Chapter 10 Management and Operation System of Ports and Inland Waterways in the Red River Delta

10.1 General

In Vietnam, administrative responsibility of the transport sector is shared among the Ministry of Transport (MOT) and other public agencies such as Government Offices, other ministries, provinces and cities. MOT has administrative authority over roads, railways, rivers and marine transport.

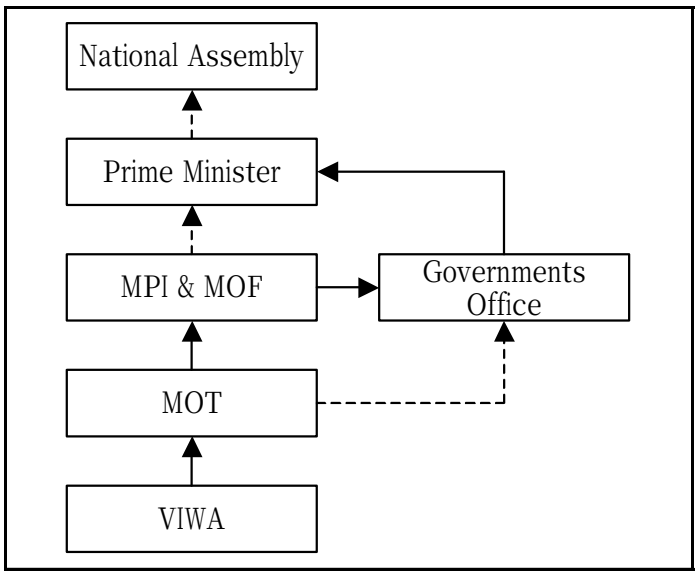
Although there are a few exceptions, competent authorities for the management and operation of general river ports and general sea ports are different. Policy matters are decided by MOT in both sectors. However, as for management, river ports are managed by VIWA under MOT and sea ports are managed by VINAMARINE under MOT. As for operation, river ports are operated by Northern ("South" in the Southern region of Vietnam) Waterway Transport Corporation (NOWATRANCO) or other organizations including private companies and sea ports are operated by Vietnam National Shipping Lines (VINALINES) or other organizations including private companies. **Table 10.1.1** shows the basic demarcation in port administration, management and operation.

Table 10.1.1 Basic Demarcation in Port Administration, Management and Operation

Type of Port	River Ports	Sea Ports
Administration	MOT (VIWA)	
Management	VIWA / Province	VINAMARINE
Operation	NOWATRANCO, etc.	VINALINES, etc.

Source) JICA Study Team

Policy initiatives on the administration of inland waterway transport are first proposed by MOT (or VIWA) and are then submitted to the Prime Minister after consultation with the Ministry of Investment (MPI), Ministry of Finance (MOF) and Government Office. The policy is finally approved by the National Assembly. **Figure 10.1.1** shows the policy-making procedure.



source) PMU-Waterways

Figure 10.1.1 Policy-making procedure

10.2 Port and Inland Waterway administration

(1) Ministry of Transport (MOT)

The MOT is a government agency performing function of state administration of transport and traffic on road, railway, inland waterway and seaway throughout the country.
Main functions of MOT described in Decree No.22/CP in 1994 are as follows:

- To draw up master plans and general plans on national transport development to submit to the Government

- To supply guidance to specialized management administrations to help them draw up legal drafts (law, ordinance), regulations and policies of transport management

- To issue national standards and define classes of seaports, river ports systems and systems of road, railway, inland waterway and seaway transport

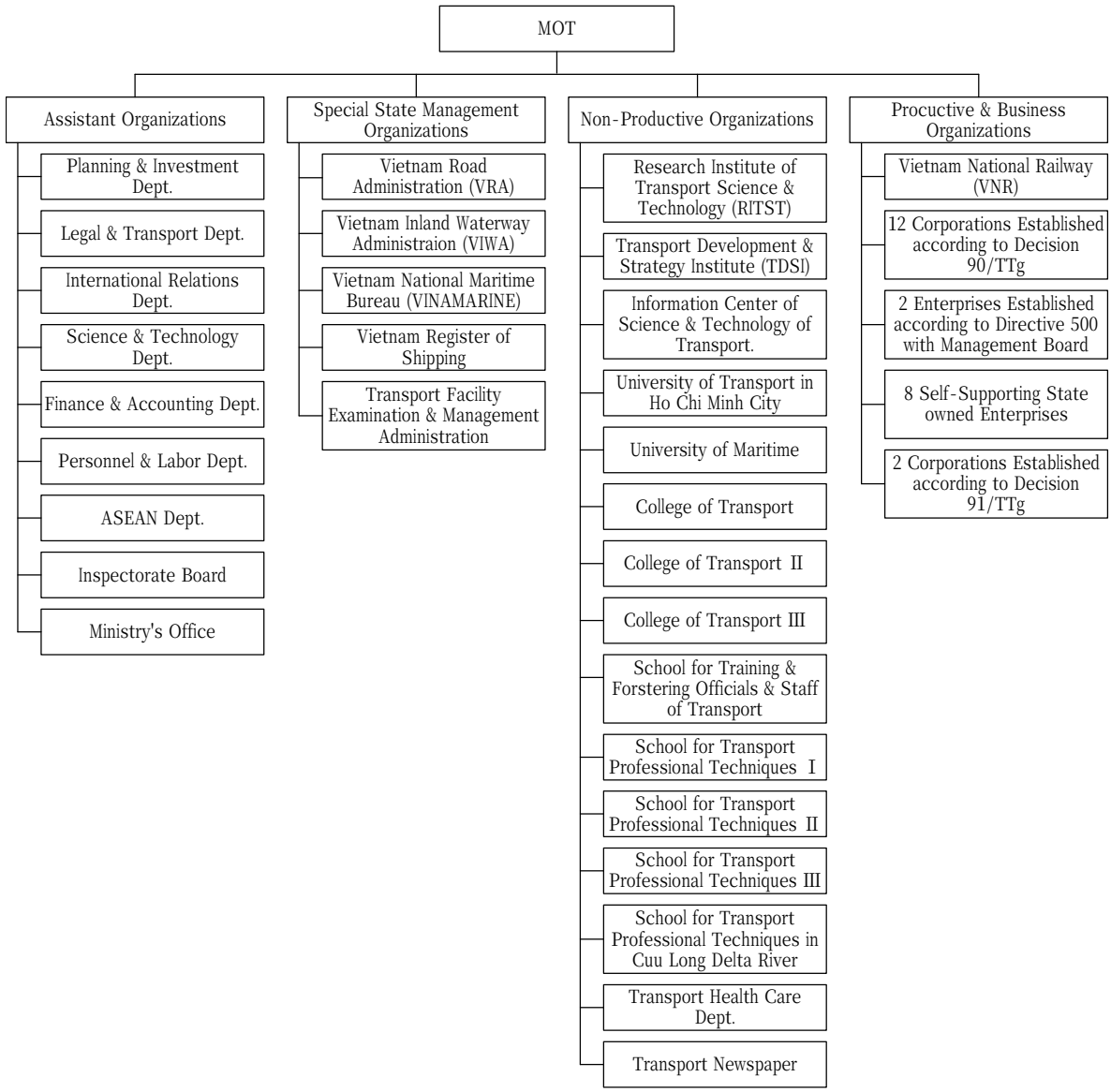
- To submit to the Government for approval or approve (in its jurisdiction) capital construction projects and plans of constructing the transport projects and checking its quality

- To provide guidance and inspect the issuance, extension and revocation of certificates and licenses of construction, operation and activities of agencies and organizations

- To provide technical standards of transport means (vessels, vehicles…), equipments, spare-parts

- Check and inspect the implementation of the law, policies and regulations issued by the MOT

Figure 10.2.1 shows the organization chart of MOT.



Source) MOT

Figure 10.2.1 Organization Chart of MOT

(2) Vietnam Inland Waterway Administration (VIWA)

1)Outline and responsibilities

Vietnam Inland Waterway Administration (VIWA) is a state agency established in 1993 by Decree No.08/CP.

VIWA is responsible for administration and management under the control of MOT on nationwide inland waterways traffic and transport which include traffic and transport on rivers, canals and routes along the bays, from inland to islands and among islands.

In Vietnam, the total length of river used for inland waterway transport is 8,036km, of which 6,254km are managed by VIWA and the rest by local governments.

According to Decree No.08/CP, main functions of VIWA are as follows.

- To prepare strategies, projects and plans on nationwide inland waterways traffic and transport development, on the basis of the socio-economic development plan defined by the State, for the Minister of Transport to submit to Prime Minister for approval.

- To formulate laws, sub-law documents, policies, and administrative regulations and procedures on inland waterways to submit to the Minister of Transport for decision in his jurisdiction or for passing on to the Prime Minister for decision.

- To issue specific economic and technical standards and norms in its jurisdiction and provide guidelines of implementation.

- To submit proposals to the Minister of Transport for decision about the decentralized administration of inland waterways traffic infrastructure and inland water lanes and to directly control nationwide inland waterways traffic infrastructure under the Central control.

- To be in charge of investment in projects of inland waterways traffic infrastructure under the Central control.

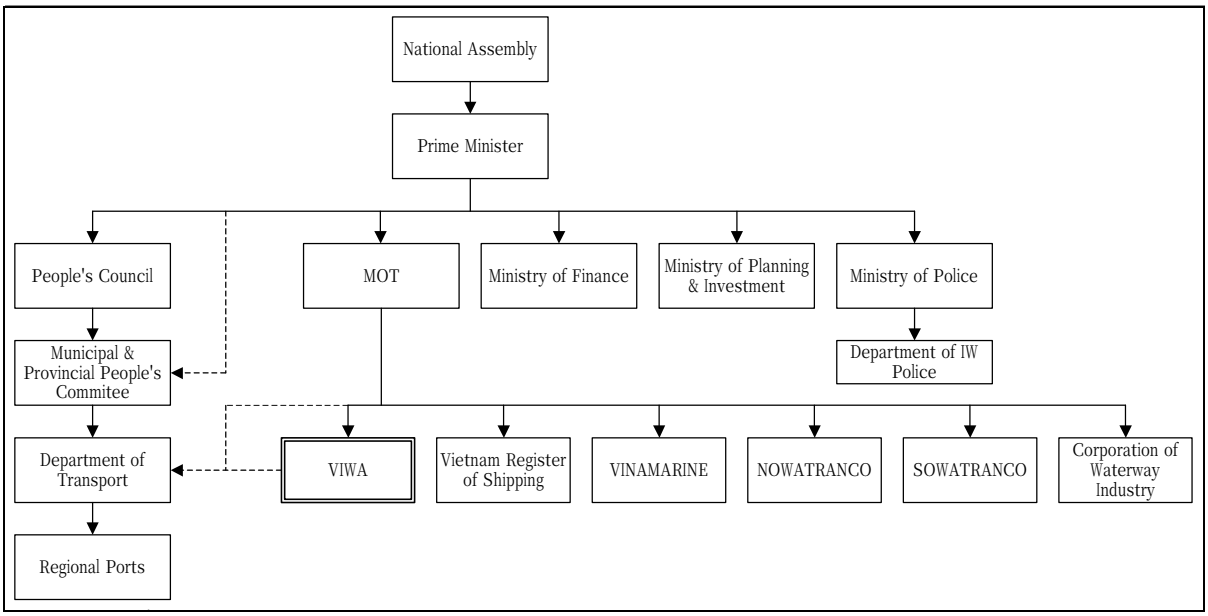
- To announce inland vessel navigation channels and river ports according to the law.

- To decide the set-up and control of inland waterways marking buoy system, take part in licensing the construction of works crossing or on the water, inspect the use and exploitation of navigation or suspend the waterways traffic.

- To provide criteria and standards and issue professional license in transportation, carrier's agents and pilot in inland waterways sector; to provide regulations on and license registration of inland waterway means to organizations and individuals nationwide (including foreign organizations and individuals working in Vietnam).

