4 TRANSPORT SUBSECTOR STRUCTURE AND PERFORMANCE

4.1 Institutional Framework and Overview

Main Organizational Features

The overall administrative responsibility of the transport sector is shared between the MOT, Government Office, MPI, other ministries, and the provinces/districts.

The structure of government in relation to transport activities is shown in Figure 4.1.1. The National Assembly meets twice a year and has a Standing Committee that presides between these two sessions. The Assembly approves the national plan and the state budget as well as major economic directions after all these have been reviewed by the Government Office. The Prime Minister (PM) is the real manager of the nation's economic and administrative system. The PM issues decisions or directives and decrees on behalf of the government. The power of the PM over ministries, policies, plans, and budgets makes him/her the key person in terms of depth and rate of change.

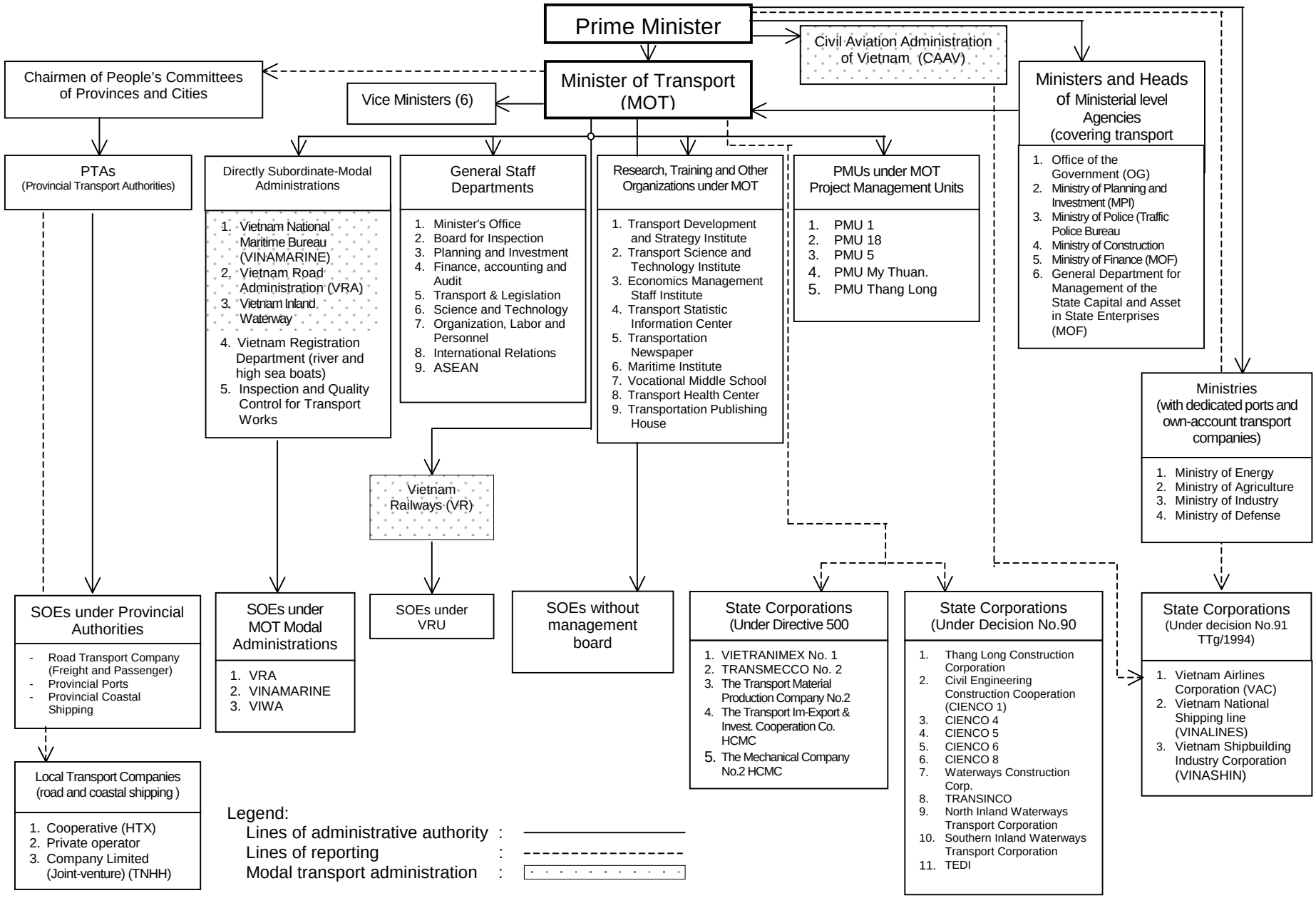
The MPI reports to the PM and submits to him major policy decisions, transport plans and large projects for approval (once these have been proposed by the other ministries). The MPI has three small transport-related units:

1) An Infrastructure Department which reviews MOT proposals,
2) A group in the Department of Synthesis, which reviews the transport sector in terms of broad intersectoral priorities, and
3) An Infrastructure and Urban Division in the Development Strategy Institute (DSI) , which provides advice for a 10 to 20-year planning period.

Other ministries with significant interests in transport are the:

1) Ministry of Police with the Traffic Police Bureau for road safety and issuance of vehicle registration numbers and number plates,
2) Ministry of Finance and the General Department for Management of the State Capital and Assets in State Enterprises, the specialized organization established in January 1995 within the MOF, tasked with supervising and managing SOEs,
3) Ministry of Construction which issues construction standards, and
4) Ministries of Industry, Agriculture and Rural Development, and Defense which own and operate dedicated ports, and own-account trucking and coastal/river fleets.

Figure 4.1.1
Structure of Government Institutions Related to the Transport Sector (August, 1999)



Provincial Transport Authorities (PTAs) are established in each province under the responsibility of Provincial People's Committees (PPCs). The PPCs, assisted by the Provincial Planning and Investment Committees, have substantial powers regarding all transport issues within the province and in particular the development and management of provincial and district roads. PTAs have a dual reporting function: (a) to MOT for technical specifications, legal transport standards and transport planning matters, and (b) to PPCs for the management and rehabilitation of provincial roads funded by provinces. They receive funding for construction and maintenance of provincial and district transport infrastructure, directly from the government rather than from the MOT, making it difficult for the latter to exercise its authority over transport infrastructure planning.

PTAs have both regulatory/oversight and commercial functions. Their oversight functions include:

- implementing/coordinating central government plans,
- driver testing and licensing, transport licensing and mandatory road vehicle inspections and registration on behalf of the MOT.

Commercial activities vary between provinces but may include:

- constructing and administering provincial and district roads and provincial ports (both general cargo and specialized ports for petroleum, salt, cement, etc.),
- maintaining designated national roads under VRA responsibility,
- operating provincial coastal shipping, inland water transport and road transport companies (freight and passengers).

There is no consistent organizational setup for PTAs that applies to all provinces (or districts) and this sometimes causes confusion about responsibilities.

Table 4.1.1 summarizes the distribution of government responsibilities in the transport sector among the MOT, specialized management departments (or subsector agencies) under it or the government, and the provinces. Major organizational issues include:

1) the involvement of the MOT in infrastructure management through the five project management units (PMUs) rather than through specialized management departments
2) too many reporting lines to the MOT Minister
3) lack of oversight function by the MOT on aviation matters
4) lack of a clear role for research institutes (distinguishing between acting as MOT representatives and acting as independent consulting firms)
5) duplicated functions within the MOT
6) lack of a proper legal status for VR
7) weak central direction of provincial transport infrastructure management
8) bureaucratic procedures that slow down decision-making on project planning and implementation among others
9) continuing lack of clear separation between commercial and oversight functions

Furthermore, in the MOT and its subordinate agencies there is a lack of suitably

experienced and qualified staff (especially at provincial/district level). These issues are further elaborated below.

MOT Organization

The main legal provisions establishing organizations under the MOT are shown in Table 4.1.2. As defined in 1994, it had "tasks, powers and state management responsibility over land, roads, railways, river, and maritime transport". In 1995 it lost responsibility for aviation. Its main functions are: (1) to elaborate general planning and the master plan on transport development throughout the country, (2) to draft legislation (laws and ordinances) and submit them for promulgation by the government or by the ministry itself, (3) to issue, according to government stipulations, national technical standards for construction, transport means, equipment and spare parts, and (4) to examine and inspect the implementation of laws, policies and regulations.

Table 4.1.1
Responsibilities in the Transport Sector

Organization	Operational functions		Policy & Regulatory Functions			
	Planning & Investment	Mgmt. of Infrastructure & Operations	Drafting of Legislation & Regulations	Issuance of Technical Standards & Transport License	Traffic Order & Safety	Negotiation of Internat'l Agreements
1. Ministry of Transport (MOT)						
• State Management Responsibility	X	X	X	X	X	X
• Vietnam Railways (VR)		X	X		X	X
2. Specialized Management Department under the MOT						
• Vietnam Road Authority (VRA)	X	X	X	X	X	X
• Vietnam National Maritime Bureau (VINAMARINE)	X	X	X	X	X	X
• Vietnam Inland Waterway Administration (VIWA)	X	X	X	X	X	X
3. Agencies attached to the Government (Government Office)						
• Civil Aviation Administration of Vietnam (CAAV)	X		X	X	X	X
4. Agencies under the PPCs						
• PTAs	X	X		X		

Table 4.1.2
Legal Basis for Organization, Function, Powers, and Responsibilities in the Transport Sector

Regulations	Legal Features
No. 07-CP/1993 – January 30, 1993	Vietnam Roads Administration (VRA): government authority to manage the road subsector.
No. 08-CP/1993 – January 30, 1993	Inland Waterway Bureau (VIWB): government authority to manage transport on rivers and lakes, and through river ports.
No. 31-TTg/1993 - February 2, 1993	Vietnam National Maritime Bureau (VINAMARINE): the regulatory body in the maritime sector, maritime ports and coastal shipping.
No. 22-CP/1994 – March 22, 1994	Ministry of Transport (MOT): state management of land, roads, railways, river, maritime and civil air communication and transport.
Not available	Vietnam Railways (VR)
No. 32-CP/1995 – May 22, 1995(1) No. 68-CP/1995 – October 25, 1995(2)	Vietnam Civil Aviation Administration (CAAV): state management of the aviation subsector - transferred from the MOT to the direct control of the Government;
No. 79-CP/1995 – November 22, 1995	Vietnam National Shipping Lines (VINALINES): responsible for building and developing the maritime industry (sea transport, maritime brokerage, etc.)
No. 4-CP/1996 – January 27, 1996	Vietnam Airlines Corporation (VAC) with the Vietnam National Air Services (Vietnam Airlines) as the core.
No. 33-CP/1996 – May 27, 1996	Vietnam Shipbuilding Industry Corporation (VINASHIN): responsible for building new ships, repairing ships, other floating equipment and facilities, oil drilling rigs.

Notes:
1/ Government Decrees (CP), Government Decisions (TTg), Ministerial Decisions (MOT – QD/TCCB)
2/ Provisional Regulations have been issued on the reorganization of VRA and VIWA, as follows
VRA : Government Decision No 3525/QD-BGTVT/1998 dated December 23,1998 to issue provisional regulation on the organization and operations of the Vietnam Road Administration.
VIWA: Government Decision No 3619/QD-BGTVT/1998 dated December 31,1998 to issue provisional regulation on the organization and operations of the VIWA.

Until recently the MOT has been headed by six vice ministers responsible for (1) transportation and traffic safety, (2) international relations and internationally funded projects (ODA), (3) science, technology and mechanics, (4) construction (domestically funded projects), (5) transport and institutional issues, and (6) southern region of Vietnam. However, the number has been reduced during the VITRANSS study (the Vice Minister for Transport and Safety Issues was appointed as General Director of VR and his ministerial duties distributed among the remaining ministers).

The MOT has nine general staff departments and nine research and training departments and other organizations under it. Within the MOT there are 209 staff, including 180 specialists. The largest general staff departments are the Minister's office (77) and Planning and Investment (32). Since the 1980s the role of the MOT has been fundamentally transformed, from directly managing the transport sector to being responsible for oversight and infrastructure provision. Many responsibilities have been delegated to subsector agencies and new functions for each of its general staff departments have been defined.

Sector Management Capacity

In terms of functional definition, MOT's institutional reforms have not yet been translated into specific means by which it should manage the transport sector under market conditions. Despite considerable progress in implementing modern technical standards in the transport sector, guidance documents and procedures have to be further developed to enable the MOT to monitor implementation of these standards.

The information required by the MOT for policy-making and planning has not yet been defined, for example, for assessing:

- different development options for infrastructure (trade-offs between developing different modes along particular corridors),
- scope for coordinating developments of different modes and improving linkages,
- capacity utilization and condition of infrastructure,
- competitive conditions within and between modes of transport,
- effectiveness of laws and regulations,
- levels of enforcement, and
- degree of achievement of policy objectives and reform programs.

In many cases such information cannot be obtained until key guidance documents have been implemented. For example, collecting traffic, operational and financial data is difficult because of the lack of a legal basis for collecting information from operators and from other agencies such as the Ministry of Police (who keep vehicle registration records). Even the most basic of transport statistics is lacking, infrastructure inventory for one, because management information systems have not yet been established at subsector and provincial levels.

Project implementation encounters bureaucratic obstacles at various stages from project preparation to completion because of:

- over-centralized decision-making processes, often involving several ministries, with their frequent involvement in micro management activities of PMUs,
- the sheer volume of administrative work involved,
- lack of experience and training of some administrators,
- in the case of internationally funded projects, insufficient English proficiency of administrators, which causes misunderstandings,
- lack of adequate guidance documents,
- the difficulty in getting data from public agencies, which lack service orientation.

From the MOT's perspective, project implementation can be streamlined through better coordination among subsector agencies – clearer guidance for implementing agencies on how they should relate to agencies under other ministries. The lack of staff with the required experience and qualifications in modern planning and regulatory techniques is a major obstacle to institutional strengthening.

The need for retraining of the transport sector personnel was found to be substantial. Within the MOT itself, the changing role of the ministry requires retraining of existing staff based on a comprehensive analysis of future staffing needs. The need for sector management training extends far beyond the MOT itself and covers senior staff in subsector agencies, the Provincial/District Transport Administrations and in transport institutes. The MOT Labor and Personnel Department has no computerized personnel register and no plan for human resource development.

Organization of Transport Subsectors

The main management functions are performed by means of three specialized management departments or subsector agencies which control particular modes of transport:

- VRA for road and road transport,
- VINAMARINE for maritime port and maritime transport, including coastal shipping, and
- VIWA for river ports and river transport.

The management department responsible for aviation, the CAAV, now reports to the Office of the Prime Minister. The VR is the former Railway General Office (then Vietnam Railway Union) under the MOT, and is responsible for railway infrastructure and services. It has never been given a proper legal status as a commercial enterprise.

The management of large construction projects is entrusted not to subsector agencies but to five PMUs under the MOT.

The MOT is currently embarking on a review of the transport sector organization and has issued MOT Directive No. 356/CT-BGTVT/1998 dated 3 November 1998 on strengthening administrative reform in the transport sector. One aim of the review is to reduce staff numbers by 15% whilst simultaneously increasing the productivity and salaries of the remaining staff. It is anticipated that one result will be a revision of Decree No. 22 which defines the organization of the MOT.

Vietnam Road Administration: In theory the VRA manages the national road network while provinces and districts are in charge of provincial and district roads. Its main functions are: (a) to draft bills, policies, rules, standards, codes, and regulations for the state management of the road transport system, (b) to elaborate national road strategy, long-term, five-year, and yearly plans on the development of the road

network, (c) to directly manage ongoing repair, construction and maintenance work and to set up road signals to ensure safety, (d) to establish and operate the road traffic management system with oversight function over policy and technical standards on road safety, (e) to introduce regulations for classification, loading capacity, as well as the regulation of import and export of vehicles; and to issue all types of interprovincial road transport licenses for passenger and goods transportation as well as cross-border road permits; to organize the examination of, and to issue driver's, licenses in the whole country, (f) to work out the regimes of collecting bridge and road tolls, charges on ferries and fees for the issuance of certificate and documents on road transport; to organize and direct the collection of fees on road and other revenues; to work out the bracket of transport rates, charges of loading and unloading and road transport services, (g) to negotiate and work out documents on cooperation with other countries in road communications and transport services; to manage internationally funded projects for road communications and transport services.

Under VRA there are four Regional Road Management Units (RRMUs), controlling 48 road management and repair SOEs, which have responsibility for medium repair (generally the periodic maintenance) and routine maintenance works. There are also four Material and Equipment Supply Enterprises and four ferry enterprises under VRA, and Transport Consulting Engineering Companies (TCECs) which can be called upon to provide design and supervision services.

VRA still retains several SOEs engaged in transport businesses – nine in road passenger and freight services and four in transport construction consultancy.

In practice VRA has almost no planning role and, since it does not implement major projects, it is far from being the state administrator of road transport.

Vietnam National Maritime Bureau: The VINAMARINE's responsibilities include (a) developing plans for the maritime industry, (b) acting as owner of state maritime infrastructure, (c) administering seagoing and coastal shipping vessels and operations, ports and navigational aids, (d) issuing licenses, managing infrastructure in accordance with government instructions and providing search and rescue services, (e) monitoring and enforcing maritime safety, environmental standards, and maritime sanitation.

The regulatory functions of VINAMARINE are carried out through its head office and three branch offices (Hai Phong, Danang, HCMC), 17 port authorities which monitor enforcement of maritime rules and regulations, including those covering maritime safety, environmental pollution and maritime sanitation. Other agencies under the control of VINAMARINE include the Vietnam Maritime Safety Agency (VMSA).

VINAMARINE still controls operations management in three ports (Nghe Tinh, Qui Nhon and Nha Trang).

Vietnam Inland Waterway Administration: The VIWA is the agency responsible for the provision of infrastructure along rivers, lakes and river ports and in particular aids to navigation (ATN) and dredging along the rivers (6,787 km of which are classified as navigable). It must be noted, however, that the VMSA, under the control of VINAMARINE, manages the ATNs and dredging along the main rivers serving inland ports.

VIWA still manages four inland waterway transport and river ports SOEs. It is expected that these functions will be divested eventually to allow the VIWA to concentrate on its regulatory functions.

Civil Aviation Administration of Vietnam: The CAAV is an agency attached to the government, having the function of state management over the civil aviation in the whole country. Its main function are: (a) drafting laws, ordinances, strategies, programs, plans, and policies on the development of civil aviation services, (b) proposing the establishment and operations of air routes, (c) the accession to and signing of international treaties on aviation, (d) issuing procedures and rules on technical and professional processes and civil aviation safety, (e) organizing and managing the operation of civil aviation routes, flight information and flight control regions, (f) ensuring security and safety of aviation services, special flights and exclusive flights, (g) managing air transport services provided by domestic air transport business as well as the activities of foreign airlines operating on Vietnamese territory, (h) managing the registration of civil aircraft, the import and export of aircraft, equipment and materials in service of civil aviation; managing the repairs and maintenance of aircraft, aircraft engines, (i) issuing, suspending, extending, revising and withdrawing certificates, licenses and permits relating to the civil aviation activity in accordance with government stipulations.

The Regional Airport Authority (RAA) under the CAAV is a non-business unit which is responsible for specialized state management of civil aviation at airports and civil airfields. It also performs the commercial function of organizing the management of airport and airfield exploitation to ensure the supply of aviation services and public services. The RAA is organized into three regions – northern, central and southern.

Vietnam Railways: The VR comprises a Headquarter Block together with four specialized blocks, namely Industrial (including workshop and manufacturing facilities), Construction (covering civil engineering and track maintenance activities), Transport (covering traffic and operations) and Hotel-Tourism-Materials. The Transport Block comprises three regional unions (covering the north, central and south of Vietnam) which operate services as planned by the HQ.

Organization of State-owned Transport Enterprises

In 1994 many commercial functions were removed from the MOT and placed in three state corporations under the Prime Ministers' Office. These are:

- Vietnam National Shipping Lines (VINALINES),
- Vietnam Shipbuilding Industry Corporation (VINASHIN), and
- Vietnam Airlines Corporation (VAC).

This restructuring was carried out under two decisions of government:

- On restructuring state-owned enterprises to increase their operational efficiency as well as to strengthen state management (Government Decision No. 90-TTg/1994 dated 7 March 1994); and
- On establishing a business corporation on an experimental basis to eliminate the governing function at the ministerial and administrative level (Government Decision No. 91-TTg/1994 on "Pilot Work to Establish Enterprise Groupings", also dated 7 March 1994).

Corporations such as the three listed above, formed under Decision 91, had to have at least seven subsidiaries and a total legal capital of at least VND 1,000 billion (US$ 77 million). Their boards of management and general directors are "appointed, dismissed, commended, or disciplined" by the Prime Minister. The scope of these corporations is as follows:

- VINALINES: to carry out business in sea transport, port exploitation, sea ship repair, and maritime brokerage, and to develop the maritime industry in line with the economic development of the state,
- VINASHIN: to conduct business in building new ships, repairing ships and other floating equipment and facilities, oil drilling rigs, and
- VAC: to conduct the following tasks: (i) carrying out business and services in air transport for passengers and cargo at home and abroad in accordance with the state overall planning, plans and policies on the development of civil aviation, (ii) investing directly or indirectly in domestic and foreign projects; buying part or the whole of another business as stipulated by law.

