Chapter 10

DOMESTIC SHIPPING DEVELOPMENT PROGRAMS

10. DOMESTIC SHIPPING DEVELOPMENT PROGRAMS

10.1. Strengthening of Freight Liner Shipping with Accelerating Containerization

10.1.1. Significance of Liner Shipping Service

Liner shipping services are those which call regularly on specific ports under fixed schedule, and cater to the transport requirements of the public at large without discrimination (known as common carriers), changing fares/freights which are already fixed and specified for the reference/guidance of the public.

Liner shipping services are thus essential for the Indonesian archipelago to form a unified country. It enables small shippers to use shipping service; it also enables investors to do business in one dynamic domestic market. Failure of inter-island shipping industry to provide a regular and reliable service may constitute a serious bottleneck to the national economy and could well jeopardize the successful implementation of investment/ development projects in the other regions beyond Java.

Liner shipping services may entail greater overhead and operational expenses by virtue of the required administrative machinery in their ports of call to handle marketing and other concerns. Moreover, liner vessels cannot always benefit from economies of scale, especially during the lean seasons, as they are obliged to undertake their scheduled voyages even despite of less than economic loads. Therefore, liner shipping services need stable business environments.

10.1.2. Administrative Framework

It is well aware for the Indonesian government to have responsibility for taking care of and providing people and the economy with adequate inter-island liner shipping services. From its historical review, however, a consistent governmental policy cannot be observed. This section firstly reviews historical policy changes, identifies the present standpoint and then proposes a policy dialogue mechanism between the maritime transport administration and the liner shipping industry.

(1) Policy Review on Liner Shipping Services

Several governmental policies for liner shipping development adopted now and then can be briefly noted as follows:

<u>KPM (a Dutch Shipping Company)</u>: KPM had operated a vast network of shipping connections between the islands on a monopolistic base since the mid-19th century. In the wake of past disturbances in the political relations between Indonesia and the Netherlands, in 1957, KPM was prohibited from continuing operations and consequently, its hundred-ship fleet was withdrawn from Indonesian waters.

RLS (Regular Liner Services): The sudden disappearance of KPM fleet created a complete vacuum in the vital need for shipping in Indonesia. Government Regulation No. 5/1964 aimed at restructuring overall shipping industry and related activity and providing integrated shipping services. Government Regulation No.2/1969 restricted foreign vessels through SKU (i.e. loading/unloading permit). Under such circumstances, RLS was implemented. Almost all vessels were conventional vessels. The RLS concept was implemented under strict supply and demand control. For this purpose, the consultation procedures in the international liner conference were required between the carriers and shippers in the domestic trade.

Deregulation Package – PAKNOV 21/1988: The government introduced a deregulation package relating to specific sectors of the nation's economy, in particular, manufacturing, trade and shipping. It forced a structural change in all aspects of shipping activities. Under the new regime, national shipping companies were free to determine their own liner routes, provided the shipping companies concerned file a report including the changes/deviations with the responsible maritime transport administration (DGSC). Most of the domestic shipping lines were likely to be listed as non-liner shipping lines to avoid reporting obligations to the government.

Current Administrative Framework: Law No. 21/1992 on Shipping stipulates that the domestic sea transportation is to be established and implemented as an integrated system as part of the national transportation system (Article 74, Paragraph 1). The second paragraph defines that "the domestic sea transportation is to be carried out on a regular system and be complemented by a non-regular system". Regular route network includes route alignment and vessel assignment. DGSC designs route alignment as an infrastructure and then shipping companies assign vessels at their own discretion. Government Regulation No. 82/1999 allows further governmental intervention to strengthen domestic liner services. The concept of route network consisting of "main route", "feeder route" and "pioneer route" was newly introduced (Article 63). The government determines new routes taking account of load factor and port facilities. The government evaluates the demand of additional shipping capacity on each route and announces them every six months (Article 66). While placement of ships can be made by the relevant shipping company, this company must file a report on its transportation and operational activities and submit it to the government every six months (Article 67).

(2) Rationale of Governmental Intervention

The country experienced drastic deregulation in the domestic shipping sector in the late 1980s. The extent of deregulation that would be deemed appropriate to be pursued becomes a critical consideration. Assuming that the needed legislative amendments will be enacted to provide a liberalized legal framework for the industry, will full deregulation be the goal to be opted for?

From the government's perspective, full deregulation would necessitate a paradigm shift – from domestic shipping services being considered as public utilities, to one where they are essentially considered as purely commercial services. As long as the government mandates itself to foster competitive common carriers which provide liner shipping services over the archipelago, the government must monitor their services carefully and undertake intervention measures when necessary. Intervention measures may change depending on the stage of development of the industry as well as national economy. Theoretically, governmental intervention must be minimized when people and the economy can afford any shipping services.

From the private sector perspective, full deregulation would somehow be the inferred preference or desired goal. Some expect that a free-market environment would foster self-regulating mechanisms with respect to scales of operation vis-à-vis routes that can be efficiently and economically served. On the other hand, shippers may have apprehension on the need to insure certain levels of service standards as well as rates, especially within the context of possible cartels and even oligopolies.

The country has already experienced drastic deregulation. And what has happened since then? It is understood that shipping companies were faced with uncertainties in deciding new ship assignment without government control on demand and supply. They seemed reluctant to long-term investment, that is, ship procurement, and then many of them resorted to chartering foreign vessels. PT. PANN shared the same difficulties in its ship financing services such as more difficult risk management and increasing non-performing loans. Therefore, the government is required to show the medium- to long-term development vision that includes route networking and demand forecasting in order to induce adequate ship investment for adequate route. Although the liner shipping market has not obviously been biased by monopoly, it is necessary for the government to periodically check the market whether it ensures healthy competition and provides satisfactory services or not.

(3) Building a New Public-Private Partnership

In compliance with Government Regulation No. 82/1999, the government now makes an intervention in the case of market access where the government evaluates the additional shipping capacity on each route and consults with operators in assigning a new liner ship. In order to create healthy and competitive business environments, the government is required to monitor not only market access but also service provision and tariff setting through a wider policy dialogue with the liner shipping industry.

The Study proposes that the responsible maritime transport administration be equipped with the following four (4) internal administrative systems to periodically provide three (3) policy dialogue materials, i.e., periodical shipping capacity evaluation by route, periodical shipping services evaluation by route and periodical shipping tariff evaluation by route (Refer to Figure 10.1.1)

<u>Medium- to Long-term Liner Shipping Development Plan</u>: Taking a long-term investment nature of ship acquisition, a medium- to long-term liner shipping plan shall be prepared in association with the STRAMINDO output. It may include, among others, route networking, demand forecasting and tonnage requirement.

<u>Liner Shipping Services Monitoring System</u>: It is a system by which the contents and information of operators' reports such as voyage records and fleet inventory are to be translated into computerized database format to bring about systematized storage, enhanced processing and easier access. The enhanced processing include load factor, productivity per dwt, etc. Such a database system shall be supplemented by reports

pertaining to domestic shipping and trade, as well as results of periodic coordinative meetings to be conducted between concerned government agencies and private sector entities.

Liner Shipping Services Rating System: It designs to rate various aspects of liner shipping services by conducting vessel survey and analyzing vessel operation records. The rating items may cover the followings:

(for freight service)

- shipping services (adequacy, responsiveness, adherence to schedule, sailing speed)
- cargo safety and security arrangement
- loading and unloading system
- reservation and booking system
- claims and customer service
- management and staff

(for passenger service)

- passenger accommodation (seating/sleeping areas, toilet and bath, eating/drinking areas, deck/open areas, etc.)
- market adequacy (frequency, capacity, adherence to schedule, sailing speed)
- boarding system (control, baggage assistance, waiting areas, etc.)
- baggage stowage and security
- reservation system
- management and staff

The system shall likewise guide DGSC in making appropriate intervention if some vessels receive very low rates. The public shall be accordingly advised on the ratings obtained by the vessels subject to the systems, primarily to serve as a guide, and also as a means of stimulating competition.

Liner Shipping Services Costing System: It aims at estimating an adequate tariff structure for liner shipping services. The following data shall be obtained by vessel survey and vessel financial records:

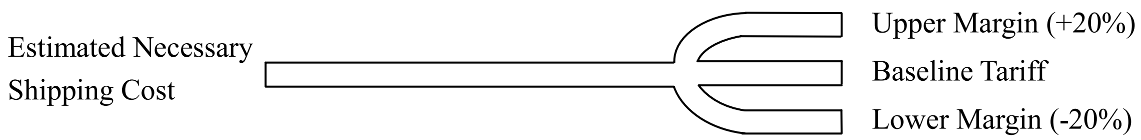
For non-fixed expense

- fuel and lubricant cost
- marketing and cargo insurance
- operation cost
- port charges
- others

For fixed expense

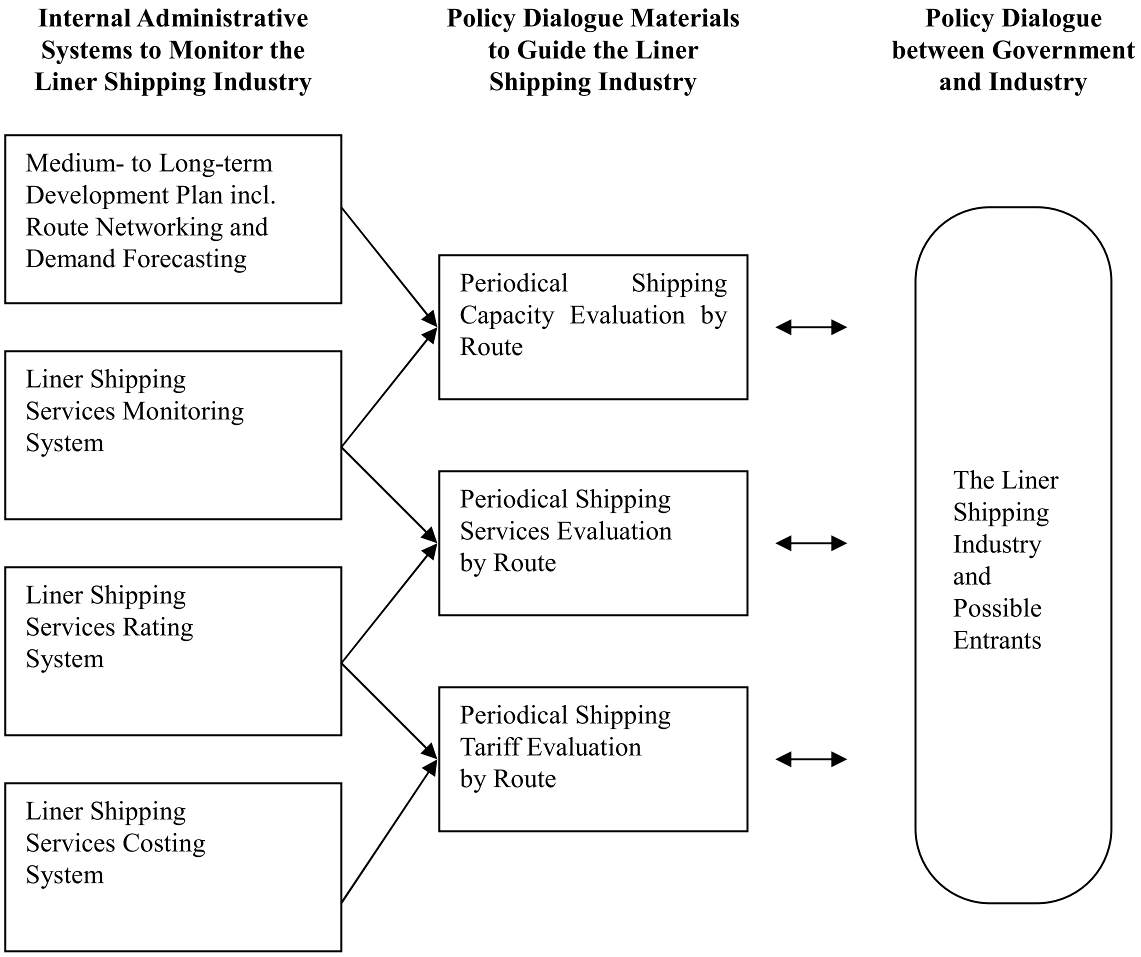
- seafarers wage and welfare
- maintenance
- depreciation
- hull insurance, P& I
- overhead and profit

The system designs to calculate an adequate tariff by shipping service and by route. By introducing a forktariff concept, DGSC may intervene in extra ordinal services which are indicated beyond the range of a forktariff, allegedly fierce and unsustainable competition below the forktariff and allegedly cartels above the forktariff.



(Example of Forktariff)

Figure 10.1.1 Proposed Dialogue Mechanism for Liner Shipping Development



10.1.3. Fleet and Network Development Plan

(1) Change in Freight Liner Fleet

The Indonesian freight liner fleet has changed its size and service type in the last quarter century. Some changes can be pointed out between 1977, the golden age of RLS, and 2003, as follows:

- The overall fleet has expanded by 1.4 times during the period 1977-2003. However it may be underestimated since many vessels provide likely liner services although they are registered as a tramper under lax administrative control (e.g. 38'trampering' container vessels in 2003).
- The average ship size has surely expanded by approximately 5 times during the same period.
- Containerization has been acute since the mid-1990s. Today, container vessels share a liner shipping market with conventional vessels. By using route analysis, it is obvious that the volume of container vessels is now overwhelming against conventional vessels on trunk routes. Based on STRAMINDO survey result, shipping traffic among the 25 strategic ports show a high containerization rate of 66% while only 27% is for other local traffic.
- In terms of vessel productivity (e.g. cargo tons per ship dwt), it has improved from 13 to 16. The contributing factor to this improvement is the container fleet (22 tons per dwt). Since the conventional fleet now serves for minor routes, the productivity is recorded at only 11 tons/dwt.

Table 10.1.1 Historical Fleet Transformation for Freight Liner Service

Year	No. of units by type	Total DWT	Ave. DWT	Productivity (tons/DWT)
1977 1/	316 conventional	310,670	983	13
1993 2/	248 conventional	287,868	1,161	unknown
2003 3/	45 conventional	212,216	4,716	11
	42 container	219,910	5,236	22

Source: 1/ M. Husseyn Umar, SH "The Regular Liner Service/RLS"
2/ JICA "The Study on Integrated Modernization Plan for Sea Transportation in Eastern Indonesia, 1994"
3/ DGSC

(2) Future Freight Liner Fleet

As discussed in Chapter 8, the STRAMINDO's demand forecast shows future fleets for container vessels and conventional vessels, as follows:

For container vessels

- Due to further containerization, container fleet will sharply expand by 4.3 times during the M/P period.
- Shipping operators will be able to assign larger container vessels on heavy demand routes as long as both port ends accommodate those vessels. It will enlarge the average ship size by 1.5 times.

For conventional vessels

- Conventional fleet will modestly increase by 1.85 times during the M/P period.
- Due to a very high containerization rate on trunk routes (over 90%), conventional fleet will be forced to serve minor routes.
- In order to meet such diversified minor needs, small vessels with less than 4,000 dwt will be preferable. Thus, the average fleet size will shrink by 27%.

In estimating the freight liner fleet, all container vessels can be treated as liner fleet since container operation must respect regularity to deal with a number of shippers. All the actual container operations are thus regarded as liner services although only 80% of the existing fleet is registered under DGSC. On the other hand, it is difficult to consider conventional fleet's role in providing liner services in the future. At present, only 9% of the total fleet is registered as a liner while it is expected that they will soon be displaced from trunk routes. Since scheduled operation require considerable overhead and operational expenses, conventional vessels engaged in feeder services may select tramper service with less tight schedule such as a monthly call at a local port. Thus, future liner conventional vessels are estimated in proportionate to the projected fleet transformation in terms of number of units and average ship size.