- To inspect safety of inland waterway traffic and transport, cooperate with relevant agencies and local authorities to protect waterways facilities, ensure safety in transport, deal with violations of water traffic safety and vessel navigation channel; preside and cooperate with relevant agencies to overcome the consequences of and inspect waterways traffic accidents throughout the country.

Judging from the function mentioned above, VIWA is an organization that plays roles in inland waterway transport administration and management. **Figure 10.2.2** shows the relationship between VIWA and other related agencies.



Source) VIWA HP

Figure 10.2.2 Relationship between VIWA and Other Agencies

2) Organization

There are 3 vice directors, 10 divisions, 4 inland waterway port authorities (IWPA), 15 inland waterway management stations (IWMS) and others in VIWA. IWPA is responsible for the management of river ports while IWMS is in charge of inland waterways. Organization chart of VIWA is shown in **Figure 10.2.3**. There are about 70 personnel in the headquarters of VIWA.

(3) Inland Waterway Port Authority (IWPA)

1) Outline and responsibilities

Inland waterway port authority is a public agency and a part of VIWA. It was established to carry out the management function in waters of river ports and Berths on river segments.

Main duties of IWPA are as follows.

- Inspect, supervise and provide guidance to the implementation of regulations on IW transport, protection of IW facilities, order and safety in IW transport and environment protection in IW by organizations and individuals operating in IW area.

- Inform entering and leaving vessels of the status of navigation channel; decide anchorage of vessels.

- Check and provide procedures of entering and leaving by vessels.

- To collect tonnage dues from vessels operating in waters of river ports, Berths and navigation channels.

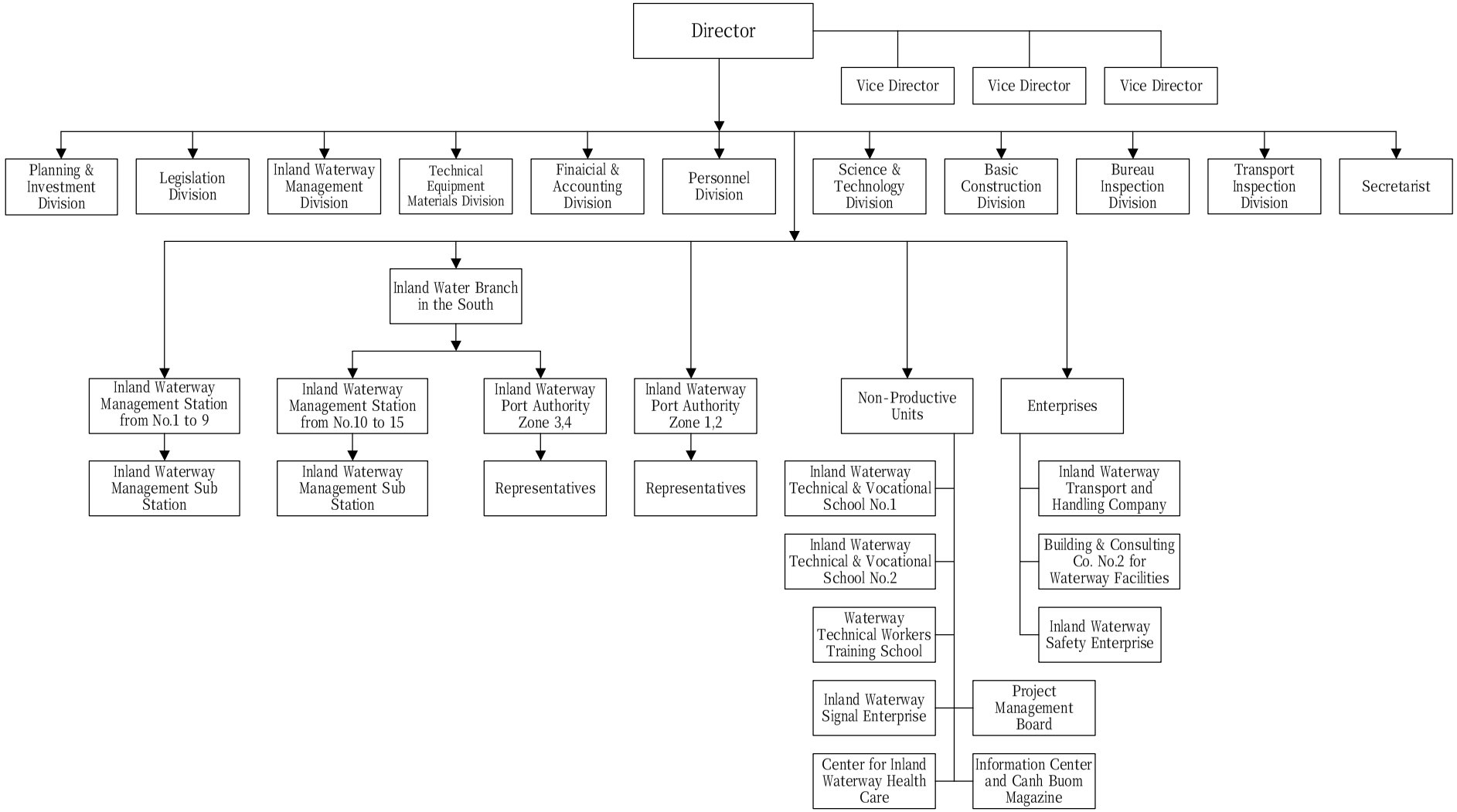
- Inspect the safety of berth, wharf, quay and navigation channels, removal of obstacles, signaling buoys, equipments and environment situation to make timely reports to relevant agencies.

- To organize search and rescue of people, cargo and vessels in the area of management.

- Inspect and supervise the operation, use and maintenance of IW

infrastructure in the area of management according to existing regulations on IW transport.

- Make periodical statistics and reports according to regulations.



Source) VIWA

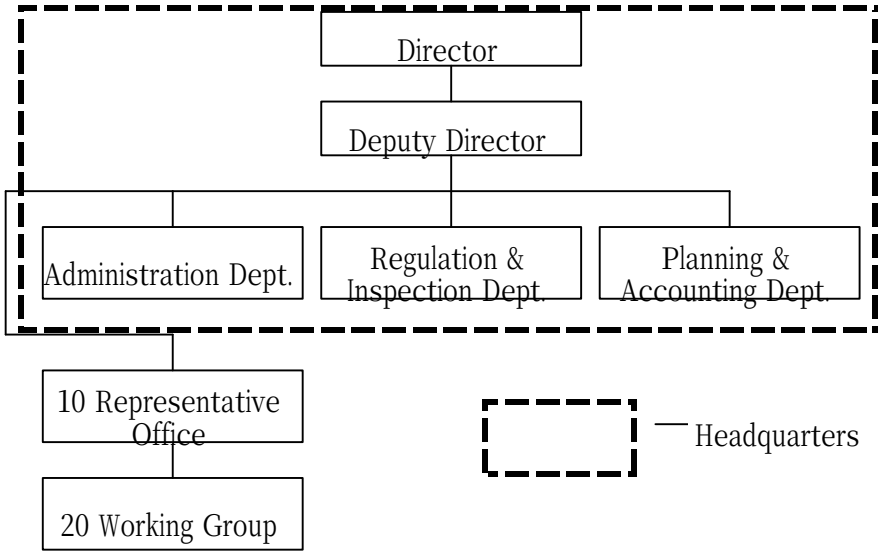
Figure 10.2.3 Organization Chart of VIWA

2) Organizations

There are 4 IWPA throughout the country and their duties are divided by regions. IWPA-Zone Ⅰ and Ⅱ are in charge of northern region. IWPA-Zone Ⅰ is in charge of the east side of the northern region (Hai Phong and Quang Ninh Province), and Zone Ⅱ is in charge of the west side.

3) IWPA Zone-Ⅱ

IWPA Zone-Ⅱ has responsibility in the Hanoi segment, the objective area of M/P of our study. It was established by Decision No.537 in 1997. It consists of a Director, Deputy Director, 3 departments, 10 representative offices and 20 working groups. Total number of staff is 60, of which 11 belong to headquarters. **Figure 10.2.4** shows organization chart of IWPA Zone-Ⅱ.



Source) IWPA Zone-2

Figure 10.2.4 Organization Chart of IWPA Zone-Ⅱ

IWPA Zone-Ⅱ has control of over 14 cities/provinces. It covers 16 ports (Bai Bang, Viet Tri, Son Tay, Hanoi, Khuyen Luong, Nam Dinh, Ninh Binh, Ninh Phuc, Ninh binh Power Plant, But Son, Pha lai, Ha Bac (Alu, Dap Cau) etc.) and 65 berths. Incidentally, more than 80% of 65 berths are private.

(4) Inland Waterway Management Station (IWMS)

1) Outline and responsibilities

IWMS is an agency performing state management of inland waterway transport throughout the country.

Main duties of IWMS are as follows:

- To have a thorough understanding of the status of navigation channel to inform vessels' controllers, ensuring smooth and safe navigation;
- To conduct regular surveys to detect changes of navigation channels and obstacles, carry out urgent solutions and make reports to higher-level agencies;
- To install, check, adjust and maintain the signal system according to regulations;
- To learn about water level and weather status to inform vessels and collect documents of geology and hydrography for study of operation in IW;
- To inspect and check the effectiveness of IW transport facilities and propose measures for reparation and protection;
- To keep an eye on navigating vessels, help vessels in danger when possible and draw up a report when there happens an accident;
- Provide guidance, check and inspect the implementation of law and regulations of inland waterway transport; Cooperate with relating agencies and local authorities to ensure order and safety in IW transport.

2) Organizations

There are 9 stations in the north of Vietnam and 6 stations in the south. There are several sub-stations under each station. The average number of personnel of each IWMS is about 200.

The demarcation of the 9 IWMS in the north is as follows.

No.1 Viet Tri
No.2 Luoc River

No.3 Quang Ninh
No.4 Between Hanoi and Pha Lai
No.5 Day River
No.6 Around Hanoi
No.7 between Pha Lai and Hai Phong, Quang Ninh
No.8 Around Hai Phong
No.9 Hoa Binh Reservior

10.3 Port operation

(1) Genaral

Currently, there are 4 types of river ports and Berths in Vietnam:
1) State owned port, 2) Specialized port, 3) Local port and 4) Private port
Table 10.3.1 shows various types of river ports.

Table 10.3.1 River Ports

	State-owned Port	Specialized Port	Local Port	Private Port
Administration	MOT (VIWA)			
Management	VIWA / Province			
Operation	NOWATRANCO(1) VINALINES(2) TUCIW(3)	Ministries and State-owned Enterprises	Provinces and Cities etc.	Private Company

(1) NOWATRANCO operates Hanoi Port and Viet Tri Port etc.
(2) VINALINES operates Khuyen Luong Port
(3) TUCIW operates Ninh Binh Port and Ninh Phuc Port

Private ports had not existed until Doi Moi Policy was approved (6th National Assemly, 1986). Since then, however, many private companies have entered the field as part of the private sector vitalization initiative.

Under the present circumstances, most private ports and Berths stages are no better than small temporary berths. Private companies have not yet played significant roles in the construction and operation of major ports.

At present, state owned ports including no small proportion of major ports are

operated by Northern Waterway Transport Corporation (NOWATRANCO) (SOWATORANCO in south Vietnam).

One of the characteristic points of Inland waterway transport in Vietnam is that some port operators conduct not only port operation but also other related businesses. For instance:

Khuyen Luong Port under VINALINES

→cargo handing, inland waterway transport, land transport and buying and selling construction materials

Ninh Binh Port under VIWA

→coastal shipping, inland waterway transport, road transport, cargo handling, ship building & repair, waterway construction and coal processing & trade

This may make it possible to effectively carry out the business related to inland waterway since strong ties already exist with other transport modes.

(2) Northern Waterway Transport Corporation (NOWATRANCO)

1) Outline and responsibilities

Northern Waterway Transport Corporation (NOWATRANCO) is a state-owned enterprise under the state management of MOT and other state agencies. Although NOWATRANCO used to be under VIWA, it became independent from VIWA by Decision No.2125 QD/TCCB-LD in 1996 because its function had become business- oriented. NOWATRANCO has its own budget and can carry out investment in ports. Planning works, however, require the approval of MOT.

