

20. Operations and Management Organization

20.1 Business Environment Surrounding Port Industry

20.1.1 Port Business Environment

After the Lehman shock, all world trade began to shrink rapidly. Starting in September 2008, the volume of world trade began to plummet sharply. It's not just that exports to the United States but the flow of goods everywhere, in all directions, has fallen. The Lehman shock has been contracting U.S. economy and the failed U.S. financial system could drag the global economy into its first recession since World War II.

Nevertheless, for a longer term perspective, there seems to be no rational need to change a perspective of the general growth pattern of the world container trade mainly due to spectacular high growth in newly industrialized economies, the BRICS for example, followed by the next group of newly industrializing economies including Vietnam and Indonesia in the Asian region.

The business environment in which ports operate today has dramatically changed. The pressure from port customers for better and cheaper services is getting greater and diversified. Ports are expected to improve efficiency continuously to satisfy and hold current customers, and further to attract additional traffic into the port, in order to become financially sound and independent.

While the ports, which are able to meet the customers' diversifying expectation, can thrive and capture an additional traffic, other ports, which cannot afford to evolve themselves in the rapidly changing environment, would lose their marketability in the port business.

Port administrators therefore should try to upgrade their organizational capabilities to fulfill ever-changing customers' needs. The market situation surrounding port industries is getting rougher and more competitive.

20.1.2 Deployment of Mega Containership

Particular phenomena that influence the industry are:

- (1) Rapid growth of huge market in China and India's increasing economy;
- (2) A deployment of larger containerships in the major trade lanes which may minimize the ports of call and results in a change of the feeder ships' networks. As of October 2009 about 4,700 containerships are in service and about 1,100 ships on order including 136 ships of 12,000TEU and above, 72 ships with 8,000 – 9,000 TEU due into service up to 2012 according to the shipping industry news paper;
- (3) A globalization of economy brought by the evolvement of supply chain management system by taking advantage of IT solutions.

These drastic changes in the trade make a world shipping business volatile through realignment of alliance partners and unpredicted acquisition and mergers.

A possible shipping business reorganization resulted from the deployment of super over panamax containerships in the major trade lanes may inevitably affect the ports in Vietnam to greater extent. Minimizing number of ports of call by larger ships necessarily involve a feeder ship network reorganization.

Another foreseeable change due to an introduction of mega containerships would be a replacement of fleet in the regional services with the containerships redeployed from the major trunk routes. A

possible cascading down of ships now deployed in the major East-West trunk routes to the regional shipping lanes would cause changes in the aspect of near sea and feeder ships network eventually.

20.1.3 Port Development to cope with Vietnam Trade Growth

Port management body in Vietnam should in this respect keep watch carefully the movement of world shipping industries. Otherwise, if it happens and the port is not ready to accommodate such larger ships, smaller ports may easily be downgraded to a second feeder ports because of inability to accommodate larger and deep draft ships. It would consequently turn out to bring a negative impact to the Vietnamese national economy.

Recent inauguration of the direct service connecting Ho Chi Minh and the U.S. West Coast by APL and MOL, alliance members of TNWA was a milestone for Vietnam. A successive introduction of the direct service to the U.S. in last June has demonstrated to the market the potential capability of the South Vietnamese port that can accommodate a larger and deeper container ship.

Taking advantage of an active port development plan and a surging container cargo volume to and from Vietnam, the ocean carriers are eagerly tackling with enhancing Vietnam services on the major East-West trade lanes between Asia and North America and Europe.

20.1.4 Deep-Water Port Development Plan

Working out a national port development plan to upgrade port capability in the northern region of Vietnam is definitely legitimate and completely in accordance with the national economic growth policy. For facilitating export promotion of Vietnam products, a thrust engine for Vietnamese economic growth, the direct line haul calls by large mother vessels serving North America, Europe and other Asian ports is indispensable.

The construction of a new deep sea container port or renovation of existing port facilities require enormous capital outlay for not only the port infrastructure such as anchorage, fairway, quay and berth but also superstructure including quay gantry cranes and modern cargo handling equipment as well as an installation of state of the arts terminal computer system.

At a Business Forum held in Hanoi in December 2009, foreign participants claimed that infrastructure in this country is not satisfactory and called for an urgent need for private sector participation in infrastructure development, financial and management, especially in power generation and deep-water seaports.

20.2 Public Private Partnership (PPP)

20.2.1 Significance of PPP

In discussing Public Private Partnership (PPP) in this study, the public sector is referred sometimes as a port authority besides a port administration or port management, the most common terminology to represent the public sector entity that is a governing body for port management and administration.

The port authority in this report therefore is not construed as a specific central, regional or local governmental organization such as Haiphong Port Authority under VINAMARINE. It is rather a general term representing public interests. The port authority under VINAMARINE is now referred as the Port Administration as per MOT Ministerial Decision No. 57/2005/QĐ-BGTVT October 28, 2005. The role and function of VINAMARINE port administration will be reviewed separately in the latter part of this report.

Private enterprise participation in the port development, management and operations emerged as significant issues in the 1980s and is very common trend not only in the developing countries but all

over the world, especially for the construction of a new large container port.

The primary reason of a proliferation of private sector participation in the port industry is financial constraints on the part of the public sector. A port construction requires tremendous financial burden covering infrastructure construction, including anchorage, fairway, berth, container yard, maintenance shop, railway side track, road access, installing cargo handling equipment, etc.

By mobilizing private funds through various forms of PPP in the port development, a government can afford to invest freed up money for the other priority objectives.

Another advantage expected by the PPP in the port management and operations is to improve port productivity and to enhance handling efficiency in order to meet port customer's expectation. If a qualified private partner is selected, such as a reputable world container terminal operator, a public entity can take advantage of learning container terminal management and operation know-how to upgrade skills and quality of terminal performance.

Summing up significance of PPP is:

- To reduce high investment burden of government;
- To improve efficiency and productivity through fair competition;
- To offer high quality of service with cheaper price to port customers;
- To provide modern operations technology and management know-how.

20.2.2 Various Modes of PPP

Private sector involvement is one of the processes for the port administrators to rely on in attaining port performance improvement, which could not easily be realized without an introduction of private sector in the port management and operations.

The widely accepted definition of privatization is that "Privatization is the transfer of ownership of assets from the public to the private sector or the application of private capital to fund investments in port facilities, equipment and systems" according to the UNCTAD Guidelines for Port Authorities and Governments on the Privatization of Port Facilities.

In narrower application of the UNCTAD definition, the transfer of ownership of port assets from the public to the private or the reliance of the private fund on the development of port facilities and procurement of various equipment are constituent of privatization but it is applied more broadly to include Contracting Out and Management Contract that do not necessarily pertain to the transfer of assets and the private fund utilization.

As mentioned in the foregoing section, the supply of infrastructure has traditionally been the responsibility of governments.

However many governments now have difficulty in allocating adequate resources and huge gap exists between infrastructure demands and available public sector financing resources.

Additionally poor performance of the public sector in supplying infrastructure services has compelled many developing countries to look for alternative ways to develop infrastructure.

It is now generally agreed that under appropriate circumstances the involvement of private sector, with adequate support and control, can go some way towards satisfying the need for financial resources and greater efficiency.

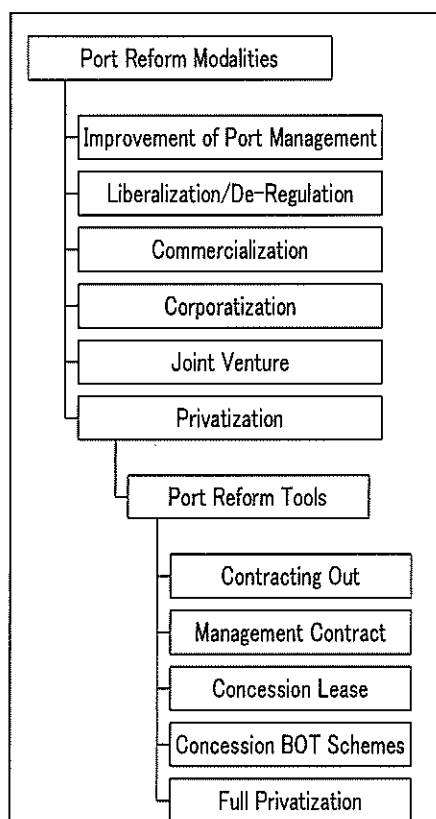


Figure 20.2.1 Port Reform Modalities

20.2.3 Two Variants of Privatization

There are two variants in regard to the privatization mode due to the depth of private sector involvement.

1) Comprehensive Privatization:

Through the sale of public sector's assets including site and equipment or even sale of bare site for development, private company becomes the owner and operator of all assets and all land and water. In this scheme, a public sector has a limited involvement in the port administration such as a strategic port development plan, management rules and regulations, international commitments on the safety and port security, setting up a regulatory regime and dispute settling mechanisms, adopting antimonopoly laws, etc.

In the strict sense of interpretation, this extreme privatization mode is not popular in the world and is an exceptional case only envisaged at Felixstowe in England and Tauranga in New Zealand. This is not an option for a Vietnamese port because of the constitutional prohibition of private ownership of land as specifically defined that all land in Vietnam is owned and administered by the State.

2) Partial Privatization

Only a part of the assets and activities are transferred to the private sector from a public port body including a concession to a private company to build and operate a certain facilities and the transfer of pilotage or towage service department to a private company.

This form of privatization constitutes PPP and usually combined with the introduction of a landlord type port authority. This formula of privatization, where public side and private side share the

responsibilities as well as risks of the construction of container terminal, installation of cargo handling equipment and maintenance of them and management and operation of the terminal activities, is predominant in the port industry.

The course of privatization to be followed depends on the purpose and aims of privatization. If an efficiency improvement is only sought then a management contract suffices. If trying to relieve and alleviate financial burdens on a part of public side, a concession agreement may be a viable choice for a public sector to take.

20.2.4 Port Reform Strategies

As discussed above there are several tools to implement partial privatization. They are proven to be useful to balance public and private interests and are popular modalities to be adopted by the relevant public sector agencies that are eagerly looking for port productivity and efficiency improvement.

In real application of PPP schemes, however, there is neither a fixed type nor common single mode that is applicable to every PPP projects. There are various combination and mixture of methods to fit for the respective PPP scheme in implementation.

In reality, a combination of several privatization options is common phenomena for example formation of a joint venture comprised of public port authority and private enterprise including lease and BOT element as seen in many Chinese container ports, Shanghai, Qingdao, Yantian, Tianjin, etc.

1) Contracting Out

Instead of executing certain functions by the public agencies, these may be contracted out to a private party, especially for non-core business activities such as pilotage towage and line handling for mooring and unmooring services wherever these services are carried out at lower prices through competitive bidding process.

Possible concern of this option is that there is limited number of operators in the market that tends to hinder business competition among operators. This may include the licensing of stevedores to undertake cargo- handling function.

2) Management Contract

The entire or a section of the port is temporarily handed over to the private sector against management fee. A private company provides managers for certain activities and receives a management fee for the activities, for instance, royalty payment per move or TEU handled. In this model the management company will not be required to make large investments. They do not involve a transfer of ownership either.

3) Commercialization

A public sector, a port administration in particular, is managed and operated by following market principles and practices under commercialization scheme. Essentially a port administration is managed and operated on a commercial basis even though an authority is empowered a greater autonomy, yet subject to national government regulations, over budgeting, procurement employment of personnel, setting strategic planning, etc. under more decentralized decision making process.

A good example of commercialization is The Port of Singapore Authority which, as a statutory body, is operated under a great deal of autonomy in managements and operations to the extent that PSA is self financing and can explore their terminal operation business opportunities worldwide.

4) Corporatization

It does not involve a transfer of ownership from the public side to private sector but setting up an independent entity that is still owned by the government, yet operated with commercial principles. The normal corporate structure is to be incorporated as wholly owned subsidiaries of a government holding company. Legally it is a private company although full share holding is retained with the government.

Many port authorities in China e.g. Shanghai International Port (Group) co. Ltd., the exclusive operator of all the public terminals in Shanghai (former Shanghai Port Authority), Shenzhen Yantian Port Group which invests in Yantian International Container Terminal at Shenzhen, Tianjin Port Group (reformed former Tianjin Port Authority) which operates JV container terminals teamed up with foreign terminal operating companies in the port of Tianjin. These holding companies are listed in the stock market in Hong Kong or Shanghai to raise money in the stock market for further port facility expansion.

5) Concession

This type of arrangement is very similar to the leasehold contract but differs that a concession allows a more freedom and flexibility to a concessionaire to operate the terminal.

Another conspicuous difference with a lease contract is that it requires a certain degree of capital investment for developing terminal facilities and cargo handling equipment. Concession normally includes a commitment for the private sector to make a specific investment to improve the quality and capacity of these services.

The prime purpose of concession agreement is to raise funds through private financing resources for port development and improvement without compromising ownership of the port facilities. Under this scheme a successful concessionaire is given an exclusive long-term container terminal operating right to operate the port. The port administration could retain full ownership of land and assets and would play no part in cargo handling operations.

The port administration, depending on the final terms of the concession agreement, would most likely receive a fixed payment for use of assets, and variable, volume related payment that reflects the growth in the port business. Such an arrangement would not remove all financial risks from the port administration, but it would quantify the financial gap between income and loan repayments, and acts as a strong incentive to increase traffic volume in order to gain a share in the increased revenue.

a) Landlord Option

The "Landlord" option has very few disadvantages, which is why it has become so popular in the international port concession formula.

Under this option, the port administration, as an owner of the facilities covers following responsibilities:

- (1) To hold ownership of land and properties;
- (2) To grant exclusive and long term operating rights to a qualified container terminal operator;
- (3) To remain responsible for all loan repayments;
- (4) To receive lease fee at agreed level from the terminal operator to cover the costs of investment in facilities and assets. This is most likely to consist of a fixed fee for asset use, and a variable payment or profit component that is related to volumes of container handled;
- (5) To play no major part in terminal operations;

A terminal operator's responsibilities are:

- (1) To make a regular rent payment to the port administration;
- (2) To make additional variable payments that relate to the number of containers passing through the terminal subject to the concession contract condition;
- (3) To undertake all maintenance at its own costs and subject to inspection by the port administration;
- (4) To provide supplementary equipment and replacement necessary for efficient operations;
- (5) To undertake to upgrade equipment, container tracking software and any other improvement necessary for the port to remain competitive;
- (6) To promote active marketing efforts for the terminal in order to bring in an additional traffic to the port.

Concession is a most popular private participation method in the port sector. In South Asia almost 79% of the container port development were green field utilizing BOT and joint partnership modes according to UNCTAD Review of Maritime Transport 2004.

6) Lease

Existing facilities, equipment and infrastructure in the port are leased out to the private sectors that provide services with using these assets as set forth in the leasehold contract. Lease contract usually does not require for a lessee to invest for port basic infrastructure and major cargo handling equipment. Well-known example is the Thailand Laem Chabang container terminals two, three and four that are leased to the private terminal operators including quay gantry cranes and cargo handling equipment.

7) BOT (Build-Operate-Transfer), BOO (Build-Operate-Own)

This type of privatization modality is often applicable when investment in new infrastructure facilities is sought by the public entity. The most popular pattern in case of a container terminal development at a green field site is that the private sector makes major investment in both infrastructure and superstructure. At some future date the facility would revert to the government under BOT scheme. Under BOO agreement an ownership of facility remains at the hands of a private developer.

BOT is a preferable option that is suitable for a large container terminal development project, which requires high capital costs and long payback periods.

8) Stock Market Floatation

This privatization option entails the sale of shares to the private sector. Alternatively the government tries to retain a qualified amount of shares to retain a political influence over strategic industries such as ports that are key infrastructure which contribute to the national trade and economy promotion.

It is not a popular method in the industry as a means of privatization. A few cases are recorded and example is the port of Tauranga in New Zealand where the port corporation shares were floated in the country's stock exchange and another case was taken place in England.

20.2.5 Balance of Interests of Public and Private Sector

Among all of these discussed heretofore, Concession including Lease and BOT are prevalent options when the public sector considers private sector participation.

In selecting the best alternative of privatization, a critical component to be negotiated between a public sector and a private sector is a balance of interests between parties besides financial capability of the

public sector.

For a port that is expected to grow with throughput increase, a private sector tends to pursue unrestricted revenue share in the longer contract period without a revenue sharing rent formula. Naturally a private sector bears a greater risk of insufficient revenue until the volume to build up to projected level for a certain period since a private side is required to keep pay rent regardless of shortfall of volume.

A private sector intrinsically pursues a level of freedom and greater flexibility in the management whereas public sector looks for control and authoritative administrative power as its natural tendency. Their interests are not necessarily accord but are conflicting each other.