These large corporations act as conglomerates which guide state policy in their respective part of the transport industry. Their statutes proceed from the Law on State Enterprises which was passed by the National Assembly on 20 April 1995 “with a view to promoting the leading role of the State-owned economy in the market mechanism”. They are guided by the Minister of Transport and subsector agencies that appoint the managing board and directors, and give instructions on policy. Major state investments are also made through these corporations.

Corporations formed under Decision 90 had to have at least five subsidiaries and a total legal capital of at least VND 500 billion (around US$ 38 million at an exchange rate of VND 13,000 for US$ 1). Their boards of management and the general directors are appointed and dismissed by the MOT. A total of 11 transport corporations were established under this Decision, as shown in Figure 4.1.1. They include most of the SOEs involved in the transport construction business. These corporations tend to be regionally located, compete with each other for construction contracts (often through joint ventures with other construction organizations) and award work to their member SOEs. Following the creation of these corporations, a

further group of five corporations was established in the next year. Following the establishment of these corporations, several transport SOEs remained attached to the MOT, subsector agencies or provincial governments, as indicated in Figure 4.1.1.

The government has been pursuing the reform of SOEs - it has plans for further reform of 5,700 SOEs in Vietnam and is currently embarking on a classification of SOEs into three groups (a) very profitable SOEs that are to be more efficiently restructured in accordance with new standards, and possibly equitized, (b) less profitable SOEs that need restructuring to reduce debt to asset ratios, especially by merging them to cut costs, and liquidating unprofitable ones, and (c) losing SOEs that will be sold or liquidated. Debt payment ability would thus become a major criterion determining the restructuring of SOEs.

As part of these reforms, Decree No. 103/1999/ND-CP dated 10 September 1999 was introduced to enable small SOEs with less than VND 1 billion (and, in some cases, up to VND 5 billion) asset value to be handed over, sold, contracted, or leased. Provision is made under this decree to value the assets based on agreed prices between seller and buyer and even to auction the SOE where there are two potential buyers. Provision is also made for dealing with labor rights and debt (including giving discounts on asset prices for undertaking to invest and provide employment).

This program could mean faster equitizing of non-strategic transport SOEs, especially those providing road and inland water transport services and those providing construction and other support services. However according to government policy, rail, aviation, and ocean-going shipping SOEs are regarded as strategic and therefore not to be equitized. Furthermore there would be insufficient interest to invest private capital in large entities, such as ports and the railway, partly because of labor obligations and the presence of large numbers of surplus staff. Therefore there may be little reform of enterprises in three out of the five major modes of domestic transport for many years to come, unless intermediate reforms such as corporatization or commercialization are pursued.

Regulatory Framework

Apart from the laws, decisions and decrees that define the organizations of the transport sector, there are legal provisions defining important functions within the transport sector which can be grouped as follows:

- modal transport acts (where they exist, giving the basis for transport activity using each mode),
- specific implementing regulations, usually for each mode, giving the precise rules for general transport activities (traffic regulations, inspection and registration of equipment),
- business regulations (transport licensing, tariff setting etc.) which define the legal basis for commercial transport services, and
- other aspects (safety, planning and provision of infrastructure, insurance).

The main features are summarized below based on the list of key provisions given in Appendix B of Technical Report No. 4 (along with provisions which define the organizations).

1) Modal Transport Acts: It is common practice in many countries to enact basic transport laws for each mode, or for several modes, covering the main provisions and incorporating enabling powers for the designated governmental department in charge of establishing standards and regulations pursuant to the basic law. So far, the National Assembly has only adopted the Maritime Code, in June 30, 1990, and the law on Civil Aviation, in December 26, 1991 (followed by the Law on Amendments and Addition of the Law on Civil Aviation adopted in April 20,1995).

   A Road Act has been under preparation for the past five years with the assistance of the ADB. The seventh draft version was released (June 1999) but the document is not yet ready for submission before the National Assembly. One of the reasons for the delay could be that it covers too many areas at the same time and tries to include details that are best left to implementing regulations (a common concern of re-forming governments is to avoid dilution of reforms at lower levels, and this can lead to excessive detail in primary legislation). Drafting legislation is made more problematic by the implementation of separate transport legislation in overlapping areas such as transport safety (for example, the Government Decree No. 36/CP/1995 dated 29 May 1995, which concerns the basis for regulating road safety) and Decree No. 80-CP/1996 dated 5 December 1996 which defines the organization and operation of transport inspection activities).

   There are no immediate plans for the submission of bills on rail and inland waterway traffic, nor for a second bill amending and supplementing a number of articles of the Vietnam Civil Aviation Law. The latter was supposed to be presented to the National Assembly under the Preparatory Program of the 1999 legislature but was postponed. The other bills have not yet reached advanced draft stage.

   These bills each cover just a single mode of transport. The legal basis for multimodal and intermodal transport is not easily addressed through such an approach. However no umbrella Transport Act is currently under consideration.

2) Implementing Regulations: Some of these implement new enabling legislation, such as the Maritime Code, Law on Civil Aviation, and Decree on Road Safety. Others define the conditions for transport activity without the support of such high-level legislation. Some of the latter are merely updates of old legislation which try to meet current pressing needs, but inevitably do not form a consistent set of provisions that meet modern needs and overall policy objectives.

   For example, road vehicle size and weight regulations have been a major issue

for many years and, until recently, have prevented efficient modern forms of road transport (such as container deliveries to/from ports). Even now they are complicated and difficult for road users to understand and involve complicated bureaucratic procedures for law-abiding transport operators. Not surprisingly one truck operator described the regulatory system as something that people use (rather than something that people obey).

3) Business Regulations: A similar situation is found in business regulations. In the maritime subsector there are relatively clear licensing requirements for operators wishing to provide shipping services. However for other modes there are still serious defects.

   For example, transport licensing regulations for roads and inland water transport often define precise routes for particular vehicles or vessels rather than specifying categories of routes built to appropriate minimum technical specifications for particular types of vehicles or vessels. This inhibits efficient use of vehicles/vessels.

   Many business regulations are excessively vague and allow considerable discretion in their interpretation. The actual interval of licenses is often too short, less than the maximum given in regulation. Not surprisingly, operators complain about excessive time taken to get and renew licenses.

   During the VITRANSS study all these transport business licenses were scrapped under Decree No. 19 dated 3 February 2000. Any future licenses will be approved by government in accordance with Article 6 of the Law on Enterprises (Law No. 13/1999/QH10).

   Many detailed regulations on transport prices are applied which would normally not be enforced in a market economy. These are likely to cause distortions such as cross-subsidies and inadequate supply of transport for some services.

4) International Conventions on Maritime, Land and Air Transport: Vietnam has signed most of the international maritime conventions, including:
   - LL (Load Level) Convention (1966),
   - SOLAS (Safety of life at sea) Convention (1974) and SOLAS PROT (1978),
   - MARPOL (Maritime pollution) Convention (1978),
   - STCW (Standard of Training Certification and Watch-keeping for Seafarers) Convention (1978),
   - COLREG (1972),
   - TONNAGE (maximum dead weight) Convention (1969),
   - ILO Convention No. 147 (on the welfare of the crew), and
   - Memorandum of Understanding on Port State Control (PSC) for the Asia-Pacific region (Tokyo MOU) signed in Tokyo in December 1993.

   The IMO insists on states ratifying IMO conventions, especially those concerned

with PSC, to have efficient maritime administrations staffed by well-trained, reasonably well-paid and experienced personnel. This is a major challenge for the Vietnam maritime sector.

A number of United Nations agreements and conventions cover cross-border transport operations. None of them have so far been signed by Vietnam. The purpose of all these conventions is to increase efficiency by performing complex operations as rationally as possible. As regional integration continues there will be increasing pressure on Vietnam to incorporate these conventions into domestic law.

Some important conventions are:

- Convention concerning the International Transport of Goods by Rail (COTIF Convention)
- Customs Convention on the International Transport of Goods under Cover of TIR Carnets (TIR Convention), 1975
- Customs Convention on the Temporary Importation of Commercial Road Vehicles, 1956
- Customs Conventions on Containers, 1972
- International Convention on the Harmonization of Frontier Controls of Goods, 1982
- Convention on the Contract for the International Carriage of Goods by Road (CMR), 1956
- Convention on Road Traffic, 1968
- Convention on Roads Signs and Signals, 1968
- Convention on the Registration of Inland Navigation Vessels, 1965
- Convention relating to the Limitation of the Liability of Owners of Inland Navigation Vessels (CLN) 1973 and Protocol (1978)
- Convention on the Contract for the International Carriage of Passengers and Luggage by Inland Waterways (CVN) 1976 and Protocol (1978).

Vietnam has also signed several conventions regarding international air transport.

5) Other Aspects: Insurance provisions require basic insurance cover for defined types of transport activity and allow competitive provision of that cover (with the possibility of price incentives from insurance companies for safe operation).

The basis for transport infrastructure planning and finance is given in Decree No. 42/CP/1996 dated 16 July 1996. This applies to all sectors of the economy and gives responsibility for allocating resources in terms of three levels of investment. In the transport sector this means that:

- Group A - transport investments over US$ 15 million (US$ 30 million for ports), plus BOT types and virtually any ODA project, are to be submitted by MOT to the Prime Minister for approval
- Group B - above VND 30 billion (US$ 2.2 million) but below the levels of

Group A, are to be decided by MOT after approval by MPI

- Group C - below VND 30 billion (US$ 2.2 million), can be decided by MOT (or even delegated to its subsector agencies provided they follow Decree No. 42 and obtain approval from the MPI).

There is no carriage of goods act in which the limits of liability of carriers for loss or damage are given. Furthermore there is no provision in law for a forwarder to act as a principal or multimodal transport operator (MTO) who is contractually responsible for door-to-door transport.

There is a need to incorporate into Vietnamese law the various international agreements and protocols which the government has entered into in recent years (especially the ASEAN agreements which liberalize transport between countries in the region).

Various decrees have been implemented which provide the legal basis for BOT agreements. In practice each BOT project requires its own regulations to provide the legal basis for implementation.

4.2 Road and Road Transport

4.2.1 Road Administration

The Vietnam Road Administration was established in 1993 to administer the road transportation system in Vietnam as a subordinate modal administration under the MOT. The duties of the VRA include the development of strategic, legal and technical directions for road management. Departments in VRA report directly either to the Chairman or to the two Vice Chairmen of VRA (Figure 4.2.1).

VRA manages and plans the maintenance of the 7,969-km national road network through its four regional road management units (RRMUs). The organizational structure of these RRMUs differs from each other. Each RRMU is divided into nine to 14 sub-RRMUs, which in turn allocate maintenance works to depots under their jurisdiction. Each sub-RRMU has between three to seven depots.

Project management units (PMUs) were formed to handle the management of large-scale projects such as the National Road No. 1 (NR1) rehabilitation project and My Thuan Bridge construction project. The number of PMUs has been increased based on attractive international financing projects.

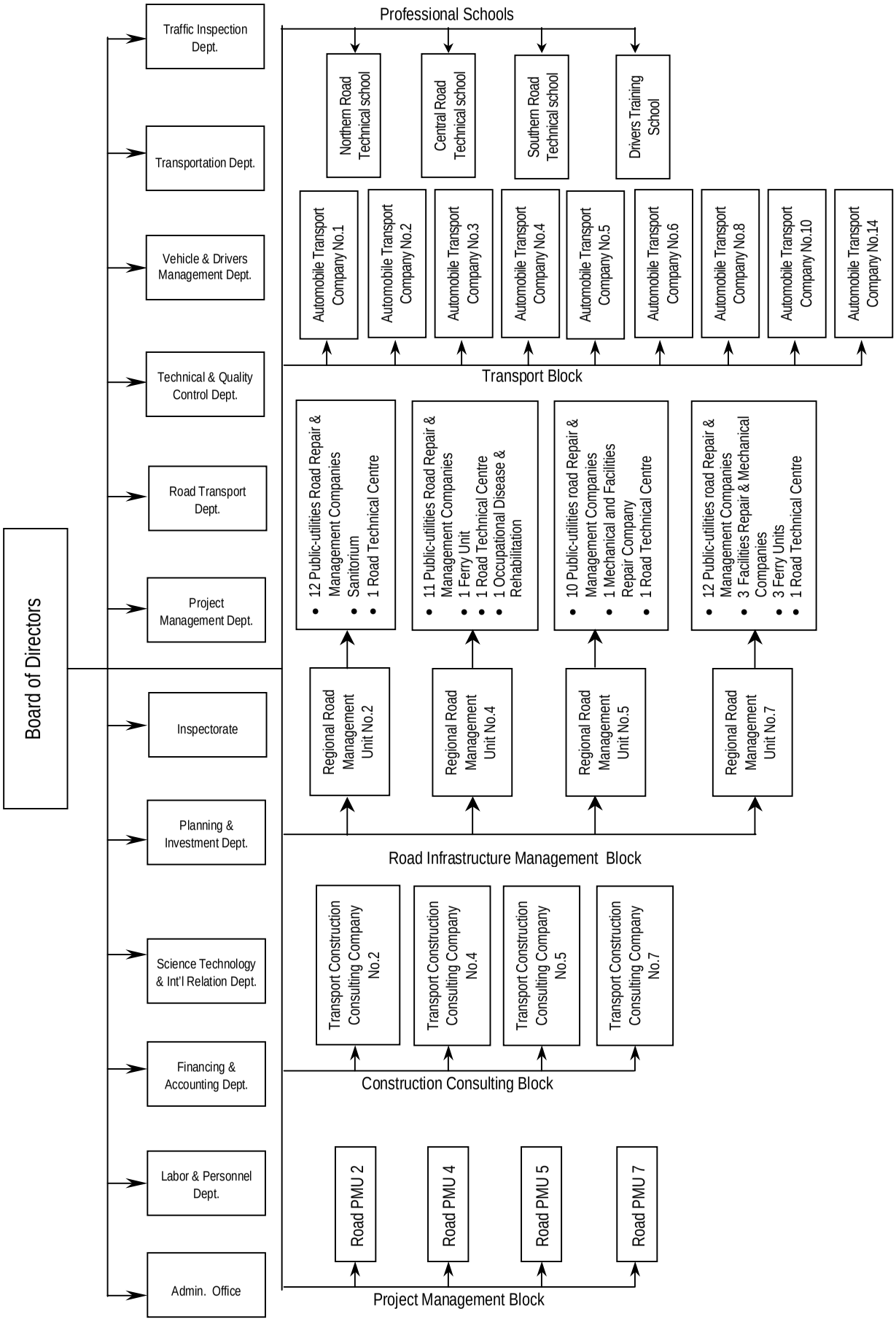
4.2.2 Road System

Classification and Administration of Road System

Pursuant to the Council of Ministers Organizational Law dated 4 July 1981, Decree No. 35/CP dated 9 February 1981 and Decision 158/CP dated 4 July 1974, the MOT established a classification and administration of road system in Vietnam, aiming to control the construction and repair of roads for the purpose of developing and strengthening the road system, to meet the demands of economic development and to safeguard national security.

The entire road system (including roads for motor and nonmotorized vehicles) in Vietnam is owned by the Vietnamese people, while the MOT is administrator. People's Committees at all levels are responsible for managing the road system within their respective administrative boundary according to the decentralized state administration. State organizations, economic bodies, army units, and all citizens have a responsibility to protect and maintain the road system and to strictly observe regulations on road transportation management.

Figure 4.2.1
Organization of Vietnam Road Administration



The road network is divided into the following six categories:

1) The National Road System (QL): This is the chief road system for the whole country. It plays the key role in the national economy, politics, culture, and national defense. It includes roads linking Hanoi with the administrative centers of provinces, cities and special zones, as well as international boundary points with neighboring countries.
2) The Provincial Road System (DT): This is a road system within a province, linking it with another, linking important traffic generators within that province and serving its economic, cultural and security interests.
3) The District Road System (designated DH): This is a road system within a district, linking it with other districts and primarily serving the economic, cultural, political, and security requirements of the district.
4) The Village Road System (designated DX): This is a road system within a village, linking it with neighboring villages and roads to rice fields or to other road systems, serving the production requirements and the public interests of the village.
5) The Urban Road System (designated DDT): This road system includes all kinds of streets and traffic roads (except highways) within a city or town. It is composed of many kinds of road, with its own character and utility. The MOT and the Provincial People's Committee of the province jointly set the classification of these roads.
6) The Special Road System (designated CD): This refers to roads used solely by one or more state organizations and enterprises in construction sites, state farms and logging sites and as exit and entry roads of new economic zones, military bases and units, ports, railway stations, and warehouses. It can be roads within the scope of the organization, enterprise, factory, or school.

The authority to classify and regulate the road network lies in the following offices:

- The Minister of the MOT shall determine the classification of the highway system;
- The Chairman of the Provincial People's Committee shall determine the classification of the provincial, urban and special road systems;
- The Chairman of the District People's Committee shall determine the classification of the district and village road systems.

Existing Road Network

Vietnam has a substantial length of road network of over 200,000 km in 1997 (see Table 4.2.1). National roads, however, account for merely 15,121 km, and provincial and district roads account for 14,014 km and 25,004 km, respectively. The remainder is composed of village, urban and special roads. Comparing with the road length in 1992 (see Table 4.2.2), the road network now has been remarkably extended.

More than one-third of bridges need structural strengthening or replacement. At present, 178 ferries connect the road network but boats and terminal facilities are deteriorated thus rehabilitation is also required.

Table 4.2.1
Road Lengths by Jurisdiction and Pavement Type, September 1997

Jurisdiction by Management	Length (km)	Concrete	AC	Asphalt	Gravel	Laterite	Earth
National Road*	15,121	72	3,949.6	5,138.6	1,491.62	3,707	762
Provincial Road	17,449	22	668	3,948	3,041	4,874	4,896
District Road	36,372	-	53	3,558	4,976	12,956	14,829
Urban Road	3,211	-	1,246	1,965	-	-	-
Subtotal	72,153	94	5,917	14,609	9,509	21,537	20,487
Special Road	5,451	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Village Road	46,910	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Subdivision Road	84,545	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total	209,059	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Source: MOT and VRA
* 50% of national roads are administered by PTAs (Provincial Transport Authorities)

Table 4.2.2
Road Lengths by Jurisdiction and Pavement Type, June 1992

Jurisdiction	Length	Cement	AC	Asphalt	Gravel	Laterite	Earth
National[1/]	11,353	-	-	3,659	1,276	2,823	-
Provincial	14,014	66	3,549	2,407	2,067	4,436	4,900
District	25,004	19	165	596	3,436	20,972	-
Urban	2,825	-	-	2,474	305	46	-
Subtotal	53,196	85	3,714	9,136	7,084	28,277	4,900
Special Purpose[2/]	5,451	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Village	46,910	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total	105,557	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Source: TDSI
Note: AC: Asphalt Concrete, Laterite includes all such compacted soils
1/ 40% of national roads are administered by provinces
2/ Roads to mines, factories

1) Pavement Type of the National Road Network*:* Merely 60.6% of national roads are paved with either concrete or asphalt (see Figure 4.2.3). The rest of the national road system is either gravel road or earth road. Many unpaved national roads are in mountainous or remote areas where traffic demand is still small. As for provincial and district roads, the percentage of concrete/asphalt-paved roads is much lower than that of national roads, 26.6% for provincial roads and 9.9% for district roads.

2) Paved Width of the National Road Network: Most of the paved national roads have two-lane carriageway for both directions. The pavement width of the two-lane road is around seven meters (see Figure 4.2.4). However, this width is not sufficient when trucks and buses overtake slow vehicles since, in many sections of national roads, a significant number of motorcycles and bicycles run alongside four-wheel vehicles.

Some sections of National Road No.1 now have 11 or 12-meter width, 3.5-meter lane in each direction and an additional 2-meter or 2.5-meter wide shoulder on both sides. With this upgrading, motorcycles and bicycles can run on the shoulder, thus traffic flows of four-wheel and two-wheel vehicles are now separate, resulting in improved traffic condition as well as increased operating speed of four-wheel vehicles.

Four-lane roads are mainly seen in urban areas and are classified as urban roads. Four-lane sections on national roads are still limited. Only some important national roads with heavy traffic demand have four-lane carriageway; those include the sections on National Road No. 1, No.5 and No.51.

3) Road Condition of National Road Network: National roads in good condition are mainly in the surrounding areas of Hanoi City and Ho Chi Minh City (see Figure 4.2.5). The road condition in mountainous areas is largely poor.

Existing Design Standards

1) Road Design Standards: The existing Highway Design Standards (TCVN 4050-85) give geometric guidelines for each of the six categories classified by function and importance (see Table 4.2.3).