According to the Decision, the main duties of NOWATRANCO are as follows.

- To transport cargo by inland waterways of Vietnam and other foreign countries.
- To handle cargo and provide services of cargo storage in river ports.
- To do business in inland waterway transport and multi-modal transport.
- To build and repair inland waterway transport vessels.
- To produce and trade construction materials.

- To directly import and export materials, equipments, spare parts and transport vessels.

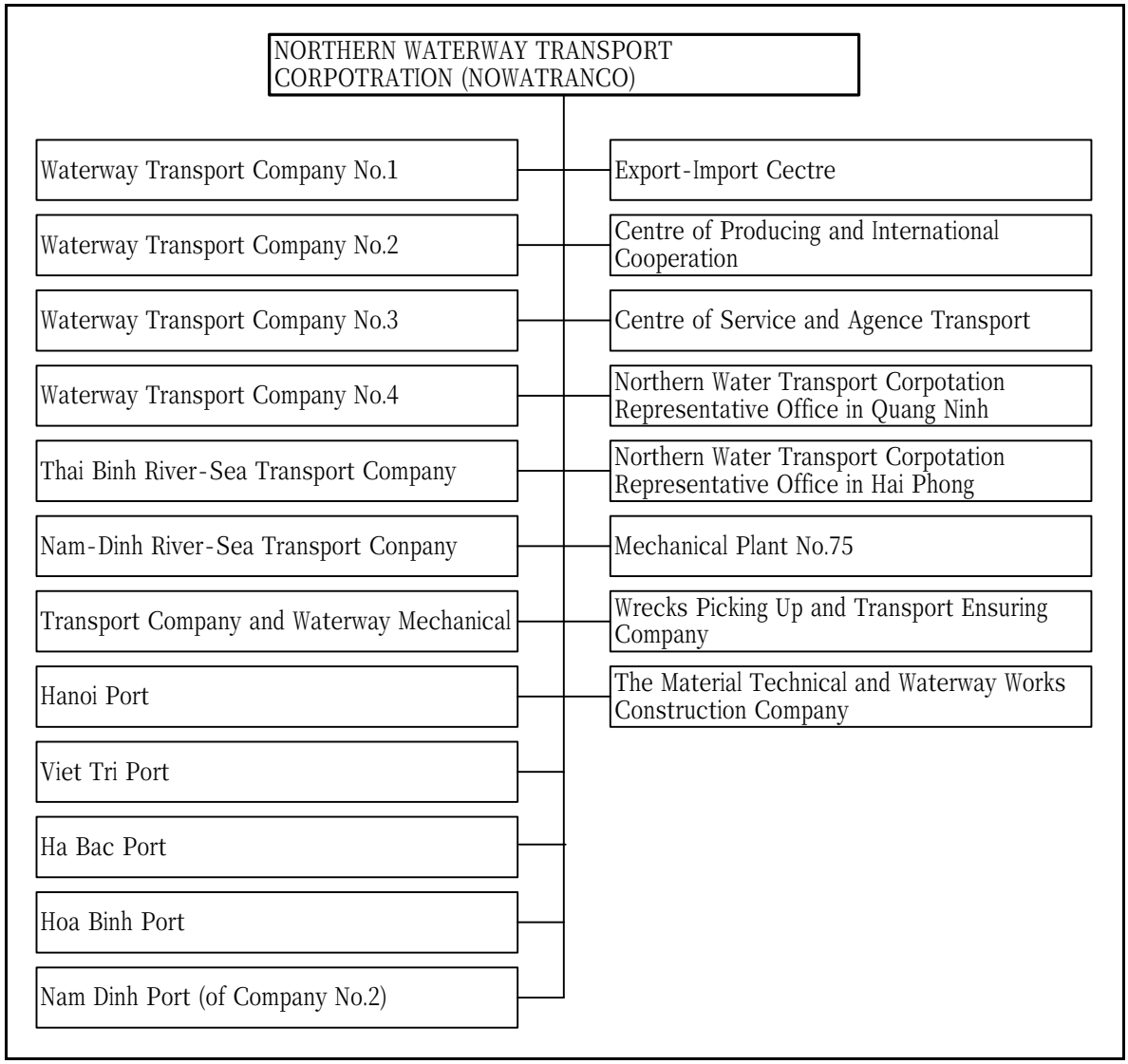
- To transport passengers in inland waterways and passengers for tourism purposes on rivers, bays and lakes.

- To transport cargo by road.

- To build other transport, industry or civil constructions.

2) Organization

Figure 10.3.1 shows organization chart of NOATRANCO. There are several affiliated enterprises such as transport, cargo handling and mechanic. Total number of employees is more than 7,000.



source) NOWATRANCO

Figure 10.3.1 Organization Chart of NOWTRANCO

(3) Port operator

1) Hanoi Port

The organization that is operating Hanoi Port is Hanoi Port, a branch of NOWATRANCO. Hanoi Port used to be under VIWA until some years ago. Main duties of Hanoi Port are operation and maintenance of Hanoi Port. In addition,

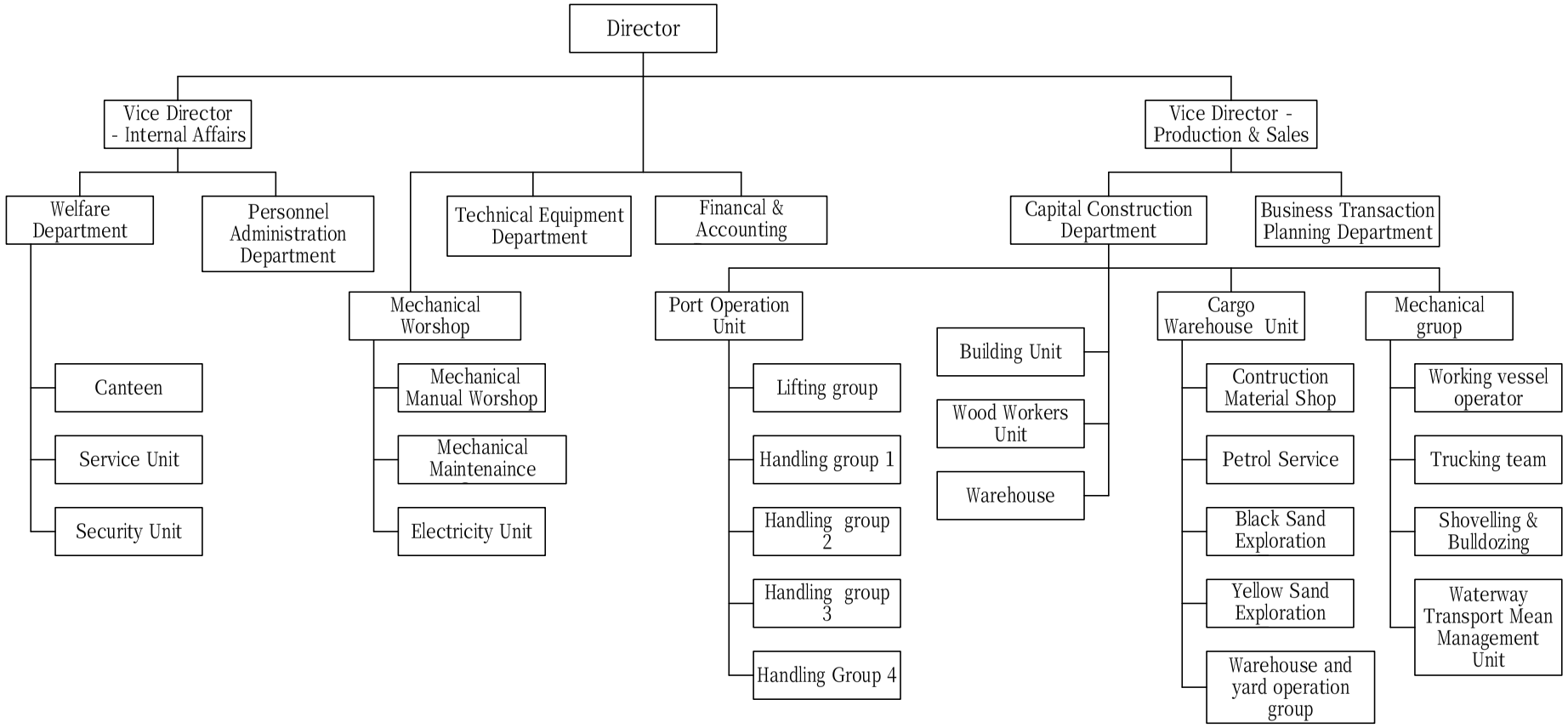
they are collecting cargo handling charges. The charge is decided through negotiation with cargo owner in reference to official tariff promulgated by MOT.

2) Khuyen Luong Port

Khuyen Luong Port is not under NOWATRANCO but under VINALINES, which is unusual for waterway ports. It was transferred to VINALINES from VINAWACO in 1997. The main duties of Khuyen Luong Port are cargo handling, inland waterway transport, land transport, buying and selling construction materials such as stone, sand and gasoline, shipping and dredging. Tonnage dues of VIWA is applied as well. Organization chart of Khuyen Luong Port is shown in **Figure 10.3.2**. Number of employee is 272.

3) Viet Tri Port

Viet Tri Port was established in 1966. It is under NOWATRANCO at present. The organization of Viet Tri Port consists of 4 departments : planning & regulation, personnel & administration, technical & material management, accounting. Number of employee is 300. Viet Tri Port conducts its own cargo handling works.



Source) Khuyen Luong Port

Figure 10.3.2 Organization Chart of Khuyen Luong Port

10.4 Charges and dues

(1) General

Organizations and individuals operating and doing business at river ports and Berths shall have to pay charges and dues. Tariff is promulgated by MOT (Decision 709/PC-VT) and it is the upper limit. Each organization is allowed to set its own tariff provided it is not above the official tariff.

(2) List of tariff

Table 10.4.1 shows a list of charges and dues related to inland waterway transport.

Table 10.4.1 List of Charges and Dues Related to Inland Waterway Transport

Collecting Organization	Charges and Dues	Purpose of collecting
IWPA	• Tonnage dues • Procedure Charge	Kind of tax
Unit that provides pilot service	• Pilot charge	Counter value for services
Port operator	• Cargo handling charge • Storage charge	Counter value for services
	• Berthing charge	Collection of fund
	• Assistance charge • Charge of compensation, reward or penalty	

In addition, for services in which charges are not decided by MOT, each port and Berth can decide the price through negotiation with owner of cargo or owner of vessel.
Generally, the going rate is at about 10-15% less than the MOT rate. Each organization is trying to enhance competitiveness by price reduction.

(3) Content of each tariff

The various charges and dues included in the tariff promulgated by MOT are as follows.

1) Tonnage dues

Vessel operating in waters of river port, Betths and navigation channels shall have to pay tonnage dues.
Tonnage dues are calculated as follows.

Inbound turn	:	150VND/DWT
Outbound turn	:	150VND/DWT

This means vessels have to pay 150 VND (inbound) +150 VND (outbound), or 300 VND every call.

2) Procedure charge

Vessels have to pay a one-time procedure charge for both inbound and outbound turns (see **Table 10.4.2**.).

Table 10.4.2 Procedure Charge

Vessels' Tonnage	Rate
□ Vessels carrying less than 50 tons of cargo or less than 12 seats	5,000 VND/turn
□ Vessels carrying from 51 to 200 tons of cargo or from 13 to 50 seats	10,000 VND/turn
□ Self-propelled barges, tugboat trains of from 201 to 500 DWT or passenger boat carrying from 51 to 100 seats	20,000 VND/turn
□ Tugboat train from 501 DWT upward, passenger vessels carrying 101 seats upward, sea-cum-river vessels up to 200 DWT	30,000 VND/turn
□ Sea-cum-river vessels of more than 201 DWT	40,000 VND/turn

3) Pilot charge

Vessels that use pilot while traveling in inland waterways or entering and leaving river ports and Berths shall have to pay pilot charge according to following price:

The minimum charge for all areas : 15 VND/DWT•km

The minimum charge for piloting entering and leaving vessels at river ports and Berths : 100,000 VND

4) Cargo handling charge 1 (except for container and car)

Table 10.4.3 shows cargo handling charge for all goods except containers and automobiles.

