5 MASTER PLAN

5.1 Approach and Planning Considerations

Objectives[1]

The Master Plan is a ten-year plan that gives a more concrete direction to the country's transport system and services. It has the long-term objective of making Vietnam's transport sector competitive and equitable, where consumer needs are satisfied at minimum cost. The Master Plan aims for a transport sector that sustains a balanced development of the country, protects and enhances the environment, and facilitates international integration at GMS and ASEAN levels as well as globally.

Although VITRANSS' main focus is on improvement and development of the primary and secondary interprovincial transport network and operation, due consideration is also given on the integration and development of the tertiary network and rural and urban transport, so that the entire transport network functions as a system with no missing links or bottlenecks. The VITRANSS does not, of course, make optimistic assumptions that the country will be provided with a brand-new, modern transport infrastructure and equipment within the Master Plan period, but that the country will be effectively integrated, with better-maintained transport system and affordable transport services.

Broad Priorities for the Master Plan

Vietnam's transport sector is constrained in terms of funding capacity. Available resources should thus be effectively allocated. For this, broad priorities have been set in allocating the likely available budget of the government. Broadly, they are as follows:

1) Maintenance, rehabilitation and minor improvements outside the VITRANSS project list. It is assumed that about 20% of the budget envelope will be allocated for this.
2) Projects that remove traffic bottlenecks and strengthen the network to meet the demand.
3) Growth corridors in the north, south and central which are expected to act as engines of national economic growth. Strategic infrastructures for land, water and air transport should be provided and integrated with transport links to the global market and neighboring countries.
4) Strengthening of the north-south integration and facilitation of the smooth movement of goods and people.
5) Urban transport, before congestion chokes the cities, especially in large urban areas.

[1] Whereas the Master Plan in the Study mainly aims to improve and develop interurban transport, it is to be noted that the rural transport issue is also seriously being attended to and has a separate strategy being developed by the government.

Road and Road Transport

In the past decades investment in Vietnam's transport sector was rather concentrated on primary roads and associated with institutional reforms. As a result, road transport has become very competitive and its share in the transport sector has been growing rapidly. The role of road will be more important as the economy grows and diversifies.

An analysis in the Study indicates that further investment in primary roads will become economically less attractive, as other subsectors, such as ports, shipping and railway, become more viable in the future. It also indicates that a balanced development among the available modes is the most economical solution for the future transport network. As a mode which can provide door-to-door service and often functions as the first and end modes of line haulage transport, the potential role of road transport is enormous, including for intermodal transport, containerization and facilitation of cross-border transport.

Establishing a proper road maintenance system with adequate finance is vital for the country's economy because reducing expenditure on maintenance increases vehicle operating costs by a much larger amount; attempts to save money by investing less for road maintenance will cost the country much more in the end. Resolving the main institutional constraints in road maintenance and finance in the next two or three years is necessary to safeguard past and ongoing road transport investments.

The key criteria to identify road projects in the Master Plan are specifically as follows:

1) Primary and secondary road networks[2] will be completed by accelerating the implementation of ongoing and committed projects as well as resolving bottlenecks and developing strategic links with adequate standards and pavement conditions.
2) Bottlenecks which are expected to hinder smooth interprovincial transport will be attended to in advance before the situation becomes critical and therefore costlier especially in and around large urban areas.
3) The second North-South link alternative to NH01 will be developed to comply with the level of demand.
4) International links between the adjoining countries of China, Laos and Cambodia will be improved to all-weather standard. The 14 road links should be prioritized according to demand and international agreements.
5) In general, future investments in roads should undergo a more critical economic evaluation. Prioritization is not only within the road subsector but applies to other transport subsectors as well. Of the identified six major growth corridors, the critical ones are Hanoi-Nam Dinh/Ninh Binh, Hue-Danang-Hoi An, HCMC-Da Lat-Nha Trang and HCMC-Can Tho.

[2] It is proposed in the VITRANSS that the current national roads be reclassified based on function – whether primary or secondary road.

6) Whereas rural roads are given high priority, and projects/programs are underway, network integration and improvement of provincial roads[3] to link them with the primary/secondary network and rural roads should be adequately considered.

The road development plan involves removal of bottlenecks in key places in the strategic network and strengthening of rural access. However, efficiency gains from using modern (often larger) trucks, buses and other motor vehicles require a considerable private sector investment, so creating an attractive business environment in the transport sector is crucial to achieve the benefits from road investment.

To reduce the enormous burden and suffering caused by road accidents, improvements must be made through a range of interventions.

Railway

The gap between the current institutional/operational capacity of VR (constrained by institutional factors and limited management capacity) and its huge potential, is a central issue in the Master Plan. This is a considerable challenge requiring years of reform to establish a commercial framework, a more market-oriented organization and a firm contractual basis for providing state assistance. Until 2005, planned investment is limited to that required to sustain operations, giving time for the railway's institutional capability for handling the proposed investments to be increased. High priority should be given to establishing realistic business plans and a reformed organization to handle potentially much more traffic after 2005.

On condition that institutional constraints are removed and management capacity is adequately provided, the areas of further investment will include the following:

1) Improvement and expansion of the lines in the growth corridors such as Hanoi-Hai Phong (101 km) and Saigon-Bien Hoa (29 km).
2) Following the rehabilitation, the north-south link will be strengthened including constructing additional stations and a new Hai Van Pass tunnel sections.
3) For the links in urban areas, especially in Hanoi and HCMC, anticipated conflict with urban traffic should be prepare attended to by elevating critical sections before the situation becomes unmanageable.
4) Replacement of rolling stocks should be properly undertaken on a strictly commercial basis, that is, if this will contribute to the profitability of railway.

Inland Waterway

The prospects for growth of inland water transport are fairly modest, but significant gains in terms of efficiency can be achieved from major dredging of rivers to allow larger, more efficient vessels to operate. Achieving these benefits requires an

[3] Provincial roads, as well as rural roads, mostly fall under the tertiary category and not adequately covered by the VITRANSS.

attractive business environment so that private investment will be attracted. Ports must be commercialized so that they no longer remain transport bottlenecks which deter use of more efficient vessels.

Regarding infrastructure management, improved maintenance is absolutely crucial so that waterways will not get silted again quickly. This requires efficient dredging maintenance, better maintenance management and a mechanism to ensure a stable fund source for maintenance. The provision of navigational aids that will allow night-time navigation is also essential to raise the vessels' productivity.

Key areas of investment for the Master Plan period are as follows:

1) Improvement and strengthening of inland waterways and related ports along selected growth corridors – Quang Ninh-Hai Phong-Hanoi waterway, Quang Ninh-Pha Lai waterway, Day River (Cua Day-Ninh Binh), Red River (Lac Giang-Nam Dinh-Hanoi), DNC (Day-Ninh Co) canal, Hanoi/Khuyen Luong port, and Ninh Binh/Ninh Phuc port in the north and HCMC-Can Tho waterway, Saigon-Dong Thap Muoi-Long Xuyen waterway, Thi Vai-Nuoc Mau canal, and My Tho/Can Tho IWT ports in the south.
2) Improvement of two international waterways – Han River via Can Tho and Thien River via My Tho to Cambodia – to accommodate larger vessels and provide them with better transport environment.
3) Expansion and improvement of rural IWT including waterways and river ports managed by local governments.
4) Improvement of river transport safety including night-time navigation of heavily trafficked routes (Class A and B route) and improved daytime navigational services in the rest of the routes
5) Upgrading of existing two IWT schools to meet the increasing demand for training of river crew as IWT services expand and modernize.
6) Strengthening of safety standards for IWT vessels and facilitate financing in fleet development.

Maritime

Vietnam's port sector has not adequately kept up with growing demand, hence port congestion has worsened.[4] Investment in Hai Phong and Saigon contributed to the expansion of handling capacity, but critical issues common to Vietnamese ports, such as narrow and shallow water area and inefficient cargo handling, have yet to be solved. Attempts at expansion of the Vietnamese international shipping fleet have also not resulted in increased market shares due to poor competitiveness. On the other hand, coastal shipping has grown year by year and new services, including liner container operation, have commenced. In order for Vietnam to sustain its future economic growth, the development of competitive gateway ports is critical to support efficient and economic international shipping services.

The role of coastal shipping is anticipated to grow substantially not only for conventional bulk goods, but also for general cargo. Short-term port investments are proposed at general-purpose ports, taking into account the scope for port productivity improvement and investment in modern navigational aids. Port planning must be strengthened to minimize overall development costs and avoid adverse environmental impacts. Responsibilities between maritime and inland water transport must be clarified. However, the role of coastal shipping will depend heavily on the extent to which shipping management can be improved and smooth links between coastal shipping and other modes can be established (especially better port services to encourage investment in modern vessels with efficient handling equipment).

To tap private sector investment and foreign know-how, the business environment must be considerably improved in the next five years by reducing the dominant presence of VINALINES and its dual influence over both shipping and ports, and reducing barriers to foreign investment. In addition, new financial mechanisms for modernizing the coastal shipping fleet are required and it is necessary for coastal shipping to pay its fair share of the cost of infrastructure (instead of being subsidized as at present).

Investment areas to be focused on are as follows:

1) Development of an efficient nationwide port network by channeling investments to nine ports (port complex) – Hai Phong Port, Quang Ninh Deep-sea Port (so far, Cai Lan Port), Cua Lo Port, Danang Bay Port System, Qui Nhon Port, Nha Trang Port, Saigon River Ports Group, Vung Tau-Thi Vai Deep-sea Port, and Can Tho Port.
2) Construction or expansion of nine specialized ports to serve specialized shipping such as Dung Quat Port for the exclusive use of oil tankers.
3) Development of international gateway ports in the north, central and south:
   - Quang Ninh Deep-sea Port including expansion of Cai Lan Port with Ha Long Bay environmental protection measures followed by conducting coastal space

[4] Between 1991 and 1998, traffic at MOT ports increased from 796,000 tons to 1.7 million tons (2.1 times), and the total length of berths increased from 6,647 m to 8,267 m.

management study to determine the appropriate gateway port site, then development of additional berths.
  - Danang Bay Port System including expansion of Tien Sa Port by 2005 followed by the development of Lien Chieu Port.
  - Vung Tau-Thi Vai Deep-sea Port including conducting a master plan followed by the development of a deep-sea port at appropriate location(s).
4) Improvement of selected local ports to improve local access and meet the demand.
5) Installation of navigational aids and deployment of SAR ships to enhance maritime safety on Vietnamese waters.
6) Upgrading of seafarers' education to meet international maritime conventions such as STCW-95, SOLAS and ISM Code.
7) Provision of adequate financing institutions to facilitate fleet development.

Ports are expected to take a leading role in developing the hinterland. Developers who promote new industrial estates particularly facing the sea and river, badly need good access ports. These are Vung Ang, Chan May, Ky Ha, Dung Quat, and Cai Sao among others. However, port development should be coordinated with hinterland development to avoid capacity underutilization.

In Vietnam, there are 67 industrial estates: 14 in the north, 13 in the central area and 40 in the south. Only 10 estates successfully lease more than half of their land, all located in the south. Even Nomura Haiphong, nearby Hai Phong Port, the best furnished industrial estate in the north, suffers from low occupancy. Therefore, it would be prudent to examine the viability, timing and location of new ports adjacent to industrial estates.

The VITRANSS guidelines to develop new ports in relation with industrial development are as follows:

- Dung Quat Port will be developed to firstly serve crude oil and refined oil products and then to expand its coverage to general cargo in line with the progress of Dung Quat Industrial Zone development.
- Cai Sao Port will be constructed only after Can Tho Port has no expansion capacity.
- The VITRANSS traffic demand forecast indicates insufficient future traffic at Vung Ang, Chan May, Ky Ha and other industrial estates' related ports to justify their implementation even taking transit cargo intoaccount.

Aviation

This sector is expected to continue to grow rapidly and there is a need for substantial upgrading and development of infrastructure. Better planning and evaluation capacity is required to target investment where it will be justifiable, and infrastructure charges must be revised to finance them on a commercial basis. To meet the required high standards of safety and passenger service, especially under the increasingly liberalized, competitive environment in the region, management of airlines and

airports must be strengthened. This requires commercialization of airports, removal of fares controls and introduction of more competition in the airline industry.

The areas to be covered in the Master Plan are as follows:

1) Establishment of a hierarchical and functional airport network in accordance with ICAO standards including three primary airports (3,600-meter runway, 24-hour operation), three secondary airports (2,000-meter runway, 24-hour operation) and 13 tertiary airports (1,200-2000-meter runway, daytime operation).
2) Upgrading and expansion of the three primary airports of Noi Bai, Danang and Tan Son Nhat.
3) Expansion of three secondary airports – Cat Bi (Hai Phong), Phu Bai (Hue) and Nha Trang – in the designated growth corridors and near famous tourism destinations.
4) Construction of four tertiary airports in Cao Bang, Lao Cai, Dong Hoi, and Chu Lai. Except for Cao Bang the others used to have airports for civil or military use which are still available. Existing nine tertiary airports will be improved to enhance air safety and meet increasing demand.
5) Implementation of the CNS/ATM program submitted by Vietnam to ICAO.
6) Provision of new training equipment for the Civil Aviation Training Center of Vietnam.

Multimodal Transport and Other Aspects

The development of an efficient multimodal transport system in Vietnam is essential to promote foreign trade, requiring both investments in container handling facilities and introduction of new systems. Infrastructure and institutional bottlenecks must be reduced to promote cross-border transport of all types. Policy recommendations support these with proposals for introducing/simplifying the regulatory framework, encouraging foreign participation in investment and targeting government investment in the most effective way.

5.2 Initial Screening and Identification of Master Plan Candidate Projects

In order to choose the projects to be included in the Master Plan up to 2010, the long-listed projects were first grouped under the following categories (see Appendix 5-A):

Group 1: Ongoing/committed projects. Taken as granted in the Master Plan (see Table 5.2.1).

Group 2: Projects proposed in the VITRANSS as candidate projects. These projects will be evaluated and selected for the Master Plan (see Table 5.2.2 and Section 5.3).

Group 3: Projects proposed in the VITRANSS as long-term projects, therefore excluded from the Master Plan.

Group 2 projects are composed of (1) transport equipment, such as rolling stock, vessels and aircraft, which are basically attended to by operators depending on financial viability (4 projects), (2) projects related to safety and training (4 projects) and (3) infrastructure projects (95 infrastructure projects and 15 equipment/ facilities/system projects), as is shown in Table 5.2.2. These projects are also categorized by subsector, as follows:

Road:
(1) Primary road network development (8 projects)
(2) Secondary road network development (20 projects)
(3) Road safety promotion (1 project)
(4) Expressways (9 projects)

Railway:
(1) Rehabilitation and minor improvement (4 projects)
(2) Capacity expansion of critical sections (14 project)
(3) Construction of new lines (4 projects)
(4) Operation and rolling stock improvement (2 projects)

IWT:
(1) Port improvement (9 projects)
(2) Waterway improvement (12 projects)
(3) Fleet and safety improvement (2 projects)

Port & Shipping:
(1) Port expansion/development (10 projects)
(2) Operation and safety improvement (6 projects)

Air:
(1) Airport expansion/development (6 projects)
(2) Construction of air traffic terminal (10 projects)
(3) Aircraft procurement (1 project)

The total costs of these candidate projects are roughly US$ 26 billion.