Table 4.2.3
Highway Function and Category

Importance of Highway	Technical Category to be applied
1. - National highways that are particularly important to the economy, politics, cultural affairs, defense, and international communications. - International highways	I-II
2. International highways - Main axis connecting political, economical, cultural centers of the country - Highways connecting important industrial areas - Highways connecting important transit centers	II-III
3. Secondary axis connecting important political, economical, cultural regional centers - Highways connecting large industrial and agricultural areas - Highways connecting main maritime ports, railroad stations, airports	III-IV
4. International provincial roads - Roads connecting middle-size industrial and agricultural areas - Roads connecting regional transit centers - Roads connecting secondary maritime ports, railroad station, airports	V
5. Regional provincial roads interconnecting countries - Roads connecting small industrial centers, agricultural cooperatives	VI

Source: Vietnam Design Standards

Figure 4.2.2
Road Conditions of National Roads

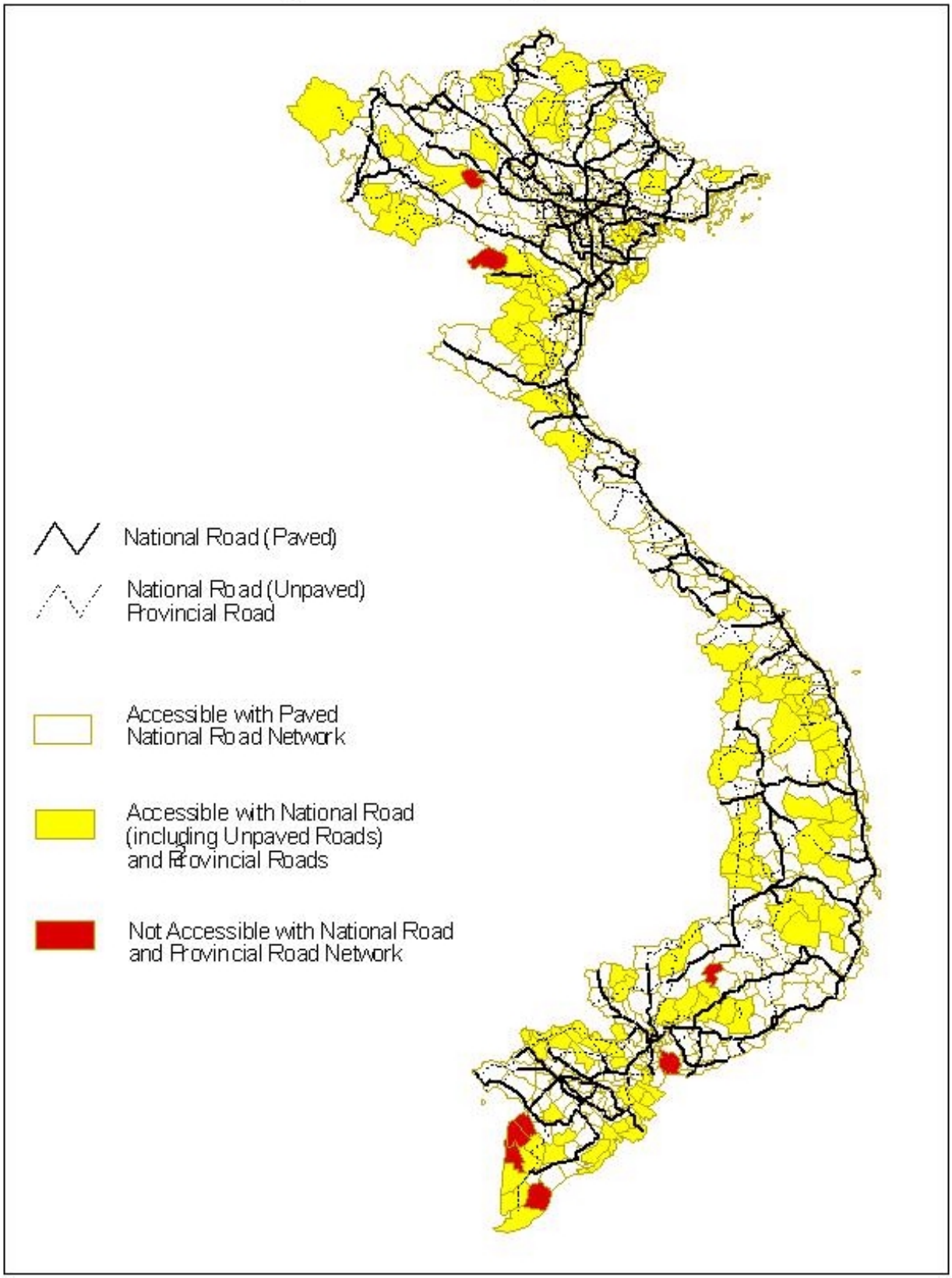


Figure 4.2.3
Pavement Type of the National Road Network

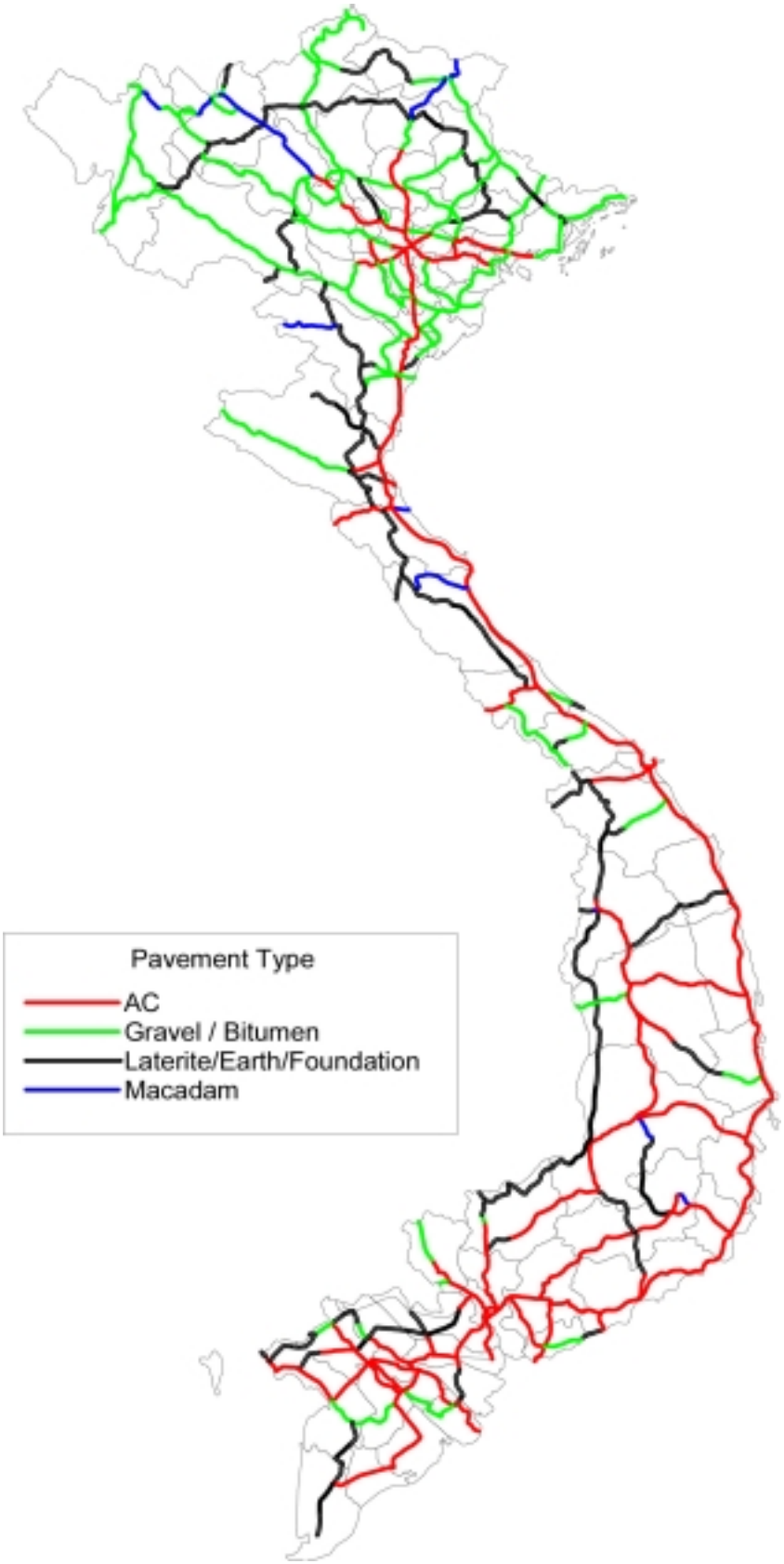


Figure 4.2.4
Paved Width of National Road

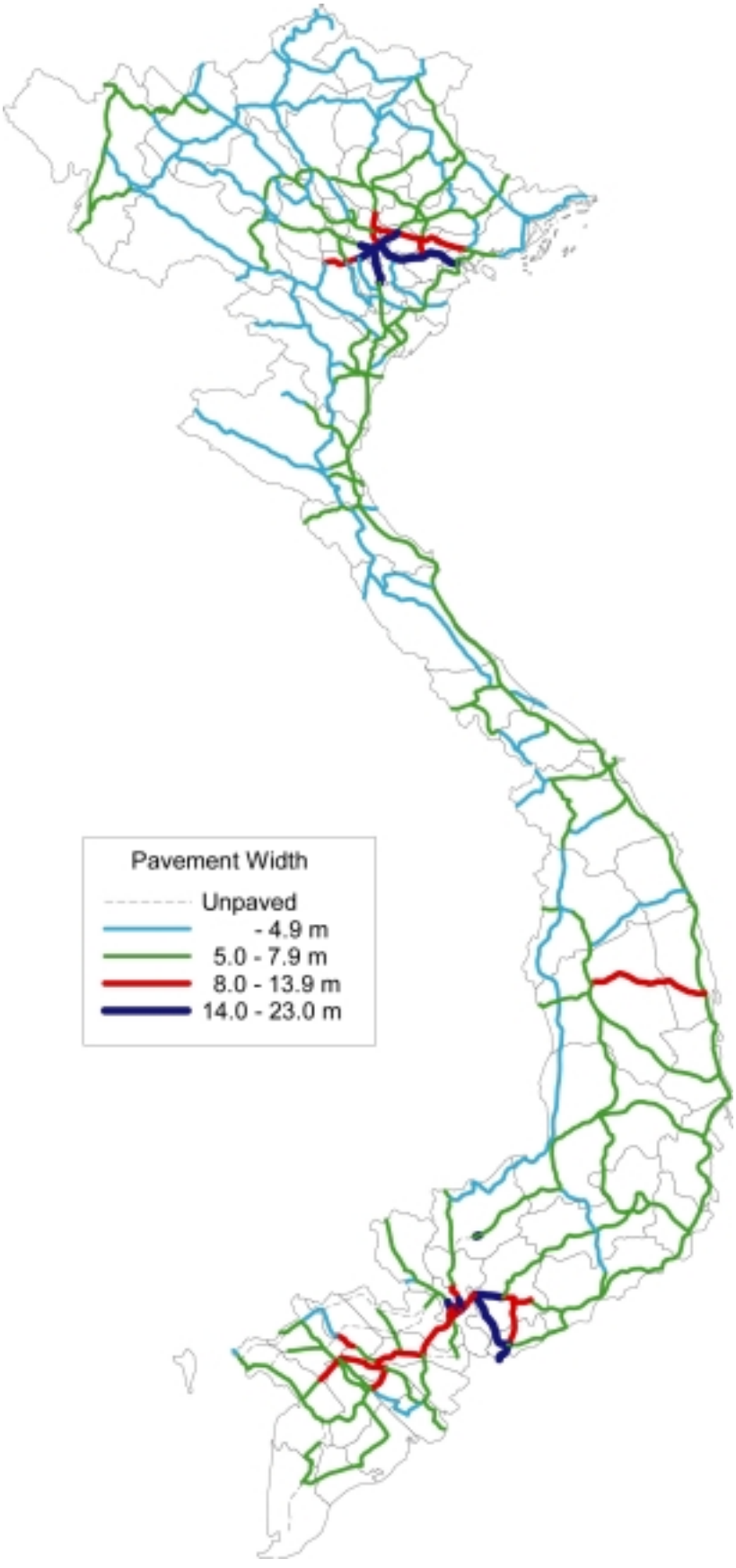
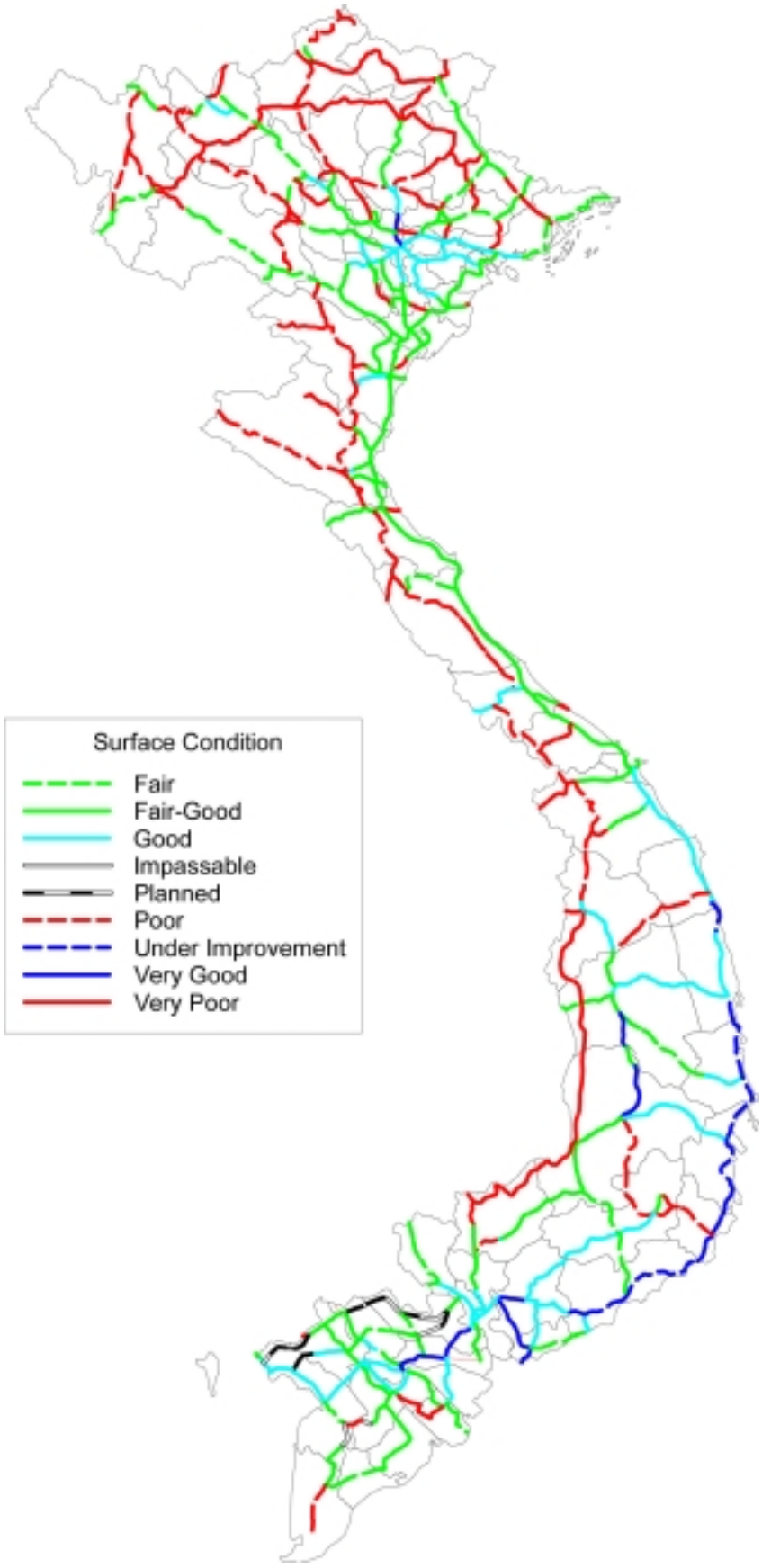


Figure 4.2.5
Surface Condition of the National Road Network



Design standards are defined more specifically by category of roads in terms of geometric standards, guidelines on average daily traffic and design speed (see Table 4.2.4). The standards are currently being reviewed and revised by VRA.

Table 4.2.4
Design Standards by Road Category

Class	I	II	III	IV	V	VI
Number of lanes	4	2	2	2	1	1
Width of Lane (m)	3.75	3.75	3.5	3.0	3.5	3.5
Width of Road side (m)	2x3.0	2x2.5	2x2.5	2x1.5	2x1.5	2x1.5
Width of road (m)	2x7.5	7.5	7.0	6.0	3.5	3.5
Width of road surface base (m)	26.0	13.5	12.0	9.0	6.5	6.0
Mini. Horizontal radius (m)	600	400	250	130	60	25
Max. Gradient (%)	4	5	6	7	8	9
Average Daily Traffic	>6000	3000~ 6000	1000~ 3000	300~ 1000	50~ 300	< 50
Design Speed (km/h)						
Normal Topography	120	100	80	60	40	25
Mountainous Topography	-	80	60	40	25	15

Source: Vietnam Design Standards

2) Bridge Design Standard: The design of bridges in Vietnam is covered by a design document entitled “Specification for Bridge and Culvert Design to Ultimate Limit State” which is based on the 1962 Russian bridge design code of practice. The standard is also being reviewed and revised.

3) Maintenance Guideline: The guidance for maintenance and operation was issued by the MOT in Vietnam in 11 October 1996. This is specified mainly for Process Decomposition, that includes the preparation plan, monthly schedule, performance, repair work, and so on. The evaluation for damages seems to be neglected.

4.2.3 Current Road Financing

Budget Allocation System

Capital Construction - National Road System: The Ministry of Planning and Investment (MPI) allocates and directly specifies the planning quota for Groups A and B projects. Group B projects are those whose total investment costs are from VND 30 billion up to VND 400 billion. Group A projects are those whose total investment costs are above VND 400 billion.

The MOT allocates and assigns the planning quota to Group C projects based on the total controlled fund allocated by the MPI. Group C projects are those whose total investment costs are below VND 30 billion.

The Ministry of Finance's General Department for Investment and Development, through its Provincial Department for Investment and Development, disburses the allocated fund in accordance with the basic work quantity completed by the contractors for the projects.

Capital Construction - Provincial Road System: The MPI allocates and directly specifies the planning quota to provinces and cities according to the list of identified projects. The method of disbursement is similar to that of the National Roads System.

Capital Construction - District Road System and Other Road Systems: The provinces and cities balance the fund for these systems. Fund disbursement is done through their respective financial units.

Roads and Bridges Maintenance - National Road System: The Ministry of Finance allocates and directly specifies the planning quota to the MOT in which the allocation for the road subsector is concretely identified. Based on the allocated fund, the VRA allocates and assigns the planning quota to the RRMUs and Provincial Transport Divisions authorized to manage the national road system. The method of disbursement is done through the system of budget departments and the Provincial Division for Finance and Pricing of provinces and cities.

Roads and Bridges Maintenance - Provincial Road System and Other Road Systems: The Ministry of Finance allocates and directly specifies the planning quota to the provincial transport sector. The province in turn balances and allocates the planning quota to local transport projects through their provincial transport divisions. The method of disbursement is similar to that of the National Road System.

Investment in the Road Network in 1995-1997: Between 1995 and 1997, the State already poured substantial investments in the maintenance and development of the road network (see Table 4.2.5). Capital resources were diverse: Besides domestic capital, there were foreign sources such as in the form of soft loans from foreign countries and international finance organizations. Mobilized resources from the people were also large: there were contributions of materials, labor days or money. On average, more than VND 600 billion and several million working days/year were mobilized. As a result, the situation of roads was considerably improved; many important national roads were rehabilitated, upgraded or newly constructed. Urban transport was also improved. However, investment capital for road network maintenance and development is still limited. Current sources reportedly meet only 60% and 40% of the total requirement of basic construction and road repair capital, respectively.

New Government Initiatives: In order to provide additional financial sources for construction and maintenance of roads, the government has recently allowed some measures to create fund, as follows:

Table 4.2.5
Sources of Funds for the Road Network, 1995-1997

VND billion

No.	Resources	1995	1996	1997
1.	For Construction - for National Roads - for Local Roads	3,215 2,015 1,200	3,666 2,446 1,220	4,158 2,558 1,600
2.	For Repair and Maintenance - for National Roads - for Local Roads	819 419 400	909 459 450	929 479 450
3.	People's Contribution	650	600	600
Total		4,684	5,175	5,687

Source: TDSI

- Loan for road maintenance and toll collection for paying back the loan (Decision No. 3170/KTN dated 25 June 1997 and Decision No 1038/KTN dated 3 September 1998).
- Toll collection on some national road sections, newly built or upgraded bridges where state budget was granted (Decision No. 3328 KTN dated 3 July 1997).
- Toll collection on three projects, namely, NR11, NR51 and Lang Hoa Lac expressway (Decision No. 111/TTg dated 2 July 1996).

4.2.4 Road Transport

Existing Road Traffic Demand

1) Traffic Demand on the Road Network: Traffic demands are concentrated in the two major cities, Hanoi and HCMC and their surrounding areas. The northern mountainous region, Central Highlands and central coastal regions do not currently show significant volume of traffic demand. At present, traffic volume of four-wheel vehicles is still moderate on many sections of the road network, except the road sections in urbanized areas. Among 39 VITRANSS traffic count survey stations, 14 stations have traffic volumes of less than 1,000 vehicles per day (see Table 4.2.6)

Table 4.2.6
Traffic Volume on Selected Stations

Traffic Volume (vehicle/day)	Number of stations
0-1000	14
1001-3000	12
3001 – 5000	9
5001-1000	2
1001-	2

Source: VITRANSS Traffic Count Survey, 1999

However, it should be noted that a considerable number of two-wheel vehicles, such as motorcycles and bicycles, run on national roads (see Table 4.2.7). This mixed mode of transport reduces actual road capacity significantly and causes traffic accidents.

