

## 2.2 Environmental Aspects

### 2.2.1 General

20. Indonesia consists of more than 17,000 islands and all the islands are relatively young, only from 15 million years ago. Since then the whole area has been the scene of violent tectonic activity. The archipelago contains 128 centers of volcanic activity, the majority of these lie along the arc formed by islands, several, however, lie on the seabed. From the environmental preservation point of view, there are many kinds of animals, birds and insects in the country. Most of the islands are covered with dense rain forest and some parts of Java and Kalimantan are covered by mangrove swamps and marsh-peat forests. The country is also rich in natural resources such as oil and LNG, coal, bauxite, tin, silver, etc. Marine products such as salt and fish also play an important role in the economy. Judging from this environmental situation, it is conceivable that various environmental problems will be encountered in the course of future development.

### 2.2.2 National Environmental Policy and Basic Principles

21. The process of rapid industrial development in Indonesia has raised various environmental issues such as pollution of air and water. The Government of Indonesia strengthens the role of the government to solve these problems in the context of national environmental policy that they gave high priority in the policy of Indonesia's Second Long-Term Development Plan. To fulfill the policy, a Five-year Development Plan is formulated every five years. The national environmental policy in the Sixth Five-year Development Plan is summarized below;

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

22. The basic principles of environmental impact control of the Environmental Impact Management Agency (BAPEDAL) in Indonesia are as follows;

1) Human beings as the center dimension in control

Sustainable development is basically aimed at improving the quality of life. Therefore, human beings assume a central dimension in environmental impact management.

2) Principle of carrying capacity and functional conservation of natural resources

Humans, as individuals or in groups, as well as natural resources have limited carrying capacities that can not be exceeded. Therefore, development efforts should observe human and natural resource limitation in supporting change. The limitations include the capacity of natural resources to support change as well as the limited supply of non-renewable resources.

3) Prevention principle

Preservation is wiser than the remediation of impacts which have already occurred. 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) Application of technologies

The application of technology for impact control needs to consider economic feasibility and the best practicable technology. If sensitive and strategic environmental issues are involved or if there are concerns for human health, it may be necessary to use the best available technology.

5) Polluters must pay principle

Initiators of activities are responsible for the impacts generated by such activities. This principle may be varied where the activities concern low income communities where the Government is obliged to provide assistance for the solution.

6) Sharing principle

Everyone has a right for, and an obligation to maintain a sound and healthy environment. Therefore, everyone has rights and obligations in the management of the environment.

7) Transparent and accountable management principle

Environmental impact management should be well planned and implemented with clear accountability.

### 2.2.3 Environmental Laws and Regulations

23. There are two organizations related to the environmental management in Indonesia. One is the Office of the State Minister for Environment established in 1993 which is empowered to formulate environmental policy and was detached from the Office of the State Minister for Demography and Environment. The other is the Environment Impact Management Agency (BAPEDAL) which is empowered to implement environmental conservation measures and environmental monitoring.

24. A legal basis of environment conservation in Indonesia is Law No.4 "Basic provision for Management of the Living Environment" enacted in 1982. The law stipulates the basis for environmental management and concept for environmental conservation and the related laws comprise 24 Chapters.

25. Regarding the environmental impact analysis, the law stipulates the necessity of environmental impact analysis for the development projects in Chapter 16 of the law. In accordance with the law, a governmental decree regarding environmental impact analysis, Government Regulation No.29, 1986 "Environmental Impact Analysis (AMDAL)" was established in 1986.

26. The Government Regulation was revised in 1993 in order to simplify AMDAL procedure and strengthen the function of the Environmental Impact Management Agency (BAPEDAL).

## Chapter 3      Ferry System Management

### 3.1      Ferry Transportation System in Indonesia

1.      Maritime Transportation in the Republic of Indonesia, because it consists of large number of islands scattered in all directions, is regarded not only as one of the transportation modes such as land and air transportation, but as a supplementary mode to land transportation mode in the same manner as a road network and rail line.

2.      The Law on Navigation (Law No.21/1992) divides maritime transportation into three types, a) sea transportation, b) transportation on rivers and lakes, and c) crossing transportation. These three types are defined as follows.

a) Sea transportation comprises domestic sea transportation including people's navigational transportation, and sea transportation to and from foreign countries.

b) Transportation on rivers and lakes comprises transportation on artificial lake, swamps, canal, and channel.

c) Crossing transportation is transportation functioning as a floating bridge connecting road network and railway line which are cut off because of waters.

3.      Among these types, crossing transportation mentioned in c) literally serves as a connection between a part of road and/or rail, and has been regarded as ferry transportation since 1979 when presidential decree No. 47 changed the term "Ferry" into "Crossing".

4.      In terms of administration, Directorate General of Land Transportation (DGLT) is in charge of transportation on rivers and lakes, and crossing transportation, that is, ferry transportation. For, it is considered as a form of land transportation as aforementioned. On the other hand, other maritime transportation is administrated by Directorate General of Sea Communication (DGSC).

5.      From the perspective of the Navigation Law and as it also can be seen in Ministerial decree No.64, 1989, ferry transportation offers a "shuttle service" linking two points/terminals that happen to be cut off, which apparently differs from passenger vessel service in which regular calls are made on a number of terminals.

6.      As aforementioned, administration and business circles surrounding maritime

transportation in Indonesia are not systematically organized in spite of similar aims and similar transportation systems, so that many of related organizations are being concerned in each position in a complicated system.

7. Ministry of Communications (MOC), which houses DGLT, DGSC and Directorate General of Air Communication (DGAC) is in charge of all transportation and communication affairs in Indonesia. DGLT directly plays an important role in the management and operation of ferry transportation at the national level, such as planning of the nation wide ferry network services. On the other hand, there are 27 KANWIL, regional offices of MOC, which work on the planning of regional ferry service.

8. Looking at the actual activities related to ferry transportation, MOC is in charge of construction of ferry terminals and building of ferry boats. Terminal management including its maintenance is to be conducted by UPT; KANWIL's branch office, PT. ASDP, Local Government and so on., under supervision of Port manager assigned and placed by MOC. Ferry terminals used to be mainly managed by KANWIL, but some of the terminal management has been transferred to PT. ASDP's control, since it became profitable. At present, 17 terminals are under the management of KANWIL. Terminal management body on each route are shown in the Table A3.1.1 and 17 terminals with its revenue and expense in the Table A3.1.2.

9. With regard to operational aspects, PT. ASDP, a public corporation under control of MOC, and private shipping lines which have obtained a license from DGLT or KANWIL carry out ferry service operations. Service between provinces is issued by DGLT, and service in a province by KANWIL. It should be noted that PT. ASDP itself manages 16 ferry terminals. If MOC/KANWIL's terminal management were to be profitable, it would be transferred to the control of PT. ASDP.

10. Besides ferry service, DGSC is in charge of other maritime transportation such as cargo transportation and passenger transportation. In addition, so-called sea-port facilities except for ferry terminals are managed by PELINDO, a public corporation under the control of DGSC. General cargo vessels and passenger boats are operated by public corporation PELNI and private shipping lines under the control of DGSC in the same way as PT. ASDP and private companies are supervised by DGLT. However, unlike PT. ASDP, PT. PELNI manages and operates no terminals.

11. Although DGLT is generally in charge of ferry transportation, DGSC is responsible for navigation control, boat inspection, management of accidents and pilotage

of all shipping vessels including even ferry boats.

12. In a sense, it could be said that ferry transportation system supervised by DGLT and others such as cargo vessels and passenger only vessels supervised by DGSC are closely related. Furthermore, as ferry transportation is not clearly defined now, there might be a possibility that PT. ASDP under the control of DGLT operates passenger only vessels and PT. PELNI under DGSC offers ferry transportation service in the near future. At this stage, no regular meeting is prepared to tackle this issue.

13. As mentioned above, in the face of the economic crisis last year, the Government promulgated the Regulation No.12 in January of 1998 as part of its new policy, " It is necessary to take various steps in order to increase efficiency, competitive ability and business development of Incorporated Company ". According to the Regulation, financial aspects of all state-owned companies are under the control of the Minister of Finance. Before decisions can be made at General Shareholder's Meetings, approval must first be obtained from the Minister of Finance concerning the following matters: 1) Alteration of capital amount; 2) Distribution and use of profit plan; 3) Investment and long term financing and so on.

### **3.2 Related Organizations for Ferry Transportation**

#### **3.2.1 Directorate General of Land Transportation**

##### **(1) General**

14. As mentioned in 3.1, DGLT is one of three Directorate Generals of MOC which is literally specialized in so-called land transportation administration, and supervises the related public corporations such as PT. ASDP.

15. DGLT's organization used to be divided into three Directorates depending on the aim; a) Directorate of Traffic and Transport, b) Directorate of Infrastructure Development, c) Directorate of Safety and Technique. Consequently, the ferry related sections with different duties such as a permission and license for terminal management and operation, terminal construction, maintenance of infrastructure, planning of ferry network and development of channel, building of ship, maintenance of ship and etc. were placed in different Directorates. However, the presidential decree No. 58 in September of 1996 rectified this situation, giving each Directorate responsibility for a specific transportation mode.

16. The new organization of DGLT is composed of 4 Directorates under the Secretariat of Directorate General. They are Directorate of Highway Transportation(LLAJ), River, Lake and Ferry Transportation(LLASDP), Railway Transportation(LLJREL) and City Transportation(LLAK). The organizational structure of DGLT is given in the Figure A3.2.1.

17. Ferry related matters are managed by Directorate of River, Lake and Ferry Transportation. As aforementioned in 3.1, Indonesian Government divides maritime transportation into three types. As both river and lake transportation, and ferry transportation function as a subsidiary mode for road network and rail line, they are placed in the same Directorate.

(2) Responsibility and function of DGLT in ferry transportation

18. LLASDP is composed of 4 Sub Directorates: a) Transportation Network, b) Infrastructure, c) Port and d) Transportation. Responsibility and function of DGLT in ferry transportation can be shown as follows. The organization of LLASDP is given in the Figure A3.2.2.

1) Sub Directorate of Transportation Network

19. With regard to ferry transportation, this Sub Directorate is in charge of general planning of ferry network and formulation of management skill on ferry operations. In addition, establishment of a policy of buoy installation and analysis into its necessity in ferry routes are also in its domain.

20. This Sub Directorate consists of 4 sections; a) Network Development, b) River, Traffic Line, c) Shipping Channel, and d) Buoy Affairs section. The following are the duties of each section.

a) Network Development section:

- Establishment of policy of ferry transportation network
- General planning of ferry transportation network

b) Traffic Line section:

- Establishment of a technical policy on ferry lines and supervision over it
- Formulation of technical management on ferry operation

c) Shipping Channel section:

- Formulation of mapping technique

d) Buoy Affairs section:

- Establishment of policy and supervision on buoy affairs
- Analysis of necessity of buoy installation in shipping channel

2) Sub Directorate of Infrastructure

21. With regard to ferry transportation, this Sub Directorate is in charge of establishment of policy on technical affairs of ferry related infrastructure, and of supervision over the management.

22. This Sub Directorate also consists of 4 sections; a) Ferry Transportation Equipment section, b) Maintenance Leadership section, c) Ship Work section and d) Lake and River Transportation Equipment. The following are the duties of each section.

a) Ferry Transportation Equipment section:

- Formulation of technical service of ferry transportation equipment
- Planning for development and supply of ferry transportation equipment
- Analysis into ferry transportation equipment

b) Maintenance Leadership of Equipment section

- Formulation of maintenance technique
- Maintenance of ferry transportation equipment
- Investigation of maintenance of ferry transportation equipment
- Monitoring into as ferry transportation equipment of the dock

c) Ship Work section

- Formulation of technical service to a ship
- Technical service to a ship and supervising it.

3) Sub Directorate of Port

23. With regard to ferry transportation, this Sub Directorate is in charge of establishment of a technical policy in the management and operation of ferry terminals. In addition, it supervises development and maintenance of ferry terminals.

24. This Sub Directorate consists of 4 sections; a) Ferry Port section, b) Port Operation section, c) Maintenance section, and d) Lake and River Port section. The following are the duties of each section.

a) Ferry Port section:



- Planning of ferry port development
- Technical services to ferry port development and supervising it

b) Port Operation section:

- Formulation of technical affairs on the system and procedure of ferry port operation
- Technical assistance to ferry port operation and supervising it

c) Maintenance section:

- Formulation of technical affairs on construction and maintenance of ferry port
- Measures to deal with environmental impact caused by development and operation of ferry port
- Programming for maintenance and rehabilitation of ferry port
- Technical assistance to maintenance of ferry port and supervising it

4) Sub Directorate of Transportation

25. With regard to ferry transportation, this Sub Directorate is in charge of establishment of a technical policy on ferry transportation. It also formulates the management system of ferry transportation.

26. This Sub Directorate consists of 4 sections; a) Ferry Transportation section, b) River Transportation section, c) Lake Transportation section, and d) Traffic Lines Rate section. The following are the duties of each section.

a) Ferry Transportation section:

- Formulation of technical policy of ferry transportation
- Preparation for technical assistance and supervision over ferry transportation in each province

d) Traffic Lines Rate section:

- Establishment of ferry rate policy
- Formulation of the control and monitoring of ferry rate

3.2.2 PT. ASDP

(1) General

27. As a government owned enterprise under control of the government, PT. ASDP offers ferry transportation service.

28. PT. ASDP is emerged form Project ASDP which was established in 1973 for the purpose of improving development of water transportation. In order to make the mission of Project ASDP more specific, the term "Ferry" was changed to "Crossing" by Presidential decree No.47, 1979. At the same time, the government took the opportunity to change the name of ASDP to ASDP. Furthermore, Project ASDP became a public corporation by the regulation No. 8 in 1986.

29. By management decree (KD25/HK203,1994), the functions of PT.ASDP are given as follows.

- River, lake and ferry transportation service in profitable place
- Implementation of pioneer transportation
- Technical service to ferry port equipment
- Maintenance of ship and its equipment, terminal facilities, shipping channel and other related infrastructure
- Financial management
- Management of personnel affairs, trade and marketing
- Implementation of safety measures at ferry terminals and branch offices, and on boats

30. PT. ASDP operates not only profitable "Commercial routes", but unprofitable "Pioneer route". At this stage, 33 commercial routes and 52 pioneer routes are operated with 89 boats. The present situation of ferry operation is given in Chapter 4 of Part 1.