Table 10.1.2 Estimated Freight Liner Fleet during the M/P Period

	Container Vessel		Conventional Vessels	
	No. of Units	Ave. DWT	No. of Units	Ave. DWT
2002	42 [1/] 97 [2/]	5,236 7,557	45 [1/]	4,716
2014	180	10,233	61	4,575
2024	279	11,362	95	4,292

Note: 1/ Registered figures in DGSC
2/ Estimated figures by STRAMINDO

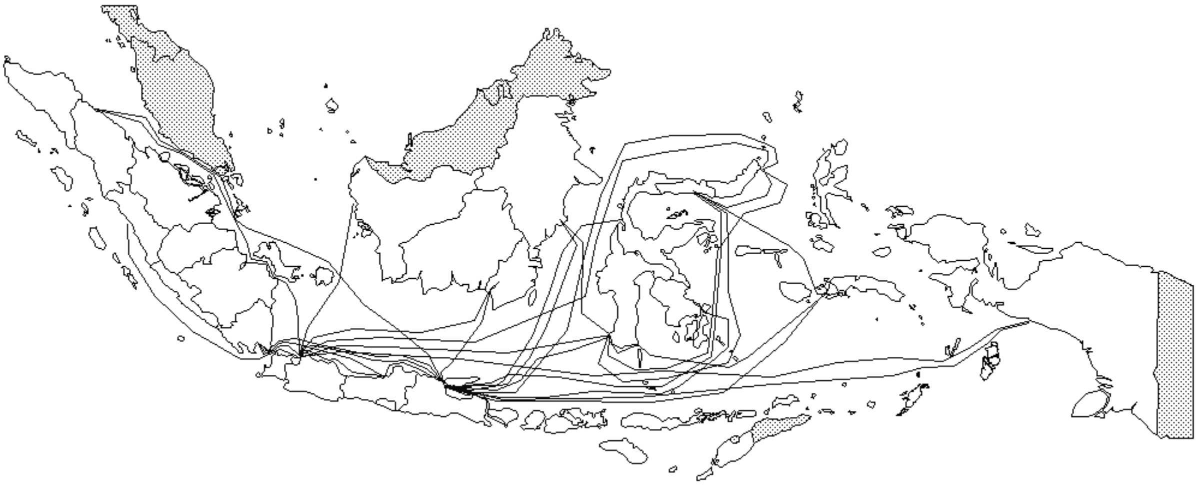
(3) Freight Liner Network Plan

The proposed freight liner network plan is composed of two elements: (1) expansion of current liner network service and (2) introduction of new liner services. Each is described as follows:

(a) Expansion of the Current Network

The current container liner network is composed of 26 routes calling at 17 ports. The current liner network serves 30 OD pairs, mostly major ports. Details of the current freight liner network are shown in the Appendix. Since much of the cargo is transported from origin port to destination port, the present network can be represented by a 30 route port-to-port network as shown in Figure 10.1.2.

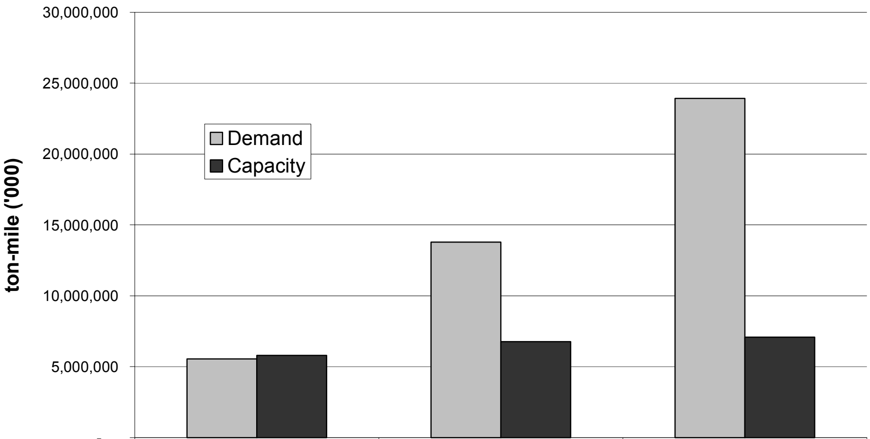
Figure 10.1.2 Current Container Liner Network



/1 multiple port calling lines are converted into port-to-port lines and aggregated to simplify analysis

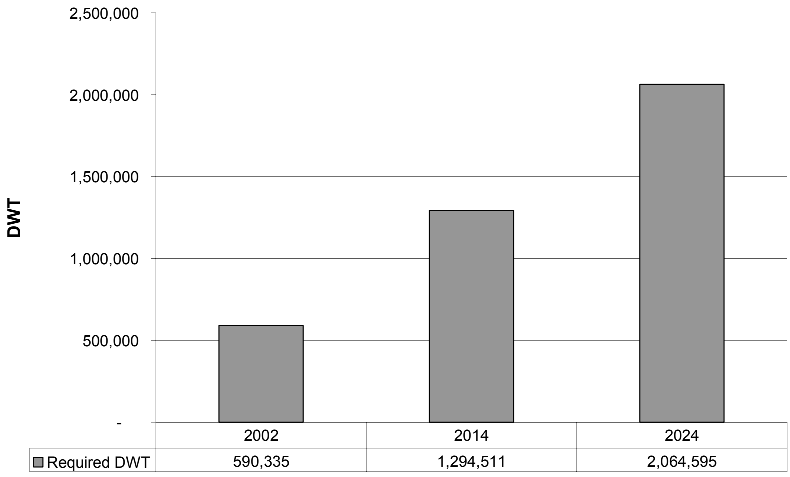
At present, the current network has to serve about 5.5 trillion ton-mile, slightly lower than the system capacity of 5.8 trillion ton-mile (calculated based on the current container fleet productivity). It is estimated that container traffic being served by the network will increase 2.5 times in 2014 and 4.3 times in 2024, but if without any new capacity system capacity will only increase by 1.17 times and 1.25 times as a result of improved fleet conditions in 2014 and 2024 respectively (see Figure 10.13). It is therefore clear that capacity expansion is necessary. Figure 10.1.4 shows the necessary fleet requirement for the current network for years 2014 and 2024.

Figure 10.1.3 Demand and Capacity of Current Container Liner Network



	2002	2014	2024
Demand	5,559,622	13,777,368	23,936,067
Capacity	5,787,642	6,765,826	7,090,511

Figure 10.1.4 Required DWT Expansion of Current Container Liner Network



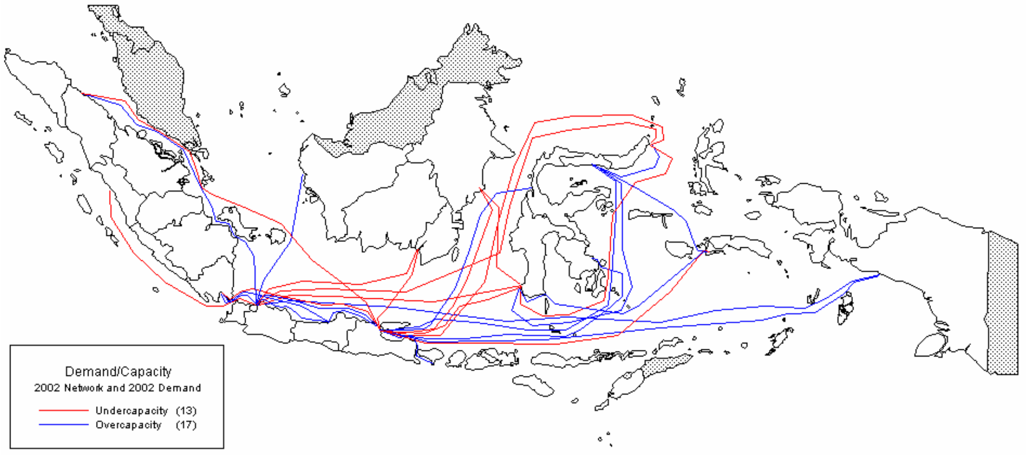
/1 Required DWT is calculated by using the forecasted ton-mile and the estimated future productivity of containers as estimated in Chapter 8 (Case 1).

Figure 10.1.5 shows if routes are over or under capacity based on demand for years 2002, 2014 and 2024 – assuming no new capacity expansion. Some routes have more capacity than demand while some routes have less capacity than demand. This indicates an imbalance of demand. In particular, Tg. Priok-Tg. Perak; Tg. Perak-Benoa; Tg. Perak-Kendari are overcapacity by 77,000 DWT and of this amount 44,000 DWT of the excess capacity is plying between Tg. Perak and Tg. Priok. Vessels plying between these routes should have their routes re-assessed and assigned to routes needing more capacity.

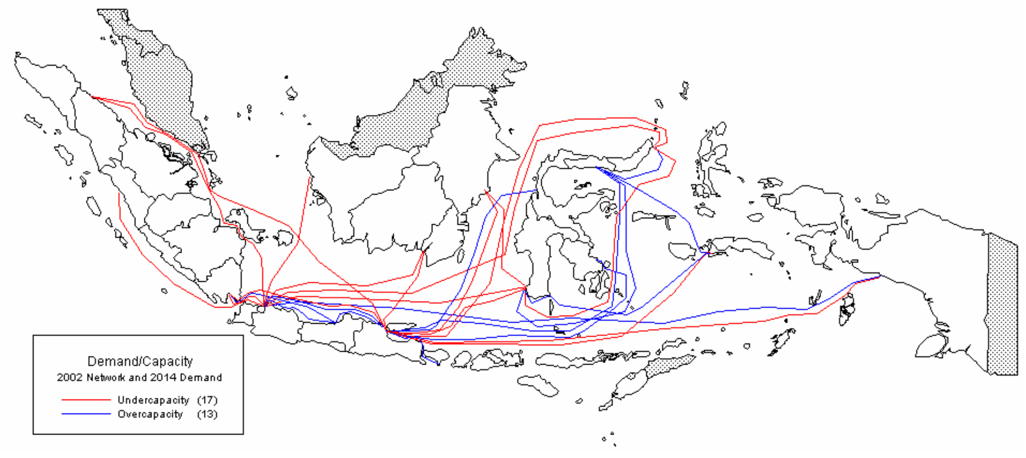
Table 10.1.3 details the vessel requirement of each route. Currently, it is estimated that 13 of the 30 OD routes are already undercapacity. It is expected that 18 of the routes will be severely lacking of capacity by 2024, if no new capacity is added. Routes that will require the most expansion is the Surabaya-Makassar Route, Surabaya-Bitung and Tg. Priok-Makassar with new fleet requirements of over 80,000 DWT in the coming 10 years.

Figure 10.1.5 Estimated Conditions of Current Liner Network

2002 Network – 2002 Demand



2002 Network – 2014 Demand



2002 Network – 2024 Demand

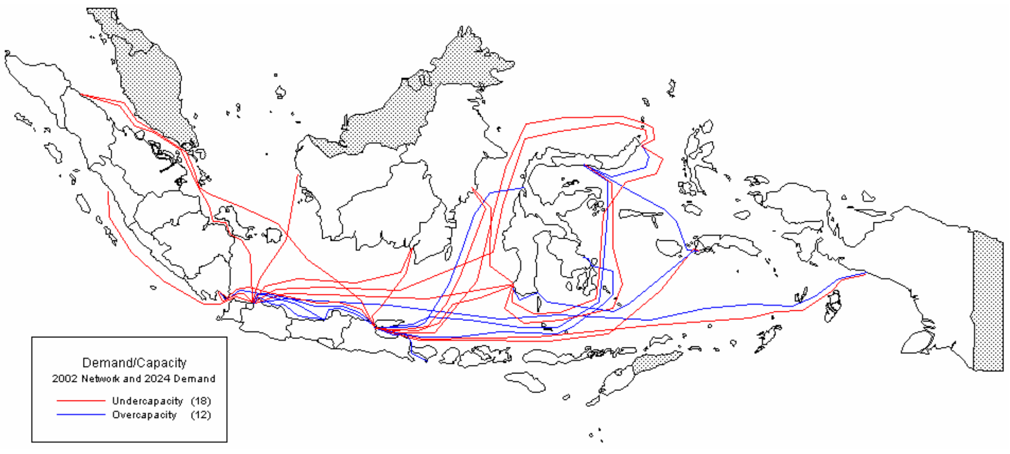


Table 10.1.3 Vessel Requirements of Existing Container Liner Network

Route		Current DWT/1	Capacity Sufficiency			New DWT required	
Port 1	Port 2		2002	2014	2024	2002~2014	2014~2024
Belawan	Tg. Priok	116,357	OK	under	under	21,102	118,385
Belawan	Surabaya	45,264	under	under	under	68,509	65,261
T. Bayur	Tg. Priok	12,278	under	under	under	46,935	36,478
Panjang	Tg. Priok	8,071	OK	under	under	4,495	8,090
Panjang	Semarang	3,049	OK	OK	OK	-	-
Panjang	Surabaya	3,049	under	under	under	15,934	8,596
Tg. Priok	Semarang	3,049	OK	OK	OK	-	-
Tg. Priok	Surabaya	49,390	OK	OK	OK	-	-
Tg. Priok	Pontianak	44,819	OK	under	under	33,091	67,617
Tg. Priok	Banjarmasin	33,648	under	under	under	55,497	59,437
Tg. Priok	Bitung	9,035	under	under	under	43,391	43,293
Tg. Priok	Makassar	44,959	under	under	under	84,300	94,461
Tg. Priok	Amamapare	5,692	OK	OK	OK	-	-
Semarang	Surabaya	3,049	OK	OK	OK	-	-
Surabaya	Benoa	20,937	OK	OK	OK	-	-
Surabaya	Banjarmasin	28,504	under	under	under	29,686	26,245
Surabaya	Samarinda	23,479	under	under	under	38,623	41,337
Surabaya	Bitung	13,933	under	under	under	101,485	65,469
Surabaya	Gorontalo	3,093	OK	OK	OK	-	-
Surabaya	Pantoloan	6,615	OK	OK	OK	-	-
Surabaya	Makassar	66,328	under	under	under	100,970	93,281
Surabaya	Kendari	16,084	OK	OK	OK	-	-
Surabaya	Ambon	4,684	under	under	under	8,986	3,821
Surabaya	Amamapare	5,692	OK	under	under	504	5,004
Samarinda	Makassar	1,781	under	under	under	7,475	4,079
Bitung	Gorontalo	868	OK	OK	OK	-	-
Bitung	Makassar	6,628	under	under	under	43,192	28,644
Gorontalo	Makassar	3,093	OK	OK	under	-	587
Gorontalo	Ambon	2,225	OK	OK	OK	-	-
Makassar	Ambon	4,684	OK	OK	OK	-	-

/1 Estimated based on DGSC Liner Data
/2 Under – means under capacity; OK – means capacity is sufficient

(b) Candidate New Liner Routes

Best on the demand forecast, primary container routes were considered as potential container liner networks. In addition to the existing liner routes, the following liner routes are candidate routes for liner network development (Figure 10.1.6). There are 31 OD pairs served by the proposed new liner network. Altogether with the existing network, the liner network will serve 61 OD pairs. Figure 10.1.7 shows the fleet requirements for the new liner networks for years 2014 and 2024 as well the total fleet requirements for the domestic liner network. Details of each route and vessel requirement of each route are shown in Table 10.1.4. Routes that will be requiring substantial fleet requirements (over 60,000 DWT in 2014) are the routes of Belewan-Cilacap, Tg. Priok-Balikpapan, Tg. Priok-Samarinda and Tg. Priok-Jayapura. Tg. Priok-Jayapura route will require more than 100,000 DWT fleet because of the its long distance (2,174 nautical miles).