Table 4.2.7
Road Traffic Volume by Section

24 hours, both directions

Stn. No.	Road No.	Location	Province	Car	Bus	Truck	Total	Motor-cycle	Bicycle
1	6	North of Thuan Chau	Son La	52	54	89	194	641	326
2	70	South Bao Yen	Lao Cai	77	69	130	276	772	713
3	2	North of Ham Yen (Tan Yen)	Tuyen Quang	72	178	237	487	2,142	3,050
4	2	South of Viet Tri Bridge	Vinh Phuc	812	862	1,985	3,660	3,405	2,731
5	3	Dong Phu (South of Cho Moi)	Thai Nguyen	146	172	245	563	860	1,363
6	3	South of Pho Yen (Ba Hang)	Thai Nguyen	488	559	1,137	2,184	2,762	2,628
7	1	South of Dap Cau	Bac Ninh	1,224	1,255	1,827	4,306	4,843	2,820
8	1	North of Kep	Bac Giang	504	669	1,020	2,193	1,888	2,878
9	18	East of Sao Do (Chi Linh)	Hai Duong	517	735	1,398	2,650	3,126	3,915
10	4B	East of Dinh Lap	Lang Son	10	15	41	66	673	1,185
11	6	North East of Tong Dau	Hoa Binh	87	164	335	587	324	99
12	6	East of Xuan Mai	Ha Tay	487	471	994	1,951	2,993	3,064
13	37	Thuong Bang La	Yen Bai	11	6	32	50	464	486
14	1	South of Dong Van	Ha Nam	1,340	1,773	3,245	6,357	4,343	2,578
15	21	North of Lac Thuy (Chi Ne)	Hoa Binh	34	12	120	166	1,339	3,408
16	1	North of Ninh Binh town	Ninh Binh	904	1,010	2,177	4,091	3,225	2,994
17	1	North of Bim Son	Thanh Hoa	851	993	2,581	4,425	3,552	4,463
18	10	South of Nghin bridge	Thai Binh	95	160	291	545	1,963	1,792
19	5	East of Du Nghia	Hai Phong	1,099	854	2,087	4,041	3,895	2,743
20	10	West of Yen Hung (Quang Yen)	Quang Ninh	141	185	143	469	912	511
21	9	West of Dong Ha	Quang Tri	114	262	427	804	1,090	674
22	1	Lang Co	Thua Thien Hue	238	562	1,439	2,239	989	953
23	14B	East of Dai Loc (Ai Nghia)	Quang Nam	15	98	149	263	2,080	3,369
24	1	North of Tam Ky	Quang Nam	405	791	1,926	3,121	3,195	1,717
25	19	East of An Khe pass (Phu Phong)	Binh Dinh	167	537	938	1,642	746	339
26	26	East of Phuong Hoang pass	Khanh Hoa	59	139	745	943	1,458	1,640
27	14	North of Dong Xoai	Binh Phuoc	148	285	736	1,170	2,774	1,203
28	20	South of Ma Da Gui	Dong Nai	149	802	1,181	2,132	2,333	1,971
29	1	South of Ham Thuan Nam	Binh Thuan	310	987	1,972	3,270	2,020	995
30	51	North of Phu My (Tan Thanh)	Ba Ria Vung Tau	957	1,373	1,935	4,265	5,473	2,228
31	1	North of Dong Nai bridge	Dong Nai	3,906	6,341	10,937	21,183	31,131	2,819
32	13	South of Thu Dau Mot	Binh Duong	1,507	2,126	3,187	6,820	15,467	2,523
33	1	Noth of Tan An	Long An	1,976	4,062	5,645	11,683	14,005	1,902
34	22	East of Trang Bang	Tay Ninh	758	857	1,669	3,284	6,336	2,317
35	60	South of Rach Mieu ferry	Ben Tre	187	346	399	932	11,806	9,995
36	30	East of Cao Lanh	Dong Thap	276	628	482	1,387	8,062	3,249
37	1	North of Can Tho Ferry	Vinh Long	440	1123	1,069	2,632	2,945	1,438
38	80	South of Thach Hung(Lap Vo)	Dong Thap	238	645	1,244	2,128	4,925	6,253
39	91	West of Long Xuyen	An Giang	354	1,177	734	2,265	14,763	11,906

Source: VITRANSS Road Traffic Survey, March-April 1999

Vehicle composition varies from station to station. However, at most survey stations, trucks are more than 50% of the total number of four-wheel vehicles. The shares of passenger cars and buses are approximately 20% and 30%, respectively.

2) OD Pattern by Vehicle Type: According to VITRANSS survey, OD patterns of road vehicles are as follows:

Passenger Car OD Pattern: Passenger car trips are concentrated in areas surrounding Hanoi and Ho Chi Minh City as shown in Figure 4.2.5. For long distance trips between Hanoi and Danang and between Hanoi and Ho Chi Minh City, the share of private passenger cars is relatively small.

Bus OD Pattern: Compared with the OD pattern of passenger cars, that of the bus is dispersed all over the country as illustrated in Figure 4.2.6, although Hanoi and Ho Chi Minh City serve as hubs for inter-city bus services. This is attributable to the current direct bus operation between these two cities.

Truck OD Pattern: Truck trips are also concentrated in the surrounding areas of Hanoi and Ho Chi Minh City, as depicted in Figure 4.2.7. The number of truck trips in the central region is relatively small. With regard to Hanoi, strong linkages are observed between Hanoi and Quang Ninh (1,100 trips) and between Hanoi and Hai Phong (900 trips). As for Ho Chi Minh City, many trucks are operated between Ho Chi Minh and Don Nai (more than 6,000 trips) and between Ho Chi Minh and Binh Duong (2,200 trips).

Vehicle Registration

In Vietnam, vehicle registration is concentrated in two large cities, Hanoi City and Ho Chi Minh City. Around 40% of vehicles are registered in these two cities (see Table 4.2.8). The truck is a dominant type of vehicle, accounting for more than 50% of all the vehicles registered in the country (see Table 4.2.9). However, the registered number of cars has been increasing rapidly at the annual average growth rate of 16.5% (see Table 4.2.10).

Table 4.2.8
Distribution of Registered Vehicles in 1996

Province	Vehicle Composition in 1996			
	Car	Bus	Truck	Total
Hanoi	13.0	7.1	15.9	13.5
Danang	3.0	3.5	1.8	2.5
Ho Chi Minh	33.0	26.2	22.7	26.7
Total Vietnam	100.0	100.0	100.0	100.0

Source: VRA

Figure4.2.5
Desire Lines of Car Trips

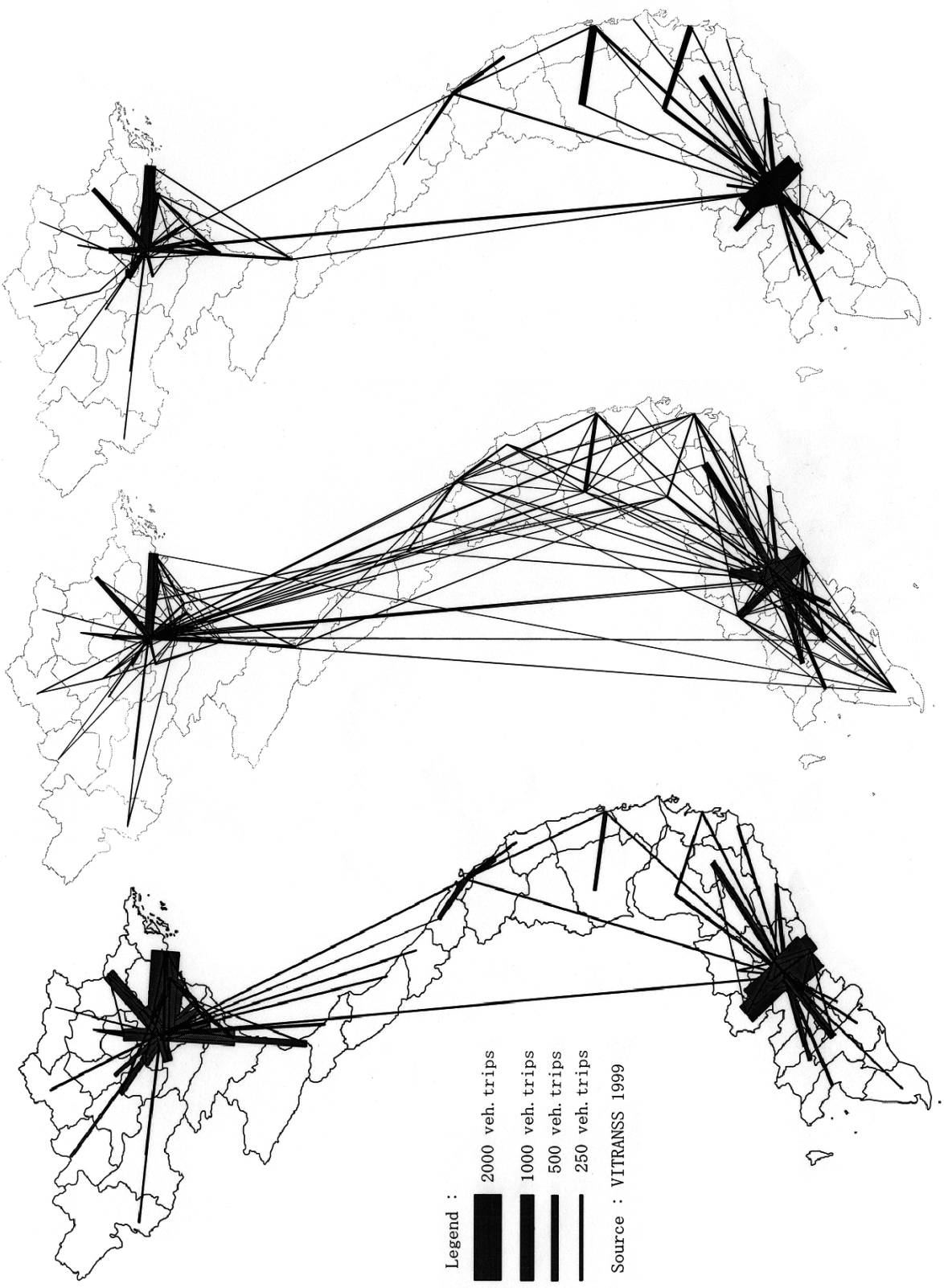


Figure4.2.6
Desire Lines of Bus Trips

Figure 4.2.7
Desire Lines of Truck Trips

Table 4.2.9
Composition of Registered Vehicles in 1996

Province	Vehicle Composition in 1996			
	Car	Bus	Truck	Total
Hanoi	31.9	8.7	59.4	100.0
Danang	39.8	23.7	36.5	100.0
Ho Chi Minh	41.0	16.3	42.7	100.0
Total	33.1	16.6	50.3	100.0

Source: VRA

Table 4.2.10
Number of Registered Vehicles in Vietnam by Vehicle Type

Vehicle Type	Year								Annual Growth
	1989	1990	1991	1992	1993	1994	1995	1996	Rate (%) 1989 – 96
Car	45,604	56,128	67,451	95,221	67,366	106,320	118,015	132,765	16.5
Bus	31,239	32,318	34,305	37,911	34,305	42,566	60,356	66,453	11.4
Truck	138,910	163,284	201,849	161,044	201,332	174,412	186,796	201,368	5.4
Total	215,753	251,730	303,605	294,176	303,003	323,298	365,167	400,586	9.2

Source: VRA

Passenger Transport

1) Inter-city Bus Operation: In Vietnam, inter-city bus services are mostly provided by a direct operation from origin to destination. Therefore, inter-city bus services even serve some small towns. This results in a variety of bus routes, with many having a low frequency due to the relatively small passenger demand. Buses are operated once a day or twice or thrice a week on such routes.

   Frequent services (with several departures per day) are available between larger towns or cities, such as HCMC, Danang and Hanoi, and places in neighboring provinces, such as Quang Ngai and Binh Dinh.

   Interprovincial bus transport operations are characterized as follows:
   - There is no official fare rate for inter-city bus services set by the central government. Instead, each province sets guidelines for inter-city bus fares.
   - These guidelines are basically used in estimating the maximum fare. The guidelines differ depending on the route (terrain type, road surface condition, etc.) and service type offered (e.g. air-conditioned). Most bus routes have a fare of VND 100 – 150 per km.
   - A bus operator who wants to open a route should obtain permission from provinces on both sides (origin and destination). Moreover, the bus operator, if it wants to stop en route to load/unload passengers, should get permission from the province where the bus will stop.

- For issuing a route license, the Origin Province and Destination Province may have negotiations to ensure mutual benefit (like international air negotiation). However, the actual amount paid by bus operators for stopping in intermediate provinces en route to destination is generally higher than the agreed rate (determined per passenger loading or seating capacity of bus).
- Plying the same route, small buses with 14 or 24 seats charge more than ordinary buses that can seat 40-45 people.

For the VITRANSS Transport Industry Survey, 11 bus companies responded – eight state-owned, two joint ventures and one private. Most of their employees are drivers and assistants. On average, bus operators own 37 large and 11 minibuses with an average seating capacity of 1,900. Buses are relatively old with an average age of seven years. Bus operators identified such serious problems as stiff competition from other bus companies, difficulties in financing new vehicles and poor road condition.

2) Freight Transport: At present, eight state-owned freight transport enterprises under VRA provide freight transport service in the country. The profiles of state-owned trucking companies are listed in Table 4.2.11. The share of these enterprises in the trucking industry is, however, small: They account for only 10% of the number of vehicles. In other words, cargoes are mainly transported by private trucking companies and manufacturing companies themselves.

These state-owned trucking companies do not gain sufficient profit from their business due to serious competition. The profit ratio against working capital is in the range of between three to five (see Table 4.2.12). This financial situation encourages trucking companies to invest in new vehicles.

Out of the operating cost, the largest component is fuel cost, which accounts for 35 to 45%, whereas the share of depreciation cost is relatively small, between seven to 16% due to the utilization of old vehicles (refer to Figure 4.2.8).

The information on private trucking companies is limited. In the transport industry survey conducted in the VITRANSS, only 10 trucking companies, all of them SOEs including Automobile Transport Companies No. 1, 2, 3, 4, 6, and 8, responded partially to the questions. The problems they are currently facing include competition from other transporters, tolls and other road charges, difficulties in financing new vehicles and qualification of truck drivers.

Table 4.2.11
Profile of State-owned Trucking Companies

Name of Company	Automobile Transport Company No. 1	Automobile Transport Company No. 2	Automobile Transport Company No. 3	Automobile Transport Company No. 4
Location	Hai Phong	Hanoi	Hanoi	Ninh Binh
Year Established	(n.a)	1960	1983	1983
Number of Vehicles	92	110	140	102
Tonnage	659	638	838	736
Ave. Tonnage	7.2	5.8	6.0	7.2
Handling Capacity				
Ton (000)	95	121	86	16
Ton-km (million)	15	15	21	14.9
Ave. Distance	158	124	244	931
No. of Staff	232	210	382	259

Name of Company	Automobile Transport Company No. 5	Automobile Transport Company No. 6	Automobile Transport Company No. 8	Automobile Transport Company No. 10
Location	Nghe An	Danang	Hanoi	Thai Nguyen
Year established	(n.a)	(n.a)	1993	(n.a)
Number of Vehicles	140	334	152	104
Tonnage	1009	2176	920	650
Ave. Tonnage	7.2	6.5	6.1	6.3
Handling Capacity				
Ton (000)	105	148	97	90
Ton-km (million)	20.5	45	17	16
Ave. Distance	195	304	175	178
No. of Staff	n.a	510	n.a	n.a

Source: VRA

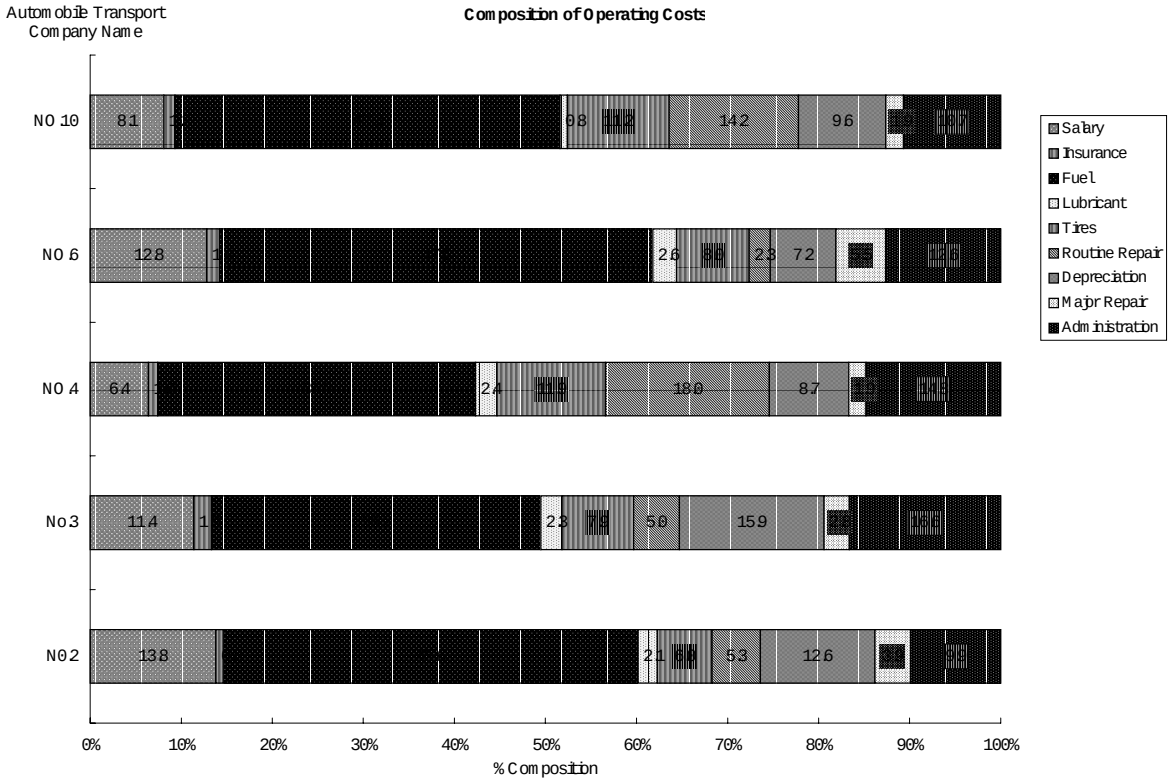
Table 4.2.12
Operating Costs and Revenue of State-owned Trucking Companies, 1997

(Million VND)

Name of Company	Automobile Transport Company No. 2	Automobile Transport Company No. 3	Automobile Transport Company No. 4	Automobile Transport Company No. 6	Automobile Transport Company No. 10
Annual Revenue (A)	7,415	9,123	6,274	17,002	9,228
Annual Operating Cost (B)	7,099	8,851	6,299	16,436	8,823
Salary	981	1,007	402	2,100	713
Insurance	59	171	60	225	106
Fuel	3,237	3,204	2,197	7,816	3,731
Lubricant	149	205	153	434	70
Tires	426	695	750	1,320	990
Routine Repair	373	445	1,135	375	1,251
Depreciation	895	1,405	549	1,187	847
Major Repair	275	252	121	909	169
Administration	704	1,466	931	2,071	945
Profit (C): (A)-(B)	316	273	-25	566	405
Profit/Cost (C)/(A)	4.3	3.0	-0.4	3.3	4.4

Source: VRA

Figure 4.2.8
Composition of Operating Costs of State-owned Trucking Companies, 1997



Source: VRA

Freight tariff for truck is regulated by Decision No. 36/VGCP-CNTDDV of 8 May 1997 signed by the Chairman of the Government Price Committee. The tariff is given per km and based on MOT's five road categories and three goods categories (see Table 4.2.13 and Table 4.2.14). The tariff indicates maximum fares based on current conditions and actual transportation expenses. If provincial authorities need to impose tariffs higher than these, they should be approved by the Government Pricing Committee.

Table 4.2.13
Official Freight Tariff by Category

Category	Items	Tariff
Category 1	stone, sand, gravel and earth	
Category 2	title, food in bag, material of construction, timber, coal, ore, and metals	Category 1 tariff plus 10%
Category 3[1/]	food in bulk, cement, limestone, salt, fertilizer, gasoline and petroleum, insecticide, paper, medicines, equipment for health care, seeds, machines and special equipment.	Category 1 plus 30%

1/ Container goods will be calculated separately based on this category.

Table 4.2.14
Official Road Tariff

(VND/ton – km)

Hauling Distance	Categories of Roads				
	1	2	3	4	5
15	794	865	1,150	1,438	1,869
56 – 60	460	518	725	979	1,371
61- 70	453	510	714	967	1,354
91 – 100	438	493	692	938	1,314
101 and above	435	489	686	930	1,304

Source: Decision 36/VGCP – CNTDDV of May 8, 1997.

Actual fares and charges commercially imposed on transport users have been obtained from field surveys, interviews and cost quotations conducted in the VITRANSS. About 20 freight forwarders in selected routes (by different transport modes and commodity types) were selected, of which 10 forwarders (six from Hanoi and four from HCMC offered their quotations. Some forwarders seem to have little experience in goods transport in some routes or by some modes. Most of them did not show an accurate basis for cost quotation.

As a result, the quoted rates greatly differ, though forwarders well equipped with modern facilities (truck fleet, warehouse, branch office, etc.) tend to offer higher prices. Although the actual cargo transport charge may not clear, it can be pointed out that the truck is the most expensive but most widely used means of freight transport. For cross-border routes, such as to Kunming and Phnom Penh, the charge jumps up considerably. Some forwarders even claim that they cannot offer a price because the cross-border procedure is unclear.