31. PT. ASDP is a ferry terminal manager as well as an operator of ferry transportation. At present, 16 terminals are managed and operated by PT. ASDP. With ferry operation, if terminal management by MOC/KANWIL were to become profitable, it would be transferred to the control of PT. ASDP. The name, class and transferred year from MOC are given in the Table 3.2.1 shown below.

32. As mentioned in 3.1, PT. ASDP offers "shuttle service" linking two terminals, but a few routes exceptionally connects 3 terminals. In addition, it should be noted that a non-shuttle service calling 5 terminals, Surabaya-Banjarmasin-Sampit-Kumai-Semaran, used to be operated by PT. ASDP flying PT. PELNI's flag. It is said that PT. ASDP has purchased two passenger boats which will presumably be used for ferry transportation.

Table 3.2.1 Ferry Terminals Managed by PT. ASDP

	Name	Place	Class	Transfer
No. 1	Merak Terminal	Jabar	II	1987
No. 2	Bakaueni Terminal	Lampung	II	1987
No. 3	Ujung Terminal	Surabaya	II	1987
No. 4	Kamal Terminal	Madura	II	1987
No. 5	Ketapang Terminal	Jatim	I	1987
No. 6	Gilimanuk Terminal	Bali	I	1987
No. 7	Padanbai Terminal	Bali	II	1992
No. 8	Lember Terminal	N.T.B.	III	1992
No. 9	Pototano Terminal	N.T.B.	III	1992
No. 10	L. Lombok Terminal	N.T.B.	III	1992
No. 11	Balikpapan Terminal	Kaltim	III	1995
No. 12	Penajam Terminal	Kaltim	III	1995
No. 13	Poka Terminal	Maluku	III	1995
No. 14	Galala Terminal	Maluku	III	1995
No. 15	Humimoa Terminal	Maluku	III	1995
No. 16	Waipirit Terminal	Maluku	III	1995

Source: PT. ASDP

33. With regard to the tariff, the Government does set the tariff for economy class, the tariff of other class (business and executive) is decided by the transport operators such as PT. ASDP. The same shipping tariff for economy class is adopted to the same ferry transportation service whether the operator is PT. ASDP or a private company.

34. PT. ASDP has to cover the operation expense related to commercial routes and terminals, however ships and terminal facilities are provided from the government. The process of introducing a new service including construction of the new infrastructure and payment of operation expense etc. is given in 3.3.

(2) Organization and its functions

35. As aforementioned, the central office of PT. ASDP consists of 4 Directorates, a) Operational, b) Technical, c) Financial and d) Personnel and General Directorate, under the Managing Director, and two supporting Units; a) Center of Planning, Information and Development, and b) Internal Supervision Unit, since the new organization was formed in September of 1994. Managing Director and four Directorates forms a Board of Directors headed by the Managing Director which functions as a policy making body on the management of the company. The organizational structure of PT. ASDP is given in the Figure A3.2.3.

36. Operational Directorate consists of 3 Sub Directorates; a)Marketing and trading

service, b) Shipping trade, c) Port trade, and is in charge of the planning, founding and development of river and lake, and ferry transportation activities. Management of the service trade and port operation activities are also in its domain.

37. Technical Directorate consists of two Sub Directorates; a) Ship technique, b) Facility and port tools, and is in charge of maintenance and treatment of ships, other port related facilities and tools, shipping channel, wharf, and the purchase and retirement of ships and other technical tools.

38. Financial Directorate has two Sub Directorates; a) Budget and Treasury, and b) Accountancy. Sub Directorate of Budget and Treasury supervises the management of financial and investment activities, and of budget and treasury. It is also responsible for the settlement of debit, credit, taxation and treasury. Sub Directorate of Accountancy is in charge of the management of accounting procedures, analysis and calculation of trade value, and analysis of financial report and bookkeeping, etc.

39. Personnel and General Directorate is composed of two Sub Directorates; a) Personnel and b) General. The former is in charge of the formulation of employment policy, arrangement of personnel training, recompense, transfer and promotion, employee working conditions and safety measures. The latter is responsible for the management of administration system, reform of organizational structure, law related affairs, management and preparation of company regulations, etc.

40. Looking at the supporting units, Center of Planning, Information and Development collects, analyzes and evaluates related data and information on the management for the purpose of strategic operation. Another unit of Intern Supervision supports the Managing Director in determining if the duties are being carried out in accordance with management policy.

41. Besides the central office, 31 branch offices are responsible for the management and operation of shipping and terminal service in the regions. Although the regional offices used to be categorized into two types such as Shipping Office and Terminal Office, they have since been combined into branch offices. Shipping Offices were in charge of shipping operation, and Terminal Offices managed and operated the 10 terminals which had been transferred from MOC/KANWIL until 1994.

42. All branch offices are basically categorized into four classes by scale. Class I denotes main branch, Class II medium branch, Class III regular branch and Class IV

newly established branch office. Branch offices of PT. ASDP are given in the Table A3.2.1.

43. PT. ASDP has successfully reduced the number of its employees in the past few years, mainly due to the radical reform of PT. ASDP's organization in which two types of branch offices were combined into one. The change in the number of staff working for PT. ASDP by types of employment, and by type of duty in 1993-1997 is given in the Table 3.2.2 shown below. The number of permanent employees includes staff transferred from MOC. The Table 3.2.3 shows the change of average salary of staff by status in 1992-1996.

Table 3.2.2 Number of Employee in 1993-1997

	1993	1994	1995	1996	1997
<b>Permanent Employee</b>					
Central Office (A)	160	160	151	152	153
Branch Office					
Land staff	1,266	1,261	1,414	488	484
Ship crew	887	885	849	1,063	1,063
Total (B)	2,153	2,146	2,263	1,551	1,547
Total (A+B)	2,313	2,306	2,414	1,703	1,700
<b>Contract Employee</b>					
Land staff	431	272	315	239	236
Ship crew	282	300	386	219	219
Total (C)	713	572	701	458	455
<b>Grand Total (A+B+C)</b>	<b>3,026</b>	<b>2,878</b>	<b>3,115</b>	<b>2,161</b>	<b>2,155</b>

Source: PT. ASDP

Table 3.2.3 Average Salary of ASDP's Staff in 1992-1996

	1992	1993	1994	1995	1996
	(unit:Rp)				
<b>Permanent Employee</b>					
Head, Sub Directorate	971,900	971,900	1,095,972	1,095,972	1,229,045
Section Head	528,028	528,028	606,569	606,569	660,089
Administration staff (land)	308,120	308,120	324,270	324,270	340,520
Operation staff	358,976	358,976	412,895	412,895	466,990
Total (A)	2,167,024	2,167,024	2,439,706	2,439,706	2,696,644
<b>Contract Employee</b>					
Administration staff (land)	159,728	159,728	159,728	159,728	159,728
Operation staff	287,039	287,039	287,039	287,039	287,039
Total (B)	446,767	446,767	446,767	446,767	446,767
<b>Grandtotal (A+B)</b>	<b>2,613,791</b>	<b>2,613,791</b>	<b>2,886,473</b>	<b>2,886,473</b>	<b>3,143,411</b>

Source: PT. ASDP

### 3.2.3 Directorate General of Sea Communication and PT. PELNI

#### (1) DGSC

44. As aforementioned, DGLT is in charge of river and lake transportation, and ferry transportation, on the other hand, DGSC manages domestic sea transportation by passenger vessels as well as cargo vessels. However, DGLT participates even in ferry transportation on matters related to navigation control.

45. In the same way as DGLT controls PT. ASDP, DGSC supervises government owned shipping line PT. PELNI and sea port management body PELINDO.

46. The main functions of DGSC are formulation of technical policy, rendering guidance and administering licenses on maritime affairs in conformity with government policy. For the purpose of realizing these functions, DGSC houses six Directorates under the Secretariat of Director General. The following are the duties of each Directorate.

- Directorate of Sea Traffic: Implementation of sea transportation policy on sea traffic.
- Directorate of Port and Dredging: To plan, regulate and supervise maritime service in the ports including pilotage. Planning of port facilities and other related equipment.
- Directorate of Marine Safety: Planning and regulating matters related to marine safety at sea and in ports.
- Directorate of Navigation: To guarantee marine safety for all vessels.
- Directorate of Maritime Services: To render advisory services to the maritime industry.
- Directorate of Sea and Coast and Security: To plan, manage and supervise the security in the port and at sea.

#### (2) PT. PELNI

47. PT. PELNI is a public corporation under the control of DGSC and operates domestic sea transportation of cargo and passenger. Passenger transportation service of PT. PELNI, now operated by 18 vessels, is closely related to PT. ASDP's ferry service because of the similarity of transportation style.

48. One of the clear distinctions between the two services is that PT. PELNI's

service is specialized in passenger transportation so that it carries multiple number of passengers with no vehicles accompanied. In addition, as for the calling pattern, PT. PELNI's service makes a number of calls in a regular route and comes back to the same port almost every two weeks in a round trip.

49. Furthermore, at present, PT. PELNI manages no terminals by itself so that it calls the ports managed by PELINDO paying related port charges with each call. In this respect, PT. ASDP might gain an advantage, if they started a similar service by operation of the same type of vessel. Besides PT. PELNI, seven other private shipping lines are offering passenger service on 16 routes with 21 vessels.

50. By Ministerial decree No. 20, 1996, the accommodation structure of passenger transportation is classified into six types; Class 1-A, 1-B, 2-A, 2-B, C and Economy. As for passenger transportation tariff, in accordance with government policy, Ministerial decree No. 19 and No. 60, 1996, defines passenger tariff of economy class, and other non-economy class by No. 147.

### **3.3 Introduction of a New Ferry Service**

51. The process of introducing a new ferry service is divided into 3 stages.

52. As the first step, the region which desires a new ferry service makes a proposal. Specifically, a branch office of PT. ASDP in collaboration with KANWIL make an official application for inauguration of a new ferry route to DGLT. Accepting this application, DGLT forms a checking team called Panel Team with PT. ASDP and KANWIL, and makes a proposal on this matter to a deliberative council that is composed of BAPENAS (National Development Institution), PT. ASDP, DGLT and DEPKEN (Ministry of Finance).

53. After the inquiry into this matter by the council, approval to open a new route may be granted. Final decision has to be made by the Government in accordance with the Regulation No. 12 promulgated in January of 1998, which defines about a determination of ferry transportation service. General Director of DGLT is responsible for implementation of the decision and makes it public to all ferry operators, so that the actual operator on that route may be selected.

54. In the second stage, the council that consented to open a new route provides instructions to related organizations toward the inauguration of a new service. Firstly,

DGLT, as a project leader, is in charge of construction of the infrastructure; ferry terminals and terminal offices, building of ferry boats that are put on a route, payment of expense for ferry operation, personnel affairs including recruitment of crews, etc. Funds needed for above are allocated by DEPKEU (Ministry of Finance) through BKN (Province Treasurer) which functions as a liaison of regional money allowance.

55. In the third stage of the process, an ex post facto report on a newly started ferry service has to be made, so that a subsidy is granted. This report has to be prepared in collaboration between DGLT and PT. ASDP or private operators, and be submitted to BKN after one months' operation. BKN inquires into the report and approves requested expense for a months' operation. This process of payment is to be continued until the newly inaugurated "Pioneer route" makes any profits, at which time it becomes a "Commercial route".

### **3.4 Adjustment System of the Budget**

56. The process of adjustment of the budget for the next fiscal year starts from a discussion between a branch office of PT. ASDP and UPT, KANWIL. Both organizations collaborate on a budget bill for the next fiscal year and submit it to DGLT. DGLT analyzes and investigates the bill, and presents it to the Financial Bureau of MOC. The Bureau makes an official request to deliberate on it to the Ministry of Finance.

57. This procedure is called DUK (Daftar Usulan Resiatan) meaning Activity of Proposal List starting in June of each year. On the other hand, after approval of the budget bill, through a reverse process called DIK (Daftar Isian Kegiatan) meaning Activity of Filler List, the budget is actually allocated at the beginning of the next fiscal year. In the case of a request for funds to OECF, the same process is required as well. The flow of adjusting system of the budget is shown in Figure 3.4.1.



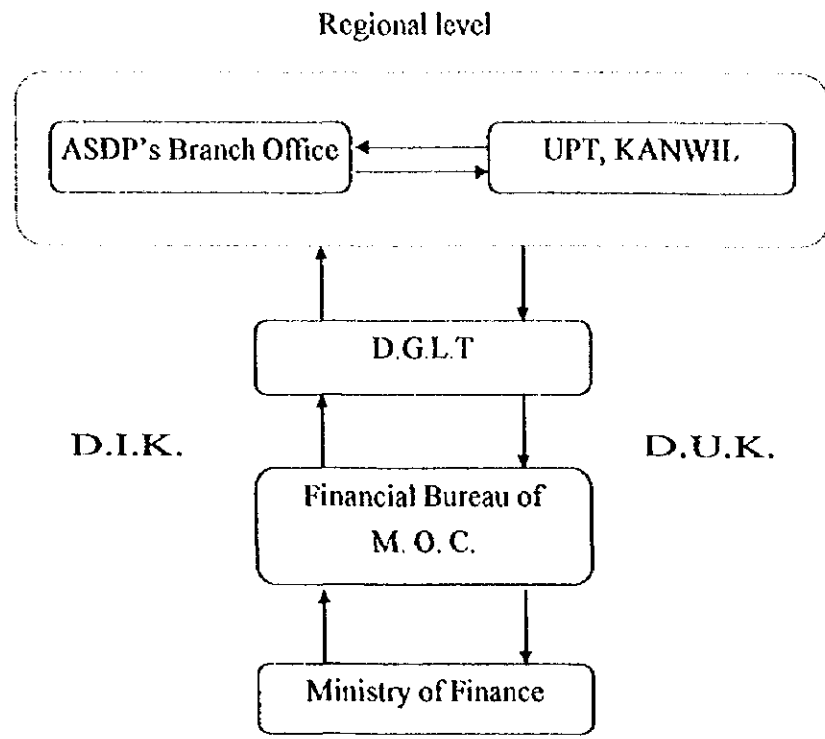


Figure 3.4.1 The Flow of Adjusting System of the Budget

## Chapter 4 Present Condition of Ferry Transportation Activity

### 4.1 Ferry Transportation

#### 4.1.1 Introduction

1. 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. In addition, infrastructure such as road network, railway and bridges has not been sufficiently developed, especially in local areas.

