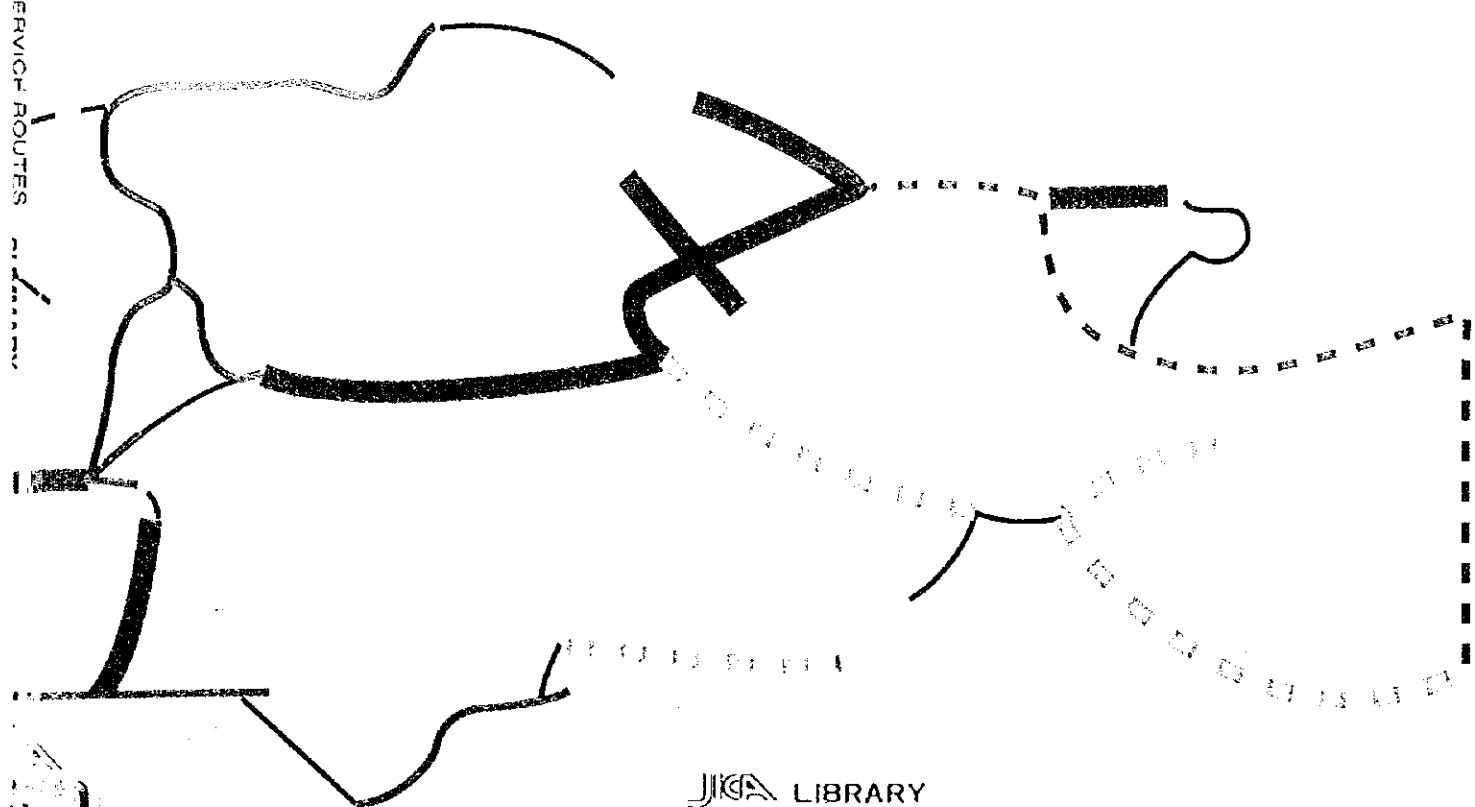


JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
MINISTRY OF COMMUNICATIONS (MOC)

FINAL REPORT THE DEVELOPMENT STUDY ON THE NATIONWIDE FERRY SERVICE ROUTES(STAGE II) IN THE REPUBLIC OF INDONESIA

SUMMARY

OCTOBER 1998



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PREFACE

In response to the request of the Government of the Republic of Indonesia, the Government of Japan decided to conduct the Development Study on the Nationwide Ferry Service Routes (Stage II) in the Republic of Indonesia and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to the Republic of Indonesia a study team headed by Mr. Takao Hirota, President of the Overseas Coastal Area Development Institute of Japan (OCDI) and composed of members from OCDI and Pacific Consultants International (PCI) four times between March 1997 and July 1998.

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

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

I wish to express my sincere appreciation to the officials concerned of the Government of the Republic of Indonesia for the close cooperation they extended to the team.

October, 1998

A handwritten signature in black ink, appearing to read 'Kimio Fujita', with a stylized, flowing script.

Kimio Fujita

President

Japan International Cooperation Agency

LETTER OF TRANSMITTAL

October, 1998

Mr. Kimio FUJITA
President
Japan International Cooperation Agency

Dear Mr. Fujita:

It is my great pleasure to submit herewith the Final Report of the Development Study on the Nationwide Ferry Service Routes (Stage II) in the Republic of Indonesia.

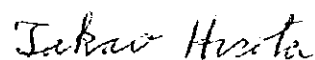
The study team which consists of the Overseas Coastal Area Development Institute of Japan (OCDI) and Pacific Consultants International (PCI) conducted surveys in the Republic of Indonesia over the period between March 1997 and July 1998 as per the contract with the Japan International Cooperation Agency.

The findings of this study, which are compiled in this report, were fully discussed with the officials of the Ministry of Communications of the Indonesian Government and other authorities concerned to formulate the Long-term Development Plan for the ferry routes for the period up to the year 2019, and to formulate and examine the feasibility of the Short-term Development Plan for the period up to the year 2004.

On behalf of the study team, I would like to express my heartfelt appreciation to the Government of the Republic of Indonesia, the Ministry of Communications and other authorities concerned for their diligent cooperation and assistance and for the heartfelt hospitality which they extended to the study team during our stay in Indonesia.

I am also greatly indebted to the Japan International Cooperation Agency, the Ministry of Foreign Affairs, the Ministry of Transport and the Embassy of Japan in Indonesia for giving us valuable suggestion and assistance during the preparation of this report.

Yours faithfully,



Takao Hirota

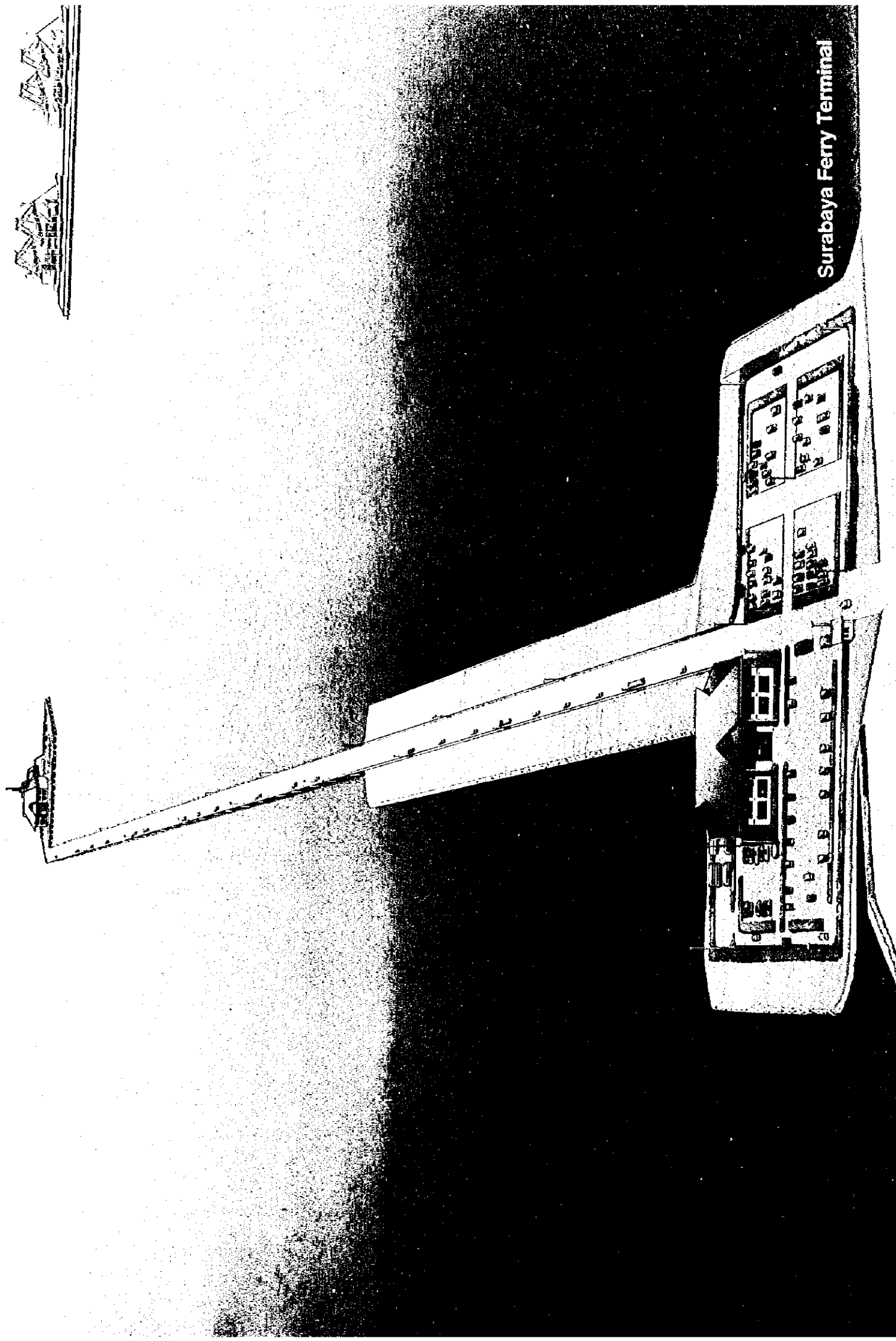
Team Leader for the Development Study
on the Nationwide Ferry Service Routes (Stage II)