Table 10.4.3 Cargo Handling Charges (Excluding Container and Car)

Cargo group	From vessels, barges to storage area and vice versa	From vessels, barges to trucks, cars and vice versa	From barge to barge	From storage areas to trucks and vice versa	From storage area to cars and vice versa
1	7,500	5,600	5,000	4,300	5,800
2	9,000	6,700	6,000	5,200	7,000
3	12,900	9,600	8,600	7,400	10,000
4	15,200	11,400	10,100	8,700	11,800
5	19,200	14,400	12,800	11,050	14,900
6	25,300	18,900	16,900	14,500	19,600
7	28,500	21,300	19,000	16,300	22,000

Group 1: Dust coal, sand, gravel and macadam with size 1-2

Group 2: Old coal, coke with size less than 35mm, peat and coal residues.

Group 3:

- Food and food-staff packed in duffle and gunny bags: paddy, rice, corn, bean, peanut, manioc, sugar, etc.
- Ore of all types, rubble, clinker, sulphur, slag, fertilizer, appetite, etc.

Group 4: Cargoes packed in paper bags, sedge bags, nylon bags like insecticides, chemical substances, salt, cement, fertilizers, ore, ground rock.

Group 5:

- Iron and Steel (in bundle, package, plate, bar, roll), pipe of cast iron, pipe of steel, iron sheet, iron package, steel plate, grille, piles of concrete, aluminum (sheet, bar, roll).
- Cargo packed in closed or open boxes made of wood, iron or board with weight less than 300 kg.
- Packages made of duffle, nylon and gunny with weight from 301 to 500 kg.
- Accomplished products made of wood in the forms of timber, sleeper.

- Bamboo, branches and roots of tree.

Group 6: Cargo packed in barrels, like tar, oil, gasoline, grease, calcium carbide, chemical substances.

- Domestic poultry and animals
- Cargo packed in closed or open boxes with weight from 301 kg to 2000 kg.
- Boxes or baskets of food, fruits, beer, alcohol, drinking water.
- Miscellaneous goods, such as family appliances, sports equipment, stationary, cotton, canned food, medical equipment, goods made of jute and sedge, bamboo screen, goods made of plastic.

Group 7: Cargo packed in closed or open boxes made of wood, iron or paperboard with weight more than 2000 kg (except for containers, cars and cargo with either length of more than 12m, width of more than 3m, height of more than 2.5m or weight of more than 15 tons).

- Rough timber packed in raft.

5) Cargo handling charge 2 (for containers and automobiles)

Table 10.4.5 shows cargo handling charges for containers and automobiles.

Table 10.4.5 Cargo Handling Charge for Container and Automobile

Cargo	From vessel and barge to storage area	From vessel and barge to truck and car	From storage area to truck, car	Load and unload cargo into and out of the container	
				Storage area to truck	Storage area to barge
1. Container 20''					
- loaded	250,000	165,000	130,000	198,000	300,000
- empty	125,000	83,000	65,000		
2. Container 40''					
- loaded	370,000	248,000	190,000	300,000	455,000
- empty	185,000	124,000	95,000		
3. Car (dong/unit)					
- weight under 5 ton	210,000	168,000			
- weight over 5 ton	400,000	330,000			

6) Storage charge

1. Cargo kept in storage areas shall be charged as follows:

a. Warehouse charge:	200 dong/ton-day
b. Ground storage:	100 dong/ton-day
c. Pre-fabricated units: cars, truck, etc:	5,500 dong/unit-day

2. Storage of container

+ Container 20"	
- Loaded:	2,000 VND/container•day
- Empty:	1,000 VND/container•day
+ Container 40"	
- Loaded:	3,000 VND/container•day
- Empty:	1,500 VND/container•day

7) Berthing charge

Vessels that land, tie to buoy or anchor in waters of a port shall have to pay berthing charge as follow:

- Stop at wharf:	6 VND/DWT•hour
- Stop at buoy:	3 VND /DWT•hour
- Stop at waters of port:	1.5 VND /DWT•hour

8) Assistance charge

Vessels which use assistance while entering or leaving river ports and Berths or traveling on inland waterway navigation channels, shall have to pay for assistance charge of: 2,500VND/HP-hour.

10.5 Legal framework

To date there has not been a comprehensive law in inland waterway transport sector. Administration of inland waterway has been done by decisions and decrees according to needs. **Table 10.5.1 and Table 10.5.2** shows principal decisions and decrees related to inland waterway sector.

Table 10.5.1 Principle Decisions and Decrees Related to Inland Waterway Sector (1)

Organization / Date of Issue	No.	Contents
MOT		
1994/3/22	Decree No.22	Duties, rights, responsibility of State management and organization of MOT
VIWA		
1993/12/30	Decree No.08	Establishment of VIWA
1998/12/31	Decision No.3619	Temporary Regulation of Organization and Activities of VIWA
IWPA under VIWA		
1996/5/2	Decision No.908	Establishment of River Port Authority Area I under VIWA
1996/12/10	Decision No. 3264	Change the name River Port Authority Area I to IWPA Area I
1997/3/13	Decision No.537	Establishment of IWPA Area II under VIWA
1997/3/13	Decision No.538	Establishment of IWPA Area III under VIWA
1997/10/13	Decision No.2873	Temporary Regulation of Organization and Activities of IWPA
1997/10/25	Decision No.3253	Establishment of the Region IWPA Representatives
2001/3/7	Decision No.615	Establishment of IWPA Area IV under VIWA
IWMS under VIWA		
1991/12/26	Decision No.2787	Establishment of IWM Department
1993/12/15	Decision No.2518	Establishment of IWMS 14 under VIWA
1997/7/21	Decision No.1806	Establishment of IWMS 15 under VIWA
NOWATRANCO		
1996/8/13	Decision No. 2125	Establishment of NOWATRANCO
1996/11/8	Decision No.2991	Regulation of organization and activities of NOWATRANCO

Table 10.5.2 Principle Decisions and Decrees Related to Inland Waterway Sector (2)

Organization / Date of Issue	No.	Contents
Finance, Tariff		
1995/7/6	Decision No.36	Tariff of Inland Waterway cargo Transport
1995/7/28	Decision 709/PC-VT	River port charges and dues
1996/3/18	Guidance 221/PC-VT	Guidance on the implementation of river port charges and dues
1999/11/19	Decision No. 142	Fees and charges for Inland waterways transport
Others		
1992	TCVN5664-92	Technical Classification of Inland Waterway
1996/8/6	Decision No. 2046	Regulations of management of inland waterways ports and Berths
1996/8/6	Decision No. 2056	Regulation on IW vessel registration
1996/12/5	Decision No.80/CP	Regulation of organization and activities of transportation inspection
1999/7/30	Decision No.1865	Regulation on IW cargo shipping, handling, delivering and storage
1999/7/30	Decision No. 1866	Regulation on IW passenger transport
1999/12/7	Decree No. 171	Implementation of Ordinance on Protection of IW transport facilities
1999/12/30	Decision No. 3809	Modifications and Amendments to Regulations of management of inland waterways ports and Berths (Decision No. 2046)

10.6 Identified problems and issues

Problems and issues related to management and operation can be summarized as follows:

(1) Absence of comprehensive law

To date there hasn't been a comprehensive law in the inland waterway transport sector. Administration of inland waterways has been done by decisions and decrees according to needs. Consequently, some inconsistencies among such

decisions and decrees can occasionally be found. On the other hand, there are comprehensive laws in other sectors such as aviation and sea transport. To rectify this situation, MOT is currently drafting a new law covering the inland waterway transport sector.

(2) Inadequate enforcement of laws and regulations

Although there are laws and regulations, it is notable that those laws and regulations are not strictly observed. For example, about 40 % of accidents in IW in 2001 were due to violation of navigation rules. Besides charges and dues of IW and ports are not always collected according to regulations. It is vital needed to establish a framework to execute laws and regulations strictly.

(3) Complicated management and operation body

Since the adoption of the Doi Moi Policy in 1986, more and more private sector participation has been observed in Vietnam. In addition state organizations have been restructured or privatized. Consequently, organizations in charge of management and operation are various and complicated. As the relations between organizations become increasingly complex, responsibilities tend to be obscured and this is accompanied by a decline in efficiency.

From now on, the number of newcomers is expected to increase with the progress of privatization. It is therefore necessary to regulate and consolidate organizations in charge of management and operation.

Moreover, to distribute information precisely and quickly as well as to share the information among related organizations it is required to introduce Management Information System (MIS).

(4) Lack of adequate information service

In order to transport cargo safely and efficiently, it is indispensable to know the condition of inland waterways, specifically the condition of navigation channel (position, width, depth, clearance, obstacles etc.) and condition of river (water level, current velocity etc.). Generally an authority makes this information available to users by chart, buoy, beacons etc. And unlike a sea channel, the navigation channel of a river changes frequently. Especially in Red River Delta, the channel (particularly the water depth) changes not only by year but also by seasons (dry season, flood season). Accordingly, more precise information is required.

(5) Inadequate port statistics

Port statistics is systematically recorded information about vessels (number, size, type etc.) and cargoes (volume, commodity, origin/destination etc.). Port statistics is indispensable not only for planning, management and operation of port but also for city planning, transport planning, energy planning etc. However, at river ports, reliable port statistics about vessels and cargoes are not kept. In particular, activities at the privately owned small-scale Berths, which are scattered at various places, are hardly known.

Chapter 11 Financial Situation of Organization Relating to the Study

11.1 Financial situation

Although the data and information required for the financial analysis in view of operation and management of the inland-water transport system in the Red River Delta Areg has been requested to various organizations concerned to the inland waterway transport, the data obtained has been limited only from the same of the Vietnam Inland Waterway Authority.

Changes and structure of the budget of the VIWA in the past 8 years is shown as in **Table 11.1.1** below:

The financial soundness and operational efficiency would be analyzed after a sufficient data and information are collected during the course of the Study.

Table 11.1.1 Budget Implement Plan of VIWA in the Northern Region

Category in Budget		1996	1997	1998	1999	2000	2001	2002	Share in 2002
117	Regular Management	11,377	12,112	(-)	16,195	20,057	24,939	36,025	77.9%
	Channel Survey	229	205	(-)	415	483	340	110	0.2%
	Navaids Repair	0	510	(-)	172	260	0	270	0.6%
118	Dredging	2,931	3,454	(-)	4,233	4,476	8,805	5,380	11.6%
	Office Improvement	3,654	3,165	(-)	1,329	3,336	2,242	841	1.8%
	Equipment Repair	1,246	835	(-)	1,036	1,135	1,397	586	1.3%
	Navaids Repair	354	62	(-)	755	577	0	100	0.2%
	New Navaids Production	861	1,358	(-)	776	1,985	3,088	127	0.3%
	Groin Maintenance	534	450	(-)	715	1,669	5,473	102	0.2%
	Obstacle	331	170	(-)	325	501	360	62	0.1%
145	Equipment	2,769	610	(-)	226	656	267	813	1.8%
134	Traffic Regulation	171	195	(-)	545	1,194	2,003	1,475	3.2%
	Traffic Inspector	190	100	(-)	841	983	1,204	265	0.6%
	Storm	553	90	(-)	93	120	340	100	0.2%
Total		25,200	23,316	(-)	27,656	37,432	50,458	46,256	100.0%

Chapter 12 Cargo Handling System of Ports in the Red River Hanoi Segment

(1) Peculiarities of current cargo handling system

- Vessels deployed for the IWT in the RRD are shallow draft and gearless type.
- From the viewpoint of cargo handling, the kind of cargo is divided into 2 categories, namely, bulk cargo and packed cargo (commodity in bag).
- Cargo handled at ports in the Hanoi segment is almost loading cargo.
- Bulk cargo is unloaded by crane equipped with grab bucket (standard capacity: 1.5m^3, see **Table 12.1.1**) and directly loaded to the dump truck (sometime to the apron of berth) and then transferred to storage yard in the port or hinterland.
- Packed cargo is unloaded by crane and directly loaded using man-power to the truck and then transferred to warehouse in the port or hinterland. The unitization such as palletization is not introduced.
- Quay side cargo handling is executed through three methods. On quay crawler crane system seems to be most suitable among them (see **Table 12.1.2**).
    + Quayside gantry crane system
    + Floating crane (on pontoon crane) system
    + On quay mobile crane system
- Cargo handling productivity is reported to 30-50 tons/hr for packed cargo and 70-100 tons/hr for bulk cargo (see **Table 12.1.3**). However, the average handling productivity seems to be lower than the above reported rate in reality (see **Table 12.1.4**).
- Standard gang composition is 11 men for packed cargo and 5 men for bulk cargo, although it depends on the request of shipper or consignee (see **Table 12.1.5**).
- As to working hours, 2 shift operation (14 hours) is adopted at Hanoi and Khuyen Luong Ports in general, although it is said to be flexible depending on the request from shipping company, shipper or consignee. Chem and Thanh Tri Berths adopt 3 shift operation (21 - 24 hours).