#### 4.1.2 Traffic Volume

2. 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. Detailed record of ferry transportation from 1987 to 1996 are attached in Table A4.1.1.

3. Goods and passengers transported by ferry have continuously increased as shown in Figure 4.1.1. In particular, 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 and it amount to nearly 20% in the highest case of 1987-1988.

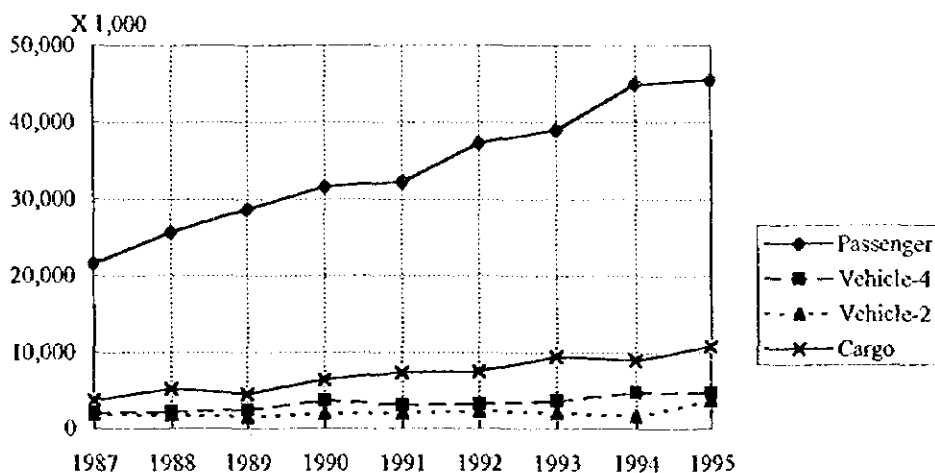


Figure 4.1.1 Transition of Ferry Traffic Volume

4. Ferry traffic data can be divided into the following seven greater regions to make an overview of regional activities: 1) Sumatra region, 2) Java region, 3) Nusa Tenggara region including Bali and East Timor, 4) Kalimantan region, 5) Sulawesi region, 6) Maluku region, 7) Irian Jaya region.

5. Among the seven the regions, Java accounts for the greatest passenger movement at 54%, followed by Sumatra at 16% (See Figure 4.1.2). This may be due to the large population and industrial activities in the two regions. On the other hand, recent trend of passenger movement (See Figure 4.1.3) does not reveal a large difference among the regions, but it can be said that Sumatra, Sulawesi, Maluku, Irian Jaya indicate rather higher increases in number of ferry passengers.

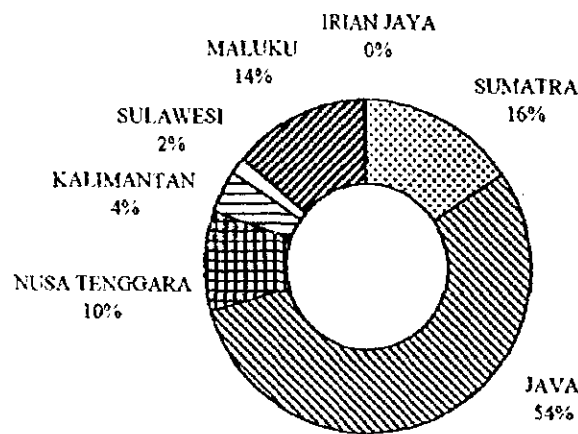


Figure 4.1.2 Passenger Traffic Volume by Region(1995)

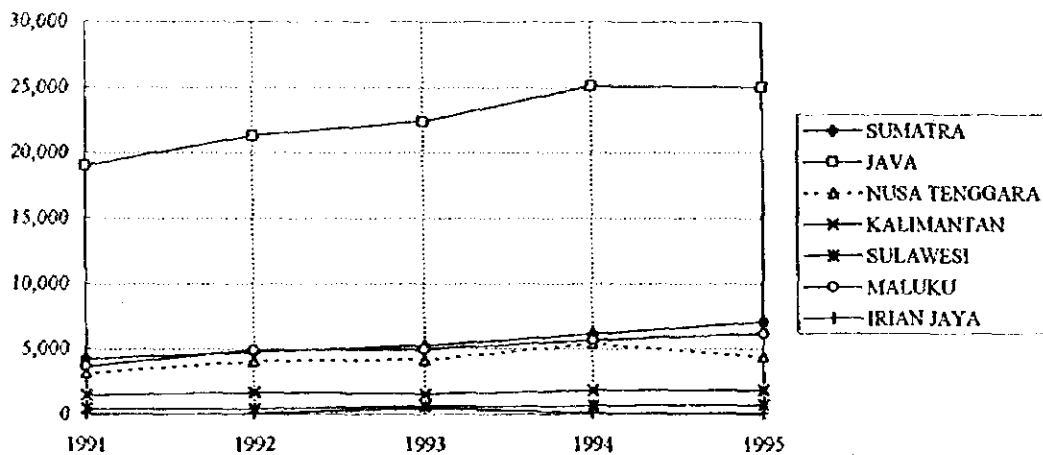


Figure 4.1.3 Recent Trend of Passenger Movement by Region

## 4.2 Ferry Network

### 4.2.1 Ferry Routes

6. Ferry transportation is widely carried out in Indonesia, using sea, river and lake. The distribution map of the ferry routes in operation at present is attached on Figure 4.2.1.

7. The ferry routes are settled by the bulletin of DGLT. The number of routes according to KM64 in 1989 (Minister's decree, number 64, 1989) was 44. Thereafter 21 lines according to KM25 in 1991(65 routes in total), 23 lines according to KM49 in 1994 (88 routes in total) and 10 routes according to KM33 in 1995 (98 lines in total) have been added. Consequently there are 98 routes which have been decided to establish by Minister of Communication's decree until 1996.

8. The ferry routes now in operation amount to 102 in total although it is difficult to identify whether a route is actually in operation or not. These 102 routes include the following routes.

- 1) Routes which is referred in the statistics record of ferry transportation by DGLT, and/or
- 2) Routes which have ship assignment in the "List of Ferry Boat Operated in Indonesia (August 1996)"
- 3) Routes which correspond to above 1) and 2), although which is not referred in 98 routes mentioned above due to being 'non motor-boat routes'.

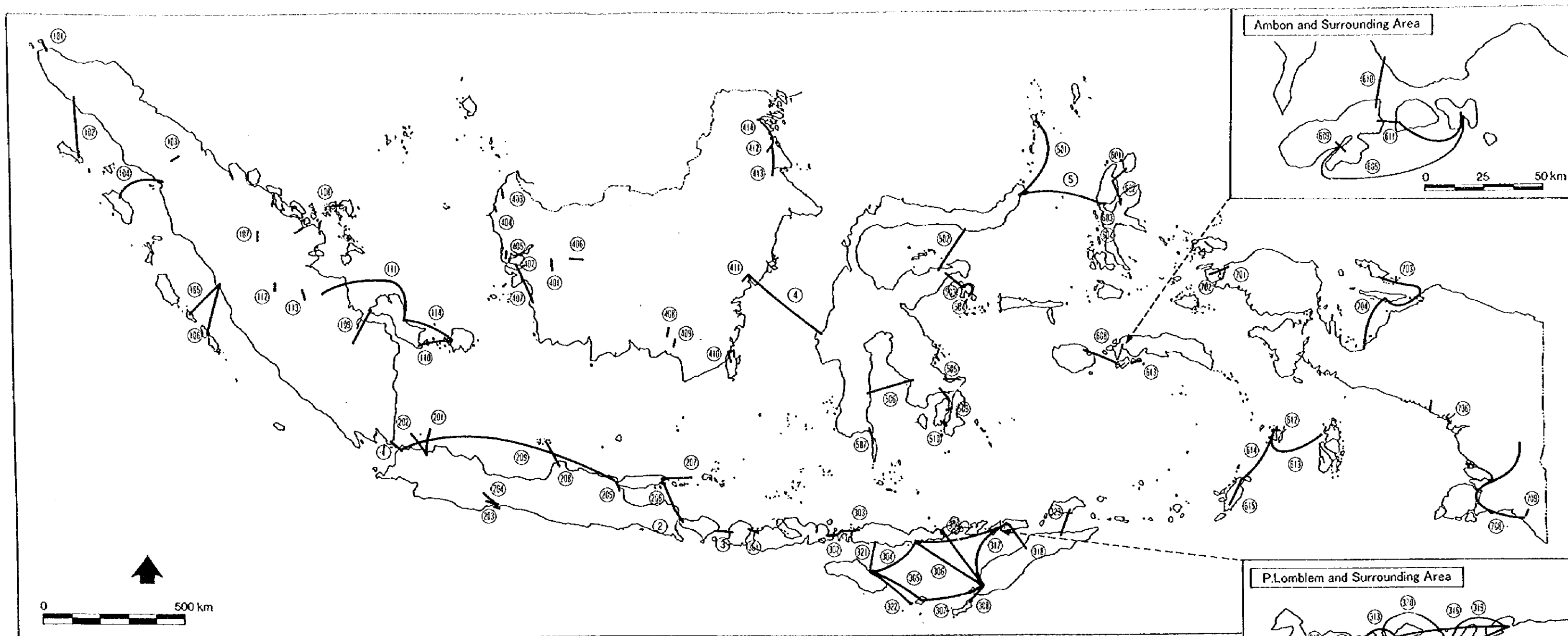
As a result, the following routes are excluded, although referred in 98 routes mentioned above.

- 4) Routes which have not been referred in operational record.
- 5) Routes which had been already shifted onto the other routes or abolished.

9. New decree by Minister of Communication was issued on January 16, 1997 as KMI in 1997 which announced the addition of a further 8 lines (106 in total) and in the near future, the number of ferry lines will increase according to this decree. (Please note that this chapter deals only with the situation of ferry network as of 1996, and it should be necessary to make up-to-date the route list actually operated by further research.)







EXISTING ROUTE LIST OF FERRY NETWORK (AUG. 1996)

0. INTER REGIONAL ROUTE

- 1 MERAK
- 2 KETAPANG
- 3 PADANGBAI
- 4 BALIKPAPAN
- 5 BITUNG

1. SUMATRA REGION

- 101 BALOHAN
- 102 MELUBOH
- 103 AJIBATA
- 104 SIBOLGA
- 105 PADANG
- 106 PADANG
- 107 RUMBAI JAYA
- 108 TELAGA PUNGKUR
- 109 PALEMBANG
- 110 SADAJ
- 111 JUMBI
- 112 MUARA TEBO
- 113 B BEDARAH
- 114 PANGKAL BALAM

2. JAWA REGION

- 201 MARINAJAKALTA
- 202 MARINAJAKALTA
- 203 CILACAP
- 204 CILACAP
- 205 UJUNG
- 206 JANGKAR
- 207 KALIANGET
- 208 JEPARA
- 209 JAKARTA

3. NUSA TENGGARA REGION

- 301 LOMBOK
- 302 SAPE
- 303 KOMODO
- 304 ENDE
- 305 WAINGAPU
- 306 ENDE
- 307 KUPANG
- 308 KUPANG
- 309 LARANTUKA
- 310 LARANTUKA

4. KALIMANTAN REGION

- 401 TAYAN
- 402 RASAUJAYA
- 403 SEKURA
- 404 KARTIASA
- 405 PONTIANAK(KOTA)
- 406 SEMUNTAI
- 407 TELUK BATANG

5. SULAWESI REGION

- 501 BITUNG
- 502 GORONTALO
- 503 LUWIK
- 504 SALAKAN
- 505 KENDARI
- 506 BAJOE
- 507 BIRA
- 508 TOROBULU
- 509 TAMPO
- 510 BAU BAU
- 511 BITUNG
- 512 BITUNG

6. MALUKU REGION

- 601 TOBELO
- 602 TOBELO
- 603 BASTIONG
- 604 BASTIONG
- 605 AMBOM
- 606 HARUKU
- 607 SAPARUA
- 608 GALALA
- 609 GALALA
- 610 HUNIMUA
- 611 TOLEHU
- 612 TUAL
- 613 TUAL
- 614 TUAL

7. IRIAN JAYA REGION

- 701 TORONG
- 702 TORONG-JEFFMAN
- 703 BIAK
- 704 SERUI
- 705 MAPURAJAYA
- 706 AGATS
- 707 TANAH MERAH
- 708 MERAUKE
- 709 MERAUKE

8. MALUKU REGION

- 801 DARUBA
- 802 SUBAIM
- 803 SIDANGOLI
- 804 TIDORE
- 805 SAPARUA
- 806 SAPARUA
- 807 WAILEY
- 808 NAMLEA
- 809 POKA
- 810 WAIPRIT
- 811 HARUKU
- 812 ELAT
- 813 DOBO
- 814 LARAT

Figure 4.2.1 Ferry Network in Indonesia 1996







10. The number of ferry routes in operation has continuously increased. According to a former data, there were 20 routes in 1978, 24 routes in 1984 and 35 routes in 1990. There has been a five fold increase in the number of ferry routes in the 20 years since 1978. The increase in the 1990's has been especially remarkable.

11. Share of the ferry routes by the greater region is shown in Figure 4.2.2. Nusa Tenggara (Bali, East Timor) region have 24 lines (24% of all lines) which is the largest, followed by Maluku region which has 17 lines (17%). This result may be due to their geographical conditions.

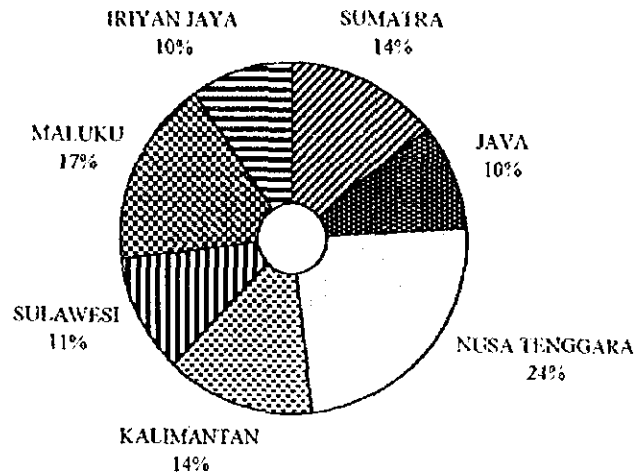


Figure 4.2.2 Ferry Route Distribution by Region

#### 4.2.2 Traffic Volume by Each Route

12. All routes are listed on Table 4.2.1 including name of routes, characteristics, distance, boat in operation and traffic volume of 1995.