Additionally it should be discussed between the public sector and private sector to follow popular international practice for the rent structure that consists of a fixed price to cover mainly the loan repayment in combination with the variable portion that reflects revenue increase.

A revenue sharing scheme to share profits exceeding certain level of container volume or revenue is prevalent in the industry. Public sector would outlay such income for refurbishment and maintenance of the facilities and for a new port development.

For the balance level of variable portion should be determined through negotiation between the public side and private sector in anticipation of a win-win relationship.

20.2.6 The Role of Public Sector

An increase of private sector participation in the port operations does not necessarily mitigate the responsibility of the public sector in the management and operations of the port. Rather it will require a more effective involvement to check the private sector activities that tends to focus on the short-term revenue generation instead of long-term perspectives aiming at the growth of national economy through efficient and economical operations in the port.

Unrestricted PPP tends to ignore the public interests including environmental consideration and living condition of the people. Moreover it sometimes results in monopolization, which leads to high cost of service. A private monopoly is one of the more contentious issues to introduce port privatization.

As a result, a private sector may disregard the non-profitable infrastructure and the whole efficiency of an infrastructure may fall due to a lack of adequate maintenance in the longer operating period. This tendency is remarkable before the transfer of the infrastructure at the end of concession contract.

As the landlord owners' function, the majority of the world port administrators engage in the development and maintenance of the basic port infrastructure such as anchorage, fairway channel, wharf, etc

Another important role of the port administration in the port management is the obligation to protect the public interests. Since the port plays a significant role for development of the national economy, the administration must put an importance of maintaining the national port system as a part of effective nationwide distribution network.

Especially rapidly expanding economy such as Vietnam needs an efficient, economical and effective distribution management, in which ports become a critical component of nation's total logistical transportation network.

Also the port land and facilities are a part of precious national assets. In this regard, government sovereignty, public interests and public ownership of port properties should clearly be identified and protected.

20.2.7 Demarcation of Responsibilities of Port Administration and Terminal Operator

Followings are based on the general practices observed in the world container terminal and are universally accepted popular standards that in many cases are incorporated in a concession contract.

Under the typical Landlord Concession Agreement public sector holds responsibility for:

- (1) Preparation of long, medium and short-term port development policy;
- (2) Ownership of port land;
- (3) Development and maintenance of port infrastructure;
- (4) Regulatory function related to security, safety, and environmental protection;
- (5) Protection of public interest and prevention of discriminatory practices;
- (6) Promotion of trade facilitation and intermodal cargo traffic;
- (7) Facilitating value added logistical services in the port area.

Basic responsibilities of the terminal operator in the concession contract are:

- (1) Cargo handling operation on board vessels and onshore, cargo delivery and storage;
- (2) Maintenance of cargo handling equipment;
- (3) Procurement and maintenance of supplemental mobile cargo handling equipment;
- (4) Additional investment for replacement and procurement of equipment to protect traffic volume increase;
- (5) Updating vessel operations and yard management software;
- (6) Securing incremental cargo volume through marketing effort;
- (7) Terminal security;

20.3 Port Privatization Examples

20.3.1 Laem Chabang Port

In 1973, after long preparatory studies and investigations, Thai government has finally selected Laem Chabang as the best site to construct a new deep-water multi purpose port on account of technical feasibilities and huge potential for future expansion.

In 1982, the government of Thai has decided to accelerate the development of Laem Chabang Port (LCP). A new port facility at Laem Chabang was regarded as a critical infrastructure to encourage the production of light consumer goods, which would lead export ridden Thai economy.

Also expected was to deal with the heavy port congestion at Klong Toey and chronic traffic in the capital city of Bangkok that resulted from fast rising economic growth of the country. The government commenced to implement the Laem Chabang project with the loan assistance from Japan in 1983. Actual site construction began in 1987.

The port of Laem Chabang began operations in 1991. Laem Chabang Port (LCP) provides various port facilities including containers, general cargoes, bulk cargo for foreign trade, domestic, long haul international traffic, feeder services, RO/RO, passengers, etc. It has become the biggest port in the country and one of the busiest ports in the world. In 2008 LCP handled 4.6 million TEUs.

Under the Phase 1 development plan, five identical container terminals have been developed, B-1

through B-5. Upon completion of Phase 2 development plan, six berths, C1-C3 and D1-D3, will be added bringing total container handling capability to 10.8 million TEUs by 2011. With an addition of Phase 2 terminals LCP can accommodate Post Panamax size ships of 8,500 TEU ships.

1) Port Authority of Thailand

The Port Authority of Thailand (PAT) has made further port development plan of Phase 3 in preparing for surging container volume in accordance with country's economic growth and international trade expansion. It is expected the facilities will be operational in 2018. LCP will be reinforced to become an international marine hub on the Asia-North America and Asia-Europe trade lanes.

PAT is a state owned enterprise under control of the Ministry of Transport and Communication. It provides the services including dredging and maintenance of anchorage and fairway, installation of navigation aids and cargo handling operations at Bangkok Port and LCP.

One of the important policy direction set by the Thailand government was privatization of state enterprise to invite the private sector in the management and operation of the ports. Fully complying with the central governmental policy for privatization, PAT has successfully given the concessions to private enterprises since Phase 1 development.

The basic methodology PAT utilized to attain privatization policy was Lease Contract. The principal features of PAT's Lease Contract are:

- 30 years contract period with an extension option subject to mutual consent;
- Concession fees comprised of a Fixed Rate per annum and a Variable Fee depending on the terminal revenue or number of TEU throughput that exceeds certain level of amount;
- At the end of the Lease Contract all infrastructure, cargo-handling equipment, buildings purchased and installed by the terminal operator will be taken over by PAT.

Table below shows dedicated Container Terminals, Multi-Purpose Terminals, Passengers and RO/RO, Agri-Bulk and a Coastal Berth operated by the private companies at LCP.

Table 20.3.1 Private Terminal Operators at LCP

Terminal	Length (m)	Depth (m)	Private Operator
A-0	250	10	LMCT Co., Ltd.
A-1	365	14	Laem Chabang Cruise Centre Co., Ltd.
A-2	400	14	Thai Laem Chabang Terminal Co., Ltd.
A-3	350	14	Hutchison Laem Chabang Terminal Co., Ltd.
A-4	350	14	Aawthai Warehouse Co., Ltd.
A-5	225	14	Namyong Terminal Co., Ltd.
B-1	300	14	Laem Chabang Container Terminal 1 Co., Ltd
B-2	300	14	Evergreen Container Terminal (Thailand) Co., Ltd
B-3	300	14	Eastern Sea Laem Chabang Co., Ltd.
B-4	300	14	TIPS Co., Ltd.
B-5	400	14	Laem Chabang International Terminal Co., Ltd.
C-1	700	16	Hutchison Laem Chabang Terminal Co., Ltd.
C-2	500	16	Hutchison Laem Chabang Terminal Co., Ltd.
C-3	500	16	Laem Chabang International Co., Ltd.
D-1	700	16	Hutchison Laem Chabang Terminal Co., Ltd.
D-2	500	16	Hutchison Laem Chabang Terminal Co., Ltd.
D-3	500	16	Hutchison Laem Chabang Terminal Co., Ltd.

Note: B-5 berth was developed under BOT scheme.

Under the normal Lease Concession Contract, PAT provides basic port infrastructures, reclamation, berth construction and installation of quay gantry cranes and buildings including CFS, administration building, M&R shop while a lessee, a private operator provides cargo handling equipment.

The Thai government is striving for private participation in the port industry in looking for financial assistance from the private sector and improvement in operational efficiency both of which are necessary prerequisite for promoting port infrastructure modernization.

It is however not necessarily unconditional. A private enterprise that intends to explore port business opportunity by taking advantage of the Thai government privatization policy must be licensed by the relevant governmental agencies and their operations are subject to surveillance by a competent surveillance committee. In case of a JV with foreign capitals, at least Thai nationals should hold 51% of the stock.

20.3.2 Tianjin Port

Tianjin Port is a gateway port for the capital city Beijing. In 2008 the port has handled 8.5 million TEUs and ranked at 14th place among the world top 20 container ports. Tianjin was the first port in the mainland China that opened full container terminal in 1980. The port still maintains a leading position of container traffic in the northern China region and is expanding vigorously to enhance its capability.

Following the direction set by the communist party, China has adopted the policy to reform the country to accelerate the process of establishing and fostering the socialist market system in the latter half of '80. Many state owned enterprises have been reformed to modern corporate structure.

Preparing for an entry into WTO the Chinese government has determined to open the transportation market to foreign funded companies, which undoubtedly try to create favorable external conditions for fair competition in port industry.

Tianjin port has grown steadily by teaming up with well-known world container terminal operators and shipping lines in that the Port Authority of Tianjin (now reorganized as Tianjin Port Group listed, TPG, on the Shanghai Stock Exchange) remains as a major stakeholder.

Other major shipping lines, the CMA-CGM, MSC, and Evergreen are also looking for an investment opportunity in the port of Tianjin. The central government of Beijing has a long term plan to develop a business center in Tianjin of financial market next to Shanghai. It has been reported that the French based CMA-CGM group has signed a 50-year concession agreement to build and operate 1.7 million TEU container terminals at Tianjin.

Table 20.3.2 JV Container Terminals in Tianjin

No of Berth	Length	JV Partner
Tianjin Container Terminal		
4	1,300M	100%Owned by TPG
Tianjin Orient Container Terminal		
4	1,150M	DP World
Tianjin Wuzou International Container Terminal		
4	1,200M	TPG (40%) COSCO and other Chinese investment companies
Tianjin Port Alliance International Container Terminal		
4	1,100M	TPG (40%) PSA (20%) APM Terminals (20%) OOCL (20%)
Tianjin Port Pacific International Terminal		
6	2,300M	TPG (51%) PSA (49%)
Tianjin Port Euroasia International Container Terminal		
3	1,100M	Tianjin Port Development (40%) COSCO Pacific (30%) APM Terminals (30%)

20.3.3 Port of Singapore

The Port of Singapore Authority (PSA), before its corporatization in 1997, was a single state unit under the Ministry of Communications and Information Technology that acted as both regulatory and terminal operator. Divestiture of PSA was a part of the nationwide movement towards privatization of state owned enterprises in Singapore.

The Maritime and Port Authority of Singapore (MPA), under the jurisdiction of the Ministry of Communications and Information Technology took over the regulatory functions while the PSA Corporation Limited (PSA Corp) succeeded a terminal operator's business.

Current PSA Corp, which still has a banner of PSA, an abbreviation of Port Authority of Singapore, is a terminal operator but does not have a regulatory function at all. MPA is the legitimate regulatory organ that is responsible for administrating port and maritime affairs. As a port regulator MPA grants an official license for pilotage and towage services and other port services. Public licenses for port facilities and services have been issued to the PSA Corp and to Jurong Port Pte. Ltd.

By the divestiture of former PSA into two separate independent entities in 1997, PSA Corporation as a privatized terminal operator and MPA as the public administrator and regulator, the status of the Singapore port has been changed from a publicly managed and operated port to a landlord type port where the basic infrastructures such as fairway and breakwater as well as terminal infrastructure including wharf and reclamation are provided by the public side while terminal superstructure of QGC, CHE and buildings are installed by a private enterprise. It constitutes the most common public private participation pattern.

Following is a matrix how these two organizations, PSA Corp and MPA share the functionality.

Table 20.3.3 MPA and PSA Function

Functions	MPA	PSA
Law and Regulations	○	
Ships' Traffic Control	○	
Ships' Entry/Departure	○	
Port Planning/Development	○	○
Pilotage		○
Towage		○
Cargo Handling		○
Construction & Maintenance of Fairway/Breakwater	○	
Construction & Maintenance of Wharf	○	
Collection of Wharfage		○
Land Reclamation	○	
Yard Pavement		○
Construction of Admin Building, CFS, Gate, Power Station		○
Installation of QGC and CHE		○
Collection of Port Due	○	

When PSA Corp has been divested in 1997, the corporation made a lump sum payment of 30 years rent to the government. Upon termination of the current leasehold contract it may not be precluded, subject to further deregulation being progressed in Singapore, that the other terminal operator from abroad may win the nomination through an international bidding process.

Since 1996, PSA Corp has expanded international business started with its first international joint venture with Port of Dalian Authority. Dalian Container Terminal, which owns, develops, manages and operates three container berths at Dalian.

For expanding and facilitating international container terminal network, PSA International Pte. Ltd has been formed as the holding arm for the PSA Group business deployment. Under PSA International, PSA Marine has been set up to provide pilotage and towage services. As long as towage is concerned, the towage service business has been liberalized further. There are six licensed towage operators in the port. PSA Marine Vietnam Pte. Ltd. with which Saigon Port signed a joint venture contract has established to form a SP-PSAM Tugboat Company Ltd. in June 2009.

20.3.4 Different Functionality of Port Authorities

In China, it is common that the public sectors positively involve in the operations of the container terminal, e.g. Tianjin Port Group, Qingdao Port Group, Shanghai International Port Group, and Shenzhen Yantian Port Group. They are former Port Authorities and are now converted to the holding companies that are listed on the Shanghai, Hong Kong and Shenzhen stock markets.

Historically the Chinese port authorities used to carry out the cargo handling operations. As a typical service port, the port authorities were responsible for the port development, administration and regulatory agencies, and cargo-handling operators.

As cargo volume dramatically being increased following the drastic Chinese economy expansion, a great deal of ports have been developed and modernized almost all at once. In order to cope with the demands for building modern ports that can accommodate larger vessels, many Chinese port authorities were looking for foreign capitals and up-to-date port operations techniques.

One of first instances for a foreign transportation company made inroad into the Chinese port industry was US based container terminal operator, CSX World Terminals. CSX Orient Tianjin Container

Terminal Co., Ltd. (CSXOT) was founded in October 1998 which was a joint venture enterprise invested by the Port of Tianjin Port Authority and CSX World Terminals New World (Tianjin) Limited with registered capital of \$29.2 million. Tianjin Port Authority invested with current mechanical equipments, holding 51% of the total shares, CSX invested with cash, holding 49% of total shares. CSXOT rent such facilities as quay, yard and buildings.

Chinese port authorities hereafter successively have sought for a business tie-up with well-known container terminal operators or leading container shipping lines to make up a joint venture terminal operations companies in which the port authorities retain the majority. By investing into the container terminal operation enterprises through the stock holding companies, the port authorities still engage in the cargo handling operation.

The Port Authority of Thailand (PAT) who manages Laem Chabang and MPA in Singapore on the other hand does not involve in the cargo handling operations of the container terminals. The private terminal operators, who lease out the container terminals under the lease concession agreement, are actually engaged in the terminal cargo handling operations. The scope of PAT and MPA functionality mainly concern with a regulator and administrator of landlord port.

20.4 PPP in the Lach Huyen Port Project

20.4.1 Public Sector Investment vs. Private Sector Investment

As regards the project implementation of the Berth One and Two of Luck Huyen port, GOV has determined and issued the specific direction that VINALINES has been nominated as a Project Owner for the private portion.

Originally, as specified in MOT Decision No. 3793/QD-BGTVT dated December 22, 2008, VINALINES was tasked to invest in the Component B comprised of Wharf, Yard Road, Container Yard, Parking Area, Warehouse for CFS, Yard Embankment, Architectural Facilities and Water and Electric Power Source. For other major basic port infrastructure Component A, including Vessel Channel, Turning Basin, Breakwater, Sand Dyke, Port Service Road, were allocated to the other project owner (VINAMARINE of MOT has been nominated later).

In the official Minutes of Meeting on The Mission for the Preparatory Survey on Lach Huyen Port Infrastructure Construction agreed by the GOV and JICA dated July 23, 2009, GOV made explanation that the Reclamation and Soil Improvement works should be incorporated into the scope of project (public investment portion) while alignment and embankment work for the Berth One and Two would be conducted under the private investment portion.

VINALINES, having been granted the development right of Berth One and Two, has initially proceeded to construct Berth One and Two by its own fund and seek for foreign capital participation for development of Container Berth Three and Four. In 2008 GOV and VINALINES then have revised their direction and determined to synchronize the fund rising for infrastructure construction and container terminal development of Berth One and Two.

Through negotiations with VINALINES and MOT, the MOU has been concluded in October 2008 between VINALINES and several private enterprises, as reportedly, to team up a joint venture to cover private portion construction works on the premises that for the public portion Japan's ODA assistance is prerequisite for the basic port infrastructure construction. Participation of private firms such as reputable shipping lines in the joint venture would be instrumental not only to utilize their terminal management and operations know-how but also to expect their vessel and cargo inducement into the Lach Huyen gateway port.

20.4.2 Joint Venture (JV)

This form of privatization is usually equity partnership between a government body and a private sector party. Several Joint Venture examples are taken place in the Saigon port. For an example of the latest case Japanese carrier MOL and other international shipping lines, Hanjin Shipping Co. of Korea and Wan Hai Lines of Taiwan set up a JV with Saigon Newport Company of Vietnam to develop and operate an international container terminal at Cai Mep district of Saigon.