(2) Identified problems and issues

- Outdated and Inefficient handling equipment: Handling equipment such as quay crane, mobile crane and forklift is very old. Some cranes in Hanoi Port have been used for more than 30 years. In addition, there is a lot of equipment which is not dedicated for port but diverted from road transport means (at second-hand). Frequent breakdown or troubles make handling efficiency

decline.

- No handling equipment which can handle container box of 40ft nor 20ft.
- Low mechanization for packed cargo handling: Mechanization of packed cargo handling is still at a low level, since the unitization has not been introduced.
- Storage yard in natural condition: There are few paved yards.
- No clear distinction between berth and yard for dirty and dusty bulk cargoes and for other clean cargoes.
- Limited operating hours in Hanoi and Khuyen Luong Ports cause increase of waiting and idle time for vessels.

Table 12.1.1 Cargo Handling Equipment of Hanoi & Khuyen Luong Ports

Type of Equipment	Hanoi Port		Khuyen Luong Port	
	Qty@Capa.	Procurement	Qty@Capa.	Procurement
QGC	2@16t 4@3t	2@1984 1940, 3@1979	0	-
Quay-side Rail-mounted Crane	0	-	1@16t	2nd-Hand
Moblile Crane	4@1.5m3	4@1971	4@10t	2nd-Hand
Floating Crane	4@1.5m3	1982, 3@1971	0	-
Folk Lift	1	(-)	4	-
Shovel Loader	4	(-)	2	2nd-Hand
Truck (Vehicle)	10	(-)	7@6t-8t	2nd-Hand
Container Trailer	0	-	2@50t	2nd-Hand

Note) (-): data unavailable

Source) Hanoi Port, Khuyen Luong Port, Site survey by JICA Study Team

Table 12.1.2 Cargo Handling Method of Hanoi & Khuyen Luong Ports

	Quayside Gantry Crane	Floating Crane (on Pontoon)	On Pier Crawler Crane
Productivity	Low (non-rotating)	Medium (narrow view, moving)	High
Safety Operation	Good	Medium (narrow view, moving)	Good
Primary & Running Cost	High	Medium	Medium
Maintenance & Repair Cost	High	Medium	Medium
Versatility	Poor (rail-mounted)	Medium (on pontoon)	Good

Source) Site survey at Hanoi & Khuyen Luong Ports by JICA Study Team

Table 12.1.3 Cargo Handling Productivity

Port	Packed Cargo	Bulk Cargo
Hanoi	30-50 tons/hr	70-100 tons/hr
Khuyen Luong	50 tons/hr	100 tons/hr

Source) Hanoi Port, Khuyen Luong Port

Table 12.1.4 Average Cargo Handling Productivity

Port/Berth	Packed Cargo	Bulk Cargo
Hanoi & Khuyen Luong Ports	20-25 tons/hr	50-60 tons/hr
Chem Berth	25-30 tons/hr	60-70 tons/hr

Source) Analyzed by JICA Study Team based on the cargo handling survey by TEDI-port.

Table 12.1.5 Standard Gang Composition of Khuyen Luong Port

	Packed Cargo	Bulk Cargo
Supervisor (Boss)	1 Man	1 Man
Crane diver	1 Man	1 Man
On Ships Labors	4 Men	2 Mens
Signal Man	1 Man	1 Man
On Pier Labors	4 Men	-
Tally Clerks (checker)	1 Person	1 Person

Source) Khuyen Luong Port

Chapter 13 Land Use and Transport Situation behind Ports and along the River in the Red River Segment through Hanoi

13.1 Outline of Hanoi city

13.1.1 Topographic condition

Hanoi City covering nearly 921 km^2 is located at nearly the center of the triangular basin of the Red River that comprises two different topographical features, which are the delta and the Middle Region of the North. Soc Son and a part of Dong Anh district, north Hanoi City, are a prolongation of the Tam Dao mountainous mass in the Middle Region of the North stretching towards the Delta. So the land level of Soc Son and a part of Dong Anh district is 7-10m with two mountains named Soc Son and Ham Lon that have the peak height of 304m and 462m above sea level respectively. The other areas comprising Gia Lam, Tu Liem, Thanh Tri district and 7 urban districts, Ba Dinh, Tay Ho, Hoan Kiem, Hai Ba Trung, Dong Da, Thanh Xuan and Cau Giay belong to the Delta with the height of 4-5m in average. Then Hanoi City has the inclination land from the north to south about 55km and the width west to east is about 20~30km.

The Red River is flowing through Hanoi City from Dong Anh district to Thanh Tri district approximately 40km long. The Duong River branches off the Red River towards west at Xuan Canh commue, Dong Anh district, passing Duong bridge, crossing National Highway No1A and flowing through Ha Bac province, then runs into The Thai Binh River.

Therefore Hanoi City is divided into three large areas as the right bank of the Red River, the north (left bank) of the Red River & the Duong River, then the area between the left bank of the Red River and the right bank of the Duong River. Thus the Red River and the Duong River form like the wide center axis of Hanoi City, which river spaces including water basin play important roles not only as water and land transportation but also water supply, irrigation and environmental protection.
Besides these two rivers we have many small rivers such as the To Lich, the Nhue, the Thien Duc, the Nghia Tru, the Cheo Reo, the Ngu Huyen Giang and the Kim Nguu Rivers. Furthermore there are many water areas such as West Lake, Hoan Kiem Lake, Thu Le Lake, Kim Lien lake, Lien Dam Lake and others which are the remains of the former Red River flows.

Among these rivers the To Lich River is on the west fringe of 2 urban districts and a

part of its left bank shapes the second ring road. Outer the third ring road the Nhue River originated from the site of the 1,500m upstream of the Thang Long Bridge flowing towards south through Cau Giay District shapes the fourth fringe of Hanoi City.

Annual average rainfall of 1488mm(1995~2000) is not so much comparatively. However, Hanoi City area suffers from submergence occurring a couple of times every year at some places due to low-level land. (Cf. **Figure 13.1.1** Map of Hanoi City)

13.1.2 Social condition

Hanoi City has many favorable conditions since long ago so that it has been functioning as the capital city during 992 years since when King Ly Thai To decided to move his capital to Thang Long (Hanoi) from Hoa Lu (Ninh Binh) in 1010 AD. The year 2010 is one thousand years anniversary since the establishment of Hanoi Capital.

At present administrative area consists of 7 urban districts and 5 suburban districts. Under urban districts there are communes and under suburban districts there are communes and towns. Each area has the population and land area as shown in the **Table 13.1.1**.

Table 13.1.1 Land Area and Population in Hanoi City by Districts

At 31,December 2000

Name	Area (km^2)	Population (thousand)	Population Density (pers./ km^2)	Number of Admi. Unit	
				Commune	Town
7 Urban Districts	84.30	1,474.3	17,489	102	-
Ba Dinh	9.25	205.9	22,259	12	-
Tay Ho	24.00	94.8	3,950	8	-
Hoan Kiem	5.29	172.9	32,684	18	-
Hai Ba Trung	14.65	360.9	24,635	25	-
Dong Da	9.96	342.3	34,367	21	-
Thanh Xuan	9.11	159.3	17,486	11	-
Cau Giay	12.04	138.2	11,478	7	-
5Suburban Districts	836.67	1,282.3	1,533	118	8
Soc Son	306.51	247.8	808	25	1
Dong Anh	182.30	263.3	1,444	23	1
Gia Lam	174.32	345.9	1,984	31	4
Tu Liem	75.32	198.0	2,629	15	1
Thanh Tri	98.22	227.3	2,314	24	1
Total	920.97	2,756.6	2,993	220	8

Source) Hanoi Statistical Year Book 2000 Hanoi Statistical Office

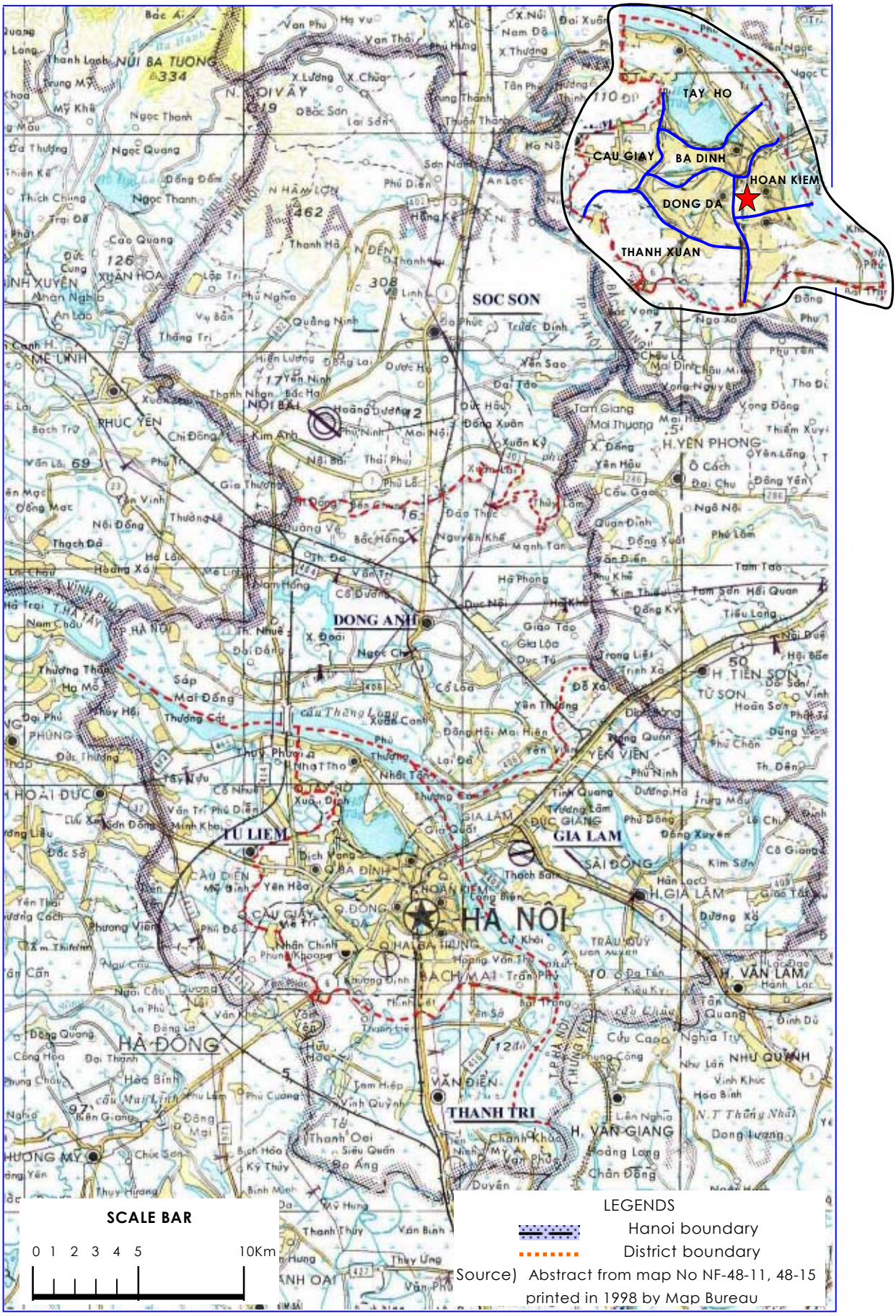


Figure 13.1.1 Hanoi City

The most high population density urban district is Dong Da that is corresponding to Hong Kong which is the most densely populated city of the world. The central area of Tokyo that has 23 urban districts is counted as population density 13,192person/ km^2 in 2000. Comparing with other Asian cities such as Manila, Bangkok and Jakarta, where population densities is15,000~20,000 person/ km^2, Hanoi central area is rather high density and crowded.