4.2.5 Road Safety

Present Situation

In 1999, more than 20,000 accidents claimed 6,670 lives and caused a further 23,911 injuries (see Table 4.2.15). Injuries are not classified by severity, i.e. minor or serious, nor is information provided on the number of fatal road accidents. One recent study reports that underreporting by the Traffic Police is acknowledged to be frequent. This can be seen from the data of Viet Duc hospital in Hanoi, which alone recorded treating a number of patients equal to 70% of the reported road casualties for the whole country. The high ratio of casualties also indicates that only the more serious accidents are reported.

The number of accidents has not grown as rapidly as the vehicle fleet and so there has been a dramatic improvement in Vietnam's official fatality rate. However, the rapid increase in motorization will inevitably make the roads less safe as higher vehicle speeds and increased congestion will increase both the frequency and severity of accidents. According to the 1994 Police Accident Report, 50% of all accidents

occurred on national highways and 30% on urban roads. Seven percent was reported as occurring on rural roads although the road classification categories on the current accident report form do not include rural roads.

It has been found out that about 80% of road traffic accidents are caused by mistakes of vehicle drivers. Of these, 62% of accidents are caused by motorbike drivers. It has been noted that many motorbikes carrying three to four people caused accidents. In one instance, two automobiles crashed into each other, causing the death of one and injury to seven (the automobile was carrying four people). In another instance, an accident caused by a motorbike carrying three people resulted in the death of all its riders.

Table 4.2.15
National Traffic Accident Statistics

Year	No. of Accidents	No. of Fatalities	No. of Injuries	Total Casualties	Percentage of Fatalities
1990	5,565	2,087	4,668	6,755	30.9
1991	6,865	2,395	6,846	9,241	25.9
1992	8,910	2,755	9,040	11,795	23.4
1993	11,016	3,440	11,519	14,959	23.0
1994	13,118	4,533	13,056	17,589	25.8
1995	15,376	5,430	16,920	22,350	24.3
1996	19,075	5,581	21,556	27,137	20.6
1997	19,159	5,680	21,905	27,585	20.6
1998	19,975	6,067	22,723	28,790	21.1

Source: Traffic Police

Table 4.2.16
Number of Accidents by Road Category (Analysis of 13,284 accidents in 1999)

Type of Road	Accidents	
	Number	%
National Road	6,694	48.6
Provincial Road	2,784	20.2
Urban Road	2,676	19.4
Others	1,630	11.8
Total	13,784	100.0

Source: Traffic Police

Table 4.2.17
Road Traffic Accidents by Cause

Causes	Accidents	
	Number	%
Causes by the vehicle users	10,359	74.4
1) Exceeding the speed limit	4,761	34.2
2) Carelessness and/or wrong turning	3,722	26.7
and overtaking	945	6.8
3) Drunkenness	612	4.4
4) Inadequate observation	319	2.3
Vehicle could not ensure traffic safety	185	1.3
Others	3,378	24.3

Source: Analysis of 13,922 accidents

Table 4.2.18
Road Traffic Accidents by Mode[1/]

Mode	Accidents	
	Number	%
Car	3,425	26.2
Motorcycle	8,130	62.3
Others	1,493	11.4

Source: Analysis of 13,048 accidents

Institutional Arrangement

At national level, there are two lead government organizations which share responsibility for road safety in Vietnam. These are the MOT and MOI. Cognizant of the need to coordinate the work of different agencies in the field of transport safety, the MOT and MOI jointly issued in 1991 Decree No. 104/QD-2B establishing the National Traffic Safety Committee (NTSC). In 1994, the VRA established a Traffic Safety Department and the MOT declared 1995 as the National Road Safety Year. The NTSC is responsible for planning projects on safety in all transport subsectors, i.e., road, rail, air, sea, and inland waterways. Its main functions (translated from Articles 2 in the Decree) are as follows:

- Drawing up plans and guiding all organizations within the MOT and MOI as well as the other branches in the country to implement traffic safety measures including safety education and development of countermeasures.
- Ensuring the implementation of traffic safety measures in Provincial Traffic Safety Committees.

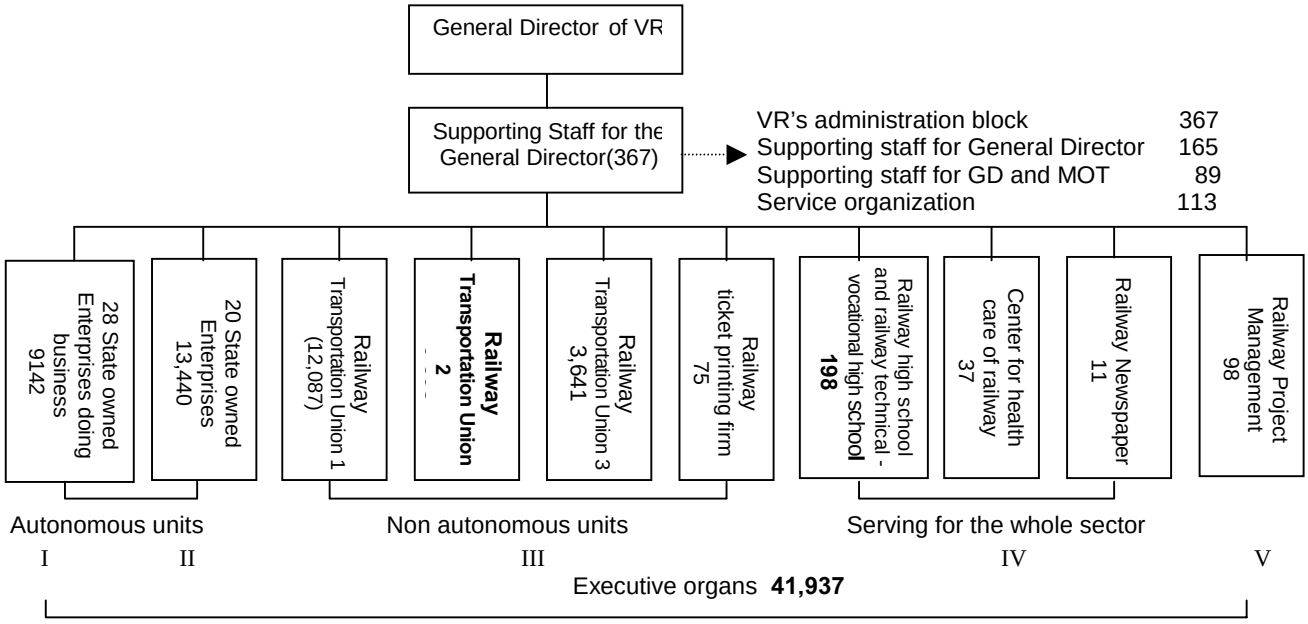
There are no specific pressure groups that lobby for improved traffic safety but the public do write to road authorities to complain about traffic matters, and the media publish news items about serious traffic accidents. However, road users tend to be relatively undisciplined compared to those in industrialized countries, implying that public concern and awareness of road safety issues is comparatively low.

4.3 Railway

4.3.1 Administration

Vietnam Railways (VR) is at present an independent SOE under the MOT. VR is divided into two divisions for accounting purposes: Transport and Infrastructure. VR and the government entered into an agreement in 1995 which made the government responsible for infrastructure while VR pays the government 10% of its operating revenue for using the infrastructure. The actual operation of VR is carried out mainly by three unions corresponding to geographic regions. The total number of employees amounts to 42,000, comprising of: (1) Headquarters: Administration Block, General Director's Office (367 employees); (2) Transport Union 1 (12,087 employees); (3) Transport Union 2 (3,208 employees); (4) Transport Union 3 (3,641 employees); (5) Ticket Printing Office (75 employees); (6) Tracking Maintenance Block, Signals/Communication Maintenance Block (20 SOEs, 13,440 employees); (7) Construction/Installation Block, Industrial Block, Hotel/Tourism/Material Block (28 SOEs, 9,142 employees); (8) School/Health Care/Newspaper Section (246 employees); (9) Project Management Unit (98 employees). The 48 SOEs include nonrail businesses and are closely connected with the three unions.

Figure 4.3.1
Organization of VR



Note: Numerical numbers show staffs and employees

4.3.2 Railway System

Network

VR has about 2,600 route-km of railway network which is composed of seven main lines and several branch lines (Figure 4.3.2 and Table 4.3.1). They are all single track. The network is composed of 1,000-mm gauge (2,241 km or 85.5% of the total), 1,435-mm gauge (161 km or 6.1%) and the combined dual gauge (220 km or 8.4%).

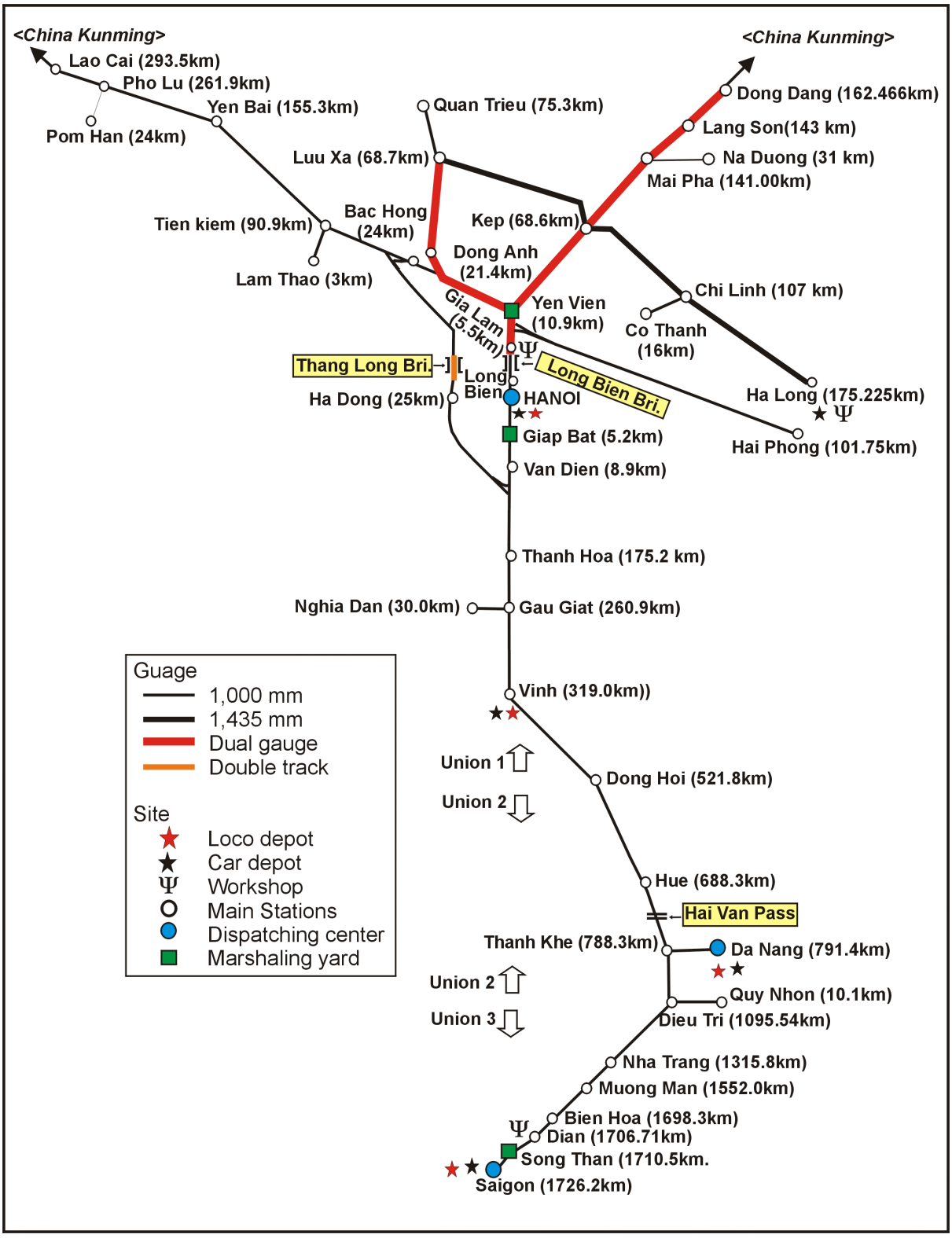
The Hanoi – Saigon line alone shares two-thirds of the total. As for the operation of trains, 1,000-mm-gauge trains can run on 94% of the network and 1,435-mm-gauge trains, 15%. The railway network covers 31 out of 61 provinces and is the least dense in the south, especially in Mekong delta.

Table 4.3.1
Railway Lines in Vietnam, 1999

Section	Distance		Track gauge (mm)
	Km	%	
Hanoi – Saigon	1,726	66	1,000
Cau Giat – Nghia Dan	30	1	1,000
Dieu Tri – Quy Nhon	10		1,000
Hanoi – Dong Dang	166	6	1,000& 1,435[1/]
Yen Trach – Na Duong	31	1	1,000
Yen Vien – Lao Cai	285	11	1,000
Tien Kien – Lam Thao	3		1,000
Pho Lu – Pom Han	24	1	1,000
Gia Lam – Hai Phong	91	3	1,000
Dong Anh – Quan Trieu	54	2	1,000& 1,435[1/]
Kep – Ha Long	105	4	1,435
Chi Linh – Co Thanh	16	1	1,000
Luu Xa – Kep	56	2	1,435
Van Dien – Bac Hong	41	2	1,000

Source: VR
1/ Dual gauge

Figure 4.3.2
VR Network



Alignment

Curves and gradients constrain speed and traction power. However, the radius of curvature mainly determines train speed regardless of traction power. Table 4.3.2 shows the distribution of curves with small radius. Even the Hanoi-Saigon line has many curves with small radius; hence train speed is kept low.

The maximum gradient in the main lines of VR is less than 1.7%. Generally speaking, VR's gradient is very mild, and gradients of more than 1.0% are rare. The gradient is not so influential to train operation, if it has enough traction power to climb (see Table 4.3.3).

Table 4.3.2
Curves of VR Lines, 1999

Radius of Curvature (m)		Line								Total
		Hanoi-Saigon	Y. Vien-L. Cai	Hanoi-D. Dang	L. Xa-H. Long	Kep-H. Phong	G. Lam-H. Phong	D. Anh-Q. Trieu	V. Dien-B. Hong	
R<100	No	5		1						6
	(km)	(0.7)		(0.1)						(0.8)
100<R<200	No	169	412	74		2				657
	(km)	(19.0)	(46.3)	(10.6)		(0.8)				(76.7)
200<R<300	No	83	152	47			1			284
	(km)	(17.7)	(16.7)	(6.2)			(0.1)			(40.7)
300<R<400	No	168	63	18		8	5	1		263
	(km)	(37.6)	(6.0)	(3.3)		(2.4)	(1.0)	(0.1)		(50.4)
400<R<500	No	125	27	43	1		6			202
	(km)	(29.7)	(4.0)	(9.7)	(0.7)		(1.4)			(45.5)
500<R<600	No	330	24	22	4	3	15		3	401
	(km)	(85.6)	(2.5)	(4.8)	(1.5)	(0.4)	(3.0)		(0.6)	(98.4)
600<R	No	831	64	57	39	64	56	24	2	1,137
	(km)	(183.7)	(5.6)	(14.5)	(18.4)	(26.4)	(8.1)	(10.4)	(0.9)	(268.0)
Total	No	1,711	742	262	44	77	83	25	5	
	(km)	(373.7)	(81.2)	(49.2)	(20.6)	(30.0)	(13.6)	(10.5)	(1.5)	

Source: VR

Table 4.3.3
Maximum Gradient of VR Main Lines, 1999

Line	Max. gradient (mm/m)	Section
Hanoi – Saigon	17	
Hanoi – Dong Dang	11	Pho Trang – Kep
Yen Vien – Lao Cai	15.8	Vu En – Am Thuong
Gia Lam – Hai Phong	9.15	Gia Lam – Cau Bay

Source: VR

Structure

Railway structures are earthwork, bridges and tunnels. Track is laid on railway structures. Along the railway, all train operation is controlled by signals.

In the earthwork sections, the formation width on top of the embankment or on the base of the cut is 4.4-m wide in most cases. This width causes trouble in the maintenance of track and the speeding up of trains, because the ballast cannot be stabilized on the formation level. It slips down on the slope of the embankment. The lack of sufficient ballast on the edge of the sleeper weakens the reaction force against the transverse force, such as buckling. The 4.4-m formation width should be improved to at least 40 cm or more on each side and widened to more than 5.2 m ($4.4 + 2\times0.4$).

As for bridges, 108 bridges have a speed limit, which is particularly noticeable on the Hanoi-Saigon line (see Table 4.3.5).

There are seven tunnels that have speed limit (see Table 4.3.6). The main reasons for this are the tunnels' small clearance, worn lining and increasing cracks.

Table 4.3.4
Railway Structures, 1999

Railway structures							Total Route-km
Earth-work	Bridges		Tunnels		Culverts		
	No.	km	No.	km	No.	km	
2,450	1,813	57	39	12	5,119	81	2,600
94.2	2.2		0.5		3.1		100%

Source: VR

Table 4.3.5
Number of Bridges with Speed Limit, 1999

Line	No. by Train Speed (km/h)						Section Speed (km/h)
	<40	<30	<15	<10	<5	Total	
Hanoi-Saigon	5	65	16	2	1	89	30 to 80, most sections 60 to 70
Hanoi-Hai Phong	6					6	60 or 70 30 (km 99 – km 102)
Hanoi-Dong Dang		2	3			5	30 to 50
Hanoi-Lao Cai		3				3	40 to 60 (km 118- km 283), 30 (km 283- km 296)
Hanoi-Quan Trieu			1			1	Don Anh to Quan Trieu, 30
Kep-Ha Long		1	3			4	30 to 60
Total	11	71	23	2	1	108	

Source: VR

Table 4.3.6
Tunnels with Speed Limit, 1999

	No. by Train Speed Limit (km/h)			
	<30	<15	<5	Total
No.	1	5	1	7

Source: VR

Track

Track consists of rail, fastening, sleeper, and ballast. VR uses 27 kg/m, 30 kg/m, 38kg/m, and 43 kg/m rails. The heavy 38 and 43 kg/m rail is used only in the Hanoi-Saigon line. VR uses four types of sleepers: wood, steel, two-block concrete, and pre-stressed concrete. Its length is 1.8 m. Fastening type depends on the type of sleeper.

Ballast thickness under the sleeper is determined at 30 cm in the maintenance manual. But in some city sections, the thickness is far less than this standard. The reason for the shortage of edge ballast is the inadequate width of the formation level (4.4 m) and insufficient supply of ballast.

Signal and Communications

VR has installed automatic blocking system only between Hanoi and Yen Vien. In other sections or lines, VR adopts a token or semi-automatic blocking system. VR is replacing the system to token-less blocking and has a plan to finish it by 2000. VR also uses color signaling and semaphore signaling which basically indicates two directions: “Go” (Green) and “Stop” (Red). Distant signals are installed in some stations. Almost all lines are equipped with automatic (electric) interlocking system, others are of the mechanical system. Most of the switchboards at stations are mechanical. At present, only 10 digital electronic switchboards have been installed on the Hanoi-Saigon line. Only Vinh station has an electric control center.

A railway telephone system is used all over the railway network, while a dispatcher telephone system connects dispatching centers with each station. Aerial bare wire is used for the telephone system.

Rolling Stock

Nearly 100% of VR’s train operation is on the 1000-mm gauge section.

1) Locomotive: VR owns 339 diesel locomotives, 332 of which are for the 1000-mm gauge and seven for the 1435-mm gauge. The type and number of diesel locomotives are shown in Table 4.3.7.

   Diesel locomotives are used for all trains. These were imported from the former USSR, Australia, USA, Romania, Czech Republic, India, and Belgium. The year they were manufactured ranged from 1963 to 1990. These locomotives are in poor operating condition. Some are deteriorated: Ten percent (10%) of D4H units are not operable. Their design speed is low (50 km/h) and their power is only 400 HP.

Table 4.3.7
Type & Number of Diesel Locos for Meter Gauge, Dec. 1998 [1/]

Specification	D4H	D5H	D9E	D11H	D12E	D13E	D18E
Manufacturing Country	USSR	Australia	USA	Romania	Czech	India	Belgium
Year Manufactured	1975/88	1966/70	1963/65	1980	1986/90	1984/85	1984/85
Rated Power (HP)	400	500	900	1,100	1,000	1,350	1,800
Design Speed (km/h)	50	65	114	100	80	96	105
Type of Transmission	H	H	E	H	E	E	E
Tare Weight (ton)	24	41	52	54	56	72	84
Wheel Arrangement	Bo-Bo	Bo-Bo	Bo-Bo	Bo-Bo	Bo-Bo	Co-Co	Co-Co
Axle Load (ton)	6	10/16	13	13.5	14	12	14
Number Owned	199	13	32	18	40	14	16
Number in Operation	183	13	32	18	40	14	16
Overall Length (m)	9.59	11.10	11.64	14.00	13.20	14.32	15.23
Width (m)	2.55	2.82	2.74	2.78	2.74	2.73	
Height (m)	3.56	3.81	3.77	3.65	3.87	3.63	

Source: VR
1/ VR owns three D16E- type locos and four TGM diesel locos for the standard gauge.