It would involve setting up a subsidiary company with a joint venture partners as a form of a joint stock company or a limited liability company. This option reduces, but does not eliminate, public enterprise's financial risk.

Under the Joint Venture option, a port operating company would be established specifically to operate container terminals at Berth One and Two of Luck Huyen Port. Ownership of the JV Company would be shared between VINALINES and the commercial private JV partners. By definition, the JV would be fully independent from both VINALINES and the other JV partners.

An independent board of directors would be appointed, based on nominations from both parties. The voting powers reflect shareholding levels. The influence for a critical business decision making over the terminal operating company will be proportionately adjusted owing to the share of capital contribution to the JV.

JV would be responsible for operating deficits for the initial years and would also remain responsible for loan repayments in the event of failure of the JV Company. These risks should be compensated and shared by the JV members in proportion to capital fund contribution.

20.4.3 Joint Venture of VINALINES and Partners

Under the guideline of GOV, VINALINES will team up with competitive private sector enterprise(s) to make up a joint venture company that will finance the projects for the infrastructures and superstructures at Lach Huyen Berth One and Two e.g. wharves, container yards, buildings for administration, CFS, power station, and cargo handling equipment of quay gantry cranes and other CHE.

As long as the benefits and risks of JV should be shared by the percentage of capital funded by the participants of the JV, the greater share of JV equity contributes to the greater revenues as well as the greater risks of business.

Wherever VINALINES wishes to wield a dominant administrative power over the JV company operations, VINALINES should be the largest shareholder of JV that assures VINALINES ultimate objective to contribute to an expansion of the nation's economy by providing reasonable transport costs with productive and efficient port services.

Possessing a leading position in the JV, VINALINES may be placed in a position to check the private enterprise(s)' motive that tends to focus on a short-term profit. A VINALINES as a SOE initiative to guide the other private firm(s) of JV toward the right direction that accords with the national policy is indispensable for this challenge.

20.4.4 VINALINES Business Partner(s)

Prospective candidates of JV partners include:

- Regional stevedoring company;
- Global shipping line;
- International container terminal operator;

- Trading company; and
- Transport company.

1) Regional Stevedore Company

One of possible candidates is a regional stevedore company who has sufficient experience and knowledge to operate a dedicated modern container terminal with sophisticated IT technology to perform loading, unloading and execute container delivery with port customers.

It is prerequisite that a company has strong financial capability to invest capital for construction and purchase of necessary CHE as a joint venture partner. In this respect, there are a limited number of such capable candidates who can afford to meet such high level requirements.

2) Global Shipping Line

Global shipping line, that can afford to collect a lot of information on port performance on a global basis, takes an advantage to compare port productivity indicators, operating costs as well. A port therefore is required to provide a high and consistent standard of service in order to remain competitive in the industry.

Most of major world shipping lines operate dedicated container terminals worldwide. They have originally developed their own container terminal networks in order to maintain schedule integrity and the operational costs containment purpose.

Since the containerization is advancing progressively, they realize the fact that operating container terminal is lucrative business and they have shifted their corporate container terminal operations section from the mere cost center to a profit center to yield revenue to their corporations. They therefore possess a lot of expertise to manage and operate container terminal with relying on the effective use of computerized terminal operations systems.

In addition to their superior technical know-how, another great advantage for teaming up with a world class shipping line is that it can bring cargoes and vessels into the port. For the port, especially for a newly developed container port, an incremental business is critical element to recoup a huge initial capital outlay.

a) Shipping Lines' Container Terminal Business

Looking at a business opportunity to operate the container terminal, the shipping companies are now trying to enhance their control over terminal assets and actively participate in the terminal operations.

They think that a port and inland infrastructure will become the critical issues. Those shipping companies who weather those challenges better than the others will have service differentiation and pricing advantage. At the same time, many of the shipping companies who operate container terminals invites smaller lines, that cannot afford to generate traffic to warrant operating their own facilities, as a third party terminal business.

Shipping lines are becoming more involved in terminal operations because the volume of their cargo, especially for the alliances, justifies the investment in fixed assets. Maritime shipping continues to produce low returns, but port terminal can produce healthy returns even in competitive situations. Every line therefore wants equity in terminal today. In recent years, terminal operators are trying to team up with shipping lines to form a joint venture in taking advantage of shipping line's potential base cargo.

A landlord port authority on the other hand prefers to lease their property to shipping companies

on the assumption that they would bring with them a secure base cargo. Port authorities are therefore seeking equity participation by shipping companies.

It is recommendable for VINALINES to enthusiastically look for business partnership with world class shipping companies, which will not only bring in the base cargo to Lach Huyen Port but also facilitate developing modern container terminal, and other prospective private partner who would be instrumental to generate an incremental business into the port.

3) International Terminal Operator

Well known international terminal operators have developed knowledge and expertise, financial strength, and also a leveraging power to negotiate with shipping lines. Nowadays, container port operations have become so complex that they require sophisticated workflows supported by software programs, which the international terminal operators are able to provide as essential standard tools.

International terminal operators have the required highly specialized managerial and technological knowledge but they may also bring substantial initial and continuous financial investment to build, operate and maintain more efficient ports. A limited number of well known global container terminal operators such as the top five of global container terminal operators, PSA, Hutchison Port Holdings (HPH), APM Terminals, DP World, and Cosco (Review of Maritime Transport, 2009) are handling majority of world container volume.

4) Trading Company

Looking at high profitability of the container terminal operations, Japanese major trading companies are also interested in the container terminal business and seeking for business opportunities especially in the developing countries.

They can contribute to bringing in an incremental business and help invite additional shipping lines into the port. In view of their financial strength, global network, a logistical expertise, a wide range of business coverage, evidenced success of container terminal operations as a JV partner at Viet Nam, Thailand and other regions worldwide, it is recommendable to consider forming a JV with them.

20.4.5 Foreign Investment

As regards a JV tie-up with a foreign enterprise in the port industry, there is no specific rule and regulation in the Law on Investment. A foreign application for investment in the port industry undergoes local governmental agencies' scrutiny as well as relevant central government agencies' judgment and handled on a case-by-case basis. Only guidance that concerns with a foreign participation in the port industry is WTO Commitment in October 2006 that refers to permissible percentage of foreign investment in each sector:

- | | |
|--|-------------------|
| - Container Handling Services | Not more than 50% |
| - Container Station and Depot Services | Not more than 50% |

Above restriction will be lifted up within seven years and will be open by 100% for foreign investor's participation.

20.4.6 Competition among Private Operators

The potential of creating a private monopoly has become one of the more contentious issues in the efforts to introduce port privatization. Many port authorities consider the creation of competitive conditions among port operators is the cornerstone of their port policy.

In the modern container ports, therefore, many port authorities put greater weight on the creation of

competitive environment among port operators as the foundation of their policy. They think that the competition in the port is the root of progress and basic management strategy for providing better services to the customers that ultimately contributes to the growth of national trade through efficient and productive port services with affordable prices.

In the longer perspective though, it is desirable to introduce competitive pricing mechanisms to use market value of the services as the tariff determinant factor.

Some contracts, as a result of contract negotiation between the port authority and the terminal operator, bear the clause that protects the terminal operator from competition. For example, the port may not be allowed for a specified period of time to offer a similar contract to the terminal operator's competitors.

Conversely, in Indian ports of Mumbai, Jawaharlal Nehru and Cochin, the port authority that precludes the company from tendering for the new container terminals on the grounds that the same operator cannot run two terminals in the same port.

An adverse effect of monopolistic behavior by the powerful terminal operator can be seen in Indonesia. Reportedly Hutchison Port Holdings and its partner the state owned port-operating company at Tanjung Priok Port effectively controls 75 % of the Jakarta's container market. Indonesia's anti-monopoly body, Competition Supervisory Commission stepped in January 2004 and made six-month investigation against the complaint of high cargo handling tariff filed by the Chamber of Commerce.

As discussed above, port authorities usually stimulate intra-port competition. However, medium sized and smaller ports, because of their limited traffic, often accommodate only one port terminal operator. In such cases, port authorities may exert their regulatory powers to regulate port charges and tariffs. It largely depends on the level of competition in the regional market and more likely the negotiation power of the port authority.

20.4.7 Attractiveness of Port to the Private Entity

Followings are prerequisites for attracting foreign private enterprises with which the public sector to form a JV to the port in the developing countries (UNCTAD meeting on Port Logistics: Opportunities and Challenges for Developing Countries, December 2007 quoted in the Review of Maritime Transport, 2008).

- A clean and transparent bidding process;
- Quality and capacity of landside multimodal connections and port infrastructure;
- No government cap on profits;
- Good safety and security requirements;
- A training and retrenchment of labor plan;
- A clear role for the port authority (e.g. landlord model);
- Smooth customs procedures; and
- Absence of corruption.

20.5 Responsibilities of Port Administrator and Terminal Operator

20.5.1 Port Administrator in Haiphong

There is a Maritime Administration (used to be Port Authority) in Haiphong port under VINAMARINE. Their involvement in the port administration is very limited as discussed in the latter part of this study. As a matter of fact Haiphong Port Maritime Administration mainly focuses on the maritime administration, maritime safety management and maritime security management in the port

of Haiphong, a narrower domain in comparison with the other port authorities in the port industry.

It concerns little with a regulatory functionality over cargo handling operations that is the major business objectives of port e.g. supervision of cargo handling activities, controlling terminal operators' business, maintaining port tariff in a reasonable level to promote and protect port customers, exporters and importers.

The most important role of the port administration in the port management is the obligation to protect the public interests. Since the ports play a significant role for development of the national economy, the administration must put an importance of maintaining the national port system as a part of effective nationwide distribution system. Rapidly expanding world economy especially needs an efficient, economical and seamless distribution management, in which ports become a critical component of total logistical transportation network.

20.5.2 Privatization Method for Lach Huyen Port

The most modern port privatization method in the industry is the Landlord Port Model and its variations, in which a public port administration retains ultimate property rights over land and infrastructure and fulfills all regulatory functions under which the commercial operations are carried out by private operators with lease and concession agreements.

Historically a port administration used to be involved in the dual functions as an administrator on the one hand and on the other as a cargo-handling operator. It has turned out that the operations by public employees and systems are not necessarily to meet the increasing demand of improving cargo-handling capabilities. This is the prime reason the function of container handling operations are separated and handed over to a private sector.

The most common privatization mode in Vietnam is a JV comprised of public sectors and private port operators. Public entities in the JV are VINALINES and its subsidiary of Saigon Port Company and other public enterprises such as Saigon New Port Company (a port operating company under the Ministry of Defense), Saigon Investment Construction & Commerce Company Limited and Tan Thuan Industrial Promotion Company (IPC, an industrial park related company under Ho Chi Minh Peoples' Committee). They are teamed up with private port terminal companies as follows.

Table 20.5.1 JV Container Terminals in Vietnam

Container Terminal	SOE/Public Corporations	Private Sector
VICT (First Logistics Company)		Mitsui & Co. NOL, Vietnam Partners
SP-SSA Intern'l Container Terminal	Saigon Port	SSA Marine
Cai Mep Intern'l Terminal	Saigon Port, Vinalines	APM Terminals
SP-PSA International Port	Saigon Port, Vinalines	PSA Vietnam
Saigon Premier Container Terminal	IPC	DP World
Cai Lan Intern'l Container Terminal	Cai Lan Port Joint Stock Co.	SSA
Maersk & Saigon Port	Saigon Port	APM Terminal
Tan Cang Cai Mep Intern'l Terminal	Saigon New Port	Hanjin, MOL, Wan Hai
Saigon Intern'l Terminals Vietnam Ltd	Saigon Investment Construction & Commerce Co. Ltd	HPH

The big four world container terminal operators, PSA International, HPH, APM Terminals and DP World are all participating as private side JV partners. It clearly demonstrates the fact that a potential business opportunity in the port industry in Vietnam is significantly remarkable.

Not only for mobilizing financial resources from private sectors in order to mitigate public monetary

burden and free up funds for other policy achievement but also catching up terminal management and operations expertise from JV partners would be major objectives to inaugurate a JV. Private JV partner's contribution to cargo generation by bringing in an incremental business into the port is a direct product attributable to JV partnership.

20.6 Port Stake Holders

There are several major stakeholders in the Vietnamese ports. One of them is the administrative bodies that manage overall port development. They include most likely the central government agencies, the Ministry of Transportation, the Ministry of Planning and Investment, the Ministry of Defense, the Ministry of Agriculture and Rural Development, the Ministry of Construction, the Ministry of Finance, their regional agencies and People's Committee.

The other major stakeholder is operational bodies that operate the port by providing various port services such as cargo handling, tugboat assistance, pilot service, water and fuel supply, ships' crew handling, etc. The most of those services are carried out by the corporatized SOE and private enterprises in this country.

Port users including shipping lines, forwarders, truckers, importers and exporters are other important stakeholders who use port facilities and services provided by the administration and port service providers.

As ports evolve themselves to meet the progress of supply chain management system, ports are no more simple conventional transport nodes between seaborne and other means of transportation modes. Ports are now regarded as critical component of logistical cargo movement where a variety of value added services such as sorting, storing, labeling, distributing and even manufacturing works are provided in the port complex. Port administrator should be aware that port users are looking for such capabilities in the port.

20.7 Port Development Plan vs. Shipping Lines' Needs

Another major stakeholder in the port is a user who utilizes the port assets and services to make contribution to the logistical movements of nation's export and import trades. Shipping lines and exporters and importers are therefore critical components of the port users. They are the final decision makers to select the port of call and their service networks.

Although the speed is a bit slowed down due to the world stagnation originated in the financial crisis in the US in 2008, the container cargo volume is expected to increase steadily. In order to cope with the constant trade growth, the development of port infrastructure is a must for facilitating logistical cargo movement.

There is a common argument in the port industry that whether ships' call must first be secured for planning port infrastructure development or the port facility must be developed beforehand in preparation for accommodating larger ships to cope with the growing cargo demand. This type of argument is taken place often when a port administrator tries to expand port facilities to accommodate a larger and deep containership that is not currently making the port call.

A proponent for an expansion to construct a deep-water berth may insist that the reason of missing a larger and deeper containership call at a port is the lack of adequate port facility. The port falls behind the other neighboring deep-water ports if a deep-water port is not readily available. They say the port must be ready to accept such a larger containership otherwise the port competitiveness is lost and the port may be downgraded to a feeder port.

An opponent may emphasize that there must be sufficient cargo in the port to justify an enormous investment for an expansion or a construction of new deep-water berth.

In case of Vietnam, the former position may weigh heavier due to the fact that the port facilities in Vietnam are inadequate and far behind of needs of port customers. As the major historical ports in the Southern and South Eastern countries are located along the rivers near the cities that impose a draft restriction. In Vietnam, Haiphong in the northern part of the country and Saigon ports in the south have a problem of draft limitation which hampers the shipping lines from deploying a mother containership in these ports. Extra transportation costs resulted from the use of feeder services burden Vietnamese traders that eventually work negative to weaken economical competitiveness of Vietnamese products.

20.8 Multi-Purpose Port of Lach Huyen

When talking about the port management organization of Lach Huyen port, the fact that the port will handle various kinds of cargo, containers, general cargoes and bulk cargoes, chemical and petroleum should be taken into account. The management organization should therefore reflect this fact and be effective enough being capable to handle diversified requirements. The scope of port organization would evolve in parallel with the expansion of the port that will be taken shape step by step in the longer project period

20.9 Haiphong Maritime Administration and Haiphong Port Holding

As long as Berth One and Two, the focal point of this study, are concerned, VINAMARINE's Port Authority and VINALINES's affiliate of Haiphong Port Holding Limited Liability Co. (Haiphong Port) are critical governmental entities that directly involve in the development manage and operate the first two container berths.

VINALINES is a state owned corporation directly under the Prime Minister's Office established on Jan 1, 1996. VINALINES is currently operated as a holding company for a VINALINES group, which includes 14 dependent accounting units and 61 subsidiaries, joint stock companies, and joint venture companies with a combined labor force of more than 28,619 employees.

20.9.1 Haiphong Port Holding

Haiphong Port is a subsidiary of VINALINES that is in charge of following activities:

- Development and maintenance of infrastructure and superstructure;
- Cargo loading and discharging, storage, receipt and delivery, tallying and warehousing;
- Transporting and freight forwarder;
- Setting cargo handling tariff;
- Tugboat services;
- Collection of wharfage;
- Transportation arrangement within the port compound;
- Shipping agency;
- Logistical services;
- Terminal security.

Figure 20.9.1 shows the organization chart of Haiphong Port Holding.

