs through the shallower side of the river. In Mahakam River, modification of the channel alignment has been already proposed for a certain area.

It is technically possible to modify the channel alignment and thereby reduce the maintenance dredging volume if the navigation channel runs through the deeper side of the river. It is therefore necessary to confirm the stability of the riverbed based on the bathymetry data.

2) Review of the Unit Price of Maintenance Dredging and Renewal of the Dredging Fleet

As for the maintenance dredging of navigation channel and harbor basin, the unit price of 6,000 – 7,300 Rp./m³ is currently applied in accordance with the agreements among Rukindo, the Government, and IPCs. Those unit prices are determined artificially low, excluding the depreciation cost and repair and maintenance cost of dredgers. This practice worsens the bottom line of Rukindo.

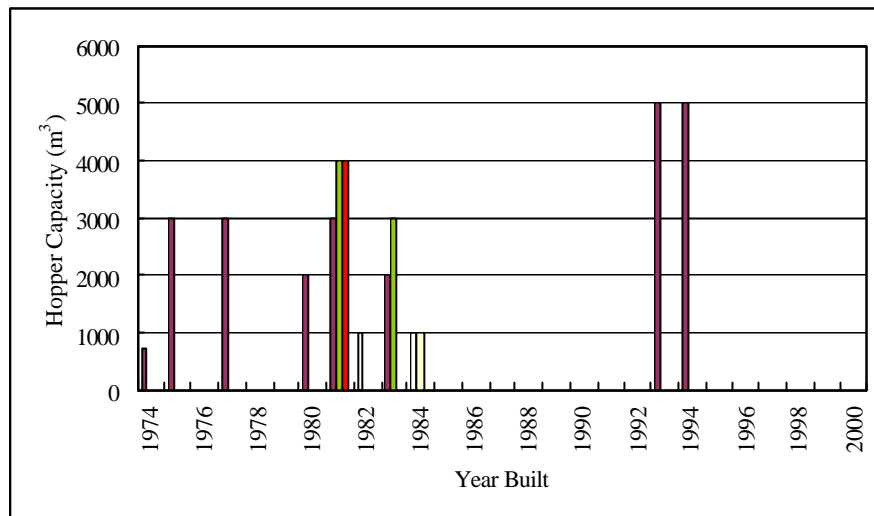
The Study Team carried out a preliminary estimate of the “market prices” of maintenance dredging based on the actual work conditions of the dredgers in the river channel in Batanghari River and Mahakam River. The result is as follows.

Jambi	19,000 – 20,000 Rp./m ³
Samarinda	13,000 – 16,000 Rp./m ³

The Study Team also learned that RUKINDO estimated the market price at 13,000 Rp./m³ for maintenance dredging.

The RUKINDO dredgers built in the 1970s are over 25 years of age while most of the

dredgers range from 18 – 20 years of age. Most of the dredgers were transferred from the Government to Perum Pengerukan (the forerunner of Rukindo; established in April 1983) free of charge.



Capacity and Year Built of Trailing Suction Hopper Dredgers of Rukindo

The replacement of the aging dredgers will become inevitable in the near future. Since the current contract prices for the maintenance dredging are not sufficient to finance the cost for the renewal, repair, and maintenance of the dredgers, the Study Team recommends that the contract prices should be increased to bring them closer to the “market price”.

Implementation Organization, Duration, and Flowchart of the Study

1. JICA Study Team

The Study Team was made up of the experts listed below.