2) Passenger car: VR owns 750 passenger cars, 741 of which are for the 1,000-mm gauge and nine for the 1,435-mm gauge. The type and number of passenger cars are shown in Table 4.3.8. Most passenger cars are manufactured in the 1960s or 1970s. They are deteriorated and their maintenance is inadequate because of the lack of spare parts. Replacement of passenger cars is urgent and crucial to the viability of VR operation.

Table 4.3.8
Type & Number of Passenger Cars for the Meter Gauge, December 1998 [1/]

Type	Sleeping Car		Ordinary Coach			Dining Car	Baggage Car	Mail Car
	1st	2nd	1st	2nd	3rd			
Tare Weight (ton)	32/34	30/32	30/34	30/32	25/30	30/34	30	32
Load (ton)	10	10	10	10	10	10	10/15	10
Body Length (m)	19	19/20	19	19/20	16/19	19	19	19
Overall Length (m)	19.7	20/21	19.7	20/21	19.7	19.7	19.7	19.7
Passenger Capacity	24/28	42	64	80	64			
Max. Speed (km/h)	100	100	100	80/100	80	100	100	100
Number	71	116	105	243	164	42	14	30

Source: VR
1/ VR owns nine passenger cars for the standard gauge.

3) Freight car: VR owns 4,368 freight cars, 3,831 of which are for the 1000-mm gauge and 537 for the 1,435-mm gauge. The type and number of passenger cars are shown in Table 4.3.9. Most freight cars are manufactured in the 1960s and 1970s. They are also deteriorated and their maintenance is inadequate because of the lack of spare parts.

Table 4.3.9
Type and Number of Freight Cars for the Meter Gauge, December 1998[1/]

	Covered Wagon		Sided Wagon		Flat Wagon		Tank Wagon
Tare Weight (ton)	15.7	19.8	15	17	15	17	15/18
Load (ton)	30	35	30	40	25	35	25/30
Body Length (m)	12	13/14	12	14	11.5	12.8	10/11.5
Overall Length (m)	12.9	14.9	13	15	12.3	13.6	10.8/12.3
Max. Speed (km/h)	80	80	80	80	80	80	80
Number	1566		1672		404		189

Source: VR
1/ VR owns 537 freight wagons for the standard gauge.

4.3.3 Train Operation

Passenger Train Operation

Passenger trains are operated centering in Hanoi-Saigon, which is served by five through trains, and Hanoi-Hai Phong with 12 trains a day (see Table 4.3.10). The required time and average speed of the fastest passenger trains are shown in Table 4.3.10.The average speed of passenger trains is low due mainly to a slowdown at sharp curves, bridges, tunnels, and switches. Especially, in the section around Hai Van Pass or sections beyond Viet Tri in the Lao Cai line, the train speed is kept very low because of frequent sharp curves. On the shortened route from Dong Anh to Van Dien, only one passenger train is operated.

Table 4.3.10
Number of Passenger Trains Operated by Line, 1999[1/]

Line	Through Train (No./day)	Inter-union Train (No./day)	Local Train (No./day)	Train	
				Time	Ave. Speed km/h
Hanoi-Saigon	5	1	25	33h50m	50
Hanoi (L. Bien)-Lao Cai	3	-	6	9h40m	30
Hanoi (G. Lam)-D. Dang	5	-	-	7h05m	23
Hanoi (L. Bien)-H. Phong	12	-	2	2h00m	50
Hanoi-Q. Trieu	2	-	-	3h32m	21
G.Lam-Ha Long	2	-	-	7h40m	23
Hanoi – D. Anh (Y. Bai)	-	-	2	-	-

Source: VR
1/ The number of trains includes scheduled and nonscheduled trains.

Freight Train Operation

Freight trains are operated most frequently on lines bound for Lao Cai, Saigon and Hai Phong. Some freight trains are influenced by fluctuation of freight.

The departure or arrival stations of freight trains are different from those of passenger trains in several cases because some freight terminals are located at mines or industrial districts.

Table 4.3.11
Freight Train Operation by Line, 1999[1/]

Trains/day

Line	Through Train	Inter-union Train	Local Train	Time (hour)	Ave. Speed (km/h)
Hanoi (Y. Vien)-Saigon (S. Than)	4	4	14	30h27m	57
G. Bat (Y. Vien)-P. Lu(P. Han)	2		28	17h50m	17
G. Bat (Y. Vien)-D. Dang (D. Mo)	2		8	9h00m	18
G. Bat (Y. Vien)-H. Phong	8		14	6h15m	16
Hanoi-Q. Trieu	n.a	n.a	n.a	n.a	n.a
Y. Vien-M. Khe	2		5	5h15m	22

Source: VR
1/ The number of trains includes scheduled trains and non-scheduled trains.

Control of Train Operation

Daily train operation is carried out by dispatching centers located at each union. Dispatching rooms are prepared for each line or section of Hanoi-Saigon line. Dispatchers receive reports from stations and give instructions about train control through a train dispatcher telephone. However, train drivers or conductors do not have any means to contact stations or dispatching centers in case of emergency. The dispatcher telephone system is outdated.

Accident

The total number of accidents has dramatically decreased from 2,171 in 1996 to 1,452 in 1997. In this period the number of minor technical faults decreased. Most accidents were minor and related to outdated rolling stock. However, accidents involving people were serious. Most of these accidents were collisions, as shown in Table 4.3.13. Some safety measures, like installing bars on both sides of crossings or fences along the railway line, should be planned and implemented immediately as the train operating speed is expected to improve in the near future.

Table 4.3.12
Railway Accidents in VR

Type	1998		1997		1996	
	No.	%	No.	%	No.	%
Serious Accident	1	0.1	3	0.2	1	0
Heavy Accident	0	0	2	0.1	3	0.1
Light Accident	56	3.8	44	3	54	2.5
Others (People are involved)	342	23	277	19.1	297	13.7
Violation of Regulation	9	0.6	0	0	6	0.3
Minor Technical Fault	1079	72.6	1126	77.5	1810	83.4
Total	1487	100	1452	100	2171	100

Source: VR

Table 4.3.13
Number of People Involved in Accidents, 1998

	Incident	Death	Injury
Collision	322	122	213
Disembarking	2	0	2
Embarking	4	0	4
Throwing Stone at Train	2	0	2
Others	12	7	5
Total	342	129	226

Source: VR

4.3.4 Maintenance

Tracks are maintained mainly by 15 railway management enterprises, the SOEs under VR. Each management enterprise is allocated a railway section. For instance, Ha Hai Management Enterprise is responsible for the maintenance of a 142-km railway section. Track maintenance is done manually mainly using hand tools, beaters and hand tie tampers. Mechanized track maintenance is planned for the future.

Signals and communications equipment are maintained by five SOEs. They periodically inspect signals, telecommunications network and switchboards, among others, and repair them if necessary and possible.

Maintenance of locomotives, passenger and freight cars are classified into two based on their mileage. These are inspection/repair and overhaul. Inspection and repair are done in depots and overhaul in workshops. The maintenance cycle is relatively short (see Table 4.3.14 – 4.3.16).

Table 4.3.14
Locomotives Maintenance Cycle, 1999

Type of Maintenance	RO (000 km)	RT (000 km)	R1 (000 km))	R2 (000 km)	R3 (000 km))	RK (000 km)	RG: Overhaul (000 km)
Place of Maintenance	Depot	Depot	Depot	Depot	Depot	Depot	Workshop
D4H	1 ± 2 0%	5 ± 20%	10 ± 20%	30 ± 20%	-	60 ± 10%	240 ±10%
D11H	-	5,	10	40	-	120	480
D9E	-	5	25	50	100	200	600
D12E	1 ± 20%	10 ± 20%	30 ± 20%	10 ± 20%	-	200 ± 20%	800 ± 20%
D13E		5	25	50	100	200	600
D18E	4 ± 20%	12 ± 20%	25 ± 20%	75 ±20%	125 ± 20%	250 ± 20%	800 ±20%
D5H	2.5	10	30	75	-	200	600

Source: VR

Table 4.3.15
Passenger Car Maintenance Cycle, 1999

Type of Maintenance		Maintenance Cycle	Place of Maintenance
Yearly Maintenance (000 km)	Old Car	150± 10%	Depot
	New Car	300 ± 5% (new car)	
Overhaul (km)		750 ± 10%	Workshop

Source: VR

Table 4.3.16
Freight Car Maintenance Cycle

Type of Maintenance		Maintenance Cycle	Place of Maintenance
Yearly Maintenance	Old Car	1 year ± 2 months	Depot
	New Car	2 years (new car)	
Overhaul		5 years (plain bearing)	Workshop
		6 years (roller bearing)	

Source: VR

Depot/Workshop

Locomotive depots are located in Yen Bai, Hanoi, Vinh (Union 1), Danang (Union 2), and Saigon (Union 3). The inspection and repair of locomotives are conducted in these depots. It is difficult to carry out maintenance on schedule because of inadequate supply of imported parts and lack of budget. Facilities and equipment for maintenance remain deteriorated too. Maintenance cost shown in Table 4.3.17 is very small.

Passenger and freight car depots are located in Hanoi, Hai Phong, Vinh (Union 1), Danang (Union 2), and Saigon (Union 3), where inspection and repair of cars are carried out. The depots face similar difficulties in maintenance and repair as locomotive depots. Workshops are located in Gia Lam and Hai Phong (Union 1) and Dian (Union 3), where overhaul of locomotives and cars are conducted. Other business activities (such as boiler production) are also conducted in these depots using available technique and equipment. These depots are suffering from inadequate budget, lack of spare parts and outdated facilities and equipment.

Table 4.3.17
Repair Cost of Rolling Stock

VND million

		1995	1996	1997
1. Locomotive	Annual Repair	17,515	19,522	24,414
	Switch	17,591	29,263	229,979
	Major Repair	25,424	29,136	196,649
2. Passenger Car	Annual Repair	24,990	16,307	138,837
	Major Repair	8,387	11,939	166,627
3. Freight Car	Annual Repair			
	Major Repair	36,942	39,694	224,406

Source: VR

4.3.4 Rail Traffic

Overall Transport Volume

The number of VR passengers that once reached its peak in 1987 decreased until 1994 but has been increasing gradually in recent years. In 1998, it carried 9.7 million passengers (or about 27,000 passengers a day) with an average trip length of 260 km. This demand clearly shows that VR serves interprovincial passenger transport.

Freight transport of VR seems to be on an upward trend in the 1990s in terms of tonnage. However, after 1995, ton-kilometer has been decreasing gradually. Table 4.3.19 shows VR's transport volume by cargo. Major goods carried by rail were ore, coal, stone/sand, cement, fertilizer, etc. in terms of tons. If by ton-km, major goods were ore, foodstuff, fertilizer, cement, agriculture/forestry products, and general goods.

Table 4.3.18
Overall Transport Volume of VR

	1985	1990	1994	1995	1996	1997	1998
No. of Passengers (million/year) (000/day)	19.1	10.4	7.9	8.8	8.5	9.3	9.7
Passenger-km (million/year)	3,359	1,913	1,796	2,133	2,267	2,444	2,540
Average Trip Length of Passengers (km)	176	184	227	242	267	263	262
Tons (million/year)	4.05	2.42	4.00	4.52	4.40	4.70	4.88
Ton-km (million/year)	869	847	1,370	1,751	1,684	1,526	1,323
Average Transport Distance of Freight (km)	215	348	343	388	383	325	271

Source: VR

Table 4.3.19
Freight Transport Volume of VR by Item, 1997

Cargo Item	Tons		Ton-km		Average Transport Distance (km)
	000	%	million	%	
1. Coal	894	18.8	92	6.0	103
2. Petroleum, oil, etc.	90	1.9	45	2.9	496
3. Ore	1,140	24.0	268	17.5	235
4. Metalware, machinery, etc.	257	5.4	83	5.4	322
5. Chemical	124	2.6	69	4.5	556
6. Fertilizer	454	9.6	184	12.0	405
7. Cement	616	13.0	149	9.7	242
8. Stone, Sand, etc.	563	11.9	62	4.1	111
9. Brick, tile, glass, etc.	26	0.5	14	0.9	537
10. Wood, wooden material	125	2.6	59	3.8	475
11. Agriculture/forestry products	70	1.5	104	6.8	1,471
12. Food	43	0.9	21	1.4	480
13. Foodstuff	235	5.0	244	15.9	1,040
14. Cotton, fiber, textile	9	0.2	13	0.8	1,409
15. General goods	72	1.5	96	6.3	1,333
16. Others	34	0.7	31	2.0	908
Total	4,752	100.0	1,533	100.0	322

Source: VR

Rail Traffic Density by Section

Transport density of VR by section is presented in Figure 4.3.3 for passenger and 4.3.4 for cargo. In passenger transport, a transport density of more than 2,000 passengers/km/day was recorded in 1997 for the Hanoi-Saigon line, Hanoi-Hai Phong line, Hanoi-Yen Vien of Hanoi-Dong Dang line, and Yen Vien-Yen Bai of Hanoi-Lao Cai line.

In freight transport, the sections up to Lang Giang of Hanoi-Lao Cai line boast of more than 2,000 tons/km/day, with Yen Vien-Dong Anh section having the maximum volume of more than 3,000 tons/km/day. Two branch lines on Hanoi-Lao Cai line (Pho Lu-Pom Han, Tien Kien-Lam Thao) show large volumes. Hanoi-Hai Phong line is the second with a density of nearly 1,600 tons/km/day.

Figure 4.3.3
Passenger Transport Density by Section, 1997

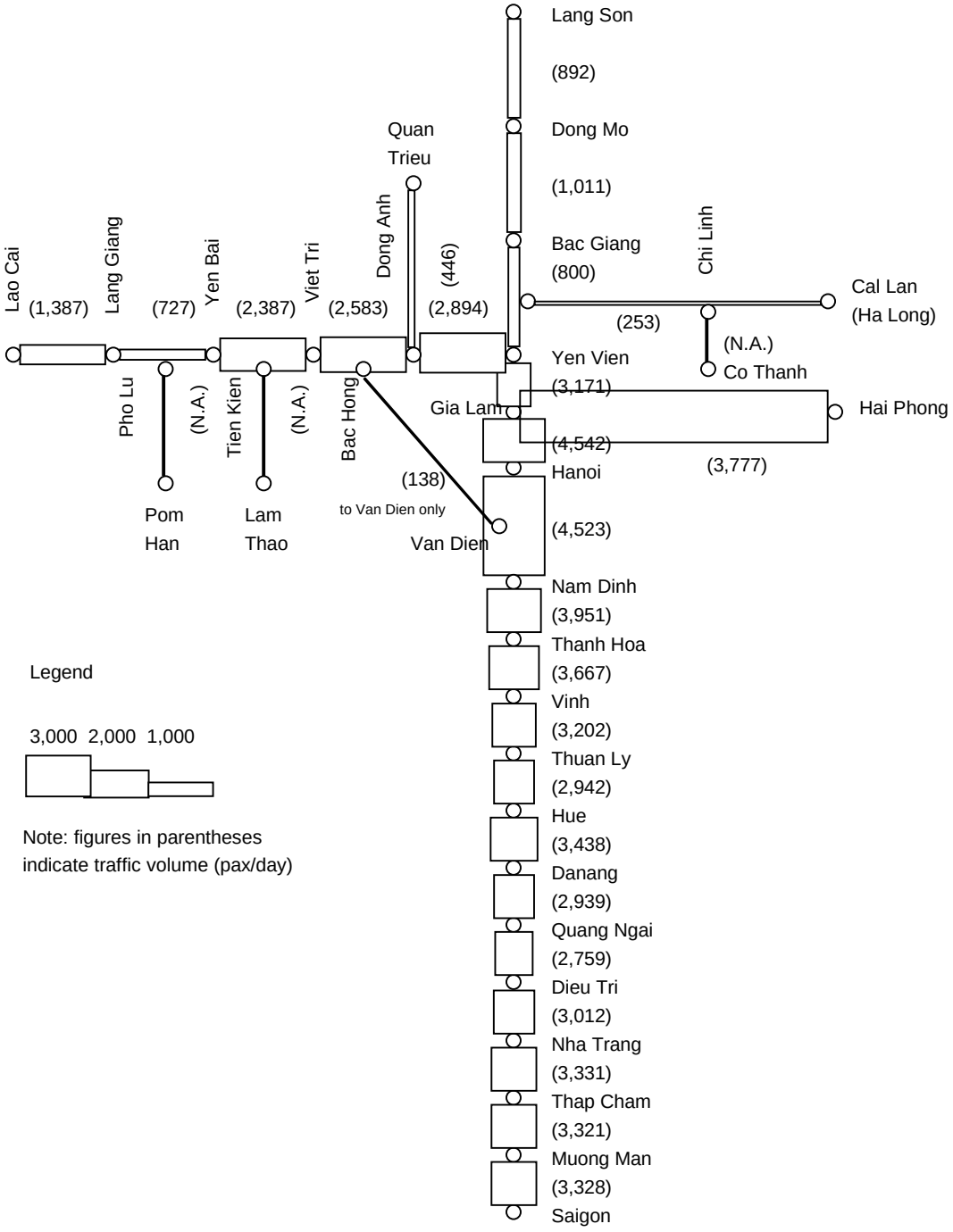
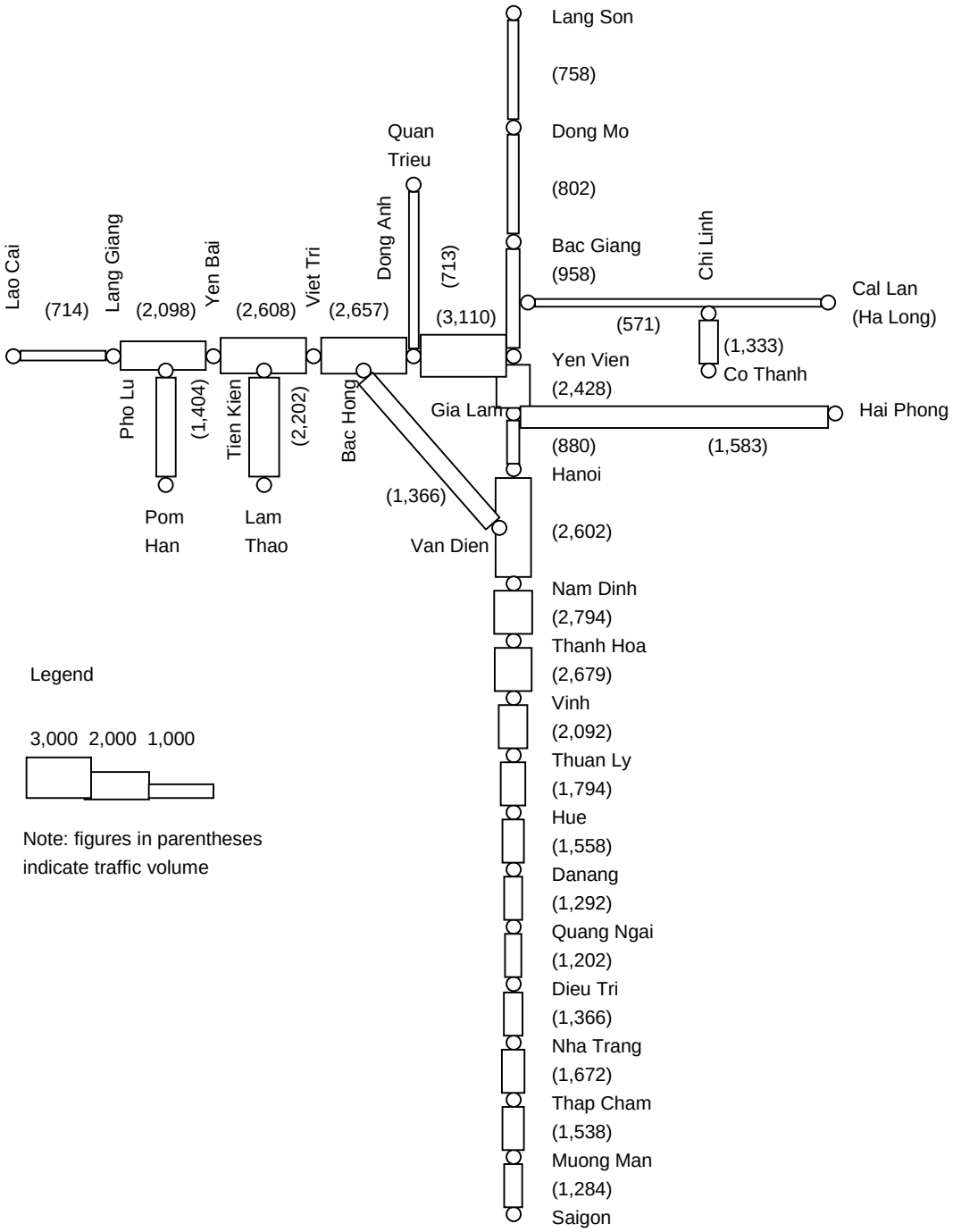


Figure 4.3.4
Cargo Transport Density by Section, 1997



4.3.5 Financial Aspect

Revenue and Expenditure of VR

As mentioned earlier, VR is divided into two divisions for accounting purposes. The Transport Division is the responsibility of VR. VR pays the government 10% of the operating revenue as charge for using the infrastructure.

In 1998, VR generated a revenue of VND 934 billion (US$ 67 million), 60% of which came from passenger and 40% from freight/baggage. The general trend is the gradual increase in passenger revenue and fluctuating pattern in goods revenue (see Table 4.3.20). The total operating cost in 1998 was VND 924 billion (US$ 66 million) excluding infrastructure tax. Of the total expenditure, salary shared 21.8% followed by materials (15.3%), depreciation (13.0%), fuel (12.3%), major repair (6.4%), and others.