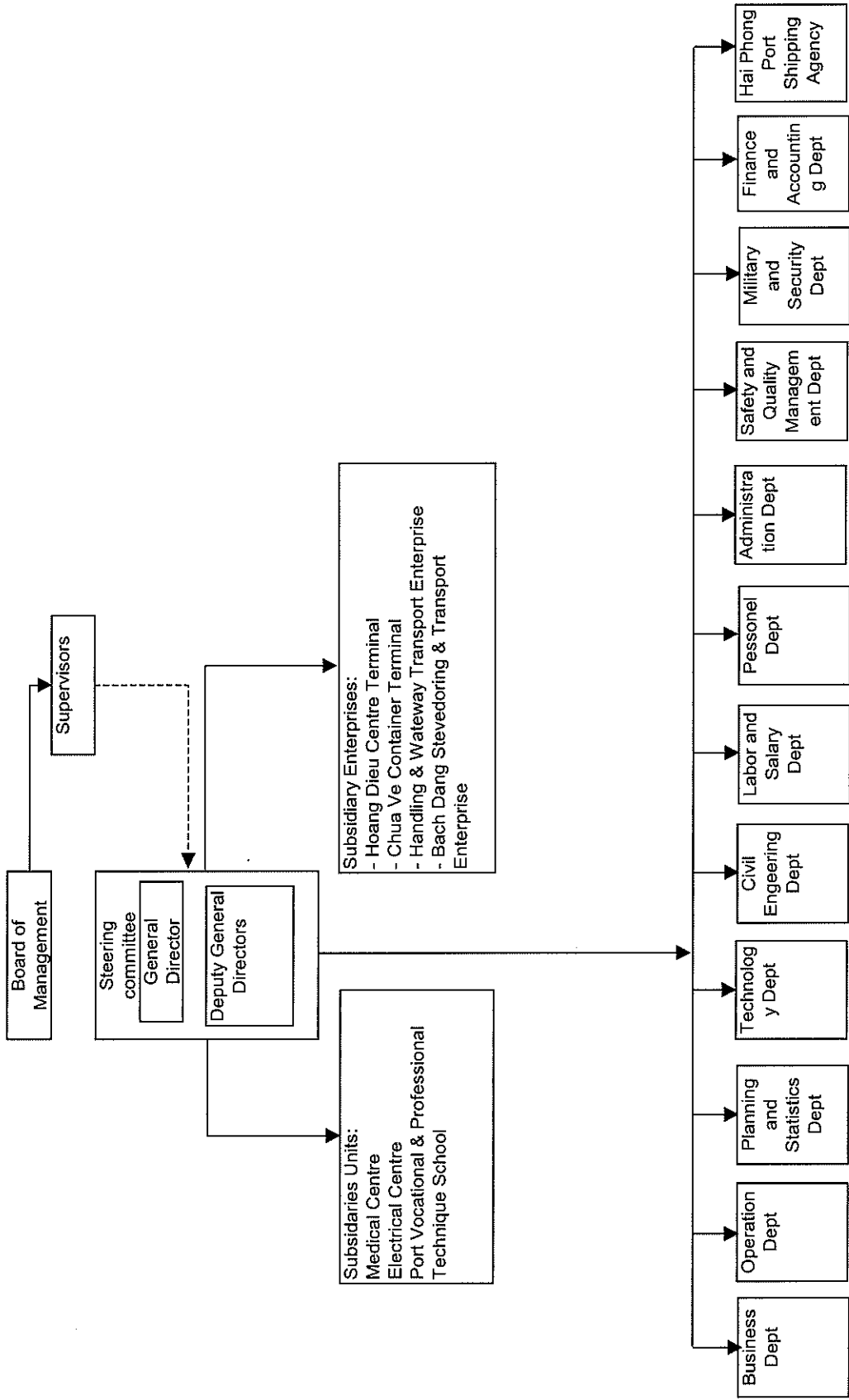


Figure 20.9.1 Haiphong Port Holding

20.9.2 Haiphong Maritime Administration

VINAMARINE was established under the Ordinance of Vietnamese Government No. 239/HDBT dated June 29 1992 and is one of the executive agencies under MOT. VINAMARINE has following major branches under its jurisdiction:

- Maritime Administration;
- Vietnam Maritime Safety Agency;
- Vietnam Maritime Safety Inspectorate;
- Vietnam Maritime Search and Rescue Co-Ordination Center;
- Vietnam Ship Communication and Electric Company; and
- Vietnam Liaison Office to IMO.

VINAMARINE has three representative offices at Haiphong, Ho Chi Minh City and Da Nang City, 24 Maritime Administration Offices and many other offices under its control. Duties and responsibilities of the Maritime Administration are in accordance with the Article 66 of the Vietnam Maritime Code, (No. 40/2005/GH11) June 14,2005 e.g.

- (1) To organize the implementation of regulations and management of maritime shipping activities in seaports; inspect and supervise seaports channels, the system of navigation aids and supervise maritime shipping activities,
- (2) To grant permits, supervise seagoing vessels leaving, entering and operating in seaports; prohibit seagoing vessels which fail to meet all necessary conditions on maritime navigation safety, maritime navigation security and prevention of environmental pollution from entering seaports,
- (3) To execute seagoing vessels arrest decisions,
- (4) To temporarily detain seagoing vessels,
- (5) To organize search and rescue of persons in distress; mobilize persons and necessary means for conducting search and rescue or handling environmental pollution incidents,
- (6) To organize the registration of seagoing vessels, registration of crewmen; collect, manage and use assorted seaport dues,
- (7) To organize maritime inspection, investigation and handle maritime accidents,
- (8) To assume the prime responsibilities for and administer the coordination of activities of state management agencies,
- (9) To sanction administrative violations in the maritime domain,
- (10) To perform other tasks and exercise other powers as provided for by law.

There are six divisions under Director and Vice Directors i.e.

- Maritime Safety & Inspectorate Division
- Financial & Accounting Division
- Legislation Division
- Administration & Personnel Division
- Port Management Division
- Cat Hai Representative

Broadly they engage in three major spheres of responsibilities:

- Maritime Administration;
- Maritime Safety Management; and
- Maritime Security Management.

There are seventy Maritime Administration staffs to support those activities.

The Maritime Administration in Vietnam has a little engagement in the “port administration” except port and fairway traffic control, vessels’ entry and departure formalities and collection of Tonnage Charges, Maritime Safety Assurance Fee as prescribed by the law on Maritime Charges, Fees and the Table of Maritime Charges and Fees, MOF Decision No: 98/2008/QD-BTC. The Maritime Administration pursuant to the Decree No.172/2007/ND-CP shall collect pilotage.

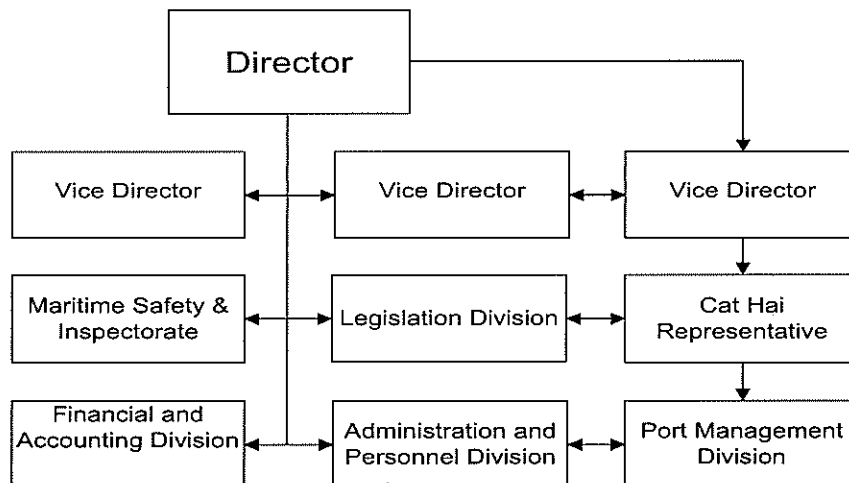


Figure 20.9.2 Haiphong Maritime Administration

20.10 Upgrading Port Management Capability

The country has so far relied on the public service port model where the State invests in the infrastructure and assigns a SOE to manage and operate the ports. The government has got remuneration in the forms of tax and investment capital recovery. Such a port management scheme little contributes to utilizing non-State sector strengths including a joint stock company and a joint venture enterprise.

In order to fully utilize such potential resources of the private sector, Vietnam needs to establish a competent port management unit that engages in the supervision and coordination of the entire port investment project. Very possibly Vietnam would further promote BOT type private participation in anticipating more active investment fund raising by a private sector.

A reshaped port management unit would manage concession contracts as well as protecting port land and water area ownership. Under the current port development, management and operations scheme in Vietnam, there are many stakeholders involved in and seems to be little consistent in the line of management.

20.10.1 Port Authority Model

1) Port Authorities Responsibilities

Generally, a port authority, which is largely responsible for the tasks of construction and administration of port facilities, bears following characteristics and responsibilities:

- It shall be a financially independent juristic person;
- It shall be a public entity in order to protect public interests;
- To provide autonomous management and operation business practices;
- In principle, no financial subsidy is provided from the central, regional and municipal government and no contribution of proceeds to the government bodies;
- To be represented and led by a board of commissioners who are nominated by the Council of Ministers;
- To be empowered to execute administrative decisions that are deemed necessary for materializing port development plan such as land exploitation right, a taxation right.

Japanese Port and Harbor Law defines the role and responsibility of the port administrator as follows:

- Preparation of port development plan;
- Maintenance of port area and port facilities;
- Construction of port facilities and execution of other necessary works;
- Administration and operations of port facilities;
- Management and operations of mooring facilities;
- Designation of mooring facility and fixing their use regulations, reception of vessel entry and departure report;
- Arrangement of fire protection devices and emergency equipment;
- Investigation and research on the port development, preparation of statistical data and public relation activities;
- Water supply and waste oil disposal works;
- Lease of port facilities;
- Regulation for use of leasing port facilities;
- Management and operations of industrial waste disposal facilities and waste oil disposal facilities;
- Arrangement and management of welfare facilities;
- Preparation and publication of public port tariff.

Although it is not specifically delineated in the law, security compliance in accordance with the ISPS requirements is a part of responsibility of the port administrator.

2) Port Authority of Thailand

Port Authority of Thailand (PAT) is regarded as a successful model of port administration body in the South East Asia. PAT was established in 1951 succeeding the Office of the Port of Bangkok as an autonomous body under the general supervision of the Ministry of Transport and Communication and the Ministry of Finance. PAT manages two ports of Bangkok and Laem Chabang Port.

Under the section 9 of the Port Authority of Thailand Act, the scope of powers vested to the PAT is described as follows:

- (1) To construct, purchase, acquire, dispose of, hire, let and operate port equipment, services and facilities;
- (2) To purchase, acquire, lease, hire, let, own, possess, dispose of or operate in connection with movable and immovable properties;
- (3) To determine charges for the use of its ports, services and facilities, and to issue regulations regarding the method of payment of such charges;

- (4) To issue regulations regarding safety, the use of its ports services and facilities;
- (5) To borrow money;
- (6) To dredge and maintain channels in the Authority Area;
- (7) To control, develop and provide facilities and safety in port undertakings and navigation in the Authority Area;
- (8) To fix the rates of various dues and charges within the Authority Area,
- (9) To issue bonds or any other instruments for the purpose of investment;
- (10) To form a limited company or a limited public company for the conduct of port undertakings and other businesses within the scope of the objectives of the Port Authority of Thailand, provided that shares of the said limited company or limited public company shall be held by aliens as defined by the law on alien business in the amount of not exceeding forty-nine percent of its registered capital;
- (11) To form a joint venture with other parties of to hold shares of a limited company or a limited public company for the benefit of the businesses of the Port Authority of Thailand.

It is noteworthy that the provision contains the specific clause that PAT is authorized to fix the rates of dues and charges. Also it clarifies the basic rules applicable for establishing a limited company or a joint venture to conduct port businesses.

The act also defines the role of Board of Commissioners that represents PAT. It is given the power and duty to lay down the policy, and to control and supervise the activities of the PAT. The Council of Minister appoints the Chairman and the member of the Board and number of member of the Board are not less than six but not more than ten.

Current member of the Board of Commissioners are nine from the Marine Dept, Customs Dept, Federation of Thai Industries, Thai Oil Power Co. Ltd, National Defense Studies Institute, scholars from various universities and from the Prime Minister's Office. PAT's experience may constitute a good guideline when GOV tries to reform a port management system.

As discussed PAT is not engaged in the cargo handling operations at LCP. It is a typical landlord type management style in that PAT provides basic port infrastructure and superstructure and terminal lessee installs mobile cargo handling equipment in most cases. Instead PAT is involved in the administrative and regulatory matters to maximize private sector participation and to coordinate their activities for the purpose of protecting port customers for the benefits of Thailand national economical expansion.

PAT's organization is as per Figure 20.10.1.

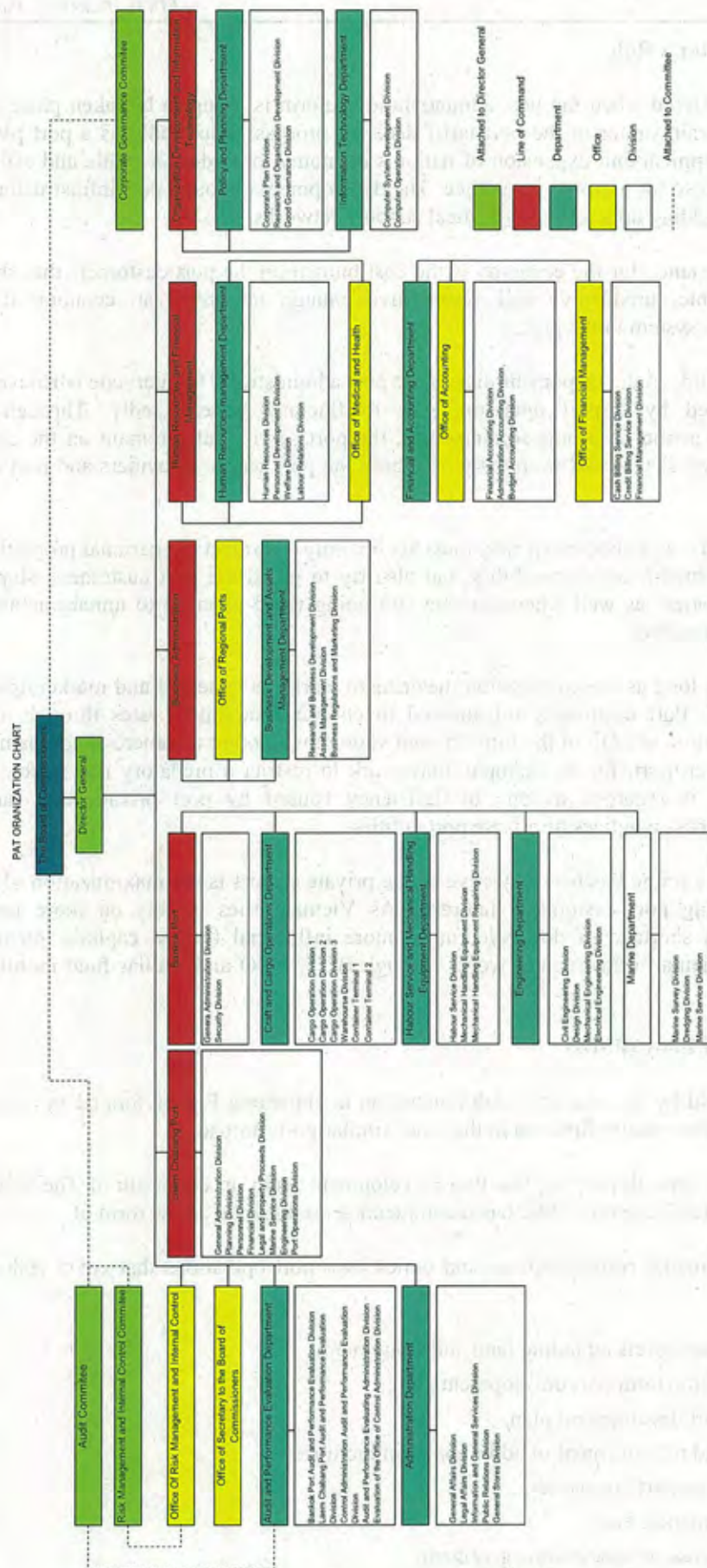


Figure 20.10.1 PAT Organization Chart

20.10.2 Port Administrator's Role

One of items to be considered when the port administration reform is going to be taken place is an involvement of a port administrator in the port tariff decision process. Admittedly as a port plays a critical role in the development and expansion of nation's economy, providing a stable and efficient port services are prerequisite for a growth assurance. The development of sound port infrastructures is fundamental factor for building up a reliable logistical support networks.