Table 5.2.1
List of Major Ongoing/Committed Projects

Project	Original Schedule	Implementing Agency	Project Cost (million US$)		Fund Source
			Total	2001-	
I. Road					
1. Highway Rehabilitation Project II (Vinh-Dong Ha; 100km)	1997-2000	MOT	236.6	23.7	WB
2. Highway Rehabilitation Project III (Can Tho-Nam Can; 230km)	2000-2004	MOT	180.0	180.0	WB
3. Highway Rehabilitation Project (Hanoi-Lang Son; 190km)	1997-2000	MOT	162.5	16.3	ADB
4. 2nd Road Development (Nha Trang-Quang Ngai; 600km)	1999-2002	MOT	163.0	81.5	ADB
5. Trans Asia Highway Project (NH22 to Cambodia; 80km)	1999-2002	MOT	144.7	144.7	ADB
6. East-West Corridor Project (ASEAN 8; NH9; 75km)	1999-2003	MOT	30.0	24.0	ADB
7. Bridge Rehabilitation Project - Phase I (435km)	1995-2000	MOT	162.2	16.2	JBIC
8. National Highway No.5 Improvement Project (remaining section, 91km)	1995-2000	MOT	215.6	21.6	JBIC
9. Bridge Rehabilitation Project - Phase II (752km)	1996-2001	MOT	211.0	105.5	JBIC
10. Hai Van Pass Tunnel (2 lanes, 14km)	1998-2003	MOT	251.0	225.9	JBIC
11. NH No.18 Widening Projects - Phase 2 (remaining section, 70km)	1998-2003	MOT	232.0	232.0	JBIC
12. National Highway No.10 Upgrading Project (147km)	1998-2003	MOT	302.0	302.0	JBIC
13. Can Tho Bridge Construction	2000-2004	MOT	294.0	294.0	JBIC

Project	Original Schedule	Implementing Agency	Project Cost (million US$)		Fund Source
			Total	2001-	
14. Thanh Tri Bridge Construction	2000-2004	MOT	410.0	410.0	JBIC
15. Bai Chay Bridge Construction	2000-2004	MOT	98.0	98.0	JBIC
16. Binh Bridge Construction	2000-2004	MOT	80.0	80.0	JBIC
17. Trans HCMC Highway Project (21.4km)	2000-2004	MOT	758.6	758.6	JBIC
18. My Thuan Bridge (1,535m)	1997-2000	MOT	79.3	15.9	Australia
19. East-West Corridor Project (ASEAN 7A; NH12A, 29; 120km)		MOT	65.0	39.0	GOV
20. Rehabilitation and Upgrading of Ho Chi Minh Highway (Hoa Lac – Ngoc Hoi)	2000-2003	MOT	380.0	380.0	GOV
21. Rehabilitation of NH 14	2000-2003	MOT	15.0	15.0	GOV
Subtotal			**4,470.5**	**3,463.9**	
II. Railway					
1. Hanoi-HCMC Railway Bridge Rehabilitation	1995-2001	VR	104.0	47.0	JBIC
2. Signal and Telecommunication Systems (Hanoi-Vinh)	1997-	VR	9.4	9.5	France
3. Tunnel Repair at Hai Van Pass (study)	1997-	VR	8.4	8.4	France
Subtotal			**121.8**	**64.9**	
III. Inland Waterway					
1. Ninh Phuc Port Expansion	1995-	VIWA	9.0	7.1	GOV
2. Waterway Improvement in Dong Thap Muoi-Long Xuyen Quadrangle	1996-	VIWA	7.1	5.3	GOV
3. Inland Waterway and Port Rehabilitation	1997-2003	VIWA	73.0	58.4	WB
4. Vietnam Inland Waterways Project	1998-2002	VIWA	0.8	0.4	CIDA
5. Upgrading of Inland Waterway School No.1	1997-2002	MOT	1.2	0.6	Netherlands
Subtotal			**91.1**	**71.8**	
IV. Ports & Shipping					
1. Cai Lan Port Expansion Project	1996-2001	VINAMARINE	108.4	108.4	JBIC
2. Hai Phong Port Rehabilitation Project - Phase 2	2000-2010	VINALINES	141.0	141.0	JBIC
3. Danang Port Improvement Project	1999-2003	MOT	113.0	113.0	JBIC
Subtotal			**362.4**	**362.4**	
V. Air					
1. Noi Bai International Airport Development Project	1996-2002	CAAV/NAA	57.1	17.1	GOV
2. New Passenger Terminal Building (T1) Construction at Noi Bai	1995-2001	CAAV/NAA	80.0	24.0	GOV & Credit Loans
3. Expansion of Int'l Passenger Terminal Bldg in Tan Son Nhat	1999-2002	CAAV/SAA	12.0	6.0	SAA
4. Airfield Pavement Overlay in Tan Son Nhat Intern'l Airport	1999-2001	CAAV/SAA	16.0	14.4	SAA
5. New Aircraft	2000-2003	VAC	500.0	400.0	VAC & Credit Loans
Subtotal			**665.1**	**461.5**	
VI. Rural Transport					
1. Rural Transport Project I	1996-2001	MOT	60.9	12.0	WB
2. Rural Transport Project II	2000-2005	MOT	145.3	116..0	WB/DFID/GOV
3. Rural Access Project	1998-2000	MOT	1.3	0.0	DFID
4. Rural Infrastructure Devt and Living Standard Improvement Proj (Loan II) *	1998-2002	MPI	133.0	40.0	JBIC
5. Tra My Rural Infrastructure Development	1998-2001	UNCDF/District	1.3	0.4	AusAID
Subtotal			**341.8**	**168.4**	
VII. Urban Transport					
1. Transport Infrastructure Development in Hanoi	2000-2005	HPC	113.7	113.7	JBIC
2. Urban Transport Improvement	1998-2002	TUPWS (Hanoi,HCMC)	45.0	22.5	WB
Subtotal			**158.7**	**136.2**	

TOTAL	**6,180.2**	**4,717.1**	
TOTAL (excluding fleets, aircraft)	**5,680.2**	**4,317.1**	

Note: Exchange rates: US$ 1 is equivalent to VND 14,000, JY 110, FF 6.18, A$ 1.55 and CAN$ 1.46
* amount of project cost is only for the road

Table 5.2.2
List of Candidate Projects with Brief Description

Sector	Project No.	Project	Description	Cost[1)] 2001- (M US$)
Road	***Primary Road Network Development Projects***			
	H10	National Highway No.1 Urban Bypass (Hanoi-HCMC; 70km)	To construct an urban bypass in five major towns (Thanh Hoa, Vinh, Dong Hoi, Dong Ha, Quang Ngai) to ease traffic congestion and segregate through traffic to enhance traffic safety.	67.0
	H14	Hanoi Ring Road	To provide bypass and alternative routes to traffic passing through or going to Hanoi City that will link all major radial arterials in the outskirts of the urbanized area. This project includes constructing new bridges.	256.0
	H19	National Highway No.1 Hanoi - Ninh Binh Widening Project (80km)	To widen the road to a four-lane dual carriageway to accommodate future traffic demand which is expected to increase rapidly due to industrialization.	76.0
	H20	National Highway No.70 Upgrading Project (Hanoi-Lao Cai; 191km)	To improve all the narrow, winding sections of the road, one of the important international links between Hanoi and Yunnan, China and the primary access to the northern mountainous provinces.	125.0
	H22	National Highway No.21 Upgrading Project (80km)	To upgrade to the 2-lane design standard. This highway, which will links NH10, NH1, NH6, and NH32, will provide the road network in the south of Hanoi, a potential area of economic growth.	58.0
	H23	East-West Corridor Project (ASEAN 7; NH8, 8B; 110km)	To upgrade to the 2-lane design standard. This highway is one of ASEAN's primary east-west corridors, linking Vientiane in Lao and Vinh (Cua Lo) Port in Vietnam. .	90.0
	H26	National Highway No.40 Upgrading Project (ASEAN 7B,24km)	To upgrade to the 2-lane design standard in line with H11. This highway is one of ASEAN's primary east-west corridors, linking Pakse in Lao and Danang Port in Vietnam.	14.0
	H27	Rehabilitation (NH19, 20, 24, 26, 27, 28)	To upgrade the access roads from NH01 to the Central Highlands to primary and secondary design standards. The roads will form a road network that will encourage rural economic development.	150.0
	Secondary Road Network Development			
	H31	Hanoi-Cao Bang (NH3) Improvement (310km)	To improve this primary access between Hanoi and the northern mountainous provinces to the standard of a 2-lane secondary road.	148.0
	H32	Hanoi-Ha Giang (NH2) Improvement (300km)	To improve this primary access between Hanoi and the northern mountainous provinces to the standard of a 2-lane secondary road.	137.0
	H33	Hanoi-Dien Bien Phu (NH6) Improvement (468km)	To improve this primary access between Hanoi and the northern mountainous provinces to the standard of a 2-lane secondary road. This is also the access road to Vientiane via the northern route, Loa.	223.0
	H34	Hanoi-Lai Chau (NH32) Improvement (390km)	To improve NH32, a primary access in the area west of Red river. This road will be within the economic influence area of the future Metropolitan Hanoi.	200.0
	H35	North C1 (North-East Ring, NH5-NH3, NH37; 150km)	To develop the outer, northeastern ring road of the future metropolitan region, linking with primary radial roads.	101.0
	H36	North C1 (North Ring, NH3-NH70, NH37; 115km)	To develop the outer, north ring road of the future metropolitan region, linking with primary radial roads.	122.0
	H37	North C1 (West-South Ring, NH70-NH1, NH379/15/47; 295km)	To develop the outer, southwest ring road of the future metropolitan region, linking with primary radial roads. The area is mountainous and has less traffic.	216.0
	H38	North C2 (North-East Ring, NH5-NH3, NH279; 255km)	To develop the northeast ring road in the northern mountainous region that will provide better access to the rural area and promote growth. The area, however, has a steep terrain and less traffic demand.	171.0
	H39	North C2 (North Ring, NH3-NH70, NH279/1B; 120km)	To develop the north ring road in the northern mountainous region that will provide better access to the rural area and promote growth. The area, however, has a steep terrain and less traffic demand.	83.0
	H40	North C2 (North-West Ring, NH70-NH6, NH279; 150km)	To develop the northwest ring road in the northern mountainous region that will provide better access to the rural area and promote growth. The area, however, has a steep terrain and less traffic demand.	107.0
	H41	Cua Ong-Bac Luan (NH18) Road Improvement (130km)	To improve the road linking Vietnam and China passing through the coastal area to promote tourism in Ha Long.	92.0
	H42	Hung Yen-Thai Binh Road (NH39) Improvement (100km)	To improve the road to the standard of a 2-lane route to the Red Delta area, southeast of Hanoi. This road will provide a better access to the high-density population and future industrialized area.	124.0
	H43	HCMC-My Tho Road (NH50) Improvement (80km)	To improve the road passing through future urban areas south of HCMC, including construction of one long-span bridge. This will be an alternative route of NH01between My Tho and HCMC via Go Cong.	79.0
	H44	My Tho-Soc Trang Route (NH60) Improvement (120km)	To improve the road linking coastal provinces (from My Tho, Ben Tre, Tra Vinh and to Soc Trang) in the Mekong Delta. Ferries connect the road in 4 main river crossings.	235.0

1/ The cost shown is only the one allocated after 2001

Cont. Table 5.2.2

Sector	Project No.	Project	Description	Cost[1] 2001- (M US$)
	H45	Can Tho-Ha Tien (NH80) Improvement (200km)	To upgrade the road, an important arterial road for Can Tho and Kien Giang provinces, to promote industrialization in the Mekong Delta.	197.0
	H46	Can Tho-Kien Giang-Ca Mau Route (NH61, 63) Improvement (200km)	To improve the access road in the country's most southern region, including construction of small and medium-size bridges for the many rivers and canals. The area is flood-prone.	197.0
	H47	Ho Chi Minh Highway Extn (NH2) (Chan-Thanh-An Giang; 60km)	To construct two new North-South axes running parallel to NH01, from Chan Thanh (NH13) to An Giang (NH80).	58.0
	H48	NH22B Improvement (Go Dau-Xau Mai; 80km)	To improve the secondary cross-border link to Phnom Penh, Cambodia, to a 2-lane design standard.	55.0
	H49	Secondary Road Network rehabilitation Program	To rehabilitate the road and assure minimum traffic function as secondary network. The road has small traffic demand, hence its priority will be comparatively low.	94.0
	H50	Tertiary Road Improvement Project	To rehabilitate the tertiary road network and provide an all-weather access route to all the rural centers.	569.0
	Road Safety			
	H52	Road Safety Improvement Program	To identify accident-prone areas and implement preventive measures including education, enforcement and campaign, etc.	30.0
	Expressway			
	H53	North-South Expressway 1 (Hanoi-Vinh, 310km)	To develop the third North-South axis with modern road facilities. The expressway, which will have a 4-lane dual carriageway and access control, will be in a high economic growth corridor.	930.0
	H54	North-South Expressway 2 (Vinh-Hue, 400km)	To develop the third North-South axis with modern road facilities. The expressway, which will have a 4-lane dual carriageway and access control, is expected to have less traffic demand.	1,200.0
	H55	North-South Expressway 3 (Hue-Danang, 100km)	To develop the third North-South axis with modern road facilities. The expressway, which will have a 4-lane dual carriageway and access control, is expected to promote economic growth in the central region.	300.0
	H56	North-South Expressway 4 (Danang-Nha Trang, 550km)	To develop the third North-South axis with modern road facilities. The expressway, which will have a 4-lane dual carriageway and access control, is expected to have a comparatively low demand.	1,650.0
	H57	North-South Expressway 5 (Nha Trang-HCMC, 420km)	To develop the third North-South axis with modern road facilities. The expressway, which will have a 4-lane dual carriageway and access control, is expected to strengthen tourism development in the area.	1,260.0
	H58	Noi Bai-Ha Long Expressway (150km)	To develop an expressway, which will have a 4-lane dual carriageway. It is expected to strengthen infrastructure development in one of the leading corridors for industrial development in the north (Hanoi).	750.0
	H59	HCMC-Vung Tau Expressway (90km)	To develop an expressway, which will have a 4-lane dual carriageway. It is expected to strengthen infrastructure development in one of the leading corridors for industrial development in the south (HCMC).	450.0
	H60	HCMC-Can Tho Expressway 1 (HCMC-My Tho; 50km)	To develop an expressway, which will have a 4-lane dual carriageway. It is expected to alleviate the traffic congestion on NH01 and enhance accessibility between the national (HCMC) and regional centers (Can Tho), thus promoting economic growth. Higher traffic demand is estimated in this section, due to rapid urbanization.	350.0
	H61	HCMC-Can Tho Expressway 2 (My Tho-Can Tho; 80km)	To develop an expressway, which will have a 4-lane dual carriageway. It is expected to alleviate the traffic congestion on NH01 and enhance accessibility between the national (HCMC) and regional centers (Can Tho), thus promoting economic growth. Higher traffic demand is estimated in this section, due to rapid urbanization. (Phase 2)	560.0
		Subtotal		**11,524.0**
Railway	***Rehabilitation and Minor Improvement***			
	R02	Rehabilitation of Tracks & Bridges	To rehabilitate 40 bridges and 1,300 km of tracks, widen formation level width (1,300 km) and introduce Multiple Tie Tampers (MTT) for all VR lines.	325.0
	R04	Hai Van Pass Tunnel	To construct Hai Van Pass tunnel (10 km) with double tracking and install electricity on Danang - Hue section.	389.0
	R05	Signal and Communication Equipment Modernization	To modernize signals and switches, provide optical fiber cable and install Automatic Train Stop (ATS).	128.0
	R07	Alarm at Crossings	To install alarm and barriers at approximately 600 crossings to prevent accidents.	21.0
	Capacity Expansion of Critical Sections			
	R08	New Stations for Train Exchange (100 stations)	To establish new stations for train exchange at sections with more than 10-km distance between existing stations.	26.0
	R09	New Stations for Commuters (30 stations)	To establish new stations for commuters in big cities such as Hanoi and HCMC.	8.0
	R10	Large Scale Freight Stations (30 stations)	To establish large-scale freight stations at every 100-km distance.	486.0