Figure 10.1.6 Candidate New Liner Routes

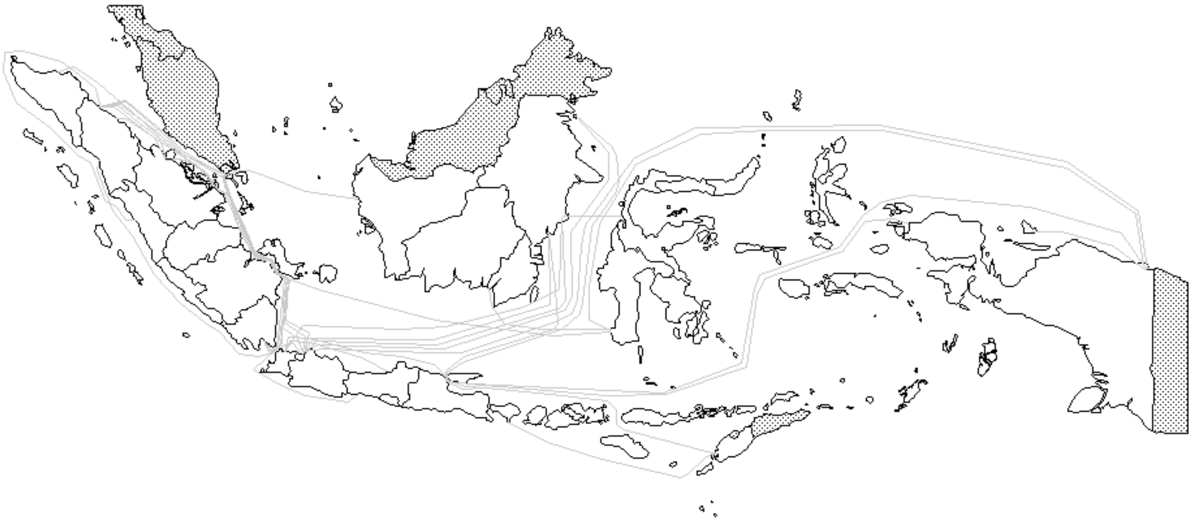
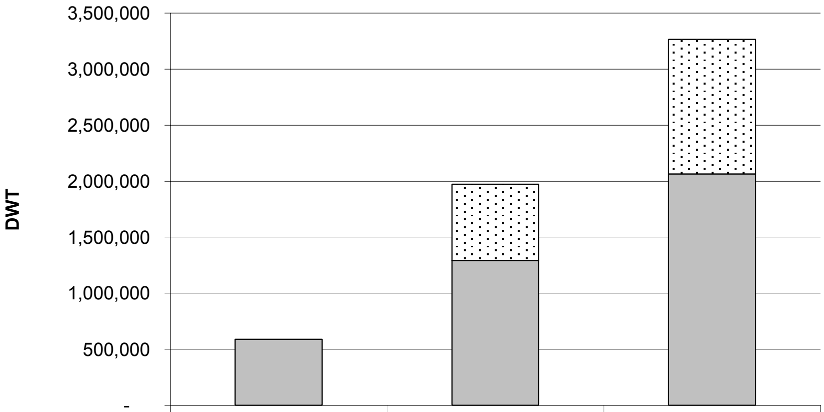


Figure 10.1.7 Fleet Size at Candidate Liner Routes and Existing Lines



	2002	2014	2024
New Lines		677,739	1,200,993
Existing Lines	590,335	1,294,511	2,064,595

Table 10.1.4 Vessel Requirements of Candidate Container Liner Network

Route		2014			2024		
Port 1	Port 2	MT	ton-mile	DWT	MT	ton-mile	DWT
Lhokseum	Dumai	141,121	51,368	4,482	195,795	71,269	5,934
Belawan	Dumai	253,926	61,196	5,340	351,895	84,807	7,061
Belawan	Batam	342,821	123,758	10,798	714,471	257,924	21,474
Belawan	T. Bayur	398,441	333,893	29,133	743,526	623,075	51,875
Belawan	Panjang	106,086	95,159	8,303	166,268	149,143	12,417
Belawan	Cilacap	626,975	769,925	67,178	951,532	1,168,481	97,284
Belawan	Pontianak	285,231	215,350	18,790	404,591	305,466	25,432
K. Tanjung	Tg. Priok	104,784	81,941	7,150	205,909	161,021	13,406
Sibolga	Tg. Priok	193,893	150,655	13,145	394,743	306,715	25,536
Dumai	Panjang	199,164	154,750	13,502	439,004	341,106	28,399
Dumai	Tg. Priok	65,422	43,636	3,807	292,617	195,175	16,250
Batam	Panjang	384,377	211,023	18,412	728,037	399,692	33,277
Batam	Tg. Priok	381,651	198,840	17,349	792,503	412,894	34,376
Batam	Makassar	240,952	246,735	21,528	548,619	561,786	46,773
Tg. Priok	Balikpapan	977,215	759,296	66,250	1,853,570	1,440,224	119,909
Tg. Priok	Samarinda	811,510	742,531	64,788	1,199,944	1,097,949	91,412
Tg. Priok	Tarakan	182,147	208,376	18,181	335,738	384,085	31,978
Tg. Priok	Jayapura	544,917	1,184,650	103,364	1,138,644	2,475,412	206,095
Banten	Semarang	192,543	55,067	4,805	330,379	94,489	7,867
Banten	Surabaya	178,682	78,977	6,891	306,609	135,521	11,283
Banten	Samarinda	101,064	84,187	7,345	162,395	135,275	11,263
Surabaya	Kupang	153,632	107,081	9,343	264,510	184,364	15,350
Surabaya	Balikpapan	669,966	324,933	28,351	1,179,762	572,184	47,638
Surabaya	Tarakan	228,080	189,991	16,577	427,245	355,895	29,631
Surabaya	Sorong	202,525	264,497	23,078	414,178	540,917	45,035
Surabaya	Jayapura	175,633	340,727	29,729	341,749	662,992	55,199
Benoa	Kupang	55,779	31,348	2,735	108,699	61,089	5,086
Banjarmas	Makassar	570,271	215,562	18,808	880,646	332,884	27,715
Samarinda	Pantoloan	172,320	33,602	2,932	318,778	62,162	5,175
Makassar	Jayapura	252,783	374,624	32,687	524,737	777,661	64,746
Jayapura	Biak	109,300	33,883	2,956	236,987	73,466	6,117

/1 ton-miles in thousands
/2 DWT – refers to the aggregate vessel requirement

10.1.4. Logistics Management Improvement

This section addresses several logistics management improvement needs in response to accelerating containerization in the domestic trade. They are port terminal facilities, container stuffing works, fast freight services, and multimodal transport operation.

(1) Port Terminal Facilities

Domestic container vessels are hardly accessible to container terminal facilities. Some major ports have not developed container terminal facilities for domestic vessels. Although the others have such facilities, their charges are however prohibitive. As a result, domestic container vessels enter conventional berths where container handling is done by either ship gear or shore crane. It leads to slow container handling and long berthing time, and probably worsens port congestion. Using a conventional berth means cost-saving to shippers but it may severely reduce expected benefits from containerization in the light of logistics management.

Indonesia has so far stressed gateway port development to strengthen connections with its trading partners in the industrialized world. The Study predicts domestic container shipping, which was started from the late 1990s, will become a full-fledged shipping system in the next ten years. Therefore, container shipping-related infrastructure and facilities among the 25 strategic ports must be considered as top priority in national development.

A variety of funding sources can be tapped into container port development. The government is responsible for persuading the liner shipping industry to use container berths and terminals. Although the capital investment in container port is higher than in conventional port, the annual throughput in tons is proportionally much higher in the container berth. With adequate port tariff setting and sufficient traffic, the port cost per ton is lower accordingly.

(2) Smooth Container Stuffing Works

Indonesian ports receive many of less than container load (LCL) shipments. However, container shipping companies only accept shippers to book space on a full container load (FCL) basis. Thus, stuffing works must be done within ports. Due to short container freight stations (CFS) at ports, such works at container sheds/yards are likely to damage cargo and delay overall container handling works.

The Study observed that about half of the containers were not fully loaded when they arrive in the ports. To avoid delayed container handling, Indonesian ports need sufficient CFS and handling equipments such as gantry cranes and forklift trucks. To increase FCL brought into ports, container shipping auxiliary industries are necessary around ports. They may include inland container depots (ICD), warehousing operators, container consolidators, and freight forwarders.

Figure 10.1.8 A Prototype Layout for Container Berth and Yard

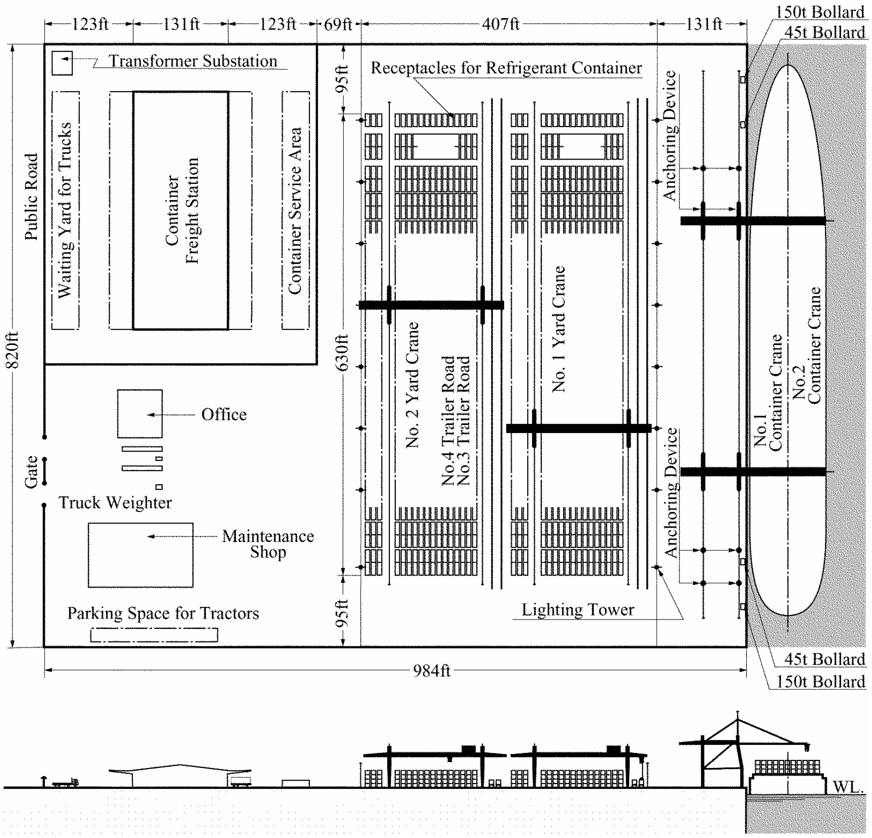
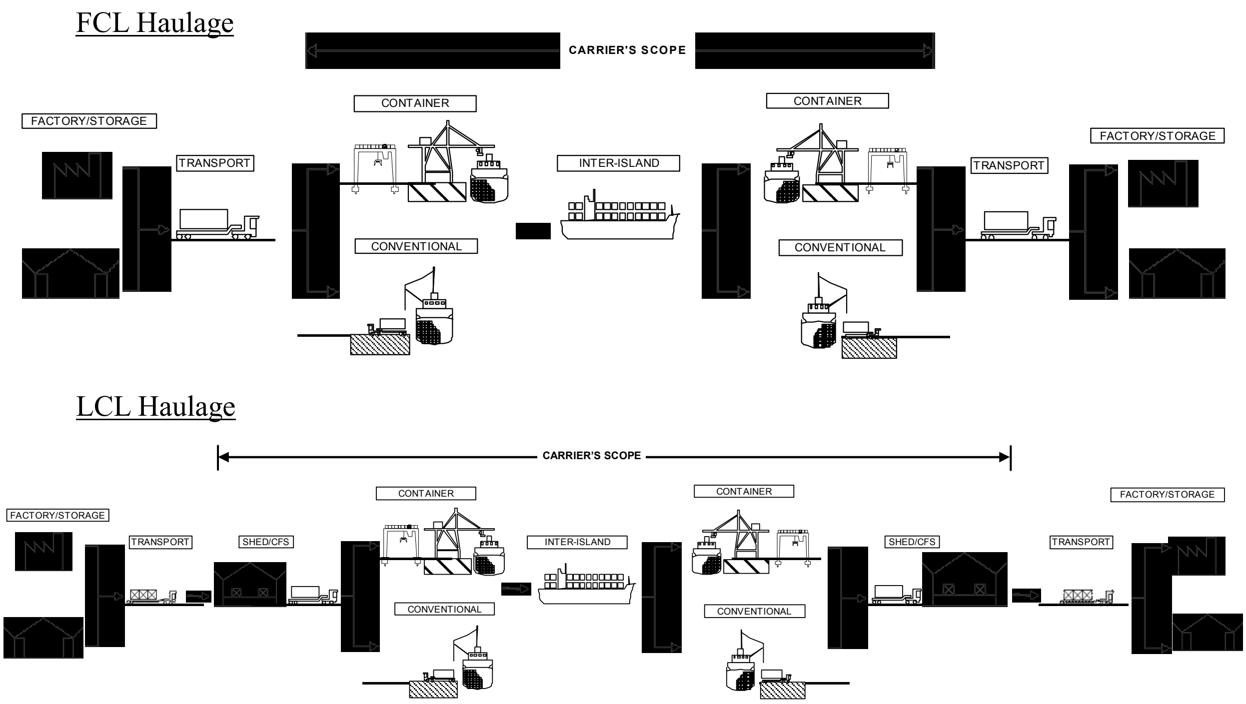


Figure 10.1.9 Container Haulage Patterns, FCL and LCL



(3) Faster Shipping Service

Given the abovementioned improvements, containerization can greatly contribute to domestic liner services. The advantages of containerization are apparent, as follows:

a. Speed and economy of handling;

b. Safety both with regard to breakage and pilferage;

c. Reduction in packing preparations; and

d. A real door-to-door transport service can be offered.

To provide faster shipping service than container shipping, the assignment of roll on – roll off (Ro-Ro) ships is one option. Since Ro-Ro ships have excellent connectivity with road transport and require short berthing time, some selective cargoes such as valuable containers, vehicles and heavy machinery can enjoy this value-added fast service.

In recent years, some shipping companies have assigned Ro-Ro ships and Ro-Ro passenger ships (long-distance ferries) on major routes. In line with accelerating containerization in the domestic trade, such Ro-Ro type fleet will be able to enjoy the lion's share of valuable commodities.

Another ambitious option is the introduction of a very fast container ship. There are several experimental and conceptual ships in the world. It is designed to provide fast freight services although carriage cost is high. When exclusive freight flights become popular across the Java Sea, this concept will become a reality in Indonesia.

Figure 10.1.10 Sectional Design of Ro-Ro Ship

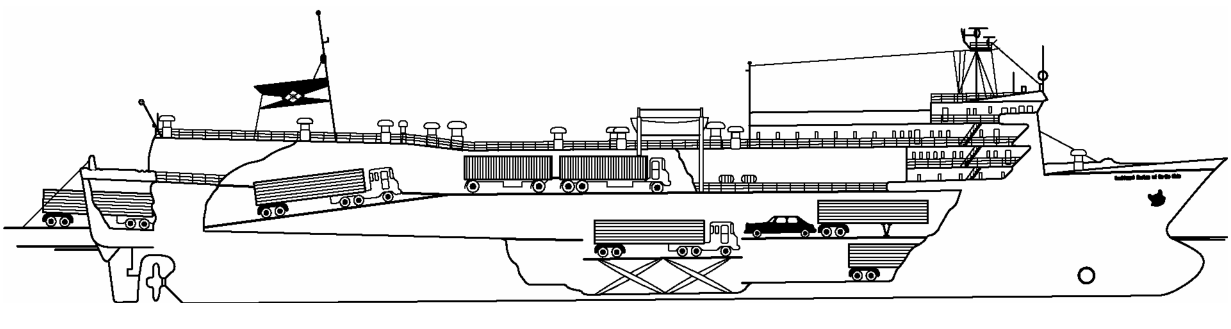
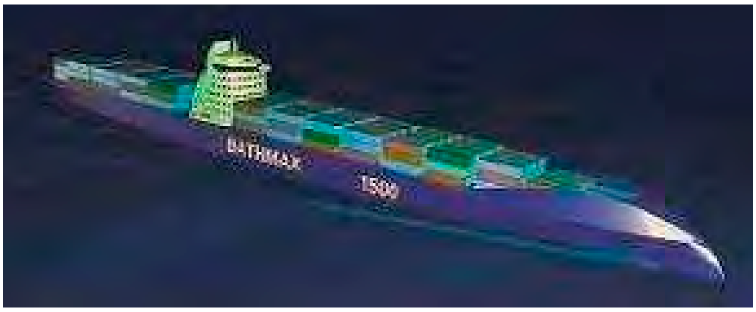


Figure 10.1.11 Fast Freight Carriers (experimental and conceptual stage)



Bathmax 1500

Jointly proposed by Kvaerner Masa Marine, Bath Ironworks and General Electric

(4) Multimodal Transport Operation

Characteristics

In today's market, just-in-time delivery is almost a prerequisite to become competitive even in domestic trading. Instead of a piecemeal, fragmented, unimodal system of transport with different laws, regulation, procedures, and practice for each mode, shippers require multimodal transport distribution network that results to a highly efficient, economical and integrated system of dispatch, transport and delivery.

The inherent benefits of multimodal transport, both in the physical handling of goods and in the reduction of paper burden through the use of a single door-to-door document are not being fully enjoyed in Indonesia. The potential benefits of through traffic movement include:

1. Reduction in overall transport costs due to less transfer costs with the use of standardized mechanized handling equipment, especially by container handling.
2. Reduction in inventory costs through a reduction in total travel time and increased reliability of delivery schedule by utilizing scheduled liner operations.

The concept of multimodal transport is not new. It has been institutionalized since the 1930s. The advent of the marine container provided the impetus in the development of multimodal transport which enabled ship operators to extend their services inland. Thereafter, multimodal transport has developed significantly under the following operational environments:

1. The growing awareness of the importance of logistics costs to business profitability;
2. Changes in port operation and other logistics management such as just-in-time shipment;
3. Overcapacity in the major shipping routes putting strong downward pressures on freight rates and leading shipping lines to engage in value-added service.

Business Opportunities

To actualize the abovementioned potential benefits of multimodal transport in Indonesia, efforts will have to be made to foster a multimodal transport operator. According to the definition in the Multimodal Transport Convention (UN Convention on International Multimodal Transport of Goods), an MTO is:

"…any person who, on his own behalf or through another person acting on his behalf, concludes a multimodal transport contract and who acts as a principle, not as an agent or on behalf of the consignors or of the carriers participating in the multimodal transport operations, and who assumes responsibility for the performance of the contract."

There are two types of MTOs, the "ocean-based" MTOs and those not operating ships. They are more formally referred to as VO-MTOs (Vessel Operating Multimodal Transport Operators) and NVO-MTOs (Non-Vessel Operating Multimodal Transport Operators).

The status of freight forwarders in Indonesia appears not to be clear. The Ministry of Communications issues a license to freight forwarder. However, the Ministry recognizes freight forwarders who belong to the shipping auxiliary industry. As long as the freight forwarder only assumes limited auxiliary functions, he is not accepting liability for the actual transport as a principal.