13. Table 4.2.2 shows the Top 10 routes in terms of passenger traffic volume of 1995. The top-ranked route in 1995 is Ujung - Kamal connecting Surabaya in Java mainland and Madura island of which annual traffic volume amounts to more than 15 million. The demand of this route is mainly the number of commuters from Madura island to Surabaya where many industries have been developed in recent years.

14. The second ranked route is Merak - Bakauheni connecting east end of Sumatra and west end of Java. Passenger traffic volume is around 14 million. In reality, this route is the largest ferry routes in Indonesia from the view point of physical distribution and people's movement, ranking first in car and cargo traffic volume. It also overwhelms the other routes in the passenger-mile record shown in Table 4.2.2.

Table 4.2.1(1) List of Existing Ferry Route (1996)

ROUTE	Route Char- acteristics	Distance (miles)	Time of Trip (hour)	No. of Trip (per day)	No. of Boat	Type of Ship	Speed (knot)	Ship Size (GRT) max	Capacity (passenger)	Capacity (car)	1995 Result (passenger)	1995 Result (car/Vehicle)	1995 Result (Cargo)	Note
<b>0. INTER REGIONAL ROUTE</b>														
1. MEBAK	Inter-island	15	1:30	80	20	Ro-Ro/Pass	20	5,584	722	60	13,579,295	1,544,392	27,816	5,614,932
2. KETAPAN	Inter-island	5	0:30	244	15	Ro-Ro/LCT	12	811	438	22	4,959,456	609,192	134,470	2,811,854
3. PADANGBAI	Inter-island	38	4:00	24	15	Ro-Ro	17	1,007	820	40	976,590	78,798	61,466	352,756
4. BALIKPAPAN	Inter-island	164	20:25	4/7	1	Ro-Ro	12	675	450	35	38,157	2,202	5,340	5,340
5. BITUNG	Inter-island	156	17:30	5/7	1	Ro-Ro	12	500	400	21	30,158	461	413	12,480
<b>1. SUMATRA REGION</b>														
101. BALOHAN	Main-island	17	1:20	2	1	Ro-Ro	11	500	400	21	103,083	5,245	8,858	8,858
102. MELUBOH	Main-island	106	14:00	6/7	1	Ro-Ro	10	400	324	12	26,861	2,427	5,726	5,726
103. AJIBATA	Inland-Water	3			2	Ro-Ro					195,187	51,633	312,822	312,822
104. SIBOLGA	Main-island	86	8:00	1	2	Ro-Ro	11	500	374	15	95,351	6,119	1,968	6,115
105. PADANG	Main-island	104	12:30	6/7	1	Ro-Ro	10	500	400	22	23,038	7	79	2,125
106. PADANG	Main-island	104	12:30	6/7	1	Ro-Ro	10	500	400	22	23,038	7	79	2,125
107. RUMBAL JAYA	Inland-Water				1	Ro-Ro	8	100	50	8	1000.31	86894		86894
108. TELAGA PUNGKUR	Inland-Island	9			10	Ro-Ro	10	300	300	12	13,345		44	
109. PALEMBANG	Main-island	79	12:00	2	3	Ro-Ro	10	281	200	20	32,774	5,457	2,709	1,271
110. SADAH	Inland-Island	87			1	Ro-Ro	7	149	100	6	8,201	398	867	867
111. JUMBI	Main-island	240			2	Conv.	6	119	125	0	1,087		176	711
112. MUARA TEBU	Inland-Water	0.4			10	Ro-Ro	3	33	69	3	273	393	8	8
113. IS BEDARAH	Inland-Water	0.4			9	Ro-Ro	3	35	60	3	1,942	232	12	12
114. PANGKAL BALAM	Inland-Island				1	Ro-Ro					29,177	412	505	1,184
<b>2. JAVA REGION</b>														
201. MARINA/JAKALTA	Main-island	26	2:45		1	Pass.	11	100	117	2	9,128	3	7	368
202. MARINA/JAKALTA	Main-island	20	2:15		1	Pass.	11	100	117	2	23,060	2	2	485
203. CLACAP	Inland-Water	22	5:00	10	6	T.A. Conv.	9	34	44	0	127,272		44	
204. CLACAP	Inland-Water	22	5:00	2	1	Ro-Ro	6	75	90	6				
205. LUJUNG	Main-island	2.5	0:20	220	13	Ro-Ro	12	846	800	40	15,530,920	1,089,201	1,818,397	1,818,397
206. JANGKAR	Main-island	44	4:00	2	2	Ro-Ro/LCT	11	344	275	22	78,811	985	6,545	4,285
207. KALIANGET	Inland-Island	96			1	Ro-Ro/LCT	11	344	275	22	52,058	11	1,643	7,591
208. JEPARA	Main-island				1	Ro-Ro	11	300	300	12				
209. JAKARTA	Coastal				1	Ro-Ro	15	18,689	0	600				
<b>3. NUSA TENGGARA/BALTIMOR REGION</b>														
301. LOMBOK	Inland-Island	11	1:30	2	7	Ro-Ro/LCT	10	487	400	7	629,196	110,875	20,702	51,092
302. SAPE	Inland-Island	54	8:00	2	2	Ro-Ro	10	500	400	22	43,689	1,949	279	1,854
303. KOMODO	Inland-Island	54	8:00	2	2	Ro-Ro	10	500	400	22	43,689	1,949	279	1,854
304. ENDE	Inland-Island	95	10:00	4/7	1	Ro-Ro	11	500	400	21	20,233	400		1,811
305. WANGAPU	Inland-Island	120	10:00	4/7	1	Ro-Ro	10	500	400	22	2,300	60		825
306. ENDE	Inland-Island	150	17:00	2/7	1	Ro-Ro	11	500	400	21	38,810	431	408	4,959
307. KUPANG	Inland-Island	115	11:00	2/7	1	Ro-Ro	11	500	400	21	28,324	871	361	634
308. KUPANG	Inland-Island	40	3:30	2	1	Ro-Ro	11	400	324	12	99,923	2,825	3,411	450
309. LARANTUKA	Inland-Island	120	14:00	4/7	1	Ro-Ro	9	150	150	12	59,115	1,158	817	1,888
310. LARANTUKA	Inland-Island	16	1:30	1	2	4.89					4,489	95	48	361
311. LARANTUKA	Inland-Island	32	3:00	1	1	Ro-Ro	9	150	150	12	6,147	146	80	125
312. WAWERANG	Inland-Island	16	1:30	1	2	Ro-Ro	9	150	150	12	1,448	15	15	7
313. LEWOLEBA	Inland-Island	28	2:45	1	2	Ro-Ro	9	150	150	12	931	19	7	55
314. BARANUSA	Inland-Island	26	4:00	1	1	Ro-Ro	9	150	150	12	28,458	241	405	2,840
315. BARANUSA	Inland-Island	4:00			1	Ro-Ro					1,921	51	54	54
316. KALABARI	Inland-Island	137	14:00	4/7	1	Ro-Ro	11	500	400	21	42,684	241	405	2,840
318. KALABARI	Inland-Island	64	7:00	4/7	1	Ro-Ro	11	500	400	21	5,291	79	59	95
320. BALAUING														
321. WANGAPU														
322. WANGAPU														
323. DILLI														

Table 4.2.1(2) List of Existing Ferry Route (1996)

ROUTE		Route Char-	Distance	Time of Trip	No. of Trip	No. of	Type of Ship	Speed	Ship Size	Capacity	Coastal	1995 Result	1995 Result	1995 Result	1995 Result	Note
		acters/cls	(mile)	(hour)	(per day)	Boat		(knot)	(GRT) max	(passenger)	(year)	(passenger)	(km-Vehicle)	(Pass-Vehicle)	(Cargo)	
<b>4. KALIMANTAN REGION</b>																
401	TAYAN	Inland Water	0.2	9:00	2/7	1	Ro-Ro	9	75	50	4	6,927	1,776	2,326	62	
402	RASAUJAYA	Coastal	80	8:00	2/7	1	Ro-Ro	10	150	70	12	874	259	0	49	
403	SEKURA	Inland Water	0.4	0:15	40	1	Ro-Ro	4	35	60	6					# 06 Data
404	MARTIASA	Inland Water	0.5	0:15	22	1	Ro-Ro	5	60	60	6	48,013	8,124	20,208	1,422	# 03 Data
405	PONTIANAKKOTA	Inland Water	0.8	0:15	40	2	Ro-Ro	9	70	50	4	920,195	6,513	969,610	1,422	
406	SEMUNTAI	Inland Water	5	0:15	40	1	Ro-Ro	7	66	100	7	377,703	98,724	17,482	5,069	# 03 Data
407	TELUK BATANG	Coastal	45	5:00	2/7	1	Ro-Ro	10	160	70	12					
408	PULANG PISAU	Inland Water	1	1	1	1	Ro-Ro	9	75	50	4	5,943	9,012	8,307		
409	P-TELO	Inland Water	0.2			1	Ro-Ro	9	75	50	4	8,923	10,797	48,707		
410	BATULICIN	Mainland	6	0:25	10	2	Ro-Ro	11	200	100	9	206,148	40,239	53,818	20,863	
411	BALIKPAPAN	Inland Water	6	1:00	36	4	Ro-Ro	12	300	300	14	521,401	197,530	102,534	329,312	
412	TARAKAN	Coastal	63	6:30	2/7	2	T.A	10	34	30	0	2,748			1,252	
413	TARAKAN	Coastal				2	T.A	10	34	30	0	458			185	
414	TARAKAN	Coastal	125	13:00	2/7	2	T.A	10	34	30	0	534			2	
415	K.KAPUAS															
<b>5. SULAWESI REGION</b>																
501	BITUNG	Mainland	136	16:00	6/7	2	Ro-Ro	13	669	400	24	3,093	220	22	733	
502	GORONTALO	Crossing Bay	08	10:30	1	1	Ro-Ro	11	500	400	21	38,573	513			
503	LOMUK	Mainland	46	5:00	1	1	Ro-Ro	11	227	100	9	8,657	352	359	2,501	
504	SALAKAN	Inland Island	48	8:25	2/7	1	Ro-Ro	11	227	100	9	804	211	11	86	
505	SENDARI															
506	BAJCE	Crossing Bay	85	10:00	6	6	Ro-Ro, LOT	17	985	520	20	417,085	30,538	2,745	77,796	
507	BIPA	Mainland	16	3:00	2	1	Ro-Ro	12	510	500	20	82,784	5,404	2,744	4,906	
508	TORBULU	Mainland	16	1:30	6	1	Ro-Ro	7	178	50	4	86,378	6,535	2,952	5,711	
509	TAMPO	Inland Island	9			1	Ro-Ro	7	178	50	4					
510	BAU BAU	Inland Island	6	1:00	4	2	Ro-Ro	10	157	80	5	94,178	3,481	4,377		
511	BITUNG															
512	BITUNG															
<b>6. MALUKU REGION</b>																
601	TOBELO	Inland Island	1			1	Ro-Ro	11	300	300	12	30,572	135	498		# 06 Data
602	TOBELO	Crossing Bay				1	Ro-Ro	11	300	300	12					
603	BASTIONG	Mainland	12	1:15	4	1	Ro-Ro	11	400	300	12	513,641	24,290	12,717		
604	BASTIONG															
605	AMBOM															
606	MALUKU	Inland Island				1	Ro-Ro	11	141	100	6					
607	SAPARUA	Inland Island				1	Ro-Ro	11	141	100	6					
608	GALALA	Inland Island	85	9:25	1	1	Ro-Ro	10	338	200	10	44,318	348	907	3,013	
609	GAYALA	Crossing Bay	23	8:15	120	3	Ro-Ro	8	239	302	12	5,090,394	510,669	635,787	5,134	
610	HUNIMUA	Inland Island	13	1:15	12	3	Ro-Ro	11	528	150	12	412,232	24,564	11,208	15,059	
611	TOLEHU	Inland Island				1	Ro-Ro	11	141	100	6					
612	TUAL	Inland Island	26	2:30	2	1	Ro-Ro	11	500	400	21	12,166	20		90	
613	TUAL	Inland Island	118	13:00	2/7	1	Ro-Ro	11	500	400	21	12,568	34	10	236	
614	TUAL	Inland Island	136	15:00	2/7	1	Ro-Ro	11	500	400	21	9,328	6	18	1,560	
615	LABAT	Inland Island	126	14:00	2/7	1	Ro-Ro	11	500	400	21	4,322	4	16	496	
<b>7. IRIAN JAYA REGION</b>																
701	SORONG	Mainland	9	1:00	4	2	Ro-Ro	10	150	75	11	38,555			5,048	
702	SORONG	Mainland	10	1:00		1	Ro-Ro	10	150	75	11					
703	BIAK	Inland Island	112	12:00	1	1	Ro-Ro	12	300	250	12	36,232	35	64	1,750	
704	ISERUI	Mainland	104	12:00	1	1	Ro-Ro	12	300	250	12	13,020	68	51	744	
705	MAPURAJAYA		40			1	T.A		60	60	0	8,976	0	0	3089	
706	AGATS	Inland Water				1	Pass	11	100	100	0	4,902	0	0	0	0 legs Data
707	TANAH MERAH	Inland Water				1	T.A	18	34	30	0	1,931	0	0	308 legs Data	
708	MERAUKE	Inland Water	480			1	LOT	10	150	115	6	4,600	0	0	818 legs Data	
709	MERAUKE					1	T.A	18	34	30	0	11,518			741	

Source: DATA ANGGKUTAN PENYEBERANGAN TAHUN 1995  
DAFTAR ARMADA KAPAL PENYEBERANGAN YANG BEROPERAS DI INDONESIA (POPPI) AWAL AGUSTUS 1996

15. The third ranked route is Galala - Poka in Ambon island of Maluku region. Galala is located near the down town of Ambon city and is connected to Poka located on the opposite side of the inlet. This is a typical route of short distance and high frequency.

16. The fourth ranked route is Ketapang - Grimanuk connecting the east end of Java and Bali island. This route is the major trunk line connecting east Java and Bali. The demand may be due to sightseeing and other industrial activities.

17. These four lines above mentioned has been forming a fixed top 4 group these 5 years. The total traffic volume conveyed by these only four routes amounted to 39 million passengers in 1995 or 86% of the total traffic volume.