Table 4.3.20
Income and Expenditure of VR

VND billion

								1998	
			1990	1994	1995	1996	1997	Amount	(%)
Income		Passenger	74.0	271.8	427.2	466.1	424.9	537.9	60.3
		Freight	59.1	301.3	343.8	407.1	496.4	369.0	41.4
		Baggage	6.1	26.9	30.0	26.0	26.7	26.8	0.3
		Others	3.9	5.9	7.8				-
		Total	*143.1*	*606.0*	*808.7*	*899.3*	*948.0*	*933.8*	*100*
Expenditure	Operation (A)	Salary	33.7	245.7	171.4	193.4	200.9	201.2	21.8
		Social Insurance		19.0	9.2	13.5	17.6	17.7	1.9
		Materials	26.4	156.2	129.6	139.9	143.1	141.3	15.3
		Fuel	23.3	71.2	94.7	105.2	121.6	114.2	12.3
		Electricity		6.3	6.3	9.6	25.9	35.9	3.9
		Basic Depreciation	12.0	20.0	81.5	99.1	139.0	119.8	13.0
		Large Repair	26.3	97.7	72.0	82.1	65.7	59.4	6.4
		Others	37.2	77.8	99.6	100.1	101.6	118.3	12.8
	Infra (B)	Collection on Capital	n.a	19.0	35.3	36.4	-	-	-
		Infrastructure Tax	-	-	80.9	89.9	94.8	116.0	12.6
	Expenditure (A + B)		158.9	712.9	780.5	869.2	910.2	924.0	100.0
	Revenue Tax		6.3	17.9	23.5	26.6	29.4	30.0	-
	Total Expenditure		165.2	730.8	804.0	895.8	939.6	954.0	

Source: VR

Tariff

Passenger tariffs are set by VR subject to government approval. Passenger fare differs by type of train, type of seat and nationality (Vietnamese or not). It is calculated as the sum of unit fare per km multiplied by travel distance plus insurance premium. The unit fare decreases gradually as travel distance lengthens. Fare tables are displayed at each station.

The difference in fare between Vietnamese and non-Vietnamese becomes bigger as service level becomes higher. In the case of S1/2 train, the difference is 1.87 times higher for the “hard seat”, 1.92 times for the “soft seat”, 2.24 times for the “air-conditioned soft seat”, and 2.48 times for the “air-conditioned soft sleeper” (excluding insurance).

Table 4.3.21
VNR Passenger Fares for Selected Sections[1/]

VND 000

Train[2/]	Seat Type[3/]		Hanoi - Danang	Hanoi - Saigon	Danang - Saigon	Unit Fare per Pass-km
			791 km	1726 km	935 km	
S1/2	Hard seat	Viet[2)]	169	370	200	0.214
		(N.V)[2)]	(327)	(701)	(385)	(0.400)
	Soft seat	Viet	190	414	225	0.240
		(N.V)	(375)	(805)	(441)	(0.460)
	Soft seat Air-cond.	Viet	250	546	296	0.316
		(N.V)	(571)	(1233)	(673)	(0.708)
	Soft sleeper Air-cond.	Viet	341	744	403	0.431
		(N.V)	(856)	(1854)	(1010)	(1.068)
S5/6	Hard seat	Viet	135	294	159	0.170
		(N.V)	(278)	(594)	(327)	(0.338)
	Soft seat	Viet	161	351	190	0.203
		(N.V)	(301)	(643)	(353)	(0.366)
	Air-cond. Soft seat	Viet	185	404	219	0.234
		(N.V)	(473)	(1019)	(557)	(0.584)
	Air-cond. Soft sleeper	Viet	298	649	352	0.376
		(N.V)	(775)	(1678)	(914)	(0.956)

Source: Decision No. 1039 CV/KHDT
1/ Excluding insurance
2/ Viet =Vietnamese, N.V = non-Vietnamese

Freight tariff is regulated by Decision No.26 QD/HKDT dated 14 January 1999, which was amended to apply value-added tax (VAT) and tax on enterprise revenue. The cargo tariff of VR is determined on the basis of a fully loaded wagon as shown in Table 4.3.22.

Table 4.3.22
Fully Loaded Wagon Tariff

Category[1/]	VND by Transportation distance (D = km)			
	D<100km	100<D<700	700<D<1300	1300<D
Category 1	270	210	195	180
Category 2	310	250	235	220
Category 3	350	290	275	260

Source: Decision No. 26 QD/KHDT, January 1999
1/ Examples of each category are as follows:
Category 1 : Peat, crude oil, ore, sand, stone, brick, firewood, straw, water, vegetables, etc.
Category 2: Coal, charcoal, product petrol, iron, steel product, fertilizer, cement, tiles, wooden and agricultural products, cotton, etc.
Category 3: Fish sauce, soy sauce, silk, canned food, pottery, high-grade wooden products, high-grade textiles, etc.

Comparison of Passenger Fare of Bus and Air

Table 4.3.23 compares VR's passenger fare of bus and air for selected routes (for Vietnamese citizens). In general, railway fare is higher than bus but lower than air. For long-distance travel, such as Hanoi-HCMC and Hanoi-Danang, railway fare is much higher than bus even for "hard seat". However, for short-distance trips, the hard seat railway fare becomes comparable or even cheaper than bus. The railway fare for "air-conditioned soft sleeper" seat is about three-fourths of airfare. Considering the large difference in travel time, railway fare may be too high to effectively compete with air transport.

Table 4.3.23
Comparison of VR Passenger Fare with Bus and Air in Selected Routes[1/]

Mode/Item			Hanoi – HCMC (1,726 km)	Hanoi – Danang (791 km)	Hanoi – Hai Phong (102 km)	Hanoi – Lao Cai (294 km)	Hanoi – Lang Son (180 km)	Hanoi – Bac Giang (50 km)
Rail	Type		S1	S1	HP1	HP2	HP1	HP2
	Time (hour)		33:50	15:56	2:00	9:40	6:26	1:55
	Frequency/day		4	4	1	3	1	1
	Fare[1/] (VND 000)	Hard Seat	370	169	20	57	20	7
		Soft Seat (A/C)	546	250	22	n.a	n.a	n.a
		Soft Sleeper (A/C)	744	373	n.a	111	n.a	n.a
Bus	Type		Non-A/C	Non-A/C	Non-A/C	Non-A/C	Non-A/C	Non-A/C
	Time (hour)		48:00	26:00	2:30	14:00	3:50	1:10
	Frequency/day		2	1	35	1	21	14
	Fare[1/] (VND 000)		185	76	18	53	25	10
Air	Time (hour)		2:00	1:00	-	-	-	-
	Frequency		6	1	-	-	-	-
	Fare[1/] (VND 000)		1.000	500	-	-	-	-

Source: Various sources
1/ Fare is for Vietnamese.

4.4 Inland Waterways

4.4.1 Administrative Framework and Overview

VIWA under the MOT is responsible for the administration of inland waterway transport in Vietnam. Since it was established on 30 January 1993 by Decree No. 08/CP, some parts of VIWA have been reorganized. Currently, there are 10 departments, one inland waterway branch in the south, 15 waterway management sections and three port authorities. Moreover, there are two technical and vocational schools and one training school as well as subsidiary enterprises for waterways facilities and safety (see Figure 4.4.1).

Inland waterways are managed by nine waterway management sections in the north (No. 1-No. 9) and six in the south (No. 10-No. 15). Inland waterway ports are managed by three port authorities, as follows:

- Port Authority No.1: Ports in Hai Phong, Quang Ninh province
- Port Authority No.2: Ports in Hanoi, Ninh Binh and 11 surrounding provinces
- Port Authority No.3: Ports in HCMC and 11 surrounding provinces

In the near future, Port Authority No. 4 will be established to manage ports in Can Tho and surrounding provinces.

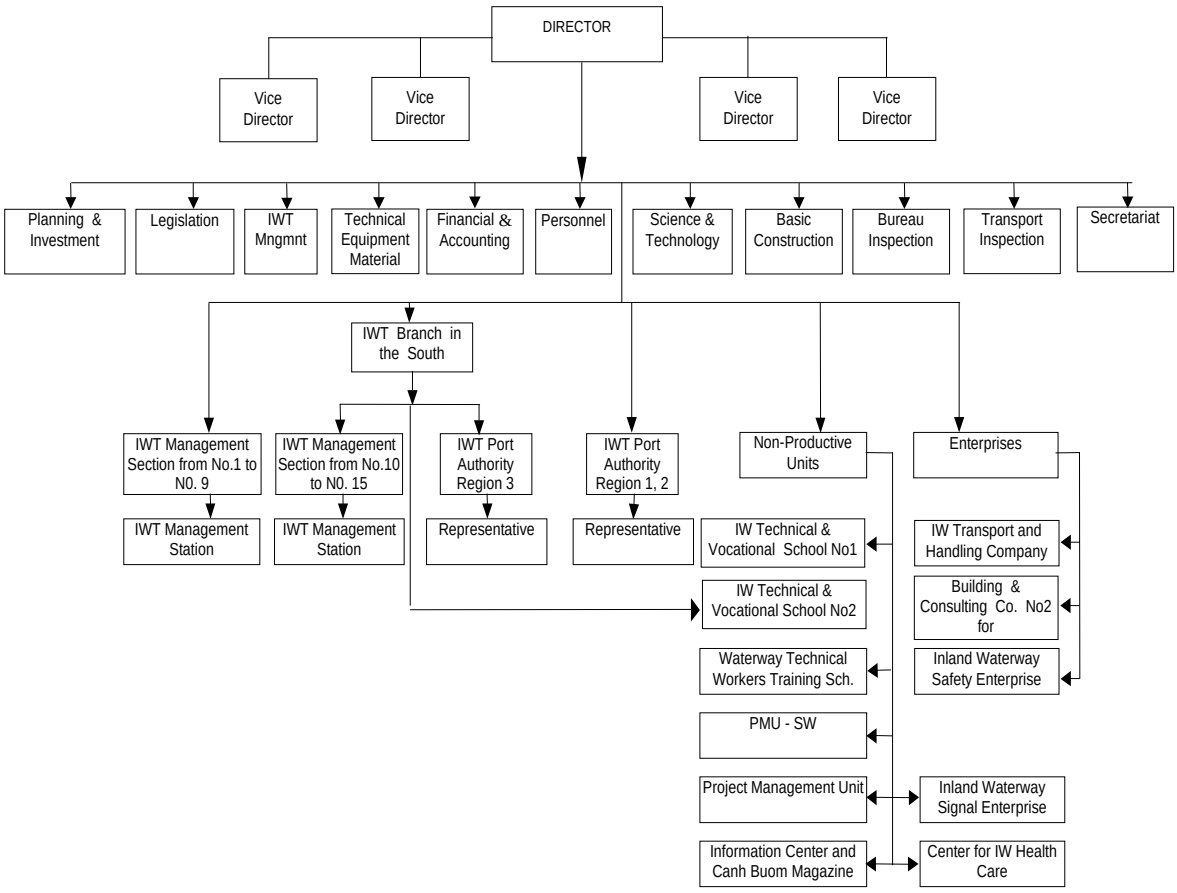
Inland waterway transport is classified into three forms, as follows:

1) State-owned transport: State-owned transport is undertaken by waterway transport companies belonging to the Northern Waterway Transport Corporation and the Southern Waterway Transport Corporation.

2) Specialized transport: For the transport of specialized material to big factories, such as cement plants, paper mills and construction-material enterprises, specialized ports are built and specialized transport sections are organized under other ministries. Typical examples of these are found in Bai Bang Paper Mill, Ha Tien Cement Plant, Sand and Cobble Company (under the Ministry of Construction), etc.

3) Private transport: Private transport has been developing rapidly in recent years and has played a great role in local transport in branch routes.

Figure 4.4.1
Organizational Chart of VIWA



4.4.2 Inland Waterway Network

Classification of Waterways and Existing Network

The total length of managed waterways (with investment for maintenance, provided with signboards, etc.) is 8,013 km, 6,231 km of which is managed by the central government and 1,782 km by local governments. Since 1993, the length of waterways managed by the central government has increased from 3,772 km to 6,231 km. Waterways are categorized into six classes (see Table 4.4.1) with the following corresponding lengths (see Figure 4.4.2 and Figure 4.4.3):

Class I	: 1,797 km
Class II	: 1,206 km
Class III:	: 3,228 km
Class IV-VI	: 1,782 km

Figure 4.4.2
Inland Waterways Classification in Northern Vietnam

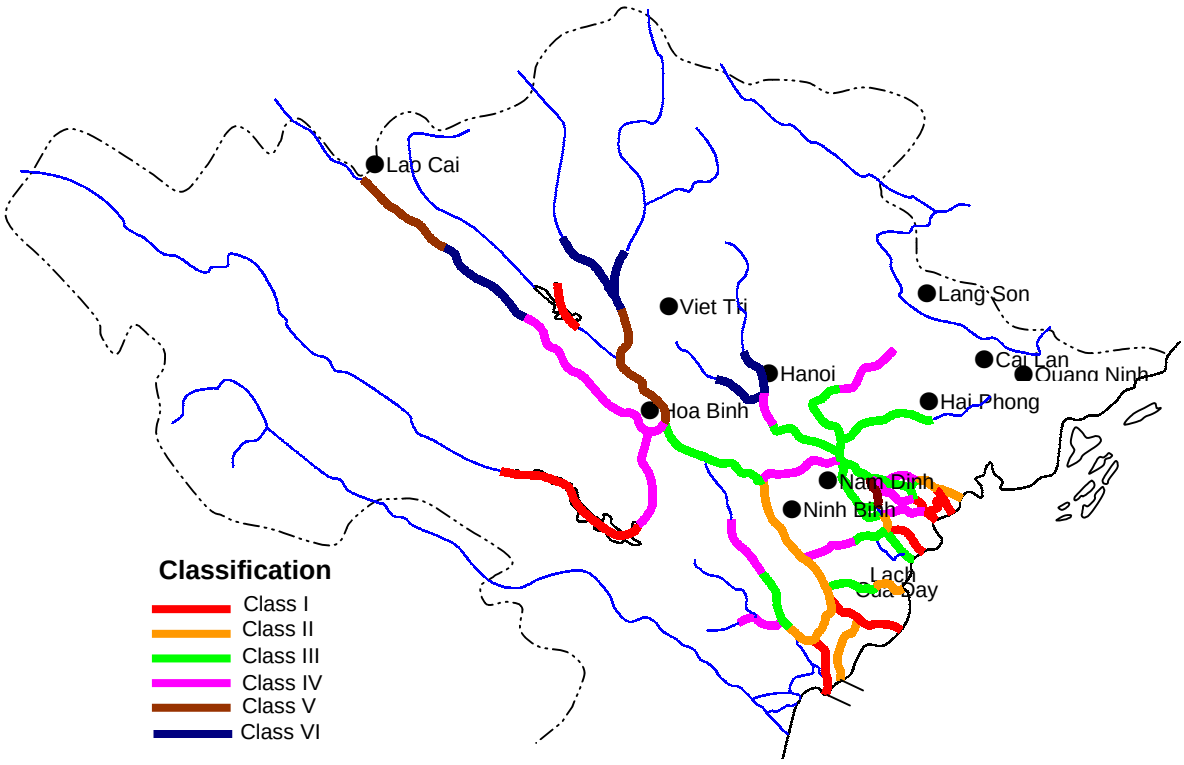


Figure 4.4.3
Inland Waterways Classification in Southern Vietnam

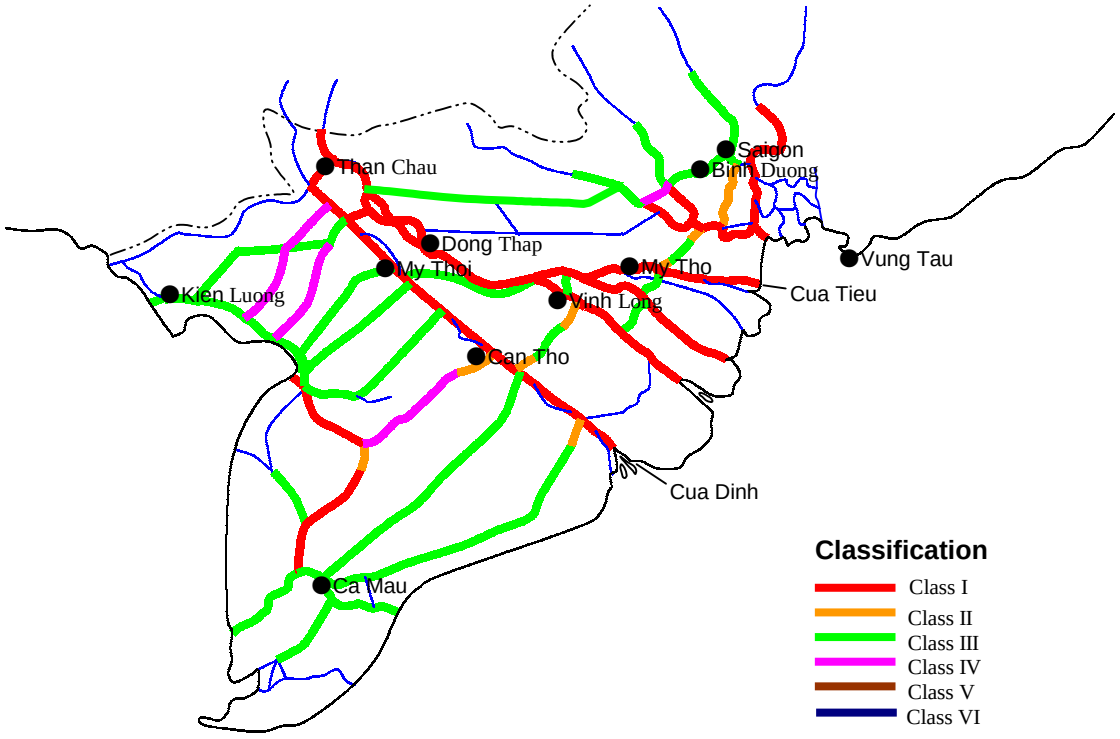


Table 4.4.1
Classification of Inland Waterways (TCVN 5664-1992)

Class	Dimension of Waterways					Dimension of Works			
	River		Canal		Radius (R)	Bridge			Electric Wire
	Depth	Width	Depth	Width		Span		Clearance	Clearance
						River	Canal		
I	>3.0	>90	>4.0	>50	>700	80	50	10	12
II	2.0-3.0	70-90	3.0-4.0	40-50	500-700	60	40	9	11
III	1.5-2.0	50-70	2.5-3.0	30-40	300-500	50	30	7	9
IV	1.2-1.5	30-50	2.0-2.5	20-30	200-300	40	25	6(5)[1/]	8
V	1.0-1.2	20-30	1.2-2.0	10-20	150-200	25	20	3.5	8
VI	<1.0	10-20	<1.2	10	60-150	15	10	2.5	8

Source: VIWA
1/ The figure in parenthesis is used with the agreement of the juridical office.

Characteristics of Waterways

Inland waterway transportation has been regarded as an important part of the national transport system for a long time, due to the advantages provided by its dense network especially in the Red River delta and Mekong delta. The average river density is 0.127km/km^2 in the entire country and 0.2-0.4 km/km^2 in the Red River delta and Mekong delta.

The characteristics of waterways in Vietnam are as follows:

Inland Waterways in the North

- There are two large natural river systems: Red (Hong) River and Thai Binh River.
- River systems are mostly natural and greatly affected by hydro-meteorological elements.
- The minimum width of waterways is 30-60 m.
- The minimum depth of waterways is 1.5-2 m.
- The difference in water level between dry and rainy seasons is 5-7 m (over 10 m in some parts)
- During rainy season, the water current is strong.
- During dry season, navigable depth and radius of channel curvature for ships decrease.
- Sandbanks often form (their position depends on the annual flooding), which make navigation difficult.

Inland Waterways in the South

- There are two large natural river systems: Mekong River and Dong Nai River.
- River systems are linked with dense canal systems, forming a favorable and remarkable waterway transport network.
- The minimum width of waterways is 30-100 m.

- The minimum depth of waterways is 2.5-3 m.
- The difference in water level between dry and rainy seasons is 2-5 m.
- The system experiences semi-diurnal tide.
- Unexpected sandbanks form less frequently.

Inland Waterways in Central Vietnam

- There are three main river systems: Lam, Thu Bon and Ba rivers in the provinces of Nghe An, Quang Nam and Phu Yen, respectively.
- River systems are greatly affected by hydro-meteorological elements.
- River systems are all small, short, high-sloping, with lots of water falls and cascades, and not connected.
- During rainy season, the water current is strong.
- During dry season, the navigable draft is very shallow.

Transport is limited due to the existence of bridges on National Road No.1. Only a total of 10-15 km from the national road to the estuary can be exploited as waterway route.

Main Inland Waterway Routes

Though there are many transport routes via inland waterways in Vietnam, the following nine routes are considered particularly important and indispensable to transportation (see Figure 4.4.4 and Figure 4.4.5).