In conclusion, there are three recommendations to the government in order to promote multimodal transport operation in Indonesia:

1. To allow a freight forwarder to act as a transport operator;
2. To establish an Indonesian multimodal transport operators' association among VO-MTOs and NVO-MTOs; and
3. To provide sufficient legal basis in conjunction with the UN Multimodal Transport Convention 1980 and the ASEAN Framework Agreement on Multimodal Transport (only official draft available).

10.2. Enhancing Competitiveness in Bulk Shipping

10.2.1. Institutional Framework

(1) Shipping Characteristics

Bulk shipping refers to that sub-sector of the industry that carries (generally) single cargo in large volume. Principal commodities are classified as follows:

- Dry bulk (industrial materials, e.g., coal, iron ore, cement, fertilizer, plus foodstuffs such as grain and sugar);

- Liquid bulks (petroleum such as crude oil, condensates and refined products, liquefied gases including LNG and LPG, and liquid chemicals)

A feature of this sub-sector is that to a large degree ships are purposely built for particular types of cargoes, and they are generally unsuitable for other commodities. This encourages the creation of fleets composed of classes of vessels for specific purposes (e.g., oil tankers).

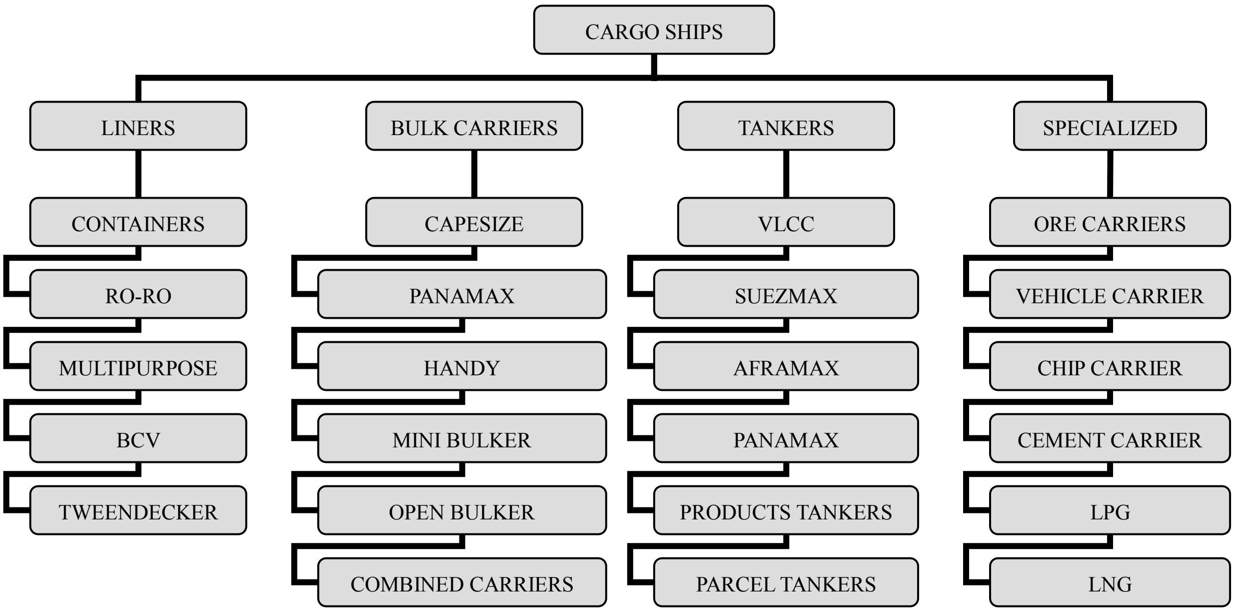
Therefore the availability of specific types of vessels, and not bulk vessels overall, will determine the supply of shipping and therefore charter rates. This is quite different to the liner sub-sector, where containerized and general cargo can be carried on a variety of ships (including, in some cases, bulk cargo vessels).

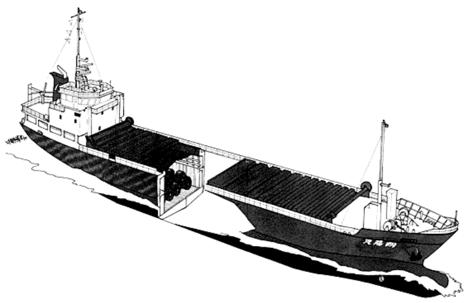
Because of this, and because of the supply of bulk commodities is tied to long-term contracts, the bulk sub-sector is itself characterized by long-term contracts of carriage. Not many vessels operate in the spot charter market, and these tend to be older vessels offering carriage at reduced rates, generally for shippers whose trades are insufficient to enable them to negotiate attractive long-term contracts. Without long-term contracts, in other words, shipping companies have limited incentives to invest specific-purpose vessels and assign new ones.

Another important feature of the bulk shipping industry is that they contain a large number of small operators, with fleets of only one or two vessels. They do not need a network of branch offices like the liner shipping industry. As a matter of fact, however, many of such small companies are beneficially owned by large groups; the legal separation helping to safeguard the rest of the fleet in the event of significant losses. Such multitude of small companies are likely to cause intense competition for cargoes and a virtual absence of a “scrap-and-build” fleet renewal policy, resulting in much higher average vessel age (this impacts on ship safety).

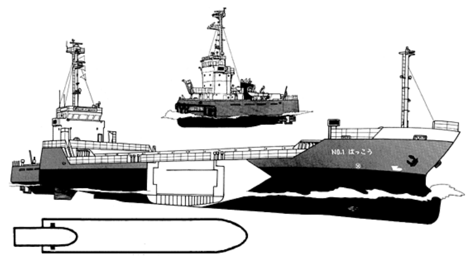
In regard to the relation with government, all regulations governing bulk trades are concerned with ship safety and environment. This is very significant, because it means that bulk ship operators are much freer to compete unlike liner operators, and bulk freight rates over a long period can demonstrate their responsiveness to market conditions. In the case of Indonesian domestic shipping, however the market is extremely biased by the existence of special shipping companies. What general shipping companies can do is only to become a subcontractor under a special shipping company after fierce competition, sometimes with foreign carriers, provided that a special shipping company does not have enough tonnage to carry its cargo.

Figure 10.2.1 Classification of Cargo Ship Types by Function and Size

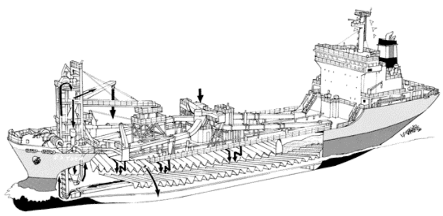




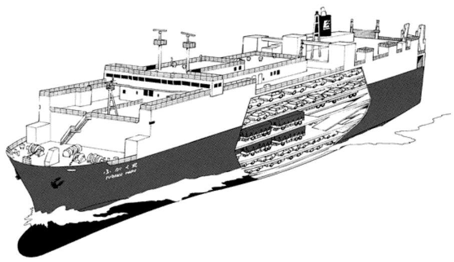
Mini Bulker



Pusher Barge



Cement Carrier



Vehicle Carrier

(2) Indonesian Issues in the M/P Period

(a) Redefining special shipping

It is unique in Indonesia that no shipping license is required for special shipping companies as long as these shipping companies own and operate ships in sole support of their main business. Many countries adopt the concept of non-commercial shipping activities to some maritime activities such as research boats, fishing boats, tourism boats, etc. The uniqueness of Indonesia is its expansion of this concept to cover raw materials and industrial materials haulage despite many general shipping companies can ably serve such demand.

Special shipping companies control some bulk commodities such as cement, fertilizer, and refined oil because their products currently monopolize the domestic markets. Under the era of globalization and regional integration, it is uncertain whether their products will be able to continue such monopolized businesses. Many local economists are warning that Indonesian products are losing their market shares and FDI are transferring their production bases to other countries under the new AFTA regime. For example in Vietnam, the construction industry south of Vietnam currently consumes cement produced from north of Vietnam since the government protects domestic products through high tariff rates and sometimes by import bans. Under the AFTA, Vietnam products must compete with foreign products such as Siam Cement and others.

Such liberalized competition makes shipping cost a critical factor in determining the product's competitive advantage in its retail price. In the case of Indonesia's domestic cement haulage, the Study surveyed that most of cement products is transported in bag, i.e., 85.8%. Such a conventional but costly transportation may not compete with an advanced cement haulage using cement carriers and exclusive ports. Competitiveness cannot be expected under protective environments. Therefore, an adequate shipping policy is necessary to realize the potential of general shipping companies to become effective industrial carriers under competitive environments while the coverage of special shipping should be restricted to non-commercial shipping activities.

(b) Promotion of specific purpose vessels

In the shipping world, fleet itself is competitiveness. Indonesia has two fleet issues in the bulk shipping sub-sector. Conventional ships carrying bagged, boxed and drummed cargoes are a backward system. Specific purpose vessels in adequate size will be necessary in many aspects of bulk transportation services. Therefore, to promote special purpose vessels is the first fleet issue. Indonesia still faces tonnage shortage, i.e., Indonesian flag tonnage shares is 56% in dry bulk and 50% in liquid bulk as of 2001. To increase national tonnage in bulk shipping is the second fleet issue.

To solve or improve both issues, the following policy package is worth considering:

Introduction of long-term contract: A long-term time charter contract will benefit shippers to a great deal. Under such a contract, a shipping company may build a specifically designed ship or find the most suitable ship in the market. Thus, service quality can be guaranteed. A long-term contract fixes and ensures not only ship space but also the freight. Long-term contracts contribute to certainty and stability for shippers' business.

Re-flagging: Indonesia has kept a closed ship registration system. There is no move to establish a second register. But considerable vessels, probably over 1 million DWT, have already flagged out. Almost all those vessels are engaged in bulk shipping in either international or domestic waters. It is necessary to offer some incentives when the government asks the Indonesian shipowners to fly Indonesian flags on those vessels.

Equity sharing with the public sector: Equity sharing is a desirable means to alleviate financial burden of shipowners when building or acquiring specific purpose vessels. The public sector's involvement may not limit to financial support since it can take part in preparing a shipping business plan or a long-term contract, and control ship quality as a co-shipowner.

In Japan, a combination of the use of long-term contracts and equity sharing historically functioned well to promote specific purpose vessels. Considering Indonesia's difficult situation to hold cabotage right, re-flagging is an important measure as well.

(c) More environmental concerns

The environmental threat posed by respective commodities varies considerably. In the event of a serious vessel casualty, for instance, the loss of an iron ore cargo would entail comparatively little subsequent pollution, whereas that of oil could present a serious problem. Therefore owners' commitment to maintaining vessel quality may vary in different forms of bulk shipping.

Today, greater importance is accorded to vessel conditions and environmental factors, as manifested in the ship vetting programs now undertaken by many charters. Therefore, bulk operators need more attention in the management of vessels particularly old tonnage and the enforcement of safety and environment regulations.

For dry bulk operators, a loading plan must be prepared in advance. The high risk associated with high-density dry bulk cargoes has been acknowledged by ship classification societies, port operators and shipowners, and has led to changes in loading practices. Each ship now has a loading plan that must be strictly adhered to, and entails that only a certain quantity of cargo is placed in each hold on each pass of the loading gear. This helps to guard against excessive stress on the vessel's hull, thereby reducing the probability of structural failure. In reality, ship safety has been enhanced by the introduction in 1997 of more rigorous inspection programs for the cargo holds of existing dry bulk carriers of 10 years old and above and of 150 meters length or greater. These requirements apply only to vessels classed by IACS members. Dry bulk carriers engaged in Indonesian domestic trades, both BKI classed and dual classed, need to follow such loading practices.

For tanker operators, double-hull tanker designs became recognized as the future standard for the industry. But this very high degree of compliance contrasts with the implementation time lags that usually occur before new regulations are fully observed. There is a strong need for the government to indicate the introduction schedule of double-hull tankers in domestic shipping. There is apprehension that an unclear timetable may interrupt tanker investment.

10.2.2. Future Demand for Bulk Transport

Liquid bulk sea traffic in Indonesia is composed of petroleum mostly but also a significant portion is CPO and the rest is made of various liquid cargos such as liquid chemicals. Currently, petroleum makes up 95% of liquid cargo but in the future petroleum will not increase significantly especially from 2014 to 2024. CPO on the other hand will continually increase. However, by 2024 petroleum will still largely compose liquid cargo though CPO would have increased its share from 3% currently to 9% (Table 10.2.1).

Table 10.2.1 Future Demand for Liquid Bulk Transport

	Volume (1000 MT)			Share (%)		
	2002	2014	2024	2002	2014	2024
Petroleum	82,326	105,123	106,144	95%	93%	88%
CPO	2,442	5,729	11,090	3%	5%	9%
Other Liquid	1,548	2,253	3,196	2%	2%	3%
TOTAL	86,316	113,105	120,430	100%	100%	100%

About two-thirds of dry bulk cargo is coal. Coal sea traffic is projected to increase sharply in the coming ten years but will start to slow down from 2014 to 2024, albeit its share will still be significant. Thus coal's share in dry bulk cargo will peak in 2014 and will start to decline as other commodities continue to grow. In particular, cement where cement bulk sea traffic will increase from about 400,000 MT to nearly 4 million MT by 2024. By 2024, about 7% of dry bulk cargo will be cement. Fertilizer is not expected to increase significantly in the future. Still, fertilizer bulk traffic will still be high at nearly 3 million MT in 2024 (Table 10.2.2).

Table 10.2.2 Future Demand for Dry Bulk Transport

	Volume (1000 MT)			Share (%)		
	2002	2014	2024	2002	2014	2024
Coal	16,326	31,348	38,030	64%	72%	69%
Mine/Quarry	4,449	6,531	9,306	17%	15%	17%
Rice	41	0	0	0%	0%	0%
Agri Grains	438	416	591	2%	1%	1%
Fertilizer	3,132	2,990	2,941	12%	7%	5%
Cement	428	1,819	3,807	2%	4%	7%
Other grains	220	511	724	1%	1%	1%
Wood	423	134	85	2%	0%	0%
TOTAL	25,457	43,749	55,484	100%	100%	100%

Liquid bulk transport demand will not increase as significantly as dry bulk cargo especially from 2014 to 2024. But the scale of liquid cargo is still significant at more than double that of dry bulk cargo. By 2024 the future tanker fleet have to serve nearly 60 trillion ton-mile (1.4 times increase) of demand and the future bulker and barge fleet have to service a little over 20 trillion ton-mile (2.2 times increase) of dry cargo demand (Table 10.2.3).

Present and future OD traffic was assigned on the existing bulk haulage routes to understand bulk shipping patterns for dry and liquid respectively. (Refer to Figure 10.2.4 and Figure 10.2.5).

Table 10.2.3 Summary of Demand for Dry and Liquid Bulk Transport

		2002	2014	2024
Liquid Bulk Cargo	ton-mile x 10^6	40,808	54,272	57,227
	ton x 10^3	86,316	113,105	120,430
Dry Bulk Cargo	ton-mile x 10^6	9,857	15,893	20,068
	ton x 10^3	25,457	43,749	55,484

10.2.3. Transportation Cost Characteristics

Based on surveys and interviews conducted for this Study, the cost characteristics of operating bulker vessels were estimated and are summarized in Table 10.2.4. There is a marked economy of scale where cost increases at a slightly lower rate than vessel capacity. This means that if demand is high enough and if ports are deep and big enough the use of large vessels would be generally more cost effective.

Table 10.2.4 Cost Parameters of Selected Bulk Vessel Sizes

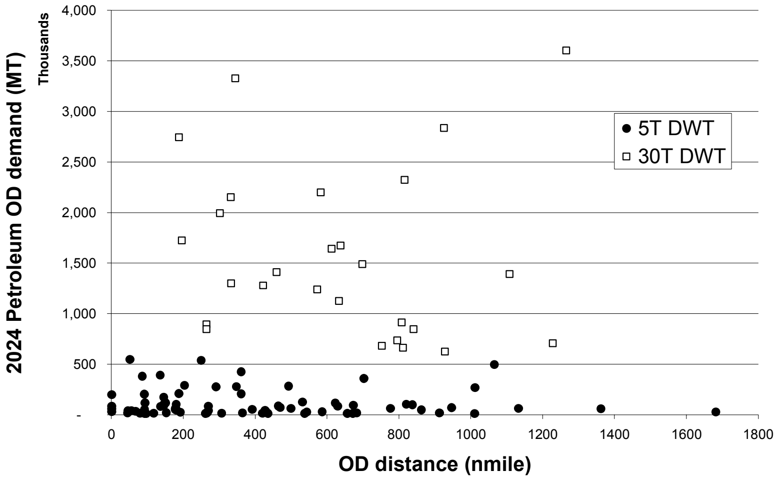
Bulk Vessel	DWT	Capital Cost (mill Rp/yr)	Fixed Operation Cost (mill Rp/yr)	Distance Cost (mill Rp/mile)	Cargo handling Cost (mill. Rp/MT)	Call related cost (mill Rp/call)
Tanker	5,000	5,758	2,800	0.070	0.004	0.66
Tanker	30,000	30,000	4,000	0.080	0.004	4.15
Bulker	10,000	7,200	3,600	0.040	0.002	1.56
Bulker	20,000	13,200	12,000	0.120	0.002	4.53
Tug & Barge	3,500	1,256	2,200	0.052	0.002	1.00
Tug & Barge	12,000	1,809	3,300	0.060	0.002	2.05

/1 Capital cost is composed of annualized cost of vessel
/2 Fixed operating cost consists of wages, ship stores, lubrication, insurance, dockage, repairs, etc.
/3 Distance related costs is composed of fuel
/4 Cargo handling costs is composed of stevedoring and other cargo handling related costs
/5 Call related costs is composed of pilotage, berthage, towage, anchorage, etc.