It causes sever traffic jam, environmental problems and difficulties for constructing urban infrastructures. Furthermore rainfall and sewage discharge cannot flow down smoothly due to lower level ground than water level of the rivers even if there are several pumping stations. Treatment with gavages or wastes from livings or business activities is also one of social problems. These situations need to disperse central population to the suburban areas without delay.

13.1.3 Traffic condition

7 urban districts in the right side of the Red River functions as a core mass of Hanoi City so that roads have been developed to enter into the central core from north–west-south-southeast directions. Then surrounding roads have been also developed forming the first ring road, second ring road and the third ring road of which part is not fully completed.

The bridges across the Red River are Thang Long Bridge (a part of the third ring road) for both use road and railway, Long Bien Bridge for railway and right vehicles except automobiles because of limitation of heavy load. Chuong Duong Bridge is the most useful bridge among them connecting with National road No.5 going down to Hai Phong City to southeast direction.

National road No.1 to Ho Chi Minh City from west-north to south, No.6 to Hoa Binh province from the south of the City to west direction, No 32 to Ha Tay Province from the center City to west direction, No 2 to Viet Tri from the north of the City to west direction, No 18 from the north City to east direction, No. 3 to Thai Nguyen from the north of the City to the north direction shape the skeleton roads of Hanoi City. (Cf. **Figure 13.1.2**)

However, road density is not enough to cover urban traffic so that for the safety of transport, Trucks over 2.5 ton are prohibited to enter into the areas within the second ring road from 5 am till 10pm and in case of 1.5-2.5t trucks from 5am till 7 pm.

Road conditions in Hanoi City are summarized as in the **Table 13.1.2.**

Table 13.1.2 Road Condition in Hanoi City

Area Name	Area (km^2)	Road Length (km)	Road Width (m)	Number of Road	Road Density (km/km^2)	Remarks
7urban districts	84.30	244.1	1.5~37.0	404	2.9	Street
Ba Dinh	9.25	43.4	1.5~30.0	73	4.7	Street
Tay Ho	24.00	22.2	3.5~28.8	13	0.9	Ditto
Hoan Kiem	5.29	62.9	3.5~18.0	164	11.9	Ditto
Hai Ba Trung	14.65	54.4	1.6~37.0	79	3.7	Ditto
Dong Da	9.96	37.2	2.8~30.0	56	3.7	Ditto
Thanh Xuan	9.11	15.8	5.0~30.0	12	1.7	Ditto
Cau Giay	12.04	8.2	5.5~30.0	7	0.7	Ditto
5Suburban Districts	836.67	81.4	3.5~7.0	11	-	Provincial road
Soc Son	306.51	32.3	3.5~7.0	3	-	Inc.5Bridge
Dong Anh	182.30	12.4	3.5	2	-	Inc.2Bridge
Gia Lam	174.32	12.6	3.5~5.0	2	-	Inc.2Bridge
Tu Liem	75.32	14.6	5.0~5.5	2	-	Inc.3Bridge
Thanh Tri	98.22	9.5	5.0~6.0	2	-	Inc.2Bridge
Total	920.97	325.5	1.5~37.0	416	-	-

Source) Compiled from Transport Situation of Viet Nam in 2000 MOT

Railway line passes Hanoi City area with approximately 200km long and 13 railway stations. The radial railway line causes traffic congestion to the west-east road traffic extraordinary during rush hour.

There are 3 airports in Hanoi City; these are Noi Bai Airport, Gia Lam Airport and Bach Mai Airport. Noi Bai Airport is functioning as an international Capital airport which has a 3200m×45m runway and transport over 1 million people. Gia Lam Airport at present is used for domestic flight for small size aircrafts. Bach Mai airport is used for mainly army helicopters.

For water transport there are 2 main river ports. These are Hanoi Port under NOWATRANCO, Khuyen Luon Port under VINALINES. Each Port has the cargo handling capacity per year with 1.2 million tons and 0.5 million tons respectively. There are 5 berths including one passenger berth which are being operated by enterprises under HNPC. From Chuong Duong passenger berth (a pontoon type with slope-way) a boat can accommodate 150 passengers in maximum is providing services for tourists or general passengers to Dai Lo, Chu Dong Tu, Bat Tran (chinaware or pottery producing commune) and other places. As for ferry service there is no car ferry but at 7 places between right bank and left bank there are small ferry boats service running for passengers, bicycles and motor bikes by private sectors.

Besides them there can be counted 28 berths mostly handling sand, gravel, bricks and other construction materials. There are no statistics how much cargo volume these private ports are handling per year. However, it probably exceeds 1.0million per year totally.

There are several transport routes originated or destined from and for Hanoi City. The largest volume of transport takes place between Hai Phong and Quang Ninh Province through the Duong River.

These ports and berths are shown as in the **Table 13.1.3.**

Each mode of existing and planned transport infrastructure is shown as in the **Figure 13.1.2**

Table 13.1.3 List of Berths and Ports in the Red River Segment through Hanoi City

No.	Name of berths and ports	Km of bank	Bank	Dimensions		Area (ha)	Kind of berths	Owner or Operator
				Length (m)	Width (m)			
I	Central					100		
1	Hanoi	76	R	1200	500	60	General Cargo	NWATRANCO
2	Khuyen Luong	83	R	800	500	40	Ditto	VINALINES
II	Local provinces					84		
1	Thuong Cat	50,6	R	1000	200	20	Forestry products	HNPC
2	Chem	54	R	800	300	24	Const. materials	HNPC
3	Long Bien	72	R	500	300	15	General Cargo	HNPC
4	Chuong Duong	74	R	500	300	15	Passenger port	HNPC
5	Bat Trang	78.5	L	1000	100	10	General Cargo	HNPC
III	Local berths and ports					8.5		
1	Lung Lo	74.6	L	200	200	4	Cons. materials	Army
2	Ham Tu	72	R	250	100	2.5	Cons. materials	HNPC
3	Chuong Duong	73.8	R	100	100	1	Cons. materials	HNPC
4	Kim Lan	82	L	100	100	1	Cons. materials	HNPC
IV	Ferries (non-car ferry)			-	-	1		
1	Thuong Cat	51	R	-	-		Pass. & bike	-
2	Phu Thuong	60	R	-	-		Pass. & bike	-
3	Tu Lien	68	R	-	-		Pass. & bike	-
4	Bo De	74.8	L	-	-		Pass. & bike	-
5	Bat Trang	81	L	-	-		Pass. & bike	-
6	Khuyen Luong	83	R	-	-		Pass. & bike	-
7	Chem Ferry	56.5	R	30	30		Pass. & bike	Nguyen Duc Sinh
V	Private Berth							
1	Gravel and sand berth	56	R	150	30		Cons. materials	Nguyen Van Thuc
2	Gravel and sand berth,,	56.8	R	400	70		Cons. materials	Chem gravel and sand factory
3	Sand berth	57.6	L	100	30		Cons. materials	Pham Ngoc Son
4	Gravel and sand berth	70	L	50	20		Cons. materials	Chu Dinh Dung
5	Gravel and sand berth	70.2	L	70	20		Cons. materials	Le Xuan Thu
6	Loading and unloading berth	70.4	L	60	20		Cons. materials	Nguyen Manh Cuong
7	Passenger berth	72.5	R	150	50		Passenger	To Xuan Cuong
8	Ham Tu Gravel and sand berth	72.6	R	150	50		Cons. materials	Duong V. Cuong
9	Gravel and sand berth	72.8	R	30	20		Cons. materials	Tran Kim Ngoc
10	Loading and unloading berth	73.8	R	30	30		Cons. materials	Tram Quoc Chinh
11	Wood material berth	78.5	L	70	50		Cons. materials	Thanh
12	Soil, coal berth	78.5	L	50	30		Cons. materials	Cong
13~ 24	Construction material berth	78.7 ~ 79.9	L	30 ~50	30		Cons. materials	Ba, Chien, Ung, Phu, My, Ly+ Su, Ly,, Chien+Huyen, Hoang, +Chuc,Van, Huy
25	Petrol berth	79.9	L	50	30		Cons. materials	Long Giang Co.
26	Construction material berth	81.9	L	50	30		Cons. materials	Ha thi Linh
27	Construction material berth	82	L	70	50		Cons. materials	Km Lan Commune
28	Construction material berth	90	L	30	20		Cons. materials	Chung
VI								

Note) Km 0 have been calculated from Viet Tri cross section

Source) Complied from Pre- F/S Report, Red River - Hanoi Section Rehabilitation Project in June 2001TEDI

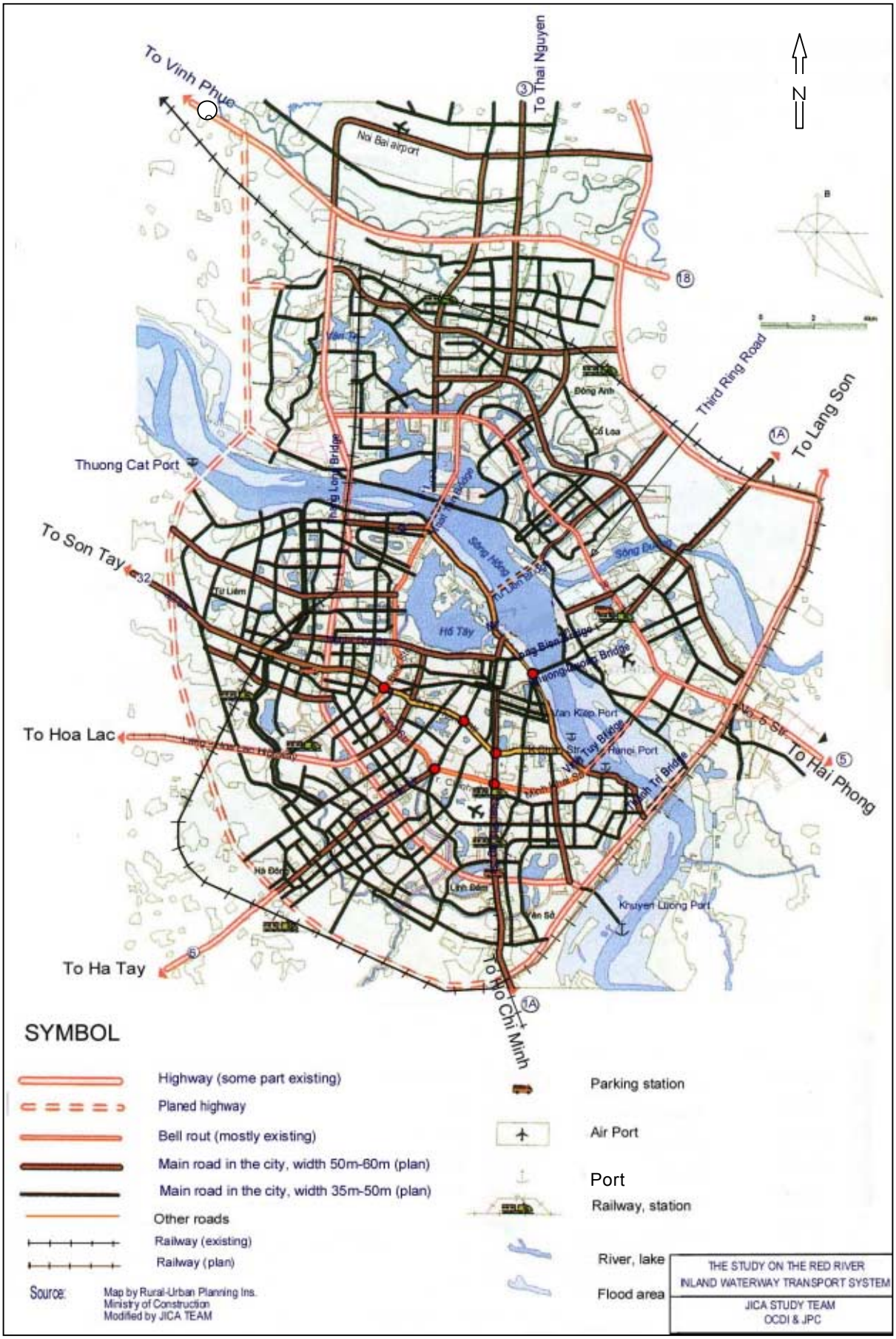


Figure 13.1.2 Transport Infrastructure Development Plan

13.2 Master Plan of Hanoi City up to the year 2020

13.2.1 Urban development plan of Hanoi city

The first Master Plan of Land use for Hanoi City up to the year 2000 was issued in April 1992 under the approval of Government upon the decision No.132/CT.

