

CHAPTER 7 STRATEGY FOR EFFECTIVE PORT ADMINISTRATION, MANAGEMENT AND OPERATION

7.1 Administration and Management Policy

7.1.1 General

For effective port administration and management, it is crucial to transfer a certain amount of authority from the central government to respective port administrators. And it is necessary to ensure proper and balanced human resources. In addition, decision-making procedure for planning, financing and construction, etc. should be standardized according to the type and role of port in order to clarify the each responsibility. Different port area should be clearly allocated in order to guarantee smooth decision-making and conduct of daily port activities, and to ensure the space for future port development.

7.1.2 Policy for Commercial Port

While it is understood that MOC/DGSC have a kind of rough criteria for designation of "Commercial Port" mostly on the basis of historical trend of cargo handling volume and future prospect, more reasonable concept or criteria need to be developed. "Commercial Port" needs to be selected on the basis of reasonable assessment on its potential function including economic impacts on national/regional development, cargo handling capability, financial viability and other relevant features.

It is recommended to strengthen the planning function of Planning Bureau of MOC through bestowing it with institutionally authorized power and adequate administrative capability for the assignment.

Any grant aids in initial investment to port facilities or in operation deficit of port service activities should gradually be abolished except for purely non-profit facilities or its operation like in the case of a small jetty used for transporting goods or passengers to/from remote islands to support its daily life.

Regarding private participation in the container terminal operation business, it is recommended in principle that a more non-conditional or deregulated contract system with the interested private entities should be applied. As a result, possible negative effects caused by monopolistic situation of IPCs port operation business under fair and efficient competitive business field will be avoided.

The current ferry service administration is rather complex and includes various issues and problem areas. For improvements of ferry service administration, effective coordination of port planning on ferry and other public port facilities, realization of comprehensive water transport planning for passenger and cargo vehicle traffic and so on can be considered.

7.1.3 Policy for Non Commercial Port

(1) General

There are 656 public ports in Indonesia. While profitable 112 ports are managed and operated by IPCs, other non-profitable small 544 ports whose main purpose is to transport goods for people, are directly managed by the government represented by "Ministry of Communications Regional Offices" ("KANPEL").

In respect to port classification, only 10 ports are "international port" and other 534 ports are "local port". While the former are opened for international trade where foreign vessels could call directly, the latter are not opened. The non-commercial ports have been playing an important role especially for transportation in isolated islands such as IrianJaya and Maluku.

(2) Recommendation

Taking above-mentioned matters into consideration, the following recommendation can be made.

1) Increase of National Budget for Development of Non-Commercial Ports

Taking account of insufficient facilities and importance of the non-commercial ports, the national budget for the developments shall be increased. DGSC should take care of the increase on enrich the national budget. In order to do so, DGSC should consider carefully the following measures.

- ① To establish "Special Account System" for development of non-commercial ports facilities (see "Chapter 6.1.2")
- ② To collect port charges without fail
- ③ To increase tariff rate as necessary (adjustment to cope with inflation)

2) Strengthening of Functions of KANWIL & KANPEL

Direct management of non-commercial port affairs handled by DGSC cause inefficient operation for the government and inconvenience for users. In order to improve the managing and operational system of non-commercial ports, the functions of regional office of MOC (KANWIL & KANPEL) for formulating "Port Master Plan" should be strengthen.

It is one idea to transfer the specific authority of licensing procedure for "special port & wharf" (e.g. for wharves with length less than 50 meters) and "environmental assessment" for small-scale projects to KANWIL. In order to do so, human resources of KANWIL &

KANPEL also should be strengthen.

3) Transfer Management of Minor Non-Commercial Ports to Local Governments

DGSC should gradually promote to transfer the management of minor non-commercial ports to the local governments due to the following reasons ;

- ① Direct management of non-commercial ports executed by the central government may cause inefficient operation and high burdens for the government.
- ② It is advisable that local affairs should be dealt with in accordance with actual circumstances of the local areas and people.
- ③ This idea will agree with the concept of decentralization and promotion of local autonomy, which is very common in developed countries (U.S.A, Japan & most European countries).

In this case, the following concrete measures should be carefully examined among related agencies.

- ① The central government shall constructs and maintains the non-commercial ports at its own funds.
- ② A part of tariff revenues should be transferred to the local government for the management.

7.1.4 Policy for Special Port

(1) Current Situation in Indonesia

In Indonesia, there are 1,213 special ports and wharves to handle specified commodities such as petroleum products, coal, fish, fertilizer, wood products, wheat, tourism etc. The special port and wharves are developed and operated under the permission on MOC. These special ports and wharves are constructed, owned and operated by private companies to handle their own raw materials and products.

While IPCs control "special wharf" whose port facilities are located in "port working area" of IPC port, KANPEL controls "special port" whose port facilities are located out of "port working area" and even "special wharf" whose port facilities are located in "port working area".

(2) Administration Policy to be Carefully Examined

1) Tariff Issue

- ① Justification of Tariff Levy

Except for “anchorage”, it seems difficult for the government or IPC to justify collecting “berth dues” and “wharfage” from users of special ports because “no service” usually means “no charge”. Furthermore, the amount of some tariff in “special wharf” is determined on “negotiation base” between IPC and private sector. Besides, the relationship between the tariff revenue and the expenditure for management is unclear.

In Japan, port management body doesn’t collect port tariff from owners or users of special ports because they construct special ports at their own cost. Besides, inducement of the private sector into the public port area has been important strategy for Japanese public sector. However, they are often required to share the cost of “infrastructure development” in accordance with degree of the benefit they receive based on “clear legal framework” and “transparent procedure”.

② Tariff Issues in “Special Wharf”

In special wharf within “non-commercial (government) port”, the port charges are paid to IPCs at present. However, the tariff should be paid to the government. There is a danger that allowing this kind of privilege for IPCs makes the nature mere “rent seeker”.

2) Discouragement of Development of Special Wharf

In Indonesia, the development of “special wharf” in adjacent of “public port” is more and more required in order to promote effective regional development. However, there are following two factors which discourage the development

- ① The above-mentioned tariff issues and the nature of IPCs prevent most of the private sector from locating in the jurisdiction of IPCs (special wharf).
- ② The “Shipping Law No.21” and “Government Regulation No.70” require the private sector to cooperate with IPCs. Thus, the private sector must obtain the permission from “IPCs” as well as the government. In this case, various kinds of conditions are forced to the private sector.

There is a danger that the excessive intervention of IPCs discourages the development of special wharf within IPC’s jurisdiction. Therefore, the government should take pains to justify collecting the port charges, eliminate the obstructed causes and reevaluate the compulsory legal requirement (see Chapter 6.3.2). Otherwise, it is one idea to legitimate “cost-sharing with beneficiary” in place of tariff levy system (see Chapter 6.1.2.3 Cost sharing system with beneficiary).

3) Utilization of Special Port & Wharf

The utilization of special port and wharf has the following two cases (case 1 & case 2).

- Case 1 : Development of “ a new public port” adjacent to “an existing special port”
Case 2 Introduction of “ a special port (wharf)” adjacent to “ an existing public port”

The concept of “Case 1” aims to develop the port effectively by developing public ports including development of the “concerned industrial sites” adjacent to special ports. On the other hand, that of “Case 2” aims to promote efficient use of port in the region and create a large-scale “industrial zones” based on the ports.

4) How to Draw a Line between “Port Working Area” and “Water Safety Area”

At present, the borders between port working area and water safety area are determined by the “negotiation” between DGSC and IPC. It is necessary for the government to establish the clear and transparent criteria how to draw the lines. DGSC is now formulating clear “guideline” in order to cope with this.

5) Documentation Problems

According to Communication Minister Decree No.27, manager of special ports must submit the operational report including data of cargo volume to DGSC every month (article No.28 (1) g). However, in reality, only a few reports are sent to DGSC. DGSC has just introduced computerized “data-base system” in order to enrich the necessary information regarding special port & wharf. .

(3) Recommendation

Taking account of the above-mentioned matters, the following recommendation can be made.

- 1) In special wharf within “non-commercial port”, the port charges should be paid to the government which bears the cost for management of the area.
- 2) The government should strive to justify collecting the port charges, eliminate the obstructed causes and reevaluate the compulsory legal requirement. Otherwise, it is one idea to legitimate “cost-sharing with beneficiary” in place of tariff levy system.
- 3) Effective utilization of special port & wharf should be carefully considered. For example, the development of “a special wharf” in adjacent to “a public port” will be more and more required to promote effective regional development. In order to do so, the government should strive to remove the above-mentioned obstructed causes which discourage the effective regional development.

- 4) The government should also establish clear and transparent criteria how to draw the line between the “port working area” and “water safety area”.
- 5) DGSC shall give appropriate instruction to the managers of special port & wharf through supervision of local regional office to make them submit the operational reports every month.

7.1.5 Transfer of Competence

In coming years, the central government should concentrate on administrative affairs such as policy making or decision-making related to all ports. Actual port management or operational works of local or non-commercial ports should be entrusted to local government as much as possible. Of course, to achieve a nationwide well-balanced development of ports, it is necessary for DGSC to exercise certain control over local governments. In future, the function of DGSC should be centered on such tasks so that the expanded affairs related to port management can be conducted well.

7.2 Formulation and Authorization System of Port Master Plan

Ports have close relation to the regional, national and international economic activities. In this respect, it is essential that port services be offered under careful planning so that they can support these activities and generate overall prosperity. Hence, a port plan which considers not only immediate demand but also the most likely long-term scenario should be established and made public. The port can then be developed efficiently according to such a plan. Port master plan should be the framework for realizing the ideal port condition. It should serve for systematic integration of various demands and harmonized formation of a future superior port space.

Provisions of port master plan should contain planning of special wharves, ferry port, navigational channel and other related facilities which would fall under the same port administrative area (DLKR: port working area, and DLKP: port safety area in Indonesia). While unification of port planning concept and procedure should be maintained, this does not mean that all relevant port facilities must always be developed and managed by one single organization. The concept implies that individual facilities could be developed and operated separately by the different management bodies, if appropriate according to nature of the facilities.

It is desirable in principle that the port master plan is originated by the individual "Port Management Body (PMB)" which is responsible in promoting their regional prosperity through planning and developing ports in their region, and therefore be responsible in port planning as a "Port Planning Body (PPB)".

Opinions from government agencies, local people, users and people of academic fields should be invited and reflected in the master plan accordingly by establishing a permanent port council. If establishment of such a system would be difficult, an alternative organization with similar function needs to be set up even on an ad hoc basis.

In order to secure high applicability and practicability of port master plan, it is necessary to have a nationally unified standard for port planning factors. It needs to include basic planning

objectives and method, cargo traffic demand forecast, type and size of port facilities and ships calling, port capacity estimation, investment requirements and cost allocation, port environmental standards and assessment, and so on.

7.3 Improvement of Port Operation

International shipping lines are operated on extremely tight schedules under the hard competitive shipping market. Delay on the schedule causes a heavy cost burden to the shipping lines. As a result, the terminal operators are always requested to provide shipping lines with quick dispatching service for vessels arrived at the port. Berthing arrangements and preparatory actions for cargo handling operation (berthing plan, loading and unloading sequence, allocation of cargo handling equipment and stacking lots of containers, and so on) for the calling vessels should be completed well before their arriving at a port. Preparation of documents should also be done long before the vessels' arrival, and the terminal operators are required to provide shipping companies with punctual operations not to interfere with shipping schedule. In order to cope with above situation, the terminal operators should improve their management and operations in Indonesia.

The study team suggests following items.

1) Conventional terminal in the port of Tanjung Priok

a) It may be worthwhile to increase terminals which is not on the current practice of the terminal operators system. So that, any stevedores shall allow to participate in operation of terminal of their business connection with shipping lines for fair and efficient cargo handling operation.

b) Currently, stevedoring workers are supplied from the labor union through ADPEL-I. This system often jeopardizes timely and adequate provision of well trained workers for reliable and stable stevedoring activities. Direct procurement of the workers from labor market should be allowed for increasing cargo handling productivity.