As an illustration, the cost parameters and typical vessel specifications are used to roughly determine the conditions in which a certain type and size of vessels is more cost effectively. In Figure 1, the 5,000 DWT tanker and 30,000 DWT tanker is compared as to which type of vessel can serve the 2024 petroleum OD demand at the least cost, also taking into consideration the distance between the two ports. As shown in Figure 10.2.2 it can be clearly seen that if OD demand is less than 500,000 MT/year, it is better to utilize

5,000 DWT tankers and 30,000 DWT tankers (or any larger tanker) if demand is greater than 500,000 MT/yr.

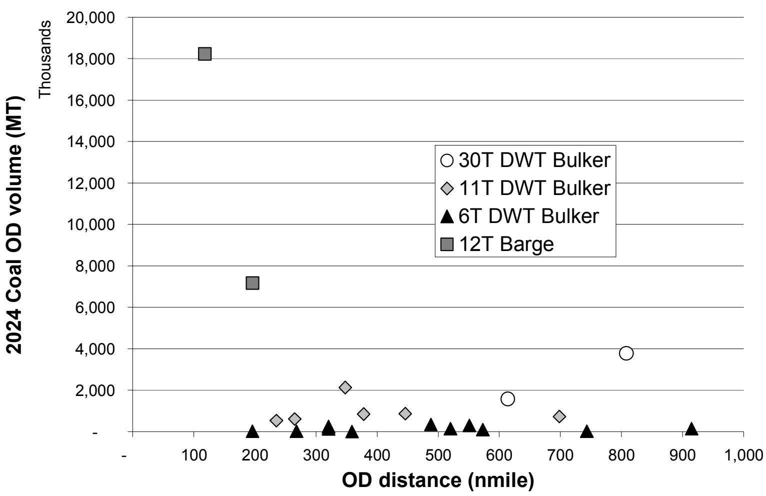
Figure 10.2.2 Selection of 5,000 DWT and 30,000 DWT Tankers based on Demand and Distance



/1 Draft conditions are not considered

In Figure 10.2.3 using the cost parameters and typical vessel specifications, a least cost selection is made between (1) 30,000 DWT bulker, (2) 11,000 DWT bulker, (3) 6,000 DWT, (4) 12,000 DWT barges, and (5) 3,500 DWT barges based on 2024 coal OD demand and OD distance. Barges are more advantageous for short distance (less than 200 nautical miles) and high volume traffic. At mid to long distance traffic, bulkers are more advantageous and the higher the demand the larger the optimal bulker size. At longer distance, larger bulkers are more cost effect as it could be able to take advantage of larger capacities to minimize the required number of voyages thereby lowering cost. In the simulation, 3,500 DWT barges were not selected. However, in reality port depth limitations especially at river ports would necessitate the use of such smaller barges.

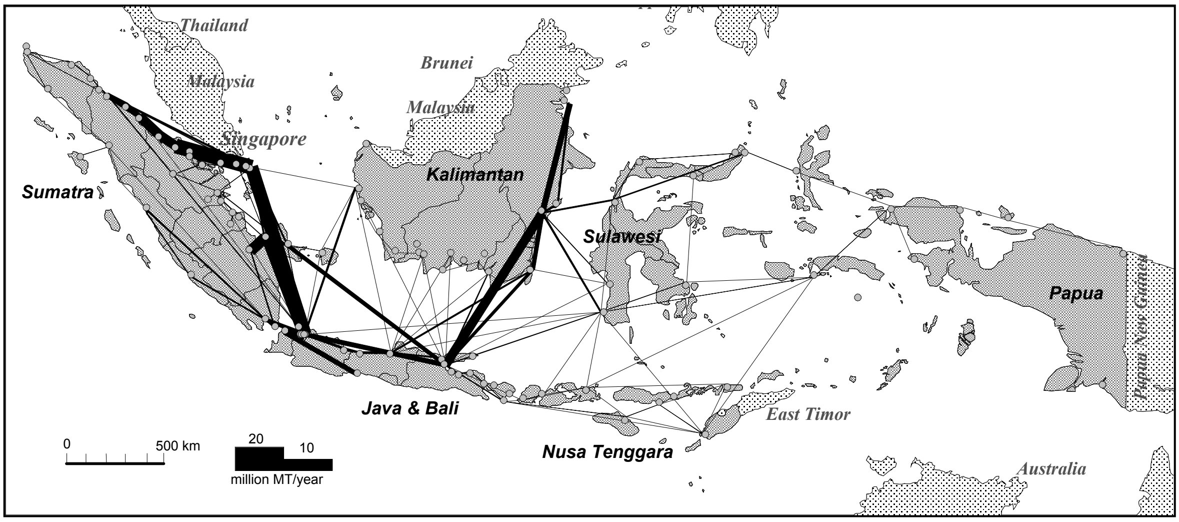
Figure 10.2.3 Selection of Bulkers and Barges based on Demand and Distance



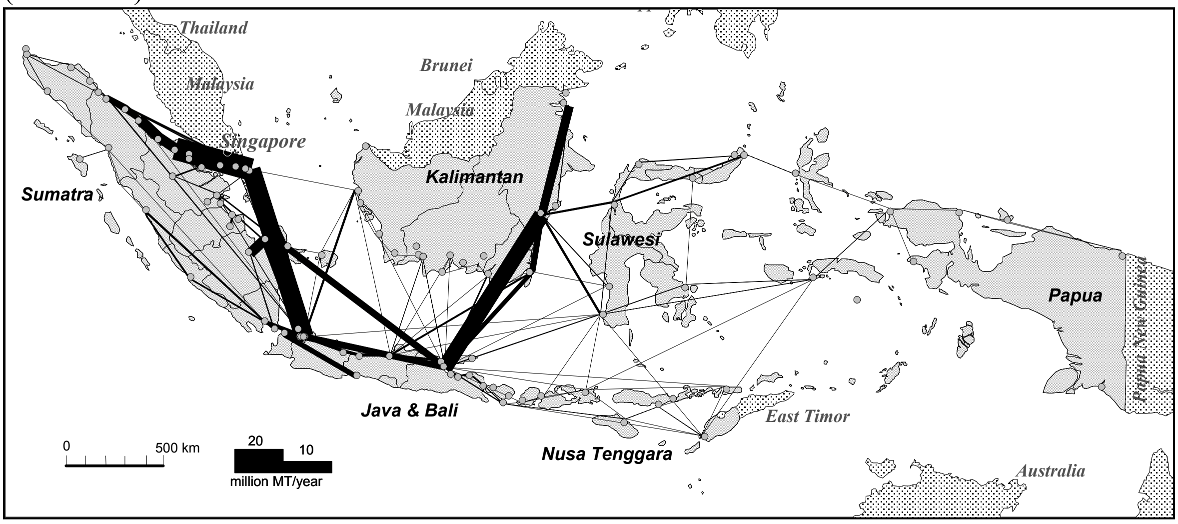
/1 Draft conditions are not considered

Figure 10.2.4 Present and Future Liquid Cargo Flow

(Year 2002)



(Year 2014)



(Year 2024)

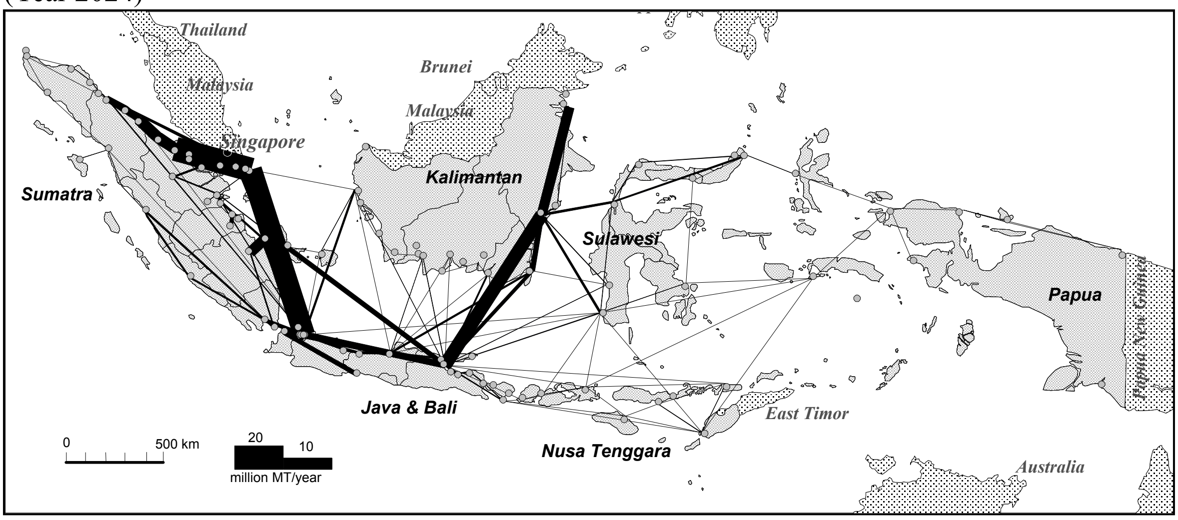
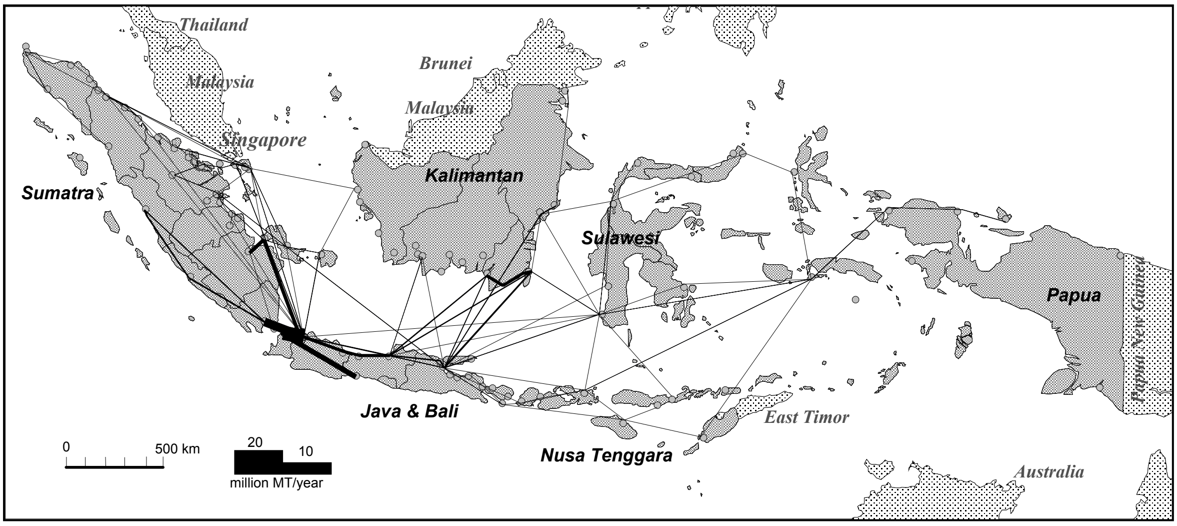
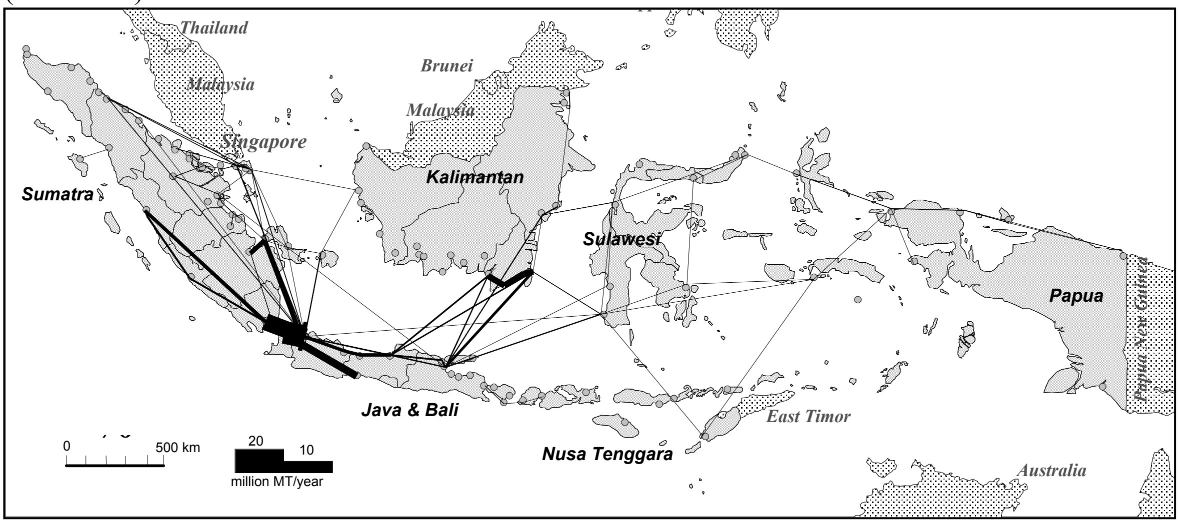


Figure 10.2.5 Present and Future Dry Bulk Cargo Flow

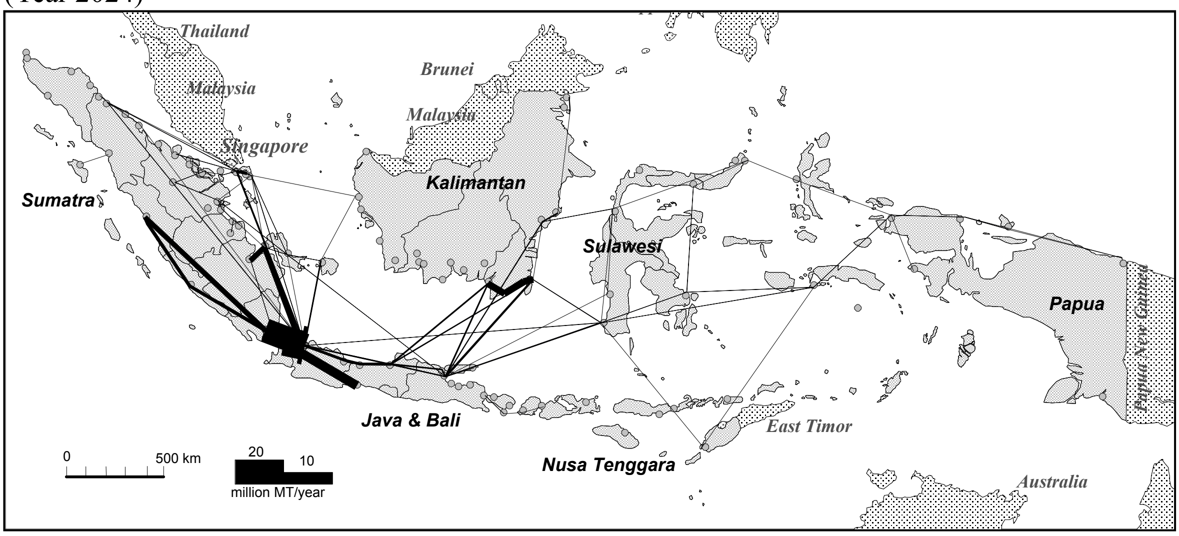
(Year 2002)



(Year 2014)



(Year 2024)



10.2.4. Coal Transportation (Case Study)

(1) Coal Resources and Production

Indonesia has rich resources of coal. According to the Directorate of Coal, Ministry of Energy and Mineral Resources, identified coal deposit is 38.8 billion MT, of which 11.5 billion MT is measured resources. Of this, 5.4 billion MT is regarded as commercially exploitable reserves. Major reserves are located in Kalimantan and Sumatra. (Table 10.2.6)

Coal deposits in Sumatra are located mainly in the area surrounding Tanjung Enim, South Sumatra. The deposits are mined by state-owned coal company Perusahaan Tamban Batubara Bukit Asam (PTBA). Coal in Kalimantan is higher in quality. Coal contractors operating on Kalimantan have the right to 6.5 billion MT of measured reserves. Kaltim Prima Coal possesses the largest measured reserves estimated at 1.3 billion MT, followed by Arutmin Indonesia and Adaro Indonesia with one billion each.