Experts	Assignment
Mr. Takechiho TABATA	Team Leader / Port Policy
Mr. Mitsuhiro OKADA	Port Planning (1) / Investment Planning
Mr. Koichiro HAYASHI	Port Planning (2) / Financial Analysis
Mr. Hiroshi HORIKAWA / Dr. Haruo OKADA	Regional Planning
Mr. Hiroshi MAEDA	Port Management (1)
Mr. Eiji HASEBE	Port Management (2)
Mr. Robert G. Brown	Economic Analysis / Demand Forecast
Mr. Kazutoshi KASHIMA	Siltation Prevention / Dredging Planning
Mr. Kazuki AIHARA	Shipbuilding
Mr. Masaaki GOSHIMA	Engineering Design / Implementation Planning / Cost Estimate
Mr. Toru WATANABE	Natural Conditions
Mr. Tsukasa KISHIMOTO	Environmental Consideration
Mr. Hiroto SUZUKI / Mr. Kenji NAKANISHI	Coordination

2. Counterpart and Coordination Committee

MOC served as a counterpart agency of the Study Team. MOC established a steering committee composed by officials of the following agencies (See Figure 1).

Ministry of Communications
BAPPENAS
IPC 1-4
RUKINDO

Related provincial governments (Riau, Jambi, South Sumatra, West Kalimantan, central Kalimantan, East Kalimantan)

The committee was chaired by Ir. Tjuk Sukardiman, Msi, Director General, DGSC, Ministry of Communications.

MOC also established a working team to coordinate the day-to-day progress of the Study. Ir. Djoko Pramano, Acting Director of Port and Dredging, DGSC, chaired the working team meeting

3. Ministry of Foreign Affairs and JICA

The following officials of the Japanese Government and JICA supported the Study Team.

Ministry of Foreign Affairs
Japanese Embassy in Indonesia Mr. Shigeki MURATA First Secretary

JICA
First Development Study Division, Social Development Study Department
Mr. Toshio HIRAI, Director
Mr. Yodo KAKUZEN, Deputy Director
Ms. Reiko FUNABA

Indonesia Office
Mr. Michio KANDA, Resident Representative
Mr. Takeshi OKODA

JICA Expert dispatched to DGSC Mr. Yoshiaki HIGUCHI

4. Field Survey

First Stage	February to April 2001
Second Stage	June to August 2001
Third Stage	October to December 2001
Forth Stage	February to March 2002

5. Flowchart

The Study was carried out according to the flowchart shown in Figure2.