1) The cost shown is only the one allocated after 2001

Cont. Table 5.2.2

Sector	Project No.	Project	Description	Cost[1] 2001- (M US$)
	R11	Bien Hoa - Saigon section (29.4km)	To install double tracks and electricity on Saigon-Bien Hoa section and to construct grade separation of Saigon-Go Vap at a cost of US$ 80 million.	130.0
	R12	Hanoi – Hai Phong section (101.4km)	To install double tracks and electricity on Hanoi-Hai Phong section and construct grade separation on Hanoi-Gia Lam section at a cost of US$ 98 million.	293.0
	R13	Hanoi - Giap Bat section (5.4km)	To install double tracks and electricity on Hanoi-Giap Bat section and construct grade separation in this section at a cost of US$ 93 million.	32.0
	R14	Giap Bat - Phu Ly section (51km)	To install double tracks and electricity on Giap Bat - Phu Ly section.	129.0
	R15	Gia Lam - Yen Vien section (5.3km)	To install double tracks and electricity on Gia Lam - Yen Vien section.	13.0
	R16	Hanoi - HCMC line (Phu Ly - Hue; 632km)	To install double tracks and electricity on Hanoi-HCMC Line (Phu Ly-Hue).	1,173.7
	R17	Hanoi - HCMC line (Danang - Bien Hoa; 906km)	To install double tracks and electricity on Hanoi-HCMC Line (Danang-Bien Hoa).	1,682.6
	R18	Yen Vien - Viet Tri (62km)	To install double tracks and electricity on Yen Vien-Viet Tri section.	115.1
	R19	Dong Anh - Ton Dong (5km)	To install double tracks and electricity on Dong Anh-Ton Dong section.	9.3
	R20	Bac Hong - Van Dien (40km)	To install double tracks and electricity on Van Dien-Bac Hong section.	74.3
	R21	Single Tracking (Mao Khe - Ha Long; 48km)	To install new 1000-mm gauge track on the Mao Khe-Ha Long section.	75.4
	New Lines			
	R22	Saigon - My Tho (70km)	To construct a new line connecting Saigon and My Tho in the Mekong Delta.	382.0
	R23	My Tho - Can Tho (100km)	To construct a new line extending from My Tho to Can Tho in the center of Mekong Delta.	450.0
	R24	Short-cut Line (Phu Thai - Mao Khe; 15km)	To construct a shorter line connecting Phu Thai in Hanoi-Haiphong line to Mao Ke in Ha Long line.	31.1
	R25	HCMC - Vung Tau (80km)	To construct a new line connecting HCMC (Thu Duc in HCMC-Hanoi line) and Vung Tau.	360.0
	Operation			
	R26	Rolling Stock Acquisition	To install a number of rolling stocks such as diesel/electric locomotives, passenger cars, freight wagons and EMUs.	1,882.0
	R28	CTC and Computerization	To install a CTC (Centralized Train Control) system and computer system for ticketing and work management.	136.0
		Subtotal		**8,351.5**
Inland Waterway	***Port Improvement***			
	W01	Hanoi/Khuyen Luong Port Improvement	To expand the berth and warehouse and purchase cargo handling equipment, such as crane and forklift, for ports located along the Red River near the capital.	11.0
	W05	Viet Tri Port Improvement	To expand the berth and warehouse and purchase cargo handling equipment, such as crane and forklift, for the port located along the Red River and Lo River.	3.5
	W07	Hoa Binh Port Improvement	To expand the berth and warehouse and purchase cargo handling equipment, such as crane and forklift, for the port located along the Da River.	4.0
	W10	Vinh Thanh (Vinh Long) Port Improvement	To expand the berth and purchase cargo handling equipment, such as crane and forklift, for the port located along the Co Chien River connecting with the Tien Giang River.	4.3
	W12	Ca Mau Port Improvement	To expand the berth and warehouse and purchase cargo handling equipment, such as crane and forklift, for the port located along the Ganh Hao River.	2.9
	W14	Cao Lanh (Dong Thap) Port Improvement	To expand the berth and warehouse and purchase cargo handling equipment, such as crane and forklift, for the port located along the Tien Giang River.	6.4
	W16	My Thoi (Long Xuyen) Port Improvement	To expand the berth and warehouse and purchase cargo handling equipment, such as crane and forklift, for ports located along the Hau Giang river.	6.2
	W18	Passenger Terminal Development	To construct a wharf and passenger terminal facility at each port in Hanoi and Hai Phong (north) and HCMC and Can Tho (south).	2.2
	W20	Other Local Port Development	To establish a local river port in each province in the delta regions and some provinces in central Vietnam. Each port will have the minimum facility to ensure efficient operation.	47.7
	Waterway Improvement			
	W22	Quang Ninh-Hanoi/Pha Lai Waterway Improvement	To dredge the waterway and increase its transport capacity and ensure safe navigation. The project will also involve rehabilitation of groynes and the Duong bridge.	13.9
	W23	Ninh Binh/Nam Dinh-Hanoi Waterway Improvement	To dredge the waterway and increase its transport capacity and ensure safe navigation. The project will also involve rehabilitation of groynes and the development of the DNC (Day/Ninh Co) canal.	19.9

1) The cost shown is only the one allocated after 2001

Cont. Table 5.2.2

Sector	Project No.	Project	Description	Cost[1)] 2001- (M US$)
	W24	Quang Ninh-Nam Dinh/Ninh Binh Waterway Improvement	To dredge the waterway and increase its transport capacity and ensure safe navigation. The project will also involve rehabilitation of groynes and correction of bends.	6.0
	W25	Hanoi-Viet Tri-Lao Cai Waterway Improvement	To improve the waterway, a potential route for trade with China. Major improvements are dredging, rehabilitation of groynes and Red River embankment in Hanoi.	74.0
	W27	Viet Tri - Tuyen Quang/Hoa Binh Waterway improvement	To dredge and improve the waterway to increase transport capacity and ensure safe navigation.	3.6
	W28	Pha Lai - Thai Nguyen/Bac Giang Waterway Improvement	To dredge and improve the waterway to increase transport capacity and ensure safe navigation.	3.6
	W33	Thi Vai-Nuoc Man Canal Development	To improve the waterway which is expected to be a new route directly connecting Thi Vai and Saigon Port. Major improvements are capital dredging for expansion of channels.	3.2
	W34	HCMC - Moc Hoa/Ben Keo/Ben Suc Waterway Improvement	To dredge and improve the waterway to increase transport capacity and ensure safe navigation.	6.5
	W35	Da River and Hoa Binh Port Improvement in Hoa Binh Lake	To contribute a new power plant at Son La, upstream from Hoa Binh. Navigation aids will be installed on this route.	2.1
	W36	Cuu Long-Cambodia Waterway Improvement	To dredge Can Tho-Tan Chau route (Hau River) and Cua Tieu-Cho Moi route (Tien River) to allow passage of 5,000 DWT ships. These are important waterways for international transport to/from Cambodia.	20.5
	W37	Island Service Improvement (Co To and Cat Ba Islands)	To install navigation aids on the major route to/from Co To and Cat Ba islands to ensure safe navigation and to support linkage between remote islands and the mainland.	2.5
	W38	Island Service Improvement (Other Islands)	To install navigation aids on these minor routes to ensure for safe navigation and to support linkage between remote islands and the mainland.	4.6
		Operation & Safety		
	W39	IWT Safety Enhancement	To install navigation aids and equipment for rescue and salvage operations thus promoting safe navigation in inland waterway transport.	52.7
	W43	IWT Fleet Development	To install a number of IWT fleets such as tag boats, barges, self-propelled vessels, small boat and oil tanker for cargo and passenger ships.	191.9
		Subtotal		**493.2**
Port & Shipping	***Port Expansion/Development***			
	P05	Cua Lo Port Project	To expand berths (660 m), purchase cargo handling equipment and construct anti-siltation dike to increase port capacity from 0.3 million tons/year to 2.6 million tons/year. The project will contribute to East-West transport corridor development.	49.3
	P07	Danang Bay - Lien Chieu Port Development	To construct a new port in the central region, located 15 km west of Danang city. The port, designed to cater to 30,000 DWT container vessels, will have a depth of -12 m.	158.0
	P10	Specialized Port for Dung Quat Industrial Zone	To construct general-cargo berths (820 m), berths for discharging crude oil and loading domestic oil for Oil Refinery No.1 and the planned industrial zone in Dung Quat.	130.0
	P12	Qui Nhon Port Development	To expand berths and the pier and purchase cargo handling equipment to increase port capacity up to 3.5 million tons/year.	36.0
	P14	Nha Trang Port Development	To expand berths, pier and storage area and purchase cargo handling equipment to increase port capacity up to 2 million tons/year.	57.0
	P16	Ho Chi Minh City General Port	To expand the ports in the HCMC area to increase their capacity from 17.5 million tons/year to more than 21 million tons/year.	200.0
	P18	Baria Vung Tau General Port	To expand the ports in Baria Vung Tau and increase their capacity to accommodate the estimated 21 million tons of general cargoes including containers. Baria Vung Tau province is the industrial center of southern Vietnam.	206.0
	P20	Can Tho Port Development	To increase port capacity up to 3 million tons/year by upgrading and widening of berths, ware house and yards, and new port zone at Cai Sau, and improvement of access channel from river mouth.	64.0
	P22	Industrial Port Development	To improve facilities of industrial ports handling bulky cargoes such as cement, coal and petroleum. There are 4 cement ports, 2 coal ports and 2 oil ports.	67.0
	P24	Other Local Ports	To improve berths and cargo handling equipment at local ports. There are 4 ports in the north and 9 ports in the central.	22.7
	Operation & Safety			
	P26	Port EDI System at Gateway Ports	To install EDI (Electronic Data Interface) system at international ports, VINAMARINE and port authorities.	10.0

1/ The cost shown is only the one allocated after 2001

Cont. Table 5.2.2

Sector	Project No.	Project	Description	Cost[1] 2001- (M US$)
	P27	Large-scale ICD Development Project	To establish two large scale ICD (Inland Container Depot) at convenient intermodal connection sites in the north and south of VN.	72.2
	P29	Fleet Expansion and Modernization Program	To expand and modernize oceangoing vessels, coastal serving vessels including container and container equipment.	1,407.0
	P31	Development of Aids to Navigation (ATN)	To install ATN (Aids to Navigation) equipment and facilities including visual ATN, electronic ATN and other ATN support equipment and facilities.	63.6
	P33	Maritime SAR and Oil Spill Protection	To install maritime SAR (Search and Rescue) equipment such as rescue ships, high-speed canoe, lift buoy and life raft and to purchase oil spill protection equipment for the area of Hai Phong, Danang and Vung Tau.	52.8
	P35	Seafarers' Education Upgrading Project	To upgrade facilities, training program, curricula, syllabi and instructors of VIMARU (Vietnam Maritime University in Hai Phong and HCMC) and MTTS (Maritime Technical and Training School in Hai Phong and HCMC).	20.9
		Subtotal		**2,616.5**
Air	***Airport Expansion/Development***			
	A03	Noi Bai Airport Development Project - Phase 1	To expand passenger terminal building up to capacity of 6-6.5 million per annum. Existing domestic passenger terminal building is converted to cargo terminal.	53.9
	A05	Danang International Airport Development Project - Phase 1	To expand capacity of Danang International Airport to be able to handle 3 million passengers per annum.	77.7
	A09	Tan Son Nhat International Airport Development Project	To construct new international passenger terminal building with capacity of 8 million passengers per annum. The existing international terminal building is used for domestic passengers.	226.7
	A11	Secondary Airport Development Project (Cat Bi, Phu Bai, Nha Trang)	To expand the capacity of secondary airports such as Cat Bi in Hai Phong, Phu Bai in Hue and Nha Trang.	85.6
	A13	New Airport Construction Project (Cao Bang, Lao Cai, Dong Hoi, Chu Lai)	To construct new airport in Cao Bang and Lao Cai in the north and Dong Hoi and Chu Lai in the central.	83.6
	A14	Rehabilitation of Tertiary Airports - Phase 1 (9 airports)	To improve airport facilities to enhance safety and meet future traffic demand. The project covers the nine airports of Dien Bien Phu, Na San, Vinh, Plei Ku, Phu Cat, Lien Khuong, Buon Ma Thuot, Rach Gia and Phu Quoc.	120.8
	Air Traffic Control			
	A16	Reconstruction of HCM Area Control Center and Noi Bai Air Traffic Management Center	To replace the existing HCM ACC with a new equipment and construct a new building for air traffic management using CNS/ATM systems and techniques at Noi Bai Airport.	58.0
	A17	Provision of Navigation Aids in Secondary Airport (Cat Bi, Phu Bai, Nha Trang)	To Install an Instrument Landing System (ILS) and DVOR/DME in secondary airports (Cat Bi, Phu Bai and Nha Trang).	4.5
	A18	Provision of Control Tower System Packages and Automatic Weather Observation Stations (AWOS) in 4 New Airports	To install control tower packages and Automatic Weather Observation Stations (AWOS) in 4 new airports (Cao Bang, Chu Lai, Dong Hoi and Lao Cai).	1.3
	A19	Communication and Navigational Equipment Replacement Program	To replace antiquated navigational equipment and install new equipment such as DME in Phan Thiet, 6 NDBs, voice logging equipment and other communications and navigation equipment.	12.2
	A20	Equipment Installation and Upgrading Project for New CNS/ATM -Phase 1	To install various equipment to meet the new CNS/ATM requirements for 2001-2005 (Radar Renewal, ATN, Multimode VHF, HF Digital Link, SAR and ATIS).	32.8
	A21	Equipment Installation and Upgrading Project for New CNS/ATM - Phase 2	To install various equipment to meet the new CNS/ATM requirements for 2006-2010 (AIS, GAS, MET, ADS-B and other communication and navigation equipment).	10.9

1) The cost shown is only the one allocated after 2001

Cont. Table 5.2.2

Sector	Project No.	Project	Description	Cost[1] 2001- (M US$)
	A22	Restructuring of Air Traffic Service - Direct Speech (ATS-DS) Circuits and Aeronautical Fixed Telecommunications Network (AFTN)	To restructure ATS-DS Circuits and prepare them for the transfer of control to Hanoi ATM Center. To restructure the AFTN Circuit and prepare it for the transfer of all Vietnam Airspace to Hanoi.	2.5
	A23	Rehabilitation of Civil Aviation Training Center of Vietnam (CATCV)	To upgrade the training facilities in CATCV such as the Air Traffic Control (ATC) procedural trainer, ATC radar simulator, multimedia language laboratory and other necessary training equipment.	3.0
	A24	Flight Calibration of Navigation Aids	To contract out, through an annual bidding process, to a specialist agency the certification of the safe anb satisfactory performance of the navigation aids in Vietnam.	1.1
	A25	Test Equipment Replacement and the Equipment Standards Laboratory	To replace old and worn-out test instruments used for the maintenance of communications and navigation aids and establish a laboratory for the calibration of test equipment.	1.9
	Aircrafts			
	A33	Aircraft Purchase	To purchase new aircraft to cope with future passenger demand and provide better service.	1,889.0
		Subtotal		**2,665.5**
		TOTAL		**25,650.7**

1) The cost shown is only the one allocated after 2001

5.3 Evaluation of Master Plan Candidate Projects

Methodology

The candidate projects (a total of 118) have been evaluated primarily from the economic viewpoint because the nature of the VITRANSS projects is to serve interprovincial level of transport needs. Some candidate projects which are difficult to be assessed quantitatively are prioritized based on the judgement of the Study Team. A total number of 110 projects underwent evaluation, 95 of which were evaluated quantitatively from the economic viewpoint as well as comprehensively.

1) Economic Evaluation

The economic evaluation was done based on the network analysis applied in the Study. Assumptions made in the exercise are as follows:

(1) All projects are implemented in three years (2002-2004) and put to public use in 2005.
(2) Project benefit comprises the savings in operating cost and passenger time cost. This was calculated for 2010 and 2020 and was in interpolated or extrapolated for other years.
(3) Output indicator of the analysis is EIRR (economic internal rate of return). In this economic evaluation, however, the benefit of each project was calculated by allocating the entire economic benefits of the subsector to each project in proportion to the estimated transport cost reduction by the project. Therefore, it is called EI (economic indicator) in this report.

2) Other Evaluation Criteria

Other criteria employed in the project evaluation include the following:

(1) Network integration: Contribution to strengthen the network
(2) International linkage: Contribution to strengthen international linkage
(3) Cost recovery: Opportunity to recover the cost of investment in the project
(4) Social equity/poverty alleviation: Contribution to social equity and poverty alleviation
(5) Environment: Level of impact of the project on the environment
(6) Resettlement and ROW acquisition: Magnitude of requirements for resettlement and right-of-way acquisition

For (1), (2), (3), and (4), the results of qualitative assessment were translated into EI equivalent point according to the following criteria:

- Significant, 3 points are added.
- Moderate, 1point is added.
- Minimal, no point is added.

3) Evaluation of Equipment/Facility/System

The 15 projects which are difficult to evaluate using the above process were evaluated as follows:

- Projects proposed in relation to infrastructure projects are given the same points as the infrastructure projects.
- Projects required by international agreements to be implemented are given higher points.

4) Evaluation Indicator

Thus the result of the project evaluation is a total of EI (%) value and additional points given based on the evaluation of non-economic factors. The evaluation indicator provides the basis for categorizing the projects by priority.

Group A: projects with more than 20 points and higher priority than B
Group B: projects with more than 20 points
Group C: projects with less than 20 points

“A” and “B” projects are considered for inclusion in the Master Plan.

Table 5.3.1 summarizes the assessment of the candidate projects for the Master Plan. In the table, “Environment” and “Resettlement/ROW Acquisition” are the reference information for project implementation not converted to priority points.