Table 4.2.2 Top 10 Routes in Terms of Passenger Traffic Volume (1995)

(Top 10 : No. of Passenger)				(Top 10 : Passenger-mile)					
Rank	Route No.	Route		Pax. (thousand)	Rank	Route No.	Route		Pax.-Mile (million)
1	205	Ujung	Kamal	15,531	1	1	Merak	Bakauheni	203.7
2	1	Merak	Bakauheni	13,579	2	205	Ujung	Kamal	38.8
3	609	Poka	Galala	5,090	3	3	Padangbai	Lembar	37.1
4	2	Ketapang	Gilimanuk	4,859	4	506	Bajoe	Kolaka	35.5
5	3	Padangbai	Lembar	977	5	2	Ketapang	Gilimanuk	24.3
6	405	Kota	Slantan	920	6	104	Sibolga	Gunung Sitori	8.2
7	301	Lombok	Pototano	629	7	309	Larantuka	Kupang	7.1
8	411	Balikpapan	Panajam	521	8	4	Balikpapan	Mamuju	7.0
9	603	Temate	Sidangole	514	9	301	Lombok	Pototano	6.9
10	506	Bajoe	Kolaka	417	10	603	Bastiong	Sidangoli	6.2

Note: Pax. is passenger.

#### 4.2.3 Characteristics of Ferry Routes

18. Ferry routes may be classified into the following 5 patterns by physical composition.

- 1) Interregional route
- 2) Mainland to Island route
- 3) Island to Island route
- 4) Coastal and Crossing bay route
- 5) Inland Waterway route

19. Interregional routes connects two different region with each other such as Merak (Java) - Bakauheni (Sumatra). They basically form a national trunk line in the transportation network and should not be understood as local transportation regardless of the site location.

20. Mainland to island routes connect a major city of mainland in region and nearby island such as Ujung - Kamal. It is indispensable transportation for the lives of people on the island.

21. Island to island routes connect two isolated islands such as Tual - Dobo. They also play indispensable role for people living on islands and often form a part of a connecting line to and from a major city of the mainland.

22. Coastal and crossing bay routes connect two terminals in the same mainland or comparatively larger island such as Taracan - Ancam. Coastal line is settled along the seashore, using partially, in some case, inland waterway of the area. It functions as an alternate transportation mode where road network has not been developed yet. Crossing bay line is set up to connect two terminals located on opposite side facing the same bay or inlet. This will function well in an area which has complicated seashore lines like Sulawesi or Halmahera as the distance between two places can be remarkably shortened. It may become also more effective where road network is not sufficiently developed .

23. Inland waterway route is settled along or crossing river and canal such as Pontianak. In some cases, a route is established on a lake such as Ajibata - Tomok in Sumatra region. Crossing river route functions certainly an alternate of a bridge, and will be abolished when the bridge will be newly constructed. Along river route is often introduced due to poor condition of the road network. Inland waterway is different from the other four patterns which are all sea routes.

24. According to these patterns, there are 5 interregional routes, 21 mainland-island routes, 43 island-island routes, 13 coastal-crossing bay routes and 20 inland waterway routes at present. Among 43 island-island routes, 21 routes are located in Nusa Tenggara region (including Bali, East Timor) and 14 routes are in Maluku region. As for 20 inland waterway routes, 14 routes are located in Kalimantan and Irian Jaya region. This situation is likely due to the topographical conditions in these regions.

25. By pattern of route, interregional routes have the largest share of passenger traffic volume, accounting for 42% of the total in 1995. The second is mainland-island routes (37%), and the smallest one is island-island routes (4%) although they have the largest

number of routes (43). In terms of passenger-mile result, the share of interregional routes amounts to about 60% of total. Complete data is shown in Table 4.2.3.

Table 4.2.3 Traffic Volume by Route Pattern in 1995

	Inter-regional	Mainland-Island	Island-Island	Coastal, Bay	Inland waterway	Total
No. of Routes	5	20	44	13	20	102
Pax. ('000)	19,484	16,884	1,789	5,549	2,223	45,929
4w Vehicle ('000)	2,522	1,197	156	542	385	4,802
Cargo ('000ton)	8,597	1,684	103	84	650	11,118
Pax.-Mile (million)	277	74	65	42	9	467

Note: Pax. is passenger.

26. Table 4.2.4 shows distribution of route distance by route pattern. Average route distance is 54 miles. The longest route is Balikpapan (kalimantan) - Mamuju (Sulawesi) at 184 mile excluding Jakarta - Surabaya route as a special case. Inland waterway routes are comparatively short range of which average is just 6 miles and there are 5 routes within one mile.

Table 4.2.4 Route Distance by Route Pattern

Distance (mile)	Inter-regional	Mainland-Island	Island-Island	Coastal, Bay	Inland waterway	Total
0 ~ 10	1	4	3	1	8	17
11 ~ 30	1	6	6	0	2	15
31 ~ 100	1	4	11	7	0	23
101 ~	2	4	9	1	0	16
Average Distance	78	47	68	64	6	54

### 4.3 Ferry Boat and Operation

#### 4.3.1 Owner of Boats and Operator of Ferry Routes

27. Number of boats operated in ferry service has remarkably increased. Though there were only 83 boats in 1988, according to continuous growth thereafter, now 168 boats are being operated at present (Aug. 1996). Number of ferry boat has more than doubled during these 9 years. Figure 4.3.1 shows the transition in the number of boat by type.

28. PT. ASDP is the largest ferry boat owner and ferry operator as mentioned in the previous chapter. PT. ASDP owns around a half of total ferry boats in operation. The others are owned and operated by many private companies. The share of PT. ASDP has not greatly changed though the number of boats and operation routes has increased.

#### 4.3.2 Type of Boat

29. The boats operated in ferry line are classified into the following 5 types.

- 1) Ro-Ro : Roll on and Roll off type vessel
- 2) LCT : Landing Craft Transport
- 3) CONV : Conventional type boat
- 4) T.A : Truck Air (non motor boat)
- 5) PASS : Passenger vessel

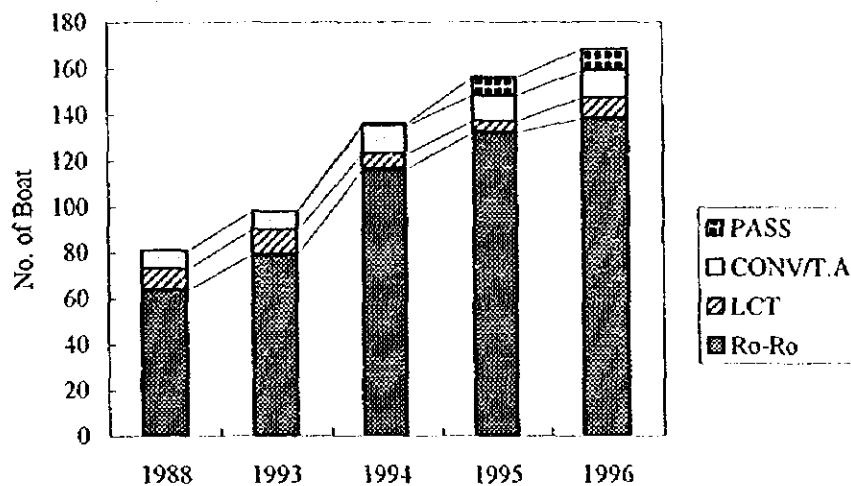


Figure 4.3.1 Transition of Ferry Boat



30. Among these 5 type, 1) Ro-Ro and 2) LCT are available for car transportation, and others are for passengers only. Considering the role of ferry transportation, it's needless to say that Ro-Ro type vessel is most desirable.

31. In the strict sense, Ro-Ro vessel for ferry service should have not only capability of roll on-roll off of vehicles, but also should have function to transport passengers with moderate accommodation (Number of passengers should be more than that of cars in this case). From this view point, the ferry service operated in Jakarta - Surabaya route is said to be an exceptional case and is not so called 'car ferry', because the vessel is not available for passenger notwithstanding the vessel itself is Ro-Ro type and transports vehicles.

32. Although Ro-Ro type vessel has increased in number, the share in total number of boat and share of Ro-Ro route (route operated with Ro-Ro vessel) in total routes has not greatly increased as shown in Figure 4.3.2. On the other hand, it is noticeable that the number and the share of passenger boat has increased.

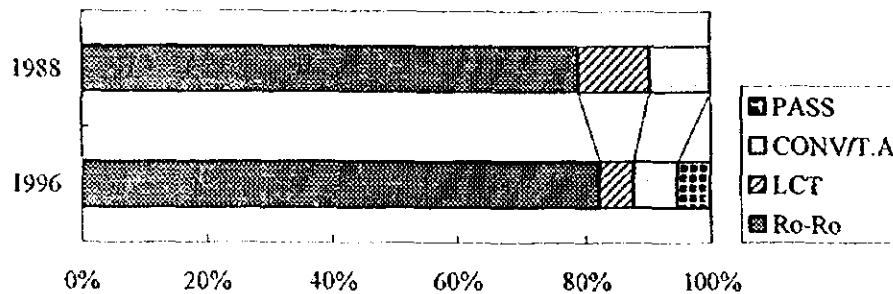


Figure 4.3.2 Composition of Type of Ferry Boat

#### 4.3.3 Size, Capacity and Cruising Speed of Ferry Boats

33. The size of ferry boat is comparatively small for the most part. Distribution of ferry boat size is shown on Figure 4.3.3. 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. Classified into seven groups by size, the number of boats less than 200 ton is 53, comprising the largest group. The average size is 671 tons. But the average size decreases to 347 tons in case of excluding the above 2 lines.

34. Figure 4.3.4 shows the comparison between 1988 and 1996 in ship size. Although

average size has not changed much, share of less than 300 ton class has remarkably decreased and that of 300-500 ton class has increased. The average size would be 293 ton in case Merak - Bakauheni were excluded in 1988. It can be said that ferry ship are getting larger in size.

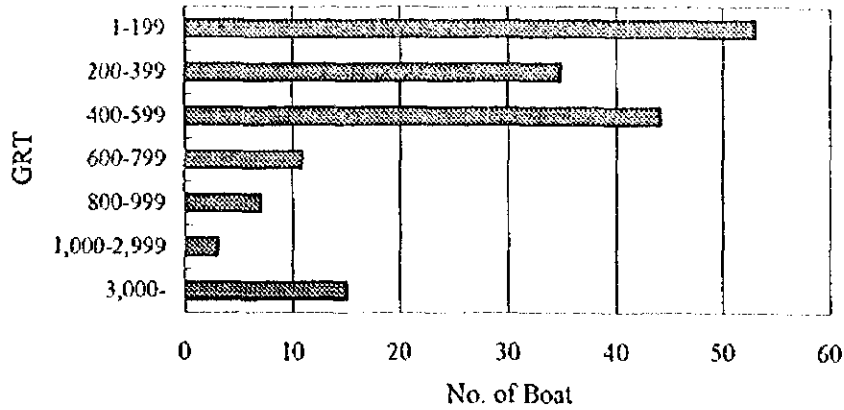


Figure 4.3.3 Size Distribution of Ferry Boat (1996)

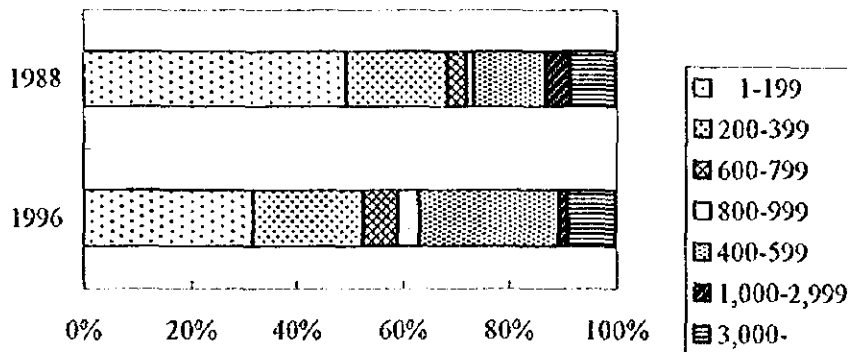


Figure 4.3.4 Boat Size in 1988 and 1996

35. Passenger capacity distribution of ferry boat is shown in Figure 4.3.5. The largest group is less than 100 passenger class which amounts to 36 routes (more than 20%). The average number is 293 passengers per boat.

36. Car capacity of ferry boat has a similar distribution pattern as that of passenger (See Figure 4.3.5). However there are 21 boats which can not cope with vehicles, which means they are not Ro-Ro or LCT type. Excluding them, small car capacity boat (less than 20 cars) has about a half in share. The average capacity is 31, but it becomes to 22 cars per boat when Jakarta - Surabaya route is excluded as a special case.

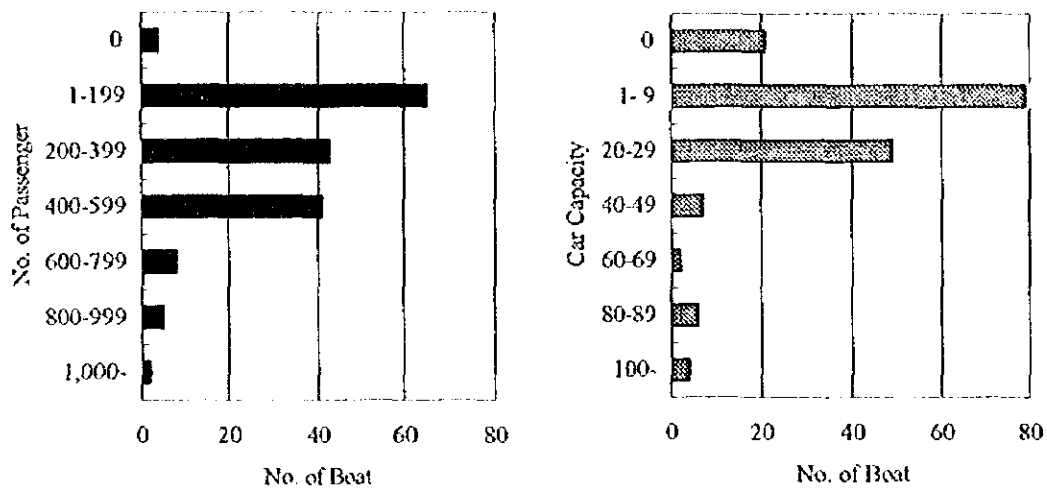


Figure 4.3.5 Ferry Boat Capacity Distribution

37. Figure 4.3.6 show the relations among GRT, passenger capacity and car capacity of the boats which are smaller than 3,000 tons in GRT. Very roughly speaking, it can be said the passenger capacity is nearly equal to the same number of GRT, and one twentieth of the number would be close to that of car capacity among middle class size boats.