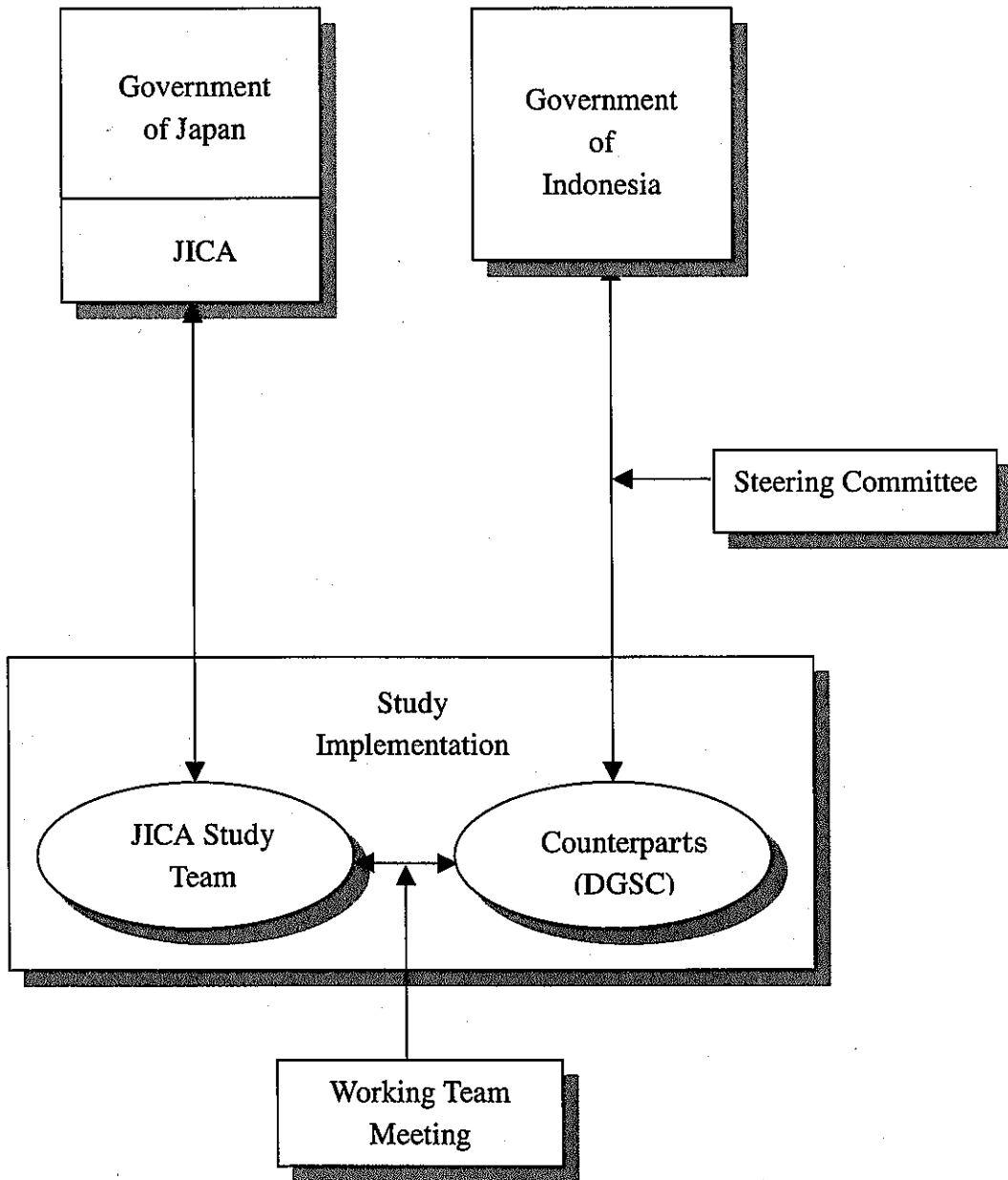


Figure 1 Study Organization

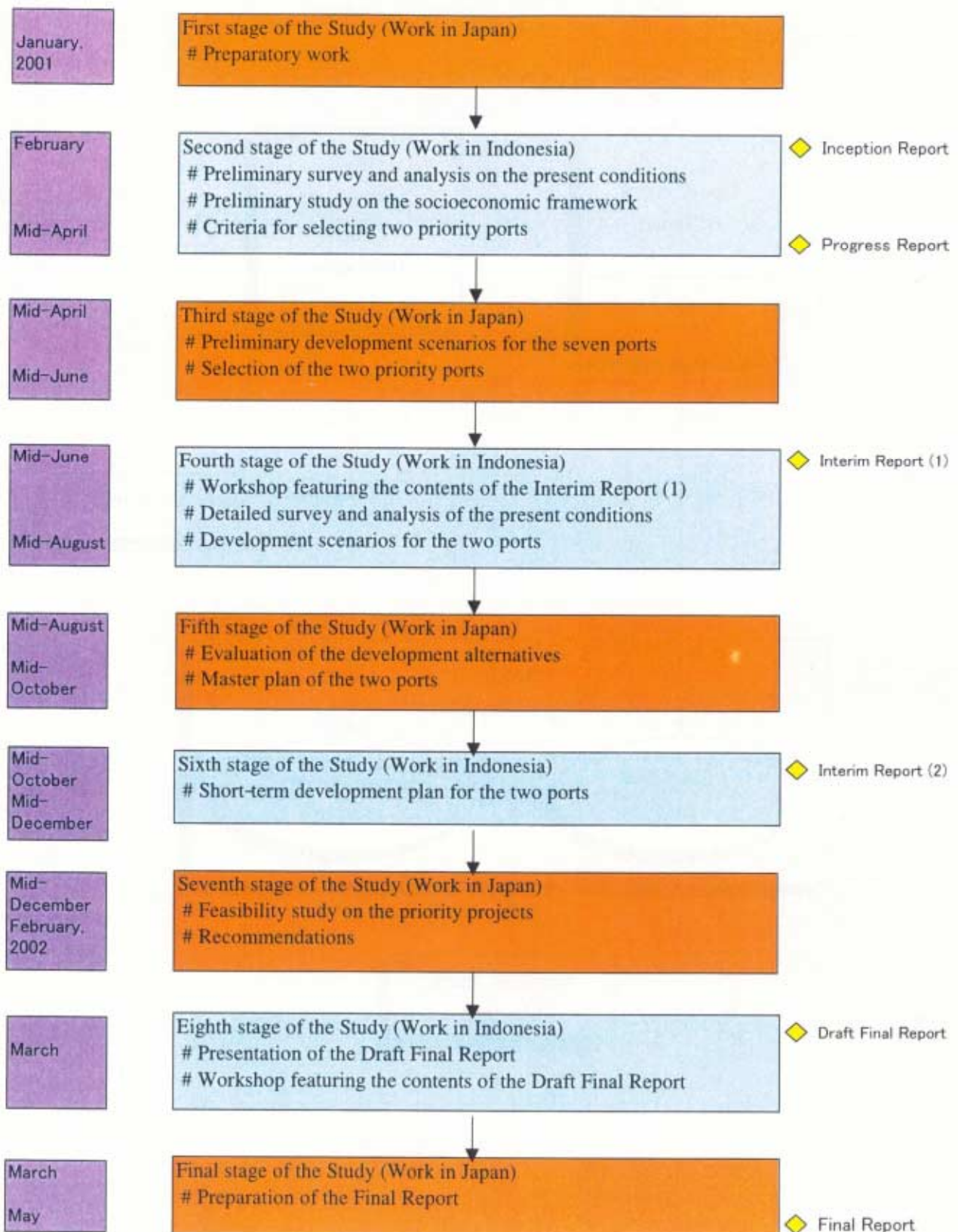


Figure 2 Study Flowchart

Part 1 INTRODUCTION

1. INTRODUCTION

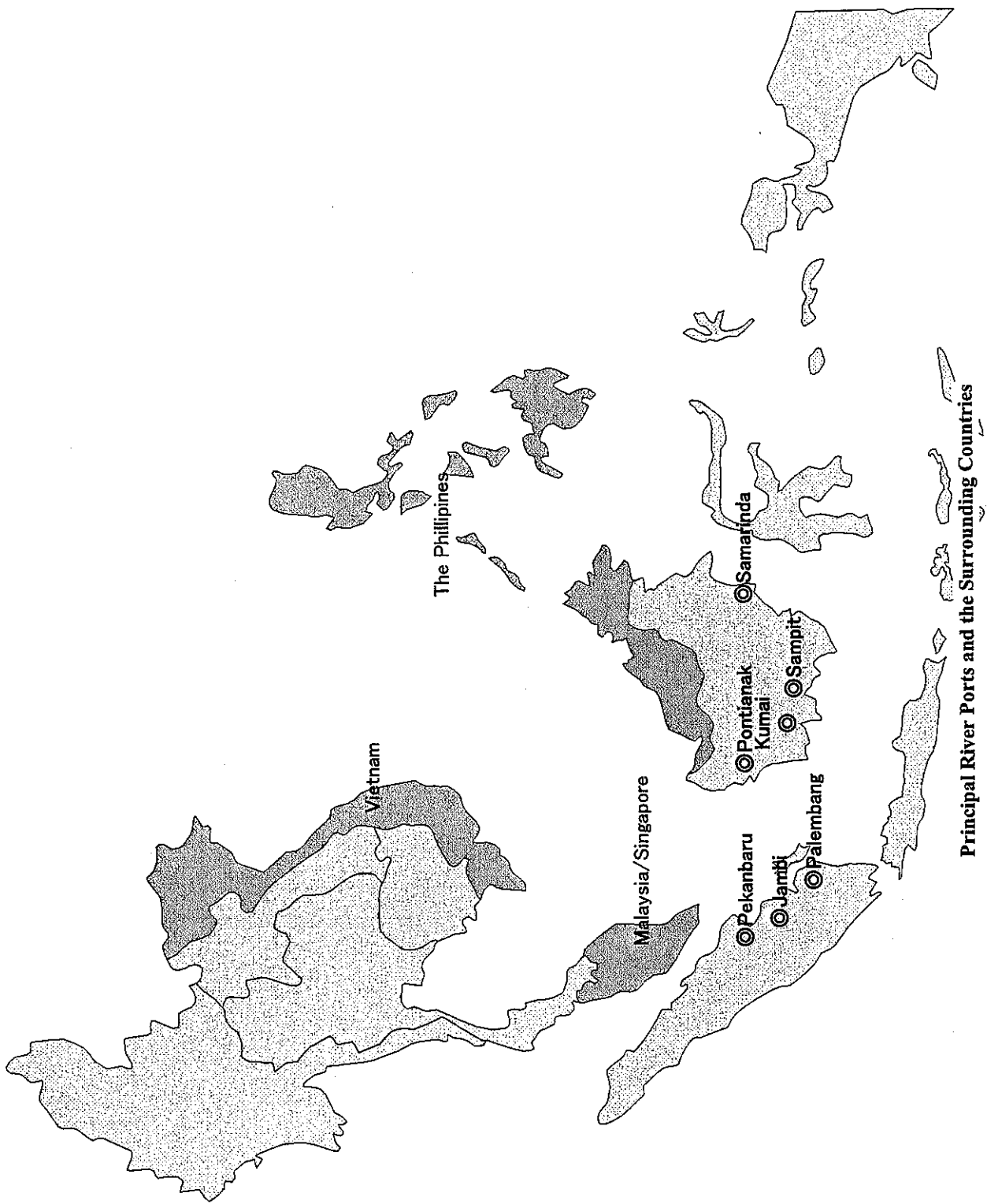
1.1 Introduction

In response to the request of the Government of the Republic of Indonesia (hereinafter referred to as “GOI”), the Government of Japan (hereinafter referred to as “GOJ”) has decided to conduct the Study on the Development Scheme for the Principal River Ports in Indonesia (hereinafter referred to as “the Study”).

Accordingly, the Japan International Cooperation Agency (hereinafter referred to as “JICA”), the official implementation agency of technical cooperation programs of GOJ, dispatched a preparatory study team to Indonesia in September 2000, and reached an agreement with GOI on the scope of the Study.

JICA dispatched a full-scale study team headed by Mr. Takechiho Tabata (hereinafter referred to as “the Study Team”) in February 2001 to carry out the Study. During the succeeding twelve month, the Study Team carried out interviews and site visits on the target ports and prepared the Progress Report, Interim Report (1), and Interim Report (2) to show the interim results of the Study. The Study was made up of three separate two-month field surveys. Throughout the Study, the Study Team maintained close contact with the Directorate General of Sea Communication (hereinafter referred to as “DGSC”), the counterpart agency of this Study, and responded to the comments and requests of GOI.

The Study Team prepared this Draft Final Report compiling all the study findings and data analysis. This report also includes recommendations on the policy mix to be taken for the development of the principal river ports. The Study Team will finalize this report taking account of the views and comments of GOI.



Principal River Ports and the Surrounding Countries

1.2 Background of the Study

Indonesia is an island country formed by a great archipelago. It is located at the crossroads of the busiest shipping routes linking Europe, the Far East, North America, and Oceania. Accordingly, Indonesian ports have been playing important roles in sustaining the economic activities of the country. They are indispensable for both domestic and international transportation. In the age of global economic integration, ports will continue to serve the nation as one of the key infrastructures.