Figure 5.3.1
Evaluation Indicator and Project Cost of Master Plan Candidate Projects

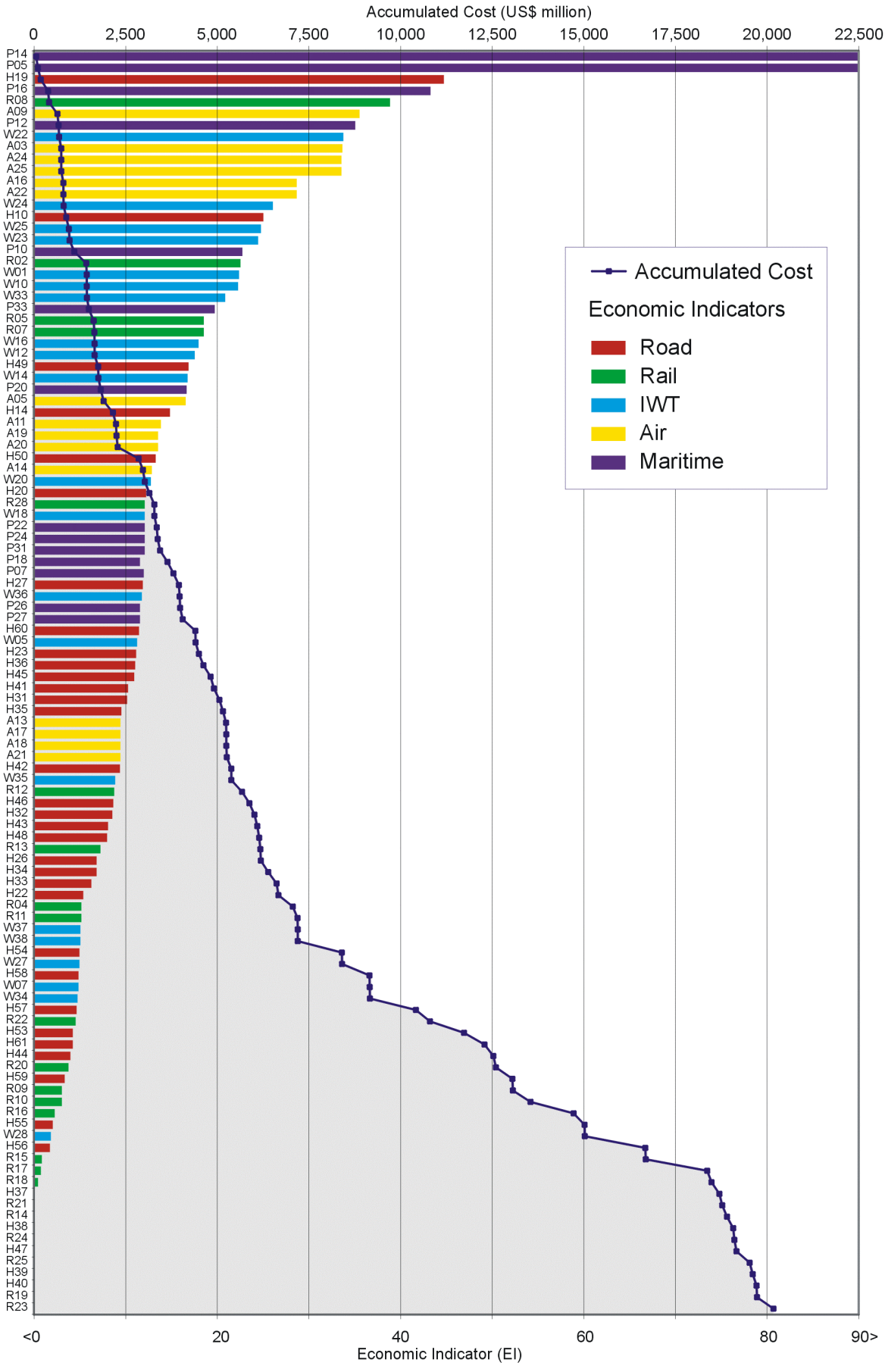

Table 5.3.1
Assessment of Master Plan Candidate Projects

Ranking	Project No.	Project	Project Cost 2001- (M US$)	Accu-mulated Cost (M US$)	Economic Indicator	Network Integ-ration	Int'l Linkage	Cost Recovery	Social/ Equity/ Poverty	Environ-ment	Resettle-ment/ ROW acquisition	Judge-ment (VIT-RANSS)
1	P14	Nha Trang Port Development	57.0	57.0	130	c	b	a	b	c	a	A
2	P05	Cua Lo Port Project	49.3	106.3	98	c	b	a	b	c	a	A
3	H19	National Highway No.1 Hanoi - Ninh Binh Widening Project (80km)	76.0	182.3	54	b	c	c	b	b	c	A
4	P16	Ho Chi Minh City General Port	200.0	382.3	49	c	b	a	b	c	a	A
5	R08	New Stations for Train Exchange (100 stations)	26.0	408.3	47	b	c	b	b	b	c	A
6	A09	Tan Son Nhat International Airport Development Project	226.7	635.0	44	c	a	c	c	a	a	A
7	P12	Qui Nhon Port Development	36.0	671.0	41	c	b	a	b	c	a	A
8	W22	Quang Ninh-Hanoi/Pha Lai Waterway Improvement	13.9	684.9	41	b	c	a	c	c	b	A
9	A03	Noi Bai Airport Development Project - Phase 1	53.9	738.8	39	c	a	a	c	a	a	A
10	A24	Flight Calibration of Navigation Aids	1.1	739.9	44	b	a	a	c	a	a	A
11	A25	Test Equipment Replacement and the Equipment Standards Laboratory	1.9	741.8	44	c	c	b	c	a	a	A
12	A16	Reconstruction of HCM Area Control Center and Noi Bai Air Traffic Management Center	58.0	799.8	39	c	a	a	c	a	a	A
13	A22	Restructuring of Air Traffic Service - Direct Speech (ATS-DS) Circuits and Aeronautical Fixed Telecommunications Network (AFTN)	2.5	802.3	39	b	a	a	c	a	a	A
14	W24	Quang Ninh-Nam Dinh/Ninh Binh Waterway Improvement	6.0	808.3	33	b	c	a	c	c	a	A
15	H10	National Highway No.1 Urban Bypass (Hanoi-HCMC; 70km)	67.0	875.3	35	c	c	c	b	b	c	A
16	W25	Hanoi-Viet Tri-Lao Cai Waterway Improvement	74.0	949.3	33	b	b	b	c	c	b	A
17	W23	Ninh Binh/Nam Dinh-Hanoi Waterway Improvement	19.9	969.2	32	b	b	b	c	c	b	A
18	P10	Specialized Port for Dung Quat Industrial Zone	130.0	1,099.2	30	c	c	a	b	c	a	A
19	R02	Rehabilitation of Tracks & Bridges	325.0	1,424.2	29	b	b	c	a	a	a	A
20	W01	Hanoi/Khuyen Luong Port Improvement	11.0	1,435.2	26	c	b	a	a	b	a	A
21	W10	Vinh Thai (Vinh Long) Port Improvement	4.3	1,439.5	28	c	b	b	a	b	a	A
22	W33	Thi Vai-Nuoc Man Canal Development	3.2	1,442.7	30	b	c	b	c	b	b	A
23	P33	Maritime SAR and Oil Spill Protection	52.8	1,495.5	30	c	c	c	a	a	a	A
24	R05	Signal and Communication Equipment Modernization	128.0	1,623.5	29	c	b	c	a	a	a	A
25	R07	Alarm at Crossings	21.0	1,644.5	29	c	c	c	a	b	a	A
26	W16	My Thoi (Long Xuyen) Port Improvement	6.2	1,650.7	24	c	b	b	a	b	a	A
27	W12	Ca Mau Port Improvement	2.9	1,653.6	25	c	c	b	a	b	a	A
28	H49	Secondary Road Network rehabilitation Program	94.0	1,747.6	22	a	c	c	a	b	b	A
29	W14	Cao Lanh (Dong Thap) Port Improvement	6.4	1,754.0	23	c	b	b	a	b	a	A
30	P20	Can Tho Port Development	64.0	1,818.0	23	c	b	a	b	c	a	A
31	A05	Danang International Airport Development Project - Phase 1	77.7	1,895.7	24	c	a	b	c	a	b	A
32	H14	Hanoi Ring Road	256.0	2,151.7	25	c	c	c	b	b	c	A

Ranking	Project No.	Project	Project Cost 2001-(M US$)	Accu-mulated Cost (M US$)	Economic Indicator	Network Integ-ration	Int'l Linkage	Cost Recovery	Social/ Equity/ Poverty	Environ-ment	Resettle-ment/ ROW acquisition	Judge-ment (VIT-RANSS)
33	A11	Secondary Airport Development Project (Cat Bi, Phu Bai, Nha Trang)	85.6	2,237.3	23	c	b	b	c	a	a	A
34	A19	Communication and Navigational Equipment Replacement Program	12.2	2,249.5	24	b	a	a	c	a	a	A
35	A20	Equipment Installation and Upgrading Project for New CNS/ATM -Phase 1	32.8	2,282.3	24	c	a	a	c	a	a	A
36	H50	Tertiary Road Improvement Project	569.0	2,851.3	18	a	c	c	a	b	b	A
37	A14	Rehabilitation of Tertiary Airports - Phase 1 (9 airports)	120.8	2,972.1	23	c	c	c	c	a	a	A
38	W20	Other Local Port Development	47.7	3,019.8	23	c	c	c	a	b	a	A
39	H20	National Highway No.70 Upgrading Project (Hanoi-Lao Cai; 191km)	125.0	3,144.8	16	b	a	c	a	b	c	A
40	R28	CTC and Computerization	136.0	3,280.8	22	c	c	c	c	a	a	A
41	W18	Passenger Terminal Development	2.2	3,283.0	22	c	c	b	a	b	a	A
42	P22	Industrial Port Development	67.0	3,350.0	22	c	c	a	b	c	a	A
43	P24	Other Local Ports	22.7	3,372.7	22	c	c	b	b	c	a	A
44	P31	Development of Aids to Navigation (ATN)	63.6	3,436.3	22	c	b	a	a	a	a	A
45	P18	Varia Vung Tau General Port	206.0	3,642.3	18	c	a	a	b	c	a	A
46	P07	Danang Bay - Lien Chieu Port Development	158.0	3,800.3	16	c	a	a	b	c	a	B
47	H27	Rehabilitation (NH19, 20, 24, 26, 27, 28)	150.0	3,950.3	17	a	c	c	a	b	b	B
48	W36	Cuu Long-Cambodia Waterway Improvement	20.5	3,970.8	16	b	a	a	c	b	a	B
49	P26	Port EDI System at Gateway Ports	10.0	3,980.8	22	c	a	a	a	a	a	B
50	P27	Large-scale ICD Development Project	72.2	4,053.0	22	c	b	a	a	b	a	B
51	H60	HCMC-Can Tho Expressway 1 (HCMC-My Tho; 50km)	350.0	4,403.0	18	b	c	a	c	c	c	B
52	W05	Viet Tri Port Improvement	3.5	4,406.5	17	c	b	b	a	b	a	B
53	H23	East-West Corridor Project (ASEAN 7; NH8, 8B; 110km)	90.0	4,496.5	18	b	c	c	a	b	b	B
54	H36	North C1 (North Ring, NH3-NH70, NH37; 115km)	122.0	4,618.5	20	b	c	c	b	b	b	B
55	H45	Can Tho-Ha Tien Improvement (200km)	197.0	4,815.5	19	b	b	c	b	c	b	B
56	H41	Cua Ong-Bac Luan (NH18) Road Improvement (130km)	92.0	4,907.5	19	c	b	c	b	b	b	B
57	H31	Hanoi-Cao Bang (NH3) Improvement (310km)	148.0	5,055.5	14	a	b	c	a	b	b	B
58	H35	North C1 (North-East Ring, NH5-NH3, NH37; 150km)	101.0	5,156.5	19	b	c	c	b	b	b	B
59	A13	New Airport Construction Project (Cao Bang, Lao Cai, Dong Hoi, Chu Lai)	83.6	5,240.1	19	c	c	c	b	b	b	B
60	A17	Provision of Navigation Aids in Secondary Airport (Cat Bi, Phu Bai, Nha Trang)	4.5	5,244.6	19	b	a	a	c	a	a	B
61	A18	Provision of Control Tower System Packages and Automatic Weather Observation Stations (AWOS) in 4 New Airports	1.3	5,245.9	19	c	c	a	c	a	b	B
62	A21	Equipment Installation and Upgrading Project for New CNS/ATM - Phase 2	10.9	5,256.8	19	c	a	a	c	a	a	B
63	H42	Hung Yen-Thai Binh Road (NH39) Improvement (100km)	124.0	5,380.8	19	c	c	c	b	b	b	B

Ranking	Project No.	Project	Project Cost 2001- (M US$)	Accu-mulated Cost (M US$)	Economic Indicator	Network Integ-ration	Int'l Linkage	Cost Recovery	Social/ Equity/ Poverty	Environ-ment	Resettle-ment/ ROW acquisition	Judge-ment (VIT-RANSS)
64	W35	Da River and Hoa Binh Port Improvement in Hoa Binh Lake	2.1	5,382.9	19	b	c	c	c	a	a	B
65	R12	Hanoi - Haiphong section (101.4km)	293.0	5,675.9	16	b	b	b	b	c	c	B
66	H46	Can Tho-Kien Giang-Ca Mau Route (NH61,63) Improvement (200km)	197.0	5,872.9	16	a	c	c	b	c	b	B
67	H32	Hanoi-Ha Giang (NH2) Improvement (300km)	137.0	6,009.9	13	a	b	c	a	b	b	B
68	H43	HCMC-My Tho Road (NH50) Improvement (80km)	79.0	6,088.9	17	b	c	c	b	c	b	B
69	H48	NH22B Improvement (Go Dau-Xau Mai; 80km)	55.0	6,143.9	16	b	b	c	b	b	b	B
70	R13	Hanoi - Giap Bat section (5.4km)	32.0	6,175.9	16	c	c	b	b	c	c	B
71	H26	National Highway No.40 Upgrading Project (ASEAN 7B,24km)	14.0	6,189.9	14	c	b	c	a	b	b	B
72	H34	Hanoi-Lai Chau (NH32) Improvement (390km)	200.0	6,389.9	12	a	c	c	a	b	b	B
73	H33	Hanoi-Dien Bien Phu (NH6) Improvement (468km)	223.0	6,612.9	10	a	b	c	a	b	b	B
74	H22	National Highway No.21 Upgrading Project (80km)	58.0	6,670.9	15	b	c	c	c	c	c	B
75	R04	Hai Van Pass Tunnel	389.0	7,059.9	13	a	c	c	c	c	a	B
76	R11	Bien Hoa - Saigon section (29.4km)	130.0	7,189.9	13	b	c	b	b	b	c	B
77	W37	Island Service Improvement (Co To and Cat Ba Islands)	2.5	7,192.4	15	b	c	c	a	a	a	B
78	W38	Island Service Improvement (Other Islands)	4.6	7,197.0	15	b	c	c	a	b	a	C
79	H54	North-South Expressway 2 (Vinh-Hue, 400km)	1,200.0	8,397.0	14	b	c	b	c	b	c	C
80	W27	Viet Tri - Tuyen Quang/Hoa Binh Waterway Iimprovement	3.6	8,400.6	14	b	c	b	c	c	a	C
81	H58	Noi Bai-Ha Long Expressway (150km)	750.0	9,150.6	12	b	c	a	c	c	c	C
82	W07	Hoa Binh Port Improvement	4.0	9,154.6	12	c	c	b	a	b	a	C
83	W34	HCMC - Moc Hoa/Ben Keo/Ben Suc Waterway Improvement	6.5	9,161.1	15	b	c	c	c	c	a	C
84	H57	North-South Expressway 5 (Nha Trang-HCMC, 420km)	1,260.0	10,421.1	12	b	c	a	c	c	c	C
85	R22	Saigon - My Tho (70km)	382.0	10,803.1	14	b	c	b	c	b	c	C
86	H53	North-South Expressway 1 (Hanoi-Vinh, 310km)	930.0	11,733.1	11	b	c	a	c	c	c	C
87	H61	HCMC-Can Tho Expressway 2 (My Tho-Can Tho; 80km)	560.0	12,293.1	11	b	c	a	c	c	c	C
88	H44	My Tho-Soc Trang Route Improvement (120km)	235.0	12,528.1	13	b	c	c	b	b	b	C
89	R20	Bac Hong - Van Dien (40km)	74.3	12,602.4	13	b	c	c	b	b	c	C
90	H59	HCMC-Vung Tau Expressway (90km)	450.0	13,052.4	12	b	c	b	c	c	c	C
91	R09	New Stations for Commuters (30 stations)	8.0	13,060.4	13	c	c	b	b	b	c	C
92	R10	Large Scale Freight Stations (30 stations)	486.0	13,546.4	13	b	c	b	c	b	c	C
93	R16	Hanoi - HCMC line (Phu Ly - Hue; 632km)	1,173.7	14,720.1	11	b	c	c	b	c	c	C
94	H55	North-South Expressway 3 (Hue-Danang, 100km)	300.0	15,020.1	11	b	c	b	c	b	c	C
95	W28	Pha Lai - Thai Nguyen/Bac Giang Waterway Improvement	3.6	15,023.7	12	b	c	c	c	c	a	C