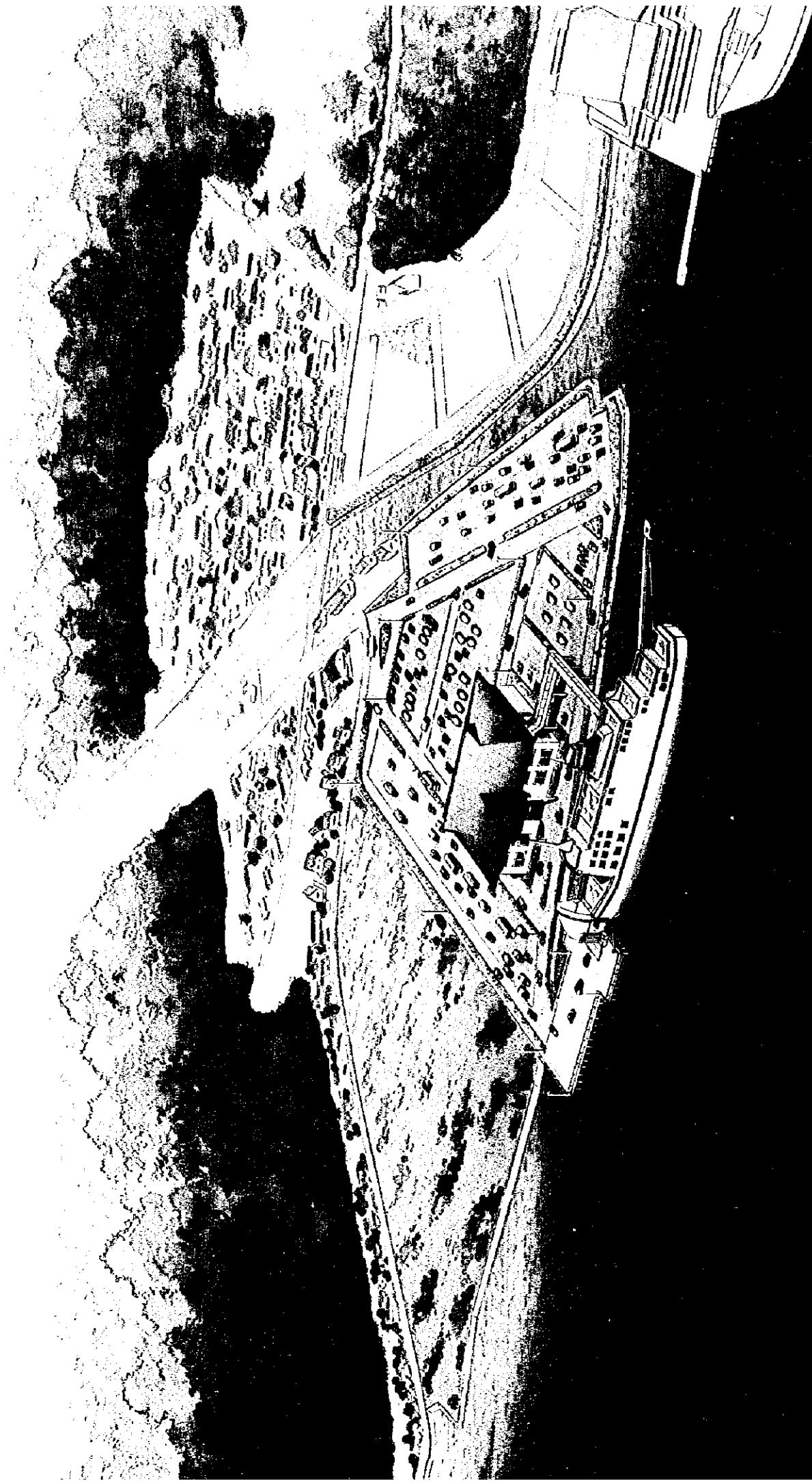
Location Map of Study Routes



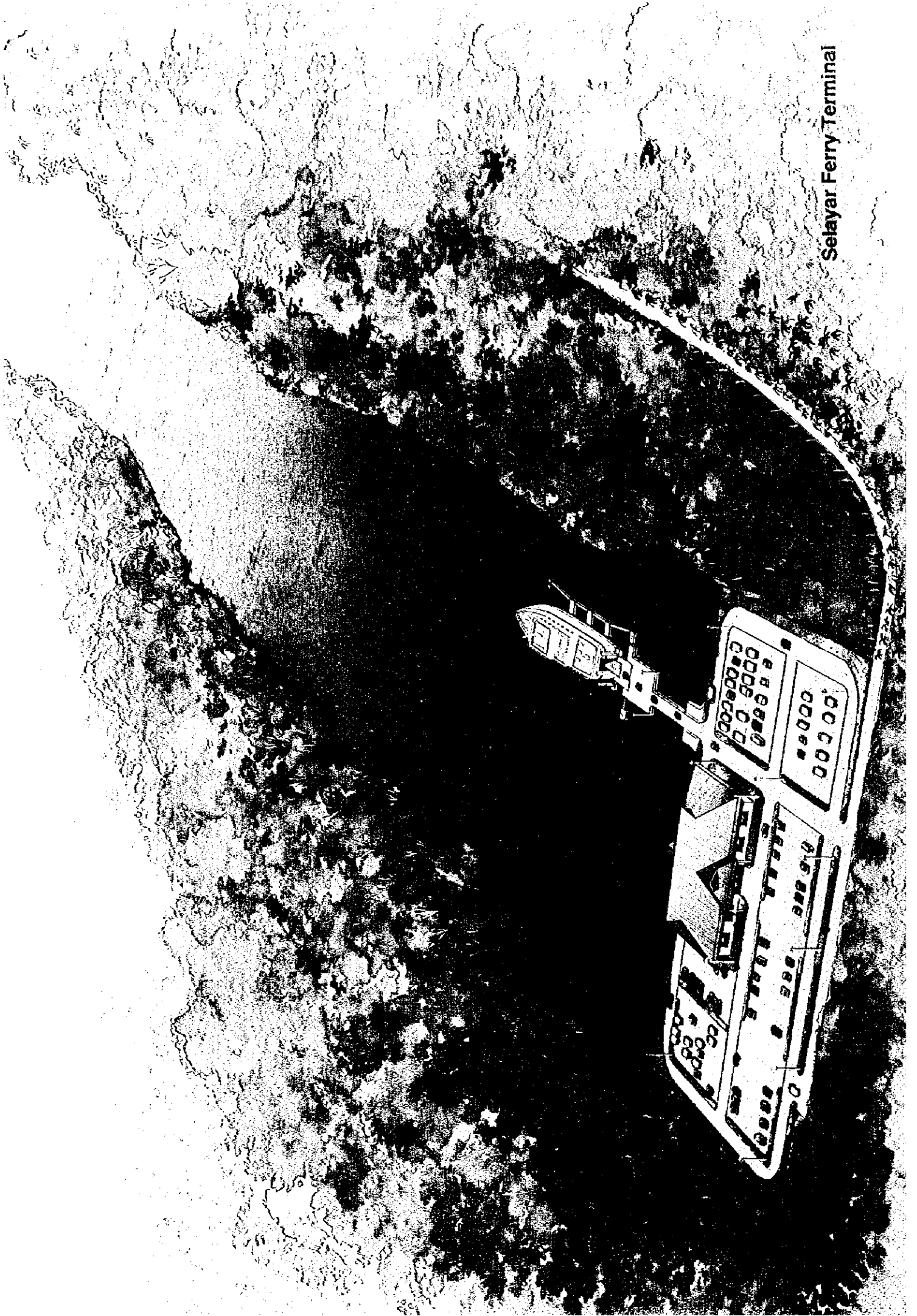
Surabaya Ferry Terminal



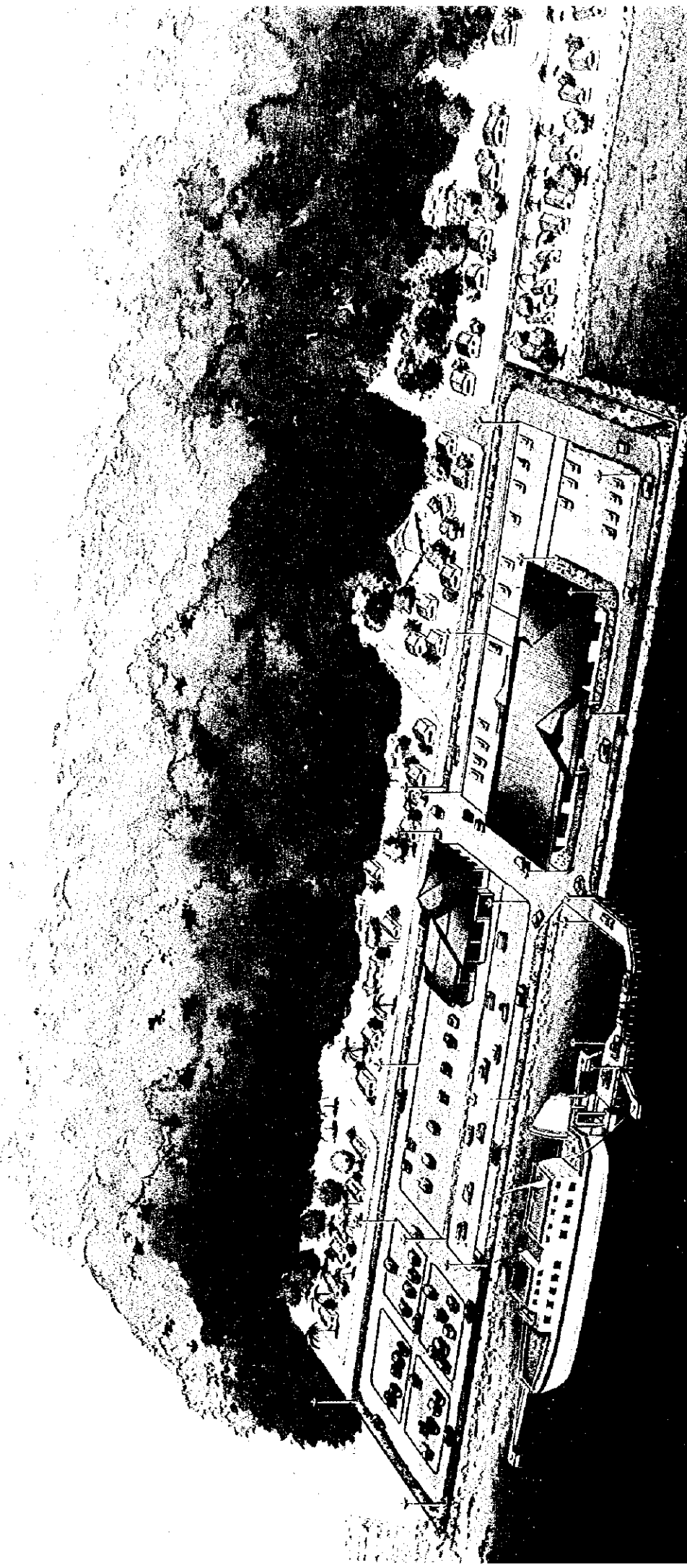
Banjarmasin Ferry Terminal

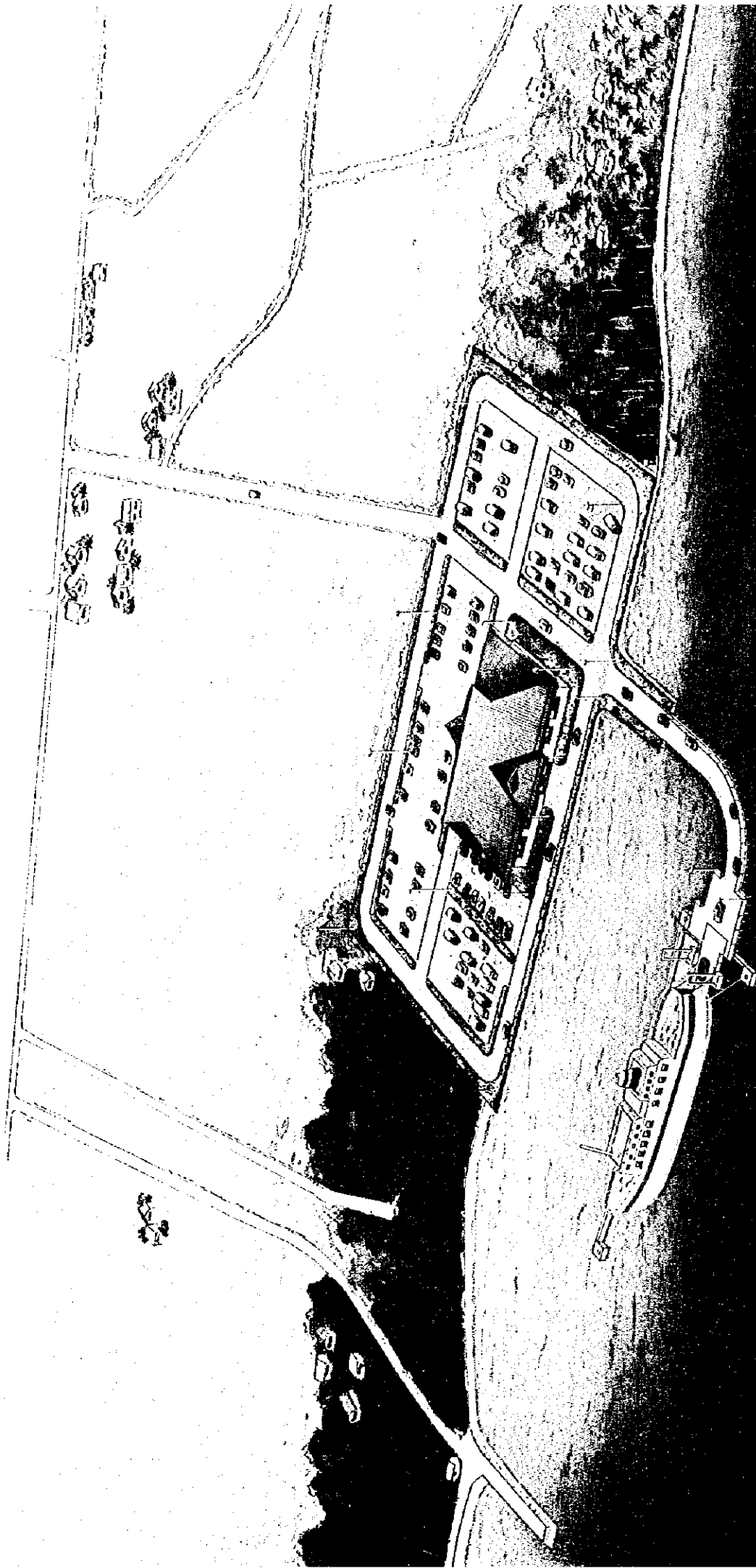


Selayar Ferry Terminal

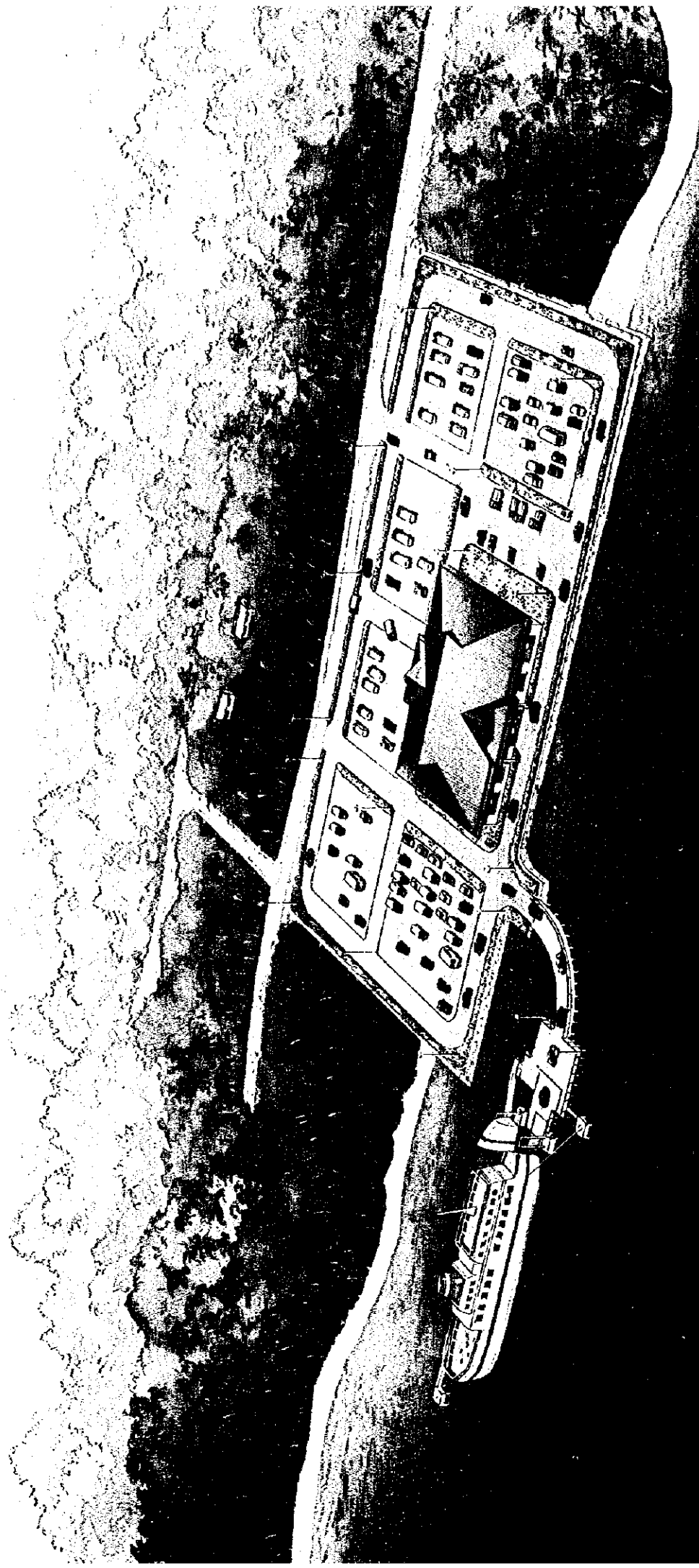


Labuhan Bajo Ferry Terminal

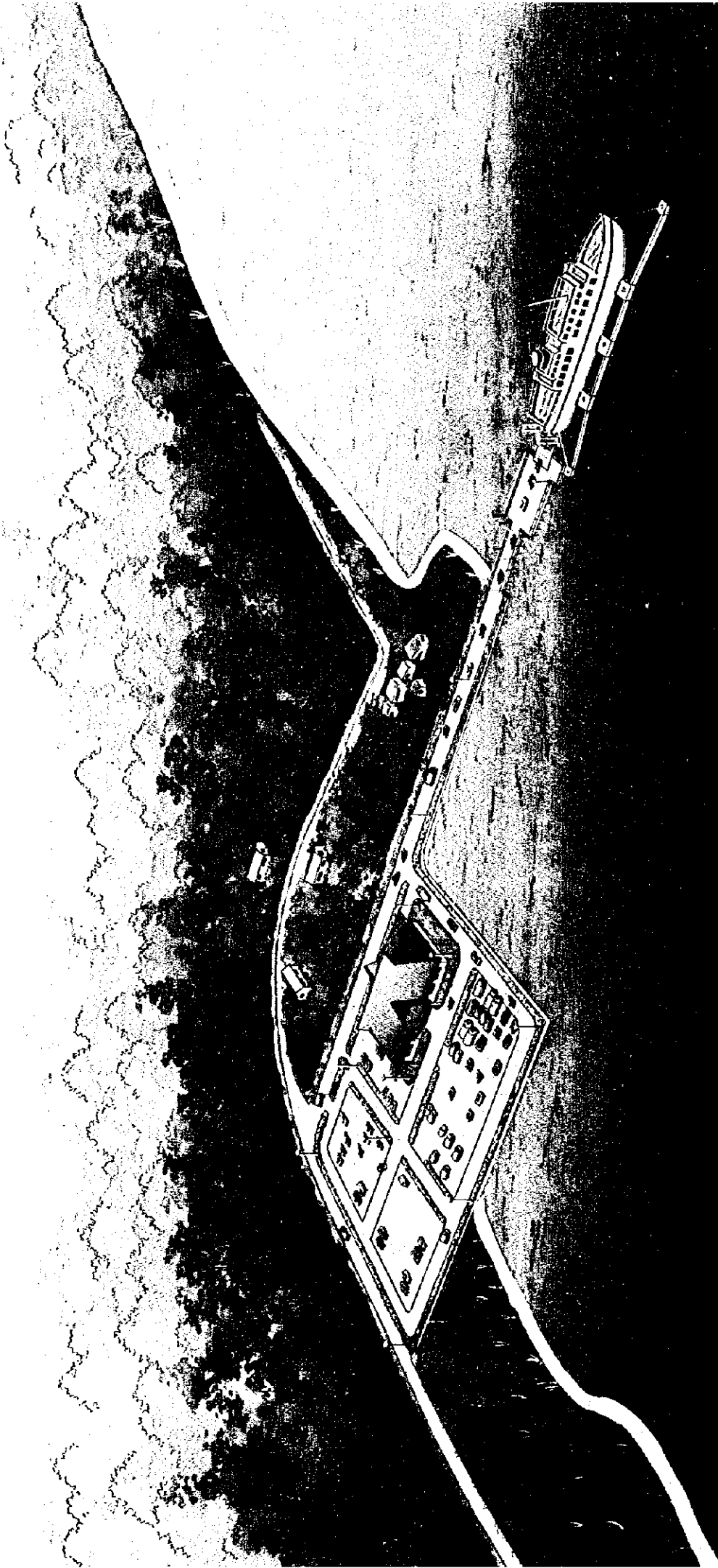




Manokwari Ferry Terminal



Biak Ferry Terminal



Wahai Ferry Terminal



Babang Ferry Terminal

LIST OF ABBREVIATIONS

A

ADB	Asian Development Bank
AMDAL	Environmental Impact Analysis
ASDF	ASDP's antecedent project
ASDP	State-owned Ferry Terminal Company