Indonesia's coal producers market coal to most customers under a long-term purchase contract. The price of coal is subject to renegotiation every year based on the changing world price of coal. More than 75% of production is exported, mainly to the Asian market and Japan is the main importer.

Domestic demand for coal has been rapidly rising and the increasing trend is considered to continue at least in coming five years, due to the operation of coal-fired power plants. Power plants and the cement industry are the major consumers and utilization of fuel briquette coal by household and industry is also prevailing. The Energy Development Research Institute of Japan forecasted export and domestic consumption as shown in Table 10.2.7.

Table 10.2.5 Coal Reserves and Resources

(Million MT)

Location	Resources			Mineable reserves
	Measured	Indicated*	Total	
Sumatra	**4,900**	**12,564**	**17,764**	**2,857**
North Simatra	64	1,764	1,828	-
Central Sumatra	350	803	1,153	157
South Sumatra	4,432	9,910	14,342	2,683
Bengkulu	54	87	141	17
Kalimantan	6,536	14,552	21,088	2,505
East Kalimantan	**3,272**	**9,856**	**13,128**	**1,727**
South Kalimantan	2,428	4,101	6,529	386
West Kalimantan	74	192	266	4
Central Kalimantan	762	403	1,165	388
Sulawesi	20	84	104	--
Others	28	83	111	
Total	**11,484**	**27,284**	**38,768**	**5,362**

* Including inferred and hypothetic resources
Source : Directorate of Coal, Department of Energy and Mineral Resources

Table 10.2.6 Forecast Coal Production of Indonesia

(million MT)

		2000	2005	2010	2015	2020
Domestic Demand	Power	15.2	27.8	39.1	55.1	77.6
	Cement	3.2	4.5	5.7	7.2	9.1
	Others	3.0	3.8	4.8	6.0	7.6
	Subtotal	21.4	36.1	49.6	68.3	94.3
Export		56.0	73.5	81.7	86.0	89.0
Total		75.0	109.6	131.3	154.3	183.3

Source: The Energy Development Research Institute of Japan

(2) Current Coal Transport System

The total production of coal in Indonesia in 2002 is estimated at 103 million tons, of which about 90% are produced from Kalimantan. About 30 million tons of the total production is consumed for domestic use, mainly by power plants and the cement industry, therefore, those amounts of coal are annually transported by domestic maritime shipping.

The following transport system shows a typical case of coal transport from Kalimantan.

The coal is transported from the mine to a transshipment location such as offshore anchorage or coal terminal by using truck and tug & barge, then, transported to the consumer's port, mainly Java, by bulk cargo vessels if transshipped or by the tug & barge if not transshipped.

Figure 10.2.6 Transport System of Coal by PT Adalo Indonesia

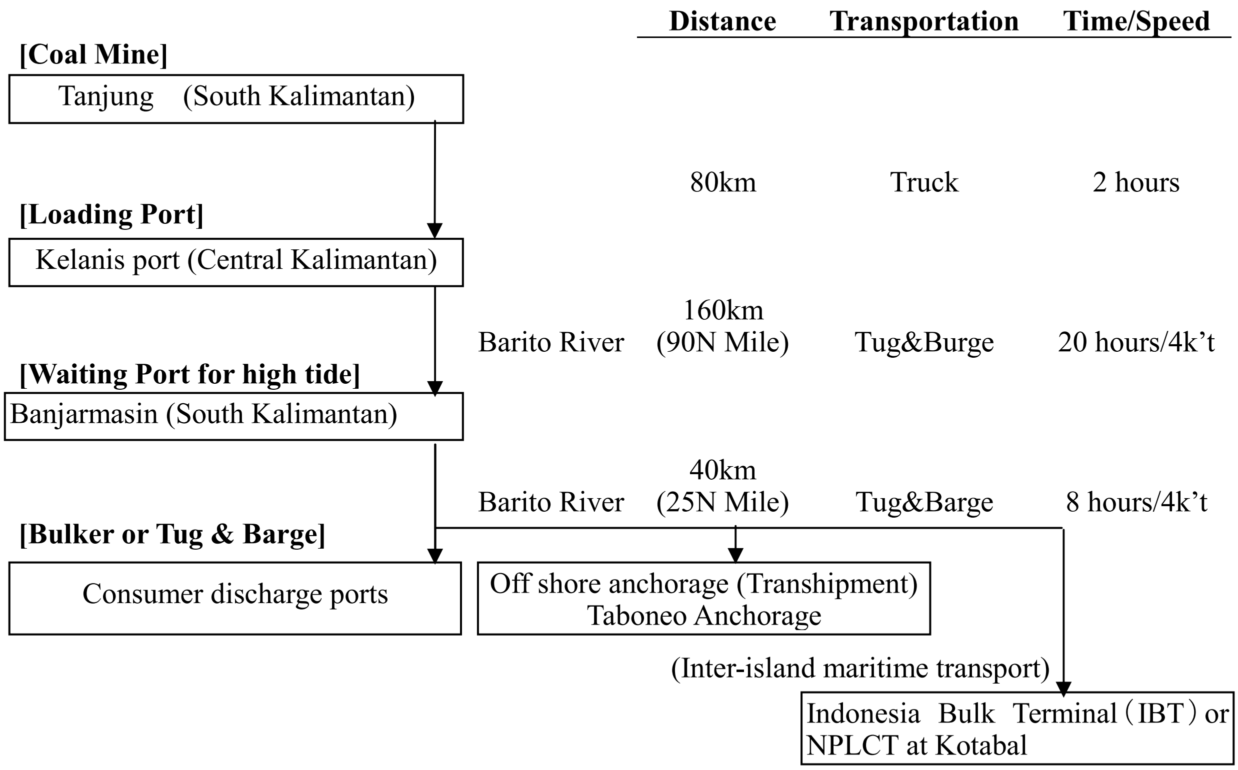


Figure 10.2.7 Transport System of Coal from Kalimantan

(3) Tug Boat and Barge

There are 40 sets of tug and barge in operation at present for coal transport from Kelanis port (inland loading port) to its transshipment location. Six to eight sets are dispatched from Kelanis every day.

Barge size ranges from 6000 DWT to 14000DWT with maximum draft of 5 m. Tug boat with 2,500 HP is normally used for towing the barge. They usually do not have navigation charts of the river and outer harbor. There is no navigation aids along the Barito river, therefore, the tug & barge are operated under careful watch in the daytime and by radar in the night time. Although tug boats are also equipped with echo sounder and GPS etc., additional pilot from the transshipment area is required at the shallow river mouth channel area at Banjarmasin.

Because of the navigation restriction due to the insufficient water depth, the tug and barge have to wait for high tide at Banjarmasin.

(4) Transshipment

At the transshipment location, the coal is transshipped from the barge to larger size bulker by using floating crane or ship gear. The Taboneo anchorage has sufficient draft even for the maximum size bulker and also sufficient capability of floating cranes to handle coal handling.

(5) Current Issues

The coal transport by tug & barge along shallow channels is dangerous that stranded barges and collisions with other vessels are often reported.

In order to cope with this issue, it is urgently required to investigate the maritime transport accidents in detail to establish a navigation safety program. The government agency responsible should immediately take concrete steps towards this end in cooperation with related organizations and shipping companies.

For instance, the introduction of pusher barges, which has more controllability for barge operation, or the introduction of modern equipments for enhancing navigation safety at shallow water channels including information systems to determine ship location precisely and water depth should be seriously examined.

10.3. Reorganization of Inter-island Passenger Shipping

The international passenger shipping industry has come a very long way since the 1920s when ocean liners were popular only among new land dreamers and the affluent. The arrival of the aircraft completely altered the economics of passenger shipping. The success of jumbo jets since the early 1970s resulted to a fleet of out-of-work passenger lines in the declining industry. In due course, a new industry, luxury cruising, has evolved from some heavily financially ailing passenger shipping companies.

In the case of domestic passenger shipping, the industry has evolved in a different way. In the beginning, the domestic shipping industry started to provide passenger services by means of conventional cargo-cum-passenger vessels. Since those vessels mainly allocate cargo space and passengers are regarded as mobile cargoes, a fleet with better accommodation space and exclusive passenger service emerged. After the advent of motorization, certain near coastal voyage demand were shifted to road transport. Motorization also created a new demand: better intermodal connection with road transport, and long-distance ferries or Ro-Ro passenger ship was introduced. This form of service has become dominant in Japan as well as in Philippines, replacing purely passenger ships. Although many perceive that passenger shipping is an old industry with little room for innovations, the industry has introduced new services in the 1990s, i.e., fast craft service and regional cruise shipping. (Refer to Figure 10.3.1 and Figure 10.3.2)

The reasons why Ro-Ro passenger ships enjoy a dominant role in domestic passenger shipping in Japan and Philippines can be grouped into two:

(1) Generally, the passenger shipping business is unstable due to seasonal fluctuation passenger demand. But Ro-Ro passenger ships have regular clients, i.e., truckers and thus the business can become stable. In the Philippines' case, freight and passenger revenues are almost even among long-to-middle ferry ships. (Refer to Table 10.3.1)

(2) Even though vehicles and passengers are not inter-related in any way, the shipping business can service the two because no lift-on/lift-off services and facilities are required. As result, Ro-Ro ships can stay at ports for a much shorter time than other type of vessels and therefore increase voyage time.

In the case of Indonesia's passenger shipping, the government has opted for an alternative direction. Although motorization became a clear trend all over the country since 1983, the government procured purely passenger ships from Germany. Thereafter, PT. PELNI has increased its passenger fleet to 25, including the latest delivery of a Pax-2,000 ship in 2002. After the economic crisis, however, Ro-Ro passenger ships have been introduced domestically and they are thriving.

Figure 10.3.1 Evolution Path of Domestic Passenger Shipping

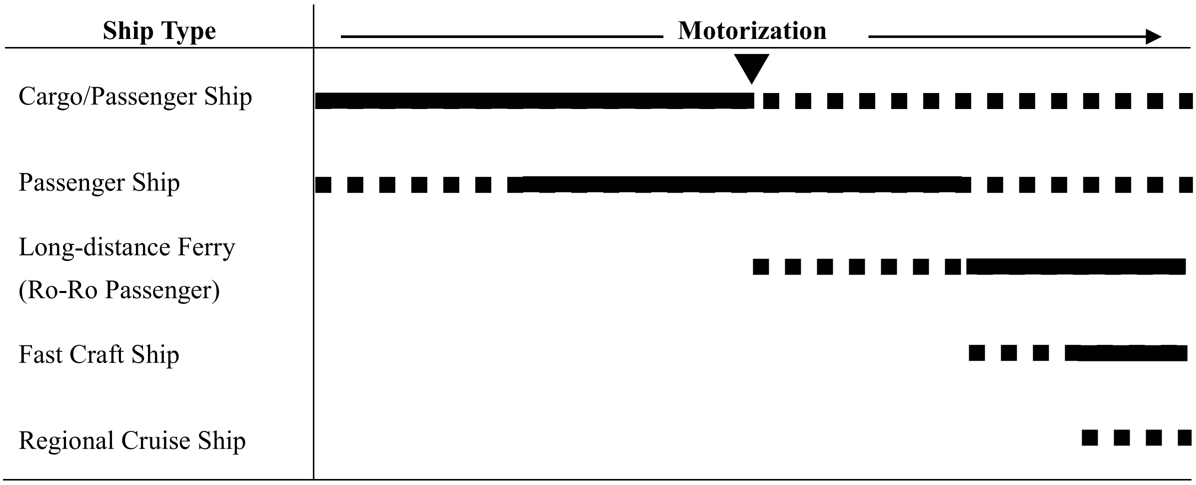


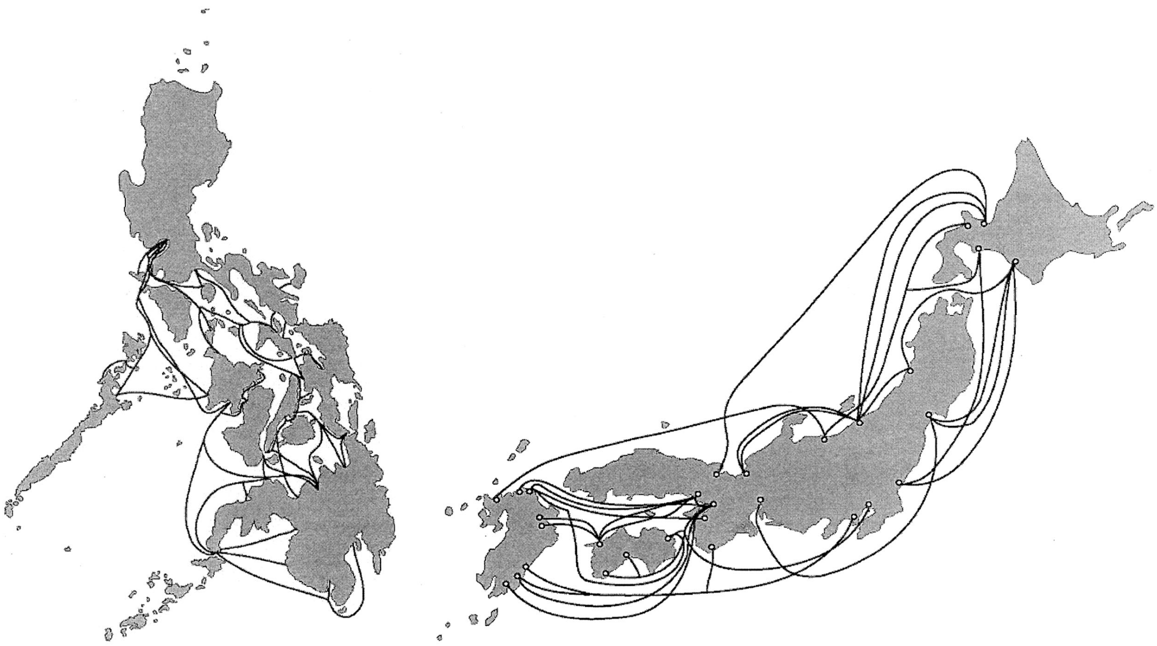
Table 10.3.1 Ferry Services in the Philippines

(as of 2002)

Route Type	Ave. Distance (n.m.)	Ave. GRT	Ave. Pax Capacity	Revenue Composition (%)		
				Freight	Passenger	Others
Long-distance	599	7,563	1,964	45	53	2
Middle-distance	313	7,468	1,956	47	50	3
Short-distance	33	251	214	N/A	N/A	N/A

Source: MARINA, ALMEC Corporation
Note: 10 samples per route type were selected for analysis.

Figure 10.3.2 Long-distance Ferry Network in the Philippines and Japan



10.3.1. Prospects of Inter-island Passenger Shipping in the M/P Period

The role of inter-island passenger shipping cannot be defined without consideration of air transport and its service expansion. Therefore, this section firstly reviews the current competitive pressure of air transport against passenger shipping. The possible delineation of the role of air and sea transport is also discussed.

(1) Sea and Air Competition

Due to the government's deregulation policy on domestic airline industry, many new airlines have entered the market in recent years. New airline routes have been opened and reduced airfare has been offered in the market. The impact of the competition amongst airline companies was so strong and it not only manifested within the airline industry but also it has gradually affected the sea passenger shipping industry.

Table 10.3.2 Number of passengers (year 1997 – 2002)

(unit: 1000 passengers)

Year	PELNI	Non – PELNI	Total
1997	4,383	3,909	8,292
1998	6,414	4,369	10,783
1999	8,673	3,375	12,048
2000	8,662	3,681	12,343
2001	7,335	4,414	11,749
2002	6,800	5,738	12,538

Source: DGSC and PT.PELNI

PELNI unofficially predicts that 2003 patronage would not reach 6 million. As shown above, the total number of passenger has been constant at the level of approximately 12 million passengers per year. However, PELNI's patronage has experienced a sharp decline after year 2000. A large proportion of PT. PELNI's fleet asset has been provided by the government as equity capital contribution. With such government support, the company has been able to make profits until 2001. In 2002, however, PELNI has not made a profit. If PELNI continues to maintain lengthy routes in its network nationwide using large passenger ships, its financial conditions may continue to worsen every year. Appendix 4.1 shows a detailed financial analysis of PT. PELNI.

On the contrary, the patronage of other operators has been on a gradual increase. This implies following facts:

(a) Expansion of airline service has directly affected PELNI's service area and long distance service routes.

(b) Non-PELNI operators are serving on short haul routes like Java sea crossing, where the competition with airline is less notable. Also their service is relatively new and are still expanding.

The current level of tough competition within the airline industry in attracting more passengers by drastic reduction of fare may not continue for a long time, and sooner or later the airline industry will naturally stabilize. However in the long-term, increasing economic development will unavoidably shift the choice of mode of travel to faster alternatives.