On the other hand, Indonesia is in a process of decentralization in terms of economy and administration. Port management is no exception in the process, and thus requires an integrated policy which is both economically sound and technically feasible. Among numerous ports in Indonesia, river ports need special attention. That is because those ports require significant efforts and funds to maintain, while they are essential to sustain the regional economy. Out of 25 strategic ports, six are located in rivers and account for 15% of the total cargo throughput. Maintenance dredging of the river ports currently consumes a quarter of the total national budget for the port sector and will become harder to continue unless the costs are properly controlled and distributed among the parties concerned.

Siltation is a chronic problem for river ports and requires a significant amount of study to understand, not to mention to find a way to control. This Study is therefore conceived to collect the data on natural conditions rather in detail. Extensive field surveys will be carried out in the course of the Study, including sedimentation and geotechnical conditions. An economic viewpoint is also important since there could be alternatives to maintaining a river port, including creation of a new seaport. Ever enlarging vessels require deeper draft in the years to come. Introduction of shallow-draft vessels also needs attention as it could reduce the dredging costs.

Taking into account the above situation, the Study addressed both economic and physical aspects of the seven principal river ports and proposed a policy-mix to realize their sustainable development.

1.3 Abbreviations

ADPEL	Port Administrator Office
ADB	Asian Development Bank
AMDAL	Environmental Impact Assessment
ASEAN	Association of South East Asian Nations
BAPEDAL	Environmental Management Agency
BAPEDALDA	Provincial Environmental Management Division
BAPPEDA	Provincial Development and Planning Board
BAPPENAS	National Development Planning Agency
BOD	Biological Oxygen Demand
BOT	Built-Operate-Transfer
BPS	Central Bureau of Statistics
BPPN	Indonesian Banking Restructuring Agency
BUMN	State Owned Company
CFS	Container Freight Station
CPO	Crude Palm Oil
DINAS	Provincial government
DGAC	Directorate General of Air Communication
DGLC	Directorate General of Land Communication
DGSC	Directorate General of Sea Communication
DLKR	Port Working Area
DLKP	Port Interest Area
EIA	Environmental Impact Assessment
GBHN	Broad Outlines of the Nation's Direction
GDP	Gross Domestic Product
GOI	Government of Indonesia
GOJ	Government of Japan
GRDP	Gross Regional Domestic Product
GRT	Gross Register Tonnage
GT	Gross Tonnage

IBRA	Indonesian Banking Restructuring Agency
IBRD	International Bank of Reconstruction and Development
INSA	Indonesian National Ship Owner Association
IPC	Indonesia Port Corporation
JBIC	Japan Bank for International Cooperation
JICA	Japan International Cooperation Agency
KANPEL	Port Administration Office (Non-commercial Port)
KANWIL	Provincial Branch Office of the Ministries
KAPET	Integrated Economic Development Areas
MOC	Ministry of Communications
MOF	Minister of Finance
MOU	Minutes of Understanding
NO _x	Nitrogen Oxide
OD	Origin and Destination
OECD	Overseas Economic Cooperation Fund
PELINDO	IPC (Indonesia Port Corporation)
PELNI	Indonesian National Shipping Company
PERINTIS	Pioneer Ship System to Serve Remote Area
PERUMKA	Indonesia State Railways
PELRA	Traditional Wooden Vessel
PERSERO	State-Owned Company
PERTAMINA	State-Owned Oil Company
PERUM ASDP	State-Owned Ferry Terminal Company
PJP	The Second Long Term Development Plan
PROPENAS	New National Five-year Development Program
P.T.	Limited Company
PT.RUKINDO	Indonesia Dredging Company
REPELITA	National Five-year Development Plan
REPELITADA	Local Five-year Development Plan
RKL	Environmental Management Plan
RPL	Environmental Monitoring Plan

Rp.	Rupiah
RTRW	Spatial Use Plan
TEU	Twenty Foot Equivalent Unit