B

BAPEDAL	Environmental Impact Management Agency
BAPENAS	National Development Planning Agency
BAPPEDA	Provincial Development and Planning Board
BKN	Province Treasurer
BM.	Bench Mark
BOT	Build Operate Transfer
BPS	Central Bureau of Statistics

C

CBR	California Bearing Ratio test
CFC	Conversion Factor for Consumption
CIF	Cost, Insurance of Freight
CONV	Conventional type boat

D

DIK	Activity of Filler List
DEPKEN	Ministry of Finance
DGAC	Directorate General of Air Communication
DGLT	Directorate General of Land Transportation and Island Waterways
DGSC	Directorate General of Sea Communication
DL	Datum Level
DUK	Activity of Proposal List
DWT	Dead Weight Tonnage

E

EIA	Environmental Impact Assessment
EIRR	Economic Internal Rate of Return

F

FOB	Free on Board
------------	----------------------

G

GDP	Gross Domestic Product
GPS	Global Positioning System

	GRDP	Gross Regional Domestic Products
	GRT	Gross Registered Tonnage
II		
	HHWS	Highest High Water Spring
	HWWS	High Water Spring
I		
	IBRD	International Bank for Reconstruction and Development
	IEE	Initial Environmental Examination
	ITCZ	Inter-tropical Convergence Zone
J		
	JICA	Japan International Cooperation Agency
K		
	KANWIL	Provincial Office
	KM	Decree of the Minister
	KVA	Kilo Volt Ampere
L		
	LCT	Landing Craft Transport
	LLAJ	Directorate of Highway Transportation
	LLAK	Directorate of City Transportation
	LLASDP	Directorate of River, Lake and Ferry Transportation
	LLJREL	Directorate of Railway Transportation
	LLWS	Lowest Low Water Spring
	LOA	Length over All
	LSL	Local Surface Level
	LWS	Low Water Spring
M		
	MOC	Ministry of Communications
	MOF	Ministry of Finance
	MSL	Mean Sea Level
N		
	NM	Nautical Mile (1852m)
	NPV	Net Present Value
O		
	OCC	Opportunity Cost of Capital
	OD	Origin and Destination
	OECP	Oversea Economic Cooperation Fund, Japan
P		
	PASS	Passenger vessel

	Pax.	Passenger
	P.C.	Precast Concrete
	PELINDO	Indonesian Sea Port Cooperation
	PELNI	Indonesian National Shipping Company
	PIANC	Permanent International Association of Navigation Congress
	PT.	Limited Company
R		
	RC	Reinforced Concrete
	REPELITA VI	Five Year National Development Plan in the Sixth
	Ro-Ro	Roll on Roll off type vessel
	Rp.	Rupiah
S		
	SCF	Standard Conversion Factor
	SMB	Srendrup Munk Bretschneider
T		
	T.A	Truk Air (non motor boat)
	TTM	Monthly Average Exchange Rate
U		
	UPT	Technical Implementation Unit
	USAID	United States Agency for International Development
	USD	US Dollar
V		
	VAT	Value Added Tax

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LETTER OF TRANSMITTAL

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EXECUTIVE SUMMARY

Executive Summary

General

1. In Indonesia, the ferry transportation is considered to be an extension of the land transportation system and is controlled by the Government of Indonesia through DGLT under MOC. DGSC, which is also under MOC, is responsible for other maritime transportation except for that of river and lakes. However, for the safety of navigation, DGSC has overall jurisdiction including ferry service.
2. Concerning the operation of ferry transportation, ferry boats are managed and operated by PT. ASDP or private companies and ferry terminals are managed by KANWIL or PT. ASDP. PT. ASDP operates not only profitable lines but also non-profitable lines (pioneer lines).
3. The Development Study on the Nationwide Ferry Service Routes (Stage I) was carried out by OCDI - PCI/ JICA in 1993.
4. However, in accordance with the rapidly increasing motorization in Indonesia, greater demands are being put on ferry services, including long-distance routes and greater accessibility of the region. Consequently, the Stage II of the same Study started in March 1997.
5. The Indonesian economy which had been developing fairly well until 1996 became mired in a currency crisis in the middle of 1997. The annual rate of economic growth fell from 8.0% in 1996 to 4.7% in 1997, and hereafter a negative growth rate is expected. Indonesian Rupiah has depreciated more than 1/5 against the US dollar in the last six months.
6. The currency is still unstable and the macroscopic economic prospects remain unclear. Accordingly economic activity of Indonesia including transportation sector has also been affected seriously. Nevertheless, the inter-island communication link is still an important element to the national economy and its development is required.
7. Since the Study started before the economic crisis, the economic frame-work as well as the traffic projection do not reflect the recent condition. Therefore, actual traffic demand of each route will vary according to the pace of economic recovery in future. However, the relative importance among alternative routes will remain as originally evaluated.

8. Because of the uncertain economic conditions in the near future, a wide range of sensitivity tests was applied to the results of economic and financial analyses. The results of the economic analysis indicated that most of the selected routes are generally feasible in spite of the economic disturbance. From the financial view point, however, most of the selected routes require substantial government subsidy.

9. Government subsidies are commonly applied to the existing ferry routes throughout the country at present. Procurement of the vessels, construction of terminal facilities have to be all provided by the Government. PT. ASDP, the ferry boat operator, can only cover its operating expenses with its revenue.

10. With the recent economic disturbance in Indonesia, various costs in relation to the facilities as well as operation and maintenance increased substantially. Therefore, if all the rates for the ferry users as well as port charges for the terminal are kept at the same level as at present, the ferry terminal cannot cover operating costs with its revenue.

Long-term Development Plan

11. For the Long-term Development Plan, nine important routes are selected from the future ferry network which was made by DGLT. The basic concept behind this Long-term Plan is to emphasize the inter-island connection between major islands. For that purpose, the maximum length of the ferry route is extended from the previous 360km (200mile) to 1000km (500mile) or less than one day trip distance.

12. The proposed nine important routes are selected after evaluation of the traffic projection results. Based upon the inter-regional OD statistics of 1988, priority was given to the heavier traffic density routes among inter-regional routes and the routes in Eastern Indonesia.

13. Even if a route is expected to have heavy traffic, it is not selected as a project route if operations are already efficient. This is partly because those heavily used routes can afford to expand capacity without heavy financial support by the government or they could be developed by the private sector. On the other hand, relatively long distance inter-regional routes or Eastern Indonesian inter-island routes are more important to promote decentralization of the population and economy.

Short-term Development Plan

14. One long distance route, Surabaya - Banjarmasin, and three short or middle

range routes, Selayar - Labuhan Bajo, Manokwari - Biak and Wahai - Babang, are selected for the short-term development plan. These routes are selected according to the traffic projection based on the OD of 1988 and other statistics. This traffic projection does not reflect possible effect of traffic demand generation after introducing the ferry service which is more convenient than other existing sea transportation.

15. Evaluation of this factor is not possible at this stage due to insufficient data to support such a hypothesis. Therefore, the results of the traffic projection may actually be conservative. And subsequent feasibility analysis will show a safer side value. This safety margin, however, will be reduced by the effect of the recent economic disturbance. Consequently, this factor is not considered in the results of the analysis.

Project Costs

16. The construction cost for development of the proposed terminal sites for the feasibility study is as follows;

Surabaya - Banjarmasin	472.974 billion Rp.
Selayar - Labuhan Bajo	44.561 billion Rp.
Manokwari - Biak	41.946 billion Rp.
Wahai - Babang	45.058 billion Rp.

17. Construction period required for the projects is estimated at two years except for Surabaya - Banjarmasin route which requires two and half years. Considering preparation period including financial arrangement, detailed design and tender procedures, it will take five years to complete all facilities.

Economic and Financial Feasibility

18. The economic benefit of the project is mainly accrued from saving of travel time and transport costs as well as reduction of cargo handling costs at the terminals. As far as the second hand vessels are introduced for the service, the economic return for each route will generally be feasible except for Wahai - Babang route where the return is less than 10%. However, this route is to complement the missing link between Ambon area and Ternate area in Maluku region and if such unquantifiable factor is considered, development of this route is also worthy of implementation.

19. The effect of the recent economic disturbance may negate economic feasibility of all the routes. However, when the Indonesian economy recovers to the extent that the forecasted traffic demand can be ensured, the implementation of these projects will become feasible.

20. Financial situation of all terminal operation will only be viable with complete government subsidy for the capital investment, interest and capital repayment, depreciation and even a major part of maintenance cost. This is achieved only after adjustment of terminal charges to the level of DGSC tariff.

Recommendation

21. Given the current state of economic confusion, immediate implementation of this project may not be possible. Considering the possible influence of the recent economic situation, the target year of the short-term plan would inevitably be delayed for a few years. Nevertheless, routes which are expected to generate a relatively larger demand such as Surabaya - Banjarmasin and Selayar - Labuhan Bajo may be developed at an earlier time.

22. Owing to the weak financial condition of both terminal operator and ferry boat operator, present ferry tariff structure should be revised at the earliest possible time, so that the operation cost as well as maintenance cost of boats and terminals could be covered by the revenues without government subsidy. At the same time, effort should be made to improve operation efficiency and productivity so that the operation cost could be reduced to the level that the government subsidy would become unnecessary.

List of the members of the Study Team and the Counterpart Team

The Study Team Organization

Takao Hirota	Leader (OCDI)
Masayuki Fujiki	Port Planning/Environmental Consideration (OCDI)
Hisao Ouchi	Demand Forecast (I)/Ferry Network Planning (OCDI)
Takashi Kajiki	Economic Analysis/Demand Forecast (II) (OCDI)
Yoshiharu Iwami	Ferry Operation Plan (OCDI)
Yuji Mitsutake	Management and Operation/Financial Analysis (OCDI)
Koji Esaki	Management and Operation/Financial Analysis (OCDI)
Nobuaki Nagao	Port Facilities Design/Natural Condition Study (I) (PCI)
Masaaki Goshima	Port Facilities Design/Natural Condition Study (I) (PCI)
Atsushi Sato	Port Facilities Design/Natural Condition Study (I) (PCI)
Tooru Watanabe	Natural Condition Study (II) (PCI)
Shigeru Kanaya	Environmental Survey (PCI)
Kazutoshi Kashima	Construction Planning/Cost Estimation (PCI)
Akihiro Sujihara	Coordinator (OCDI)
Tsuyoshi Oki	Coordinator (OCDI)

Counterpart Team Organization

(Planning Bureau, MOC)	
Ir. Soetjahjo Reksoprodjo	Head of Planning Bureau
Ir. Djoko Mulyanto	Chief of Data and Planning Division
Ir. P. Tarigan, MStr	Chief of Sub Division Sectoral II
Ir. Dwi Budi Sutrisno, MSc	Chief of Sub Division
Drs. Riguntoro	Chief of Sub Division
Drs. Totok Lukito, MStr	Chief of Sub Division
Ir. Djoko Sasono, MSc	Chief of Sub Division
Ir. Herman MK, MSc	Chief of Foreign and Technical Aids
Untung Margono, SH	Staff of Planning Bureau
Ir. Syafrwan	Staff of Planning Bureau
Ir. Triyono	Staff of Foreign and Technical Aids
(Legal Bureau, MOC)	
Hanung Cahyono, SH	Chief of Law Sub Division

(Finance Bureau, MOC)

Drs. Nelson Batus	Chief of Finance Division
Drs. Sudarnadi	Chief of Financial Sub Division
Drs. Sukarno	Staff of Finance Division
Ir. Zulmeirnof	Staff of Finance Division

(Research, MOC)

Ir. Nugroho Indrio, MSc	Chief of Land Transportation Division
Ir. Malisan	Chief of Research and Development Sub Division
Mrs. Poh Aye Tan	Staff of Land Transportation Division

(Logistic Bureau, MOC)

Drs. Ruslan	Chief of Logistic Division
Ir. Agus Budiono	Chief of Logistic Sub Division
Ir. Juaksa Siahaan	Chief of Material Sub Division

(DGLT)

Ir. Anton Simbolon	Director of Traffic and River and Inland Waterways
Ir. Nugroho Basuki	Head of Traffic of Ferry and Inland Waterways
Ir. Siswanto Wanoyudo	Chief of Sub Directorate Ferry and Inland Waterways
Ir. Abdul Fatah	Chief of Ferry Sub Directorate
Ir. Toto N	Chief of Evaluation Sub Division
Ir. Harris Fabillah	Chief of Planning Division
Ir. As'ad, MSc	Chief of Ferry Section
Ir. Yoyo Sulaeman	Chief of Ferry and Inland Waterway Section
Ir. Heru Sasongko	Chief of Ferry and Inland Waterway Section
Ir. Amal Hamsyah	Chief of Engineering Ferryport Section
Ir. Sigit Iwansyah	Staff of Ferry Section
Ir. Cucu Mulyana	Staff of Planning Division

(DGSC)

Ir. Eko Hadi Rumekso, MSc	Chief of Planning Sub Division
Drs. A. Kadir Kateru	Chief of Sea Transport Section
Drs. Syukri Marzuki	Chief of Sea Transport Section
Ir. Isan Kamil	Chief of Ship Inspection Section
Ir. Sanoesi S.	Chief of Ship Inspection Section
Ir. Wijayanto	Chief of Port and Dredging Section
Capt. Piersyah SA	Chief of Ship Construction Section

Capt. Suranto	Chief of Ship Construction Section
Ir. Anwar, SA	Chief of Ship Construction Section
Drs. Simson Sinaga	Chief of Sea Traffic Section
Drs. Maman. D	Chief of Sea Traffic Section
Ir. Suwarno	Chief of Domestic Sea Transportation Section
Ir. Sugeng Wibowo	Staff of Ship Design Section
Ir. A. Samboh	Staff of Port and Dredging Section

(BAPPENAS)

Ir. Dail Umail A.	Staff of Transportation Bureau
-------------------	--------------------------------

(PELIND III)

Ir. Setiawan	Chief of Planning and Development Bureau
--------------	--

(PELIND III Banjarmasin Branch)

Ir. Suwandi	Chief of Banjarmasin Port
Ir. Jonggara Simanjuntak	Chief of Technical Division

(PERIND IV)

Ir. Muljono S.A.	Chief of Planning and Development Bureau
Ir. Sumardiyo	Staff of Planning Division

SUMMARY

PART 1

PRESENT CONDITIONS

Chapter 1 Present Socio-economic Condition in Indonesia

(1) General

1. Indonesia which is spread over a wide area of South Eastern Asia and contains over 17,000 islands with a total land area of 1,919,317km², is comprised 27 provinces.

(2) Population

2. The population of Indonesia was 147 million in 1980, 179 million in 1990 and 195 million in 1995. The annual population growth rate was 1.98% from 1980 to 1990 and 1.67% from 1990 to 1995.

3. The population share of Java Island, which accounts for 7% of the national land area, is nearly 60%. On the other hand, the population share of Kalimantan, Maluku and Irian Jaya is only 7.5%, though these areas account for 54% of the total land.

4. Many people migrated within Indonesia, 603,800 families between 1990 and 1995. Major destinations for migration are Sumatra (Riau, Jambi and South Sumatra), Kalimantan (West, Central and East Kalimantan), Central Sulawesi and Irian Jaya.

(3) Gross Regional Domestic Products (GRDP)

5. The annual growth rate of Gross Regional Domestic Products (GRDP) during the period from 1988 to 1995 fluctuated between 7.4% and 9.0%, and the average growth rate during the same period was 8.0%.