Ranking	Project No.	Project	Project Cost 2001- (M US$)	Accu-mulated Cost (M US$)	Economic Indicator	Network Integ-ration	Int'l Linkage	Cost Recovery	Social/ Equity/ Poverty	Environ-ment	Resettle-ment/ ROW acquisition	Judge-ment (VIT-RANSS)
96	H56	North-South Expressway 4 (Danang-Nha Trang, 550km)	1,650.0	16,673.7	11	b	c	b	c	b	c	C
97	R15	Gia Lam - Yen Vien section (5.3km)	13.0	16,686.7	11	c	c	c	b	c	c	C
98	R17	Hanoi - HCMC line (Danang - Bien Hoa; 906km)	1,682.6	18,369.3	11	c	c	c	b	c	c	C
99	R18	Yen Vien - Viet Tri (62km)	115.1	18,484.4	9	b	c	c	b	b	c	C
100	H37	North C1 (West-South Ring, NH70-NH1, NH37/15/47; 295km)	216.0	18,700.4	7	b	c	c	b	c	c	C
101	R21	Single Tracking (Mao Khe - Ha Long; 48km)	75.4	18,775.8	7	b	c	c	b	a	a	C
102	R14	Giap Bat - Phu Ly section (51km)	129.0	18,904.8	6	b	c	c	b	c	b	C
103	H38	North C2 (North-East Ring, NH5-NH3, NH279; 255km)	171.0	19,075.8	2	b	c	c	b	c	b	C
104	R24	Short-cut Line (Phu Thai - Mao Khe; 15km)	31.1	19,106.9	3	b	c	c	c	b	c	C
105	H47	Ho Chi Minh Highway Extension (NH2)(Chan-Thanh-An Giang; 60km)	58.0	19,164.9	1	b	c	c	b	b	b	C
106	R25	HCMC - Vung Tau (80km)	360.0	19,524.9	1	b	b	c	c	b	c	C
107	H39	North C2 (North Ring, NH3-NH70, NH279/1B; 120km)	83.0	19,607.9	0	b	c	c	b	c	b	C
108	H40	North C2 (North-West Ring, NH70-NH6, NH279; 150km)	107.0	19,714.9	-2	b	c	c	b	c	c	C
109	R19	Dong Anh - Ton Dong (5km)	9.3	19,724.2	-4	c	c	c	b	b	c	C
110	R23	My Tho - Can Tho (100km)	450.0	20,174.2	-6	b	c	c	c	b	c	C
	H52	Road Safety Improvement Program	30.0		-	c	c	c	a	a	c	A
	W39	IWT Safety Enhancement	52.7		-	c	c	b	a	a	a	A
	P35	Seafarers' Education Upgrading Project	20.9		-	c	b	c	a	a	a	A
	A23	Rehabilitation of Civil Aviation Training Center of Vietnam (CATCV)	3.0		-	c	a	a	c	a	a	A
	R26	Rolling Stock Acquisition	1,882.0		-	c	c	c	c	a	a	A
	W43	IWT Fleet Development	191.9		-	c	b	a	a	b	a	A
	P29	Fleet Expansion and Modernization Program	1,407.0		-	c	b	a	a	a	a	A
	A33	Aircraft Purchase	1,889.0		-	c	a	a	c	a	a	B

Note: Evaluation Criteria

1. Economy — EIRR (%)
2. Network Integration
   - a: Significant
   - b: Moderate
   - c: Insignificant
3. International Linkage
   - a: Strong
   - b: Moderate
   - c: None
4. Cost Recovery
   - a: Possible
   - b: Limited
   - c: None
5. Social Equity/Poverty
   - a: Significant
   - b: Less significant
   - c: Neutral/Negative
6. Environment
   - a: No negative impact
   - b: Minor negative impact
   - c: Negative impact
7. Resettlement/ROW Acquisition
   - a: No constraints
   - b: Minor constraints
   - c: Major constraints
8. Judgement (VITRANSS)
   - A: High priority
   - B: Medium priority
   - C: Low priority

5.4 Master Plan Program

Selection of Master Plan Projects

A total of 116 projects considered necessary to achieve the transport network and services intended within the Master Plan period have been selected. They are listed in Table 5.4.1 and the locations of infrastructure projects are shown in Figure 5.4.1. They are composed of the following:

1) Ongoing and committed projects (33 projects)
2) Safety and training projects (4 projects)
3) Infrastructure projects (64 projects)
4) Equipment/facility/system projects integrated with 3) (15 projects)

Investment Requirement

The investment requirement of the Master Plan reaches almost US$ 11.5 billion as summarized in Table 5.4.2. Excluding that part of the investment required for revenue-generating projects, such as expressways and ports, and the cost of transport equipment that operators should shoulder, the cost to government (central and local) is estimated to be about US$ 10.5 billion.

Road accounts for about 65% in the cost to government, followed by rail (13.2%), port and shipping (11.5%), air (6.6%), and inland waterway (3.6%), However, the road subsector includes US$ 3.6 billion for ongoing/committed projects which is almost 50% of the total road investment cost.

Another important area of investment in the transport sector is transport equipment for road, railway, IWT, shipping, and air subsectors (see Table 5.4.3). The total investment is roughly US$ 38 billion, 84% of which is for road vehicles.

Overall Evaluation by Subsector

An economic evaluation was conducted on the projects included in the Master Plan by subsector on several assumptions (e.g. 2005 as the starting year, project life of 30 years, and SCF of 80%). The results, shown in Table 5.4.4, are summarized as follows:

- If all the projects are implemented, the EIRR is calculated at 22%.

- The road subsector registers an average of 25% EIRR. However, if ongoing and committed projects are excluded, the average EIRR reduces to 12%. This

Table 5.4.1
List of Master Plan Projects (up to 2010)

Sector	Project No.	Project	Status (original Schedule)	Fund Source	Project Cost (million US$)		Priority
					Total	2001-	
Road	*Primary Road Network Development*						
	H01	Highway Rehabilitation Project (Hanoi-Lang Son; 190km)	Ongoing (1997-2000)	ADB	162.5	16.3	A
	H02	Highway Rehabilitation Project II (Vinh-Dong Ha; 100km)	Ongoing (1997-2000)	WB	236.6	23.7	A
	H03	2nd Road Development (Nha Trang-Quang Ngai; 600km)	Ongoing (1999-2002)	ADB	163.0	81.5	A
	H04	Highway Rehabilitation Project III (Can Tho-Nam Can; 230km)	Ongoing (2000-2004)	WB	180.0	180.0	A
	H05	Bridge Rehabilitation Project - Phase I (435km)	Ongoing (1995-2000)	JBIC	162.2	16.2	A
	H06	Bridge Rehabilitation Project - Phase II (752km)	Ongoing (1996-2001)	JBIC	211.0	105.5	A
	H07	Hai Van Pass Tunnel (2 lanes, 14km)	Ongoing (1998-2003)	JBIC	251.0	225.9	A
	H08	My Thuan Bridge (1,535m)	Ongoing (1997-2000)	Australia	79.3	15.9	A
	H09	Can Tho Bridge Construction	Ongoing (2000-2004)	JBIC	294.0	294.0	A
	H10	National Highway No.1 Urban Bypass (Hanoi-HCMC; 70km)	New		67.0	67.0	A
	H12	Rehabilitation and Upgrading of Ho Chi Minh Highway (Hoa Lac-Ngoc Hoi)	Ongoing (2000-2003)	GOV	380.0	380.0	A
	H13	Rehabilitation of National Highway No.14	Ongoing (2000-2003)	GOV	15.0	15.0	A
	H14	Hanoi Ring Road	New		256.0	256.0	A
	H15	Thanh Tri Bridge Construction	Ongoing (2000-2004)	JBIC	410.0	410.0	A
	H16	National Highway No.5 Improvement Project (remaining section, 91km)	Ongoing (1995-2000)	JBIC	215.6	215.6	A
	H17	National Highway No.18 Widening Projects - Phase 2 (remain section, 70km)	Ongoing (1998-2003)	JBIC	232.0	232.0	A
	H18	Bai Chay Bridge Construction	Ongoing (2000-2004)	JBIC	98.0	98.0	A
	H19	National Highway No.1 Hanoi - Ninh Binh Widening Project (80km)	New		76.0	76.0	A
	H20	National Highway No.70 Upgrading Project (Hanoi-Lao Cai; 191km)	New		125.0	125.0	A
	H21	National Highway No.10 Upgrading Project (147km)	Ongoing (1998-2003)	JBIC	302.0	302.0	A
	H22	National Highway No.21 Upgrading Project (80km)	New		58.0	58.0	B
	H23	East-West Corridor Project (ASEAN 7; NH8, 8B; 110km)	New		90.0	90.0	B
	H24	East-West Corridor Project (ASEAN 8; NH9; 75km)	Ongoing (1999-2003)	ADB	30.0	24.0	A
	H25	East-West Corridor Project (ASEAN 7A; NH12A, 29; 120km)	Ongoing	GOV	65.0	39.0	A
	H26	National Highway No.40 Upgrading Project (ASEAN 7B,24km)	New		14.0	14.0	B
	H27	Rehabilitation (NH19, 20, 24, 26, 27, 28)	New		150.0	150.0	B
	H29	Trans HCMC Highway Project (21.4km)	Ongoing (2000-2004)	JBIC	758.6	758.6	A
	H30	Trans Asia Highway Project (NH22 to Cambodia; 80km)	Ongoing (1999-2002)	ADB	144.7	144.7	A
	Secondary Road Network Development						
	H31	Hanoi-Cao Bang (NH3) Improvement (310km)	New		148.0	148.0	B
	H32	Hanoi-Ha Giang (NH2) Improvement (300km)	New		137.0	137.0	B
	H33	Hanoi-Dien Bien Phu (NH6) Improvement (468km)	New		223.0	223.0	B
	H34	Hanoi-Lai Chau (NH32) Improvement (390km)	New		200.0	200.0	B
	H35	North C1 (North-East Ring, NH5-NH3, NH37; 150km)	New		101.0	101.0	B
	H36	North C1 (North Ring, NH3-NH70, NH37; 115km)	New		122.0	122.0	B
	H41	Cua Ong-Bac Luan (NH18) Road Improvement (130km)	New		92.0	92.0	B
	H42	Hung Yen-Thai Binh Road (NH39) Improvement (100km)	New		124.0	124.0	B
	H43	HCMC-My Tho Road (NH50) Improvement (80km)	New		79.0	79.0	B
	H45	Can Tho-Ha Tien (NH80) Improvement (200km)	New		197.0	197.0	B
	H46	Can Tho-Kien Giang-Ca Mau Route Improvement (200km)	New		197.0	197.0	B

Cont. Table 5.4.1

Sector	Project No.	Project	Status (Original Schedule)	Fund Source	Project Cost (million US$)		Priority
					Total	2001-	
	H48	NH22B Improvement (Go Dau-Xau Mai; 80km)	New		55.0	55.0	B
	H49	Secondary Road Network rehabilitation Program	New		94.0	94.0	A
	H50	Tertiary Road Improvement Project	New		569.0	569.0	A
	Road Safety						
	H52	Road Safety Improvement Program	New		30.0	30.0	A
	Expressway						
	H60	HCMC-Can Tho Expressway 1 (HCMC-My Tho; 50km)	New		350.0	350.0	B
		Subtotal			**7,944.5**	**7,131.9**	
Railway	*Rehabilitation and Minor Improvement*						
	R01	Hanoi-HCMC Railway Bridge Rehabilitation	Ongoing (1995-2001)	JBIC	104.0	47.0	A
	R02	Rehabilitation of Tracks & Bridges	New		325.0	325.0	A
	R04	Hai Van Pass Tunnel	New		389.0	389.0	B
	R05	Signal and Communication Equipment Modernization	New		128.0	128.0	A
	R07	Alarm at Crossings	New		21.0	21.0	A
	Capacity Expansion of Critical Sections						
	R08	New Stations for Train Exchange (100 stations)	New		26.0	26.0	A
	R11	Bien Hoa - Saigon section (29.4km)	New		130.0	130.0	B
	R12	Hanoi - Haiphong section (101.4km)	New		293.0	293.0	B
	R13	Hanoi - Giap Bat section (5.4km)	New		32.0	32.0	B
	Operation						
	R28	CTC and Computerization	New		136.0	136.0	A
		Subtotal			**1,584.0**	**1,527.0**	
Inland Water-way	*Port Improvement*						
	W01	Hanoi/Khuyen Luong Port Improvement	New		11.0	11.0	A
	W03	Ninh Binh/Ninh Phuc Port Improvement	Partly Ongoing	GOV	14.4	14.4	A
	W05	Viet Tri Port Improvement	New		3.5	3.5	B
	W08	My Tho/Can Tho Port Improvement for IWT	Partly Ongoing	WB/GOV	6.1	6.1	A
	W10	Vinh Thai (Vinh Long) Port Improvement	New		4.3	4.3	A
	W12	Ca Mau Port Improvement	New		2.9	2.9	A
	W14	Cao Lanh (Dong Thap) Port Improvement	New		6.4	6.4	A
	W16	My Thoi (Long Xuyen) Port Improvement	New		6.2	6.2	A
	W18	Passenger Terminal Development	New		2.2	2.2	A
	W20	Other Local Port Development	New		47.7	47.7	A
	Waterway Improvement						
	W22	Quang Ninh-Hanoi/Pha Lai Waterway Improvement	New		13.9	13.9	A
	W23	Ninh Binh/Nam Dinh-Hanoi Waterway Improvement	New		19.9	19.9	A
	W24	Quang Ninh-Nam Dinh/Ninh Binh Waterway Improvement	New		6.0	6.0	A
	W25	Hanoi-Viet Tri-Lao Cai Waterway Improvement	New		74.0	74.0	A
	W29	HCM-Can Tho Waterway Improvement	Partly Ongoing	WB/GOV	23.2	23.2	A
	W30	Can Tho-Ca Mau Waterway Improvement	Partly Ongoing	WB/GOV	17.6	17.6	A
	W31	Cho-Lach-Kien Luong Waterway Improvement	Partly Ongoing	WB/GOV	25.5	25.5	A
	W32	Saigon-Dong Thap Muoi-Long Xuyen Waterway Improvement	Partly Ongoing	GOV	5.4	5.4	A
	W33	Thi Vai-Nuoc Man Canal Development	New		3.2	3.2	A
	W35	Da River and Hoa Binh Port Improvement in Hoa Binh Lake	New		2.1	2.1	B
	W36	Cuu Long-Cambodia Waterway Improvement	New		20.5	20.5	B
	W37	Island Service Improvement (Co To and Cat Ba Islands)	New		2.5	2.5	B
	Operation & Safety						
	W39	IWT Safety Enhancement	New		52.7	52.7	A
	W41	IWT Education	Ongoing (1997-2002)	CIDA	14.1	14.1	A
		Subtotal			**385.3**	**385.3**	
Port & Shipping	*Port Expansion/Development*						
	P01	Cai Lan Port Expansion Project	Partly Ongoing (96-01)	JBIC	128.1	128.1	A
	P03	Hai Phong General Port (Phase II)	Ongoing (2000-2010)	JBIC	138.0	138.0	A
	P05	Cua Lo Port Project	New		49.3	49.3	A
	P07	Danang Bay - Lien Chieu Port Development	New		158.0	158.0	B
	P09	Danang Bay - Tien Sa Port Rehabilitation	Partly Ongoing (1999-2003)	JBIC	172.0	172.0	A

Cont. Table 5.4.1

Sector	Project No.	Project	Status (original Schedule)	Fund Source	Project Cost (million US$)		Priority
					Total	2001-	
	P10	Specialized Port for Dung Quat Industrial Zone	New		130.0	130.0	A
	P12	Qui Nhon Port Development	New		36.0	36.0	A
	P14	Nha Trang Port Development	New		57.0	57.0	A
	P16	Ho Chi Minh City General Port	New		200.0	200.0	A
	P18	Ba Ria Vung Tau General Port	New		206.0	206.0	A
	P20	Can Tho Port Development	New		64.0	64.0	A
	P22	Industrial Port Development	New		67.0	67.0	A
	P24	Other Local Ports	New		22.7	22.7	A
	Operation & Safety						
	P26	Port EDI System at Gateway Ports	New		10.0	10.0	B
	P27	Large-scale ICD Development Project	New		72.2	72.2	B
	P31	Development of Aids to Navigation (ATN)	New		63.6	63.6	A
	P33	Maritime SAR and Oil Spill Protection	New		52.8	52.8	A
	P35	Seafarers' Education Upgrading Project	New		20.9	20.9	A
		Subtotal			**1,647.6**	**1,647.6**	
Air	*Airport Expansion/Development*						
	A01	Noi Bai International Airport Development Project	Ongoing (1996-2002)	GOV	57.1	17.1	A
	A02	New Passenger Terminal Building (T1) Construction in Noi Bai International Airport	Ongoing (1995-2001)	GOV & Credit Loans	80.0	24.0	A
	A03	Noi Bai Airport Development Project - Phase 1	New		53.9	53.9	A
	A05	Danang International Airport Development Project - Phase 1	New		77.7	77.7	A
	A07	Expansion of International Passenger Terminal Building in Tan Son Nhat International Airport	Ongoing (1999-2002)	SAA	12.0	6.0	A
	A08	Airfield Pavement Overlay in Tan Son Nhat International Airport	Ongoing (1999-2001)	SAA	16.0	14.4	A
	A09	Tan Son Nhat International Airport Development Project	New		226.7	226.7	A
	A11	Secondary Airport Development Project (Cat Bi, Phu Bai, Nha Trang)	New		85.6	85.6	A
	A13	New Airport Construction Project (Cao Bang, Lao Cai, Dong Hoi, Chu Lai)	New		83.6	83.6	B
	A14	Rehabilitation of Tertiary Airports - Phase 1 (9 airports)	New		120.8	120.8	A
	Air Traffic Control						
	A16	Reconstruction of HCM Area Control Center and Noi Bai Air Traffic Management Center	New		58.0	58.0	A
	A17	Provision of Navigation Aids in Secondary Airport (Cat Bi, Phu Bai, Nha Trang)	New		4.5	4.5	B
	A18	Provision of Control Tower System Packages and Automatic Weather Observation Stations (AWOS) in 4 New Airports	New		1.3	1.3	B
	A19	Communication and Navigational Equipment Replacement Program	New		12.2	12.2	A
	A20	Equipment Installation and Upgrading Project for New CNS/ATM -Phase 1	New		32.8	32.8	A
	A21	Equipment Installation and Upgrading Project for New CNS/ATM - Phase 2	New		10.9	10.9	B
	A22	Restructuring of Air Traffic Service - Direct Speech (ATS-DS) Circuits and Aeronautical Fixed Telecommunications Network (AFTN)	New		2.5	2.5	A
	A23	Rehabilitation of Civil Aviation Training Center of Vietnam (CATCV)	New		3.0	3.0	A
	A24	Flight Calibration of Navigation Aids	New		1.1	1.1	A
	A25	Test Equipment Replacement and the Equipment Standards Laboratory	New		1.9	1.9	A
		Subtotal			**941.6**	**838.0**	
		Total			**12,503.0**	**11,529.8**	