Table 10.3.3 Fare Comparison between Airline and Passenger Ship

Origin	Destination	Air travel		Sea Travel		Air fare – Ship fare
		Airfare	Duration	Ship fare	Duration	
		'000 Rp	*Hour-Minute*	*'000 Rp*	*Hour-Minute*	*'000 Rp*
Jakarta	Medan (Belawan)	499.0	02-10	254.5	42-00	244.5
	Batam	385.0	01-30	190.5	25-00	194.5
	Pontianak	309.0	01-20	168.5	32-00	140.5
	Balikpapan	450.0	02-05	357.5	46-00	92.5
	Makassar	599.0	02-10	287.5	45-00	311.5
	Manado (Bitung)	533.0	03-05	500.0	90-00	33.0
Surabaya	Balikpapan	359.0	01-20	250.5	25-00	108.5
	Makassar	332.0	01-20	161.5	24-30	170.5

Source: PT. PELNI, Garuda Airline, Lion Air
Note 1. Air fare: Lowest available fare (as of May, 2003)
2. Ship fare: PELNI economy class fare
3. Comparison on direct service basis

(2) Weaknesses and Potentials

Air transport will continue to expand its network in line with economic development. But it does not mean that the passenger shipping is no longer needed. From the viewpoint of the country's geographical vastness and its archipelagic configuration, passenger shipping will still play a significant role in the domestic transportation system. A country with such vast territory requires at least two modes to adequately provide passenger transport services such as long-distance bus service in the United States, railway services in Japan and shipping services in the Philippines besides well developed air networks.

Indonesian passenger shipping has some weaknesses. The weaknesses indicate the potential areas to improve passenger shipping and are as follows:

- Assignment of large ships on small demand routes: The most important change required in Indonesian passenger shipping is to redesign shipping routes by assigning appropriate ships in terms of type and size to corresponding routes.

- Too many pure passenger ships: More competitive vessels are Ro-Ro passenger ships and fast crafts but currently such vessel types are limited in number. With more Ro-Ro passenger ships and fast crafts the competitiveness of the passenger fleet will be enhanced.

- Protected industry: For a long time, PT. PELNI, a state-own company, dominated the market. The civil aviation industry has recently attracted new industry entrants and was able to promote competition. Competition always rationalizes the activities within the industry and thereby reduces costs. The passenger shipping industry can immensely benefit though the promotion of competition within its ranks.

- Poor terminal facilities: Many ports are located near city centers since most cities started urbanization from ports. Ship passengers who have substantial personal baggage are not comfortable in embarking and disembarking ships despite the terminal's close proximity to city centers. Passenger terminals and access transport services are poorly arranged. Competition for passengers with the airline industry is not limited to fare and travel time, but also covers other aspects of transport services such as convenience and comfort at terminals.

- Poor inter-modal connectivity: Particularly Ro-Ro passenger ships need good inter-modal connection and facilities such as enough parking lots on quayside and reliable voyage schedules.

Figure 10.3.3 Osaka South Port Ferry Terminal

10.3.2. Reorganization Plan of Inter-island Shipping Routes

This section conceptualizes shipping route reorganization plans. The following principles are the basis of reorganization:

- To place adequate capacity of service where demand exists. Therefore, present PELNI routes, where vessels repeating a 14 day journey cycle must be reorganized.

- To develop a hierarchical route network wherein passenger shipping routes are divided into primary routes, secondary routes and tertiary routes depending on traffic demand and location.
- To assign the most suitable vessels on corresponding routes.

(1) Network Configuration

Figure 10.3.4 show the passenger traffic flow under the current network system in the future and Figure 10.3.5 illustrates the passenger desire lines in the future. Key observations of the nature flow of passengers are as follows:

- There is a strong east-west traffic flow
- There is very little demand going to and from the east side to the west side of Indonesia. Most of the east-west traffic is centered in the major cities of Jakarta and Surabaya which are located in central Indonesia.
- There is very strong cross-Jawa Sea traffic: (1) between Jawa and the southern and coast of Kalimantan; (2) Jawa and the eastern coast of Kalimantan; (3) Jawa and the western coast of Sulawesi; and the eastern cost of Kalimantan and the western coast of Sulawesi.
- Though there is almost no one significant port-to-port demand between Jawa and the northern coast of Papua, collectively, the corridor is heavily trafficked.
- There is moderate to strong demand between Jawa and the lower regions of eastern Indonesia, most notably Ambon and Fak-fak.
- There is an important, albeit moderate, passenger service within the islands of the Nusa Tenggara region.

Figure 10.3.4 Passenger Shipping Traffic Demand on Present Network (2014)

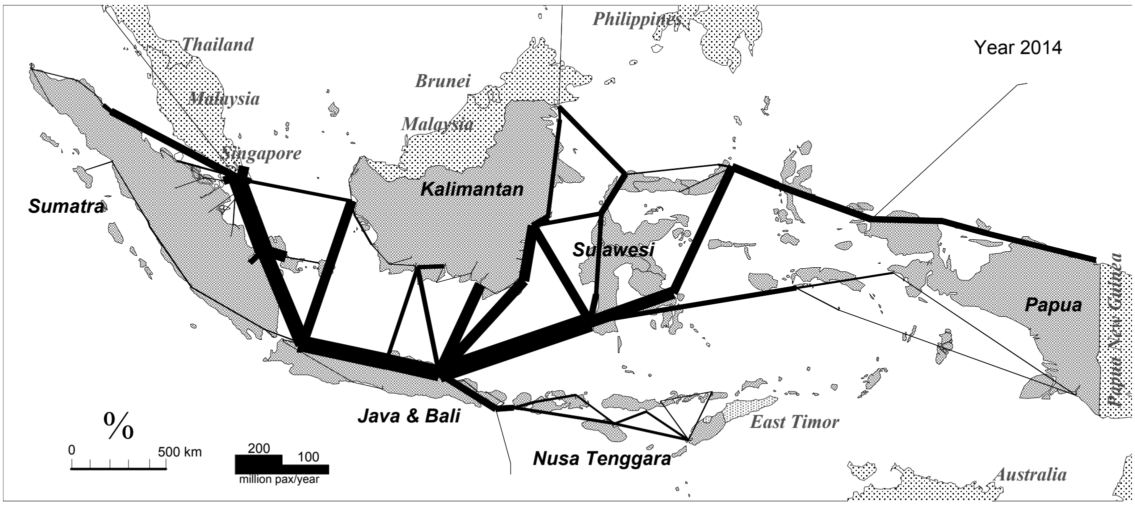
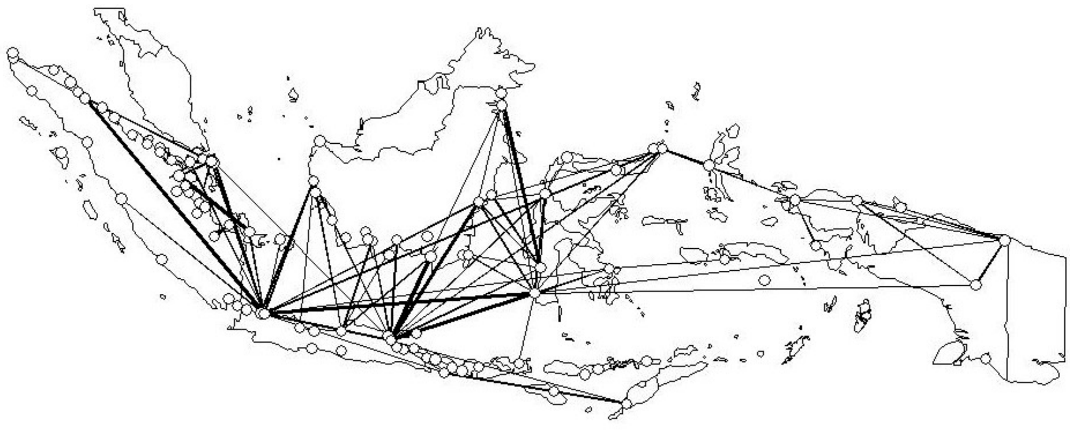


Figure 10.3.5 Inter-island Sea Passenger OD (2014)



/1 OD pairs with volume greater than 40,000

Based on the above observations, it is proposed to re-arrange the current maritime passenger service network, to better suit the nature of flow of maritime passengers. A hierarchical network is developed. From a purely functionality basis, the network is composed of trunk lines, and shuttle and feeder services – see Figure 10.3.6 and 10.3.7 respectively. Trunk lines primary function is to serve as integrator of the network, and to provide good connectivity within the network, thus trunk lines will cater to a high and concentrated demand. Shuttle services primary function is to provide port-to-port service between two ports with moderate to high demand. Feeder services are providing coastal and/or inter-island passenger services in areas with moderate to low demand and to provide enhanced connectivity of local areas to the trunk lines. Details of the route networks design are shown in Figure 10.3.8. Comparison of the current network and the proposed network is shown in Table 10.3.7. It is shown that the proposed network is more cost efficient than the current network by 20% in 2014. However, the proposed network will increase the number of transfers in the network. Under the current network there will be on average 0.16 transfers per trip while in the proposed network, the average is 0.24 transfers per trip – an increase of 0.08 average transfer per trip. Figure 10.3.9 and Figure 10.3.10 illustrates the size of vessel used and the fare box ratio for each route respectively.

Figure 10.3.6 Trunk Line of Proposed Network

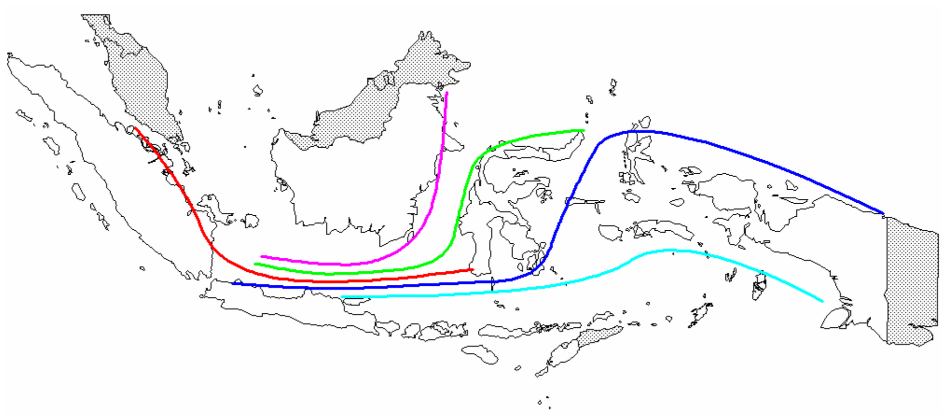


Figure 10.3.7 Shuttle and Feeder Services

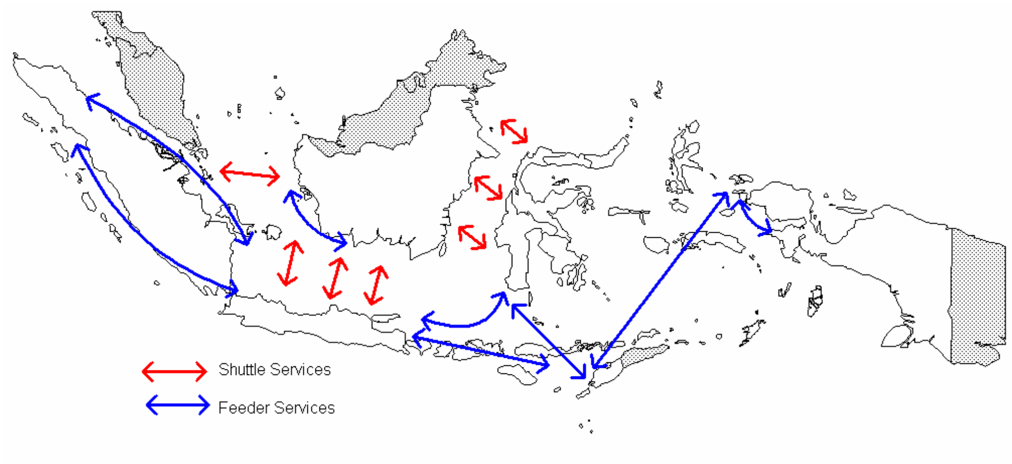


Figure 10.3.8 Proposed Hierarchical Network

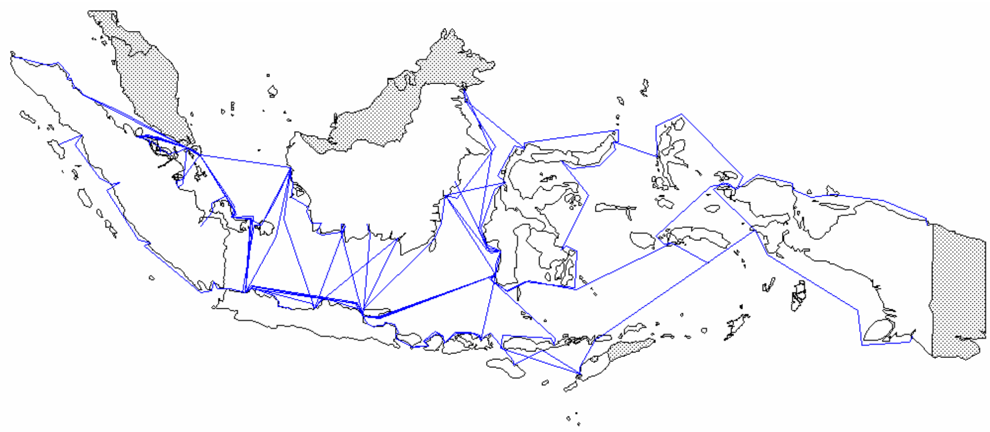


Table 10.3.4 Trunk Routes of Proposed Network

TR01	Tg. Balai Karimun – Batam – Tg. Pinang – Pangkal Balam – Tg. Priok
TR02	Belawan – Batam – Kijang – Tg. Priok – Surabaya – Makassar
TR03	Nunukan – Tarakan – Balikpapan – Kotabaru – Surabaya – Tg. Priok
TR04	Surabaya – Makassar – Ambon – Bandaneire – Fak-fak – Merauke
TR05	Tg. Priok – Semarang – Surabaya – Makassar – Kendari – Gorontalo – Bitung – Ternate – Sorong – Manokwari – Biak – Jayapura
TR06	Bitung – Toli-toli – Pantoloan – Pare-pare – Makassar – Surabaya – Tg. Priok
TR07	Belawan – Batam – Kijang – Tg. Priok

Table 10.3.5 Shuttle Services of Proposed Network

SS01	Sunda Kelapa – Pontianak
SS02	Tg. Pandan – Pontianak
SS03	Tg. Priok – Pontianak
SS04	Pontianak – Semarang
SS05	Kumai – Semarang
SS06	Kumai – Surabaya
SS07	Semarang – Banjarmasin
SS08	Sampit – Surabaya
SS09	Banjarmasin – Surabaya
SS10	Makassar – Balikpapan
SS11	Nunukan – Pare-pare
SS12	Kijang – Pontianak
SS13	Balikpapan – Pantoloan
SS14	Pare-pare – Balikpapan
SS15	Toli-toli – Tarakan

Table 10.3.6 Feeder Services of Proposed Network

FS01	Malahayati – Lhokseumawe – Kuala Langsa – Pangkalan Susu – Belawan
FS02	Dumai – Batam
FS03	Kuala Tungkal – Kuala Enok – Kijang
FS04	Palembang - Muntok
FS05	Muntok – Pangkal Balam – Tg. Pandan
FS06	Pontianak – Teluk Air – Ketapang – Sukamara – Pangkalan Bun – Kumai
FS07	Samarinda – Pare-pare – Makassar
FS08	Gunung Sitoli – Sibolga – Teluk Bayur – Pulau Baai – Panjang – Tg. Priok
FS09	Surabaya – Meneg/Tg. Wangi – Benoa – Bima – Waingapu – Ende – Kupang/Tenau
FS10	Benoa – Lembar – Badas – Bima – Makassar
FS11	Kupang/Tenau – Kalabahi – Ambon – Sorong
FS12	Sorong – Fak-fak
FS13	Tg. Priok – Cirebon – Tegal
FS14	Makassar – Maumere – Kupang/Tenau
FS15	Batam – Tg. Pinang
FS16	Kuala Tungkal – Dumai
FS17	Batam – Dumai
FS18	Tg. Balai Karimun – Dumai
FS19	Kijang – Dumai