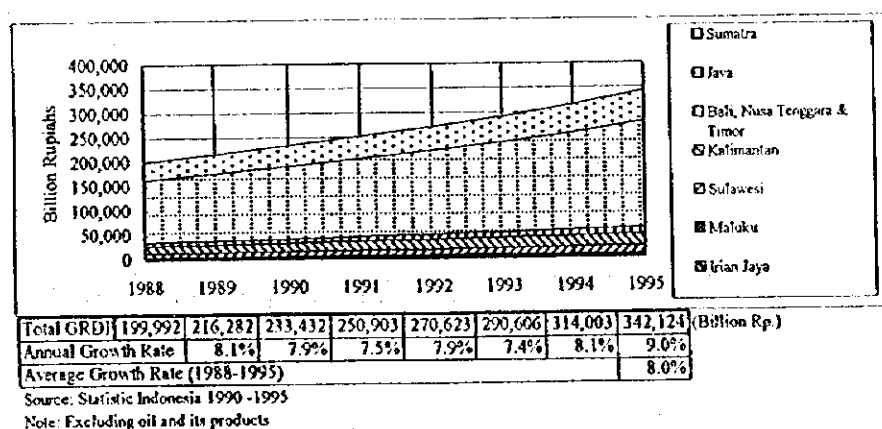


Figure 1.1.1 Trend of GRDP at 1993 Constant Prices

6. In 1995, the per capita GRDP in Indonesia was Rp.1,752,000 (US\$839) at 1993 constant prices, while the per capita GRDP of D.K.I. Jakarta had the highest level of Rp. 6,620,000 (US\$3,170).

Table 1.1.1 GRDP and Per Capita in 1995 at 1993 Constant Prices

Region	GRDP			Per Capita GRDP		
	(Bil. Rp.)	(Ex. Oil) (Bil. Rp.)	Growth Rate (Ex. Oil, '88-'95) (%)	('000 Rp.)	(Ex. Oil) (Ex. Oil, '88-'95) (%)	Growth Rate (Ex. Oil, '88-'95) (%)
Sumatra	82,281 (21.9%)	62,815 (18.4%)	8.00	2,015	1,533	5.55
Java	222,110 (59.2%)	217,646 (63.6%)	7.86	1,936	1,893	6.49
Bali, Nusa Tenggara and Timor	12,660 (3.4%)	12,656 (3.7%)	8.18	1,155	1,152	6.60
Kalimantan	33,559 (8.9%)	24,876 (7.3%)	7.77	3,205	2,364	4.62
Sulawesi	15,488 (4.1%)	15,519 (4.5%)	8.02	1,128	1,127	5.97
Maluku	2,757 (0.7%)	2,742 (0.8%)	6.58	1,321	1,309	4.02
Irian Jaya	6,123 (1.6%)	5,871 (1.7%)	13.84	3,151	3,001	9.68
Total	374,978 (100.0%)	342,124 (100.0%)	7.97	1,925	1,752	6.19

Source: Statistik Indonesia 1995

7. In terms of sectorial GDP, the share of Agriculture and Mining sectors gradually decreased during the period (1988-1995), while the Manufacturing sector increased during the same period. In 1995, its share represented a quarter of the whole GDP.

(4) Investment

8. Both domestic and foreign investment has been strongest in Java (65% of cumulative investments) led by West Java. Conversely, approved investment has been weakest in Nusa Tenggara, Sulawesi, Maluku and Irian Jaya in eastern Indonesia.

(5) Transportation

9. In 1995, the national total road length was 372,414km. Each sq. km of land area on Java is served by about 800m of road, whereas the same land area is served by only 29m of road in Irian Jaya, and 72m in Kalimantan.

10. Indonesia's internal transportation network is best developed in Java, the northern and southern parts of Sumatra and Bali, where most cities are connected by

highway or secondary roads. Most of the roads in Indonesia excluding Java and Sumatra, however, are still in poor condition.

11. Java has the largest share of registered motor vehicles at 65%, followed by Sumatra (18%). However, Maluku and Irian account for less than 1% of the total respectively. This result may be a clear reflection of the population, regional industrial activities and regional condition of road infrastructure.

(6) Socio-economic characteristics

12 The higher growth of the Indonesian economy has been realized by expanding the economic infrastructure in Java and Sumatra. On the other hand, per capita GRDP, approved investment and development of regional transport are lower than the national average in Eastern Indonesia (Nusa Tenggara, Kalimantan, Sulawesi, Maluku and Irian Jaya). Judging from above mentioned socio-economic conditions by region, it seems that regional disparity is pronounced.

Chapter 2 Overview of Natural Conditions and Environmental Aspects

2.1 Natural Conditions

1. Geographically, Indonesia is the biggest archipelagic country in the world, consisting of more than 17,000 islands that are spread across an area of about 5,100km from east to west and about 1,900km from north to south. The total land area is around 1.92 million km².
2. Indonesia lies in the most active seismic zone in the world. Most of the islands, with the exception of a large part of Kalimantan, have been subjected to destructive earthquakes. In the last 90 years Indonesia has been subjected to 19 large intensity earthquakes of $M \geq 7$.
3. Indonesia belongs to the tropical monsoon climate region. Temperature and humidity are high with small seasonal variation. The climate is characteristically divided into the NW monsoon season from November through March, and the SE monsoon season from June to September.
4. The average air temperature slightly fluctuates seasonally between 26°C and 29°C throughout the year, and with the lowest temperatures experienced in the extreme north of the area in January. Mean air temperatures in the coastal waters are slightly more variable than over the open sea.
5. Indonesian territorial regions are liable to be affected, although infrequently, by tropical cyclones. These cyclones are liable to occur in the Indian Ocean south of Java and Nusa Tenggara between November and April, and the Arafura Sea, south of Irian Jaya during the period of March to May.
6. Rainfall is abundant with the average annual rainfall everywhere exceeding 1000 mm and the annual total exceeds 4,000mm in the mountainous areas. In general, very heavy downpours occur in the NW monsoon season but rainfall is heavy in the SE monsoon season in Maluku and the northern half of Sulawesi.
7. The winds during the NW monsoon blow mainly from between NW and N over the northern part, similarly the SE monsoon blows from SE and S in the vicinity of the equator, and from between SE and E over the southern part. Winds are generally weak to moderate and gales seldom occur.

8. The sea area surrounded by south Sumatra, west Kalimantan and east Java have, for the most part, a very gentle sloping bottom, covered with a layer of unconsolidated sediment, chiefly soft mud but in some places mud and sand. River deltas along the coast of Kalimantan, Sumatra and the north coast of Java are severely affected by deposit of alluvial sediment causing coastline extensions seawards.

9. Currents are controlled to a very large extent by the monsoon and the current directions are reversed twice each year in phase with the monsoon. In addition to the currents, there are tidal streams, which are generally weak in the open sea but strong in the straits. Tidal streams in the area are semidiurnal, mixed and diurnal, and the resultant streams due to the combined working of the currents and tides are less than 3 knots in all straits in the region except Bali and Nusa Tenggara where they are 6 to 10 knots.

10. The generation of high waves is restricted in the region because there are no long fetches due to the many islands and no strong winds. In NW monsoon seasons the significant waves of 1.5m or higher occurs not more than 10% and predominant wave directions are west and northwest. In SE monsoon season, east and southeast waves predominate and the significant waves of 1.5m or higher occur less than 20%.

2.2 Environmental Aspects

11. The national environmental policy in the Sixth Five-year Development Plan is set to fulfil the the targets as follows.

- 1) Implementation of basic study for rational and effective use of national resources
- 2) Development of management system for environmental conservation of natural resources
- 3) Executing appropriate environmental impact analysis for development projects
- 4) Formulation of countermeasures for rehabilitation of forest, soil and water quality
- 5) Expansion of effective use of coastal, marine and air resources and attainment of suitable development

12. The basic principles of environmental impact control of the Environmental Impact Management Agency in Indonesia are as follows.

- 1) Human beings is a central dimension in environmental impact management.
- 2) The development efforts should observe human and natural resource limitation

in supporting change.

- 3) The philosophy of preventing impacts should be reflected in every level of decision making, policy development, program and project, at both the operational and post-operational stages.
- 4) The application of technology for impact control needs to consider economic feasibility and the best practicable technology.
- 5) Initiators of activities are responsible for the impacts generated by such activities.
- 6) Everyone has a right for and an obligation to maintain a sound and healthy environment.
- 7) Environmental impact management should be well planned and implemented with clear accountability.

13. Regarding the environmental impact analysis, Government Regulation No.29, "Environmental Impact Analysis (AMDAL)" was established in 1986, and was revised in 1993 in order to simplify AMDAL procedure and strengthen the function of the Environmental Impact Management Agency (BAPEDAL).

Chapter 3 Present Situation of Ferry Transportation

3.1 Ferry System Management

1. According to the Navigation Law (Law No.21/1992) and the Ministerial decree No. 64, 1989, the ferry service in Indonesia offers "shuttle service" linking two points/terminals without extending its voyage to other terminals. This is apparently different from passenger liner service in which regular calls are made on a number of terminals in series.
2. One of three Directorate Generals of MOC, DGLT is in charge of ferry transportation as an extension of land transportation. DGSC, which is also under MOC, is responsible for other maritime transportation except for that of river and lakes. For the safety of navigation, DGSC has overall jurisdiction including ferry service.
3. Regional offices of MOC/KANWIL work on the planning of regional ferry service, management and operation of ferry terminals. With the growth of traffic at major terminals, management of such terminals has been transferred to PT. ASDP.
4. PT. ASDP, a state-owned company under control of MOC, and private shipping lines which have obtained a license from DGLT, carry out ferry service operations. The Government does set the tariff for economy class, but the tariff of other class (business and executive) is decided by the transport operators.
5. PT. PELNI, also a public corporation under control of MOC, and private shipping lines, which have obtained license from DGSC, operate shipping service. Unlike PT. ASDP, however, PT. PELNI does not manage nor operate terminals.
6. DGLT is responsible for construction of ferry terminals and related infrastructures.
7. The Government promulgated the Regulation No.12 in January of 1998. According to the Regulation, financial aspects of all state-owned companies are under the control of the Minister of Finance. Before decisions related to profit, investment and so on can be made at General Shareholder's Meetings, approval must first be obtained from the Minister of Finance.

3.2 Ferry Transportation Activity

8. The ferry transportation network which covers almost all Indonesia has become indispensable to people's lives and to industrial activities. What makes the ferry network so important is Indonesian peculiar geographical conditions in which many islands are scattered across a wide area, as well as the topographical conditions which include complicated seashore line with peninsula and also very large flat land with navigable river.

9. Ferry transportation has continuously increased recently and the total ferry traffic in 1995 is comprised of 46 million passengers, 4.7 million 4-wheel vehicles, 3.7 million 2-wheel vehicles including motor-bikes and 11 million tons of cargo. The increase in the number of passenger is remarkable; in the nine years from 1987 the number has more than doubled. The annual increasing ratio is 8.7% in average (See Figure 3.2.1).

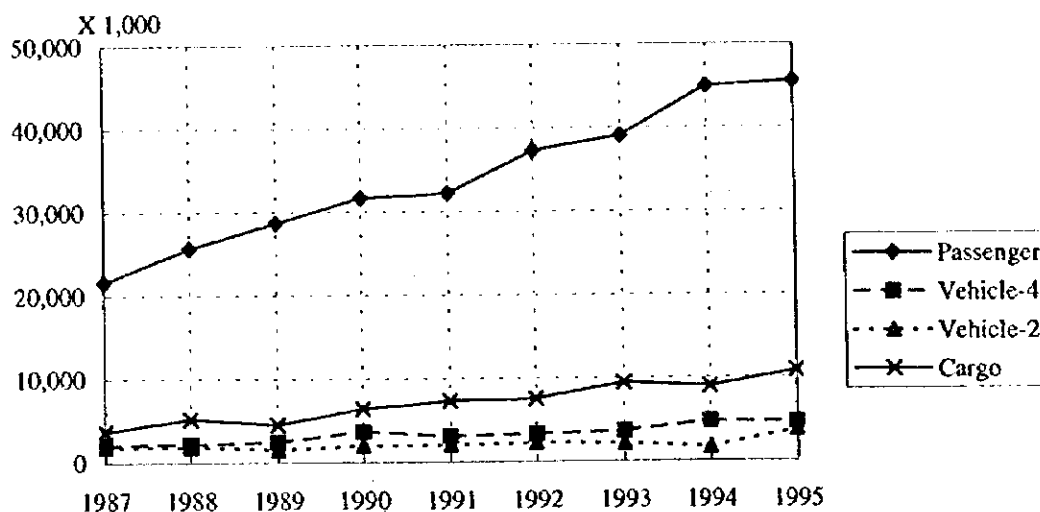


Figure 3.2.1 Transition of Ferry Traffic Volume

10. Among the seven regions, Java accounts for the greatest passenger movement at 54%, followed by Sumatra at 16%. This may be due to the large population and industrial activities in the two regions.

11. The number of ferry routes in operation amounts to 102 in total as of August 1996. (The number of the routes here includes the routes which is referred in the statistics record of ferry transportation by DGLT, and/or which is referred in "the List of Ferry Boat Operated in Indonesia (August 1996). The number has continuously increased and there

has been a five fold increase in the number of ferry routes in these 20 years(20 routes in 1978) .

12. The routes of which annual passenger traffic volume in 1995 amount to more than one million are the following four routes; Ujung - Kamal connecting Surabaya in Jawa mainland and Madura island (15.5 million), Merak - Bakauheni connecting east end of Sumatera and west end of Jawa(13.6 million), Galala - Poka in Ambon island of Maluku region(5.1 million) and Ketapang - Grimanuk connecting the east end of Jawa and Bali island (4.9 million). The total traffic volume conveyed by these only four routes amounted to 39 million passengers in 1995 or 86% of the total traffic volume.

13. 168 boats are being operated at present (Aug.1996), according to continuous growth thereafter; the number of ferry boat has more than doubled during these 9 years. As for type of boats, 87% of total is Ro-Ro vessel (Roll on-Roll off) or LCT (Landing Craft Transport) which can convey vehicles, and the others are for passengers only. The size of ferry boats are comparatively small for the most part. Though there are 15 boats which are more than 3,000 ton in GRT, all are operated in only two lines(13 boats are operated in Merak - Bakauheni, and 2 boat are in Jakarta - Surabaya). The others are almost smaller than 1,000GRT class. The average size is 350GRT in case excluding the above 2 lines.

14. PT. PELNI ordinarily organize the route and diagram by long range loop line with two week cycle. On this point, PT. PELNI shipping is basically different from the ferry service which is operated by shuttle service between two terminals in principle. Though PT. PELNI and ferry routes are established independently, there are some actual cases in which PT. PELNI routes and ferry service are operated between the same place. In general, PT. PELNI is operating these routes by larger vessel than the ferry though the number of trip is not so much. The average share of ferry service in total traffic volume of both routes in 1994 was around 75%.

3.3 Ferry Terminal

15. Ferry terminals can broadly be categorized into two types: inter-regional and inter-island terminals. The former refers to terminals located on a route connecting different regions and the latter to terminals connecting islands within a region.

16. The government of Indonesia had planned to develop four trunk lines for the development of ferry transportation such as Northern, Southern, Middle and South-North

trunk line.

17. There are 100 ferry terminals which were constructed by MOC and DGLT as of 1996. Among these terminals, 74 terminals are managed by regional offices of MOC and 26 terminals are managed and operated by PT. ASDP.

18. Distribution of these terminals is mostly concentrated to the southern trunk line. Number of terminals in the provinces of Sulawesi, Maluku and Irian Jaya, on the other hand, is insufficient to support development of these provinces.

19. Participation of the private sector along the southern trunk line is already observed at Meraku-Bakauheni. Sufficient traffic density will attract further development of privately owned terminals.

PART 2

LONG-TERM DEVELOPMENT PLAN

Chapter 1 Traffic Demand Forecast

1.1 Review of Existing Origin Destination Tables

1. The forecast is based on the Origin Destination (OD) data composed of twenty-seven provinces, and the target year of the forecast is the year 2019.
2. The ODs of ferry, air transportation and sea shipping are used in this study.
3. The total passenger and cargo volume records of ferry, sea shipping and air transportation from 1988 to 1995 are shown in Table 1.1.1.