2) Container terminal in the port of Tanjung Priok

a) Introduction of so called first come – first serve system may be one of the possible alternatives for more flexible use of the available berthing spaces of the terminal.

b) To create competitive business field for three terminals of the port, the basic concept of the idea is to remodel three container terminals (CT-I, II, and III) into three semi-independent terminal operation entities or subsections under overall management of IPC-II.

3) Conventional terminal in the port of Tanjung Perak

a) In order to cope with the increase in cargo handling volume, cargo handling by ship gear should be shifted to shore crane handling operation.

b) For the effective use of cargo handling equipment, private stevedores shall allow to hire the equipment from competitive suppliers of the equipment including IPC, ADPEL-I and other private companies.

4) Container terminal in the port of Tanjung Perak

a) Well coordinated operational policy should be considered, if possible, for maximizing advantage situation of the continuous berth of ICT-II and ICT-III.

5) Procedure of documentation

a) The one roof system should be employed in every port to eliminate cumbersome procedure of bringing documents from one department to another.

b) The EDI system should be employed in every container port to makes the procedure at the port more reliable and easier without many kind of papers. The EDI system linked with customers and relevant government agencies, can minimize paper flow, eliminate errors in communications and faster response.

7.4 Environmental Consideration in Port Development and Use

7.4.1 Environmental Impact Factors

Generally, the port activities are closely related to the industrial development and other projects in hinterland. It brings impacts and effects on wide area combining with economic growth and urban activities.

Port activities impact on environment in various ways through the implementation of construction, closing water area by breakwater, navigation of vessels, cargo handling at wharves and so on. Furthermore, in the surrounding urban areas of port, mostly, the population increases with the growth of economic activities, and various pollution issues or impacts on natural environment tend to get serious. (Environmental impact components and factors related to the port development are demonstrated in the main report.)

A large-scale oil spill from tanker seriously impacts on economic activities, operation of adjacent ports and the ocean environment, particularly fisheries in surrounding areas. In such an event all possible measures for collection and treatment of oil as prevention of diffusion must be taken.

7.4.2 Countermeasures for Environmental Conservation

In the implementation of port development project, various countermeasures for environmental conservation should be proposed according to the type and size of impact. The impacts caused by a port development on the background areas and the present environmental circumstances must be assessed accurately. In case the predicted level is not in compliance with an environmental conservation target, feasible countermeasures should be supposed for further assessment. (The countermeasures for respective environmental impacts are indicated in the main report.)

7.4.3 Promoting Sea Transportation from the View Point of Environmental Conservation

The sea and railroad transportation are both highly energy efficient and gentle to the environment. Because of their high transportation capacities, the so-called "Modal Shift" can assist in the reduction of labor, dissolution of traffic congestion, saving of energy and conservation of the global environment.

The access between the wharves and passenger terminals and the trunk roads and railroad stations should be strengthened through the construction of road, railroad, chassis yards and car parks, etc. In order to promote the domestic trade by ferryboat or Ro-Ro vessels, the unit load terminals and ferry terminals should be constructed or expanded.

7.4.4 Basic Concepts for Port Environmental Consideration

Environmental conservation in port development should be considered from the beginning of planning. It needs to be fully discussed and reflected in formulating the port master plan.

To suitably grasp each environmental impact factor, the impacts should be analyzed quantitatively as much as possible. An EIA report must clarify how environmental information is assembled, analyzed and used in selecting, planning, designing and executing of the project. And, it is very important to clearly indicate the basis of evaluation.

EIA should cover all related areas. If existing data are not adequate to predict and evaluate the impacts, field survey must be conducted in order to collect all needed data. Future background of air and water quality, etc. including the impacts which will be not always directly related to the port development or activities should be grasped as accurately as possible and reflected in the estimation.

Detailed standards or guidelines of environmental consideration need to be established. Countermeasures for minimizing negative impacts and maximizing positive impacts as well as the methods for estimation of the environmental impacts should be indicated in the guidelines.

It is very important that an adequate environmental impact monitoring system is established and securely implemented so that various environmental related data can be accumulated and reflected in other port projects. This system must clarify the proponent's obligation and responsibility to implementation, scope and publicity of monitoring survey.

The necessity of public participation will be elevated accompanied with the progress in living and educational standards. The "right-to-know" of any community that may be affected by a project should be respected. A certain report which includes the public opinions and views of the proponent obtained in the course of the formation of a port master plan should be made public. In addition, to grasp the effect of the countermeasures for environmental conservation and to make improvements to the environment, if necessary, the system of the post-EIA based on the monitoring results should be established.

In large and intersectoral projects, environmental units are necessary at the project level to monitor impacts and implementation of mitigation measures and to promote information exchange across sectoral and agency boundaries. The units must be empowered not only to carry out EIA works but also to use EIA findings to influence the design and implementation of

projects.

A port environmental management plan should be established. And based on that, the port administrators should preserve the environment, accurately grasp the environmental situation and make efforts to appropriately maintain the environment with the cooperation of related organs.

Along with the improvement in living standards and changes in people's lifestyle and perceptions, people will become more conscious of their living environments. Parks, promenades, fishing places, restaurants and shops, etc. available at waterfronts should be dealt with in the port planning.

Ports will need to contribute further to the creation of an environment where people can live and enjoy their lives by meeting other people and encountering other cultures. It is a direction which needs to be carefully looked at in coming years.

7.5 Navigation Safety and Channel maintenance

7.5.1 Safe navigation control in port basin, long sea and river channel

(1) Formulation of sailing rules in port and prescribed channels

A fundamental law stipulating common essential provisions and covering entire Indonesian ports is desired to assure the safe navigation and maintenance of good order in ports. The said law should contain sailing rules; priority of specified vessels; safe speed; preservation of environment; commission Minister of MOTC to prescribe additional regulations to cope with local circumstances.

(2) Revision of pilotage system

Further establishment of pilotage water areas and additional pilots is necessary. On the other hands, the lower limit of objective vessel size, 150GRT, could be raised up to 500GRT from viewpoints of easier maneuverability of smaller vessels and bringing Indonesian ports in line with current international practice.

(3) Reinforcement of tug fleet

Considering current strength of small and old tug fleet, the authorities should provide major ports with a set of capable tugboats to ensure a safe and smooth flow of calling vessels and promote port productivity. The required number will be derived from anticipated calling vessels per year and the assumed net working rate of a tugboat at each port respectively.

Desired output(HP) of a tugboat, according to accepted wisdom, is equivalent to 8-10% of a mother vessel's DWT. And, those tugboats equipping with twin rudder propeller known as Z-pellar/Duck peller are mostly desired for harbor maneuvering purpose.

(4) Additional installation/upkeep of navigational aids

Present situation requires additional installations and comprehensive maintenance in order to accommodate the growing vessel traffic and also to prepare for the establishment of new international sea-lanes in the Indonesian waters.

The additional installation is reaching to the entire Indonesian waters thereby the detailed planning should be carried out for this purpose in particular.

(5) Additional DGSC duties concerning the control of safety

In accordance with the amendments to the international convention for the safety of life at sea, 1994, which introduced the international safety management code has been made mandatory, the authorities should carry out the certification and oversee a safety management system of the companies/vessels. The concrete jobs concerning the matter are handling by the port state control officers, and training/stationing of capable officers should thus be commenced as soon as possible.

The great number of sections makes it difficult to collect/exchange information and form a coherent and updated policy. Therefore, an appropriate organization or committee should be established to perform such tasks.

(6) Removal of wrecks

According to the latest harbor charts (UK edition), many wrecks are lying in close proximity to the access channels and within ports too. The position and state of remaining wrecks need to be identified, and as far as possible, removal of such obstructions should be planned/carried out by administration.

(7) Expanding the system of vessel inspection

Most of domestic vessels remain in substandard conditions as for the structure, equipment and operation, which would be one of the causes of primarily preventable sea accidents.

The authority should take the following steps:

- 1) Formulating the remaining technical provisions regardless foreign/domestic trade, e.g. ship stability, ship inspection, plying limit, maximum passengers, load line, life-saving/fire-fighting apparatus in particular.
- 2) Additional inspectors with better qualifications to carry out the above inspections strictly.

(8) Expanding the system of search and rescue

It is anticipated that sea accidents will naturally increase with the increase of vessel traffic, therefore it is necessary to expand the present poor system as follows:

- 1) Reinforcement of rescue fleet;
- 2) Updating the system of information/communications.

7.5.2 Maintenance of Navigational Channels

General performance of DGSC dredging administration is generally well and capacity of dredging fleet is evaluated enough. Under severe budget constraints, however, the initial and maintenance dredging requirements of Indonesian ports are not fully satisfied, and maintenance of sound performance of the ports become difficult and crucial even in the most important ports in Indonesia. Therefore how to use the limited budget effectively is the most important point in this regard.

While the most of current difficulties on dredging affairs in this country come from general shortage of available budget which can not be expected to increase instantly, suggestions are mainly focused on those for basic or long term policy oriented measures.

Cost and benefit evaluation is indispensable at port planning in the case of a port has siltation problems. To cope with shortage of budget for dredging, beneficiary-payment principle should be employed according to degree of their benefit such as number, size and draught of vessels operated, and cargo volume transported through the channel.

The study team suggests following items.

- a) In view of the constraint on channel maintenance budget, critical examination is necessary to select priority dredging projects and their scopes from cost and benefit point of view.
- b) More accurate engineering surveys and assessment on the results of dredging works is required for the channels which are utilized under very critical or limited conditions. At every stage of port development, economical and technological investigation on siltation and counter measures should be done carefully. This requires substantial upgrading of total engineering survey system of the DGSC.
- c) It is necessary to upgrade the engineering standards in accordance with the overall port engineering standards adopted in the DGSC port and dredging administration. Authorizing of technical justification of dredging standards is normally effective and useful in getting necessary budget successfully from the agencies concerned.
- d) To cope with shortage of budget for dredging, beneficiary-payment principle should be employed according to degree of their benefit such as number, size and draught of vessels operated, and cargo volume transported through the channel.

7.6 Staff Training System for Port Sector

The port sector is composed of various sub-sectors including the government organizations, public corporations or government owned companies, private business entities and many other port related organizations or associations which play their own roles to achieve their original assignment or business target. Although the required roles or functions of each sub-sector are different and diversified, overall capability or performance of the port sector of a country is largely controlled by quality of manpower which may be evaluated by level of moral, knowledge, skill, experience and mental/physical soundness of each individual staff of the organizations of the sector.

In this sense, staff training system for port sector should be designed and developed with comprehensive training program structure covering across various training demands of all relevant sub-sectors so that effective improvement of total power or capability of port sector could be expected. In other words, staff training for each port sub-sector needs to be conducted under well coordinated programs with constant exchange of relevant information, for instant, on new technologies for port operation or development, and recent trend of administrative or legal requirements.

The study team suggests following items.

- 1) Strengthening exact knowledge and deep understanding on other sub-sectors' business is particularly important in making better coordination with relevant agencies or entities.
- 2) Promotion of on-the-job-training (OJT) become more effective by developing OJT methods and manuals applicable to actual training stage.
- 3) Establishment of effective personnel exchange system should be executed among the port sub sector entities including MOC, DGLT, DGSC, IPCs, and ADPELs, in order to obtain wider knowledge and port related business and understand role and activity of each organization and personnel for better coordination.
- 4) Strengthening evaluation of effects of training is another requirement for improving the staff training system. And retraining system is necessary to make the staff training system more effective.

7.7 Policy on Port Statistics

Port statistics should be edited in a unified style so that they can be easily accessed and understood by all of the nation and concerned parties.

A port statistics should comprehensively involve all ports including special ports and special wharves based on laws and regulations. In addition, it should clarify at least the trend of cargo handling volume by lot and the origin/destination of each kind of commodity and cargo type, as well as number of calling vessels, number of passenger and situation of basin, warehouse and stock yard, etc. And, if possible, port statistics should be integrated with statistics system of land transportation that is closely related to the port activities and be compatible to international statistics system.