However, due to the rapid economic development and urbanization as well the Plan needed to be amended and adjusted. Then the new plan including surrounding suburban areas in Ha Tay, Vinh Phuc, Bac Ninh and Hung Yen with the Influential radius of 30～50km from the center of Hanoi City had been studied by Ministry of Construction and Hanoi Peoples Committee(HNPC) since 1995.

In 1998 the amended Master Plan was approved by the Prime Minister in the Decision No. 108/1988/QD-TTg. In this Master Plan the population and land use framework is planned as in the **Table 13.2.1**.

Table 13.2.1 Framework of Population and Area

Area	Urban Areas	Present population (thousand)	2005		2020	
			Population (thousand)	Areas (ha)	Population (thousand)	Areas (ha)
	Hanoi Capital Region	1,690	2,465	24,600	4,500~5,000	56,000
I	Hanoi City	1,312	1,725	14,603	2,500	25,000
1,1	Development restricted area (South Hanoi City)	900	839	3,557	800	3,557
1,2	The right of Red river (South Hanoi City)	322	566	6,346	700	8,623
1,3	The left of Red river (North Hanoi City)	89	320	4,700	1,000	12,820
II	Urban area constellation and well balanced development group	85	390	7,500	1,500	24,500
2,1	Western Satellite Cities Group: Son Tay, Hoa Lac, Mieu Mon, Xuan Mai, (Ha Tay Province)	54	280	6,000	1,000	1,700
2,2	Northern Satellite Cities Group: Soc Son , Phuc Yen, Viet Tri	31	110	1,500	500	7,500
III	Other Satellite Cities	294	350	2,500	500	6,500

Note) 1) Hanoi Capital Region means 30~50km surrounding area from the center of Hanoi City
2) Present population as of 1995

Source) Compiled from the Summary Report of the 2020 M/P

The Targets of the population density are set at 100 persons/ha in the city center

and 65~85 persons/ha in other urban area.

The center area within ring road No.2 (Vinh Thuy~Vong~Cau Giay ~Nhat Tan) in the right bank of the Red River is restricted to develop and to disperse population with the target number of inhabitant 900,000, while new western satellite cities groups such as Son Tay, Hoa Lac, Mieu Mon, Xuan Mai (Ha Tay Provice) and northern satellite groups Soc Son (Hanoi City), Phuc Yen(Vinh Phuc Province) and Viet Tri(Phu Tho Province) will be developed.

Hanoi City should be expanded to North-west, South-west and North directions, especially the North of Red River, where New towns will be constructed in Thang Long North ~Van Tri and Dong Anh~Co Loa. In the east to south area, Gia Lam ~Sai Dong~Yen Vien will be also developed.

This master plan aims at orienting the urban development and construction planning only, so that it needs to make detailed plans in accordance with the Urban Development Plan and to have the approval of the competent state authorities. The decree N0.91/CP in August 1994 stipulated the management on urban planning. According to this decree, an urban development master plan and a detailed plan are summarized as the **Table 13.2.2**

Table 13.2.2 Urban Development Master Plan and Detailed Plan

Item	Urban Development Master Plan	Detailed Plan
Format	Geographical map on the 1/2000~25,000 scale depending on the urban class	Geographical and Cadastral map on the 1/500~2,000 scale
Aim and Term	To orient the urban development (15~20 year) and construction planning at first stage (5~10 year)	To concretize the Master Plan (up to 10 year) The detailed plan is the basis to set up the investment projects, to choose the right location for construction and to grant the planning certificate, to decide the allocation of land and to grant the construction permit.
Coverage	To be prepared for whole city area or group of cities	To be prepared for specific areas within a city
Preparation	The preparation of Master Plan for class I or II cities is the responsibility of MOC	Developer or Investor or District
Approval	Prime Minister in the name of Government following consultation with the provincial peoples committee	Chief architect office

Source) The Decree No 91/CP

During the formulation work or after approval of Urban Development Plan of Hanoi City by Prime Minister in June 1998, some detailed urban development plans have been studied as the followings.

- OECF; Urban Infrastructure Development Project (Improvement of national highway [NH] No.2, 3, 6, 32 and Hoa Lac Highway, Expansion of NH-5 to NH-3, Construction of Ring Road No.3), SAPROF Study in March 1998
- KOICA; New Town (To Liem &Ho Tay, 840ha, Dong Anh 7,990ha, planned population 750,000) Development Plan up to 2020 in April 2000.

13.2.2 Industrial development plan

According to the analysis carried out by JICA Study, Master Plan for Industrial Development of Hanoi Area in 1995, industry of Hanoi Area was characterized as rather high percentage of fabricated metal/machinery industry with 28% in gross out put comparing 9.9% of whole country.
There are now 9 industrial estates surrounding the center of Hanoi City tabulated as in **Table 13.2.3 (**cf. **Figure 13.2.1** Long Term Industrial Development Plan)

Table13.2.3 Existing Industrial Estate in Hanoi City

	Name	Kind of Industry	Numb. of Factory	Numb.Of Employee
1	Minh Khai- Vinh Thuy	Weaving, machinery	17	17,000
2	Thuong Dinh	Food, Machinery	29	18,000
3	Van Dien—Phap Van	Fertilizer, Machinery	14	6,000
4	Truong Dinh—Nguyen Trai	Food, Rubber, Tobacco	13	5,000
5	Cau Dien—Mai Dich	Food, Chemical,	8	1,950
6	Gia Lam—Yen Vien	Machinery, Wood Product	21	5,000
7	Dong Anh	Machinery, Metal	22	8,300
8	Chem	Construction Material, Textile	5	2,310
9	Cau Buou	Chemical, machinery	5	1,390

Note) Number of Factory and Employee as of 1995
Source) Summary Report 2020 M/P, HNPC and Pre-F/S Red River-Hanoi Section Rehabilitation Project by TEDI in 2001

In general the factories having small or medium scale with degraded facilities and some times causing environmental problems need to be relocated and modernized. Then HNPC intends to develop 5 new Industrial zones including Export Processing Zone and put into the Master Plan also. Some of them have been already created.

Table 13.2.4 shows the outline of New Industrial Zones.

Table 13.2.4 The Outline of New Industrial Zones

Name	Location	Area (ha)	Existing or Preferred Industry
Noi Bai	Adjacent to Noi Bai Airport	100(created)	EPZ, Mechanical Products, Machine
Sai Don B	Adjacent to NH-5	97(created)	Electronic Products, Non-polluted Industry 2 Japanese factories operating
Hanoi-Dai Tu	Adjacent to NH-5	40(created)	Electronic Products, Food Processing, Sewing, Garment
Thang Long Industrial Park	Between left-side of Red River Dyke and Noi Bai Air Port(Nam Van Tri)	121(created) 300(planned)	Electric & Electronic Products, Tele-communication& others 7 Japanese factories operating
Daewoo-Hanel	Adjacent to NH-5	197(developing)	Daewoo-Hanel Orion operating
Dong Anh	South-east Noi Bai Airport	300	Plan
Soc Son	North Noi Bai Airport	430	Plan

Adjacent to north Thang Long Industrial Park the plan to create a dry port is going on. These Industries need well-developed means of transportation for cost performance expecting convenient container transportation especially.

Figure 13.2.1 shows a long -term industrial zone development plan.

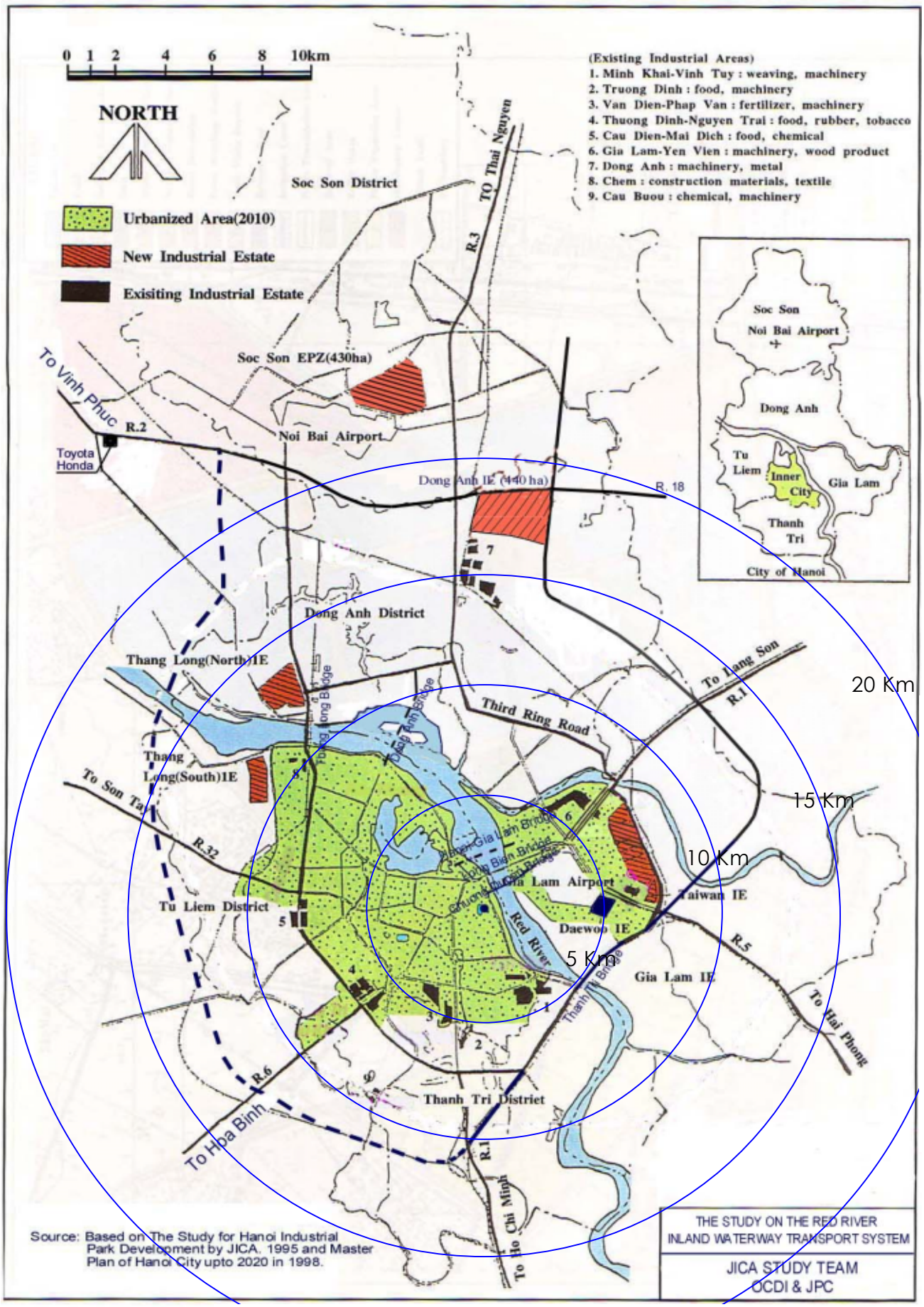


Figure 13.2.1 Long Term Industrial Development Plan

13.2.3 Land use plan

HNPC has set a land use plan in Hanoi City area as shown in the **Table 13.2.5.** According to this plan in 2020 the residential area shares 26% of total area while 55.7% in 1996 and industrial area will become 15% in 2020 from 6.46% in 1996.
In order to accommodate the population of 2.5million in the core of the City in 2020, the land area of 25,000ha will be developed as for urban land use area, which is nearly 4.5 times as large as that in 1996.