Table 1.1.1 Total Passenger and Cargo Volume

Year	Passenger (Ferry + Sea + Air)	Cargo (Ferry + Sea + Air)
1988	36,035,523	89,378,482 tons
1989	40,750,160	81,515,546
1990	44,039,890	101,328,124
1991	47,136,569	126,927,895
1992	53,537,546	140,401,502
1993	56,241,866	139,060,909
1994	66,714,347	156,149,821
1995	70,229,485	157,680,030

Source: DGLT, DGSC and BPS (Statistic of Air Transportation 1995)

4. The 1990 OD is modified so that the total volume of OD would be the same as the 1988 data. The modified OD as to the passenger and the cargo in 1988 are shown in Table 1.1.2 and Table 1.1.3.

1.2 Future Socio-economic Framework

5. "The Second Twenty Five Year Development Plan" contains the population and the GRDP growth rate in the final year of each Five Year Development Plan. These figures are used as control totals.

Table 1.1.2 Passenger OD in 1988

Province	Aceh	North Sumatra	West Sumatra	Riau	Janji	South Sumatra	Bengkulu	Lampung	Jakarta	West Java	Central Java	Yogyakarta	East Java	Bali	West Nusa Tenggara	East Nusa Tenggara	East Timor	West Kalimantan	Central Kalimantan	South Kalimantan	East Kalimantan	North Sulawesi	Central Sulawesi	Southeast Sulawesi	South Sulawesi	Maluku	Irian Jaya	TOTAL
Aceh	110,123	26,899	1,341	2,336	0	603	0	94	74,633	18,926	4,825	1,771	4,642	1,259	19	237	18	64	0	31	385	74	109	0	410	9	13	258,929
North Sumatra	26,910	194,878	15,979	16,395	139	13,034	1,810	3,948	258,244	79,089	33,223	12,677	17,970	31,302	3,415	92	247	2,987	237	1,394	9,736	2,848	187	1,595	2,558	671	2,822	764,737
West Sumatra	1,355	15,163	17,492	9,014	0	3,423	35	99	193,440	61,883	12,564	4,137	3,699	959	625	181	0	1,059	31	82	996	37	593	31	2,677	170	862	332,012
Riau	2,013	37,727	11,471	337,858	6,148	26,590	927	260	136,327	48,167	36,698	7,607	60,648	5,628	4,897	3,367	7	4,455	18	2,263	1,716	43	0	31	2,452	0	3,458	740,390
Janji	0	2,310	992	4,403	0	9,109	85	54	40,941	9,913	30,162	7,784	9,973	50	0	93	29	3,893	0	60	1,288	18	0	106	1,642	0	0	122,903
South Sumatra	2,495	11,673	4,220	21,292	12,017	187,333	6,386	8,678	443,843	209,673	99,593	31,826	87,959	4,109	1,879	1,042	0	4,485	370	726	2,911	690	78	1,374	3,664	593	19	1,163,923
Bengkulu	0	673	469	68	443	7,332	0	72	33,826	19,317	8,171	2,234	5,383	45	0	0	0	15	0	17	26	6	0	0	46	0	0	80,345
Lampung	92	169	227	1,170	1,701	8,358	14,030	0	962,232	889,392	354,103	64,979	117,725	13,765	3,477	1,391	0	10,933	0	211	174	2,125	11	818	1,609	716	0	2,347,547
Jakarta	78,757	233,187	311,732	144,742	58,447	436,723	27,267	1,337,347	0	35,037	188,936	99,223	495,144	194,676	112,203	19,226	37,124	85,090	14,129	42,643	98,537	41,171	18,797	7,264	32,926	48,542	55,836	4,224,950
West Java	21,663	68,403	66,867	37,697	23,932	248,920	28,581	1,008,206	29,887	4,286	50,919	15,309	58,864	81,389	23,614	10,055	12,334	28,605	6,703	19,842	41,348	7,684	5,107	4,834	14,701	14,844	14,232	1,949,078
Central Java	9,815	20,659	26,710	18,605	32,354	127,424	27,889	221,666	196,172	76,933	115,477	149	68,534	200,435	14,155	8,793	1,067	7,668	14,977	27,059	23,030	3,073	1,311	1,111	10,359	1,584	11,792	1,274,999
Yogyakarta	2,813	3,447	5,160	5,553	2,155	56,849	5,818	91,764	89,981	6,822	523	0	27,864	103,559	6,654	6,722	2,667	21,895	1,899	4,497	13,322	725	890	56	3,733	1,064	4,276	470,099
East Java	1,741	25,795	3,852	28,116	20,919	68,417	15,391	148,681	322,212	31,814	75,503	2,841	12,531,867	1,160,847	123,724	29,824	5,032	8,854	24,527	100,063	59,529	17,454	18,708	8,384	49,796	20,441	18,711	14,967,542
Bali	32	1,914	2,567	4,131	45	2,653	40	3,175	127,224	65,091	182,368	78,429	1,221,557	3,140	177,638	19,785	3,139	231	359	3,341	2,644	3,347	5,435	2,528	21,255	2,748	2,287	1,932,983
West Nusa Tenggara	15	1,060	0	181	0	4,242	0	0	106,331	10,814	8,955	12,841	138,118	200,667	297,674	23,101	981	603	0	2,046	447	482	466	410	8,520	20	333	819,771
East Nusa Tenggara	54	1,018	0	3,416	0	3,904	0	0	171,220	14,544	5,965	7,108	41,923	24,283	22,252	231,950	8,727	195	210	377	4,718	91	116	274	7,732	248	1,820	572,145
East Timor	18	174	0	7	31	0	0	951	28,830	13,214	751	454	2,504	2,769	934	3,928	2,834	0	0	0	12	32	21	27	3,990	24	616	62,181
West Kalimantan	50	2,651	2,082	11,158	4,018	1,548	16	2,083	110,320	28,846	13,345	3,000	10,557	237	590	155	0	67,670	5,553	5,773	4,048	23	0	10	135	169	1,605	275,833
Central Kalimantan	13	160	39	164	0	19	0	418	11,835	7,035	10,921	2,045	38,628	628	48	268	0	3,076	51,990	35,759	2,683	455	390	20	993	0	3,672	175,429
South Kalimantan	599	139	290	2,211	65	1,712	36	197	49,423	16,520	14,909	7,326	81,792	4,905	2,164	274	0	1,310	32,079	93,343	48,130	542	599	7,639	1,347	8,958	8,183	385,338
East Kalimantan	445	7,569	250	3,525	84	12,324	17	76	81,419	39,525	20,644	8,513	103,208	3,569	2,136	4,400	0	7,038	2,178	34,838	302,733	7,654	10,922	1,374	63,630	103	1,185	715,433
North Sulawesi	54	1,383	27	17	17	1,007	5	589	34,139	11,070	2,174	580	21,101	15,504	239	25	23	1,306	0	523	8,588	174,718	39,182	238	14,732	33,929	12,988	355,538
Central Sulawesi	45	223	116	9	0	54	0	6	8,437	5,948	1,893	1,287	20,822	4,347	513	116	19	0	3,981	208	9,036	31,609	113,929	2,222	30,657	1,078	308	237,026
Southeast Sulawesi	0	177	15	69	75	999	0	1,139	21,988	1,872	3,304	75	7,706	4,019	533	62	392	126	24	54	892	130	3,093	69,873	141,759	10,130	2,062	270,605
South Sulawesi	183	5,023	360	1,915	1,014	6,501	393	4,228	61,874	14,003	7,949	5,875	47,738	21,230	8,355	5,267	4,000	138	332	3,843	71,005	16,832	29,672	152,205	67,393	18,485	16,748	572,783
Maluku	0	2,367	1,831	10	0	27	0	958	30,568	11,648	6,327	1,559	18,971	2,139	116	836	323	171	0	4,654	334	21,583	1,738	10,052	14,592	492,385	18,389	551,741
Irian Jaya	14	2,740	648	2,011	0	1,033	0	17	32,925	21,171	10,937	2,605	19,823	1,359	640	527	30	45	32	13	1,141	9,167	1,141	2,393	16,737	17,874	219,094	381,150
TOTAL	269,582	669,329	375,226	685,777	164,646	1,230,902	134,753	2,837,516	3,694,331	1,747,175	1,201,821	399,215	15,262,742	2,087,290	808,395	412,325	98,793	262,224	159,539	383,679	755,492	352,863	243,378	235,033	341,156	581,669	499,334	36,035,523

Source : Study Team

Table 1.1.3 Cargo OD in 1988

Table 1.7.5 - Cargo in 1960																												Unit : ton
Province	Aceh	North Sumatra	West Sumatra	Riau	Janabi	South Sumatra	Bengkulu	Lampung	Jakarta	West Java	Central Java	Yogyakarta	East Java	Bali	West Nusa Tenggara	East Nusa Tenggara	East Timor	West Kalimantan	Central Kalimantan	South Kalimantan	East Kalimantan	North Sulawesi	Central Sulawesi	Southeast Sulawesi	South Sulawesi	Maluku	Irian Jaya	TOTAL
Aceh	9,039	32,221	4,519	4,930	103	103	0	0	56,163	0	1,333	0	131,880	0	1,643	0	0	0	0	0	0	0	0	0	0	0	0	241,935
North Sumatra	93,654	222,419	6,359	139,657	0	49,214	719	102,797	2,685,395	878,553	668,393	0	1,267,190	9	139	0	0	1,040	0	0	74,505	22,904	0	64	194,635	0	0	6,416,669
West Sumatra	6,368	754,673	2,876	90,678	0	6,626	15,715	60,394	508,422	18,735	584,609	0	3,381,649	3,389	3,890	0	0	0	0	2,260	11,195	0	0	0	0	0	0	5,451,390
Riau	12,531	455,103	144,044	6,492,331	75,593	33,241	4,519	317,477	1,221,369	121,501	72,924	0	459,997	1,335	205	0	0	3,492	0	56,183	18,915	0	303	398	2,876	0	0	9,504,254
Janabi	0	4,211	0	5,238	12,735	47,417	0	0	115,141	26,355	2,203	0	2,038	0	0	0	0	131,675	0	308	0	0	0	103	0	0	0	347,427
South Sumatra	1,541	65,266	673,632	25,009	35,083	2,850,167	58	668,747	1,951,138	574,612	2,074,764	0	1,242,968	529	0	8,422	0	274,750	8,525	290,157	102,284	0	0	58,545	103	112,057	0	11,045,357
Bengkulu	0	0	2,054	0	514	15	0	15,969	4,120	453	0	0	514	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23,635
Lampung	0	62,242	433,158	2,362	0	74,362	402,932	1,533,670	1,058,350	355,492	33,006	2,004	643,319	681	0	0	0	2,773	0	0	0	681	0	205	308	0	0	4,625,515
Jakarta	34,911	954,997	256,790	437,665	77,621	442,808	41,152	636,815	0	112,528	7,809	1,237	76,055	89,109	5,202	5,955	225	153,912	3,973	61,685	134,256	143,702	20,649	7,102	251,892	27,829	137,537	4,175,448
West Java	103	8,545	9,953	16,348	769	758,378	1,816	159,033	1,671	4,006	112,326	0	456,098	24,732	27,892	4	0	25,780	313	31,330	110,433	37,695	127,830	2,310	514	27,732	0	1,955,385
Central Java	393	6,950	137,660	85,545	12,770	46,149	70,821	37,929	1,515,668	11,817	12,633	0	564,417	11,802	8,350	103	0	313,056	29,776	22,116	76,873	0	0	54	17,461	616	0	2,983,353
Yogyakarta	0	0	0	0	0	0	0	0	70	0	0	0	92	369	0	0	0	0	0	4	25	20	3	0	0	0	0	604
East Java	133,578	1,832,781	687,543	264,654	19,089	589,166	62,242	350,952	145,777	1,673,360	43,452	538	490,555	734,702	171,740	298,166	9,837	20,029	61,029	368,593	720,891	193,750	58,048	98,642	585,830	235,474	202,727	10,485,195
Bali	0	0	0	0	0	0	0	0	88,949	5,512	233,222	2,100	263,498	934	14,472	3,853	155	0	0	514	109	0	924	451	398	48	15	615,084
West Nusa Tenggara	0	0	5,546	10,579	0	2,773	0	924	11,703	13,715	6,591	950	278,248	20,052	15,623	34,928	5,414	1,438	0	5,957	924	0	1,541	7,703	2,465	1,746	0	478,160
East Nusa Tenggara	0	616	0	0	0	0	0	0	43	0	0	0	64,074	253	5,063	29,835	3,260	0	0	103	1	0	0	10	0	398	822	104,484
East Timor	0	0	0	0	0	0	0	0	16	0	0	0	4,119	19	0	0	122	1	0	0	0	0	0	109	0	0	0	4,389
West Kalimantan	0	1,755	0	3,817	5,546	1,130	0	1,335	711,926	59,058	177,694	0	5,729	0	0	0	0	26,995	4,627	1,233	179	616	0	822	2,670	0	0	1,004,492
Central Kalimantan	0	0	0	27,013	71,794	8,422	0	0	35,674	3,389	190,564	0	173,583	1,233	0	0	0	10,579	197,896	114,455	20,350	308	0	0	19,720	0	0	784,990
South Kalimantan	0	0	0	309	103	3,581	0	0	27,622	48,559	147,620	10	441,165	15,331	5,238	14,956	0	6,280	33,776	40,949	39,121	4	28,044	4	247,018	41,290	0	1,140,157
East Kalimantan	239,315	254,524	11,401	121,459	175,018	239,410	0	97,789	360,882	1,933,013	493,015	11	3,743,675	62,980	206,140	385,154	205	235,701	111,672	964,182	4,266,699	901,214	517,781	973	1,006,021	563,161	455,828	17,486,195
North Sulawesi	0	103	0	0	0	308	0	0	23,912	0	4,622	0	101,746	3	0	1,841	0	205	812	103	3,002	101,955	28,504	2,421	26,307	150,637	1,477	434,183
Central Sulawesi	716	103	0	3,287	0	0	0	103	7,027	629	0	0	99,745	5,957	103	2,876	0	3,593	1,438	208	409,910	16,141	19,851	413	75,773	1,541	822	649,266
Southeast Sulawesi	0	0	0	0	103	0	0	0	5,972	221	321	0	49,698	80	103	8,883	18	308	0	308	366	740	4,834	562,293	37,723	1,117	3,389	1,057,569
South Sulawesi	293	18,383	514	1,541	616	31,943	203	1,541	131,098	2,979	121,020	0	137,032	146,978	189,576	169,617	72,205	145,259	308	312,856	263,786	554,122	63,221	69,637	318,607	293,751	41,700	3,286,262
Maluku	0	0	0	103	0	103	0	0	1,030,350	0	0	0	93,975	118	103	2,773	0	2,054	0	177,595	412	244,477	2,352	1,937,993	64,194	260,170	8,162	3,846,875
Irian Jaya	1,130	0	0	203	0	411	0	308	27,611	0	168,733	0	130,551	5	5,093	2,876	0	0	0	205	75,560	624	1,541	491	17,872	476,721	389,275	1,248,212
TOTAL	517,483	4,685,005	2,434,593	7,722,741	487,442	1,643,418	600,209	3,976,825	11,754,934	3,848,143	5,068,453	6,850	14,413,062	1,121,691	659,425	969,696	91,471	1,359,231	483,659	2,453,482	5,435,023	2,218,946	377,488	3,169,612	2,960,052	2,147,871	1,241,743	89,378,482

Table 1.2.1 Population and GRDP in the Second 25 Year Development Plan

		Second 25 Year Development Plan				
		6th	7th	8th	9th	10th
Total Population	Million	204.4	219.4	233.6	246.5	258.1
GDP Growth Rate	%	6.2	6.6	7.1	7.8	8.7

Source: Five Year Development Plan (REPLITA IV) 1994-1998

6. The actual and forecast results of population and GRDP are shown in Table 1.2.2. Total population in Indonesia in 2019 is 260.6 million and total GRDP with oil and gas at 1993 constant price in 2019 is 2.036 billion rupiah.