Figure 5.4.1
Master Plan Projects up to 2010 (Infrastructure Projects Only), North

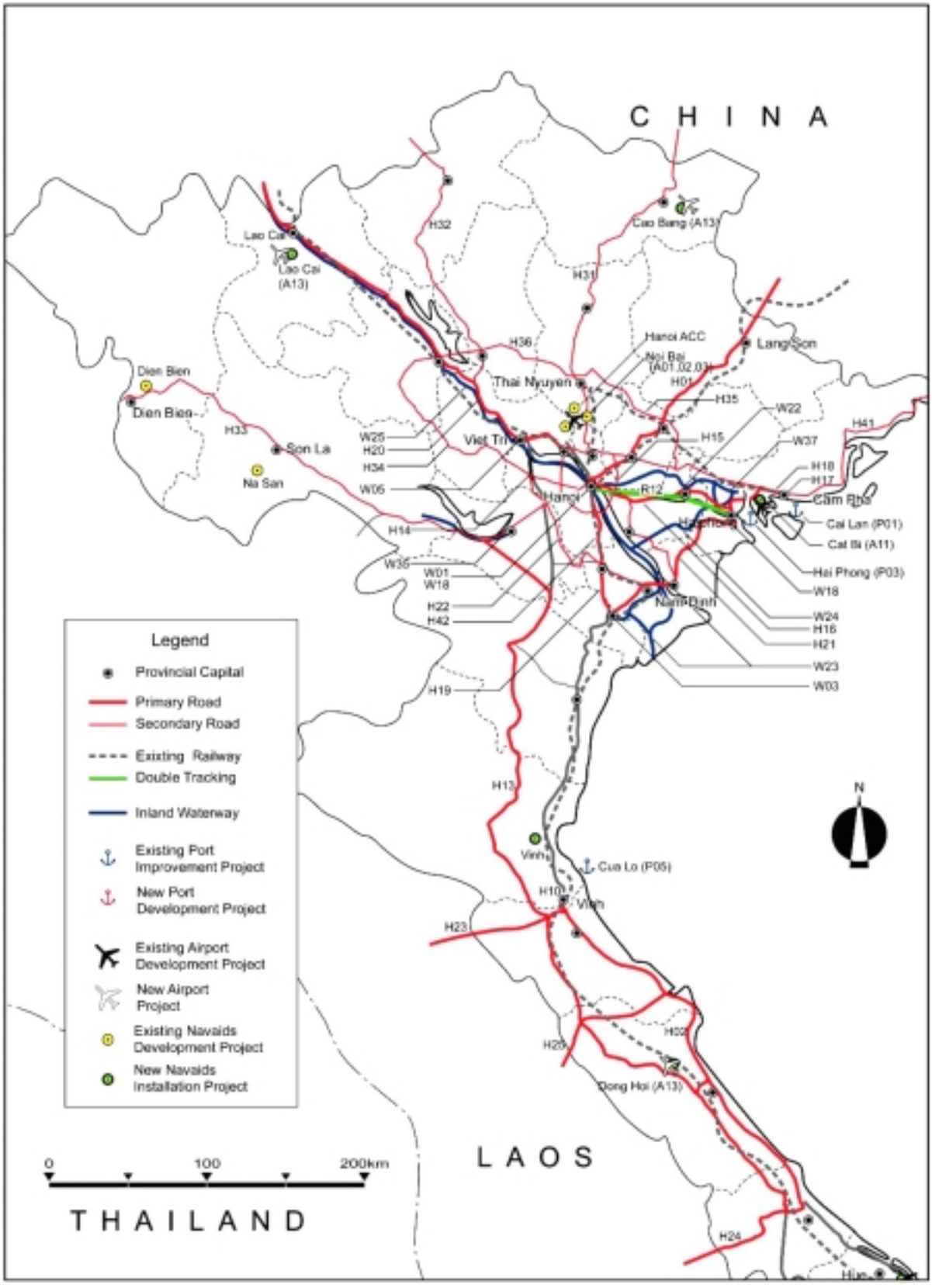

Figure 5.4.1
Master Plan Projects up to 2010 (Infrastructure Projects Only), Central Vietnam

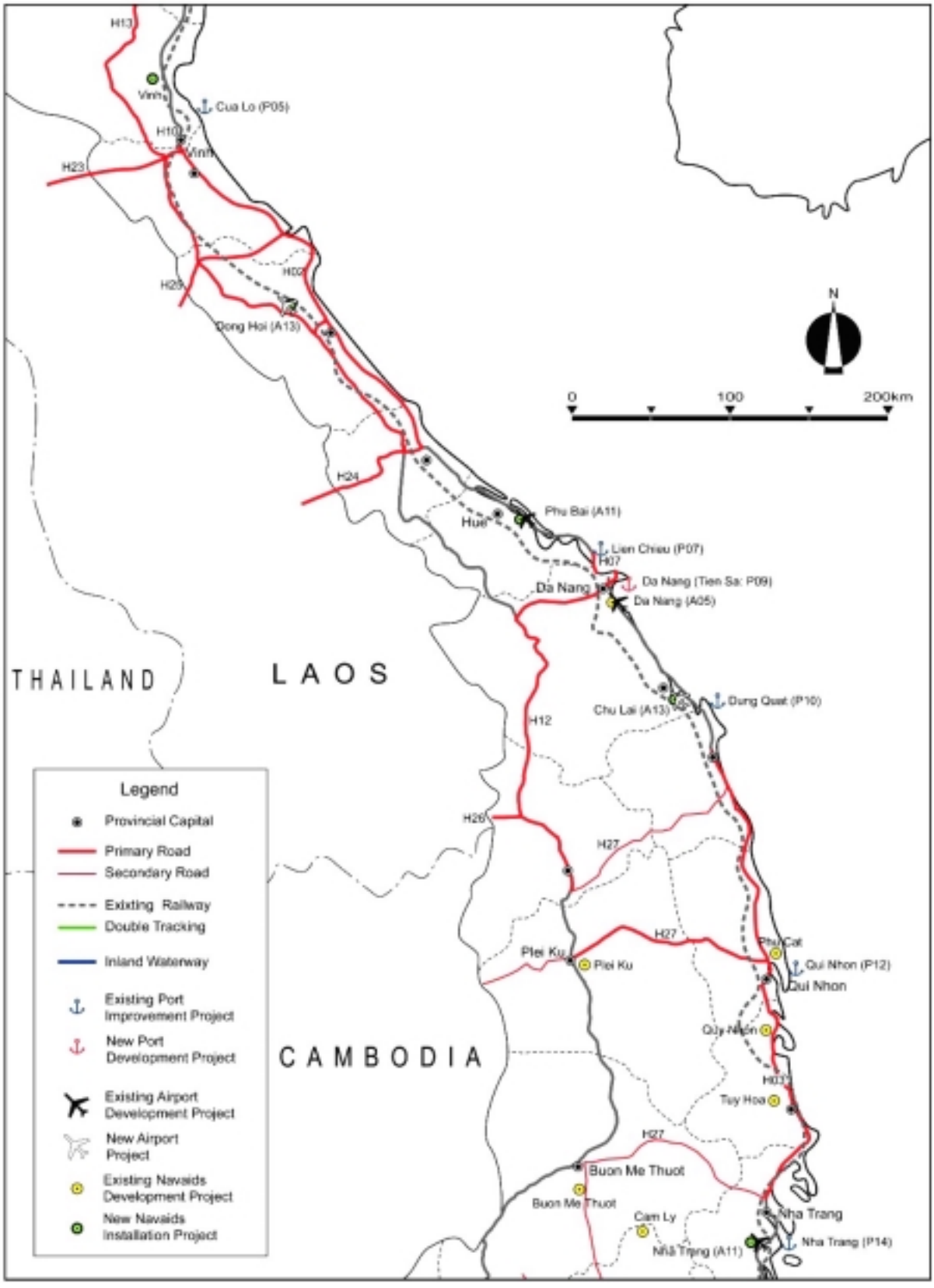

Figure 5.4.1
Master Plan Projects up to 2010 (Infrastructure Projects Only), South

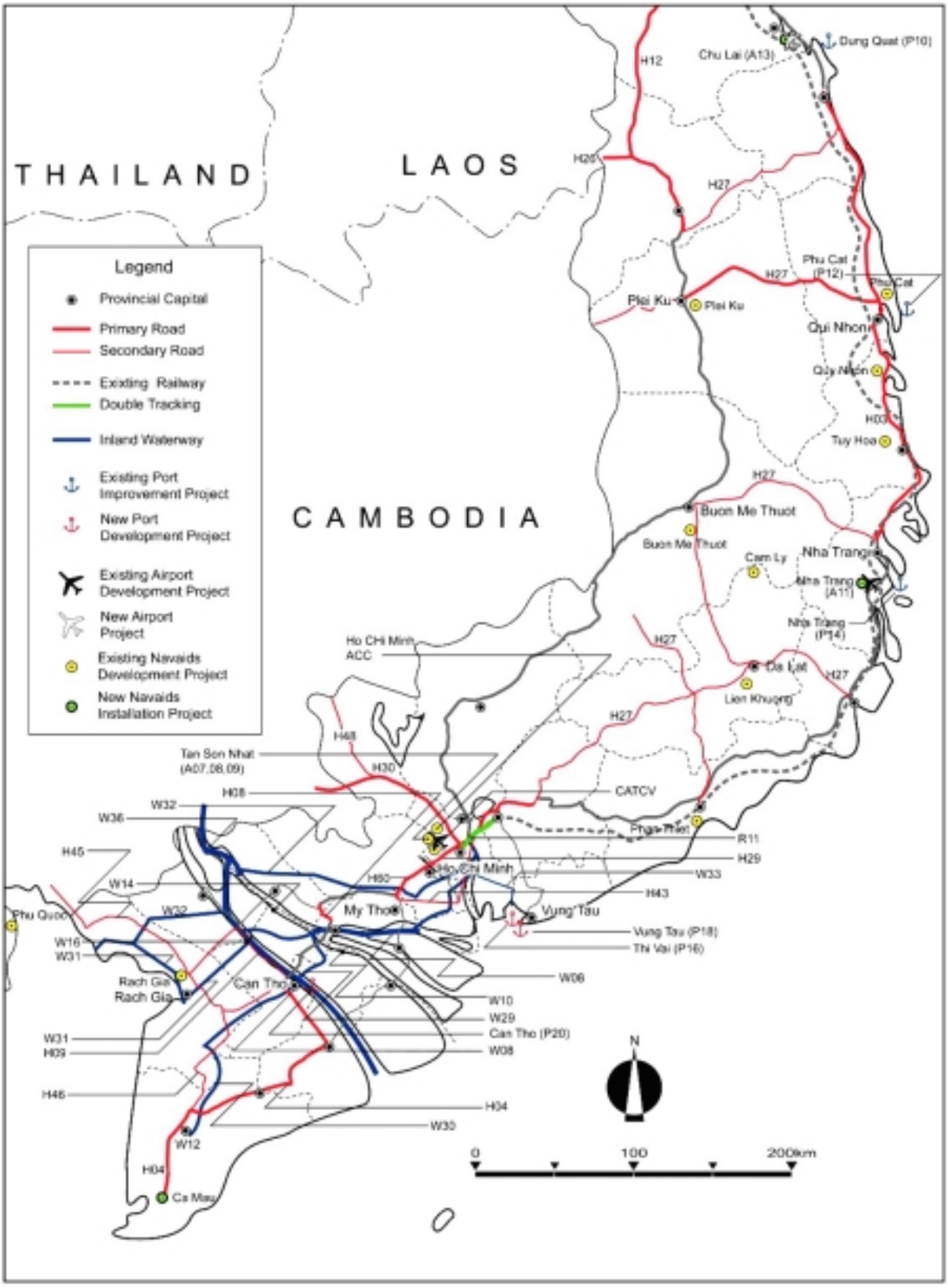

Table 5.4.2
Investment Requirement for the Transport Sector up to 2010

Sector	Category	Estimated Capital Cost (US$ mil)		Cost to Government		
		Total	Ongoing	% to Capital	US$ Mil.	% to total
Road	Primary Road Network Development	4,413.9	3,577.9	100	4,414	41.9
	Secondary Road Network Development	2,338.0	-	100	2,338	22.2
	Road Safety	30.0	-	100	30	0.3
	Expressway	350.0	-	20	70	0.7
	Subtotal	**7,131.9**	**3,577.9**		**6,852**	**65.1**
Railway	Rehabilitation and Minor Improvement	910.0	47.0	100	910	8.6
	Capacity Expansion of Critical Sections	481.0	-	100	481	4.6
	Operation	136.0	-	0	0	0.0
	Subtotal	**1,527.0**	**47.0**		**1,391**	**13.2**
Inland Waterway	Port Improvement	104.7	20.5	90	94	0.9
	Waterway Improvement	213.8	71.7	100	214	2.0
	Operation & Safety	66.8	14.1	100	67	0.6
	Subtotal	**385.3**	**106.3**		**375**	**3.6**
Port & Shipping	Port Expansion/Development	1,428.1	438.1	70	990	9.4
	Operation & Safety	219.5	-	100	220	2.1
	Subtotal	**1,647.6**	**438.1**		**1,209**	**11.5**
Air	Airport Expansion/Development	709.8	61.5	80	568	5.4
	Air Traffic Control	128.2	-	100	128	1.2
	Subtotal	**838.0**	**61.5**		**696**	**6.6**
	Total	**11,529.8**	**4,230.8**		**10,523**	**100.0**

1/ Figures in parentheses are the costs of ongoing/committed projects.

Table 5.4.3
Transport Equipment Costs for the Master Plan Period

Sector	Type	Cost	
		US$ mil	%
Road	Car, utility vehicle, truck, bus, motorcycle	32,200	84.8
Railway	Diesel/electric locomotive, passenger cars, wagons	1,882	5.0
Inland Waterway	Cargo and passenger ships	192	0.5
Shipping	Ocean-going vessels, coastal ships	1,407	3.7
Air	Various aircraft	2,289	6.0
Total		37,970	100.0

1/ Including ongoing projects worth US$ 500 million, of which US$ 400 million is included in the Master Plan period.

Table 5.4.4
Economic Evaluation of Master Plan Projects by Subsector

Subsector		Cost	Benefit (US$ mil)		EIRR (%)	NPV[1/] (US$ mil)
			2010	2020		
Road	All Projects	7,113	2,278	5,357	24.7	7,191
	Excluding committed and ongoing projects	3,028	437	640	12.1	22
Railway		979	276	687	22.1	808
Port/Coastal Shipping		1,411	1,107	4,337	43.3	5,789
3 Subsectors[2/]		9,503	2,563	7,266	21.8	7,227

1/ Discounted by 12 p.a.
2/ Including committed and ongoing projects

implies that the future investments in roads should undergo critical economic evaluation.

- The railway subsector shows a sound level of EIRR on condition that the system can be operated and managed efficiently.

- Port and coastal shipping, including inland waterway transport, shows a significant economic return, clearly indicating that this subsector will become critical in meeting the future demand.

For more details of economic evaluation, refer to Appendix 5-B.