Table 10.3.7 Comparison between Existing Network and Proposed Network

Item		Existing Network 2002	Existing Network 2014 and Beyond	Proposed Network 2014 and Beyond
Number of Routes		55		41
Route Length (n.mile)		168,805		48,144
Average Route Length (n.mile)		3,069		1,174
Embarking + Transfers (pax)		14.7 million	21.7 million	23.2 million
Person trips (pax)		12.5 million	18.7 million	18.7 million
Transfers: Person trips		0.17	0.16	0.24
[A] Traveled Pax-mile		5,292 million	8,240 million	8,521 million
[B] Direct Pax-mile		5,081 million	7,896 million	7,896 million
Directness of travel index [A/B]		1.04	1.04	1.08
Fleet Capacity (pax)		95,000	117,160	107,000
Necessary Fleet Profile (units per vessel size in pax capacity)	2,000 pax	11 units	18 units	16 units
	1,000 pax	36 units	42 units	42 units
	500 pax	17 units	22 units	52 units
	315 pax	10 units	9 units	-
	210 pax	44 units	48 units	13 units
	150 pax	108 units	100 units	31 units
	Total	226units	240 units	154 units
Fleet productivity (Pax-mile/cap)		53,000	67,000	74,000
Ave. LF		0.72	0.72	0.76
System Operating Cost (mill. Rp)		2,262,000	3,258,000	2,707,000
System Operating Revenue (mill. Rp)		1,762,000	2,743,000	2,837,000
System FBR		0.78	0.84	1.05
System Total Cost/2 (mill. Rp)		3,400,000	4,270,000	3,477,000
System Revenue/Total Cost		0.51	0.64	0.82

/1 annual values
/2 Total cost = operating cost + capital cost

Figure 10.3.9 Vessel Size Used per Route (2014 and Beyond)

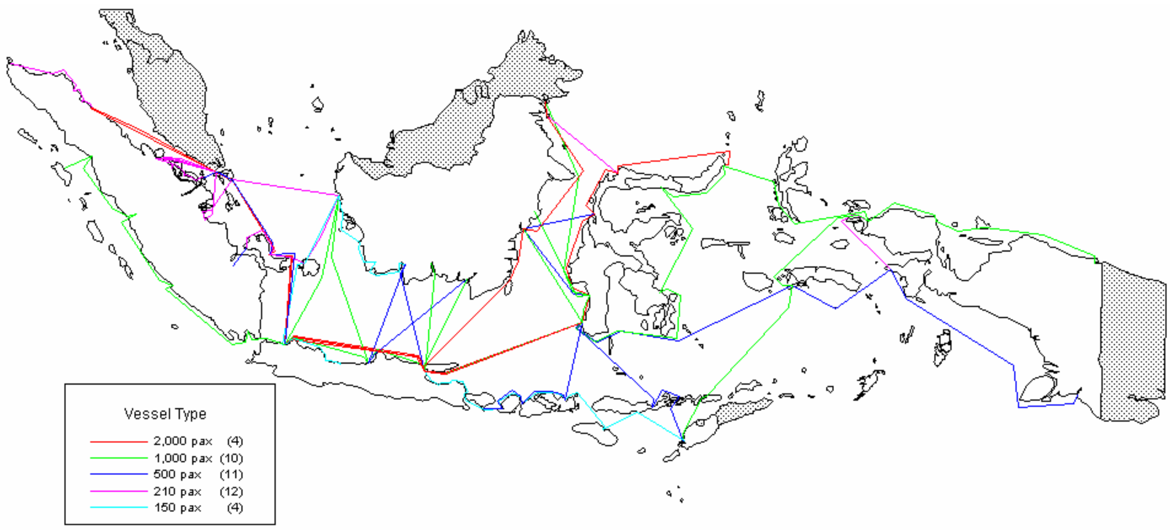
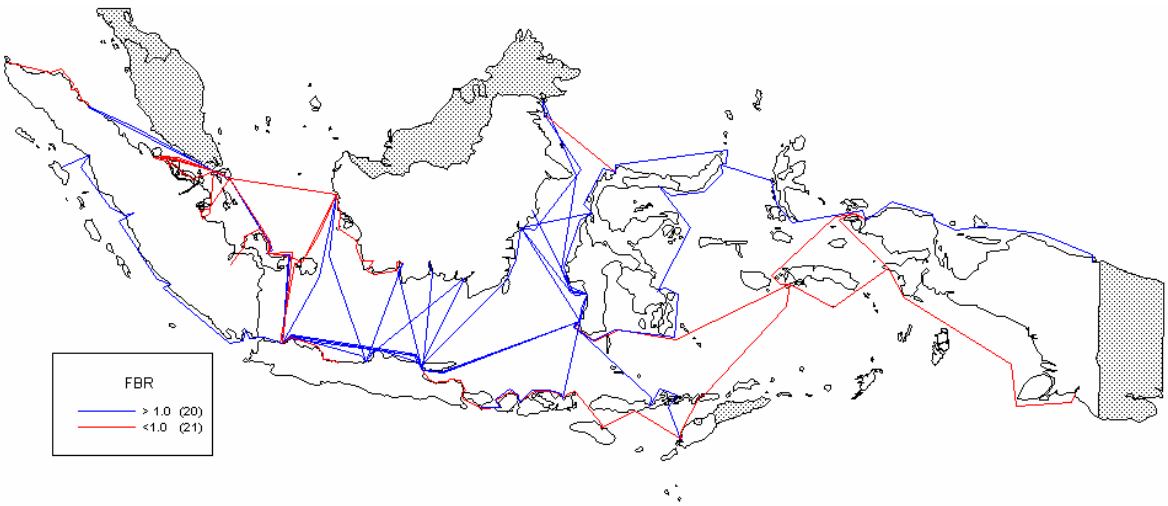


Figure 10.3.10 Fare Box Ratio per Route (2014 and Beyond)



10.3.3. Financial Evaluation on the Proposed Networks

From the viewpoint of policy and regulation setting, it is useful to classify routes into primary, secondary and tertiary routes as described in Table 10.3.8.

Table 10.3.8 Route Classification Matrix

	Number of Vessels Operating in Route < 2	**Number of Vessels Operating in Route ≥ 2**
Not Commercially Feasible (FBR < 1.0)	**Tertiary Routes** – routes that require government financial support, e.g. PELNI operation	
Commercially Feasible (FBR ≥ 1.0)	**Secondary Route** – routes that are feasible for private sector operation, but could accommodate *only* 1 operator.	**Primary Route** – routes that are feasible for private sector operation and could accommodate *more than* 1 operator.

The regulatory regimes of each type of service are evidently different. Tertiary routes would be requiring government operational subsidies, thus would be requiring strict accounting and regulatory regimes, to ensure that subsidies are used efficiently. Secondary routes are commercially feasible routes, but would allow for one operator, thus services are prone to monopolistic abuse. Regulatory regimes need to ensure that the public will be safeguarded against such abuses. Primary routes on the other hand can make use of competitive environments to ensure quality of service. Regulatory regimes for primary routes therefore needs ensure that collusion does not ensue and that competition will be healthy. The following illustrates the classification of routes for the years 2014 and beyond.

Figure 10.3.11 Route Classification (2014 and Beyond)

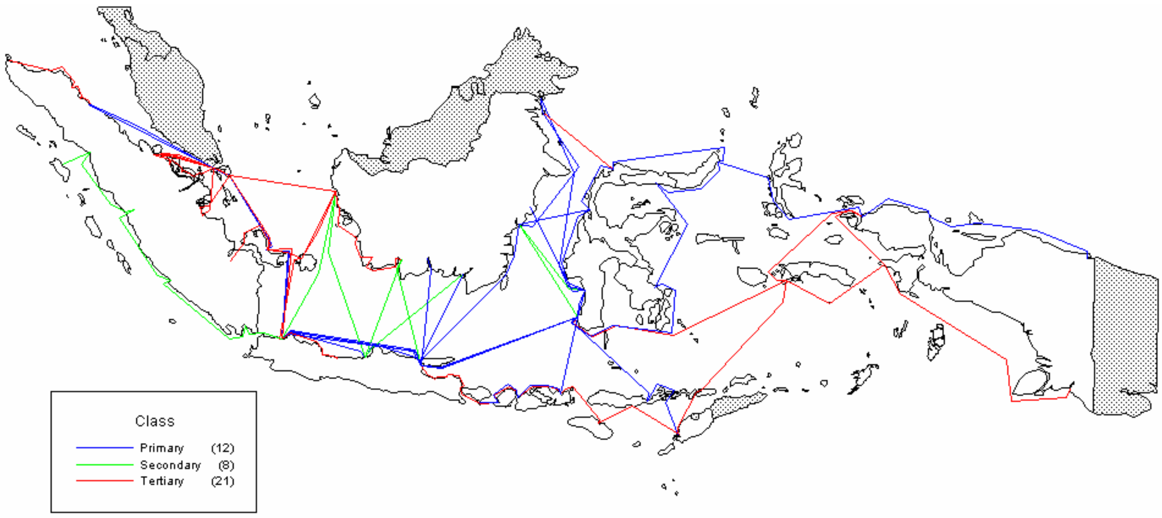


Table 10.3.9 Perspectives of Operation per Route Class (2014 and Beyond)

	Primary Routes	Secondary Routes	Tertiary Routes
Number of routes	12	8	21
Passenger Embarkation ('000 pax)	13,280	1,957	8,010
Pax-mile Served (million)	5,874	726	1,921
Average Route LF	0.87	1.05	0.58
Ship Size Used (pax capacity)	500 ~ 2,000 pax	500 ~ 1,000 pax	150 ~ 500 pax
Number of vessels	56	9	89
Fleet Capacity (pax)	69,046	6,730	32,118
Operating Cost (billion Rp)	1,589	148	971
Operating + Capital Cost	1,948	191	1,339
Revenue	1,956	242	640
FBR	1.23	1.63	0.66
Total Cost/Revenue	1.00	1.26	0.48
Route Names	TR02, TR03, TR05, TR06, TR07, SS08, SS09, SS11, SS13, FS07, FS10, FS14	SS03, SS04, SS05, SS06, SS07, SS10, SS14, FS08	TR01, TR04, SS01, SS02, SS12, SS15, FS01, FS02, FS03, FS04, FS05, FS06, FS09, FS11, FS12, FS13, FS15, FS16, FS17, FS18, FS19

10.3.4. Increasing Cargo Carriage of Passenger Vessels

Under the current situation, typical passenger operation has not been able to tale advantage of the potential for cargo carriage services to increase revenue. However, some private companies have been operating Passenger cum Ro-Ro services, particularly for cross-Jawa Sea routes.

If demand is available and if joint passenger and cargo operations would not affect operations significantly, it is in most cases advantageous to introduce cargo operations to improve profitability. As in the case of Philippines, passenger services derive about 40% of revenues from cargo operations.

There are types of passenger vessel types considered in this regard: (1) purely passenger vessel; (2) passenger cum Ro-Ro vessel; and (3) passenger cum cargo vessel. The criterion for the selection of the appropriate vessel type is shown in Table 10.3.10. based on this criteria, the type of vessel type per route is shown in Figure 10.3.11. The resulting changes in fare box ratio and overall profitability is summarized in Table 10.3.11. It is clear from the comparison that profitability will markedly improve if cargo carriage operations are integrated in passenger shipping service.

Table 10.3.10 Criteria for Vessel Type Selection

Type	Criteria
Passenger Vessel	For trunk routes (routes which serve as backbone of the network). Trunk route vessels have to serve large amounts of passengers and have to call at many ports serving as the linkage between main regions. Operation needs to be simplified so that efficient passenger operation can be achieved – thus only passenger vessels with no or limited cargo carrying capacity only.
Passenger cum Ro-Ro Vessel	For vessels that serve high passenger demand and routes that have potential demand for Ro-Ro (for example routes that are currently being served by Ro-Ro vessels) and at mid-distances – i.e. 500~700 nautical miles. These type of conditions are very typical for cross-Jawa Sea routes between Jawa and Kalimantan and Kalimantan and Sulawesi. The use of Ro-Ro vessels is advantageous because it will yield at higher revenues. There are two types of pax/Ro-Ro vessels considered (1) 1,000 pax and 184 vehicle capacity and a (2) 500 pax and 92 vehicle capacity. The former has a cost profile approximately the same as a 2,000 pax capacity vessel and the latter approximately the same as 1,000 pax capacity vessel. The typical fare of vehicles is 2.5 million Rp.
Passenger cum Cargo Vessel	All other routes. However, the cargo carrying capacity will vary depending on the situation. If cargo demand is present, cargo services will lead to higher revenues for operators – thus considered more advantageous than operating purely passenger vessel only. The nature and extent of cargo carrying capacity will vary depending on the situation of each route. To simplify the discussions, costs and revenues related to cargo carriage for such vessels are not considered quantitatively only qualitatively.

Figure 10.3.12 Vessel Type per Route

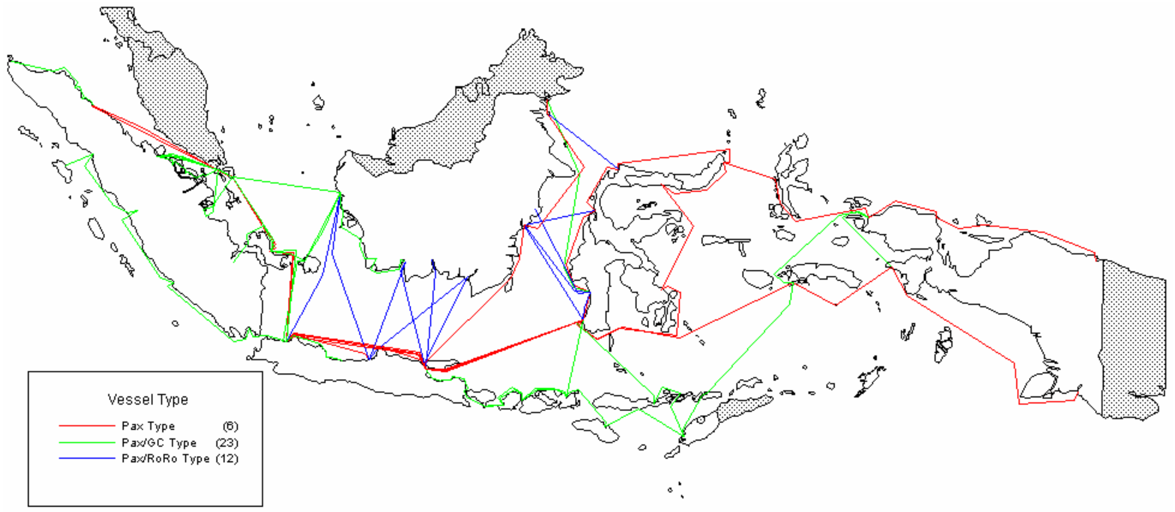


Table 10.3.11 Comparison of Systems With and Without Ro-Ro Operation for Passenger Service (Year 2014 and Beyond)

	Without Ro-Ro Operations	With Ro-Ro Operations
Operating Cost (bill. Rp)	2,707	2,939
Operating Cost + capital cost (bill. Rp)	3,477	3,745
Revenue (bill. Rp)	2,837	3,567
FBR	1.05	1.21
Revenue/Total Cost	0.82	0.95

10.3.5. Considerations for Effective Route Reorganization

(1) Management scheme of new route network

Most of the trunk line and shuttle service routes have potential to be commercially viable, while majority of feeder service routes may be unable to operate on fully commercial terms. Still all elements of the network have to be properly developed as all are key and indispensable elements of Indonesian domestic passenger shipping.

Any shipping company that wants to enter into the passenger shipping business should operate on primary or secondary routes. Even at the current stage, several private shipping lines already operate RORO passenger ships on some of these primary and secondary routes. Prohibition of the participation of PT.PELNI is not necessary as long as fair competition is ensured and that PT. PELNI does not get undue advantages from the government.

In regard to the management scheme of the tertiary route network, it might be worth considering the full participation of local governments. Since the maintenance of these routes is a major concern of local residents, local government should have certain responsibility in its management. PT. PELNI, if they stay within the framework of state owned companies for coming decades, may play an important role as operator of the tertiary network lines. If there is any private shipping companies that would want to do business in a certain local area that has potential for commercially viability, their participation should not be excluded.

The government may help the development or maintenance of these local area network routes by disbursing subsidy.

It is interesting to note that the routes for passenger local area network is overlapping with those of pioneer shipping, for which the government has for a long time been providing considerable amount of subsidies.

Moreover, it is worth considering the consolidation of pioneer shipping companies as a long-term strategy for the management of local area networks.

It is also essential to strengthen the cargo carrying capacity of passenger-cum-cargo vessels deployed at local area networks to match and cater for the cargo carrying requirement of pioneer shipping.

(2) Transitional arrangement

In the course of the actual implementation of the new passenger network scheme and the new type of vessels as discussed above, re-assignment and partial conversion of the present fleet is an unavoidable and important issue.

Currently, PT. PELNI has a fleet of 25 purely passenger vessels. These are purchased as brand new vessels within the period of 1983 to 2002, thus the oldest vessel is 20 years old and newest one is just one year old. These vessels are constructed as pure passenger vessel with one small cargo hatch in the fore part of the vessel. It is impractical to consider the conversion of such vessels to RORO passenger vessel considering the technical and cost issues involved. However, it would not be impractical to consider refitting work to add one more cargo hold of similar capacity by sacrificing several sections of the passenger area. It would be possible to double the cargo space of the existing vessels. It should be further analyzed if the expanded cargo capacity would be sufficient to absorb all the cargo transported by pioneer shipping and if such investment is financially sensible especially considering that many of the vessels are already old.