1.3 Demand Forecast

7. Passenger volume is forecasted using the formula obtained from the relation between passenger and GRDP/capita without oil and gas.

$$P_i = a G C_i + b$$

P_i : Passenger in the year i

$G C_i$: GRDP without oil and gas / capita in the year i

a, b : constant

8. Cargo volume is forecasted using the formula obtained from the relation between cargo and GRDP with oil and gas.

$$C_i = c G_i + d$$

C_i : Cargo volume (ton) in the year i

G_i : GRDP with oil and gas in the year i

c, d : constant

9. The passenger and cargo ODs at the target years are made using the forecasted total passenger and cargo volume and are shown in Table 1.3.1 and 1.3.2.

Table 1.2.2 Population, GRDP and GRDP/cap

Province	Population			GRDP without oil and gas at 1993 constant prices			GRDP/cap without oil and gas at 1993 constant prices		
	1988	2004	2019	1988	2004	2019	1988	2004	2019
Aceh	3,262.8	4,603.3	5,629.9	8,139,397	23,033,889	75,936,164	1,023,492	2,934,176	11,470,294
North Sumatra	9,983.1	12,605.7	14,402.5	12,312,875	45,466,841	187,708,383	1,193,723	3,542,540	12,837,278
West Sumatra	3,891.0	4,889.1	5,567.5	4,330,752	14,334,971	55,411,515	1,113,009	2,929,489	9,841,232
Riau	3,019.3	5,057.6	6,732.6	13,869,156	31,503,561	84,916,957	1,291,209	3,286,978	11,501,668
Jambi	1,869.5	3,028.3	3,971.5	1,675,403	5,858,970	22,647,720	891,735	1,881,709	5,488,905
South Sumatra	5,979.4	8,795.5	11,003.5	8,682,986	24,326,844	88,019,173	1,149,733	2,369,439	7,150,282
Bengkulu	1,081.3	1,834.7	2,455.9	957,741	2,888,506	9,271,771	885,715	1,572,682	3,731,178
Lampung	5,794.9	7,792.7	9,267.8	3,659,141	14,444,043	65,356,389	631,437	1,852,257	6,975,925
Jakarta	7,896.8	10,703.1	13,145.9	33,783,263	99,015,952	289,374,042	4,278,110	9,240,209	21,749,700
West Java	33,926.2	46,011.2	56,533.9	36,390,438	92,434,790	236,021,480	987,885	1,904,978	3,968,839
Central Java	28,254.6	31,515.3	33,768.5	24,420,606	53,956,693	120,223,798	821,874	1,638,893	3,463,488
Yogyakarta	2,912.9	2,854.4	2,810.5	3,067,983	8,258,494	25,809,386	1,053,232	2,890,051	9,075,211
East Java	32,139.8	36,114.5	38,931.7	34,569,202	91,578,870	253,604,907	1,075,314	2,531,069	6,431,405
Bali	2,742.5	3,118.8	3,381.7	3,748,370	13,273,550	49,971,318	1,366,770	4,252,170	14,610,494
West Nusa Tenggara	3,279.8	4,130.7	4,827.7	1,750,517	5,345,523	17,389,144	533,733	1,292,724	3,559,979
East Nusa Tenggara	3,168.0	4,100.5	4,879.2	1,475,527	4,351,731	13,968,555	465,753	1,060,127	2,829,416
East Timor	721.9	988.5	1,217.7	325,954	1,069,713	3,433,655	451,535	1,080,994	2,786,829
West Kalimantan	3,088.2	4,373.0	5,374.2	3,749,021	16,152,926	91,102,846	1,213,966	3,692,137	16,778,694
Central Kalimantan	1,303.3	2,063.4	2,686.0	2,195,619	7,294,393	28,196,316	1,684,605	3,532,073	10,379,968
South Kalimantan	2,484.5	3,440.8	4,175.1	3,112,014	10,433,497	38,253,739	1,236,338	3,004,551	8,983,935
East Kalimantan	1,670.6	3,177.9	4,465.6	12,529,657	29,838,667	82,630,769	3,419,659	6,052,739	16,047,751
North Sulawesi	2,415.5	2,957.7	3,321.5	1,854,991	6,611,843	25,222,814	767,964	2,233,500	7,508,509
Central Sulawesi	1,607.7	2,371.6	2,981.7	1,158,001	3,863,216	13,432,366	720,294	1,627,345	4,453,255
Southeast Sulawesi	1,254.2	2,013.7	2,639.3	832,417	2,728,452	8,994,929	663,684	1,553,529	3,368,481
South Sulawesi	6,769.2	8,598.4	9,900.7	5,199,050	20,440,895	94,935,591	768,040	2,375,720	9,486,004
Maluku	1,767.0	2,502.9	3,143.5	1,776,652	6,006,397	24,153,702	993,620	2,456,132	8,096,752
Irian Jaya	1,507.5	2,506.6	3,407.5	3,012,192	9,658,057	30,183,290	1,571,593	3,728,180	8,709,570
TOTAL	173,791.6	222,149.9	260,623.1	228,578,926	641,435,466	2,036,170,717	1,150,756	2,687,195	7,544,614

Unit : Population : thousand
GRDP : million rupiah
GRDP/cap : Rupiah per person

Source : Statistics of Indonesia, Study Team

Table 1.3.1 Passenger OD in 2019

Province	Aceh	North Sumatra	West Sumatra	Riau	Jambi	South Sumatra	Bengkulu	Lampung	Jakarta	West Java	Central Java	Yogyakarta	East Java	Bali	West Nusa Tenggara	East Nusa Tenggara	East Timor	West Kalimantan	Central Kalimantan	South Kalimantan	East Kalimantan	North Sulawesi	Central Sulawesi	Southeast Sulawesi	South Sulawesi	Makassar	Irian Jaya	TOTAL
Aceh	1,716,783	378,813	32,800	30,409	0	11,483	0	1,544	493,113	107,631	37,295	18,360	41,194	30,680	294	2,970	487	1,298	0	867	6,812	1,168	1,358	0	9,711	113	200	2,947,307
North Sumatra	385,249	2,749,158	630,136	474,585	1,947	147,803	21,494	107,043	1,782,181	450,632	224,281	133,080	171,379	768,975	52,896	1,663	6,695	60,587	4,243	23,740	172,110	45,010	2,543	14,760	62,838	15,435	17,744	8,649,233
West Sumatra	54,611	613,196	1,918,745	318,603	0	181,937	1,137	7,594	3,593,753	955,736	237,117	111,999	98,612	65,413	30,139	3,858	0	60,719	1,551	3,901	48,731	1,633	19,201	543	176,267	10,932	32,231	8,659,236
Riau	28,139	519,675	441,772	4,201,922	127,171	492,632	10,522	6,883	884,596	271,317	241,991	77,974	564,766	134,144	74,064	38,062	183	88,378	315	37,631	29,632	664	0	307	56,390	0	32,100	8,462,423
Jambi	0	48,005	57,637	84,578	0	255,091	1,472	2,157	450,799	83,205	299,252	120,375	140,111	1,798	0	1,586	1,158	116,516	0	1,505	33,543	419	0	1,441	56,971	0	0	1,768,114
South Sumatra	46,790	223,822	226,191	377,310	246,227	4,840,636	100,884	319,736	4,008,181	1,613,524	913,891	739,354	1,075,181	126,307	10,552	16,394	0	123,860	8,999	16,802	69,936	17,185	1,412	17,768	117,275	18,537	769	15,413,914
Bengkulu	0	9,578	18,661	895	9,475	144,846	0	1,969	240,041	111,034	55,647	23,659	51,809	1,108	0	0	0	207	0	292	464	96	0	1,092	0	0	0	670,975
Lampung	2,528	4,549	17,186	29,285	109,919	305,285	312,066	0	12,274,103	9,717,238	3,292,792	1,218,919	2,155,121	644,977	103,279	30,912	0	417,159	0	6,898	8,619	64,478	287	15,034	72,743	31,614	0	20,886,331
Jakarta	519,407	1,545,915	3,921,508	886,215	581,822	3,898,621	203,414	17,023,768	0	93,789	598,880	489,681	2,117,241	2,231,304	816,042	213,233	725,564	811,735	118,728	340,970	817,940	305,581	120,037	11,543	585,303	524,334	350,649	29,956,033
West Java	115,978	391,988	1,071,326	199,677	266,103	1,912,928	134,962	11,104,221	80,677	9,920	139,631	65,277	218,038	808,921	148,578	47,287	135,792	236,077	48,719	137,263	218,473	49,340	28,214	19,122	140,648	110,668	77,321	17,986,139
Central Java	70,237	145,510	515,953	186,214	342,176	1,209,166	133,843	3,000,787	650,886	218,860	389,219	734	326,333	3,441,831	109,469	50,869	14,439	77,794	133,825	230,078	203,278	24,233	10,260	5,120	133,535	18,192	28,744	10,732,327
Yogyakarta	29,426	33,157	117,140	52,331	33,660	781,420	48,898	1,298,836	421,329	28,107	7,532	0	192,124	1,817,611	74,916	56,263	40,503	311,616	23,406	55,369	120,274	8,284	8,731	374	43,515	17,695	41,348	6,291,556
East Java	18,023	263,133	109,819	265,103	320,690	940,559	137,778	2,914,976	1,548,283	141,433	370,566	21,565	71,420,032	30,489,819	1,385,731	249,668	98,617	130,074	317,325	1,332,200	1,273,576	199,502	183,591	56,065	848,034	339,989	180,935	105,459,552
Bali	1,373	50,577	156,713	99,827	1,799	93,374	838	178,778	1,539,219	683,997	2,270,510	1,518,435	21,485,537	141,350	5,074,526	422,464	176,899	8,636	11,849	104,935	85,203	97,576	136,226	43,117	923,261	116,577	56,431	35,631,219
West Nusa Tenggara	245	17,062	0	2,741	0	92,131	0	807,201	70,388	69,275	133,992	1,315,635	5,553,671	5,267,189	3,109,811	30,373	13,995	0	39,604	9,037	7,551	4,331	229,233	526	3,088	14,231,093	0	0
East Nusa Tenggara	859	15,948	0	49,468	0	82,438	0	1,263,593	92,029	44,719	82,866	441,012	658,279	382,770	3,139,333	262,676	4,400	4,174	7,130	92,638	1,597	1,752	2,814	202,239	6,315	27,033	6,269,684	0
East Timor	474	4,818	0	168	1,210	0	0	47,458	353,230	138,574	9,231	8,965	43,953	124,405	26,637	83,699	141,372	0	0	0	390	931	326	460	177,663	1,016	1,175,424	0
West Kalimantan	1,202	63,025	137,869	245,157	143,020	49,412	312	94,822	1,230,852	275,946	153,530	51,873	169,197	9,713	15,003	3,790	0	2,308,294	166,850	155,664	120,149	610	0	155	5,378	6,527	36,041	5,431,783
Central Kalimantan	356	3,101	1,112	2,938	0	496	0	15,572	144,588	55,075	101,297	29,495	306,296	37,740	1,022	5,854	0	85,868	1,278,404	836,728	65,170	10,099	2,188	234	32,134	0	61,479	3,274,202
South Kalimantan	10,516	2,405	38,209	33,994	1,690	39,914	513	6,550	402,789	115,436	123,421	94,308	956,548	146,815	41,104	3,890	0	27,621	704,005	1,949,235	1,043,404	10,566	9,920	86,631	38,994	249,860	134,210	6,284,879
East Kalimantan	8,173	136,681	12,612	58,839	2,280	299,929	253	2,638	692,953	212,617	178,133	114,995	1,284,235	111,520	42,532	63,207	0	183,040	49,895	759,461	6,918,720	155,078	188,181	18,633	1,918,233	2,692	29,205	13,447,820
North Sulawesi	862	21,752	1,187	247	402	21,345	65	29,897	232,933	70,312	16,563	6,788	224,563	421,946	4,127	223	695	29,583	0	9,930	169,270	3,079,205	457,639	2,454	386,848	869,616	193,672	6,271,856
Central Sulawesi	633	4,521	4,512	0	0	1,012	0	160	55,423	31,422	12,603	13,324	193,893	104,645	7,836	1,324	508	0	70,261	3,493	157,536	492,751	1,328,744	20,265	717,072	24,454	4,662	3,449,296
Southeast Sulawesi	0	1,822	432	656	1,160	13,838	0	22,332	106,611	7,782	18,139	574	53,611	21,580	6,150	574	7,792	2,905	313	671	10,343	1,499	30,693	471,476	2,436,764	170,014	20,112	2,455,217
South Sulawesi	12,230	125,941	23,236	33,112	38,209	233,223	8,078	203,747	730,799	141,836	95,374	109,613	809,170	921,066	217,238	108,377	192,685	4,983	10,560	116,330	2,231,029	473,437	717,247	2,501,756	2,811,116	755,759	299,111	14,048,350
Makassar	0	33,616	114,122	209	0	1,741	0	47,167	326,334	106,613	68,642	26,141	730,671	87,885	2,587	16,470	14,065	5,582	0	117,335	9,488	804,619	37,976	149,498	552,149	29,870,214	393,133	23,099,628
Irian Jaya	211	40,609	26,851	27,550	0	20,673	0	434	369,305	126,732	77,569	28,730	198,619	33,622	10,415	6,410	854	992	602	233	21,192	152,240	16,303	23,350	414,149	431,951	3,078,614	5,110,349
TOTAL	3,044,377	7,510,231	9,659,874	7,776,073	2,270,361	16,183,437	1,116,550	37,037,252	31,687,156	15,995,329	10,035,223	5,201,082	106,862,801	38,033,217	13,942,026	4,992,594	1,812,719	5,142,319	2,954,105	6,207,968	14,087,939	6,606,499	3,516,710	3,485,794	13,169,978	33,593,453	5,283,450	459,778,435