Investment Requirement vs. Fund Availability

The possible investment amount for the Master Plan period (2001-2010) was estimated at US$ 11.7-12.6 billion, assuming a 2.5% allocation of GDP to the transport sector (The range of the amount is due to the difference in the assumed GDP growth rate.).

As shown in Table 5.4.5, the total investment requirements of the transport sector include maintenance/minor projects and urban and rural transport which amount to US$ 5.9 billion and are outside of the VITRANSS but are definitely needed and given high priority by the government.[5] Thus, available funds for the VITRANSS is US$ 5.8 to 6.7 billion, of which US$ 3.0 billion is for ongoing/committed projects and only US$ 2.8 to 3.7 billion is available for new projects.

[5] Urban and rural transport sectors have not been covered by the VITRANSS. Since strategies on rural transport sector are being developed by the World Bank with the support of the DFID of UK, they need to be further incorporated in the Master Plan.

On the other hand, the selected new projects for the Master Plan require a total of US$ 6.1 billion, and US$ 3.9 billion is needed for the disbursement during the Master Plan period. This indicates that the proposed investment size needs to be reduced. Otherwise, implementation will be a little delayed.

Table 5.4.5
Investment Requirements vs. Fund Availability

		US$ billion
• Investment Requirement for the Master Plan Period (2001-2010)		
1) Maintenance/Minor Projects not covered by the VITRANSS		2.4
2) Urban Transport [1/]		2.5
3) Rural Transport [2/]		1.0
	Subtotal	5.9
4) VITRANSS Project		
(1) Ongoing/Committed Projects		3.0
(2) New Projects		6.1 (3.9)[3/]
	Subtotal	9.1 (6.9)[3/]
	Total	15.0 (12.8)[3/]
• Possible Available Fund (Low – High Case)		11.7 – 12.6

1/ At present, there are no definite strategy and investment program for urban transport.
2/ The amount needs to be adjusted based on the strategy which is being developed by the government.
3/ The amount to be disbursed during the Master Plan period.

Selection of Core Projects

For this reason, a total of 50 core projects (projects under priority A in Table 5.4.1) which cost US$ 4.1 billion have been selected. In order to expand implementation beyond these core projects, it is necessary to either improve cost recovery of the projects or increase the overall financial allocation to the transport sector.

6 SHORT-TERM PLAN

6.1 Introduction

This chapter sets out the short-term investment priorities for public investment, based on the evaluation of projects included in the master plan.

Initially, suggested short-term investment priorities are given for each mode, together with the main supporting policy measures and institutional changes that are required to achieve the master plan objectives in the short-term. Further details of the required policy and institutional changes are given in Chapter 8, together with proposed technical assistance projects that would help to implement the short-term plan successfully.

Finally this chapter sets out the proposed short-term investment program, based on the prioritization of projects included in the master plan.

6.2 Subsector Priorities in the Short-term

Road: For road transport to play its expected role in carrying increased traffic at minimum cost, increasing accessibility and level of service with minimum adverse impacts such as accidents, the main short-term investment priorities are (a) completing the current rehabilitation program of the primary/secondary road network, to provide the basic network of strategic links for efficient operation of modern motor vehicles, and (b) implementing the tertiary road improvement project to provide rural access. This calls for completion of the many primary/secondary road projects already underway or committed and, where finance permits, the start of new projects which tackle expected short-term bottlenecks (mainly cross-river sections and roads around metropolitan areas such as Hanoi and HCMC) or which develop the strategic north-south and east west corridors (both of which are important from the government's policy viewpoint). See Table 6.3.2 and Figure 6.3.1 for details of these projects.

In support of these investments, to increase efficiency, safety and level of service, whilst minimizing infrastructure costs, important short-term policy measures are required to be taken in three key areas:

(a) increasing efficiency of road transport services, through providing a legal basis for the competitive environment for road transport services and an accelerated equitization program for bus and truck enterprises,
(b) improving safety, through strengthening the road safety program and the way that regulations are enforced (supported by investments included in the short-term plan),
(c) establishing a sustainable road management (especially maintenance) and financing system, through institutional strengthening of subsector agencies, better road contracting systems, and better methods of road funding based on user charges.

Railway: If operating efficiency and level of service can be increased, the railway could play a much greater role in future. However in practice this is likely to be constrained in the short-term by the institutional capacity of the railway. Infrastructural bottlenecks are to be found everywhere because most of the track, bridges, rolling stock and other equipment is obsolete. The priority for investment is therefore to intervene in the most crucial areas required to sustain the capacity of the railway, in order to continue safe and stable operations. This would enable the railway to carry traffic levels similar to those handled at present, while institutional reforms are carried out. This calls for substantial increased infrastructure investment in rehabilitation of track, bridges and signaling equipment along the main strategic routes. Further investment to expand capacity should only be considered if this is certain to increase the financial viability of the railway. Virtually all of these investments would be through new projects.

Meanwhile the vital policy and institutional reforms required to establish the railway as a commercially and economically viable organization are three-fold:

(a) establishing the railway as a corporation, organized in a lines-of-business way with new management systems, to enable a more customer-oriented approach to management,
(b) placing the relationship between government and the railway on a proper commercial basis (except for regulatory aspects), with a performance agreement that encourages efficiency and value for money,
(c) preparing a realistic business plan that the railway can begin implementing in the short-term to improve efficiency of carrying existing traffic and attract potential new traffic in the long-term.

Inland Water: Although future potential growth in demand is not large, much can be done to improve efficiency and reduce costs. The priority short-term investments are aimed at securing navigational safety and stability along the main waterways. These include improvements to ports and inland waterways to enable more efficient vessel utilisation and cargo handling and use of larger vessels. Other investments focus on navigational safety (especially to enable safe nighttime navigation) and training of water transport staff. Most of these investments would involve new projects.

To support this investment program, policy measures are required in the following three key areas, to increase efficiency, safety and level of service and minimize infrastructure costs:

(a) increasing competition, efficiency and service levels in water transport services, through equitizing water transport SOEs and establishing a regulatory framework with minimum entry barriers (subject to minimum safety standards),
(b) establishing a sustainable water management and financing capability (especially for dredging and other maintenance) to ensure that the improved facilities offer the planned service and safety level (requiring a clear definition of responsibilities between inland water and maritime sector management, and implementation of the current inland water institutional strengthening project and education programs),

(c) reform of the ports to place overall responsibility with local government, while enabling more competition and efficiency in management (through management contracts and leasing arrangements), in order to remove bottlenecks to operational efficiency.

Maritime: As roads are improved, ports are revealed to be major bottlenecks in the entire transport system - these need to be improved in terms of service and accessibility. In particular, to increase efficiency, safety and level of service of shipping services it is vital to tackle these bottlenecks, by increasing productivity/throughput and promoting use of more modern and efficient vessels. Infrastructure improvements are urgently required in the three gateway ports which are so vital to Vietnam's international trade. However investment is also required in other major local ports, in industrial ports, and along main access channels and busy sea lanes. Investment is also required in safety-related activities in order for Vietnam to meet its international obligations. The short-term investment priority is therefore to support efforts at achieving maximum increase in productivity per unit of investment at the key strategic ports, and improving maritime safety (seafarer's education, navigational aid facilities etc.). See Table 6.3.2 for more details.

Supporting short-term policy and institutional measures cover the supply of shipping and port services and the way that the subsector is managed, in order to increase efficiency, safety and level of service, while minimizing infrastructure costs:

(a) improving port efficiency and level of service, through implementing pilot projects in commercialization (establishing ports as independent entities with local involvement in planning and control, with increased autonomy to set charges, providing management and handling services under contract, and leasing facilities to private terminal operators to attract private investment and management know-how),
(b) promoting competition in coastal shipping services, through giving increased autonomy to ship operators under the VINALINES group (allowing VINALINES to concentrate on its important function of developing the Vietnamese ocean-shipping industry) and making a start on equitizing coastal shipping operators,
(c) improving the way the maritime sector is planned and regulated, through making a clear division of responsibilities between inland water and maritime subsectors; raising ship inspection and other regulatory standards as required to meet international obligations; improving VINAMARINE capacity to make infrastructure plans based on shippers needs, taking account of national priorities and environmental considerations; and improving the business environment for private and foreign investment.

Aviation: To meet continued high traffic growth, whilst raising technical/safety standards, is a major challenge in both international and domestic markets. Careful planning is required to minimize investment requirements. In parallel to strengthening the three gateway airports and implementing improvements required under international commitments (especially the new air traffic management system), the overall air network needs strengthening through carefully targeted improvements at

other major local airports. Precise short-term priorities are difficult to define with available information. The short-term investment plan therefore gives priority to completing current projects and to implementing those new projects required under international agreements or those new projects with high expected returns (for example at the major airports). This allows more marginal projects to be reviewed using better planning data over the next five years before decisions to implement them are taken. See Table 6.3.2 for details of these projects.

To support the short-term aviation plan, policy and institutional measures are required in the following areas, to increase efficiency, level of service and safety, while minimizing infrastructure costs:

(a) raising technical standards to those required under international agreements, by implementing the recommendations of the recent legal reform study,
(b) increasing efficiency of the Vietnamese aviation industry, by fostering competition (between airlines and between support organisations), removing unnecessary regulatory constraints (such as fares controls), and basing infrastructure charges more closely on costs,
(c) improving management capacity in the subsector by separating regulatory and commercial activities (in preparation, in the long-term, for the airports to be established as independent commercial units) and adopting modern planning and evaluation methods (to allow future investments to be planned more effectively).

Transport Sector Management Aspects: Further policy and institutional measures are required to implement the short-term plan effectively, covering the following aspects:

(a) coordinating the many regulatory reforms proposed for each mode to ensure that a consistent approach is followed,
(b) institutional strengthening of the MOT and its subsector agencies, at central and local levels, to develop and implement transport policies,
(c) seeking support at government level for tackling the financing problems encountered for all modes of transport,
(d) implementing the far-reaching government programs for equitization in the transport sector.

These measures are highlighted in the policy and institutional reforms described in Chapter 7 (which also deals with other aspects common to more than one mode, such as multimodal transport, rural transport development and cross-border transport, all of which require policy action in the short-term).

6.3 Short-term Projects

Core projects have been selected for the short-term program that include both ongoing/committed projects and new projects. The investment requirements are summarized in Table 6.3.1. Of the total cost to government at US$ 7.3 billion, US$ 4.2 billion is for ongoing/committed projects. The road subsector accounts for US$ 4.8 billion (including ongoing/committed projects) or 65% of the total cost to

government. However, 75% of this cost is for ongoing/committed projects, leaving only US$ 1.2 billion for new ones. Port and shipping subsector requires US$ 1.03 billion (14.0%), air subsector, US$ 0.61 billion (8.4%), railway subsector, US$ 0.55 billion (7.5%), and inland waterway subsector, US$ 0.35 billion (4.7%).

The short-term projects are listed in Table 6.3.2 which shows the total project cost and the estimated costs to be disbursed during the 2001-2005 period. These costs were estimated based on the assumed implementation schedule shown in Figure 6.3.1. The investment requirements are compared to possible fund availability in Table 6.3.3. Available funds during the period 2001-2005 are about US$ 5 billion, whereas the investment requirements for maintenance/minor projects, urban and rural transport, and ongoing/committed projects amount to US$ 5.8 billion, which exceeds the available funds. This makes it difficult for government to undertake new large projects unless new fund sources are found or increased priority given to the transport sector.

Since the investment requirements of the core projects more or less tally with the fund availability during the Master Plan period, it is assumed that the core projects would be started during the first five years. Approximately US$ 0.6 billion out of the total US$ 2.4 billion of the new projects will be disbursed in 2001-2005 period.

Table 6.3.1
Investment Requirement for the Transport Sector up to 2005

Sector	Category	Estimated Capital Cost (US$ mil)		Cost to Government		
		Total	Ongoing	% to Capital	US$ Mil.	% to total
Road	Primary Road Network Development	4,102[1/]	3,578[1/]	100	4,102[1/]	56.0
	Secondary Road Network Development	663	-	100	663	9.0
	Road Safety	30	-	100	30	0.4
	Subtotal	4,795	3,578		4,795	65.4
Railway	Rehabilitation and Minor Improvement	521	47	100	521	7.1
	Capacity Expansion of Critical Sections	26	-	100	26	0.4
	Operation	136	-	0	0	0.0
	Subtotal	683	47		547	7.5
Inland Waterway	Port Improvement	101	21	90	91	1.2
	Waterway Improvement	189	72	100	189	2.6
	Operation & Safety	67	14	100	67	0.9
	Subtotal	357	107		347	4.7
Port & Shipping	Port Expansion/Development	1,270	438	70	889	12.1
	Operation & Safety	137	-	100	137	1.9
	Subtotal	1,407	438		1,026	14.0
Air	Airport Expansion/Development	626	62	80	501	6.8
	Air Traffic Control	112	-	100	112	1.5
	Subtotal	738	62		612	8.4
	Total	7,980	4,232		7,327	100.0

1/ Including US$ 1.5 billion for urban road projects.

Table 6.3.2
List of Short-term Projects

Sector	Project No.	Project Name	Status (Original Schedule)	Fund Source	Project Cost(USD Million) 2001-	2001-05
Road	*Primary Road Network Development*					
	H01	Highway Rehabilitation Project (Hanoi-Lang Son; 190km)	Ongoing (1997-2000)	ADB	16.3	16.3
	H02	Highway Rehabilitation Project II (Vinh-Dong Ha; 100km)	Ongoing (1997-2000)	WB	23.7	23.7
	H03	2nd Road Development (Nha Trang-Quang Ngai; 600km)	Ongoing (1999-2002)	ADB	81.5	81.5
	H04	Highway Rehabilitation Project III (Can Tho-Nam Can; 230km)	Ongoing (2000-2004)	WB	180.0	180.0
	H05	Bridge Rehabilitation Project - Phase I (435km)	Ongoing (1995-2000)	JBIC	16.2	16.2
	H06	Bridge Rehabilitation Project - Phase II (752km)	Ongoing (1996-2001)	JBIC	105.5	105.5
	H07	Hai Van Pass Tunnel (2 lanes, 14km)	Ongoing (1998-2003)	JBIC	225.9	225.9
	H08	My Thuan Bridge (1,535m)	Ongoing (1997-2000)	Australia	15.9	15.9
	H09	Can Tho Bridge Construction	Ongoing (2000-2004)	JBIC	294.0	294.0
	H10	National Highway No.1 Urban Bypass (Hanoi-HCMC; 70km)	New		67.0	2.3
	H12	Rehabilitation and Upgrading of Ho Chi Minh Highway (Hoa Lac-Ngoc Hoi)	Ongoing (2000-2003)	GOV	380.0	380.0
	H13	Rehabilitation of National Highway No.14	Ongoing (2000-2003)	GOV	15.0	15.0
	H14	Hanoi Ring Road	New		256.0	9.0
	H15	Thanh Tri Bridge Construction	Ongoing (2000-2004)	JBIC	410.0	410.0
	H16	National Highway No.5 Improvement Project (remaining section, 91km)	Ongoing (1995-2000)	JBIC	215.6	215.6
	H17	National Highway No.18 Widening Projects - Phase 2 (remain section, 70km)	Ongoing (1998-2003)	JBIC	232.0	232.0
	H18	Bai Chay Bridge Construction	Ongoing (2000-2004)	JBIC	98.0	98.0
	H19	National Highway No.1 Hanoi - Ninh Binh Widening Project (80km)	New		76.0	2.7
	H20	National Highway No.70 Upgrading Project (Hanoi-Lao Cai; 191km)	New		125.0	4.4
	H21	National Highway No.10 Upgrading Project (147km)	Ongoing (1998-2003)	JBIC	302.0	302.0
	H24	East-West Corridor Project (ASEAN 8; NH9; 75km)	Ongoing (1999-2003)	ADB	24.0	24.0
	H25	East-West Corridor Project (ASEAN 7A; NH12A, 29; 120km)	Ongoing	GOV	39.0	39.0
	H29	Trans HCMC Highway Project (21.4km)	Ongoing (2000-2004)	JBIC	758.6	758.6
	H30	Trans Asia Highway Project (NH22 to Cambodia; 80km)	Ongoing (1999-2002)	ADB	144.7	144.7
	Secondary Road Network Development					
	H49	Secondary Road Network rehabilitation Program	New		94.0	94.0
	H50	Tertiary Road Improvement Project	New		569.0	113.8
	Road Safety					
	H52	Road Safety Improvement Program	New		30.0	15.0
		Subtotal			**4,794.9**	**3,819.0**
Railway	*Rehabilitation and Minor Improvement*					
	R01	Hanoi-HCMC Railway Bridge Rehabilitation	Ongoing (1995-2001)	JBIC	47.0	47.0
	R02	Rehabilitation of Tracks & Bridges	New		325.0	70.4
	R05	Signal and Communication Equipment Modernization	New		128.0	7.7
	R07	Alarm at Crossings	New		21.0	1.3
	Capacity Expansion of Critical Sections					
	R08	New Stations for Train Exchange (100 stations)	New		26.0	1.6
	Operation					
	R28	CTC and Computerization	New		136.0	8.2
		Subtotal			**683.0**	**136.1**
Inland Waterway	*Port Improvement*					
	W01	Hanoi/Khuyen Luong Port Improvement	New		11.0	5.5
	W03	Ninh Binh/Ninh Phuc Port Improvement	Partly Ongoing	GOV	14.4	7.2
	W08	My Tho/Can Tho Port Improvement for IWT	Partly Ongoing	WB/GOV	6.1	4.2
	W10	Vinh Thai (Vinh Long) Port Improvement	New		4.3	2.1
	W12	Ca Mau Port Improvement	New		2.9	1.5
	W14	Cao Lanh (Dong Thap) Port Improvement	New		6.4	3.2
	W16	My Thoi (Long Xuyen) Port Improvement	New		6.2	3.1
	W18	Passenger Terminal Development	New		2.2	2.2
	W20	Other Local Port Development	New		47.7	10.7
	Waterway Improvement					
	W22	Quang Ninh-Hanoi/Pha Lai Waterway Improvement	New		13.9	6.9
	W23	Ninh Binh/Nam Dinh-Hanoi Waterway Improvement	New		19.9	10.0
	W24	Quang Ninh-Nam Dinh/Ninh Binh Waterway Improvement	New		6.0	3.0
	W25	Hanoi-Viet Tri-Lao Cai Waterway Improvement	New		74.0	40.3
	W29	HCM-Can Tho Waterway Improvement	Partly Ongoing	WB/GOV	23.2	23.2
	W30	Can Tho-Ca Mau Waterway Improvement	Partly Ongoing	WB/GOV	17.6	17.6
	W31	Cho-Lach-Kien Luong Waterway Improvement	Partly Ongoing	WB/GOV	25.5	25.5
	W32	Saigon-Dong Thap Muoi-Long Xuyen Waterway Improvement	Partly Ongoing	GOV	5.4	5.4
	W33	Thi Vai-Nuoc Man Canal Development	New		3.2	3.2
	Operation & Safety					
	W39	IWT Safety Enhancement	New		52.7	20.7
	W41	IWT Education	Ongoing (1997-2002)	CIDA	14.1	7.4
		Subtotal			**356.7**	**202.9**
Port & Shipping	*Port Expansion/Development*					
	P01	Cai Lan Port Expansion Project	Partly Ongoing (96-01)	JBIC	128.1	70.0
	P03	Hai Phong General Port (Phase II)	Ongoing (2000-2010)	JBIC	138.0	106.0
	P05	Cua Lo Port Project	New		49.3	49.3