Another paramount importance for the economy is the cost burden on the port customers that should be fair, reasonable, stable, predictable and competitive enough to assure an economical and dependable transportation system in the port.

It is not unpopular to include in the responsibilities of the port administrator to intervene whenever the port service rates quoted by a port operator tends to fluctuate unrestrictedly. Through this administrative corrective action by a port administrator, the port service rates remain on the certain steady and reasonable level that would eventually help both the port service providers and port users as well.

A port administration body, as a state enterprise, must act not only to protect the national properties as its intrinsic government enterprise responsibility, but also try to guard the port customers, shipping lines, exporters and importers as well whenever they are going to be exposed to unreasonable rate pressures from the port operators.

It may not be the case as long as the competition mechanism works as expected and market oriented pricing rule is observed. Port customers are allowed to choose competitive rates through a rate negotiation. The participation of SOE in the form of joint venture with other commercial companies as in the case of Lach Huyen port, for an example, may work to restrict a predatory rate action by a private operator, which is regarded as one of deficiency caused by port privatization due to monopolistic way of business practices of private port entities.

It is a universal rule that a prime business objective of the private sectors is the maximization of their profits and sub-optimizing port customer's interests. As Vietnam tries to rely on more foreign investment to cope with shortage of domestic funds, more influential foreign capitals intends to participate in the fundamental infrastructure works through BOT, BOO and similar fund mobilizing methods.

20.11 Port Management Body (PMB)

Current responsibility held by the Maritime Administration at Haiphong Port is limited in its scope that covers almost the harbor master function in the other similar ports abroad.

The JICA report on the "Final Report for The Port Development Study in the South of The Socialist Republic of Vietnam" dated December 2002 has recommended establishing a new form of

PMB, which will bear broader responsibilities and duties over port operations that cover following area such as:

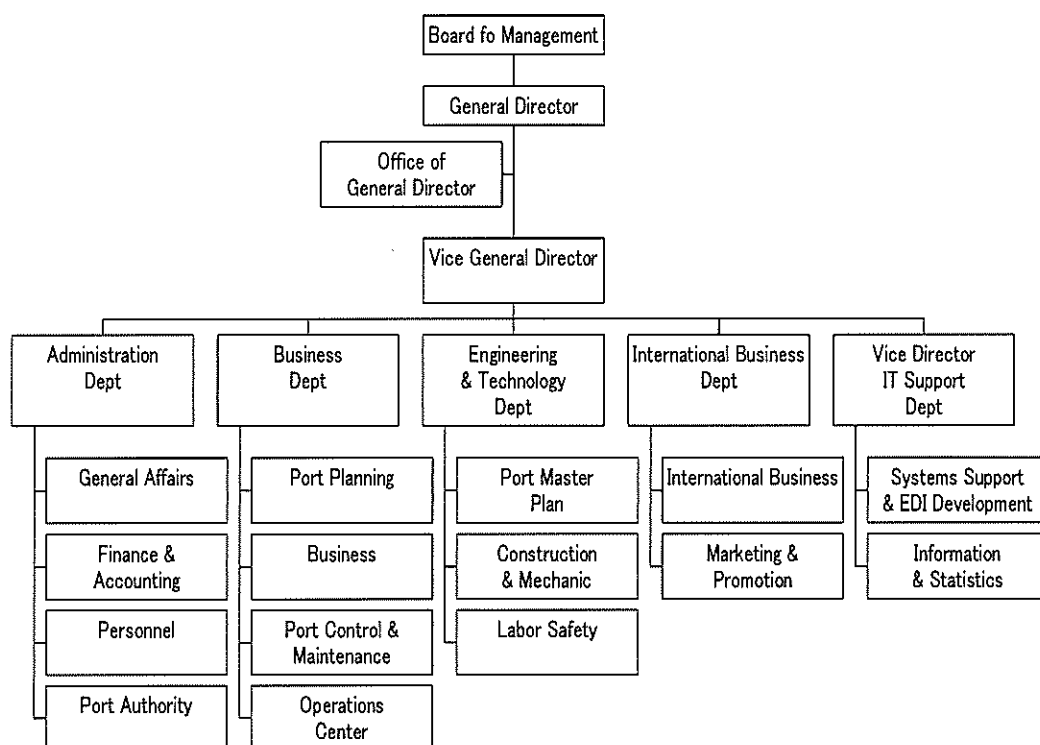
- Ownership of port assets including land and equipment,
- Long term/Medium term port development plan,
- Execution of port development plan,
- Construction and improvement of additional port facilities,
- Management over port businesses,
- Port tariff governance, and
- Conclusion of lease or concession agreement.

It is not an easy task to reform a port administration system since many relevant stakeholders have involved in the port management scheme in this country. Hesitations from those who have various kinds of interests in the current port management system may persistently emerge. An establishment of streamlined port system, however, under a straightforward line of management is indispensable challenge for GOV to deal with the future for more open foreign investment and participation in the Vietnam port industry.

In dealing with a lack of effective port management system in the current administrative framework and looking for great growth opportunities of the Lach Huyen port, a TEDI study also recommends to set up a Port Management Unit.

It says in I 1.2.4.1 under the title of “The Organization Structure of Port Management Unit” of the TEDI’s Feasibility Study on “Haiphong Lach Huyen Gateway Port Construction Investment Project that “To gain high effect of administration management and port exploitation, management, a Management Unit should be formed. There is an organization under the steering of Board of Directors and functional departments who in charge of daily management and exploitation activities. Board of Management is main factor to set up Management Unit effectively, independence of finance and following the development directions of branch, region and to be under the supervision of Vietnam National Maritime Bureau (VINAMARINE)”.

Undoubtedly it should be a right direction and is recommendable to organize such Port Management Body. A proposed organization chart is as per Figure 20.11.1. The scope and size of Port Management Body should be adjusted and modified in accordance with the progress of phased development of the Lach Huyen port project.



Source: SAPROF Team

Figure 20.11.1 Proposed Port Management Body

As described heretofore, the size and scope of the PMB organization depends largely on the port reform challenges by VINAMARINE for streamlining port administration and management system as well as the progress of the Lach Huyen port development. VINAMARINE has worked out a comprehensive reform plan under the technical assistance of JICA on improvement of the Vietnamese

port management system in November 2008. It is strongly advisable to follow the direction identified in the study in order to enhance and improve port management capability that is essential prerequisite for accomplishing a Master Plan on the development of Vietnam's seaport system for 2020.

20.11.1 PMB Organization

Followings are job descriptions of the divisions proposed by the study team for a new PMB.

1) Administration Division:

a) General Affairs;

Responsible for general affairs matters concerning PMB and shall assume a coordinating function to adjust businesses handled by the other PMB divisions.

b) Finance and Accounting;

Dealing with financial matters of PMB including the collection of facility rentals,

Budget compilation,

Management of the incomes and disbursements.

c) Personnel;

Management of human resources including recruitment and staff training of PMB personnel.

d) Port Authority;

Representing public sector to deal with private sector enterprises to protect public interests,

Assuming ownership of infrastructure and port assets and their administrative management,

Overseeing maritime safety in the port including activities vessels traffic management,

Port security including fire fighting, dangerous cargo storage, international requirements in respect of the ISPS codes.

Implementing the environment protection.

2) Business Division:

a) Port Planning;

Making up a port development plan in accordance with the national port development master plan and in coordination with the relevant central ministerial agencies.

b) Business;

Negotiating a berth lease/concession contract and execution of an agreement,

Conclusion of the lease/Concession contract,

Selection of a terminal operator,

Port tariff management to ensure competitiveness of the port.

c) Operations Center;

Overseeing and controlling operations of each port facility,
Coordinating overall operations activities to maximize port capability,

3) Engineering and Technology Division:

a) Port Master Plan;

Preparing a short term overall port maintenance schedule.

b) Construction and Mechanic;

Responsible for construction, expansion and renovation of the public facilities,
Overseeing maintenance works handled by the facility lessees to protect public interests and for integrity,

c) Labor Safety;

Supervising labor practices to assure no labor casualties.

4) International Business Division;

a) International Business:

Maintaining an international relationship with other foreign ports and port industry organizations,
Participating international conventions, conferences and agreements in regard to the port administration and management.

b) Marketing and Promotion:

Promotion activities to invite additional port customers, shipping lines, cargoes, logistics businesses into the port.

5) IT Support Division;

a) Systems Support and EDI;

Providing IT support and facilitating EDI networks with port related governmental agencies and port users.

b) Information & Statistics;

Establishment of IT based port statistics collection system.

As long as Luck Huyen Container Berth 1 and 2 are concerned it has been decided that the MPMUII is assigned to execute the project until the completion of the ODA project in 2015 and VINALINES and its JV companies are appointed as a terminal operator, it is recommended for VINAMARINE and their regional agency to form a preparatory department with about 50 staffs to work out a concrete and realistic plan in order to set up an effective PMB organization for Lach Huyen middle term project that includes 5-6 container berths and 3 multi-purpose berths aiming at being operational in 2020 in full swing.

If it is intended to follow PAT as a model case for the landlord type port administration and

management scheme it may need about 200 PMB staffs to fulfill responsibilities.

A size of PMB depends on;

- The scope of responsibilities which a PMB will cover,
- The size of port and a type of berths, public general cargo berths, dedicated container berths, passenger, bulk cargoes, industrial private berths, vehicle, etc.,
- The amount of cargoes in tonnage or TEU,
- Share of responsibilities between public and private in case of lease/concession contract,
- Either to execute the technical engineering works by own PMB employees or by contracting out to outside,
- Use of IT technology to rationalize daily routine business.

There is no universal benchmark for a size of staff to be employed by a PMB. At Laem Chabang that is referred as a model case of the typical landlord container port in this study employs about 200 to handle 5.2 Mil TEU containers.

The most significant factor to affect the size of PMB in case of the landlord type container port may be an alternative to carry out the engineering works. In case of Hamburg Port Authority it employs 439 engineering mechanics and skilled labor for maintenance dredging and other civil engineering works over road, bridges, embankment, etc. of public facilities out of total 1,716 PMB staffs. Port of Rotterdam on the other hand has only 10-11 engineering staffs who engage in the inspection and supervisory role over the contractors that are hired to do public facilities maintenance works.

Yokohama Port and Harbor Bureau has 316 total staff including 127 engineering staff. Yokohama Port Development Public Corporation which specializes to administer and manage 10 container berths and 8 general cargo liner terminals has 42 staffs.

The size of PMB varies by port by port and is not liable for comparison.

For an initial period current MA may take care of PMB functions under the present laws and regulations for the time being but for an implementation of full responsibilities it should need a specific legislative framework to justify the rights and obligations of PMB.

21. Collaboration between Public and Private Sector

21.1 Basic Demarcation

Basic demarcation between public entity and private side on the construction of Lach Huyen port is laid out in the Decision No. 3793/QĐ-BGTVT dated December 22, 2008. This baseline has been clarified further in the MOM of July 23, 2009 signed between MOT, MPI, VINALINES and JICA that the reclamation and soil improvement works for the Berth One and Two should be incorporated into the scope of the Project (public investment portion) while alignment and embankment would be conducted by under the private investment portion.

As discussion is still underway between VINAMARINE, the project owner of public side investment and VINALINES and its Japanese JV candidates, there would be various alternatives for investment demarcation.

Table 21.1.1 Demarcation between Public and Private Sectors

	Baseline	Alternative 1	Alternative 2	Alternative 3
Vessel Channel	●	●	●	●
Vessel Turning Basin	●	●	●	●
Breakwater	●	●	●	●
Sand Dyke	●	●	●	●
Port Service Road/Bridge	●	●	●	●
Berth Construction	○	○	●	●
Reclamation/Soil Improvement	○	●	●	●
Container Yard	○	○	○	●
Buildings (Gate/Admin/M&R)	○	○	○	●
Water/Power Supply/Sewage	○	○	○	●
QGC	○	○	○	●
Other CHE	○	○	○	○
CIQ Offices	-	●	●	●

Note: ● Public Investment ○ Private Investment

Base Case is as per Decision 3793 while Alternative 3 can be seen in a typical lease contract where a public administrator provides all the facilities and CHE except movable CHE.

There is no universal division of investment responsibilities for port development. It depends on the financial capabilities of the public side, political implications in accordance with the government policy, commercial willingness and intention on a part of a private investor.

If a commercial private investor wishes to hold a dominant decision making power in respect of terminal management and operations, a private investor may try to invest more in the facility and equipment to gain a hegemony. A lease fee imposed by a public entity might be pegged lower, in this case, due to less investing burden made by a public side.

In view of pure financial consideration, the use of governmental ODA loan is beneficial for reducing total project costs lower due to a marginal interest rate and deferred repayment schedule applicable in the official loan to an initial grace period.

21.2 Private Investment in Seaport Construction

Vietnam Maritime Code stipulates the terms in regard to the investment in building, management and operation of, seaports and seaports channels that domestic and foreign organizations and individuals may invest in building seaports and seaport channels shall decide the forms of management and operations of seaports and seaport channels under the Article 64.

It further goes on to say that the government shall provide in detail for investment in building, management and operation of seaports and seaport channels.

It clearly specifies a government responsibility to provide detail for investment scope and an investor who contributes to construction funds in accordance with the government decision on the investment shall decide on the forms of management and operation of seaports.

There is no specific legal requirement for a private sector to invest in PPP scheme. It depends on the government decision on the scope of infrastructure that should be invested by a private sector. It is not precluded, therefore that a port that is constructed with whole government fund can be leased out to a private company through an open international bidding process.

In the near future, PPP with BOT, BOO and their variants will increasingly be introduced and become popular method for the construction of container ports in Vietnam.

21.3 Enhancement of Public/Private Collaboration

21.3.1 SAPROF Study Team Recommendation

In order to make the development plan more realistic and effective by taking advantage of public and private partnership, SAPROF team has proposed various recommendations e.g.

- Construction of a Port Administration Building that will house governmental agencies including CIQ (Customs, Immigration and Quarantine) offices, Maritime Administration, Maritime Safety Company, Pilot, and Tugboat companies, etc.

An accommodation of these governmental agencies in one building should be a first step to further provide a One Stop Service that precludes shipping lines' agents and exporters and importers from physically running between those offices with paper documents although a real One Stop Service in the modern port is to use a computerized system that enables to share electronically the same information on the ship and cargo among governmental offices;

- Providing a mooring facilities for Port Service Area for tag boat, pilot boats and other small crafts;
- Constructing a 750M berth for a 50,000 DWT ship for full load and a 100,000 DWT ship for partial load in accordance with the team's demand forecast;
- A 160M width –14M CDL for access channel for the passage of above sized vessels in the belief that forced loss time at outside in waiting for high tide should hold off shipping lines' motives to deploy mother ships for U.S. West Coast line haul service lane. In view of port competition among neighboring ports a 14M depth in the fairway is a critical prerequisite;
- Reclamation and Soil Improvement should be borne by the public investment, as per Alternative 1 in the Table 21.1.1, due to

- a) a great amount of money for the works on the shoulder of the private sector,
- b) alleviating heavy financial burden on the private side which would inevitably be passed over to exporters and importers by high port usage costs,
- c) relying on the use of lower interest loan, and
- d) facilitating works by utilizing STEP loan and coordinating progress with other basic infrastructure works by Japanese undertakings.

21.3.2 Further Collaboration with Private Sector

For the success of this PPP project, a close well-devised work plan is decisively indispensable for both public and private sectors. Possible contention from the private side may include:

- (1) A concrete timetable and commitment by the government on the completion of works of the following components that is fatally important for smooth inauguration of Lach Huyen port.
 - Land Reclamation and Soil Improvement
 - Access channel dredging
 - Cat Hai Bridge and Port Access Road

They are integral part of comprehensive development plan. Without a timely completion of the works in a coordinate fashion, the real aim of the Lach Huyen development plan i.e. providing efficient port service with reasonable costs might unjustifiably be affected. A synchronized coordination between public sector and private sector is a key for success of this project.

- (2) An introduction of Berth Three and Four should be adjusted in order to ensure sound throughput growth at Berth One and Two. The insistence by the private investors of first two berths is that unless the container volume at Berth One and Two exceeds certain planned level or otherwise subject to negotiation with JV operation company, the government should not commence construction of Berth Three and Four;

22. Mitigation Measures for Environmental Impacts

22.1 Natural Environment

The project component as the implementation plan as ODA (by 2015) is the initial phase of the Medium Term Development Plan until 2020. The most significant aspect of this plan from port operational view point is only container terminal to handle “clean” container cargo will be provided. (Multipurpose terminal to handle general cargo will be the part of future plan including the provision of additional container terminals). Still, the overall construction work requirement of this plan (2015) is quite similar to the year 2020 plan though of rather smaller scale. Accordingly the construction stage environmental impacts and mitigation measures are basically same as described under Section 13.1.1 of Chapter 13.