Source : Study Team

Table 1.3.2 Cargo OD in 2019

Unit : ton

Province	Aceh	North Sumatra	West Sumatra	Riau	Jambi	South Sumatra	Bengkulu	Lampung	Jakarta	West Java	Central Java	Yogyakarta	East Java	Bali	West Nusa Tenggara	East Nusa Tenggara	East Timor	West Kalimantan	Central Kalimantan	South Kalimantan	East Kalimantan	North Sulawesi	Central Sulawesi	Southeast Sulawesi	South Sulawesi	Makulu	Irian Jaya	TOTAL	
Aceh	183,139	955,290	93,262	97,446	1,780	1,983	0	0	577,988	0	10,687	0	1,313,503	0	37,733	0	0	0	0	0	0	0	0	0	0	0	0	2,274,818	
North Sumatra	2,629,753	9,087,776	184,729	3,804,348	0	1,279,251	14,312	4,374,941	38,098,589	15,038,697	7,372,719	0	17,391,597	575	4,400	0	0	27,104	0	0	1,824,788	296,282	0	678	5,326,319	0	0	106,819,270	
West Sumatra	114,567	23,236,117	63,221	1,869,356	0	133,657	237,246	1,804,638	5,437,160	242,720	4,881,153	0	33,128,112	163,889	91,032	0	0	0	0	37,406	297,518	0	0	0	0	0	73,787,202		
Riau	150,744	8,011,245	1,801,877	76,192,308	775,666	379,927	38,837	5,490,439	7,462,937	876,043	346,615	0	2,779,241	36,732	2,796	0	0	39,209	0	329,367	199,599	0	4,271	1,405	33,969	0	0	105,684,337	
Jambi	0	89,360	0	74,104	157,537	653,444	0	0	848,127	234,304	12,634	0	14,328	0	0	0	0	1,792,328	0	3,498	0	0	0	566	0	0	0	3,870,430	
South Sumatra	24,533	1,529,422	11,157,813	368,413	476,392	43,269,796	660	15,054,474	15,858,349	5,608,034	13,050,679	0	9,727,330	19,273	0	137,063	0	4,092,637	162,116	3,618,021	1,526,141	0	0	353,485	1,607	2,324,832	0	128,262,139	
Bengkulu	0	0	50,243	0	19,307	233	0	190,699	59,382	4,208	0	0	5,940	0	0	0	0	0	0	0	0	0	0	0	0	0	0	321,114	
Lampung	0	2,310,703	11,961,656	38,460	0	1,792,785	7,203,113	55,019,849	13,638,511	5,528,415	330,858	13,873	8,023,130	39,513	0	0	0	65,665	0	0	0	0	0	10,766	1,973	7,659	0	166,106,806	
Jakarta	299,684	12,697,399	2,645,438	3,657,868	567,200	3,654,938	251,868	7,714,466	0	590,997	26,433	2,892	320,295	1,747,017	50,322	52,415	1,707	1,230,735	40,637	434,049	1,008,979	763,878	203,940	23,075	2,115,038	310,703	1,354,459	41,114,990	
West Java	1,016	124,833	93,368	157,362	6,296	7,112,638	13,013	2,219,119	8,375	24,232	438,687	0	2,260,726	58,960	311,986	40	0	237,423	3,689	242,728	955,815	230,475	1,454,637	8,644	4,971	356,594	0	16,825,217	
Central Java	4,278	110,704	1,552,281	919,064	119,566	477,279	550,732	583,817	8,380,220	78,838	54,334	0	3,030,198	293,959	103,040	1,146	0	3,180,830	387,168	188,559	734,049	0	0	223	185,388	8,739	0	20,934,331	
Yogyakarta	0	0	0	0	0	0	0	142	0	0	0	0	180	3,285	0	0	0	19	172	70	7	0	0	0	0	0	0	2,875	
East Java	1,039,751	20,367,723	5,486,065	1,990,266	124,809	7,208,768	341,016	3,803,834	567,853	7,867,264	131,636	1,126	1,849,333	12,894,238	1,493,698	2,337,323	66,628	143,271	833,892	2,114,036	4,849,602	920,754	533,216	286,907	4,403,369	2,353,403	1,787,172	86,078,712	
Bali	0	0	0	0	0	0	0	1,899,298	142,030	3,871,920	24,082	5,443,970	88,872	165,541	5,742	0	0	16,930	4,819	0	0	44,770	7,348	12,687	2,629	725	12,471,071		
West Nusa Tenggara	0	0	0	0	0	0	0	117,465	156,147	50,378	5,122	2,702,873	906,786	349,980	692,442	94,819	26,533	0	92,199	16,017	0	33,106	37,730	47,741	6,781	15,964	0	5,803,529	
East Nusa Tenggara	0	15,229	0	0	0	0	0	430	0	0	0	331,145	9,782	96,971	515,103	50,033	0	1,363	13	0	0	64	0	0	0	0	0	1,743,874	
East Timor	0	0	0	0	0	0	0	175	0	0	0	43,666	938	0	1,699	19	0	543,433	122,375	21,383	2,477	8,452	0	0	2,177	0	0	49,665	
West Kalimantan	0	36,861	0	60,848	104,740	23,776	0	41,797	8,066,592	801,637	1,354,334	0	73,784	0	0	0	0	543,433	122,375	21,383	2,477	8,452	0	0	17,838	77,043	0	11,518,562	
Central Kalimantan	0	0	0	616,843	1,433,379	187,322	0	0	424,137	68,631	930,061	0	1,997,306	66,047	0	0	0	231,128	5,532,155	2,059,536	417,897	4,467	0	0	432,894	0	0	14,441,266	
South Kalimantan	0	0	0	4,547	1,329	44,301	0	0	212,297	450,791	882,547	0	3,281,512	565,507	89,851	231,961	0	88,695	601,432	474,645	519,262	38	489,268	21	3,663,380	814,216	0	12,415,624	
East Kalimantan	3,273,252	5,094,173	162,244	1,630,284	2,041,827	3,748,620	0	1,891,130	2,367,164	16,268,334	2,664,336	41	25,170,946	1,971,320	3,196,397	5,385,338	2,471	3,009,069	1,824,498	10,749,182	51,191,793	7,638,346	8,164,483	5,047	14,692,699	10,038,218	7,166,814	188,997,974	
North Sulawesi	0	1,329	0	0	0	2,970	0	0	154,166	0	18,331	0	507,510	70	0	15,984	0	1,842	9,963	858	26,720	641,133	333,437	9,217	266,598	1,991,963	17,228	2,999,919	
Central Sulawesi	11,495	2,452	0	52,158	0	0	0	2,369	59,056	6,182	0	0	797,547	221,729	1,899	47,821	0	54,579	17,939	2,630	5,849,053	161,690	372,241	2,548	1,197,029	32,729	15,369	8,913,745	
Southeast Sulawesi	0	0	0	0	2,278	0	0	0	78,639	3,312	3,288	0	518,633	4,746	3,027	138,117	411	7,453	0	6,254	8,233	11,888	144,473	9,461,474	938,474	37,738	100,727	11,389,477	
South Sulawesi	2,872	376,910	7,492	21,662	7,361	425,371	2,053	30,318	933,916	23,586	675,448	0	1,598,003	4,712,239	2,995,692	2,400,081	891,621	1,912,591	5,154	3,433,931	4,464,668	4,810,671	1,032,414	370,014	4,374,887	5,363,202	671,568	41,593,826	
Makulu	0	0	0	3,565	0	3,473	0	0	18,568,353	9	0	0	1,677,930	9,581	4,143	106,578	0	4,933,129	12,823	5,375,171	96,615	26,346,891	2,232,338	12,029,959	331,893	71,793,287	0	0	
Irian Jaya	14,690	0	0	2,600	0	5,077	0	3,662	182,234	0	866,817	0	836,863	149	74,175	38,211	0	0	0	0	0	0	0	0	0	0	0	0	16,180,400
TOTAL	7,810,736	83,758,727	333,76,634	91,784,842	5,820,368	70,407,164	8,753,899	97,974,891	124,121,436	54,011,186	38,180,983	47,177	127,013,970	24,313,331	9,295,333	12,293,095	1,113,453	16,732,730	9,532,077	28,681,653	74,467,304	20,978,985	12,912,969	36,929,537	40,220,111	43,039,597	17,280,281	1,093,566,342	

Chapter 2 Future Nationwide Ferry Service Network

2.1 Basic Development Policy for Future Nationwide Ferry Network

1. Ferry services are classified into the following categories.

Category-1: A part of national highway trunk lines including important connecting routes between major islands.

Category-2: Connection for two provincial capitals.

Category-3: Connection for small islands or isolated areas to a regional center or island waterways and river crossings.

These categories may apply separately or to two simultaneously.

2. Differences between sea transportation services and ferry services are proposed as indicated in Table 2.1.1.

Table 2.1.1 Ferry Services and Sea Transportation Services

	Ferry Services	Sea Transportation Services
Route	Fixed route between two terminals	Fixed or unfixed route with multiple numbers of port of call
Operation	Shuttle services	Liner and tramper
Distance	Less than 550NM (1,000km) or sailing time of 20 hours	no limitation
Cargo handling	Vehicles are loaded / unloaded through boarding ramp(s) under their own power	Ship's gear, shore facilities and/or through boarding ramp(s)
Cargo	On vehicle	Directly on board a vessel and/or vehicles
Passenger Accommodation	More than the number of the vehicles on board	Multiple number of passengers and/or their vehicles accompanied

2.2 Forecast of the Nationwide Ferry Traffic Demand

3. Shares of air transportation and shipping including ferry are studied first for forecasting ferry passenger demand at the target year. Then it is assumed that 75% of the passengers who do not use air transportation will select ferry at the target year.

4. The passenger demand is forecasted considering not only the item described in paragraph 3 but the fact that a considerable volume of the passengers and cargoes carried between provinces in Sumatra and Java go by ferry between Meraku and Bakauheni. The results of ferry passenger demand forecast are shown in Table 2.2.1.

5. Ferry cargo demands are forecasted considering the relation between cargo volume and passenger volume and the actual result of the cargoes carried among main islands. The results of ferry cargo demand forecast are shown in Table 2.2.2.

6. The future demand of four-wheel vehicles is estimated from the relation between vehicles and cargoes. The average cargo volume per vehicle between regions is 3.2 tons. There is no close relation between the distances of routes and the cargo volume per vehicle. The results of four-wheel vehicle demand forecast are shown in table 2.2.3.

7. The number of two-wheel vehicles is closely related to the distance of ferry route and the number of passengers. The number of two-wheel vehicles per capita is in inverse proportion to the distance.

2.3 Nationwide Ferry Network

8. Ferry boats of 300 to 500GRT will continue to be used for short distance ferry routes. On the other hand, a larger boat should enter into service for long distance ferry routes because larger boat is able to secure high speed and maintain stability in rough seas.

9. The possible ferry routes on the nationwide ferry network at the target year 2019 should meet the following requirement.

- 1) Distances of ferry routes are within 550NM (1,000km).
- 2) Passenger demands are more than 300,000 a year.
- 3) Both ports connected by the ferry route are not linked by road.
- 4) Ferry routes in Maluku and Irian Jaya should be given high priority.

10. The following routes are selected as the nationwide ferry network trunk line in 2019.

DKI - West Kalimantan

East Java - South, Central and East Kalimantan

East Java - South Sulawesi

Table 2.2.1 Ferry Passenger OD in 2019

Province	Aceh	North Sumatra	West Sumatra	Riau	Jambi	South Sumatra	Bengkulu	Lampung	Jakarta	West Java	Central Java	Yogyakarta	East Java	Bali	West Nusa Tenggara	East Nusa Tenggara	East Timor	West Kalimantan	Central Kalimantan	South Kalimantan	East Kalimantan	North Sulawesi	Central Sulawesi	Southeast Sulawesi	South Sulawesi	Makassar	Irian Jaya	TOTAL	
Aceh	1,603,192	0	18,038	10,033	0	0	0	0	32,182	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,653,467	
North Sumatra	0	1,547,776	274,001	222,106	1,034	76,738	7,093	0	802,163	802,783	100,926	0	77,121	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3,308,783	
West Sumatra	18,684	280,917	1,166,891	0	0	0	587	2,910	2,443,732	670,300	161,240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4,745,280	
Riau	9,286	243,208	0	2,331,612	67,200	216,206	0	2,504	398,068	122,093	108,833	33,088	254,143	0	0	0	0	36,339	0	0	0	0	0	0	0	0	0	3,824,634	
Jambi	0	17,174	0	44,657	0	139,177	0	1,021	188,569	59,908	115,963	86,670	100,880	0	0	0	0	49,722	0	0	0	0	0	0	0	0	0	1,014,743	
South Sumatra	0	69,339	0	169,262	216,046	3,170,617	58,336	181,899	2,885,963	1,168,937	657,838	532,335	774,130	0	0	0	0	41,060	3,908	0	0	0	0	0	0	0	0	9,928,678	
Bengkulu	0	3,161	9,629	0	0	83,757	0	1,016	204,036	91,379	47,300	20,110	41,038	0	0	0	0	0	0	0	0	0	0	0	0	0	0	507,423	
Lampung	0	0	6,664	10,632	32,019	176,589	161,542	0	11,967,318	9,484,155	3,210,414	1,217,695	2,101,243	628,833	0	0	0	157,622	0	2,075	0	0	0	0	0	0	0	29,176,870	
Jakarta	31,411	695,662	2,566,625	398,797	418,912	2,807,007	172,902	16,600,124	0	68,231	293,547	238,794	888,005	1,238,374	193,850	0	0	259,539	49,071	112,523	0	0	0	0	0	0	0	27,171,359	
West Java	0	176,393	728,488	89,855	148,391	1,381,508	114,718	10,826,615	58,693	9,920	97,742	36,278	99,831	626,914	48,695	0	0	0	16,812	46,944	0	0	0	0	0	0	0	14,510,851	
Central Java	0	63,480	337,670	83,805	246,583	870,888	112,917	2,925,767	317,295	153,202	389,074	0	197,268	2,259,619	87,321	0	0	28,061	53,597	96,288	63,270	0	0	0	0	0	0	8,308,857	
Yogyakarta	0	0	0	23,538	24,233	552,622	41,563	1,753,865	211,085	15,618	0	0	0	810,715	51,416	0	0	0	0	0	0	0	0	0	0	0	0	3,524,678	
East Java	0	118,411	0	119,296	230,897	677,202	117,111	2,842,102	620,088	62,824	223,971	0	71,011,996	19,875,134	1,170,943	0	0	43,900	136,401	534,490	429,832	0	0	0	305,935	0	0	59,340,339	
Bali	0	0	0	0	0	0	0	271,809	865,378	530,095	2,100,231	698,480	20,943,668	0	3,983,503	137,195	0	0	4,550	44,702	28,642	0	43,045	14,002	375,598	0	0	20,041,297	
West Nusa Tenggara	0	0	0	0	0	0	0	0	193,728	23,070	53,500	106,254	1,289,712	4,392,602	4,740,470	116,554	9,454	0	0	16,658	3,070	0	0	2,475	1,494	100,405	0	0	2,860,917
East Nusa Tenggara	0	0	0	0	0	0	0	0	0	0	0	0	0	213,776	143,539	2,267,533	156,424	0	0	0	0	0	0	0	0	0	0	122,159	
East Timor	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8,288	49,843	0	0	0	0	0	0	0	0	0	0	0	2,033,886	
West Kalimantan	0	0	0	83,292	57,289	20,679	0	34,989	454,184	0	55,382	0	57,104	0	0	0	0	1,154,147	72,329	64,499	0	0	0	0	0	0	0	0	1,020,783
Central Kalimantan	0	0	0	0	0	157	0	4,832	49,447	19,001	43,569	0	217,581	8,732	393	0	0	37,224	0	594,914	32,504	0	2,848	82	12,460	0	0	1,922,822	
South Kalimantan	0	0	0	0	0	0	0	1,970	132,924	39,476	51,652	0	430,447	62,547	17,202	0	0	14,700	500,548	0	670,813	0	4,038	29,628	16,855	0	0	1,922,822	
East Kalimantan	0	0	0	0	0	0	0	0	0	0	55,177	0	433,477	37,053	14,167	0	0	0	451,879	2,075,616	52,339	102,117	7,099	817,231	0	0	4,071,039		
North Sulawesi	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	57,129	1,588,870	186,382	959	126,789	337,194	0	0	2,297,322		
Central Sulawesi	0	0	0	0	0	0	0	0	0	0	0	0	0	33,042	2,568	0	0	0	27,454	1,412	85,306	200,673	99,368	9,687	340,192	7,885	0	807,584	
Southeast Sulawesi	0	0	0	0	0	0	0	0	0	0	0	0	0	22,923	2,156	201	3,127	0	101	229	4,143	586	14,661	285,243	2,205,271	68,091	0	2,605,765	
South Sulawesi	0	0	0	0	0	0	0	0	0	0	0	0	291,908	375,104	99,339	40,957	70,667	0	4,095	50,425	950,418	155,176	342,665	2,264,089	2,326,867	242,032	0	7,213,921	
Makassar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5,512	5,633	0	0	0	0	0	0	0	0	0	0	186,995	
Irian Jaya	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,044,211	
TOTAL	1,667,573	3,217,511	3,225,026	3,582,957	1,462,619	10,206,167	786,769	35,454,472	21,925,403	12,723,993	7,867,494	2,971,705	99,201,601	30,611,387	10,566,293	2,617,805	245,334	1,833,305	884,750	2,037,037	4,350,704	2,307,634	899,848	2,673,420	6,944,721	21,512,830	1,264,513	294,983,783	