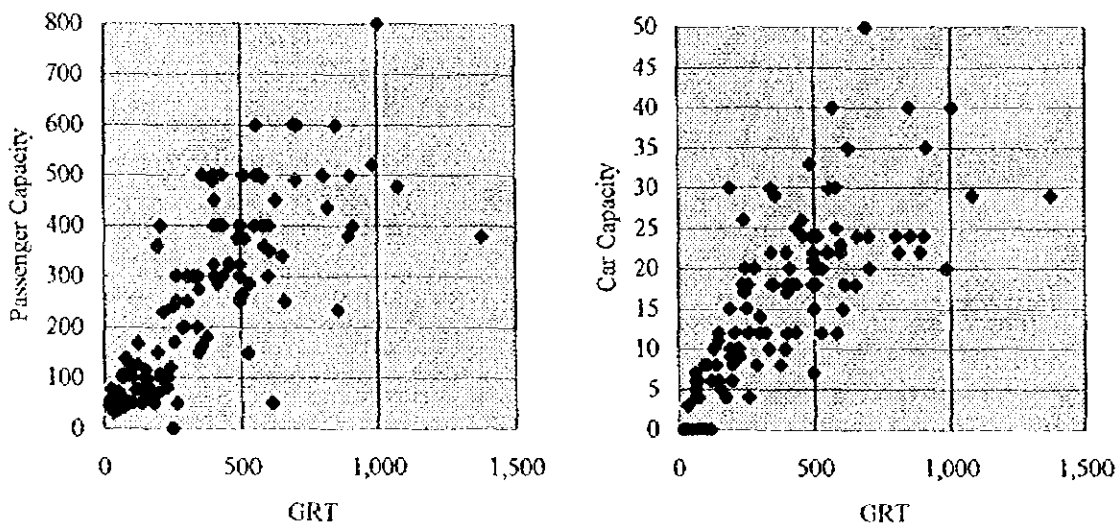


Figure 4.3.6 GRT-Capacity Relation

38. As for cruising speed of ferry boat, the highest speed boat is a passenger boat operated in Merak - Bakauheni line which can cruise at 32 knots. Among Ro-Ro vessels, the fastest vessel reaches a speed of 20 knot on the same route. The average speed is 11.5

knot which is most economical speed for such size of vessel (See Figure 4.3.7).

39. Comparison among various types of ferry boat by size, capacity and speed is shown on Table 4.3.1. For the most part, Ro-Ro type vessels are superior to the others, that is, they have comparatively large size and large capacity, they can cruise at reasonable speed and in total they can provide high quality transportation service. Passenger boats are comparatively new and can cruise fast, but they should play a supplementary role in ferry service. Conventional and T.A type vessels are rather old and inferior in capability to the others.

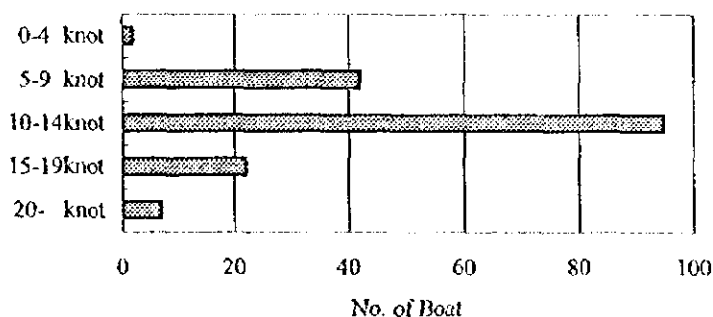


Figure 4.3.7 Boat Speed Distribution

Table 4.3.1 Comparison of Boat Type

		Ro-Ro	LCT	Conv./T.A	Passenger
Size(GRT)	Min.	35	150	17	51
	Max.	5,837	702	119	121
	Avt.	784	381	38	88
Passenger Capacity	Min.	40	0	30	50
	Max.	1,006	600	125	166
	Avt.	330	186	46	110
Car Capacity	Min.	3	6	0	0
	Max.	130	22	0	0
	Avt.	23	14	0	0
Speed (knot)	Min.	3	7	6	8
	Max.	20	11	18	32
	Avt.	11	9	11	21
Draft (m)	Min.	0.9	1.2	1.0	0.3
	Max.	4.9	2.9	1.8	2.2
	Avt.	2.3	2.1	1.5	1.6
Operation from (year)	Old	1961	1975	1973	1976
	New	1996	1995	1985	1996
	Avt.	1983	1986	1978	1991

#### 4.3.4 Operation

40. Frequency of operation (number of trip per day) is one of the important factor in service level of ferry transportation. Based on the actual record, it cannot be said that the present frequency is sufficient. Of the 61 routes for which operation data are available, 20 routes are less than one trip per day which is the minimum service level for regular public transportation. More than half of the routes are one trip per day or less.

41. On the other hand 3 routes have more than 100 trips a day; Ketapang - Grimanak route is operated the most frequently at 244 a day. It might be better to decrease the frequency by increasing the boat size, as an exceedingly high frequency is not necessary convenient and efficient.

42. The longest trip time is 20.5 hours the Balikpapan - Mamuju route which is 184 miles in distance. There are 15 routes with travel times exceeding 12 hours which means that night cruise is unavoidable. There are 8 routes in which travel time is less than 30 minutes, most of which are crossing river routes of inland waterway and crossing narrow inlets or canals such as Galala - Poka, Ujung - Kamal, etc.

43. Time of trip is closely related with route distance and cruising speed. Roughly speaking, the time of trip is nearly equal to 'distance divided by speed plus one hour' excluding short range route.

44. Load factor is the ratio of loading results to loading capacity which is an important index indicating service level and transportation efficiency. Trial calculation of load factor of Merak - Bakauheni by up-to-date operation data of 1996 is as follows.

1) Number of boat	Ro-Ro boat : 18, Passenger boat : 10
2) Capacity of boat	Ro-Ro boat : 14,575 passengers, 1,360 cars Passenger boat : 1,616 passengers
3) No. of trip per day	Ro-Ro boat : 40, Passenger boat : 17
4) Total capacity of a day	Passenger : $14,575 / 18 \times 40 = 32,389$ $1,616 / 10 \times 17 = 2,747$ Total 35,136 Car : $1,360 / 18 \times 40 = 3,022$
5) Annual volume in '96	Passenger : 6,292,263, Car: 864,277
6) Average Load Factor	Passenger : $6,292,263 / (35,136 \times 365) = 49.1\%$ Car : $864,277 / (3,022 \times 365) = 78.4\%$

45. As a result, load factor of Merak - Bakauheni line is 49.1% for passengers and

78.4% for car which suggest that there is some remaining transportation capacity.

46. The average load factors in total were 35% for passenger and 28% for vehicle in 1995 as far as depending on rough calculation with limited available data . It can be said in general that the load factors are low for the most part.

#### 4.3.5 The Other Shipping Lines

47. PT. PELNI is operating nation wide shipping network as already mentioned in previous chapter. They ordinarily organize the route (origin, calling and destination) and diagram by long range loop line with two week cycle. On this point, PELNI shipping is basically different from the ferry service which is operated by shuttle service between two terminals in principle(PT. PELNI shipping network is shown in Figure 4.3.8).

48. Though PELNI and ferry routes are established independently, there are some actual cases in which PELNI routes and ferry service are operated between the same place. Table 4.3.2 shows such routes and the comparison of operational results. In general, 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%.

Table 4.3.2 Comparison Between Ferry and PELNI Service

Route		No.5	No.104	No.304	No.306	No.317	No.615	No.703	No.704
		Bitung - Ternate	Sibolga - G. sitori	Ende -Waingapu	Ende - Kupang	Kalabahi - Kupang	Tuel - Dobo	Biak - Serui	Serui - Nabire
1. Present Operation									
1) Passenger Capacity	Ferry	400pax.	324pax.	400pax.	400pax.	400pax.	400pax.	250pax.	250pax.
	PELNI	2,000pax.	1,000pax.	1,000pax.	1,000pax.	1,000pax.	1,000pax.	-	1,000pax.
2) No. of Trip (/day)	Ferry	5/7	1	2	2/7	4/7	2/7	1	1
	PELNI	1/14	1/14	1/14	1/14	1/14	1/28	-	1/28
2. Results (No. of Passenger)									
1991	Ferry	-	-	-	13,413	12,673	-	-	-
	PELNI	19,525	-	6,984	16,417	-	2,227	530	829
1992	Ferry	-	17,224	21,435	-	34,445	-	-	-
	PELNI	22,986	2,784	3,106	10,416	1,298	6,551	1,579	3,117
1993	Ferry	4,092	23,316	16,236	22,196	21,113	-	-	-
	PELNI	23,189	4,467	2,432	14,785	1,346	6,642	1,343	3,181
1994	Ferry	29,482	50,241	16,236	32,781	22,782	1,406	28,866	10,164
	PELNI	22,970	4,024	2,432	16,128	1,228	3,698	362	2,808
3. Share of Ferry in 1994		56.2%	92.6%	87.0%	67.0%	94.9%	27.5%	98.8%	78.4%

Note: Pax. is passenger.

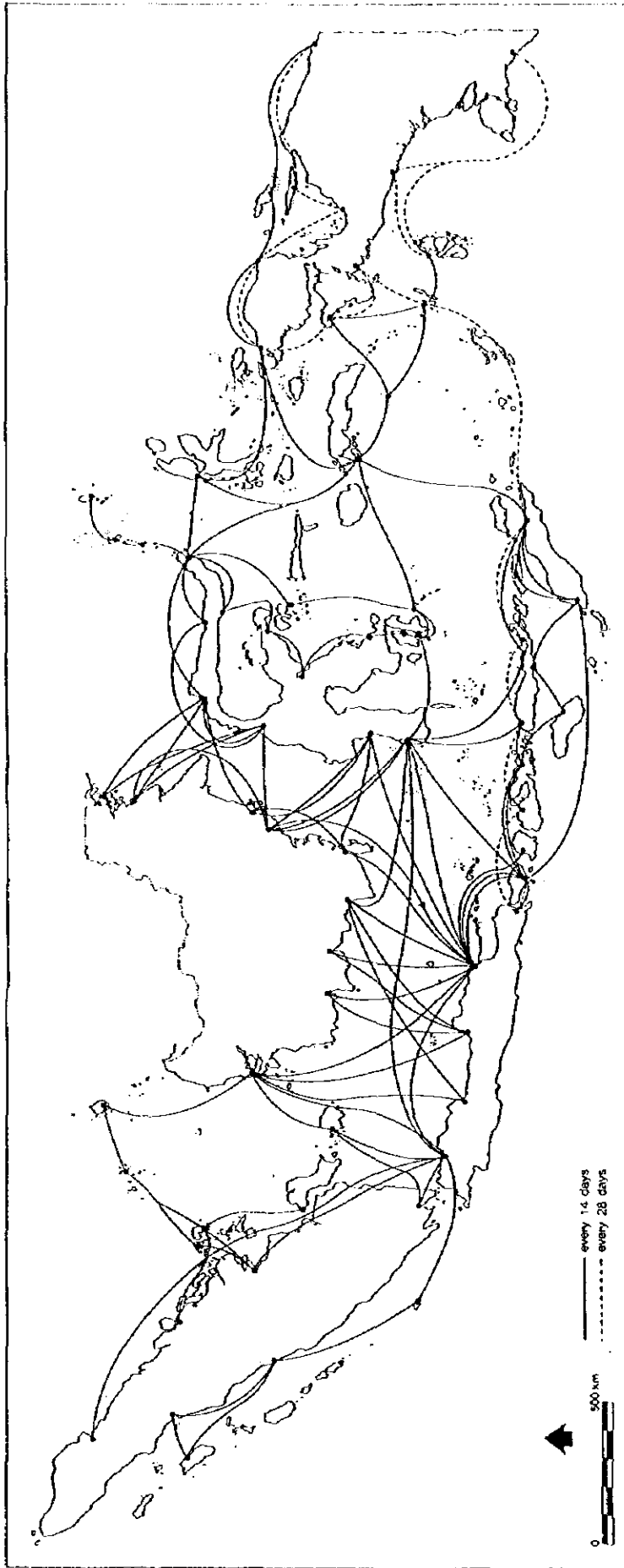


Figure 4.3.8 PT. PELNI Route Map

## Chapter 5 Present Condition of Ferry Terminal

### 5.1 Ferry Terminal

#### (1) Ports

1. In Indonesia, ports are categorized into two types: public port and special (industrial) port. The public ports are further classified into two categories, commercial ports managed by Indonesian port corporations (PELINDO; Port Corporation of Indonesia, I, II, III and IV), and non-commercial ports directly managed by the Regional Office of Ministry of Communications.

2. Table 5.1.1 shows the commercial ports in Indonesia. Commercial ports are used to conduct international and major domestic trade; a total of 110 commercial ports are managed by four PELINDO on a geographical basis. The non-commercial ports handle local commodities for local industries and residents in their relatively small hinterlands. There are a total of 546 such ports and most of them are located in isolated areas or small islands.

Table 5.1.1 Commercial Ports in Indonesia

No.	Province	Commercial Ports	Non-commercial Ports	Total
1	Acch	6	10	16
2	North Sumatra	8	45	53
3	West Sumatra	3	6	9
4	Riau	10	45	55
5	Jambi	3	8	11
6	Bengkulu	1	3	4
7	South Sumatra	8	3	11
8	Lampung	1	11	12
9	DKI Jakarta	3	0	3
10	West Java	3	13	16
11	Central Java	3	10	13
12	East Java	8	18	26
13	Bali	3	7	10
14	NTB	3	12	15
15	NTT	5	30	35
16	West Kalimantan	7	4	11
17	Central Kalimantan	8	3	11
18	South Kalimantan	2	4	6
19	East Kalimantan	5	13	18
20	North Sulawesi	3	36	39
21	Central Sulawesi	2	22	24
22	South Sulawesi	4	37	41
23	South East of Sulawesi	1	33	34
24	Maluku	3	56	59
25	Irian Jaya	6	108	114
26	East Timor	1	9	10
	Total	110	546	656

Source: MOC



3. There are some private ports and berths known as special ports handling special commodities of manufacturing, forestry, fishery, mining, tourism and other sectors under permission of Ministry of Communications. There are 1,233 special ports.