Even regarding operational impacts and mitigation measures, they are quite similar to that described under Section 13.1.2 of Chapter 13, except for the fact that potential for air pollution due to cargo handling related fugitive emission is virtually eliminated as only container is handled. Accordingly relevant salient features of environment mitigation measures described in Section 13.1 of Chapter 13 are summarized below with emphasis on important mitigations measures.

22.1.1 Construction Stage Mitigation Measures

1) Sourcing of Materials for Construction of Port Facilities

The proposed construction plan for the project duly confirmed that the procurement of all required natural resources for construction could be supplied by legally certified suppliers located close to project site in Hai Phong and nearby Hai Duong areas. The construction contractor shall ensure all construction materials are procured from legally certified suppliers.

2) Dredging and dredged material management

The proposed dredged material disposal site at Nam Dinh Vu area as shown in Figure 16.1.5 of Chapter 16 has sufficient capacity to accommodate the entire dredged material derived (33 million m³) that is not contaminated. Still its availability during actual dredging works can not be guaranteed since this area is targeted for land reclamation to be an industrial estate.

Since offshore disposal seems to be the most viable alternative option, environmental effects and mitigation measures of offshore disposal may be studied as component of change in design of dredging works of the detailed engineering design and the relevant additional (supplementary) EIA Report shall be formulated for approval by MONRE prior to the start of construction works. Alternative study on offshore disposal is expected to require 6 months.

The proposed offshore location for alternative study on dredged material disposal is Bac Bo Bay area (Refer to Figure 16.1.5) located in between the planned Sand Protected Dyke and Do Son with water areas having depth of at least 20m. Being located at offshore of Bac Dang Estuary this area is expected to have relatively high natural turbidity and regarded as most suited area for alternative study on offshore disposal of dredged material and hence to select the most suitable location.

3) EHS Aspects of Construction Works

Due diligence to ensure implementation of necessary environment, health and safety (EHS) measures in integral manner during the execution of the construction works by the construction contractor (also referred to as proper construction management or good construction practice) need not be overemphasized considering also the location of the construction works in offshore area. Contractor as the first priority shall ensure the safety of his construction works and workers with strictly in

compliance with “Safety First” concept that would also include mandatory use of necessary personal protective equipment/PPE. Navigation safety of transport barges of construction materials with proper scheduling is also very important. Moreover, all wastes generated due to the construction works including living wastes has to be managed sanitarily and treated as appropriate so as not to cause water pollution and in the sensitive offshore area of the construction site located near Cat Ba Island and to maintain the cleanness of the work environment. This also includes due focus on 3R (reduce, reuse and recycle) with segregation and management disposal of solid wastes generated. Fugitive (dust) emission from stock piles of sand and others need to be duly controlled with water spray or vinyl sheet covering as appropriate. Moreover, all construction machinery and equipment should be in good workable condition and meet the air emission standard requirement.

Contractor shall conduct (contractor may be obliged to conduct) periodic regular environmental monitoring in both on-land area of Cat Hai Island and offshore area of the construction site at Lach Huyen Estuary by using the services of an independent reputed organization to conduct all such environmental monitoring related sampling and analysis work.

A tentative environmental monitoring program (plan) as updated in the SUPPLEMENTAL EIA Report study by the SAPROF is given in Appendix 13-1. This tentative plan shall be reviewed and reformulated in detailed engineering. The reformulated environmental monitoring plan for construction stage will be duly included in the technical specifications and contract tender documents in accordance with the 2 relevant contract packages (dredging works and port terminal cum related facility construction works) as proposed in Section 17.4 of Chapter 17.

22.1.2 Operational Stage Mitigation Measures

Comprehensively, the required overall environmental mitigation measures could be categorized as EHS (environment, health and safety) of port operational management, in reality container terminal operational management for this initial phase of the project by 2015.

1) Port Operational Safety

Overall operational safety including the safety in container cargo handling work and work force (stevedores and others) is very important. In addition navigational safety of ship and vessels is the important aspect of access through navigation channel and subsequent berthing. The required navigational safety and vessel traffic control is described in Chapter 23. Moreover, the necessary facilities and resources to deal with emergency situation like vessel accidents including accidental oil spills (that might occur in rare instance) need to be provided and ready for action at short notice as the emergency management system of the port operation. These are essential technical requirement to be met for effective port operational management.

Still, this project at this stage will handle only container cargo and even by 2020 only general cargo will be additionally handled. So no oil terminals to handle significant (and large) quantity of oil as cargo (oil tanker vessels) and also significant noxious liquid cargo in bulk form is involved. So there is no possibility to encounter large scale oil spills.

In this respect, even in future, provision of oil terminal facility in such a sensitive coastal water environmental area need to be carefully investigated along with alternative sites elsewhere since the risk of ecological damage caused by potential accidental (and large-scale) oil spill consequent to oil tanker vessel accidents to the protected coastal marine environment of Ha Long and Lan Ha bays located near the port (and also to tourism), could be very severe even with the provision of all the necessary facilities to handle potential oil spill as significant component of emergency management system of port operation.

2) Port waste management

Considering the proximity of the port to Cat Ba Island (with its Cat Ba National Park, protected area) located basically at a distance in the range of only about 1 to 3 km away from the port across the Lach Huyen Estuary, effective management of all wastes generated both consequent to port (container terminal) operation and ship berthing activities is utmost important.

Container cargo is clean and hence there is no potential air pollution directly due to cargo handling. All machinery, vehicles and equipment in the port in particular container trailer trucks shall be in good operational condition and meet the air emission standards. Under such condition good ambient air quality in the port located near topographically favorable offshore area could be duly attained.

In this respect the necessary waste reception, treatment and disposal systems shall be incorporated as integral component of the port design. The waste reception and treatment facilities as also incorporated in the approved EIA Report include sewage treatment system to treat both human waste generated due to port (container) terminal operation and also that disposed by berthing ships (waste corresponding to Annex IV of MARPOL 73/78), waste oil reception facility to receive oily bilge waste from berthing ships (waste corresponding to Annex I of MARPOL 73/78) and solid waste (garbage) reception facilities to manage both solid waste generated due to port terminal operation and also that disposed by berthing ships (waste corresponding to Annex V of MARPOL 73/78).

The effective operation of these waste reception facility in the port shall be complemented with an effective surveillance system to mitigate illegal dumping of wastes by ships (with high levy as fine to deter illegal dumping) within the port waters and its vicinity.

The above environmental protection and mitigation measures focused on the EHS of overall port operation shall be complemented with the implementation of regular periodical port environmental monitoring focused at least as the first priority on the monitoring of surrounding estuarine coastal water environment of Lach Huyen Estuary. A tentative port operational environmental monitoring plan is included in the EIA Report (2008) that is further updated in the SUPPLEMENTAL EIA Report formulated by this SAPROF and given in Appendix 13-1. This tentative environmental monitoring plan needs to be reviewed and reformulated during the detailed engineering.

3) Maintenance dredged material management

The waste management system for the port operation would also include effective management of periodical maintenance dredged materials. Periodic maintenance dredging would be necessary in the access channel to ensure continuity of design navigation depth and hence to ensure navigation safety of vessels. As far as possible near-shore disposal as practiced currently in the existing Hai Phong Port will be continued including those in the communes as proposed in the EIA Report and shown in Figure 16.1.5 of Chapter 16 though those locations are rather far from the port requiring high transportation cost. Moreover, other potential beneficial uses such as ecological restoration of coastal areas and wetlands of Bach Dang Estuary also recommended. Nam Dinh Vu area is regarded as no longer available by the time of the port operation since land reclamation for industrial estate is expected to be already completed by that time.

Since the proposed port is expected to expand its facilities in the future, it is highly recommendable to consider "Sustainable solution" for the dredged material management. For the limited time frame for the initial two (2) container terminal and a common berth, it is recommendable to utilize the permitted dump site, but other sustainable measures such as:

- (1) offshore dumping with appropriate environmental measures to avoid the negative impacts on enclosed waters and surrounding ecosystem,
- (2) beneficial use for the estuary/tidal flat creation adjacent to the sand control dyke, which is subject

to provide favorable environment for tidal and coastal organism, especially for juvenile fish and shell fish

shall be considered in the detail design stage.



Figure 22.1.1 General Location of the Potential Mitigation Measures

Considering the sustainability and practicability of the offshore dumping, it is economically and practically favorable for the port development. However, careful consideration of the environmental impacts should be studied with substantial number and period of baseline study. With the sufficient studies and appropriate counter measures to reduce the environmental impacts, it would be possible to acquire the approval of the EIA and permission of the dumping.

Considering the beneficial use of dredged material, it would be good opportunity to utilize dredged material as natural habitat restoration rather than costly reclaimed landfill material or no value dumping. Due to the elimination of the coastal mangrove forests for decades in the region, substantial decline of the fish catch has been observed and reported by fishermen in the region. It would be a good opportunity for the Hai Phong City to restore the tidal flat with tidal vegetation such as mangroves, which would be able to add further benefits in the region from recovery of fish catch with sustainable solution for dredged material management. In this respect feasibility of creation of artificial wetland at the rear side of the port terminal facing the Nam Trieu Estuary using the maintenance dredged material as soil conditioner as a means of ecological enhancement in the surroundings of the newly created port is recommended to be studied after commencement of port operation. This option is also regarded as the most economical means of maintenance dredged material management requiring minimum transport of dredged materials.

Since both offshore dumping and tidal flat creation is likely take time to develop reliable design/plan, it is recommendable to consider the utilization of the permitted dumpsite for the initial construction and explore the sustainable management measures for the maintenance dredging. In addition to the detailed dredging plan at the detailed design stage, it is recommendable to analyze the potential options for the sustainable management measures for the maintenance dredging.

22.2 Social Environment

22.2.1 Preparation Stage Mitigation Measures

In addition to the recommended mitigation measures in chapter 4 of approved EIA report (2008) and approved letter of the EIA report (Decision No 2231/QĐ-BTNMT), SAPROF's recommended

mitigation measures for potential impacts on social environment pointed out in Section 13.2 are shown below. In addition, SAPROF experts' updated and recommended mitigation measures based on the discussions with MPMU II are also given in "Chapter 4 and CONCLUSION AND RECOMMENDATION" of the SUPPLEMENTAL EIA report (Appendix 13-1). Followings are the summary of the recommendable mitigation measures in social environment as a Japanese ODA project.

1) Land Acquisition

Based on the fundamental concept of the Vietnamese land acquisition policy for the public's needs, the land acquisition shall be only sufficient level to achieve the objectives of the projects. Based on the discussion with MPMU II, some public facility area (presently salt pan and road) proposed by the SAPROF can be avoidable to sufficiently allocate the public facilities (Figure 22.2.1). Summary of the expected impacts and mitigation measures are shown in Table 22.2.1 and expected cost for the land acquisition is shown in Table 22.2.2 respectively.

Table 22.2.1 Summary of the Expected Impacts and Recommended Mitigation Measures

Present Use	Area (m ²)	Recommended Mitigation Measures
1. Unknown use land between residential building and VTS Station	7,200	There are no sign of land use at this moment so that it is recommendable to acquire the land either it belongs to public or private. The compensation shall be settled by the compensation policy of Hai Phong City (Decision No 130/2010/QĐ-UBND)
2. Gov. facilities	13,600	It is recommendable to continuously utilize the existing facilities (border control and the VTS station) without major change in facilities and properties. In case of need for land acquisition, it shall be followed by the Decision No 130/2010/QĐ-UBND.
3. Bare ground along the coast with 5 graves	26,300	This portion is necessary to be acquired for the public facilities. At this moment, there are no sign of land use except 5 graves. 5 graves shall be relocated by the full support of responsible authorities following Decision No 130/2010/QĐ-UBND.
4. Salt pan	1,500	It is recommendable to avoid the land clearance since this portion could be avoidable by the rearrangement of the public facilities. VINAMARINE/MPMU II are also agreeable to avoid the land clearance of the salt pan.
5. Aquaculture pond	64,700	This portion is necessary to acquire the land for the public facilities. At this moment, there are no sign of aquaculture usage. The aquaculture ponds belong to the border control office. The compensation shall be settled by Decision No 130/2010/QĐ-UBND.
6. Forest	10,200	This portion is necessary to acquire the land for the public facilities. The forest belongs to the local community and there are no sign of the environmentally essential species. The compensation shall be settled by Decision No 130/2010/QĐ-UBND.
7. Road	4,300	Due to the VINAMARINE/MPMU II's preference and possibility of the design arrangement, one of two roads could be avoidable to aquaculture. As a result the necessary land acquisition could be reduced to 3,500m ² . Although both roads will be cut off by the Tan-Vu – Lach Huyen Highway, it is required to maintain the function of the existing two roads connecting between Cat Hai TT and Got harbor. Such counter measures shall be prepared by the responsible implementation agency of the highway.
	Reduced to 3,500	

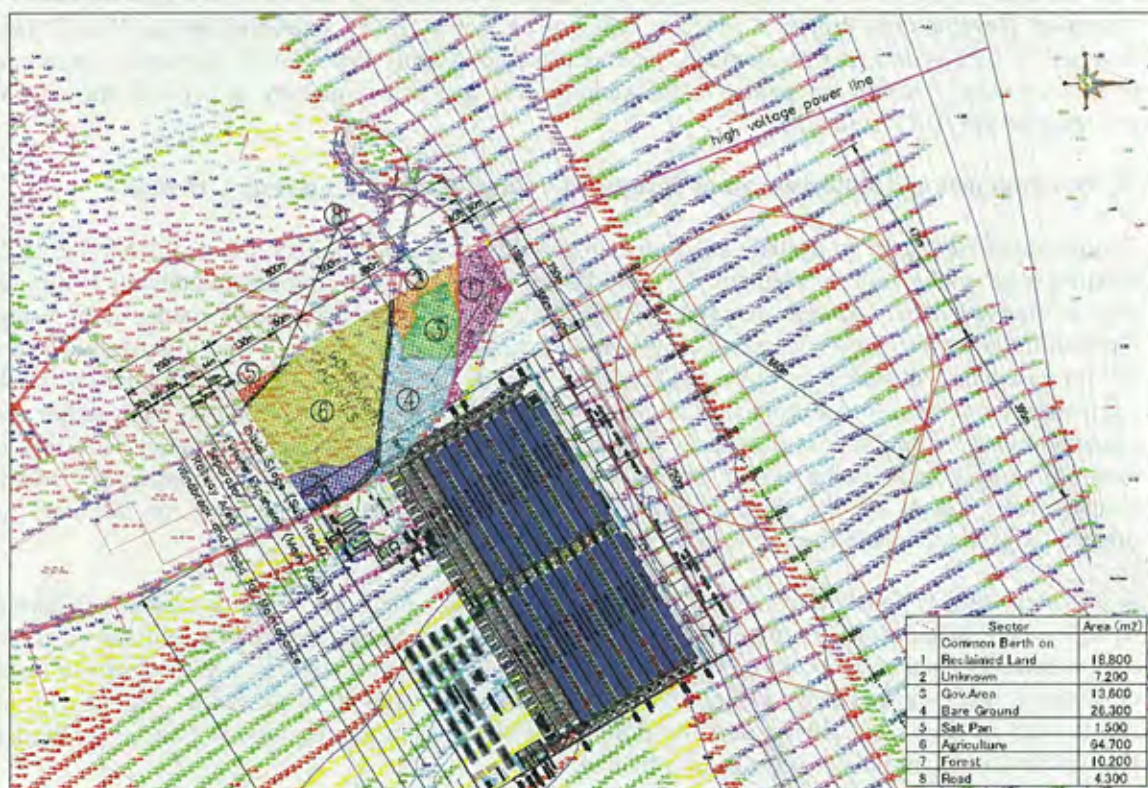


Figure 22.2.1 Present Land Use of the Proposed Public Facility Area

Table 22.2.2 Mitigated Cost of Land Acquisition (SAPROF ESTIMATION)

Present Use	Area (m ²)	Compensation/support Cost (million VND)
1. Unknown use land between residential building and VTS Station	7,200	237.6
2. Gov. facilities	N/A	
3. Bare ground along the coast with 5 graves	26,300	- Land: 867.9 - 5 Graves: 34.5
4. Salt pan	1,500 Reduced to 0	
5. Aquaculture pond	64,700	- Land: 640.53 - Bank creation: 25.0 - Facilities: 1,220.8 - Labor tool: 77.64 - Fence: 20.0 - Pond treatment: 97.05 - Living facilities: 7.0 - Aquaproduct: 679.35 - Labor: 7.12
6. Forest	10,200	- Land: 67.32
7. Road	3,500	3,500.0
Total		7,482 (Thousand USD441)

There are three items (graves, aquaculture ponds, bare ground) belong to private property or economic activities, which shall be properly mitigated to meet the JBIC Guideline. As there are still some gap between JBIC Guideline/WB OP 4.12 and Vietnamese safeguard policy described in Chapter 9 and 13, we would recommend referring the resettlement policy framework (RPF) of "Northern Delta

Transport Development Project”, which is ongoing project by MOT supported by the World Bank. Though the RPF is different donor project, it is reasonable to apply WB OP4.12 due to the consistency of ODA projects’ safeguard policy in the same region and same ministry as well as the original reference of the JBIC Guideline.