Source : Study Team

Table 2.2.2 Ferry Cargo OD in 2019

Province	Aceh	North Sumatra	West Sumatra	Riau	Jambi	South Sumatra	Bengkulu	Lampung	Jakarta	West Java	Central Java	Yogyakarta	East Java	Bali	West Nusa Tenggara	East Nusa Tenggara	East Timor	West Kalimantan	Central Kalimantan	South Kalimantan	East Kalimantan	North Sulawesi	Central Sulawesi	Southeast Sulawesi	South Sulawesi	Makulu	Irian Jaya	TOTAL	
Aceh	648,493	0	7,293	4,054	0	0	0	0	13,002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	672,849	
North Sumatra	0	623,302	109,485	89,731	426	31,010	2,865	0	16,534,779	6,526,534	2,949,488	0	31,157	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26,990,776	
West Sumatra	7,548	113,491	471,424	0	0	0	237	1,176	2,974,152	270,801	170,840	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4,009,659	
Riau	3,751	98,256	0	941,983	27,149	87,347	0	1,011	671,664	80,644	43,978	14,176	102,674	0	0	0	0	14,681	0	0	0	0	0	0	0	0	0	2,087,313	
Jambi	0	6,938	0	18,042	0	64,307	0	412	725,149	200,330	87,250	35,015	40,755	0	0	0	0	16,452	0	0	0	0	0	0	0	0	0	1,194,650	
South Sumatra	0	28,009	0	66,766	87,282	1,280,919	23,568	74,699	2,695,919	953,366	2,218,615	215,063	312,749	0	0	0	0	16,583	1,579	0	0	0	0	0	0	0	0	7,975,132	
Bengkulu	0	1,277	3,899	0	0	33,838	0	410	137,303	42,755	19,109	8,115	17,291	0	0	0	0	0	0	0	0	0	0	0	0	0	0	264,499	
Lampung	0	0	2,692	4,304	21,016	71,342	65,263	0	11,183,579	4,533,300	1,297,007	491,949	848,902	254,056	0	0	0	63,679	0	838	0	0	0	0	0	0	0	18,837,928	
Jakarta	13,502	5,250,271	1,441,738	329,208	484,956	1,134,031	181,345	6,706,450	0	27,566	119,401	96,473	358,754	358,205	79,123	0	0	121,010	16,189	45,459	0	0	0	0	0	0	0	17,164,102	
West Java	0	71,263	294,309	35,301	59,951	1,209,148	46,345	4,373,933	23,712	4,008	39,435	14,656	40,352	296,217	19,673	0	0	0	6,792	18,565	0	0	0	0	0	0	0	6,555,135	
Central Java	0	44,282	144,499	33,857	59,619	351,839	395,541	1,182,010	128,389	61,894	157,185	0	1,192,978	912,885	54,611	0	0	11,335	21,653	38,900	25,561	0	0	0	0	0	0	4,858,042	
Yogyakarta	0	0	0	9,517	9,791	227,299	16,792	708,362	85,273	6,310	0	0	175	339,649	20,772	0	0	0	0	0	0	0	0	0	0	0	0	1,424,145	
East Java	0	47,838	0	48,195	53,282	273,590	47,313	1,148,209	250,516	25,381	90,484	1,093	28,688,845	12,314,016	1,000,376	0	0	17,736	55,106	224,014	173,652	0	0	0	0	0	0	44,623,250	
Bali	0	0	0	0	0	0	0	109,811	824,255	214,158	2,013,918	282,185	8,461,242	0	1,609,335	55,427	0	0	1,838	18,060	11,571	0	17,390	5,637	151,993	0	0	13,776,792	
West Nusa Tenggara	0	0	0	0	0	0	0	28,265	9,320	26,902	42,927	1,810,926	1,774,611	1,915,150	47,088	3,819	0	0	0	6,730	1,720	0	1,000	604	49,364	0	0	5,759,126	
East Nusa Tenggara	0	0	0	0	0	0	0	0	0	0	0	0	86,366	57,990	916,083	63,195	0	0	0	0	0	0	0	0	0	0	0	1,155,811	
East Timor	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3,348	20,135	0	0	0	0	0	0	0	0	76	29,627	164	0	49,352
West Kalimantan	0	0	0	33,650	23,141	8,354	0	14,136	183,450	0	22,374	0	23,070	0	0	0	0	466,275	29,221	26,057	0	0	0	0	0	0	0	829,770	
Central Kalimantan	0	0	0	0	0	63	0	1,972	19,972	7,676	16,399	0	87,903	3,328	155	0	0	15,038	0	240,345	13,131	0	1,151	33	5,034	0	0	412,396	
South Kalimantan	0	0	0	0	0	0	0	795	35,701	15,948	20,857	0	173,900	25,269	6,950	0	0	5,939	202,221	0	230,813	0	1,632	11,970	6,813	0	0	776,820	
East Kalimantan	0	0	0	0	0	0	0	0	0	0	22,392	0	175,125	14,959	5,723	0	0	10,054	182,559	838,349	21,145	41,255	2,868	330,161	0	0	0	1,644,700	
North Sulawesi	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23,085	641,903	75,298	387	51,223	135,226	0	0	928,118	
Central Sulawesi	0	0	0	0	0	0	0	0	0	0	0	0	0	13,349	1,038	0	0	11,092	570	34,464	81,072	49,145	3,911	137,438	3,186	0	0	326,264	
Southeast Sulawesi	0	0	0	0	0	0	0	0	0	0	0	0	0	9,261	871	81	1,275	0	41	1,674	237	5,924	115,238	890,930	27,509	0	0	1,033,133	
South Sulawesi	0	0	0	0	0	0	0	0	0	0	0	0	117,931	151,542	40,214	16,550	28,550	1,654	23,372	383,969	63,691	138,437	914,692	949,054	97,781	75,547	0	2,914,436	
Makulu	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,227	2,276	0	0	0	0	0	125,044	4,948	24,189	71,438	8,342,875	75,547	0	8,649,544
Irian Jaya	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	82,586	69,407	0	150,993	
TOTAL	672,709	6,286,926	2,475,352	1,615,609	906,614	4,773,099	780,270	14,313,607	36,583,172	12,979,991	9,315,590	1,201,657	42,465,231	16,953,923	4,815,329	1,057,593	99,115	748,735	357,439	822,553	1,757,684	933,092	327,179	1,080,062	2,803,667	8,691,183	143,954	174,994,747	

Table 2.2.3 Vehicle Carried by Ferry OD in 2019

Province	Aceh	North Sumatra	West Sumatra	Riau	Jambi	South Sumatra	Bengkulu	Lampung	Jakarta	West Java	Central Java	Yogyakarta	East Java	Bali	West Nusa Tenggara	East Nusa Tenggara	East Timor	West Kalimantan	Central Kalimantan	South Kalimantan	East Kalimantan	North Sulawesi	Central Sulawesi	Southeast Sulawesi	South Sulawesi	Maluku	Irian Jaya	TOTAL
Aceh	202,656	0	2,280	1,267	0	0	0	0	3,096	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	209,298	
North Sumatra	0	195,407	34,214	28,041	133	9,691	895	0	3,936,852	1,553,937	702,259	0	7,418	0	0	0	0	0	0	0	0	0	0	0	0	0	6,468,817	
West Sumatra	2,359	35,466	147,320	0	0	0	74	367	708,131	64,477	40,676	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	998,870	
Riau	1,172	30,705	0	294,370	8,484	27,296	0	316	159,920	19,201	10,471	3,375	24,446	0	0	0	0	4,588	0	0	0	0	0	0	0	0	584,344	
Jambi	0	2,168	0	5,638	0	20,096	0	129	172,654	47,698	20,774	8,337	9,704	0	0	0	0	5,141	0	0	0	0	0	0	0	0	292,339	
South Sumatra	0	8,753	0	20,864	27,276	400,290	7,365	23,343	611,886	226,992	528,242	51,206	74,464	0	0	0	0	5,184	493	0	0	0	0	0	0	0	2,016,357	
Bengkulu	0	399	1,216	0	0	10,574	0	128	32,691	10,180	4,550	1,934	4,236	0	0	0	0	0	0	0	0	0	0	0	0	0	65,909	
Lampung	0	0	811	1,345	6,567	22,294	20,395	0	2,662,757	1,079,357	308,811	117,131	202,120	79,393	0	0	0	19,900	0	262	0	0	0	0	0	0	4,521,173	
Jakarta	3,310	1,250,065	313,276	78,383	115,466	270,007	43,177	1,596,774	0	6,563	28,429	22,970	85,418	180,525	18,839	0	0	37,816	5,059	14,206	0	0	0	0	0	0	4,100,282	
West Java	0	16,967	70,074	8,643	14,274	287,892	11,035	1,041,417	5,646	954	9,402	3,490	9,608	70,528	4,684	0	0	0	2,122	5,927	0	0	0	0	0	0	1,562,663	
Central Java	0	10,543	34,401	8,061	23,719	83,771	94,415	281,431	30,569	14,737	37,425	0	281,012	217,354	13,003	0	0	3,513	6,767	12,156	7,988	0	0	0	0	0	1,163,928	
Yogyakarta	0	0	0	2,266	2,331	54,119	3,998	168,705	20,304	1,302	0	0	42	80,869	4,946	0	0	0	0	0	0	0	0	0	0	0	339,082	
East Java	0	11,390	0	11,475	22,210	65,140	11,265	273,383	59,647	6,043	21,544	261	8,273,535	2,931,909	238,185	0	0	5,542	17,221	70,004	54,266	0	0	0	38,624	0	12,111,645	
Bali	0	0	0	0	0	0	0	26,145	196,261	50,990	479,504	67,187	2,014,581	0	383,175	17,321	0	0	574	5,644	3,616	0	5,434	1,768	47,470	0	3,299,671	
West Nusa Tenggara	0	0	0	0	0	0	0	0	18,635	2,219	6,405	10,221	431,173	422,526	455,988	14,715	1,191	0	2,103	381	0	312	189	12,676	0	0	1,378,737	
East Nusa Tenggara	0	0	0	0	0	0	0	0	0	0	0	0	26,989	18,122	286,276	19,748	0	0	0	0	0	0	0	136	9,651	268	361,191	
East Timor	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,046	6,293	0	0	0	0	0	0	0	24	8,009	51	15,423	
West Kalimantan	0	0	0	10,516	7,232	2,611	0	4,417	57,341	0	6,992	0	7,209	0	0	0	0	145,711	9,132	8,143	0	0	0	0	0	0	259,303	
Central Kalimantan	0	0	0	0	0	20	0	616	6,243	2,399	5,122	0	27,470	1,102	48	0	0	4,700	0	75,108	4,104	0	360	10	1,573	0	128,874	
South Kalimantan	0	0	0	0	0	0	0	249	16,782	4,984	6,521	0	54,344	7,897	2,172	0	0	1,856	63,194	0	78,379	0	510	3,741	2,129	0	242,756	
East Kalimantan	0	0	0	0	0	0	0	0	0	0	6,966	0	54,726	4,678	1,789	0	0	0	3,142	57,050	262,047	6,608	12,892	896	103,175	0	513,969	
North Sulawesi	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7,212	200,595	23,531	121	16,007	42,571	290,037	
Central Sulawesi	0	0	0	0	0	0	0	0	0	0	0	0	0	4,172	324	0	0	3,466	178	10,770	25,335	12,545	1,222	42,949	996	0	101,957	
Southeast Sulawesi	0	0	0	0	0	0	0	0	0	0	0	0	0	2,894	272	25	399	0	13	29	523	74	1,851	36,012	278,416	8,596	329,104	
South Sulawesi	0	0	0	0	0	0	0	0	0	0	0	0	36,853	47,357	12,567	5,172	8,922	0	517	6,366	119,990	19,591	43,261	285,841	293,767	30,557	910,761	
Maluku	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	696	711	0	0	0	0	39,189	1,546	7,559	22,324	713,399	23,608	809,232
Irian Jaya	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25,808	21,377	47,185	
TOTAL	209,497	1,561,863	633,625	470,869	227,692	1,253,803	192,619	3,417,422	8,729,414	3,092,232	2,224,093	286,111	11,601,389	4,078,192	1,155,159	330,498	30,973	233,980	111,700	257,176	549,276	291,591	102,243	337,519	876,771	822,245	44,986	43,122,937

Source : Study Team

NTT & NTB - South Sulawesi
South Sulawesi - Maluku (through Southeast Sulawesi)
Maluku - Irian Jaya

Several new ferry routes will enter service between Maluku and Irian Jaya.

11. In addition to the routes proposed in paragraph 40, the following routes may be included from the viewpoint of completing the nationwide trunk lines in the future network after 2019.

Riau and Jambi - West Kalimantan
East Kalimantan - Central Sulawesi
East Timor - Maluku

12. Figure 2.3.1 illustrates the Nationwide ferry network in 2019.

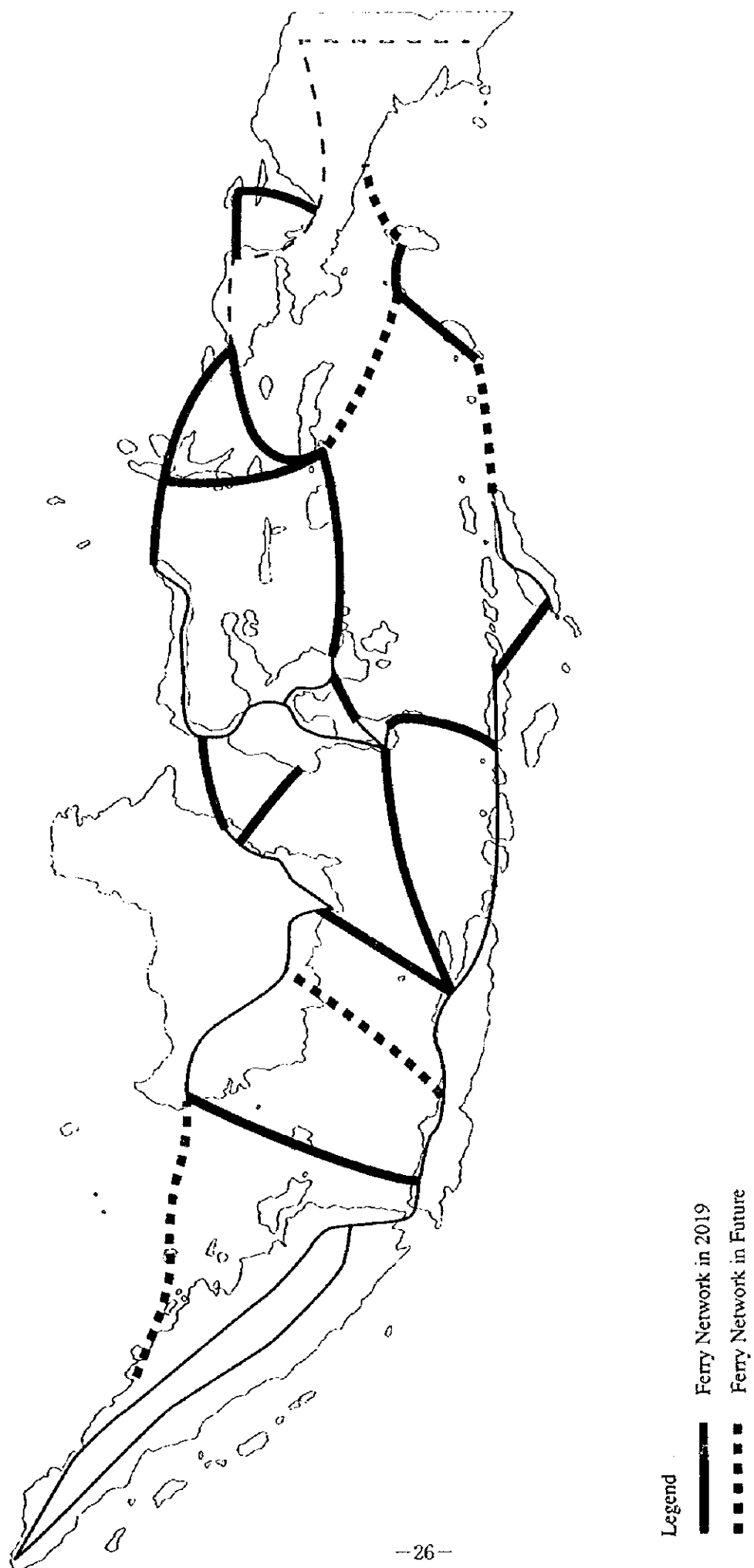


Figure 2.3.1 Nationwide Ferry Network in 2019