Table 13.2.5 Land Use Area List

Items		1996		2005		2020	
		Area (ha)	%	Area (ha)	%	Area (ha)	%
I	Communal Land Use	4,783.9	85.9	11,514.0	79.9	17,500.0	70.0
1.	Residential area	3,215.2	55.7	4,485.0	37.4	6,500.0	26.0
2.	Public utility in the city	300.7	5.2	863.0	6.0	1,250.0	5.0
3.	Green area and open space	104.0	1.8	2,243.0	15.2	3,500.0	14.1
4.	Urban Transportation	661.0	11.5	2,933.0	15.0	4,750.0	19.0
5.	Land beyond management of the City's authority	262.0	4.5	690.0	3.7	1,000.0	4.0
6.	Educational facilities area	241.0	4.2	300.0	2.6	500.0	2.0
II.	Non-Communal Land Use	986.1	17.1	2,311.0	20.2	7,500.0	30.0
1.	Industrial and Craft	372.7	6.5	970.0	8.4	3,750.0	15.0
2.	Storage	50.4	0.9	130.0	1.1	500.0	2.0
3.	Outer Transportation	188.6	3.3	520.0	2.2	1,250.0	5.0
4.	Major Infrastructure	18.5	-	40.0	-	90.0	-
5.	Military Use	355.9	6.1	647.0	5.6	647.0	2.6
6.	Other Green area	-	-	780.0	2.4	1,263.0	5.1
	Total	5,773.0	100.0	14,600.0	100.0	25,000.0	100.0

Source) Summary of the 2020 M/P HNPC in 1998

13.2.4 Priority project on urban development plan

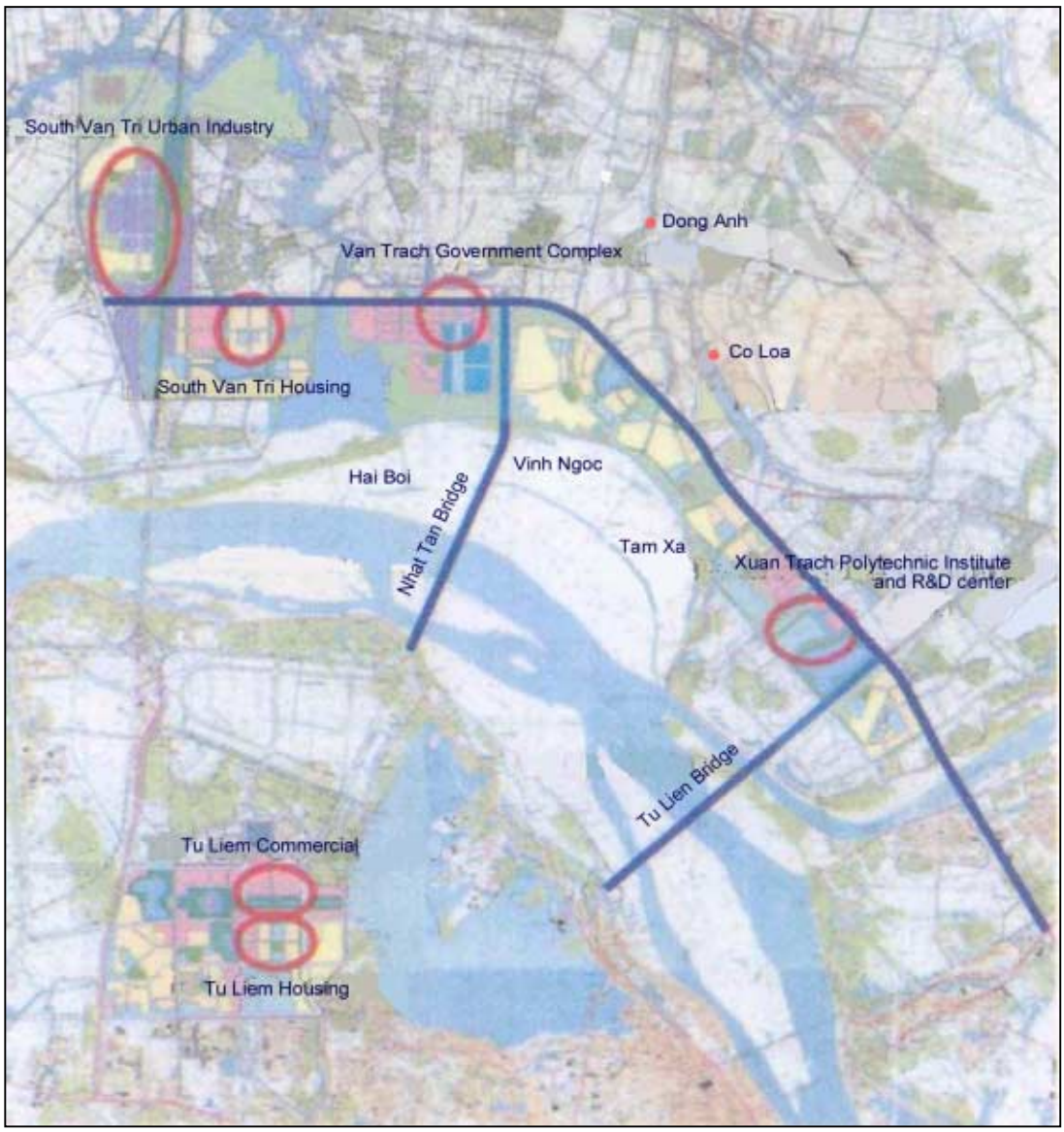
HNPC Architect Office (at present Architecture Planning Department) published some priority projects like in the **Figure 13.2.2**. in 2001. They are South Van Tri Urban Industry, South Van Tri Housing, Phuong Trac Government Complex, Xuan Trach Polytechnic Institute and R&D center development Projects, in the north of left bank of the Red River. In the Center area, we have Tu Liem Commercial and Housing developing Projects. As essential infrastructures for the projects the extension of National Highway No 5, Nhat Tan Bridge and To Lien Bridge is planned for construction.

HNPC intends Tu Liem Commercial and Housing Area and Co Loa Area, which is, belong to Dong Anh District to become new vice cores of Hanoi City. In this regard as the connection of these two cores area, Nhat Tan Bridge is a very

important infrastructure. However, Nhat Tan Bridge is not authorized by central government so far.

Between the left bank of the Red River and low stream water area there is a rather wide area in which there are three communes named Hai Boi, Vinh Ngoc and Tam Xa.

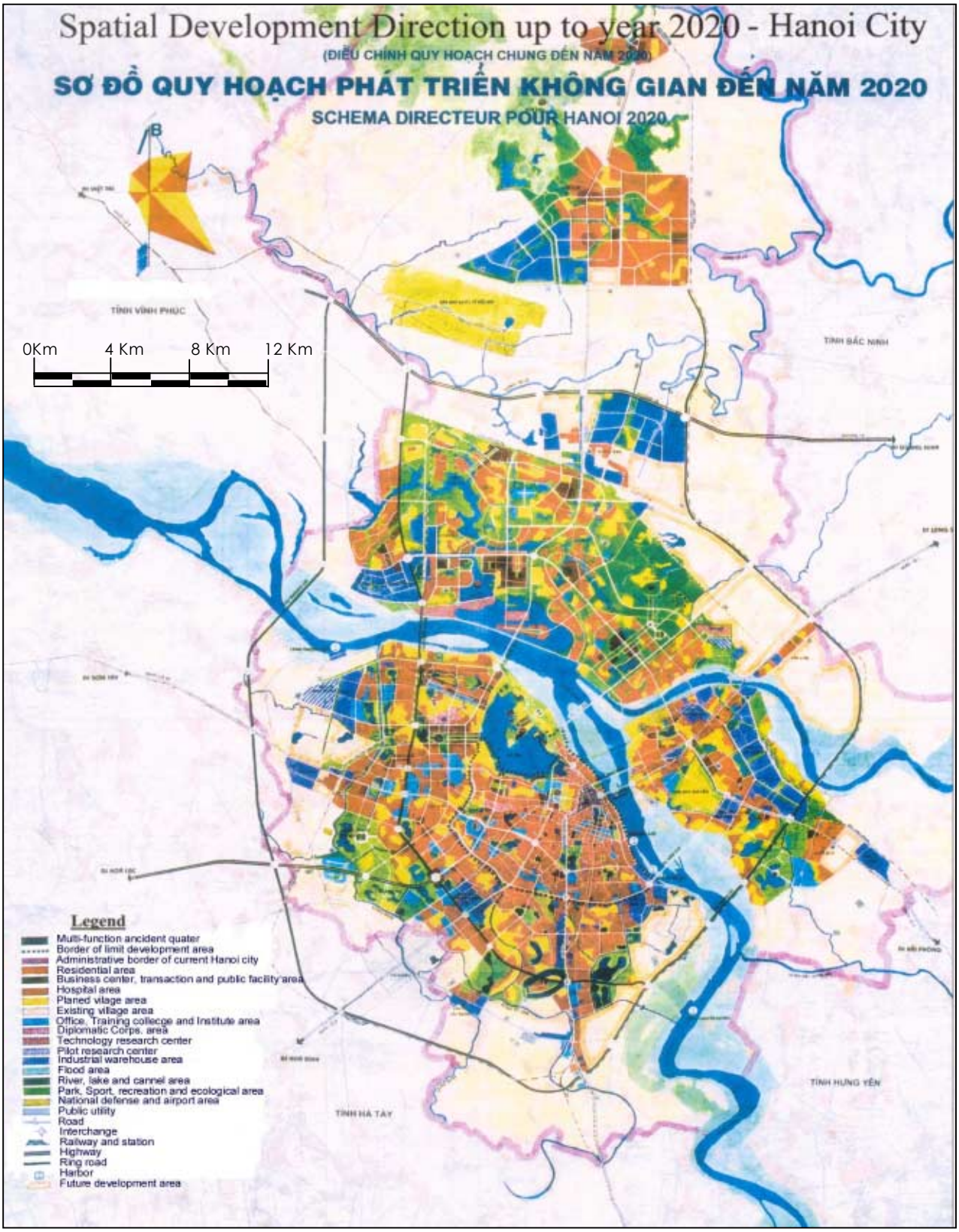
In front of Hai Boi commune the north Hanoi Port is now planned and along the upper stream shore line of the New Port a group of groins will be constructed to stabilize the flow. So that this area is available for urban development, and can be planned as a suitable relocation area in case of removing inhabitants inside the Red River.



Source) HNPC Chief Architect Office (at Present HNPC Architecture Planning Department)

Figure 13.2.2 Locations of Priority Project Sites

The comprehensive land use and urban development plan (Master Plan) up to the year 2020 is shown as the **Figure 13.2.3.**



Source) HNPC Chief Architect Office(at present HNPC Architecture Planning Department)

Figure13.2.3 Master Plan up to the Year 2020