4. Several public ports mentioned above have been connected by passenger vessels of PT. PELNI with two weeks or four weeks round trip schedule, and cargo vessels such as Perintis ships, and ferry vessels servicing basically two ports (average distance between two ports is about 53.5 miles) on a shuttle service base. As for Perintis shipping, passenger traffic routes are determined by government based on the request of regional offices of MOC considering the basic transportation needs in remote areas, not necessarily based on the passenger traffic demand.

5. In the Sixth Five Year Development Plan (PELITA VI, 1994-1998), the government intends to develop required port facilities: berthing facilities of 14,850m, open storage of 20ha, container yard of 70ha, and 45 units of container handling equipment including 23 passenger terminals.

6. In addition, in order to realize physical development of port facilities and equipment as planned in the Sixth Five Year Development Plan, private investors are invited especially for development of the twenty five strategic ports through cooperation with Indonesian Port Corporations on the basis of mutual benefit. The expected outcome of the cooperation is to increase capacity of port facilities and equipment, improve productivity of port operation and guarantee a high level of services.

## (2) Ferry terminals

7. As with ferry routes, ferry terminals can broadly be categorized into two types: interregional 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.

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

9. Tables 5.1.2 and A5.1.1 show the present conditions of ferry terminals in Indonesia. There are 100 ferry terminals which were constructed by MOC and Directorate General of Land Transport and Inland Waterways (DGLT) as of 1996.



Among these terminals, 74 ferry terminals are managed by regional offices of MOC while 26 terminals are managed and operated by PT. ASDP.

10. According to these tables, there are 16 interregional terminals which are located at islands of Sumatera, Jawa, Bali, Sumbawa, Kalimantan, Sulawesi and Maluku, which is connected between provinces of Lampung (Sumatera) and West Java, East Java and Bali, Bali and Nusa Tenggara, East Kalimantan and South Sulawesi and North Sulawesi and Maluku.

11. Among the 16 interregional terminals, terminals of Bakauheni, Merak, Ketapang, Gilimanuku, Padang Bai and Lembar are located on the southern trunk line which connects the islands between Sumatera, Jawa, Bali and Lombok.

12. Balikpapan and Mamuju is located on the middle trunk line and connects provinces between East Kalimantan and South Sulawesi which is the only route of the middle trunk line. Other interregional terminals on the middle trunk line have not been developed.

13. Interregional terminals on the northern trunk line are only Bitung and Ternate. And the remaining south-north trunk line between islands of Jawa, Kalimantan, and Sulawesi has not been developed, therefore, there are no interregional terminals.

14. In spite of the rapidly increasing motorization and the government policy to develop four trunk lines, only the southern trunk line has been developed.

15. Management body of ferry terminal is divided into two groups such as regional office of MOC and PT. ASDP. UPTs (Technical Implementation Units) are responsible for terminal operation under the regional office of MOC.

16. Twelve of the total 26 terminals managed and operated by PT. ASDP are interregional terminals, however, the terminals of Mamuju (South Sulawesi), Bitung (North Sulawesi) and Bastiong (Maluku) are managed and operated by regional offices though they are in fact interregional terminals.

17. All of the inter island terminals are managed and operated by the regional offices except the terminals of Ujung, Kamal and Pototano; these terminals handle a large ferry traffic volume.

18. Mooring capacity of ferry terminal is classified according to GRT of the existing ferry fleet, and the ferry fleet is divided into eleven categories of GRT. The predominant mooring capacity is concentrated between 100GRT and 500GRT.

19. The interregional terminals of Bakauheni and Merak have respective capacities of 2,000 and 5,200GRT, however, the interregional terminal of Balikpapan has a capacity of only 300GRT.

20. Movable bridge with hydraulic cylinder is equipped at all interregional terminals except for the inter island terminals in the provinces of DI. Aceh, north and west Sumatra and Irian Jaya.

21. The water depth of ferry terminals is classified according to GRT of the existing ferry fleet the same as the mooring capacities. The predominant water depth is concentrated between 2.5m and 4.0m, and the inter island terminals do not have a water depth over 4.0m.

22. Thirteen interregional terminals have a water depth over 4.5m, while terminals of Bakauheni and Merak have the greatest water depth; 6.0m. Only the terminal of Balikpapan has a water depth less than 4.0m.

23. Water depth of the inter island terminals in the provinces, twelve provinces of South Sumatra, Bengkulu, DKI Jakarta, Central Java, East Timor, Kalimantan, Central and North of Sulawesi and Irian Jaya do not exceed 4.0m.

24. The area of passenger terminal and office is concentrated between 51-100m<sup>2</sup> and 401-500m<sup>2</sup>. The area of passenger terminal and office at the interregional terminals exceeds 500m<sup>2</sup> except the terminals of Balikpapan and Mamuju.

25. There is no space for passenger terminal and office at 13 inter island terminals and it seems that management and operation of ferry services is not undertaken in earnest.

26. There are 16 terminals which do not have a parking area. The area of the majority of parking areas is concentrated between 501-1,000m<sup>2</sup> and 3,001-4,000m<sup>2</sup>.

27. The parking area exceeds 10,000m<sup>2</sup> at the interregional terminals of Bakauheni, Merak, Ketapang and Gilimanuk, while all of the inter island terminals do not have

sufficient parking areas.

28. As part of ferry terminal development during PELITA VI, 18 ferry terminals (Torobuu, Tampo, Bira, Pamatata, Bau Bau, Ware, Luwuk, Salakan, Pananaro, Bajoe, Palembang, Munttok and Kolaka by DGLT, and 5 ferry terminals belonging to PT. ASDP such as Ujung, Kamal, Ketapang, Gilimanuk and Padangbai) are under rehabilitation and improvement. However, the ferry terminals of Merak IV and Bakauheni IV are being constructed by a private sector.

29. As mentioned above, the government is putting priority on the development of the ferry transport network as a means to eliminate regional economic disparity.

30. In terms of the present condition of the inter island terminals, there seems to be an adequate number of terminals but the water depth, space of passenger terminal and office and parking area is insufficient.

31. However, the provinces of Maluku and Irian Jaya still do not have a sufficient number of terminals in addition to insufficient wharf capacity, passenger terminal space and parking area.

32. Therefore, the formation of a reliable ferry network between land and sea to link islands should be pursued in the provinces of Sulawesi, Maluku and Irian Jaya.

33. While the provinces of Lampung, East and West of Java and Bali have sufficient terminal facilities compared with the other provinces, the terminal facilities will become inadequate in future according to the steadily increasing ferry traffic volume.

34. The terminals of Bakauheni, Merak, Ujung, Kamal, Ketapang, Gilimanuk and Padan Bai and in the province of DKI Jakarta will become inadequate in future.

35. At present, the ferry terminals of Merak IV and Bakauheni IV are currently being constructed by the private sector in accordance with the government policy mentioned above, therefore, it is necessary to carry out such ferry terminal development by further increasing participation of the private sector.

36. At present, the longest distance ferry route is 184 miles between Balikpapan and Mamuju which is located on the middle trunk line. However, this ferry route is not

included in long distance ferry route of the world.

37. A large volume of passenger and cargo has been transported by maritime transportation between Java and Kalimantan and Java and Sulawesi, however, long distance ferry services between these areas have not been developed.

38. Ferry service is defined as the transport of vehicles and passengers between two terminals with regular schedule in Indonesia, therefore, ferry boats require high speed navigation and efficient handling of passengers and cargoes at the terminals to carry out long distance ferry service.

39. Ro-Ro vessel's transportation services greatly facilitate the movement of cargoes since no intermediate handling and storage is required, and the movement of cargo is dependent only on ship departure schedule, as on ship arrival it continues directly to its destination. For similar reasons, bus and car traffic also benefit from such services.

40. Ro-Ro transportation can be considered as an advanced form of shipping, suitable for long distance routes, therefore, it is necessary to consider the introduction of Ro-Ro vessel's ferry traffic for the south-north trunk line between Jawa and Kalimantan and Java and Sulawesi.

41. As for the future development of ferry terminal, natural conditions is one of the major factors to be considered in the formation of long-term development plans of individual terminals because severe natural conditions may limit further development, and because careful evaluation of natural conditions at ferry terminal is necessary to avoid excessive construction cost.

42. Therefore, the site for the future development of ferry terminal where large scale maintenance dredging or construction of a breakwater is required should be avoided if possible.

43. There exist river ports and estuary ports in Kalimantan and Irian Jaya. Transportation costs at these ports cannot be reduced even by enlargement of vessel size because draught of calling vessels at these ports has been limited by the water depth of the rivers. Furthermore, these ports usually require maintenance dredging, which is a heavy financial burden for port management bodies.

## **5.2 Preliminary Observation**

44. The Study Team visited the proposed sites of ferry terminal after collecting data and information as well as conducting interviews. The sites visited by the preparatory study team are as follows.

### **(1) Belawan and Jambi (Sumatra)**

45. The port of Belawan is located 26km from the center of Medan city, which has the fourth largest population in Indonesia, and is the gateway to Sumatra Island .

46. Present facilities of Belawan port include a wharf with a maximum depth of 10 m, a 500m container berth with a depth of 10m, and two gantry cranes (40 ton type). In addition a new berth is planned as an expansion of the existing berth.

47. The passenger terminal has two berths of 7m depth and a waiting room used by both domestic and ocean-going passenger vessels. One domestic passenger vessel (3,200GRT with passenger capacity of 2,000) is connected between Tanjung Priok port and Belawan port with two weeks round trip schedule. Three high speed ocean-going passenger vessel of 2,000DWT class ply between Belawan and Penang (Malaysia) with five times a week (One way travel time is about 5 hours).

48. As for the development of ferry terminal, on account of making good use of the existing berth, it seems that the port has sufficient capacity for the expansion of ferry terminal with the wharf and parking areas.

49. However, the port is under the control of DGSC, therefore it is necessary to cooperate with both DGSC and DGLT in utilizing the existing facilities and for the construction of the new facilities.

50. City of Jambi is the capital of Jambi province and is situated southeast of Sumatra Island and 85 miles from the upper stream of the mouth of the Hari river. There are three individual port facilities. A ferry facility is located at the front of the management office; structure type is wooden pontoon.

51. The ferry boat controlled by DGLT has a capacity of 133GRT with cargo capacity of 50 tons (except car) and passenger capacity of 100 people, and it plies between Jambi, Kualatungkal and Tanjungpinang (60 hours travel time).

52. At present, the regional office is considering the creation of a roll on- roll off type ferry terminal by the expansion of Kualatungkal. It takes 6 hours from Jambi to Kualatungkal by ferry and 2 hours by car (under 3 ton).

(2) Merak and Bakauheni

53. The Merak and Bakauheni ferry terminals are the important passing points as a direct link of the major national highway roads between Sumatera and Java islands. The distance between terminals of Merak and Bakauheni is about 15 nautical miles, and the number of ferry trips is 80 times per day by 20 ferry boats.

54. The size of ferry boats ranges from 51 to 5,900GRT and passenger capacity ranges from 72 to 1,000.

55. The existing Merak terminal is located at the end of the Merak coast of north west Java. The terminal has three wharves with a water depth of -6.0m, terminal and office area of about 4,000m<sup>2</sup> and parking area of about 21,000m<sup>2</sup>.

56. The existing Bakauheni terminal is located at the south end of the Sumatera island in Lampung province. The terminal is situated at the east coast of the Tanjung Pura of south Lampung. The terminal has three wharves with a water depth of -6.0m, of terminal and office area of about 5,500m<sup>2</sup> and parking area of about 33,000m<sup>2</sup>.

57. Number of passengers who embarked or disembarked at both terminals reached about 13.5 million in 1996. A total of 1.5 million vehicles passed through the terminals.

58. At present, the ferry terminals of Merak IV and Bakauheni IV are currently being constructed by the private sector in accordance with the government policy.

(3) Tanjung Priok and Muara Angke (Jakarta)

59. Tanjung Priok port, located northeast of Jakarta, plays an important role as the gate of domestic and international sea trade in Indonesia. The port is protected by a breakwater and has two gates at the east and west side, though the east gate is closed at present. Wharf is straight piers type and the distance between piers and between breakwater and head of pier is 150-200m and 300-350m, which seems to be rather narrow for the present vessel size.



60. Ro-Ro vessel (18,000DWT, cargo space: 4,000m<sup>2</sup>) plying the Tanjung Priok and Surabaya route uses mooring facilities under jurisdiction of DGSC while service permission is granted by DGLT.

61. Ro-Ro vessel operation is conducted twice weekly with a one-way travel time of 24 hours; handling time for arrival to departure is about 12 hours. It is pointed out that the port lacks a parking area because vacant ground has not been secured behind the mooring facilities.

62. Most cargoes from Tanjung Priok are new cars produced in the vicinity of Jakarta and containers. Cargo from Surabaya represents 40-60% of the full load capacity. As there is has no accommodation for passengers and drivers, this is technically not a ferry service route although it is under the control of DGLT.

63. At present, DGLT has a plan to develop a new ferry terminal at the west side of existing Muala Angke fishery port which is located 10km west of Tanjung Priok port and will connect with Seribu island.

64. According to this plan, breakwaters will be constructed about 3km to the east of the Anke river mouth and about 1km on the east side. The ferry terminal (depth -3m) is constructed by dredging and reclamation to accept a ferry boat of 150GRT. And in future, there is an extension plan further out to sea to accommodate Ro-Ro vessels.

65. The integrated coastal area development plan of DKI Jakarta including the area mentioned above to be developed by a third party. In addition, the new passenger terminal at Tanjung Priok will be developed by private sector during PELITA VI.

#### (4) Banjarmasin (South Kalimantan)

66. Banjarmasin is the capital and largest city of south Kalimantan province and is located about 25km from the upper stream of the Barito river, which has a population of about 65,000.

67. The port has a berth of approx. 510m on the east side of Barito river, of which 70 m is used for the terminal of passenger vessel while the remainder is used as a cargo berth. The terminal for passenger vessel is located far upstream of the river and there are mooring facilities for small boats further upstream of the terminal.