7.8 Port Engineering, Research and Survey

In Indonesia investment funds for infrastructure development are limited due to the severe economic situation. In order to utilize the limited investment funds more efficiently, to secure safety of facilities and to envisage earlier materialization of the investment effects, more sophisticated technology shall be introduced in the port development field as well as the port management and operation field.

In formulating a policy for port engineering, research and survey, the following four (4) items are important. (See Figure 7.8.1)

(1) Arrangement and application of "Technical Standards for Port Facilities"

In Indonesia, port facilities have been constructed mainly based on previous experience in adjacent areas and knowledge of engineers in charge. Therefore, sometimes port facilities have been damaged by inappropriate prediction of natural forces such as wave, tide and earthquake, in addition to inferior ground condition.

In order to secure safety of facilities and save construction cost, appropriate "Technical Standards for Port Facilities" should be introduced by considering characteristics of respective regions.

(2) Accumulation and analysis of technical information for port development

Accumulation and analysis of technical information for port development is very important for effective, efficient and safe project implementation.

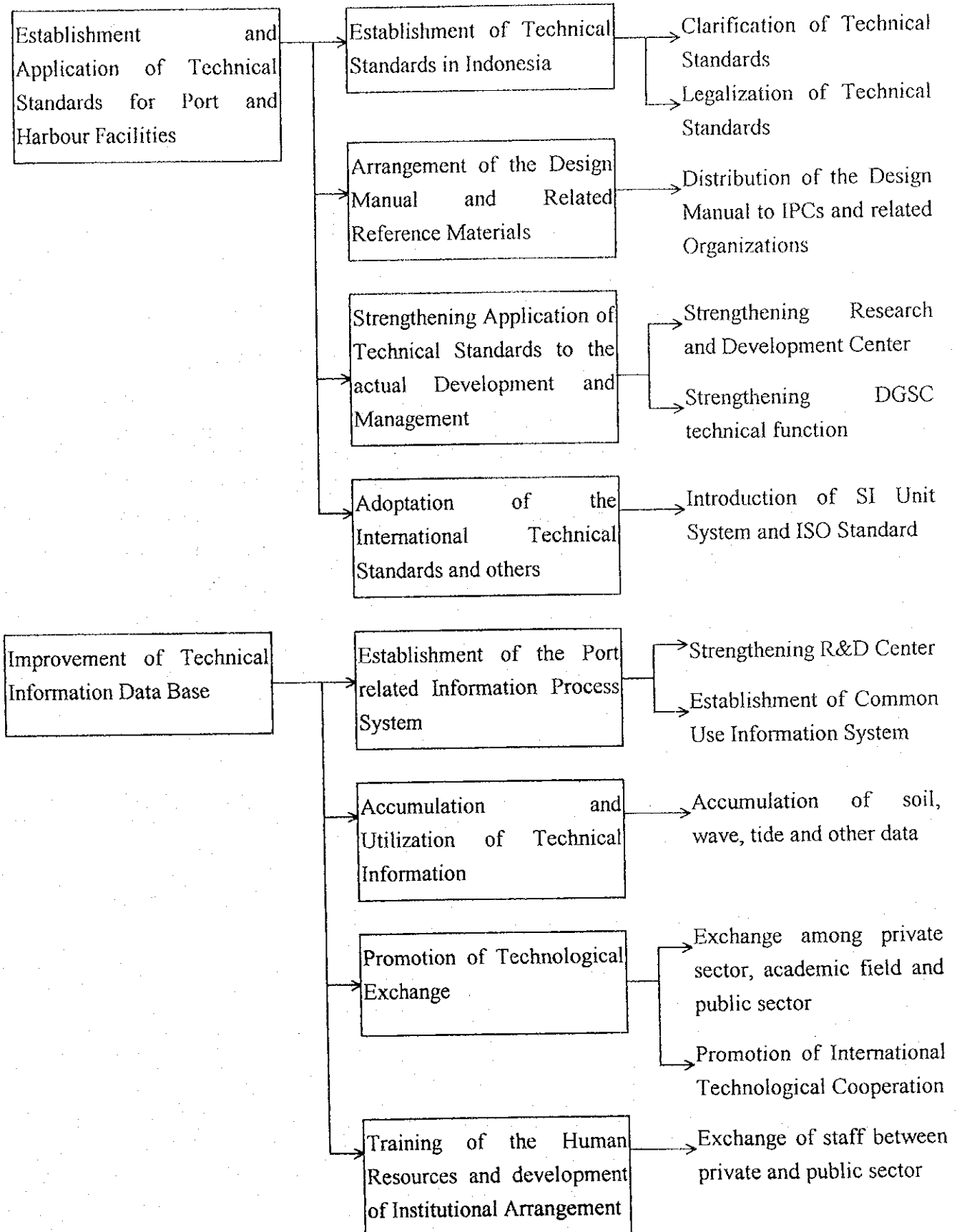
(3) Introduction of new technology and promotion of technology development

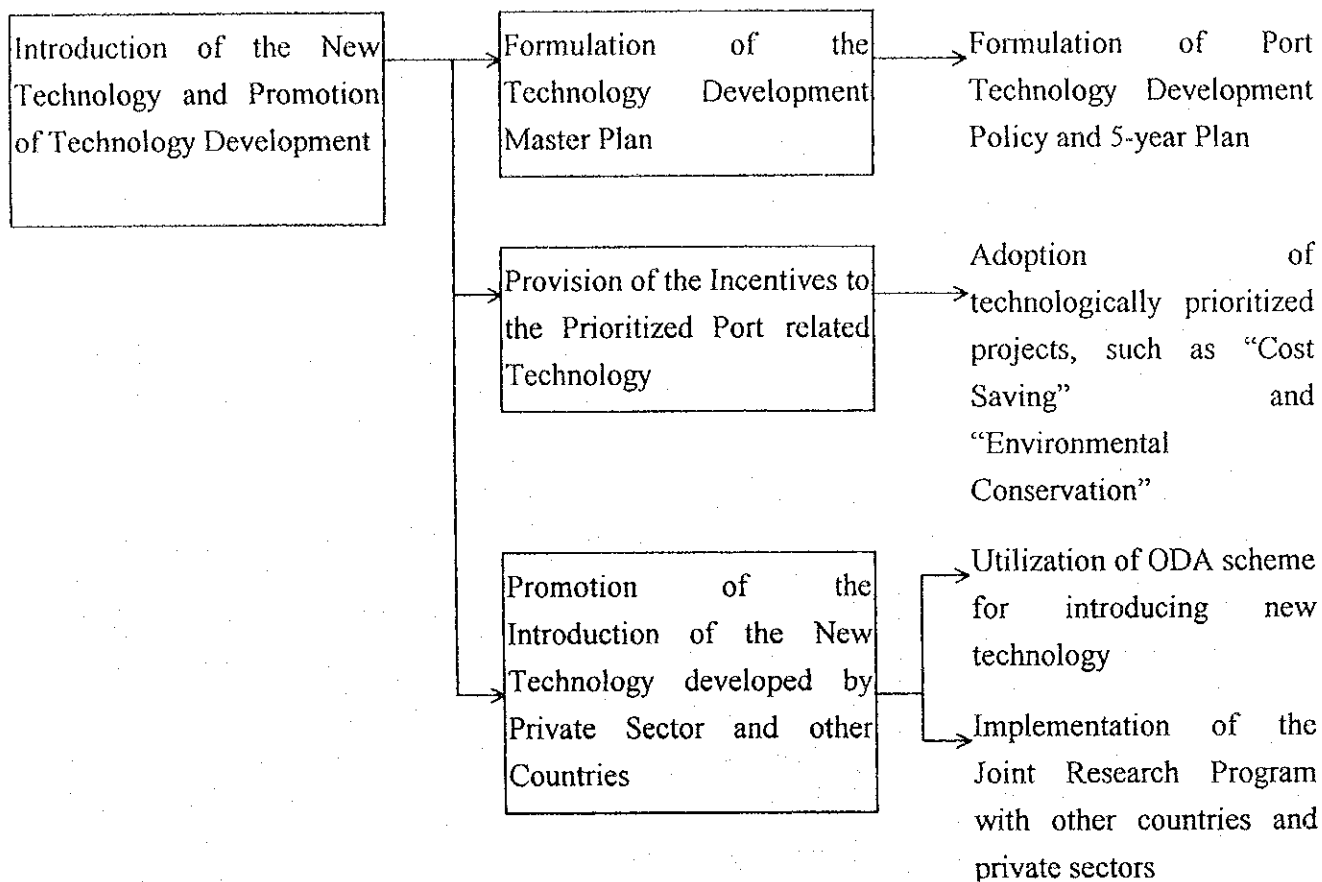
Introduction of new technology and promotion of technology development are quite useful for dealing with various kinds of demand and request from port users. For example, environmental consideration, cost reduction and modernized shipping system/port operation are key items.

(4) Enhancement of total capability of port engineers

In order to promote efficient and effective port development, it is vital to enhance the total capability of port engineers. Especially considering the variety of natural conditions such as soil and sea conditions in Indonesia, ability of the engineers to judge the natural conditions and decide design of the port facilities should be improved.

Figure 7.8.1 Technical Policy System for Port Development





7.9 Supporting Activities for Port Sector Development

Considering the importance of port sector activities in Indonesia, port sector development seems to have been neglected by the higher spheres of government.

Under the severe conditions in promoting port development in Indonesia, it is vital that the Indonesian port sector should become more powerful as a whole in its economic, administrative, and even political position.

Therefore, in order to strengthen financial, institutional and theoretical foundation for promoting sound port development and management, the following informal port supporting activities are proposed. Especially, it is required to establish a semi-formal (or informal) supporting body and system consisting not only of the government or public entities but of a wide range of private or semi-private port/transport related business circles.

- (1) Promoting national consensus and international understanding on Indonesia's port policy
- (2) Improving legal, institutional and organizational arrangements
- (3) Strengthening theoretical base for better understanding of the parties concerned
- (4) Securing adequate allocation of public funds (national and local government budget) for port sector development
- (5) Attracting private sector participation

Chapter 8 IMPLEMENTATION PROCESS POLICY

8.1 Port Sector Development Process Policy

(1) General

The objective of this study is to prepare a Long Term Port Development Strategy up to the year 2018. However in order to utilize the limited investment funds effectively, it is important to show the prioritized and urgent plans at each intermediate target year. This would also greatly contribute to the realization of the Long Term Port Development Strategy.

In Section 8.2, prioritized actions under the current economic situation are examined. Under this situation, the preparation of REPELITAVII will be delayed by almost 2 years. Prior to the formulation of REPELITAVII, Indonesian Government is preparing an "Urgent Plan for the Economic Recovery". Therefore, the prioritized actions under the current economic situation in the port development sector as well as port administration and management field are examined.

In Section 8.3, rough estimation of required investment in port development up to each intermediate target year is conducted. In addition, in Section 8.4, macro-view analysis of required investment in port development is conducted in order to check and confirm the result of the rough estimation in Section 8.3.

(2) Basic principle of port sector development process policy

In formulating the port sector development process policy, the viewpoint of realizing the nationwide development network as well as supporting socio-economic development in Indonesia shall be considered.

The general direction of time wise port development policy can be proposed as follows.