Table 4.4.2
Main Inland Waterway Routes

Area	No.	Route	Main River, Channel	Length (km)	Minimum Water Depth (m)	Maximum Vessel Size (DWT)
North	1	Quang Ninh-Ninh Binh	Luoc, Dao, Day	323	1.8	Barge use
	2	Quang Ninh-Hanoi, Hanoi-Viet Tri	Kinh Thay, Duong, Hong	313 79	1.5	Barge use
	3	Lach Giang-Nam Dinh-Hanoi	Ninh Co, Hong	181	1.5	600
	4	Cua Day-Ninh Binh	Day	72	0.8	300-1,000
South	1	HCMC-Kien Luong (1)	Dong Tien Lagrange, Van Nao, Mac Can Dung	288	1.5	Barge use
	2	HCMC-Kien Luong (2)	Cho Gao, Rach Soi-Hau Giang, Rach Gia-Ha Tien	319	1.5	Barge use
	3	HCMC-Ca Mau	Cho Gao, Ni Co Lai, Xa No	341	1.5	Barge use
	4	Cua Tieu-Tan Chau	Tien Giang	227	2.1	2,000
	5	Cua Dinh An-Tan Chau	Hau Giang	235	2.6	3,000-5,000 (Cua Dinh An-My Thoi)

Figure 4.4.4
Main Routes of Inland Waterway Transport in Northern Vietnam

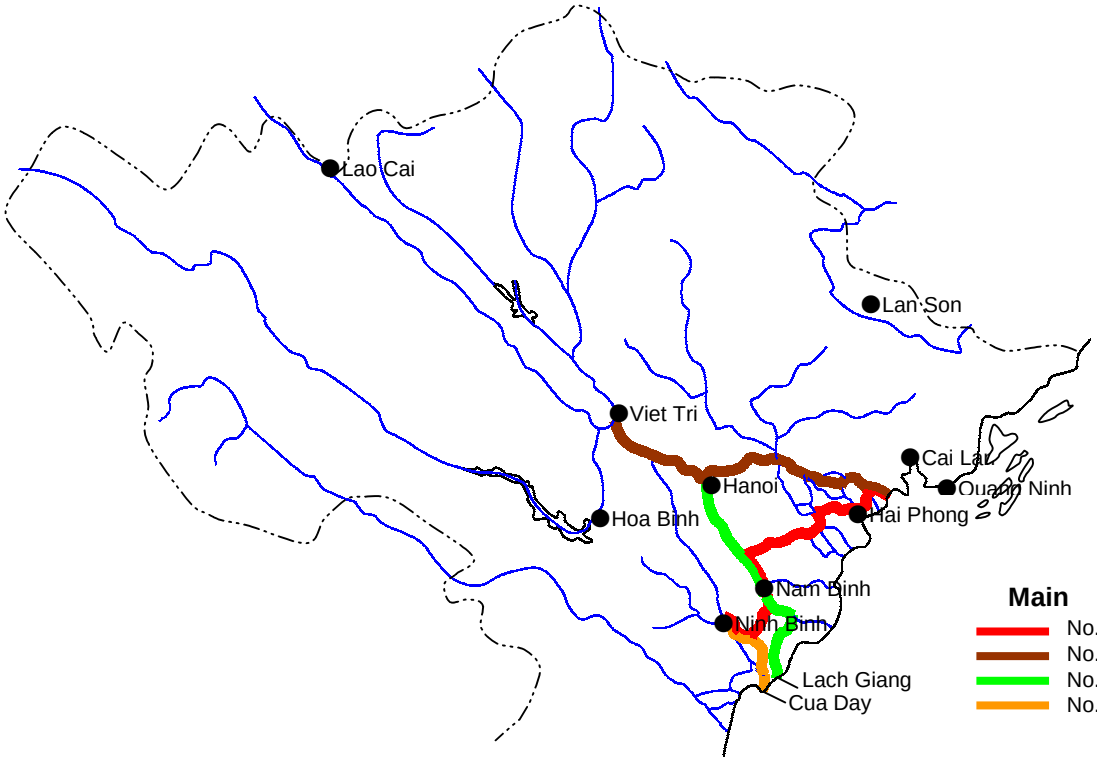
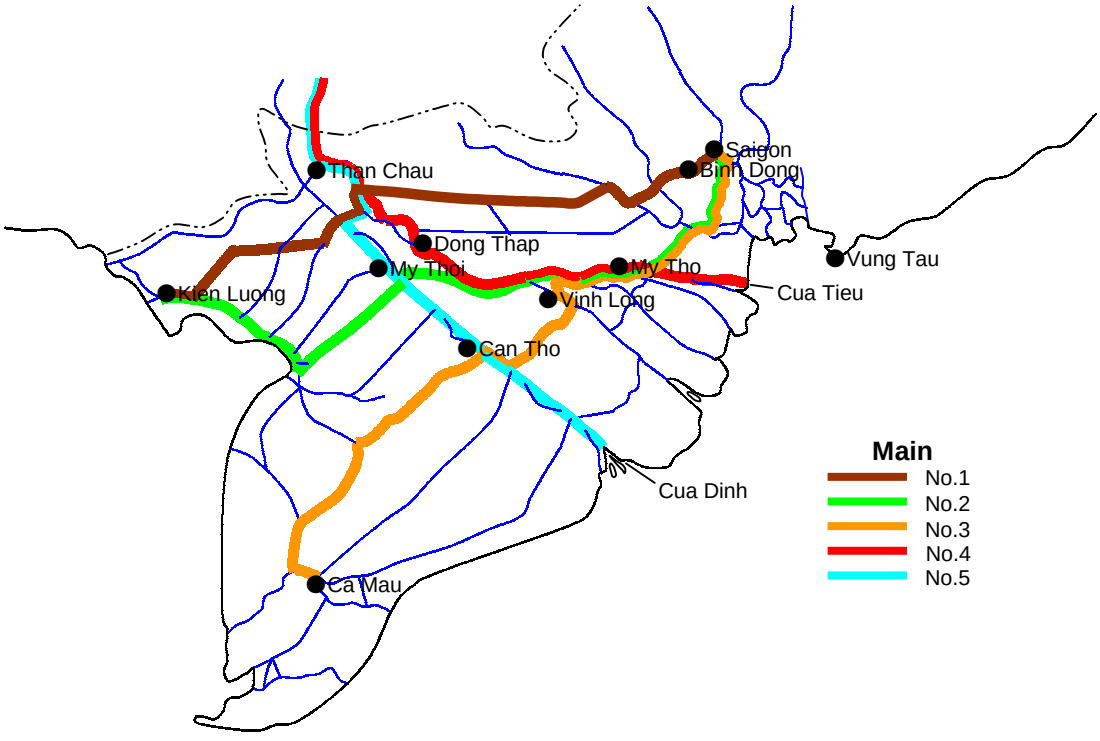


Figure 4.4.5
Main Routes of Inland Waterway Transport in Southern Vietnam



Inland Waterway Ports

There are hundreds of inland waterway ports, and these ports are classified into three according to management, as follows:

1) Ports managed at central level: There are a total of seven ports, as follows:

   North: Hanoi, Viet Tri, Hoa Binh, Ninh Binh, and Ha Bac
   South: Tan Thuan, Thu Duc I

2) Ports managed at local level: Majority of provinces, which have their own economic centers, also have their own ports and quays to promote economic development and to serve as a contact place to supply goods. Major ports managed at local level are as follows:

   North: Tuyen Quang, Son Tay, Hong Chau, Cong Cau, Ta Hoc, An Duong, etc.
   South: Cao Lanh, Long Xuyen, My Tho, Tan An, etc.
   Center: Ho Do, Dong Ha, etc.

3) Special ports: These ports are responsible for handling specific items only such as thermal power plants, cement, food grains, chemicals, papers, building glass, etc. These are directly managed by various ministries and sectors. Typical examples are:

   North: Pha Lai, Ninh Binh (thermal power plants), Chinfon, Hoang Thach (cement), Bai Bang (paper), Dap Cau (glass), Chem (construction material), etc.
   South: Kien Luong, Thu Duc, Hon Chong (cement), Tra Noc, Binh Dong, Cao Lanh (cereals)

The general characteristics of inland waterway ports are as follows (see Table 4.4.3):

- Ports are generally small, and their average capacity is not so large.
- There are few ports equipped with proper loading/unloading facilities. Mechanization is still at a low level.
- Facilities are mostly outdated and incomplete, except in some special ports, and their performance is low. The capacity of warehouses is insufficient.
- Most small ports are poorly connected to the national transportation network due to insufficient road access.

Table 4.4.3
Facilities and Equipment of Major IWT Ports

Area	Ports	Berth Length (m)	Water Depth (m)	Yard Area (m^2)	Warehouse Area (m^2)	Cargo Handling Equipment
North	Hanoi	525	3.5	55,500	6,210	1 mobile crane, 6 floating cranes, 5 mobile loaders, 1 forklift, 6 trucks
	Khuyen Luong	106	5-6	6,000	4,620	6 cranes
	Viet Tri	180	3.5	23,400	2,400	7 cranes, 2 forklifts, 10 trucks
	Hoa Binh	120	1-2.5	15,000	320	1 cranes
	Ninh Binh	40	3-5	34,000	920	17 cranes, 310 m belt conveyor, 60 trucks (10t)
	Ninh Phuc	117	6	n.a	n.a	2 cranes
	Nam Dinh	345	10	17,870	4,200	10 cranes, 1 forklift, 2 trucks
	A Lu	n.a	n.a	3,000	720	3 cranes
	Dap Cau	n.a	n.a	17,000	n.a	1 crane, 10 trucks
	Cong Cau	n.a	n.a	n.a	n.a	n.a
	Son Tay	160	3-3.5	1,200	2,500	n.a
	Hong Van (Hong Chau)	60	3-4	1,500	5,000	5 trucks, 105-m conveyor belt
	Thuy Loi	n.a	n.a	n.a	n.a	n.a
	Thai Binh	n.a	n.a	n.a	n.a	n.a
	Pha Lai	261	1.2	n.a	n.a	4 cranes
	Hoang Thach	n.a	n.a	n.a	n.a	n.a
	Dien Cong	120	n.a	6,000	n.a	2 conveyor belts
	Chinh Pong	n.a	n.a	n.a	n.a	n.a
South	My Thoi	76	4.5-6.5	3,000	3,625	2 mobile cranes (7-10t), 3 floating cranes (2.5-16t), 2 forklifts (3-5t), 4 trailers (5t)
	Cao Lanh (Dong Thap)	70	n.a	1,500	1,810	n.a
	My Tho	62 135	7 5	25,478	1,440	3 cranes (13-25t), 19 trucks, 4 trailers
	Vinh Thai (Vinh Long)	80	7	6,700	6,100	4 cranes, 4 forklifts
	Hong Chong	65	4.6-5.7	8,000	3,600	1 crane, 4 trucks
	Ca Mau	70	n.a	6,400	1,240	2 cranes
	Thu Duc	200	n.a	n.a	800	2 cranes
	Dong Nai	n.a	n.a	n.a	n.a	n.a
	Kien Luong	300	3-4	n.a	1,600	1 crane, 1 belt conveyor
Center	Ho Do	n.a	n.a	n.a	n.a	n.a
	Dong Ha	n.a	n.a	n.a	n.a	n.a

Source: VIWA and VITRANSS survey

4.4.3 Fleet and Operational Characteristics

Inland waterway transport services are provided by public operators, several cooperatives in transport and handling services and numerous small and independent private operators. Services are mainly provided by public operators in the north and private operators in the south. This is because the fleet in the north is mainly owned by central government or provinces, whereas that in the south is mainly owned by private operators. The total fleet capacity of inland waterway transport is shown in Table 4.4.4.

Table 4.4.4
Fleet Capacity of Inland Waterway Transport

Vessels	Unit	1991	1992	1993	1994	1995	1996
Pusher and Tugboats	Vessels (No.) HP	854 70,900	975 111,500	915 111,500	864 105,600	784 96,000	709 87,500
Cargo Ships	Vessels (No.) Tonnage	12,306 229,000	11,764 180,500	11,923 188,600	11,996 191,800	21,014 380,600	20,778 396,200
Barges	Vessels (No.) Tonnage	1,757 287,800	1,558 268,100	1,663 287,000	1,763 269,800	1,877 268,500	1,996 324,700
Cargo Boats	Vessels (No.) Tonnage	n.a	n.a	31,000 68,000	27,000 58,300	21,000 37,880	n.a
Non-motorized Boats	Vessels (No.) Tonnage	n.a	n.a	1,500 9,700	1,300 8,100	1,200 7,540	n.a

Source: TDSI and General Statistical Yearbook, 1997

Public operators use iron-hulled vessels, but private operators mainly use self-propelled, wood-hulled, oval-shaped vessels. In general, the majority of vessels were built in the 1980s. Vessels in the south were built prior to 1975 and due to the lack of capital, they are not sufficiently repaired and maintained.

The general characteristics of vessels and operation in the north and south are, as follows:

- Convoy (400 tons x 2 barges) + tug/pusher 135-150cv
- Convoy (200 tons x 4 barges) + tug/pusher 135-150cv
- Convoy (100 tons x 6 barges) + tug/pusher 135-150cv
- Self-propelled ship of 100-300 tons
- River and seagoing ships with 600-1000 DWT on routes between Cua Day and Ninh Binh
- River and seagoing ships with 2000-5000 DWT on Tien and Hau rivers

In the central region, almost all vessels for transportation are below 50 tons, a number of which are below 20 tons. Regarding sea and river transportation service, the Vietnam Sea-River Transport Enterprise (VISERITRANS) has a sea-cum-river ship with a capacity of 400 tons. However, the company is hardly operating this

service now due to low profitability. It mainly provides coastal shipping and river-to-river services.

4.4.4 Traffic Demand Characteristics

Overall Traffic Volume

Accurate data on traffic volume of inland waterway is hard to obtain. Existing statistics are considered unreliable due to unclear methodology in collecting and compiling data (see Table 4.4.5 and Table 4.4.6).

Nevertheless, the tables can show the following general features:

- Although traffic volume has been steadily increasing, the share of inland waterway has been decreasing. Still, the relatively high share of IWT indicates its importance in the two delta areas.
- The private sector plays a very important role, which is particularly true in the south and becoming more and more visible even in the north.

Table 4.4.5
Cargo Traffic Volume

Items	Tons (000)			Ton-Km (million)		
Year	All Modes	Waterways	(%)	All Modes	Waterways	(%)
1990	53,889	16,295	30	12,544	1,749	14
1991	56,431	15,566	28	17,210	1,765	10
1992	64,903	16,894	26	17,002	1,817	11
1993	70,464	16,797	24	18,419	2,335	13
1994	76,455	17,533	23	21,127	1,971	9
1995	87,220	20,051	23	21,858	2,248	10
1996	100,140	23,395	23	29,142	2,487	9
1997	104,709	24,144	23	35,297	2,821	8

Source: Statistical Yearbook, 1997

Table 4.4.6
IWT Cargo Volume by Area and Sector

	1993		1994		1995	
	000 Tons	Million Ton-km	000 Tons	Million Ton-km	000 Tons	Million Ton-km
North	6,955	1,114	7,229	941	8,205	1,044
Public	2,317	428	2,538	496	2,843	524
Private	4,638	686	4,691	445	5,362	520
Center	1,388	54	1,697	121	1,971	108
Public	-	-	-	-	-	-
Private	1,388	54	1,697	121	1,971	108
South	8,454	1,167	8,627	909	9,875	1,096
Public	498	461	16	52	138	114
Private	7,956	706	8,611	857	9,737	982

Source: TDSI

Table 4.4.7
Passenger Traffic

Items	Number of Passengers (million)			Passenger-km (million person-km)		
Year	All Modes	Waterways	Share (%)	All Modes	Waterways	Share (%)
1990	326.8	43.6	13	11,830.0	1,014.0	9
1991	436.5	92.6	21	12,861.0	1,186.0	9
1992	493.0	92.5	19	14,600.0	1,145.0	8
1993	516.4	86.4	17	15,272.0	1,310.0	9
1994	555.5	104.1	19	16,757.0	1,412.0	8
1995	593.8	109.8	18	20,431.6	1,432.0	7
1996	639.2	117.9	18	22,133.9	1,605.6	7
1997	699.9	129.8	19	24,258.0	1,784.0	7

Source: Statistical Yearbook, 1997

Traffic Demand along Waterways and at Ports

Traffic volume along waterways varies by route. In the south, the heavily trafficked route is Cho Gao Canal (9.3 million tons) followed by My Tho – N3 Sa Dac (7.4 million tons), Kenh Sa Dec – Lap Vo (6.2 million tons), Man Thit route (3.5 million tons), etc. In the north, the Hai Phong – Cau Xi Mang is the heaviest route (4.3 million tons), followed by H. Gai – N3 S. Chanh (4.0 million tons) (see Table 4.4.8). In the south, main cargoes transported include agricultural products; construction materials; materials for cement and cement products; and fertilizer and wood. In the north, they are coal for power plants, industry and consumption; construction materials; cement and cement products; equipment, iron, steel, general cargoes, and fertilizer etc.

As reliable statistics are unavailable, it is difficult to obtain details of cargo handled in each port. During the field survey, only data on total cargo and main cargoes handled were obtained (see Table 4.4.9). The data on container cargo using inland waterway transport is also unavailable. But during the field survey in the south, it was observed that Vinh Long Port, where sea-cum-river vessels can enter, handled many containers.

Table 4.4.8
Cargo Volume in Main Inland Waterway Ports

Tons 000

	Ports	1993	1994	1995	1996	1997
North	Hanoi	718	745	723	540	650
	Khuyen Luong	38	126	219	384	492
	Viet Tri	215	298	150	120	150
	Hoa Binh	40	153	185	n.a	70
	Ninh Binh	415	413	484	500	512
	Ninh Phuc	n.a	n.a	n.a	n.a	100
	Nam Dinh	203	200	130	84	71
	A Lu	41	90	103	n.a	130
	Dap Cau	16	26	27	n.a	250
	Cong Cau	n.a	n.a	n.a	n.a	n.a
	Son Tay	38	126	219	200	150
	Hong Van	25	32	61	47	55
	Thuy Loi	n.a	n.a	n.a	n.a	100
	Thai Binh	n.a	n.a	n.a	n.a	n.a
	Pha Lai	n.a	n.a	1,013	n.a	n.a
	Hoang Thach	n.a	n.a	212	n.a	n.a
	Dien Cong	n.a	350	400	n.a	n.a
	Chinh Pong	n.a	n.a	n.a	n.a	n.a
South	My Thoi	83	104	153	159	169
	Cao Lanh (Dong Thap)	n.a	n.a	40	140	n.a
	My Tho	n.a	182	203	126	349
	Vinh Thai (Vinh Long)	n.a	n.a	120	100	120
	Hong Chong	n.a	n.a	4	n.a	n.a
	Ca Mau	n.a	n.a	n.a	n.a	50
	Thu Duc	n.a	n.a	200	n.a	n.a
	Dong Nai	n.a	n.a	140	207	n.a
	Kien Luong	200	180	400	450	310
Central	Ho Do	n.a	n.a	n.a	n.a	60
	Dong Ha	n.a	n.a	n.a	n.a	70

Source: VIWA

Table 4.4.9
Traffic Volume in Main Inland Waterway Routes

Tons 000

North			South		
River	Route	1995	River	Route	1995
Hai Phong	Hai Phong-Cau Xi Mang	4300	Vam Co Tay	N3 Vam Co-Tan An	1470
Cam	Hai Phong-Nga Ba Nong	400		Cay Kho-Cho Gao	9270
Han	N3 Nong-N3 Trai Son	400	Tien	Cua Tieu-My Tho	n.a
Thai Binh	N3 Keo-Cong Cau	n.a		My Tho-N3 Sa Dec	7350
Mao Khe	Pha Dun-N3 Trieu	n.a		N3 Sa Dec-Cao Lanh	n.a
Phi Liet	Phu Dun-N3 Trai Son	n.a		Kenh Sa Dec-Lap Vo	6150
Kinh Thay	N3 Trai Son-N3 Trieu	2500		Rach Soi-Hau Giang	1820
	N3 Trieu-N3 Lau Khe	n.a		Rach Gia-Ha Tien	n.a
Da Bach	N3 S.Chanh-Pha Dun	2000		Mang Thit	3530
Ven Bien	H.Gai-N3 S.Chanh	4000		Quan Lo-Phung Hiep	1180
Da	N3 H.Ha-Cang H.Binh	450		Xa No	1160
	Ho Hoa Binh	n.a		Phu Hua Bai Xau	1100
Thuong	N3-My Loc-Pha Lai	n.a	Hau	Cua Dinh An-Can Tho	n.a
	Pha Lai-A Lu	800		Can Tho-Long Xuyen	n.a
Cau	Dap Cau-Pha Lai	n.a	Kenh	Dong Tien-Lagrange	n.a
Tra Ly	N3 Pham Lo-Yhai Binh	n.a			
Luoc	N3 Phuong Tra-Qui Cao	2000			
Nam Dinh	N3 Hung Long-N3 Doc Bo	2000			
Day	N3 Doc Bo-Cang Ninh Binh	1200			
	Cua Day	n.a			
Hong	Yen Bai-Viet Tri	150			
	Viet Tri-Hanoi	1500			
	Hanoi-Hong Chau	400			
	Hong Chau-Phuong Tra	400			
	Phuong Tra-Pham Lo	1200			
	Pham Lo-Hung Long	1200			
	Cua Lach Giang	n.a			
Duong	Cua Dau-My Loc	1200			
Lo	Viet Tri-Bai Bang	1500			
	Bai Bang-Tuyen Quang	n.a			

Note: (-) Statistical data unavailable
Source: TDSI