68. The number of passengers and vessels operated by PT. PELNI tends to rise every year. Parking areas of the passenger terminal and bus terminal are currently being constructed

69. Banjarmasin port also has a berth extension plan; about 600m till 1998 and about 800m till 2018.

70. Banjarmasin port has been maintained at a water depth -6.0m by maintenance dredging of about 2 million m<sup>3</sup> every year.

71. MOC has a plan to build a new ferry terminal in Batulicin. Batulicin is situated east of south Kalimantan, and is the biggest city in this area with a population of 100,000. The route will connect with Surabaya.

72. The planned new ferry terminal is situated on the other side of Batulicin River. Mooring facilities are planned about 200m offshore from the coastline to secure a sufficient depth.

73. In the investigation of the new ferry terminal for Batulicin, maintenance of road in the hinterland and the trend of regional development must be considered. It is also necessary to consider the demand of all Kalimantan Island.

(5) Sampit and Kumai (Central Kalimantan)

74. Sampit is situated roughly in the middle of Central Kalimantan province about 115 km west of Palangkaraya, the capital city of the province. Port of Sampit is located on the west bank of the Mentaya River about 72km upstream from the mouth of the river, which has been maintained at a water depth of -5.0m by maintenance dredging of about 700,000m<sup>3</sup> every two years.

75. The port has a total length of 316m with a water depth of -5.0m including the transit sheds of 1,328m<sup>2</sup>, open storage yard of 3,000m<sup>2</sup> and a passenger terminal of 750m<sup>2</sup> (1,000 passengers). Number of passengers who embarked or disembarked at the port reached about 190,000 in 1995.

76. Kumai is situated in the west of Central Kalimantan province about 25km south-east of Pangkalanbun. Port of Kumai is located on the west bank of the Kumai River about 28km upstream from the mouth of the river, which has been maintained at a

water depth of -4.5m by maintenance dredging of about 500,000m<sup>3</sup> every three years.

77. This port has a total length of 280m with a water depth of -4.5m including 900m<sup>2</sup> of transit sheds, 1,500m<sup>2</sup> of open storage and a 300m<sup>2</sup> of passenger terminal. Number of passengers who embarked or disembarked at the port reached about 120,000 in 1995.

78. Passenger vessels ply between Semarang and Kumai and Surabaya and Sampit with two weeks round trip schedule. Vessel size is about 1,500GRT (L: 99m x B: 18m x D: 4.1m) and passenger capacity is 1,000.

79. The road system in the hinterland between Palangkaraya and Sampit has already been paved, however, the area from Sampit to Pangkalanbun has not been paved completely. The fundamental problem of both ports lies in the fact that the ports are river ports, future expansion of which is generally limited by shallow draught of the channel.

(6) Pontianak (West Kalimantan)

80. In Pontianak city, there is an existing ferry service route connecting Kota and Siantan, which is a river crossing route located in the city center at about 20km upstream from the mouth of Kapuas Kecil River. Kota and Siantan ferry terminals have one berthing facility each which are in good condition equipped with movable bridges and have water depths of 3 to 4m.

81. This route provides 40 trips a day with 2 ferry vessels of about 100GRT and has been transporting passengers of 0.5 to 1.0 million in recent years. However, the existing Kota ferry terminal has no parking space and is located beside the navy base and public park. Therefore, there is no room for expansion of this ferry terminal.

82. The Pontianak port is also situated in this Kapuas Kecil River, a few hundred meters downstream from Kota ferry terminal. The Kapuas Kecil River is more than 500 m wide and more than 5m deep below LWS, but out of the estuary of this river, very shallow sand bar is extended up to around 10km offshore. Therefore, an artificial navigation channel of -5m depth has been prepared and the dredging of about 2 million m<sup>3</sup> is carried out every year to maintain that water depth.

83. The local government has a city development plan, in which the construction

of an outer ring trunk road, which will cross the Kapuas Kecil River by a bridge 5km downstream from the existing Kota ferry terminal, is planned. If a ferry terminal is to be developed for the new ferry route between Pontianak and Jakarta, the area in the vicinity of the bridge construction site will be suitable for that purpose, since that area is less developed but not so far from the city center.

(7) Surabaya Area (East Java)

84. The existing Ujung ferry terminal is in the boundary of Surabaya port. This terminal has 3 berths located at the estuary of the narrow Kali Mas River and provides 220 daily trips of ferry service and transports more than 16 million passengers and 1.5 million vehicles using 13 vessels of 200 to 800GRT between Kamal ferry terminal in Madura Island.

85. However, this terminal has no space to accommodate an additional berthing facility or additional land facilities. In addition, the existing Surabaya port is also very congested by international and domestic containers and general cargoes.

86. Due to the situation at Surabaya port, PELINDOIII plans to use the Lamong Bay area for comprehensive port development including a container terminal, an industrial zone and passenger terminal.

87. As for the new ferry terminal site, DGLT intends to find an area in Tuban city. However, Tuban is located about 160 km west of Surabaya city, or more than 2 hours by car from Surabaya to Tuban and the coast in Tuban faces the open sea and is subjected to relatively rough waves.

88. One of the recommendable terminal sites is in the northern part of Gresik Industrial development zone which is about 15km from Surabaya port by sea. The coast of this area faces the Madura Strait and waves are very small, and the access by land from Surabaya is quite good. However, the availability of this site for the ferry terminal needs to be confirmed.

(8) Ujung Pandang (South Sulawesi)

89. Makasar port is located in the center of Ujung Pandang city and through this port about 820 thousand passengers passed and 110 thousand TEUs of containers and 3.3 million tons of general cargoes were handled in 1995. Drastic renovation works of

this port were completed this year. However, given the very limited back-up yard of this port and traffic congestion at the city center, it will be difficult to build a new ferry terminal for long haul ferry services within this port.

90. The coast from the Makasar port up to 100km north has a very gently sloping sea bottom and the water depth of more than -7m below LWS can not be obtained within the area about 3km from shoreline. Therefore, northern coast area is not preferable for the ferry terminal of long haul ferry services.

91. The coast between Barombong and Galesong (6km and 22km south from Makasar port respectively) has a more steeply sloping sea bottom and the water depth is more than -7m at 200 to 300m offshore. The land along this coast is owned by the successor of the local Sultan, who has proposed to the KANWIL office that his land be used for regional development.

92. Moreover, a new shortcut road between Ujung Pandang city and Barombong is under construction. The only conceivable problem is coast sedimentation. However, the problem has reportedly been solved by the construction of a dam upstream of Jene Berang River which flows into the sea near Barombong.

(9) Ambon and Seram Island (Maluku)

93. There are three ferry terminals in Ambon Island, namely, Paka, Galala and Hunimua terminals. Paka ferry terminal and Galala ferry terminal are located on opposite sides of Ambon bay and provide bay cross ferry services of 120 trips a day by 3 ferry vessels of 100 to 250GRT. The annual average traffic was about 5 million passengers, 400 thousands cars and 470 thousands bicycles for the past three years.

94. The demand of this route is quite big, however, the berthing facility of each terminal is very primitive, i.e., a concrete slipway without movable bridge nor fender system.

95. Galala ferry terminal also provides another ferry service of one trip a day between Namlea ferry terminal in Buru Island. The berthing facility for this ferry service has a similar type of structure to that of the Paka - Galala route.

96. Hunimua ferry terminal is located at outer coast of Ambon Island, connecting to Waipirit ferry terminal in Seram Island. In this route, 1 ferry vessel (300GRT) of PT.

ASDP and 2 ferry vessels (200 and 500GRT) of private companies are introduced and run 12 trips a day. About 360,000 passengers, 20,000 cars and 10,000 bicycles were transported on this route on average in the past three years.

97. Berthing facilities of both terminals are dolphin type structure but movable bridges are not installed and all rubber fenders have been lost. The water depth at the berth in Hunimua is deep enough, more than -5m below LWS is maintained, however, in Waipirit it is less than 3 m and the operation is restricted by tide movement.

98. If additional ferry service routes will be developed between Ambon and Southeast Sulawesi, Ambon and Ternate or Ambon and Tual, a new ferry terminal should be built at suitable site in Ambon Island. Based on the preliminary site survey along the coast of Ambon Island, Eri area which is located at the southeast coast of Ambon Bay will be the best location for the new ferry terminal site.

99. If a new ferry service route will be developed between Seram Island and Sorong in Irian Jaya, a new ferry terminal site should be situated on the north coast of Seram Island. Considering the socio-economic conditions, maritime conditions, road conditions, etc., Wahai area which is the biggest town in the northern part of the island, is considered as the most recommendable place.

(10) North Irian Jaya

1) Sorong

100. Sorong is the most economically active region in Irian Jaya province. Now there is one ferry terminal in Sorong to connect Jaffman Island where the airport of Sorong is situated. The airport of Sorong is going to shift from Jaffman island to Sorong city in the main island within a few years and the existing ferry service will be closed at that time.

101. The existing ferry terminal is situated in Sorong city and has more than one ha. of land space and a wooden jetty with water depth of -5m. Only 30 to 50m off from the existing jetty, a water depth of -8 to -10m can be obtained.

102. Therefore, if a new ferry route is required between Sorong and Seram Island in Maluku, the existing ferry terminal site is suitable for construction of new deep water mooring facilities and ancillary land facilities.

103. The local government is developing an industrial complex of 6000 ha in Klasaman area located 5 to 10km south from Sorong city. According to the local government, a new ferry terminal can be constructed on the coast in this industrial zone, if so required. The problem in this coast will be shallow water.

2) Manokwari

104. Manokwari city is located at the northwest coast of Cendrawasih Bay. There is no ferry terminal in Manokwari at present. The sea born cargoes and passengers are being transported by a Pioneer ship once or twice a week between Sorong, Biak and Nabire. The local government and DGLT want to open a ferry service route from Biak to Manokwari through Numfoor Island.

105. As for the ferry terminal candidate site, several locations on the coast of Manokwari city were introduced by BAPPEDA. Based on the brief site observation, it seems that the inner end of Wosi Bay is the best location and the north coast of Sowi Bay is the next recommendable location from view points of wave condition and land access.

106. For the Wosi site, however, further investigation on sedimentation will be required, and for the Sowi site, it is anticipated that the land acquisition will not be so easy.

3) Biak

107. A ferry service between Biak and Yapen Island has been commenced a few years ago. However, since there is no ferry terminal in Biak, the mooring facility of Biak port is used for the ferry operation.

108. The construction of a new ferry terminal commenced last year at Mokmer on the south coast of Biak Island. The land reclamation works of about 0.6Ha. have been completed already but the construction of mooring facilities has not yet started. Therefore, at least another one year will be necessary for the completion of this ferry terminal.

109. The existing ferry service between Biak and Yapen Island is one trip a day and the frequency of intended ferry service from Biak to Manokwari through Numfoor Island will also be one trip a day.

110. Therefore, the Mokmer ferry terminal will be available for common use by both routes, which means that construction of two ferry terminals in Numfoor and Manokwari will be enough for opening the new ferry route Biak - Numfoor - Manokwari.

(11) Nusa Tenggara

111. Islands between Jawa and Timor are connected by ferries at the following ferry terminals;

(Java)	(Bali)	(Lombok)	(Sumbawa)	(Flores)	(Timor)
Ketapang	-Gilimanuk				
	Padangbai	-Lember			
		Lombok	-Pototano		
			Sapa	-Labuhan Bajo	
				Ende	-Kepang

112. The mooring facilities of all the above ferry terminals are already equipped with movable bridges and are in comparatively good condition. Therefore, it is considered unnecessary for these ferry routes to be included in the objective routes of this development study.

113. Needless to say, the ferry terminals of Ketapang, Gilimanuk, Padangbai, Lember, Lombok and Pototano require further development, i.e., increase in the number of mooring facilities to meet the demand at peak periods. But it is recommended that such further development should be achieved through introduction of the private sector as at Merak and Bakauheni ferry terminals.



## **PART 2**

# **LONG-TERM DEVELOPMENT PLAN**

## **Chapter 1      Traffic Demand Forecast**

### **1.1      General**

1.      In this chapter, the ferry traffic demand is forecasted for the purpose of creating a nation-wide ferry network and forming a long-term development plan.

2.      The target year of the traffic demand forecasts is the year 2019, which marks the first year of the *Third Twenty Five Year Development Plan*.

3.      Though a traffic demand forecast of ferries is the prime objective, a demand forecast including other transportation modes such as vessels and airplanes is first conducted for the following reasons:

1)      Ferries are thought to be floating bridges connecting the main land and islands in Indonesia. However, it would be better to consider not only ferry but air transportation and sea shipping because these three means of transport serve a similar purpose.

2)      Some would suggest that all transport modes including roads and railways be reviewed, but since the amount of road transportation is enormous and railways are used in Sumatra and Java only, it is not appropriate to include roads and railways in the consideration of this kind of traffic demand forecast.

3)      Growth of the volume of each transport mode does not consistently follow the growth rate of GRDP, and the share of each mode of transport fluctuates annually. But the total volume of traffic of all modes is steadily growing with the trend of GRDP.

4.      Therefore the ferry traffic demand at the target year is forecasted using the average share of the total ferry traffic of all three modes.

### **1.2      Review of Existing Origin Destination Tables**

5.      The forecast is based on the Origin Destination (OD) data composed of twenty-seven provinces. Because existing data is limited and because each route should be examined on the same level, the forecast has to be analyzed as a macro type.

6.      OD table based on the data of 1988, usually called "1990 OD", is used for this forecast, which is the only OD table we could obtain. (The OD table of 1995 could not

be used because final modifications have not been completed.)

7. The 1990 OD is composed of the following six means of transportation and each OD has passenger and cargo tables.

- 1) Air transportation
- 2) Sea shipping
- 3) Ferry
- 4) River shipping
- 5) Road transportation
- 6) Railway

8. The ODs of ferry, air transportation and sea shipping are used in this study. River shipping OD is excluded because river shipping operates only within provinces and because the traffic volume is small.

9. Since the OD tables are made based on the sample data, they may include some errors. Therefore the total volume is adjusted to the total volume of all three individual transport statistic volumes.

10. The total passenger and cargo volume records of ferry, sea shipping and air transportation from 1988 to 1995 are obtained. (See Table 1.2.1)

Table 1.2.1 Total Passenger and Cargo Volume

Year	Passenger (Ferry + Sea + Air)	Cargo (Ferry + Sea + Air)
1988	36,035,523	89,378,482 ton
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)

11. The sums of ferry, sea shipping and air transportation of both OD and individual statistics in 1988 are almost the same. 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 1.2.2 and Table 1.2.3.