(a) Short term

- To concentrate efforts on revitalizing the developed areas, such as Java and Sumatra, which have high potential for effective and efficient development.
- To support the eight (8) prioritized activities for quick economic recovery of the country, which were decided by the Indonesian Government in May 1998
- To select the actions of which effect can be expected to be materialized in 2 to 5 years
- To spread improvement of people's livelihood all over Indonesia
- To select the actions which require only small amount of cost or investment

(b) Middle term

- To concentrate efforts on extending development axes to relatively high potential areas in the less advanced areas such as East Kalimantan, Sulawesi and East Nusa Tenggara
- To spread improvement of people's livelihood all over Indonesia
- To increase international competitiveness mainly in the developed areas such as Java and Sumatra
- To select the actions of which effect can be expected to be materialized in 5 to 10 years

(c) Long term

- To concentrate efforts on extending development axes to the least advanced areas and finally realizing a well balanced development network
- To spread improvement of people's livelihood all over Indonesia
- To increase international competitiveness in the less developed areas
- To select the actions of which effect can be expected to be materialize in 10 to 20 years

(3) Implementation program

Based on the above basic principle the Study Team proposed the implementation program for respective strategies as shown in Table 8.1.1 – 8.1.4.

Table 8.1.1 Basic Principle of Port Sector Development Process Policy (in general)

	Short Term	Middle Term	Long Term
General Policy	<ol style="list-style-type: none"> 1) Concentrating efforts on revitalizing the developed areas, such as Java and Sumatra, which have high potential for effective and efficient development 2) Supporting 8 prioritized activities, which were decided by the Indonesian Government in May 1998 3) Selecting the actions of which effect can be expected to be materialized in 2 to 5 years 4) Spreading improvement of people's livelihood all over Indonesia 5) Selecting the actions which require only small amount of cost or investment 	<ol style="list-style-type: none"> 1) Concentrating efforts to extending a development axes to relatively high potential areas in the less advanced areas such as East Kalimantan, Sulawesi and East Nusa Tenggara. 2) Spreading improvement of people's livelihood all over Indonesia 3) Increasing international competitiveness mainly in the developed areas such as Java and Sumatra 4) Selecting the actions of which effect can be expected to be materialized in 5 to 10 years 	<ol style="list-style-type: none"> 1) Concentrating efforts to extending development axes to the least advanced areas and finally realizing a well balanced development network 2) Spreading improvement of people's livelihood all over Indonesia 3) Increasing international competitiveness in the less developed areas 4) Selecting the actions of which effect can be expected to be materialize in 10 to 20 years

Table 8.1.2 Implementation Program of Strategy for Strengthening Port Development

	Short Term (Urgent Program)	Middle Term	Long Term
1. Strategy for Port System (in general)	<ol style="list-style-type: none"> 1) Completion of the ongoing construction work 2) Reducing construction costs 3) Conducting the manpower oriented and local material oriented construction work 4) Securing the maritime safety especially <ul style="list-style-type: none"> - Safety of international sea lanes 	<ol style="list-style-type: none"> 1) Promoting the development of ports located in advanced areas with high potential 2) Promoting the development of ports which increase international competitiveness <ul style="list-style-type: none"> - Container terminals - Conventional terminals which can accommodate international cargo including containers 3) Promoting the development of ports which greatly contribute to people's livelihood in less advanced areas 4) Promoting the development of ports which support economic independence of Indonesia, such as supporting export oriented industry 	<ol style="list-style-type: none"> 1) Promoting the development of ports which increase international competitiveness 2) Promoting the development of ports located in the high potential regions, in less advanced areas, for promoting economic growth and extending economic development network <ul style="list-style-type: none"> - Areas in which international economic cooperation is becoming active - Areas which are located near the international sea lanes 3) Promoting the port development which contributes to improvement of environment

(Table 8.1.2 Continued)

	Short Term (Urgent Program)	Middle Term	Long Term
2. Strategy for Respective Port System			
(1) Container Port System	1) Continuing the ongoing container terminal development projects, such as Tg.Priok, Tg.Perak, Tg.Ermas, Makassar, Bitung, Kupang and so on	1) Strengthening the development of "Major Container Terminals" 2) Developing Tg.Priok / Bojonegara port as an International Container Hub Port	1) Strengthening the development of "Major Container Terminals" and "Feeder Container Terminals" 2) Developing Bitung port as an International Hub Port in addition.
(2) Conventional Cargo Terminal	1) Continuing the ongoing conventional cargo terminal development projects	1) Strengthening the development of "Domestic Hub / International Conventional Cargo Terminals" 2) Introducing multi purpose terminal system - Ro/Ro vessels - Semi container vessels	1) Strengthening the development of "Domestic Hub / International Conventional Cargo Terminals" and "Major Conventional Cargo Terminals" 2) Promoting multi purpose terminal system - Ro/Ro vessels - Semi container vessels
3. Port Hierarchy	1) Establishment of Port Hierarchy 2) Selection of the strategically important ports	1) Monitoring the activities of the strategically important ports	1) Monitoring the activities of the strategically important ports

Table 8.1.3 Implementation Program of Strategy for Port Finance and Private Sector Participation

	Short Term (Urgent Program)	Middle Term	Long Term
1. Strategy for Port Finance	<ol style="list-style-type: none"> 1) Clarification of roles of the government, IPC and private sector 2) Establishment of clear allocation policy for national budget 3) Effective use of limited national budget for port development 4) Increase of the national budget for port development 5) Enhancement of financial ability of IPCs 6) Strengthening self-funding ability of IPC 7) Careful consideration of possibility of "Initial Public Offering" (IPO) of each IPC 	<ol style="list-style-type: none"> 1) Creation of more "competitive" circumstances for promotion of PSP 2) Decrease of national subsidy to IPCs 3) Establishment of "Special Account System" for funding of port development 4) Reevaluation and justification of "Tariff Levy System" in special port and wharf 5) Consideration of diversification of financial sources of IPC for port development (borrowing, issue of bond & sales of stock etc.) 6) Establishment of incentive policy for bond-issuing (government-guaranteed bonds & bonds with tax credit, etc.) 7) Establishment of total debt service policy for bond-issuing (setting limitation of bond-issuing) 	<ol style="list-style-type: none"> 1) Abolishment or phasing out of national subsidy to IPCs 2) Introduction of cost sharing system with beneficiary 3) Arrangement of basic concept and whole legal framework regarding cost sharing system 4) Fostering domestic bond & stock market for funding for port development

(Table 8.1.3 Continued)

	Short Term (Urgent Program)	Middle Term	Long Term
2. Strategy for Port Tariff System	<ol style="list-style-type: none"> 1) Collecting the port charges without fail 2) Allowing initiative of IPC for tariff determination 3) Consideration of proper incentive tariff reduction 	<ol style="list-style-type: none"> 1) Setting the port tariff in line with inflation 2) Introduction of a "Tariff Ceiling" system 3) Establishment of "Time-Conscious" tariff structure 4) Introduction of "Fast Connection Rebate System"(FCR) 	<ol style="list-style-type: none"> 1) Establishment of "Flexible" tariff system (more deregulation to IPC's determination) 2) Establishment of "Lower" tariff rate as a national policy in potential international hub port 3) Establishment of proper "Incentive" tariff rate for transship cargoes

(Table 8.1.3 Continued)

	Short Term (Urgent Program)	Middle Term	Long Term
3. Strategy for Private Sector Participation	<ol style="list-style-type: none"> 1) Reconfirmation & establishment of general philosophy for promoting PSP 2) Confirmation of roles of each sector (government, IPC & private sector) for promoting PSP 3) Usual preparation of PSP project lists and issue of "a booklet" for PSP promotion 4) Establishment of "Implementing Regulation" based on "Presidential Decree No. 7" 5) Consideration of diversification of possible PSP types (lease, management contract, etc.) 6) Establishment of possible forms for port development & operation 7) Introduction of the private sector to "container terminal operation" in new ports through "Lease Contract" 	<ol style="list-style-type: none"> 1) Establishment of close coordinating relationship among PSP relevant agencies for promotion of PSP 2) Formulation of "Guideline for PSP" for port development and operation 3) Opening of port services to private sector (tug, pilot & utility service, etc.) 4) Introduction of the private sector to operation of existing "container terminals" in major ports through "Lease Contract" 5) Promotion of BOT & Joint Operation in container & multi-purpose terminals of major ports 6) Establishment of "Risk-Allocation Policy" & "Incentive Measures" for BOT projects 7) Foundation of "Internal Monitoring 	<ol style="list-style-type: none"> 1) Arrangement of consistent PSP-related legal frameworks & Foreign Investment Laws 2) Reevaluation of compulsory requirement of cooperation with IPC 3) Shifting the port type from "operating port type" to "tool port type" or "land-lord type" 4) Establishment of "Comprehensive Incentive Package" for foreign investors

	<p>8) Establishment of clear selection criteria of PSP applicants</p> <p>9) Promotion of "Competitive Bidding System" in selection procedure of PSP applicants based on "Presidential Decree No.7"</p> <p>10) Promotion of simplifying licensing procedure for foreign investors</p>	<p>Committee" (monitoring system through eyes of third sector & ex post facto check)</p> <p>8) Upgrading of total PSP system and promotion of disclosure of PSP related-information</p> <p>9) Allowing of participation of "100 % foreign-owned company" in "prioritized" port development projects</p>	
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Table 8.1.4 Implementation Program of Strategy for Effective Port Administration, Management and Operation

	Short Term (Urgent Program)	Middle Term	Long Term
1. Administration and Management Policy	<ol style="list-style-type: none"> 1) Reinforcement of the cooperation with various urban infrastructures including road, railroad, etc. 2) Promotion of active port sales, foreign private sector participation and other activities which attract foreign investors 3) Increasing capable human resources for maintaining and improving administrative performance 	<ol style="list-style-type: none"> 1) Clarification of the competence for decision making <ul style="list-style-type: none"> - in order to define the responsibilities related to the port management 	<ol style="list-style-type: none"> 1) Demarcation of certain area such as harbor limit or waterfront area <ul style="list-style-type: none"> - in order to secure smooth operation and future development 2) Transfer of certain authority to the port administrators <ul style="list-style-type: none"> - toward the era of decentralization
2. Formulation and Authorization System of Port Master Plan	<ol style="list-style-type: none"> 1) Establishment of the guideline for port master planning <ul style="list-style-type: none"> - in order to facilitate the preparation of port master plan 2) Establishment of port master plan for major ports 	<ol style="list-style-type: none"> 1) Integration of ferry port and special wharf into the port master plan <ul style="list-style-type: none"> - in order to make up comprehensive port master plan 2) Establishment of permanent port council in central and local governments <ul style="list-style-type: none"> - in order to reinforce the authority of port master plan 	<ol style="list-style-type: none"> 1) Establishment of port master plan for all ports

(Table 8.1.4 Continued)

	Short Term (Urgent Program)	Middle Term	Long Term
3. Improvement of Port Operation	<ol style="list-style-type: none"> 1) Giving incentives for handling nine basic staple supplies and medicines in order to promote prioritized activities designated by the government 2) Strengthening security measures for securing the safe and effective management 3) Strengthening the maintenance activities without spending much cost 	<ol style="list-style-type: none"> 1) Promotion of port service including cargo handling productivity up to the level of partner ports and rival ports. 2) Employ the "one roof center system" at the ports, which handle international cargoes. 3) Employ the EDI system at the ports, which handles container cargo. 4) Privatization of the port function where the efficiency of port management and operation are expected to improve by privatization (Ex. Container Terminals). 	