2) Development and Enforcement of Safeguard Policy for Coastal Fishing Activities

Though there are hardly to provide adequate safeguard measures for project affected fishermen under existing legal framework in Vietnam, it would be required to consider proper consideration for such project affected people to meet the JBIC Guideline. Since fishermen regularly change their fishing location to gain the fishing yields, it is not easy to estimate accurate value of the loss of the catch in the proposed port development area. Following article 16 of WO OP4.12, the best solution for the compensation is not always money. It is actually preferable to provide prolong solution rather than pinpoint money solution. As commonly experiencing in other compensation program in Vietnam, land-to-money compensation is not always successful due to the PAP’s unfamiliarity of financial management. Based on the local communities’ demands, vocational training for the new job opportunities is preferable for the sustainable solution in the communities.

In addition, unlike aquaculture and other farming activities, there are many immigrant fishermen living on their boats. Consideration for such fishermen is also essential. In order to accurately estimate the potential impacts and necessary budget for the support of such fishermen, we would recommend conducting the fishing survey by individual socio economic experts who do not belongs to any stakeholder of this Lach Huyen port development project. Such survey report shall be referred to finalize the safeguard policy of the coastal fishing.

As requested by JICA, MPMU II and responsible authorities started making efforts to develop reasonable safeguard policies to treat PAP reasonably and meet the Japanese ODA policy. Though there are few legal frameworks to maintain or support the potentially affected fishermen, the people’s committee of Hai Phong is actively working on the new safeguard policy development to take care of such project affected fishermen at this moment. Since there are no legal frameworks for such matter at this moment, the Hai Phong PC has requested relevant authorities of Hai Phong city, such as DONRE, department of land management, department of agriculture, fishery and rural development, and department of finance to consider the possible option for such project affected fishermen. Since there is not good enough information to develop a realistic policy, it is highly recommendable to conduct “Detailed base line survey” to understand the reality of the fishing activities and to consider the potential safeguard policy for such affected people.

Although the development of the safeguard policy is not the responsibility of VINAMARINE/MPMU II, both authorities are keen to contribute to such safeguard policies as the project owner and implementation agency of the port development. MPMU II has actively consulted with the people’s committee of Hai Phong to meet the requirement of the necessary land delivery with timely manner as well as the commitment of the Vietnamese authorities under the Japanese ODA loan processes. However, due to the new policy development, it is likely to take more than six (6) months. However, in the case of the higher priority matter suggested by appropriate higher authorities, the process might be shortened. In order to acquire the majorities of the project affected fishermen and meet the tight schedule of the port development, it is highly recommendable to develop such safeguard policy as soon as possible and lead smooth transaction of the construction stage. In order to convince the appropriate higher authorities to accelerate such process, JICA or relevant Japanese agency may be able to support such matter by official request form or other means.

Due to the lack of educational opportunity and financial support, majority of the fishermen have fear of occupation change is highly recommendable to encourage such fisherman to participate the supporting program such as vocational training for the potential employment. Based on other emerging countries experiences, improvement of language skill is also effective skill training to adapt new employment opportunities. Based on the Article 22 (Support for job change and creation) of

Decree 69/2009/ND-CP, there are many authorizes involved in the development of such policies, but MPMU II or VINAMARINE shall also make efforts to ensure the development and enforcement of such safeguard policy meet the development schedule of the proposed Lach Huyen port development project. As long as the SAPROF study, the enforcement of such policy shall be the beginning of the detail design stage which would be fall of 2010.

22.2.2 Construction Stage Mitigation Measures

1) Labor safety and community health

Considering the labor safety, proper training and management is essential. As the responsible agency for the project implementation, MPMU II shall include the supervisory mechanism to ensure the contractor's EHS training and enforcement on the ground in the EMP.

As for the control of the transmittable diseases, proper supervision and collaboration with contractors for the health care training are recommendable. Since the self protection is the most effective measures to control such diseases, periodical and continuous efforts to maintain the workers' and local communities' awareness are recommendable. Control of the physical contacts between immigrant workers and locals, such as workers' township, would be another recommendable option to reduce the risk.

2) Socio economic impacts

It is highly recommendable to control the expected sharp inflation of pricing in the Cat Hai island. In order to maintain the affordability of goods for the local communities, it is recommendable to monitor the price indexes and affordability/income level of the local communities. Such monitoring result shall be shared among MPMU II and local authorities to consider necessary measures if it is necessary. Physical separation between local communities and workers community would be a solution for the initial stage by means of sufficient goods supply in the workers' township.

Follow-up for the resettlement would be another important matter in the construction stage. Due to no requirement for the residential resettlement, follow-up for livelihood support should be focused. Although MPMU II is not responsible for the implementation of the safeguard policy, it is recommendable to include a mechanism to check the appropriate implementation of such policy in EMP. If it is necessary to improve such safeguard measures, MPMU II shall coordinate responsible authorities to ensure the effective implementation as the responsible agency for the project implementation.

3) Coastal Fishing

In order to monitor unexpected negative impacts on fishing communities, it is recommendable to conduct periodical sample survey including the fish yield and income level of the project affected fishermen. If it is necessary to provide additional support based on the sample survey result, responsible authorities shall consider modification of the safeguard policy for coastal fishing or additional counter measures such as encouragement of job transfer. In the case of necessity to improve the safeguard policy for the coastal fishing, MPMU II shall coordinate responsible authorities to improve the modified policy as the responsible agency for the project implementation.

22.2.3 Operation Stage Mitigation Measures

For the consideration of the social environmental impacts during the operation stage, monitoring the implemented safety guard measures in the previous stages would be the primary matter in this stage. As a part of environmental management plan (EMP) and responsibility of the implementation agency, MPMU II shall supervise VINALINE and other private operators to ensure the EMP including the proper implementation and follow-up of the safe guard policies described in section 13.2.3.

23. Navigational Safety and Vessel Traffic Control

23.1 Natural Environment

23.1.1 Wind Condition

Table 23.1.1 shows the frequency in occurrence of wind in Hai Phong. The climate in northern Vietnam and adjacent area is relatively calm except for stormy season (from June to November).

The frequency of the wind velocity more than 10m/sec is 2.26%. The prevailing wind direction in the category 10-15m/sec is SSE (37%) and East (24%). Although frequency of strong wind more than 10m/sec is rare, in case of East wind, the vessel drifts to the side end of the channel due to receiving the wind from the side. It is possible to affect to the vessel maneuvering.

Table 23.1.1 Frequency in Occurrence of Wind in Hai Phong

Wind Direction	Wind Force (m/sec)										Total	
	Calm		1.0-4.0		5.0-9.0		10.0-15.0		>15.0			
	Nr	%	Nr	%	Nr	%	Nr	%	Nr	%	Nr	%
N			432	9.97	132	3.05	4	0.09	0	0.00		
NNE			89	2.05	36	0.83	1	0.02	0	0.00		
NE			241	5.56	63	1.45	3	0.07	0	0.00		
ENE			134	3.09	12	0.28	0	0.00	0	0.00		
E			578	13.35	482	11.13	23	0.53	0	0.00		
ESE			227	5.24	123	2.84	1	0.02	0	0.00		
SE			307	7.09	132	3.05	4	0.09	0	0.00		
SSE			87	2.01	126	2.91	36	0.83	0	0.00		
S			180	4.16	144	3.32	11	0.25	0	0.00		
SSW			21	0.48	51	1.18	13	0.30	0	0.00		
SW			50	1.15	24	0.55	0	0.00	0	0.00		
WSW			4	0.09	0	0.00	0	0.00	0	0.00		
W			36	0.83	3	0.07	0	0.00	1	0.02		
WNW			20	0.46	1	0.02	0	0.00	0	0.00		
NW			155	3.58	15	0.35	0	0.00	0	0.00		
NNW			108	2.49	16	0.37	1	0.02	0	0.00		
Total	204	4.71	2,669	61.63	1,360	31.40	97	2.24	1	0.02	4,331	100.0

Source: Report on Port Capacity Reinforcement Plan in Northern Vietnam: Nippon Koei Co., Ltd & Associates, Sep. 2009

23.1.2 Current and Tide Condition

The current at Lach Huyen estuary is governed semi-diurnal tidal flow. The survey in January 1987 shows that average current speed is 0.3 – 0.5m/sec. It is not so serious to large vessel. But, due to the effects of wind and wave generated flow, the current velocity becomes the maximum speed of 1.0 to 1.2m/sec (2.3knots) at flood as well as ebb tide and may reach to the greatest speed at 1.5 to 1.8m/sec during ebb tides at the river estuaries. It is expected that current direction is alongside the river. It is expected that the influence by current is small because the vessel receives current from head on or following.

Although the current form Cua Nam Trieu affects vessel from side, the current flow is blocked by the

training dike that is built from the end of the berth to offshore (abt. 7.6km).

Table 23.1.2 shows that the height of tide at Hon Dau, and Table 23.1.3 shows the height of designed training dike. As these Tables show that the height of the training dike is lower than MHWL and equal to MWL, it is expected that the training dike is under the water when tidal level is high.

In this way, vessels are not able to find the location of the dike under high water level. The deep draft vessels do not go close to the dike due to their draft, however the small crafts have the possibility to go close to the dike. Accordingly, it is necessary to designate the dike with a light beacon for small crafts.

Table 23.1.2 Tidal Range

HWL	CD+3.55m
MHWL	CD+3.05m
MWL	CD+1.95m
MLWL	CD+0.91m
LWL	CD+0.43m

Table 23.1.3 Crown Height of Training Dike

Training Dike	CD+2.0m
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23.1.3 Wave Condition

Table 23.1.4 shows the frequency in occurrence of normal wave height at Hon Dau Station (2006 – 2008). Although the wave height that is less than 1.0m occupied 91.4% of occurrence, the category wave height 0.5 - 1.0m occupied 47.1% of occurrence. In this category, the wave in the East occupied 54.6%. It is not so serious maneuvering for a large vessel.

Table 23.1.4 Frequency in Occurrence of Normal Wave Height by Direction

Wave Direction	Wave Height (m)										Total	
	0-0.25		0.25-0.5		0.5-1.0		1.0-1.5		>1.5			
	Nr	%	Nr	%	Nr	%	Nr	%	Nr	%	Nr	%
N			3	0.09	57	1.74	8	0.24	1	0.03		
NE			0	0.00	47	1.43	16	0.49	0	0.00		
E			184	5.60	844	25.71	63	1.92	5	0.15		
SE			37	1.13	429	13.07	89	2.71	6	0.18		
S			4	0.12	149	4.54	75	2.28	13	0.40		
SW			0	0.00	10	0.30	5	0.15	1	0.03		
W			0	0.00	1	0.03	0	0.00	0	0.00		
NW			0	0.00	10	0.30	0	0.00	0	0.00		
Total	1,226	37.34	228	6.94	1,547	47.12	256	7.80	26	0.79	3,283	100.0

Source: Report on Port Capacity Reinforcement Plan in Northern Vietnam: Nippon Koei Co., Ltd & Associates, Sep. 2009

23.1.4 Fog Frequency

Table 23.1.5 shows the frequency in occurrence of foggy day in Hai Phong. The fog occurrence concentrates in winter season from December to April. The average frequency of foggy day is 21.2 days annum and 6.5 days in peak month of March. Although it is not high frequency in average, it is

possible to be in fog when the vessel is passing the channel. Accordingly, it is indispensable to know its definite position, clearance to the side end of the channel, other vessels location, etc.

Table 23.1.5 Frequency in Occurrence of Foggy Day (1984 – 2004)

	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec	Mean
Max	15	9	20	16	3	0	2	0	6	2	5	15	61
Avr.	2.4	4.0	6.5	4.6	0.3	0	0.1	0	0.3	0.2	0.6	2.1	21.2

Source: Report on Port Capacity Reinforcement Plan in Northern Vietnam: Nippon Koei Co., Ltd & Associates, Sep. 2009

23.2 Traffic Environment

23.2.1 Vessel Traffic

Table 23.2.1 shows the calling vessel record of Hai Phong Port in 2006. The record shows 2,960 vessels entered to Hai Phong Port, and the maximum number of the vessel was 277 in month (August and October).

Table 23.2.1 The Entering Vessels Record in Hai Phong Port (2006)

Classification of Vessel Size	Month (2006year)												Total
	1	2	3	4	5	6	7	8	9	10	11	12	
-1,000GT	31	16	35	27	26	29	34	35	34	39	20	9	335
1,000-3,000GT	68	39	54	66	66	64	62	54	46	64	69	57	709
3,000-6,000GT	72	66	57	76	73	74	79	98	76	77	69	76	893
6,000-10,000GT	64	52	74	76	77	71	70	81	81	88	86	91	911
10,000GT-	7	9	11	10	7	14	10	9	6	9	12	8	112
Total	242	182	231	255	249	252	255	277	243	277	256	241	2,960

Table 23.2.2 shows the number of the vessel in August on each day. The table shows the number of vessels in August. August 2nd and 16th are the maximum number of vessels, and in August 2nd, small and middle size vessels occupied relatively, and in August 16th, middle and large size vessels occupied relatively.

Table 23.2.3 and Table 23.2.4 show the number of the vessel in 2nd and 16th in August on each hour. The maximum number of the vessel is at most 4 vessels. Accordingly, it is expected that the conflict with other vessel is relatively small. But the handling cargos and calling vessels are more and more increase in Vietnam. It is necessary to evaluate about efficiency of the vessel traffic in prospective cargo volume.

Table 23.2.2 The Number of Vessel in August By Day

Classification of Vessel Size	Day (August 2006)																															Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
-1,000GT	3	3		1		1	3	1	1		1	2			2				3	1		2	1	3	2	1		2	3			35
1,000-3,000GT	2	4					4	2	3	4	2	2		2	2		1	2	5	1	6	4				1	3	1	2		1	54
3,000-6,000GT	7	5			2	2	3	6	6			4	2	3	3	9	1	2	2	2	3	5	6		4	3	2	2	6	4	4	98
6,000-10,000GT	1	4	4	2	2	2	3		5	4	3	2			4	6	4	2	2	4	4	3	4	3	1	2	1	2	2	5	81	
10,000GT-					1	1				1						1	1									1	1	1	1		1	9
Total	13	16	4	3	5	6	13	8	15	9	6	10	2	5	11	16	6	7	12	8	13	14	11	6	7	8	6	14	6	11	277	

Table 23.2.3 The Number of Vessel in August 2nd by Time

Classification of Vessel Size	direction	Hour (August 2nd, 2006)																							Total		
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22		23	
-1,000GT	enter												2					1									3
	leave							1				1															2
1,000-3,000GT	enter		1									1												2			4
	leave															2											2
3,000-6,000GT	enter		1						2							2											5
	leave							1	2								2			2							7
6,000-10,000GT	enter										2									2							4
	leave																										0
10,000GT-	enter																										0
	leave																										0
Total	enter		2					2				3	2			2	1		2	2							16
	leave							2	2				1			2		2	2								11
	Total		2					4	2			3	3			4	1	2	2	2							27

Table 23.2.4 The Number of Vessel in August 16th by Time

Classification of Vessel Size	direction	Hour (August 2nd, 2006)																							Total	
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22		23
-1,000GT	enter																									0
	leave						1																			1
1,000-3,000GT	enter																									0
	leave									2																2
3,000-6,000GT	enter															1	1		2							9
	leave						2			2											2					4
6,000-10,000GT	enter								4													2				6
	leave	2																	2							4
10,000GT-	enter			1																						1
	leave																									0
Total	enter			1				2	4		3					1	1		2		2					16
	leave	2						1		2	2								2		2					11
	Total	2		1				3	4	2	5					1	1	2	2	2	2					27

23.2.2 Activity of Fishing Boats

The fishing activities is catching small fishes by the fixed shore net, the throwing net, the setting bait net and so on around shallow water area. There is no large fishing boat that is catching fishes by the trawl net. The trawl net fishing boats are carried out on offshore. The relative large fishing boats that have the boom with the net from the bow are catching squid, however their operations are not carried out in the channel.

Although basically the fishing boats operations are not carried out in the channel, if they were to work in the channel, the Maritime Administration would instruct directly them to go out from the channel by their boat.

In this way, it does not affect to the vessels that are passing the channel. However, it may have a risk that capsizing of the fishing boats that is operated on close to the channel.