(Table 8.1.4 Continued)

	Short Term (Urgent Program)	Middle Term	Long Term
4. Environmental Consideration in Port Development and Use	<ol style="list-style-type: none"> 1) Revision of the guideline for EIA - for smoothly grasping the present situation and impacts 2) Implementation of monitoring survey 3) Securing of special staff for environmental conservation in DGSC - in order to clarify the responsibilities for environmental conservation 	<ol style="list-style-type: none"> 1) Execution of EIA in port master planning - in order to implement the proper countermeasures 2) Establishment of post-EIA system - for suitable environmental management 3) Realization of public participation - in order to collect various information and opinion and reflect them into port planning 	<ol style="list-style-type: none"> 1) Integration with other city development including road and sewage, etc. - in order to actualize the comprehensive environmental management 2) Securing of amenity - in order to enhance the quality of living environment
5. Navigation Safety and Channel Maintenance	<ol style="list-style-type: none"> 1) Formulation of sailing rules in ports and prescribed channels 2) Revision of the pilotage system 3) Additional DGSC duties concerning the control of safety 4) Expanding the system of vessel inspection 5) Examine priority of dredging projects and their scopes from cost and benefit of view 	<ol style="list-style-type: none"> 1) Reinforcement of tug fleet 2) Additional installation of navigational aids 3) Expanding the system of search and rescue 4) Careful preparation of institutional counter measures on the future environmental problems originated from dredging works 	<ol style="list-style-type: none"> 1) Removal of wrecks 2) Positive involvement in securing international navigational channels through international cooperation

	<p>6) More accurate engineering surveys and assessment on the results of dredging works with upgraded engineering standards</p> <p>7) Conduct a comprehensive study on development of entirely different solution for the issues to be applied</p>		
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(Table 8.1.4 Continued)

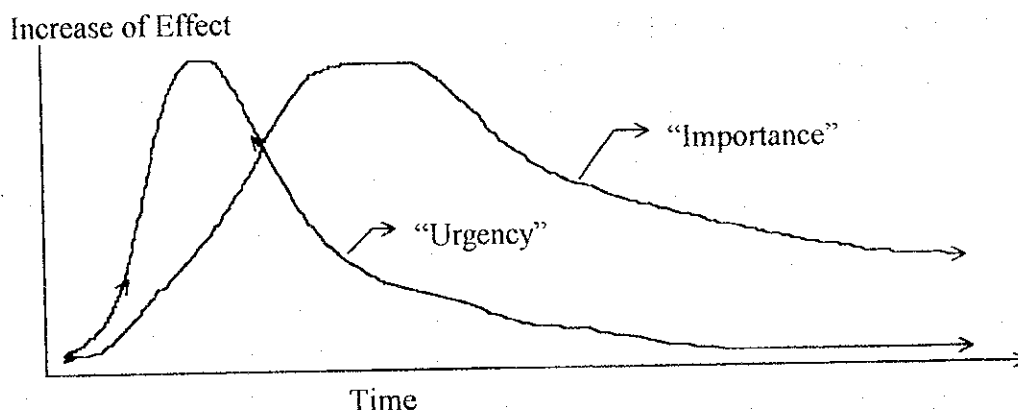
	Short Term (Urgent Program)	Middle Term	Long Term
6. Staff Training System for Port Sector	<ol style="list-style-type: none"> 1) Training for strengthening and deep understanding on other sub-sectors' business 2) Active introduction of information on new technology 3) Promotion of on the job training 4) Establishment of effective personnel exchange system among the port sub-sectors and other semi governmental organizations 5) Strengthening evaluation of effect of training 	<ol style="list-style-type: none"> 1) Training on the latest technologies in the field of port and others 2) Promotion of retraining system 	<ol style="list-style-type: none"> 1) Improvement of basic human resource for port related business (Ex. School, Institute, etc.)
7. Port Statistics	<ol style="list-style-type: none"> 1) Revision of survey items (improvement of SIMOPPEL system) - in order to grasp various data needed for port planning 	<ol style="list-style-type: none"> 1) Over all implementation of statistical survey in public ports 2) Grasping annual change of the port situation (proper analysis and management of data) 	<ol style="list-style-type: none"> 1) Compulsory implementation of statistical survey in ferry and special ports 2) Making statistics internationally compatible

8.2 Prioritized Actions under the Current Economic Situation

In selecting prioritized actions, the Study Team used two criteria; “Urgency” and “Importance”.

“Urgent” programs will be expected to generate immediate results. On the other hand, “Important” programs will be expected to generate a large-scale effect, although their impact may not be immediately felt.

Figure 8.2.1 Investment effect of the prioritized actions in “Urgency” and “Importance”



In evaluating “Urgency”, safety, alleviation of poverty and urgent maintenance are the main criteria. On the other hand in evaluating “Importance” contribution to the activating export oriented activities and contribution to obtaining foreign currency and others are the main criteria.

Proposed actions under current economic situation are summarized as follows (see Table 8.2.1).

1) Port Development Field

- (a) Completion of the ongoing construction work
- (b) Reducing construction costs
- (c) Conducting the manpower oriented and local material oriented construction work
- (d) Securing maritime safety

2) Port Administration Field

- (a) Improving various coordination functions among relevant agencies in order to make swift and proper decisions for coping with the current economic difficulty
- (b) Providing a social safety net for poor people
- (c) Promotion of active port sales, foreign private sector participation, special legal consideration on export oriented industry, and transferring the power to the regional

related office

- (d) Establishing a kind of advisory committee comprised of capable government staff or members of opinion leaders
- (e) Coordination and cooperation between relevant parties in order to make best use of the limited internal budget for the implementation of foreign aid projects

3) Port Management Field

- (a) Activity for supporting fluent distribution of nine basic staple supplies and medicines
- (b) Activity for social safety net and for supporting the poor
- (c) Improving maintenance activity
- (d) Improving activity for maritime safety

Table 8.2.1 Ideas of Prioritized Actions under Current Economic Situation

1. Urgent Programs

Items	Prioritized Actions		
	Port Development Field	Port Administration Field	Port Management Field
(1) Activity which supports fluent distribution of nine basic staple supplies and medicines	<p>1) Promotion of ongoing construction work of conventional cargo terminal which handles basic staple supplies and medicines</p> <p>2) Provisional start of the use of port facilities in the middle stage of the construction work</p>	<p>1) Facilitation of the legal procedure for taking appropriate coordination with related organization to implement the countermeasures to deal with current situation</p> <p>2) Establishment of the coordination committee for fluent distribution of basic commodities</p> <p>3) Appropriate coordination with logistic distribution sector and labor union sector</p>	<p>1) Giving incentive for handling nine basic staple supplies and medicines</p> <ul style="list-style-type: none"> - Quick handling - Cheap handling - Allocation of the convenient berth and storage area - Swift legal procedure for international cargo <p>(It is necessary for these cargoes to be distinguished by taking appropriate measures, such as attaching a sticker.)</p> <p>2) Strengthening the security measures for preventing these cargoes from pilferage</p> <ul style="list-style-type: none"> - Frequent and careful patrol <p>3) Promotion of the multi purpose utilization of the terminal on a temporary basis</p> <ul style="list-style-type: none"> - Simplification of the procedure for approving cruising vessel to use cargo terminal

(Table 8.2.1 Continued)

Items	Prioritized Actions		
	Port Development Field	Port Administration Field	Port Management Field
(2) Activity for social safety net and for supporting the poor	<p>1) Strengthening the inspection of the port facilities for securing the social safety</p> <p>2) Promotion of manpower oriented port project for increasing the employment opportunities</p> <p>3) Promotion of the port project in which domestic materials are mainly used</p>	<p>1) Strengthening the coordination with related organizations to secure appropriate accessibility between sea and land transportation</p> <p>2) Strengthening the present measures for securing the social safety net</p> <p>3) Strengthening the coordination with port labor organization which is responsible for welfare of port labors</p>	<p>1) Improvement of the port labors wage level</p> <p>2) Reduction of the fare of port passengers and the tariff of the basic commodity</p>
(3) Maintenance activity	<p>1) Strengthening the inspection of the port facilities for maintaining the expected functions</p> <p>2) Application of the cost-saving and manpower oriented technology to the maintenance work Utilization of the stone and wood Utilization of waste materials</p>		<p>1) Improving the maintenance to prevent use of imported spare parts</p> <p>2) Preparing a list of spare parts which are stocked</p>

(Table 8.2.1 Continued)

Items	Prioritized Actions		
	Port Development Field	Port Administration Field	Port Management Field
(4) Activity for maritime safety	<p>1) Strengthening the inspection of the port facilities for securing the safety</p> <p>2) Arranging the necessary and urgent facilities and equipment for securing maritime safety along the three international sea lanes</p>	<p>1) Strengthening the present measures for securing the maritime safety</p>	
(5) Continuation of ongoing or very urgent projects	<p>1) Selection of the projects of which continuation is necessary</p> <p>2) Announcement of the projects whose suspension is inevitable</p> <p>3) Increasing the efficiency of the ongoing projects by dividing the project period into several phases</p> <p>4) Reducing the cost of ongoing projects by using local or waste materials</p>		

(Table 8.2.1 Continued)

2. Important Programs

Items	Prioritized Actions		
	Port Development Field	Port Administration Field	Port Management Field
(1) Activity for supporting agricultural, tourism and export oriented industry	<p>1) Promotion of ongoing construction work of container terminals which mainly handle international containers</p> <p>2) Promotion of ongoing or small scale construction work of multi-purpose terminal which can be utilized not only by cargo vessels but also by passenger vessels, ferry vessels or tourism vessels</p> <p>3) Promotion of the ongoing construction work of all terminals and other facilities in order to complete them as swiftly as possible</p>	<p>1) Promotion of port sales including necessary budget dispatching the "Port Sales Mission"</p> <ul style="list-style-type: none"> - Establishing a "Cruising Day" for promoting the calling of cruising vessels - Allowing the private sector to use idle port areas for commercial purpose for inviting the tourism vessels <p>2) Announcement and advertisement of the project list for Private Sector Participation</p> <p>3) Provisional simplification of the legal procedures for formulating countermeasures to promote export oriented activities</p> <ul style="list-style-type: none"> - Simplification of obtaining the license for developing and operating the special ports 	<p>1) Promotion of export oriented industrial activities by private sectors</p> <ul style="list-style-type: none"> - Discount of the port - Temporary suspension of collecting port dues from the users of ports - Allowing the port management body to set a more flexible tariff for attracting more cargo <p>2) Introduction and popularization of "First Come First Serve" Operation Policy</p> <p>3) Popularization of "One Roof Service" Policy</p> <p>4) Temporary suspension of collecting port dues from tourism vessel for promoting the cruising vessel calling</p>

(Table 8.2.1 Continued)

Items	Prioritized Actions		
	Port Development Field	Port Administration Field	Port Management Field
		4) Streamlining the port administration by transferring the authority to the regional related office	
(2) Activity for human resource development	1) On-the-job training of the technical staff in the field of maintenance and cost minimize construction work which can be conducted during slack periods	1) Setting the advisory committee comprised of port users and related organizations in order to take appropriate countermeasures to deal with the current problems 2) Monitoring the priority policy program under the current economic situation to learn from this crisis	1) On-the-job training of the technical staff in the field of effective management and operation which can be conducted during slack periods
(3) Activity for facilitating foreign aid projects	1) Completion of the ongoing foreign aid projects	1) Strengthening the coordination with the related government organizations in order to prepare the internal budget for promoting the implementation of foreign aid projects	

8.3 Rough Estimation of Required Port Development Investment

The total amount of the initial investment is estimated by following seven Steps;

- A. Review, Evaluate and Estimate the Capacity of the Existing Facilities
- B. Select the Standardized Port Facilities and Decide the Capacities.
- C. Demand Forecast as of the Target Year
- D. Formulate National Port Development Policy and Plan
- E. Decide the Required Quantity of Standardized Facilities until the Target Years
- F. Initial Cost Estimation for Standardized Facilities
- G. Estimate the Required Initial Investment Amount by the Target Years

Step C and D are already described in previous Chapter in this Study. (See Section 3.6 and Chapter 5) The result of the demand forecast (Case3, Scenario2) and International Container Port Network System (Scenario 2) (See Section 5.3.1) are used in this estimation.

The basic dimension of future port facilities is to be standardized as guideline for development, considering modernization of sea and land transportation system. The present condition of port facilities is to be evaluated based on review and evaluation of the inventory of facilities, short-term development plan, the requirement of rehabilitation and the result of inspection and the capacity existing facilities should be decided.

The required facilities of public ports until target years were calculated, based on the result of demand forecast, the capacity of existing facilities and the productivity of the standardized facilities. The handling volume at possible International Hub Port (at Jawa Island and eastern part of Indonesia) is calculated considering a certain volume of transshipment from domestic feeder ports.

The unit prices of the construction and the procurement of standardized facilities are estimated referring the past construction projects and cost estimation in other feasibility studies. The construction costs of each standardized facility per unit berth length (m) or unit wharf are summarized in Table A.8.3.6 in Appendix 8.3

Based on the above-mentioned required quantity of facilities and estimated costs, the required total investment amount for the port development at public port until target years are calculated. The maintenance cost of the existing and constructed facilities until the target year is not considered in this estimated investment amount.

Table 8.3.1 Estimated Total Amount of Initial Investment (Unit : Million US\$)

Target Year	Infrastructure	Superstructure	Total
2008	8,142.2	1,939.3	10,081.5
2018	23,003.1	6,615.9	29,618.9

8.4 Projection of Port Development Investment

8.4.1 Macro-View Analysis

(1) General

Port development investment should be estimated from the following two views, that is, the “micro-view” and “macro-view” analysis. In this section, the estimation based on the “macro-view” analysis shall be explained. The main purpose of the macro-view analysis is to roughly show how much money can be invested as a whole for the port development by 2008 & 2018.

Macro-view analysis is based on the actual results of “investment in port development” during a certain period of time (REPELITA). In this case, it is practical to calculate “total investment” in commercial & non-commercial ports during “REPELITA VI (1994-1998)” in order to estimate total investment during the next REPELITA VII~X. The basic concept of macro-view analysis is founded on the idea that total investment will increase in accordance with the projected GDP. “Alternative-3” and “sensitivity-1” (lowest case) based on 1983 constant price shall be employed regarding GDP growth rate from 1994 to 1998 (see Chapter 3.6).

* Note : Although REPELITA VI was recently completed in 1998, it is not clear at this time whether subsequent 5-year plans will be formulated. Therefore, reference to REPELITA VII-X in this section are only for the sake of convenience.

(2) Review of Total Investment during REPELITA VI (1994/95~1998/99)

Table 8.4.1 shows the summary of total investment during REPELITA VI. The total investment during REPELITA VI is Rp.2,110 billion. While the national funds account for Rp.867 billion (40%), IPC funds account for Rp.1,329 billion (60%). Based on the actual result of investment during REPELITA VI and the projected GDP, total investment during REPELITA VII shall be estimated.

However, “abnormal consumer price index” (34.22%) in 1997/98 makes it difficult for us to estimate the total investment for the subsequent REPELITA. In order to avoid a distortion of figure brought by the drastic change of “consumption price index”, it is necessary for us to convert the figures by using 1997/98 constant price (before monetary crisis). The result of “converted” total investment during REPELITA is summarized in Table 8.4.2.

Table 8.4.1 Summary of Total Investment during REPELITA VI

(Unit : Rp.Million)

Source	REPELITA VI					
	1994/95	1995/96	1996/97	1997/98	1998/99	Total
National	137,849	230,517	203,668	175,610	119,415	867,059
	61%	62%	42%	37%	19%	39%
IPC	89,353	144,315	290,885	294,499	510,943	1,329,995
	39%	38%	58%	63%	81%	61%
Total	227,202	374,832	494,553	470,109	630,358	2,197,054
Consumption Price Index (%)	8.57	8.86	5.17	34.22	NA	-
* Comparison with GDP (%)	1.5	2.3	2.8	2.5	3.6	2.6

Note : GDP figures represent each calendar year (e.g. GDP of 1994 is under 1994/95 heading).

Table 8.4.2 Summary of Total Investment during REPELITA VI (1997/98 Constant Price)

(Unit : Rp.Million)

Source	REPELITA VI					
	1994/95	1995/96	1996/97	1997/98	1998/99	Total
National	169,003	262,859	214,197	175,610	78,551	900,220
	61%	62%	41%	37%	19%	43%
IPC	109,546	164,562	305,924	294,499	336,098	1,210,629
	39%	38%	59%	63%	81%	57%
Total	278,549	427,421	520,121	470,109	414,649	2,110,849
Consumption Price Index (%)	8.57	8.86	5.17	34.22	NA	-
Comparison with GDP (%)	1.5	2.3	2.8	2.5	2.4	2.5

(3) Method to Estimate Total Investment during Subsequent REPELITA

In order to estimate the total investment after 1999/2000, the following method shall be used.

- 1) The result of average national & IPC investment per year during REPELITA VI is seen in Table 8.4.3.
- 2) The Table shows that the national budget per year is about Rp.180,044 million (43%) and that of IPC budget per year is about Rp.242,126 million (57%).
- 3) The total investment after 1999/2000 shall be estimated from the co-relationship between the average investment per year during REPELITA VI and the subsequent economic growth rate (e.g. 4.60% in 1999/2000).

Table 8.4.3 Average Investment Per Year during REPELITA VI

(Unit : Rp.Million)

Source	Total Investment by Source during REPELITA VI	Average Investment Per Year during REPELITA VI
National	900,220 (43%)	180,044 (43%)
IPC	1,210,629 (57%)	242,126 (57%)
Total	2,110,849 (100%)	422,170 (100%)
Comparison with GDP (%)	2.57%	-

(4) Total Investment from 1999/2000-2018/19 based on "Alternative-3" and "Sensitivity-1" (Lowest Case)

Total national and IPC investment from 1999/2000-2018/19 shall be calculated by using economic growth rate based on "Alternative-3". The Table shows that total investment by 2008 will amount to Rp.5,654 billion (government Rp.2,411 billion & IPC Rp.3,243 billion) and that by 2018 will reach Rp.17,863 billion (government Rp.7,618 billion & IPC Rp.10,245 billion).

For reference, total national and IPC investment from 1999/2000 to 2018/19 shall be calculated by using economic growth rate based on "sensitivity-1". The Table shows that total investment by 2008 will amount to Rp.4,586 billion (government Rp.1,956 billion & IPC Rp.2,630 billion) and that by 2018 will reach Rp.13,731 billion (government Rp.5,856 billion & IPC Rp.7,845 billion).

Table 8.4.4 Total Investment Projection during REPELITA VII~X
(Excluding Private Funds)

(Unit : Rp.billion)

REPELITA (FY)		Transition Period (1999-00)	VII (2001- 05)	VIII (2006- 10)	IX (2011- 15)	X (2016- 18)	Total by 2008	Total by 2018
Alternative-3	Total	903	2,685	3,730	5,639	4,906	5,654	17,863
	National Funds	385	1,145	1,591	2,405	2,092	2,411	7,618
	IPC Funds	518	1,540	2,139	3,234	2,814	3,243	10,245
"Sensitivity- 1" (lowest case)	Total	786	2,167	2,937	4,284	3,557	4,586	13,731
	National Funds	335	924	1,253	1,827	1,517	1,956	5,856
	IPC Funds	451	1,243	1,684	2,457	2,040	2,630	7,875

(5) Review of the Total Investment during REPELITA I ~ VI

Table 8.4.5 Review of Total Investment during REPELITA I ~ VI

(Unit : Rp.billion)

REPELITA (FY)		I (1969-73)	II (1974-78)	III (1979-83)	IV (1984-88)	V (1989-93)	VI (1994-98)
① Total National Budget		2,463	12,476	43,510	154,581	240,332	483,194
② Total Development Budget (②/①)		1,059 (43%)	5,249 (42%)	21,894 (50%)	78,609 (51%)	107,532 (45%)	183,293 (38%)
③ Total Transport Budget (③/②)		231 (22%)	787 (15%)	2,998 (14%)	9,107 (12%)	18,966 (18%)	33,054 (18%)
④ Port Development Budget	Budget	45	63	179	925	1,245	3,149
	(④/②)	(4.2%)	(1.2%)	(0.8%)	(1.1%)	(1.1%)	(1.7%)
	(④/③)	(19%)	(8%)	(6%)	(10%)	(6.6%)	(9.5%)
⑤ Planned Budget	Total	45	63	179	925	1,245	3,149
	National Funds	45	63	179	925	1,245	2,046 (65%)
	IPC/Private Funds	0	0	0	0	NA	1,103 (35%)
⑥ Actual Budget	Total	NA	NA	NA	NA	1,185	* 2,914
	National Funds	NA	NA	NA	NA	1,185 (100%)	867 (30%)
	IPC Funds	0	0	0	0	NA	** 1,329 (45%)
	Private Funds	0	0	0	0	0	** 718 (25%)

Note :

*1) Data as of December 1997 indicates that total investment will reach Rp.3,126 billion (government Rp.1,079 billion & IPC/Private Rp.2,047 billion)

**2) It is presumed that in total IPC/private funds (Rp.2,047 billion), IPC funds account for Rp.1,329 billion (65%) and "purely private funds" account for Rp.718 billion (35%).

Table 8.4.5 shows total investment during REPELITA I ~ VI. In REPELITA VI, there is a gap between the planned budget and the actual budget. In the planned budget, the government funds including foreign loan accounts for 65%, while IPC/private funds accounts for 35%. However, actually, the former accounts for 30% and the latter accounts for 70%.

In short, the government funds accounts only for “30%” (Rp.867 billion), while IPC funds accounts for “46%” (Rp.1,329 billion) and purely private funds accounts for “24%” (Rp.718 billion) in REPELITA VI.

It is presumed that this trend will not change in the following REPELITA (VII ~ X) as long as the today’s basic policy for role sharing between the public and private sector doesn’t change drastically. However, there is a high possibility that the ratio of private funds will increase to a considerable extent by 2008 or 2018. This depends on the government’s policy on PSP.

(6) Total Investment during REPELITA VII ~ X (Including Private Funds)

Taking into consideration the trend of current private funds during REPELITA VI, the total investment (including private funds) during REPELITA VII ~ X can be summarized in the Table 8.4.6. Total investment (“alternative-1”) will amount to Rp.7,503 billion by 2008 and Rp.23,704 billion by 2018. Total investment (“sensitivity-1”) is projected to amount to Rp.6,086 billion by 2008 and Rp.18,222 billion by 2018.

Table 8.4.6 Total Investment Projection during REPELITA VII ~ X
(Including Private Funds)

(Unit : Rp.billion)

REPELITA (FY)		Transition Period (1999-00)	VII (2001-05)	VIII (2006-10)	IX (2011-15)	X (2016-18)	Total by 2008	Total by 2018
Alternative-3	Total	1,198	3,562	4,949	7,482	6,510	7,503	23,704
	National Funds	385	1,145	1,591	2,405	2,092	2,411 (32%)	7,618 (32%)
	IPC Funds	518	1,540	2,139	3,234	2,814	3,243 (43%)	10,245 (43%)
	Private Funds	295	877	1,219	1,843	1,604	1,849 (25%)	5,841 (25%)
“Sensitivity- 1” (lowest case)	Total	1,043	2,876	3,897	5,685	4,720	6,086	18,222
	National Funds	335	924	1,253	1,827	1,517	1,956 (32%)	5,856 (32%)
	IPC Funds	451	1,243	1,684	2,457	2,040	2,630 (43%)	7,876 (43%)
	Private Funds	257	709	960	1,401	1,163	1,500 (25%)	4,490 (25%)

8.5 Review of Funds Allocation

8.5.1 Establishment of Funds Allocation Standard for Development of Each Terminal

In Chapter 8.3, required port development investment by 2008 and 2018 was roughly estimated. Table 8.5.2 and Table 8.5.3 show how the funds will be allocated among government, IPC and private funds. Table 8.5.4 and 8.5.5 indicates the result of funds allocation by 2008 and 2018.

The result is summarized in the following Table 8.5.1. Government funds are forecasted to account for 31% while IPC & private funds will account for 69% by 2008. By 2018, the former will account for 25% while the latter will account for 75% due to the increase of private sector participation.