Figure 23.2.1 Fishing Boat in Hai Phong



Figure 23.2.2 Fishing Activity by the Throwing Net

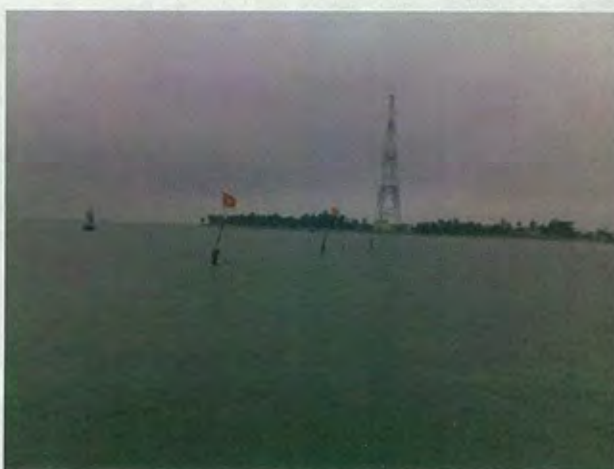


Figure 23.2.3 Mark of the Fixed Shore Net

23.3 Navigation Assistance

23.3.1 Pilot

There are 39 pilots in Hai Phong area (as of April 2010). Table 23.3.1 shows the classification of the pilot. Pilot qualification is divided into 4 classes by their career. The pilot who is able to maneuver to 100,000DWT container ship is the Premier Class (currently 7 pilots available).

The person who wants to be Maritime Pilot must satisfy some conditions. After graduation from maritime university or college, he should attend the maritime pilot training program. Then he should take part in intern as maritime pilot ClassIII, and after having 300 vessels or for at least 36 months in intern period with at least 150 vessels, they receive certification of maritime pilot competency.

The existing pilot station on the chart is pointed at South of the Nam Trieu Channel (20°40'.0N, 106°51'.0E). This point is supposed for the vessels in the Nam Trieu Channel, however, for the Lach Huyen Channel, pilots should embark and disembark at around south of Lach Huyen Channel.

Table 23.3.1 Classification of Pilot

Classification of Pilot	Maneuverable Vessel Size	Maneuverable Vessel Length (LOA)
Class III	- 4,000GT	- 115m
Class II	4,000 – 10,000GT	115 – 145m
Class I	10,000 – 20,000GT	145 – 175m
Premier Class	20,000GT -	175m -

23.3.2 Tug Boat Assistance

Table 23.3.2 shows the number of tug boats in Hai Phong Port. In the current situation, there is only one 3,200HP tug boat in Hai Phong Port.

Table 23.3.2 The Number of the Tug boats in Hai Phong

Port	Tug boat Company	Nos. of Tug	Capacity
Main Port, Chua Ve, Doan Xa, Dinh Vu	Port of Haiphong	2	500 HP
		1	800 HP
		2	1,200 HP
		3	1,300 HP
		1	3,200 HP
Transvina, Green port, Nam Hai	Marina Hanoi & Falcon	2	1,200 HP
		2	800HP

Assistance by the tug boat is compulsory for all vessels except the ones having LOA less than 80m. Requirement on tug boat depends on the vessel length. Table 23.3.3 shows the requirement on tug boat assistance by the vessel length.

Table 23.3.3 Requirement of Assistance Tug Boat

Vessel Length (LOA)	Required Nos. of Tug	Required Tug Power	
80 – 90m	1	500HP	
90 – 110m	2	500HP, 800HP	Total pulling power: at least 1,300HP
110 – 130m	2	800HP, 1,000HP	Total pulling power: at least 1,800HP
130 – 150m	2	1,000HP, 1,200HP	Total pulling power: at least 2,200HP
150 – 160m	2	1,000HP, 3,000HP	Total pulling power: at least 4,000HP
160m -	3	1,000HP * 2 3,000HP	Total pulling power: at least 5,000HP

Following shows estimated required tug power for 100,000DWT class container ship (8,000TEU) when it receives wind from the side.

Table 23.3.4 shows model ship that is assumed in calculation. The model ship assumed actual container vessel that is as large as the designed vessel in this plan. Table 23.3.5 shows result of the force of wind that vessel receives from the side. And Table 23.3.6 shows assumed power of 3,200HP tug boat.

As table indicates, under 5m/sec wind, the force of wind is estimated 25.1ton, this force is less than the usual tug power (85% of maximum power), one tug boat is enough under this wind condition.

However, under 10m/sec wind, the force of wind is estimated 100.3ton, it is required three tugs. In addition, under stronger wind, it is required additional tug.

Actually, a large container ship expects to have the thruster with almost the same power as a large tug boat. Accordingly it is possible to reduce the tug boat, however tug boat is insufficient for the large container ship in the current situation.

Above estimation is static result, hereafter it is necessary to confirm about requirement of tug efficiency (tug power, the number of tug) under the windy condition by dynamic estimation such as the ship-handling simulator.

Table 23.3.4 Model Ship

LOA	337.0m
LPP	321.0m
Breadth	45.6m
Draft	12.7m (UKC10% in depth 14m)
Vessel Side Area above WL	9,458m ²

Table 23.3.5 Estimation of the Wind Force

Wind Velocity	Win Force
5m/sec	25.1t
8m/sec	64.2t
10m/sec	100.3t
15m/sec	144.5t
20m/sec	225.7t

Table 23.3.6 Assumed Power of 3,200HP Tug Boat

Maximum Power	Push: 46.0t Pull: 39.8t
Usual Power (85% of Maximum Power)	Push: 39.1t Pull: 33.8t

23.3.3 Vessel Traffic Control

1) Actual Condition of Vessel Traffic Control in Vietnam

The vessel control in Vietnam is basically same in whole area.

Planning of vessel's berth and un-berth schedule is made by Maritime Administration after consulting with port operators and pilots. Under this control, it does not occur that berthing vessels and un-berthing vessels exist at the same time in the narrow sea area. As the control area is wide range, berthing and un-berthing vessels are allowed to pass each other in some areas. Maritime Administration is able to confirm vessels location by the vessel notice position.

There are VTS stations in HCM in southern port of Vietnam and in Hai Phong in northern port of Vietnam. The VTS station in HCM has been not used for long time. It is necessary to replace or to maintain VTS device. The prospects for the investment from government are nothing so far.

The VTS station in Hai Phong was built at Cat Hai island. It has two radars and AIS monitor and some communication devices. The radar was installed few months ago, AIS monitor was installed about

three years ago. Now it is used as trial.

2) Actual Condition of Vessel Traffic Control in Hai Phong / Lach Huyen

Planning of vessel's berth and un-berth schedule is made by Maritime Administration after consulting with port operators and pilots. Basically it does not occur that berthing vessels and un-berthing vessels exist at the same time. However, it is allowed vessel's passing in some areas for passage allowance. (cf. Figure 23.3.1)

Although VTS exists in Hai Phong (east part of Cat Hai) at present, VTS system has just been installed and it is used on trial. It has two radars and AIS monitor and some communication devices. However, since the north part of chart data is old, the radars have not been operated in the current situation.

Vessel's berth and un-berth schedule is made by Maritime Administration previously. This schedule is sent to the VTS station twice a day (10:00 / 16:00). If schedule is modified, rescheduled plan is sent to the VTS station by e-mail, fax and so on.

The vessels have obligation to inform their position at three points in Figure 23.3.1. VTS operators are able to know about vessel's location and moving by these information and AIS. Currently two operators work at the station all the time (2days rotation). The operator not only monitors vessels but also gives instructions to vessels when some vessels are close each other.



Figure 23.3.1 Guide to maritime activities in Ha Nam Canal



Figure 23.3.2 VTS Station at Cat Hai in Hai Phong

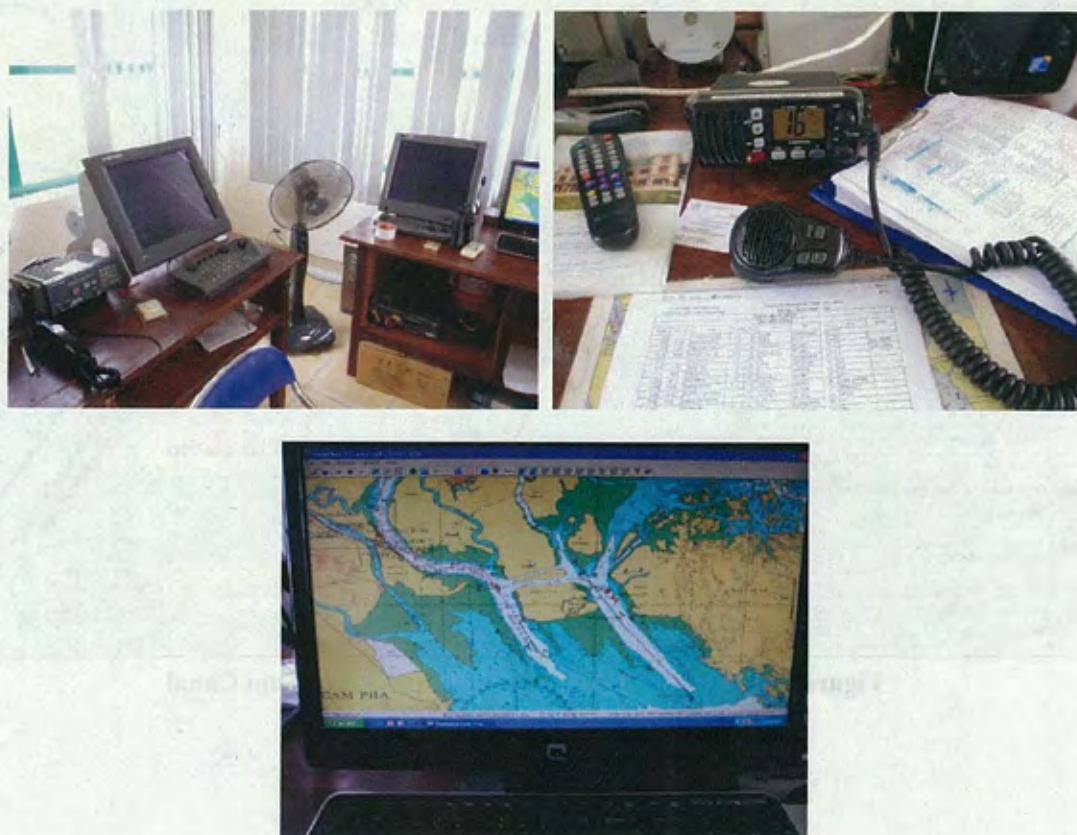


Figure 23.3.3 Radar, VHF and AIS Monitor



Figure 23.3.4 Checklist of the Berth/Un-berth Time and Checklist of the Vessel's Notice

23.3.4 Buoys in the Lach Huyen Channel

Figure 23.3.7 shows the current location of the buoys along Lach Huyen channel. Along the current Lach Huyen channel, 26 buoys are set on both sides about every 1,600m.

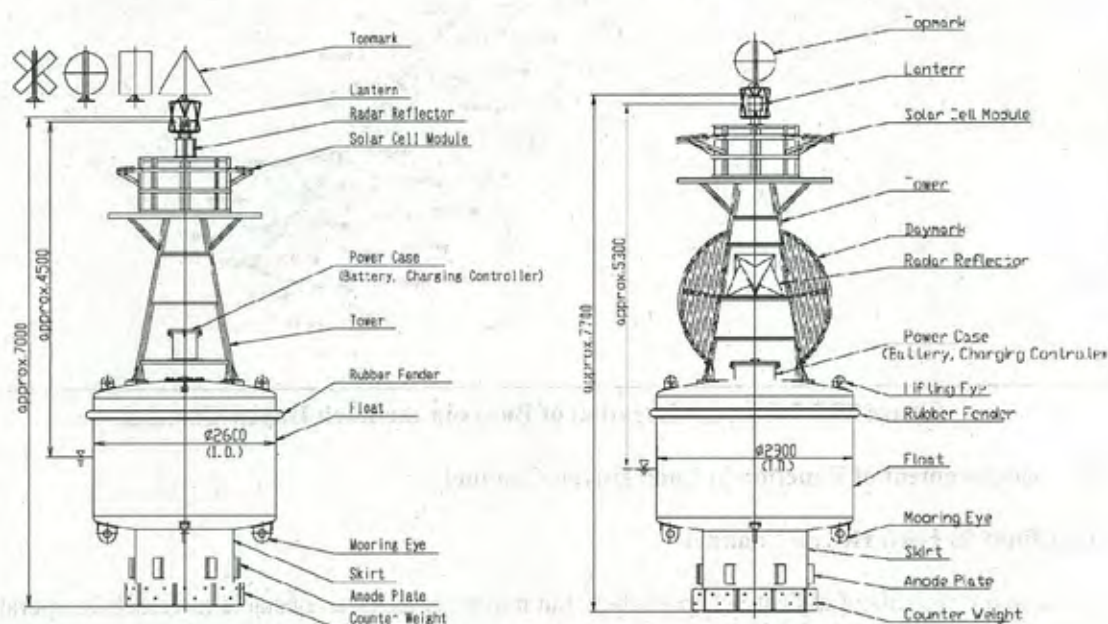


Figure 23.3.5 Buoy in the Lach Huyen Channel



Figure 23.3.6 Buoy in the Nam Trieu Channel

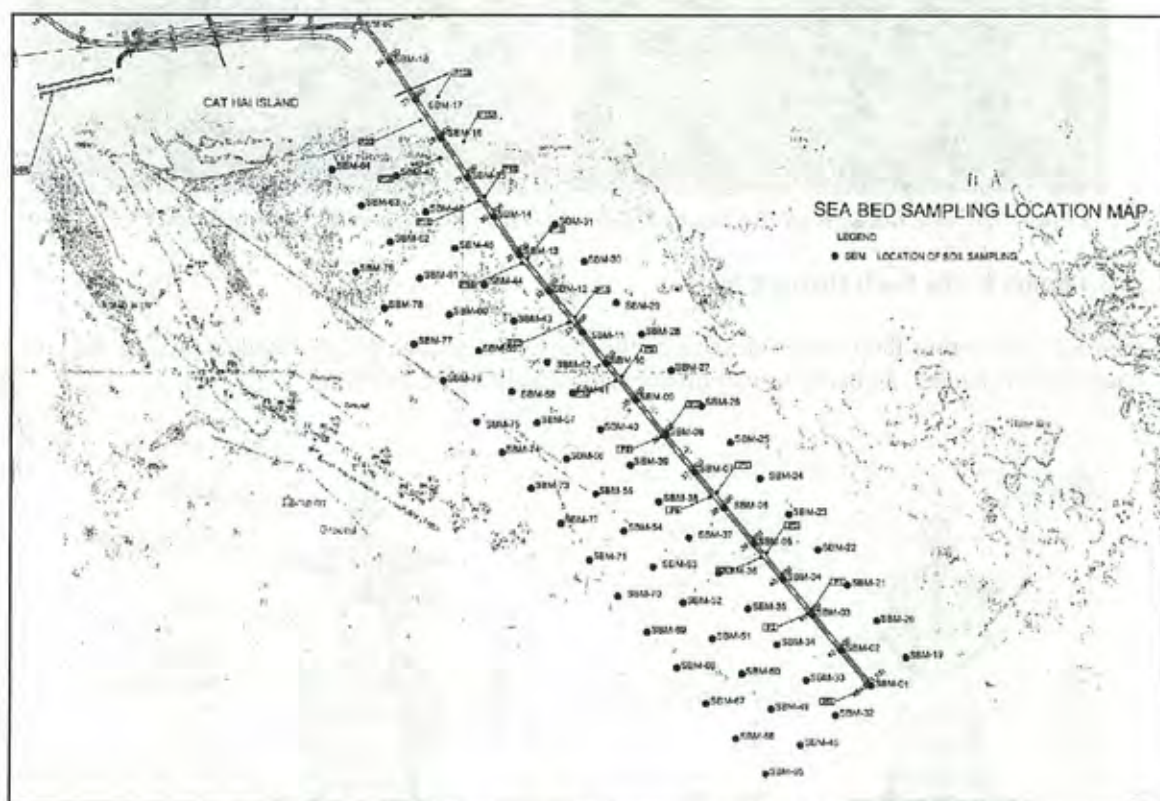


Figure 23.3.7 Current Location of Buoys in the Lach Huyen Channel

23.4 Requirement of Function in Lach Huyen Channel

23.4.1 Buoy in Lach Huyen Channel

A beacon has the role of indicating a boundary, but it also serves as an obstacle to vessels in operation. The passage for a 100,000 DWT class container ship along a designed channel with a breadth of 160m is considered to be a narrow channel with a restricted navigable area of water. Shown below are the functional conditions of a navigational aid:

to indicate the boundary of a channel and turning basin

to prevent vessels from spinning around due to wind, waves, and tidal currents