Table 8.5.1 Result of Required Port Development Investment by 2008 & 2018

Funds	REPELITA VI Projection (1994-98)	Required Investment by 2008	Required Investment by 2018
Government Funds	Rp.5,826 billion (32%)	US\$3,157 million (31%)	US\$7,345 million (25%)
IPC Funds	Rp.7,876 billion (43%)	US\$4,729 million (47%)	US\$11,141 million (38%)
Private Funds	Rp.4,490 billion (25%)	US\$2,195 million (22%)	US\$11,133 million (38%)
Total	Rp.18,222 billion (100%)	US\$10,081 million (100%)	US\$ 29,619 million (100%)

8.5.2 Total Review of Port Development Investment

(1) Comparison between Required Investment and Projected Investment

The co-relationship between “rough estimation of required port development investment” (Chapter 8.3) and “projection of port development investment” (Chapter 8.4) shall be reviewed. The result of the co-relationship can be summarized in the following Table 8.5.6. The former by 2018 is approximately 2.5 times as much as that of the latter by 2018.

However, there is a high possibility that government funds for infrastructure will increase by the rate higher than economic growth. Since the country can afford for spending

Table 8.5.2 Funds Allocation Policy for Each Terminal by 2008

(1) Funds Source for Container Terminal in Each Area

Area	Mother Port Type Hub Port Terminal		Transshipment Type Hub Port Terminal		Intra-Asia Container Port Terminal		Domestic Container Port Terminal	
	Infra	Super	Infra	Super	Infra	Super	Infra	Super
Sumatra	B/C	C	B/C	C	B/C	B/C	B/C	B/C
Jawa	B/C	C	B/C	C	B/C	B/C	B/C	B/C
Kalimantan	B/C	C	B/C	C	B/C	B/C	B/C	B/C
Sulawesi	B/C	C	B/C	C	B/C	B/C	B/C	B/C
Others	B/C	C	B/C	C	B/C	B/C	B/C	B/C

(2) Funds Source for Conventional Cargo in Each Area

Area	Multi-purpose (-12m)		Multi-purpose (-10m)		Conventional		Small Ship	
	Infra	Super	Infra	Super	Infra	Super	Infra	Super
Sumatra	A/B	C	A/B	C	A	B/C	A	A
Jawa	B	C	B	C	A	B/C	A	A
Kalimantan	A/B	B/C	A/B	B/C	A	B/C	A	A
Sulawesi	A/B	B/C	A/B	B/C	A	B/C	A	A
Others	A/B	B/C	A/B	B/C	A	B/C	A	A

(3) Funds Source for Bulk terminal in Each Area

Area	Dry Bulk		Liquid Bulk					
	Infra	Super	Infra	Super				
Sumatra	B/C	C	B/C	C				
Jawa	B/C	C	B/C	C				
Kalimantan	B/C	C	B/C	C				
Sulawesi	B/C	C	B/C	C				
Others	B/C	C	B/C	C				

(4) Funds Source for Passenger Terminal in Each Area

Area	International		National		Domestic		Local	
	Infra	Super	Infra	Super	Infra	Super	Infra	Super
Sumatra	A/B	C	A/B	C	A/B	C	A	A
Jawa	A/B	C	A/B	C	A/B	C	A	A
Kalimantan	A/B	C	A/B	C	A/B	C	A	A
Sulawesi	A/B	C	A/B	C	A/B	C	A	A
Others	A/B	C	A/B	C	A/B	C	A	A

A : National Budget

B : IPC Funds

C : Private Funds

Table 8.5.3 Funds Allocation Policy for Each Terminal by 2018

(1) Funds Source for Container Terminal in Each Area

Area	Mother Port Type Hub Port Terminal		Transshipment Type Hub Port Terminal		Intra-Asia Container Port Terminal		Domestic Container Port Terminal	
	Infra	Super	Infra	Super	Infra	Super	Infra	Super
Sumatra	B/C	C	B/C	C	B/C	B/C	B/C	B/C
Jawa	B/C	C	B/C	C	B/C	B/C	B/C	B/C
Kalimantan	B/C	C	B/C	C	B/C	B/C	B/C	B/C
Sulawesi	B/C	C	B/C	C	B/C	B/C	B/C	B/C
Others	B/C	C	B/C	C	B/C	B/C	B/C	B/C

(2) Funds Source for Conventional Cargo in Each Area

Area	Multi-purpose (-12m)		Multi-purpose (-10m)		Conventional		Small Ship	
	Infra	Super	Infra	Super	Infra	Super	Infra	Super
Sumatra	B/C	C	B/C	C	A	B/C	A	A
Jawa	B/C	C	B/C	C	A	B/C	A	A
Kalimantan	A/B	B/C	A/B	B/C	A	B/C	A	A
Sulawesi	A/B	B/C	A/B	B/C	A	B/C	A	A
Others	A/B	B/C	A/B	B/C	A	B/C	A	A

(3) Funds Source for Bulk terminal in Each Area

Area	Dry Bulk		Liquid Bulk					
	Infra	Super	Infra	Super				
Sumatra	B/C	C	B/C	C				
Jawa	B/C	C	B/C	C				
Kalimantan	B/C	C	B/C	C				
Sulawesi	B/C	C	B/C	C				
Others	B/C	C	B/C	C				

(4) Funds Source for Passenger Terminal in Each Area

Area	International		National		Domestic		Local	
	Infra	Super	Infra	Super	Infra	Super	Infra	Super
Sumatra	B/C	C	B/C	C	A/B	C	A	A
Jawa	B/C	C	B/C	C	A/B	C	A	A
Kalimantan	B/C	C	B/C	C	A/B	C	A	A
Sulawesi	B/C	C	B/C	C	A/B	C	A	A
Others	B/C	C	B/C	C	A/B	C	A	A

A : National Budget

B : IPC Funds

C : Private Funds

Table 8.5.4 Funds Source for Each Terminal by 2008

(Unit : US\$million)

(1) Funds Source for Container Terminal in Each Area

Area	Mother Port Type Hub Port Terminal		Transshipment Type Hub Port Terminal		Intra-Asia Container Port Terminal		Domestic Container Port Terminal	
	Infra	Super	Infra	Super	Infra	Super	Infra	Super
Sumatra	0.0	0.0	0.0	0.0	12.2	10.8	65.3	62.7
Jawa	49.4	46.9	0.0	0.0	122.1	107.5	25.6	24.6
Kalimantan	0.0	0.0	0.0	0.0	0.0	0.0	64.1	61.6
Sulawesi	0.0	0.0	0.0	0.0	0.0	0.0	13.3	12.7
Others	0.0	0.0	0.0	0.0	0.0	0.0	64.1	61.5

804.2

(2) Funds Source for Conventional Cargo in Each Area

Area	Multi-purpose (-12m)		Multi-purpose (-10m)		Conventional		Small Ship	
	Infra	Super	Infra	Super	Infra	Super	Infra	Super
Sumatra	478.6	83.5	1,006.1	272.7	209.6	62.0	34.2	0.0
Jawa	580.0	101.2	1,216.0	329.9	162.0	47.9	10.4	0.0
Kalimantan	223.5	39.0	729.7	209.8	282.0	83.4	6.7	0.0
Sulawesi	48.0	8.4	80.0	36.5	27.7	8.2	43.4	0.0
Others	206.8	36.1	231.7	65.6	25.3	7.5	77.6	0.0

7,071.2

(3) Funds Source for Bulk terminal in Each Area

Area	Dry Bulk		Liquid Bulk					
	Infra	Super	Infra	Super				
Sumatra	236.5	72.0	345.1	8.6	0.0	0.0	0.0	0.0
Jawa	65.6	20.0	115.5	2.9	0.0	0.0	0.0	0.0
Kalimantan	153.9	46.8	100.3	2.5	0.0	0.0	0.0	0.0
Sulawesi	20.2	6.1	0.0	0.0	0.0	0.0	0.0	0.0
Others	0.9	0.3	3.6	0.1	0.0	0.0	0.0	0.0

1,200.9

(4) Funds Source for Passenger Terminal in Each Area

Area	International		National		Domestic		Local	
	Infra	Super	Infra	Super	Infra	Super	Infra	Super
Sumatra	26.7	0.0	87.9	0.0	46.9	0.0	268.5	0.0
Jawa	10.2	0.0	26.3	0.0	7.4	0.0	22.5	0.0
Kalimantan	1.3	0.0	44.3	0.0	39.6	0.0	8.8	0.0
Sulawesi	0.3	0.0	22.9	0.0	25.5	0.0	130.3	0.0
Others	1.0	0.0	59.3	0.0	59.3	0.0	116.2	0.0

1,005.2

(5) Total Initial Investment in Each Area By 2008

Area	Infra	Super
Sumatra	2,817.6	572.2
Jawa	2,413.0	680.9
Kalimantan	1,654.2	443.1
Sulawesi	411.6	71.9
Others	845.8	171.1
Total	8,142.2	1,939.3
Grand Total		10,081.5

Government	3,157	31%
IPC	4,729	47%
Private	2,195	22%
Total	10,081	100%

Note : Exchange Rate (US\$1=Rp.2,000 as of July, 1997)

Table 8.5.5 Funds Source for Each Terminal by 2018

(Unit : US\$million)

(1) Funds Source for Container Terminal in Each Area

Area	Mother Port Type Hub Port Terminal		Transshipment Type Hub Port Terminal		Intra-Asia Container Port Terminal		Domestic Container Port Terminal	
	Infra	Super	Infra	Super	Infra	Super	Infra	Super
Sumatra	0.0	0.0	0.0	0.0	65.2	57.5	206.2	198.0
Jawa	73.5	69.7	76.9	75.2	313.1	275.9	398.1	382.3
Kalimantan	0.0	0.0	0.0	0.0	0.0	0.0	257.4	247.2
Sulawesi	1.7	1.6	41.6	40.7	84.6	74.6	483.8	464.6
Others	0.0	0.0	0.0	0.0	0.0	0.0	184.8	177.4

4,251.9

(2) Funds Source for Conventional Cargo in Each Area

Area	Multi-purpose (-12m)		Multi-purpose (-10m)		Conventional		Small Ship	
	Infra	Super	Infra	Super	Infra	Super	Infra	Super
Sumatra	723.7	126.3	2,836.0	823.9	1,249.3	369.5	117.6	0.0
Jawa	1,317.3	229.9	2,630.3	704.8	708.1	209.4	35.7	0.0
Kalimantan	452.5	79.0	2,460.7	731.5	1,266.9	374.7	23.1	0.0
Sulawesi	108.5	18.9	498.5	150.2	203.6	60.2	149.1	0.0
Others	409.5	85.4	550.1	134.3	69.6	20.6	266.7	0.0

20,195.6

(3) Funds Source for Bulk terminal in Each Area

Area	Dry Bulk		Liquid Bulk					
	Infra	Super	Infra	Super				
Sumatra	700.8	213.3	1,007.1	25.2	0.0	0.0	0.0	0.0
Jawa	120.4	36.6	189.4	4.7	0.0	0.0	0.0	0.0
Kalimantan	444.1	135.2	208.6	5.2	0.0	0.0	0.0	0.0
Sulawesi	38.5	11.7	1.3	0.0	0.0	0.0	0.0	0.0
Others	0.8	0.2	2.6	0.1	0.0	0.0	0.0	0.0

3,145.8

(4) Funds Source for Passenger Terminal in Each Area

Area	International		National		Domestic		Local	
	Infra	Super	Infra	Super	Infra	Super	Infra	Super
Sumatra	71.2	0.0	247.8	0.0	206.4	0.0	366.7	0.0
Jawa	15.2	0.0	105.6	0.0	31.5	0.0	31.5	0.0
Kalimantan	1.9	0.0	119.3	0.0	123.4	0.0	11.5	0.0
Sulawesi	0.3	0.0	24.8	0.0	27.7	0.0	170.5	0.0
Others	2.8	0.0	148.0	0.0	157.9	0.0	161.7	0.0

2,025.7

(5) Total Initial Investment in Each Area By 2018

Area	Infra	Super
Sumatra	7,798.1	1,813.7
Jawa	6,046.7	1,988.7
Kalimantan	5,369.4	1,572.8
Sulawesi	1,834.4	822.7
Others	1,954.4	418.1
Total	23,003.1	6,615.9
Grand Total	29,618.9	

Government	7,345	25%
IPC	11,141	38%
Private	11,133	38%
Total	29,619	100%

Note : Exchange Rate (US\$1=Rp.2,000 as of July, 1997)

government funds for infrastructure development as a progress of economic development which results in fulfilling citizen's basic living requirement. Therefore, it is forecasted that the gap will be narrowed to 1.5 or 2 times.

Table 8.5.6 Co-relationship between Required Investment & Predicted Investment
(Unit: Rp.billion)

Funds Source		By 2008	By 2018
* Required Investment (Chapter 8.3)	Government Funds	6,314	14,690
	IPC Funds	9,458	22,282
	Private Funds	4,390	22,266
	① Total	20,162	59,238
Projected Investment based on Alternative-3 (Chapter 8.4)	Government Funds	2,411	7,618
	IPC Funds	3,243	10,245
	Private Funds	1,849	5,841
	② Total	7,503	23,704
①/②		2.68	2.5

* Note : The figure is converted by the exchange rate of US \$ & Rp. before monetary crisis (US\$1=Rp.2000 as of July, 1997).

(2) Analysis of the Comparison

Although the gap between required investment and projected investment is within 1.5 or 2 times, this gap can also be rectified or narrowed by employing all kinds of effective measures. In this case, "public investment" is definitely important because public investment possibly will be able to induce IPC and private investment. First of all, the government must take a positive step to secure as much funds as possible for port development.

Based on the understanding of the current situation and the future trends, the following measures shall be carefully considered among related government agencies in order to narrow the gap between required investment and projected investment.

1) Government Funds

- ① Taking into consideration the importance of port development in the world's largest archipelago country, the government must strive to increase the budget to stimulate private investment.
- ② In this case, the government must pay more attention to effective use of the limited budget (see Chapter 6.1).

- ③ From the long term perspective, the government must make every effort to establish effective mechanism funding for development of necessary infrastructure of the public works. In this sense, issue of “National Bonds” as a tool for the funding will be essential for Indonesia in the future.

2) IPC Funds

- ① IPC should seek more financial sources such as issue of bond & sale of stocks for port development.
- ② It is necessary for the government and IPC to change the port type from operating port type to tool port type and land-lord port type. “Land-lord port type” enables IPC to use private funds for superstructure developments.

3) Private Funds

- ① As mentioned in Chapter 8.4, there is a high possibility that private funds will increase rapidly to a considerable extent by 2008 or 2018. This depends upon the government’s policy on PSP (see Chapter 6.3).
- ② The government should strive to promote PSP (e.g. BOT & Joint Operation) in port development and operation in cooperation with IPC to secure the required investment from the private funds.



Conclusions and Recommendations

1. General

[Expected Scenario of National Development]

(1) Considering the nature of Indonesia as the largest archipelago in the world, the port is one of the most crucial infrastructure for realizing the comprehensive national development. Therefore, port development strategy should be examined from the viewpoint of realizing future scenario of overall national development.

In this study, the following scenario can be recommended for future national development based on the discussion with the authorities of the government and relevant organizations.

- (a) Judging from the current economic situation of Indonesia, the first priority of the government efforts should be placed on economic recovery for at least the next several years. During this period, various kind of development resources such as national budget, institutional actions and private sector funds shall be utilized for the development of Java and other selected areas where more direct economic impacts can be expected compared to other areas.
- (b) After the national economy recovers, a long term national policy of realizing well-balanced nationwide development shall be pursued. During this period, various kinds of development resources, especially government budget shall be utilized predominantly for the development of East Indonesia which is a less advanced area. However, during this period, it will be foreseen that input efficiency of the development resources will be lower than in the earlier period.

[Prioritized Actions under Current Economic Situation]

(2) Indonesian Government is preparing an "Urgent Plan for the Economic Recovery". It is important for port sector to support the announced eight (8) prioritized activities by the Government in May 1998, which include supporting fluent distribution of basic commodities, supporting maritime safety, supporting export oriented industry and tourism for obtaining foreign currency and so on (see Chapter 8.2). In supporting fluent distribution of basic commodities, it is indispensable to improve comprehensive transportation system including sea and river transportation.

In particular, effective port administration, management and operation are very important in order to utilize the present capacity of the port facilities without spending much money.

Under the current severe economic situation, it is also recommended to concentrate investment and other efforts in revitalizing the developed areas, such as Java and Sumatra, which have high potential for effective economic development.

[Role of Ports]

(3) Based on the recent trend surrounding ports and expected scenario of national development, basic roles of ports are envisaged as follows.

- (a) Supporting Socio-economic Development
- (b) Rectifying Regional Disparity
- (c) Surviving in the Age of Global Exchange and Great Competition

[Structure of the Port Development Strategy]

(4) Based on the expected role of ports, the main structure of the basic policy for this strategy is summarized into the following three pillars. (See Figure 4.4.1)

- I Strategy for Strengthening Port Development
- II Strategy for Port Finance and Private Sector Participation
- III Strategy for Effective Port Administration, Management and Operation

2. Strategy for Strengthening Port Development

2.1 Strategy for Port System

[Policy for International Container Port Network System]

(1) In order to deal with the rapidly increasing containerization, an efficient and effective international container port network system should be established all over the country.

The required container volume for international container ports, which is proposed in this study, can be utilized as a standard for evaluating appropriate timing for starting port development (see Chapter 5.3.1).

(2) Based on the result of demand forecast and standard container volume required for establishing respective international container routes, container port network system were proposed. The following scenario, which considered rectifying regional disparity as well as economical feasibility, is recommended.

- (a) In the first stage of development, major container ports to which Inter-Asia container service route vessels call should be developed with high priority. In particular, ports which are located not only in Sumatra (north, central and south) and Java (west, central and East) but also in east Kalimantan and south Sulawesi are recommended to be developed as the major container ports (see Chapter 5.3.1).
- (b) After the international container volume handled at the ports reaches a sufficient level, international container ports including international hub container port(s) should be more developed. Finally, the establishment of the nationwide container port network

shall be pursued. Also, the development of international container hub ports should be pursued not only in Java but also in eastern Indonesia in order to realize well-balanced nationwide development, provided that various countermeasures are conducted for a port to satisfy the required container volume for an international container hub port.

- (3) For examining the possibility of the development of an international container hub port in Indonesia, volume of the OD containers (originated and destined containers within the hinterland of ports), national development policy such as policy for rectifying regional disparity and geographical condition such as closeness to the international container service routes should be considered.

[Policy for Conventional Cargo Terminal Network System]

- (4) In order to deal with the increase of conventional cargo, an efficient and effective conventional cargo terminal network system should be established all over the country. Hub and major conventional cargo terminal should be developed based on the cargo demand, present shipping routes and regional balance. In particular, each province should have at least one port which have a major conventional cargo terminal or a hub conventional cargo terminal. Hub conventional cargo terminals should be developed not only in western Indonesia but also in eastern Indonesia (see Chapter 5.3.2).

- (5) Conventional cargo terminal should be developed based on the future trend of increase of the vessel size and unitization of cargo such as containerization and introduction of Ro/Ro vessel.

Regarding the vessel size, it is clarified that the cargo transportation cost by 3,000 – 5,000 DWT size vessel is the cheapest among other size vessels.

Regarding unitization of cargo, it is clarified that the cargo transporting cost by conventional cargo vessel is cheaper than any other vessel such as semi-container vessel, full container vessel and Ro/Ro vessel in ascending order.

However demand for unitization of general cargoes and frequent delivery of cargoes from port users are being intensified as a recent worldwide trend. Therefore, introduction of a multi purpose cargo terminal, which can accommodate container vessels, Ro/Ro vessels or ferry vessels, shall be pursued to ensure that the quality and condition of cargo is maintained and to achieve quick cargo handling. It should be pursued, in particular, at the ports where large amount of unitizable cargo is to be handled. In addition, it is also recommended to decrease the freight rate of Ro/Ro shipping, which is much higher than the freight rate of other shipping vessels, and promote closer coordination between domestic shipping and ferry system which have been separately administrated by the different government organization.

[Policy for Bulk Cargo Terminal System]

(6) In order to establish an efficient and effective bulk cargo terminal system, taking into account importance of the role of special ports and wharves in bulk cargo transportation, the following policy need to be applied by the public sector.

- (a) Formulating a comprehensive port plan including special port/wharf and public port facilities
- (b) Developing the conventional cargo terminal which accommodates break-bulk cargo
- (c) Developing the bulk cargo terminal in cooperation with the private sector
- (d) Supporting the private sector in developing and operating the special port/wharf

[Policy for Passenger Terminal Development]

(7) Considering that Indonesia is the largest archipelago country in the world, formulation of sea transport system for passenger traffic is crucial for supporting daily lives of the people and regional economies.

Development of passenger terminal, which supports and promotes human exchange to be activated by international regional economic cooperation with neighboring countries, is also important.

In addition, further coordination between DGSC and DGLT, which administrates ferry system, is necessary in order to strengthen the passenger transportation capacity and efficiency through coordination with ferry system.

[Policy for Supporting Tourism Development]

(8) Tourism is one of the most effective measures for the acquisition of foreign currency. Therefore, the government places special emphasis on promoting foreign tourism.

The policy for supporting tourism development is proposed as follows.

- 1) In order to support tourism, port sector should promote development of tourism port (terminal for sightseeing boat, cruiser and yacht) and provision of sites for commercial zone (restaurant, souvenir shop, park, etc.) in potential tourist areas.
- 2) It is proposed that Tg. Priok, Belawan, Batam, Manado, Benoa and Biak become the central areas for tourism in the central part, western, northern, southern and eastern Indonesia respectively. It is also proposed to define and develop these important ports as "Main Strategic Ports" for attracting many foreign tourists, and the other high-potential ports as "Internal Network Ports" for widening the combination of tourist destinations.

[Policy for Supporting Regional Development]

(9) Port development and various activities in port areas greatly contribute to promoting various regional industries in port surrounding areas and hinterland. Considering that the role of port for promoting regional industries is respectively different according to the progress of

regional development, the following 3 types of policy for supporting regional development are proposed.

- (a) Supporting primary industries (transporting primary products from scattered remote areas by means of "joint shipment")
- (b) Supporting processing industries for primary products (formation of processing industry zone)
- (c) Supporting industrial complexes (formation of industrial complexes by accumulating manufacturing industries, heavy industries, etc. in port area)

[Policy for People's Livelihood Support]

(10) Since those ports, which are located in less advanced regions, play an important role as the means of transporting the people and daily goods, effective development is needed for ports with insufficient facilities in order to secure the minimum requirement of the citizen.

Concerning the above objective, the national and regional government shall use the budget to promote such development, since securing the civil minimum is a basic task of the national and local governments which cannot be achieved only by private sector.

(11) In the isolated islands and remote areas, the frequency of the liner cargo and passenger shipping calls is not so much. In order to utilize the port facilities in such areas effectively, multipurpose port facility which can accommodate passenger ships, cargo ships and ferry ships including rakyat ships shall be developed. In order to achieve this task, coordination with relevant organizations is indispensable.

In addition, it is also recommended to develop the required facilities which accommodate rakyat vessels safely and efficiently.

[Policy for River Port Development]

(12) Major ports in Sumatra and Kalimantan are river ports which are located in the densely populated areas along the river. It is very important to improve the transportation system, particularly river transportation, since these river ports play an important role in regional development and in sustaining people's livelihoods.

[Policy for Notable Ports Development]

(13) In formulating an efficient and effective container port network, high priority is expected to be given to the development of ports, especially in East Jawa (such as Tg.Priok/Bojonegara).

In addition, in rectifying regional economic disparity and dealing with internationalization high priority is also expected to be given to the development of ports in North Sulawesi, East Nusa Tenggara and North Sumatra (such as Bitung, Kupang and Sabang ports).