Cont'n of Table 6.3.2

Sector	Project No.	Project Name	Status (Original Schedule)	Fund Source	Project Cost (USD Million) 2001-	2001-05
	P09	Danang Bay - Tien Sa Port Rehabilitation	Partly Ongoing (99-03)	JBIC	172.0	113.0
	P10	Specialized Port for Dung Quat Industrial Zone	New		130.0	4.6
	P12	Qui Nhon Port Development	New		36.0	1.3
	P14	Nha Trang Port Development	New		57.0	2.0
	P16	Ho Chi Minh City General Port	New		200.0	35.5
	P18	Ba Ria-Vung Tau General Port	New		206.0	36.0
	P20	Can Tho Port Development	New		64.0	3.8
	P22	Industrial Port Development	New		67.0	2.3
	P24	Other Local Ports	New		22.7	4.9
	Operation & Safety					
	P31	Development of Aids to Navigation (ATN)	New		63.6	63.6
	P33	Maritime SAR and Oil Spill Protection	New		52.8	52.8
	P35	Seafarers' Education Upgrading Project	New		20.9	20.9
	Subtotal				**1,407.4**	**566.0**
Air	*Airport Expansion/Development*					
	A01	Noi Bai International Airport Development Project	Ongoing (1996-2002)	GOV	17.1	17.1
	A02	New Passenger Terminal Building (T1) Construction in Noi Bai International Airport	Ongoing (1995-2001)	GOV & Credit Loans	24.0	24.0
	A03	Noi Bai Airport Development Project - Phase 1	New		53.9	15.9
	A05	Danang International Airport Development Project - Phase 1	New		77.7	22.9
	A07	Expansion of International Passenger Terminal Building in Tan Son Nhat International Airport	Ongoing (1999-2002)	SAA	6.0	6.0
	A08	Airfield Pavement Overlay in Tan Son Nhat International Airport	Ongoing (1999-2001)	SAA	14.4	14.4
	A09	Tan Son Nhat International Airport Development Project	New		226.7	66.9
	A11	Secondary Airport Development Project (Cat Bi, Phu Bai, Nha Trang)	New		85.6	0.9
	A14	Rehabilitation of Tertiary Airports - Phase 1 (9 airports)	New		120.8	53.7
	Air Traffic Control					
	A16	Reconstruction of HCM Area Control Center and Noi Bai Air Traffic Management Center	New		58.0	58.0
	A19	Communication and Navigational Equipment Replacement Program	New		12.2	12.2
	A20	Equipment Installation and Upgrading Project for New CNS/ATM -Phase 1	New		32.8	32.8
	A22	Restructuring of Air Traffic Service - Direct Speech (ATS-DS) Circuits and Aeronautical Fixed Telecommunications Network (AFTN)	New		2.5	2.5
	A23	Rehabilitation of Civil Aviation Training Center of Vietnam (CATCV)	New		3.0	1.7
	A24	Flight Calibration of Navigation Aids	New		1.1	0.4
	A25	Test Equipment Replacement and the Equipment Standards Laboratory	New		1.9	1.9
	Subtotal				**737.7**	**331.3**
	Total				**7,979.7**	**5,055.3**

Sector	Project No.	Project	Status (original Schedule)	Fund Source	Project Cost (USD Million) 2001-	2001-05
Rail	R26	Rolling Stock Acquisition	New		1,882.0	941.0
IWT	W43	IWT Fleet Development	New		191.9	96.0
Shipping	P29	Fleet Expansion and Modernization Program	New		1,407.0	703.5
Air	A32	New Aircraft	Ongoing (2000-2003)	VAC & Credit Loans	400.0	400.0
	Subtotal				**3,880.9**	**2,140.5**

Table 6.3.3
Investment Requirements vs. Fund Availability During 2001-2005

		US$ billion
• Investment Requirement for the Master Plan Period (2001-2005)		
1) Maintenance/Minor Projects not covered by the VITRANSS		1.0
2) Urban Transport [1/]		1.5
3) Rural Transport [2/]		0.4
	Subtotal	2.9
4) VITRANSS Project		
(1) Ongoing/Committed Projects		2.9
(2) New Projects		0.6
	Subtotal	3.5
	Total	6.4
• Possible Available Fund (Low – High Case)		4.9 – 5.1

1/ At present, there are no definite strategy and investment program for urban transport.
2/ The amount needs to be adjusted based on the strategy which is being developed by the government.

Figure 6.3.1
Schedule of Short-term Projects

Sector	No.	Project Name	Project Cost (mil. US$) Total	2001-	2001	2002	2003	2004	2005	2006-
Road	H01	Highway Rehabilitation Project (Hanoi-Lang Son; 190km)	162.5	16.3						
Primary Network Development	H02	Highway Rehabilitation Project II (Vinh-Dong Ha; 100km)	236.6	23.7						
	H03	2nd Road Development (Nha Trang-Quang Ngai; 600km)	163.0	81.5						
	H04	Highway Rehabilitation Project III (Can Tho-Nam Can; 230km)	180.0	180.0						
	H05	Bridge Rehabilitation Project - Phase I (435km)	162.2	16.2						
	H06	Bridge Rehabilitation Project - Phase II (752km)	211.0	105.5						
	H07	Hai Van Pass Tunnel (2 lanes, 14km)	251.0	225.9						
	H08	My Thuan Bridge (1,535m)	79.3	15.9	(completed)					
	H09	Can Tho Bridge Construction	294.0	294.0						
	H10	NH No.1 Urban Bypass (Hanoi-HCMC; 70km)	67.0	67.0						
	H12	NH No.14, 14B Upgrading Project (Danang-Tay Ninh; 900km)	360.0	360.0						
	H13	NH No.15 Rehabilitation Project (Hanoi - Hue; 748km)	45.0	45.0						
	H14	Hanoi Ring Road	256.0	256.0						
	H15	Thanh Tri Bridge Construction	410.0	410.0						
	H16	NH No.5 Improvement Project (remaining section, 91km)	215.6	215.6	(completed)					
	H17	NH No.18 Widening Projects - Phase 2 (remain section, 70km)	232.0	232.0						
	H18	Bai Chay Bridge Construction	98.0	98.0						
	H19	NH No.1 Hanoi - Ninh Binh Widening Project (80km)	76.0	76.0						
	H20	NH No.70 Upgrading Project (Hanoi-Lao Cai; 191km)	125.0	125.0						
	H21	NH No.10 Upgrading Project (147km)	302.0	302.0						
	H24	East-West Corridor Project (ASEAN 8; NH9; 75km)	30.0	24.0						
	H25	East-West Corridor Project (ASEAN 7A; NH12A, 29; 120km)	65.0	39.0						
	H29	Trans HCMC Highway Project (21.4km)	758.6	758.6						
	H30	Trans Asia Highway Project (NH22 to Cambodia; 80km)	144.7	144.7						
Secondary Network Dev't.	H49	Secondary Road Network rehabilitation Program	94.0	94.0						
	H50	Tertiary Road Improvement Project	569.0	569.0						
Road Safety	H52	Road Safety Improvement Program	30.0	30.0						
Railway	R01	Hanoi-HCMC Railway Bridge Rehabilitation	104.0	47.0						
Rehabilitation and Minor Improvement	R02	Rehabilitation of Tracks & Bridges	325.0	325.0						
	R05	Signal and Communication Equipment Modernization	128.0	128.0						
	R07	Alarm at Crossings	21.0	21.0						
Cap. Expans'n.	R08	New Stations for Train Exchange (100 stations)	26.0	26.0						
Inland Water Port Improvement	W01	Hanoi/Khuyen Luong Port Improvement	11.0	11.0						
	W03	Ninh Binh/Ninh Phac Port Improvement	14.4	14.4						
	W08	My Tho/Can Tho Port Improvement for IWT	6.1	6.1						
	W10	Vinh Thai (Vinh Long) Port Improvement	4.3	4.3						
	W12	Ca Mau Port Improvement	2.9	2.9						
	W14	Cao Lanh (Dong Thap) Port Improvement	6.4	6.4						
	W16	My Thoi (Long Xuyen) Port Improvement	6.2	6.2						
	W18	Passenger Terminal Development	2.2	2.2						
	W20	Other Local Port Development	47.7	47.7						
Water Improvement	W22	Quang Ninh-Hanoi/Pha Lai Waterway Improvement	13.9	13.9						
	W23	Ninh Binh/Nam Dinh-Hanoi Waterway Improvement	19.9	19.9						
	W24	Quang Ninh-Nam Dinh/Ninh Binh Waterway Improvement	6.0	6.0						
	W25	Hanoi-Viet Tri-Lao Cai Waterway Improvement	74.0	74.0						
	W29	HCM-Can Tho Waterway Improvement	23.2	23.2						
	W30	Can Tho-Ca Mau Waterway Improvement	17.6	17.6						
	W31	Cho-Lach-Ben Luong Waterway Improvement	25.6	25.6						
	W32	Saigon-Dong Thap Muoi-Long Xuyen Waterway Improvement	6.4	6.4						
	W33	Thi Vai-Nuoc Man Canal Development	3.2	3.2						
Safety	W39	IWT Safety Enhancement	52.7	52.7						
	W41	IWT Education	14.1	14.1						
Port & Shipping Port Expansion / Development	P01	Cai Lan Port Expansion Project	128.1	128.1						
	P03	Hai Phong General Port (Phase II)	138.0	138.0						
	P05	Cua Lo Port Project	49.3	49.3						
	P09	Danang Bay - Tien Sa Port Rehabilitation	172.0	172.0						
	P10	Specialized Port for Dung Quat Industrial Zone	130.0	130.0						
	P12	Qui Nhon Port Development	36.0	36.0						
	P14	Nha Trang Port Development	67.0	67.0						
	P16	Ho Chi Minh City General Port	200.0	200.0						
	P18	Ba Ria-Vung Tau General Port	206.0	206.0						
	P20	Can Tho Port Development	64.0	64.0						
	P22	Industrial Port Development	67.0	67.0						
	P24	Other Local Ports	22.7	22.7						
Safety and Environmental Protection	P31	Development of Aids to Navigation (ATN)	63.6	63.6						
	P33	Maritime SAR and Oil Spill Protection	52.8	52.8						
	P35	Seafarers' Education Upgrading Project	20.9	20.9						
Air Airport Expansion / Development	A01	Noi Bai International Airport Development Project	57.1	17.1						
	A02	New Passgr. Ter. Bldg. (T1) Construction in Noi Bai Int'l. Airport	80.0	24.0						
	A03	Noi Bai Airport Development Project - Phase 1	53.9	53.9						
	A05	Danang International Airport Development Project - Phase 1	77.7	77.7						
	A07	Expn of Int'l Passenger Ter. Bldg in Tan Son Nhat Int'l Airport	12.0	6.0						
	A08	Airfield Pavement Overlay in Tan Son Nhat International Airport	16.0	14.4						
	A09	Tan Son Nhat International Airport Development Project	226.7	226.7						
	A11	Secondary Airport Dev't Project (Cat Bi, Phu Bai, Nha Trang)	85.6	85.6						
	A14	Rehabilitation of Tertiary Airports - Phase 1 (9 airports)	120.8	120.8						
Air Traffic Control	A16	Reconst'n of HCM Area Control Ctr. and Noi Bai Air Traffic Mng't Ctr.	58.0	58.0						
	A19	Communication and Navigational Equipment Replacement Program	12.2	12.2						
	A20	Equip't. Installation and Upgrading Proj. for New CNS/ATM -Phase 1	32.8	32.8						
	A22	Restructuring of ATS-DS Circuits and AFTN	2.5	2.5						
	A23	Rehabilitation of Civil Aviation Training Center of Vietnam (CATCV)	3.0	3.0						
	A24	Flight Calibration of Navigation Aids	1.1	1.1						
	A25	Test Equip't. Replacement and the Equip't. Standards Lab.	1.9	1.9						

Legend : F/S
: Implementation

7 POLICY PRIORITIES AND INSTITUTIONAL IMPROVEMENTS

7.1 Introduction

The recommended policy and institutional changes over the next five years are based on the long-term strategies for the transport sector and each subsector described earlier in Chapters 4 and 5. In addition to actions aimed at operational and infrastructural improvements which are reflected in the master plan investment projects for each subsector, these strategies include policy actions and institutional reforms to improve:

- competitive frameworks,
- institutional arrangements, including sector management and SOE reform, and
- funding of transport activities.

Possible ways to support implementation of the short-term plan, through appropriate policy and institutional strategies, are discussed below.

7.2 Implementation Plan

As described in the previous chapter, a wide range of policy actions are required for each transport mode to support the implementation of the short-term plan: (a) to increase efficiency, safety and level of transport service, and (b) to provide the planned infrastructure cost-effectively with adequate funds.

However effective implementation of the master plan requires policy-making to be based not just on the viewpoints of each mode but rather based on a view of the transport sector as a whole. This, in turn, requires effective transport sector policies in each of the following areas:

- Provision of a regulatory framework and enforcement mechanism to ensure efficient, competitive transport services, so that the proposed infrastructure investments achieve the intended benefits without excessive external costs such as accidents and adverse environmental impacts,
- Development of effective planning capability, to achieve objectives effectively at reasonable cost,
- Development of adequate construction services, to provide the required standards of infrastructure with minimum cost,
- Establishment of an adequate infrastructure maintenance capability, so that the improved infrastructure provides the expected improved transport conditions over the full planned lifetime,
- Provision of financial mechanisms for development, maintenance and overall management of the infrastructure, to provide sustainability, and
- Strengthening of sector management to coordinate reform and implement policies and projects.

This chapter summarizes the policy-making requirements in each of these areas and then indicates the implications for implementation and need for technical assistance.

Provision of a Regulatory Framework and Enforcement Mechanism to Ensure Efficient, Competitive Transport Services

The long-term strategy for establishing the competitive environment for transport services involves three aspects - (a) a regulatory framework that meets minimum safety /environmental standards and fosters competition, (b) economically efficient pricing and cost recovery measures, and (c) equitization/commercialization of SOEs. The short-term actions required are set out below.

Regulatory Framework: Implementing the regulatory framework for transport involves:

- setting clear, minimum technical standards (justifiable on safety and environmental grounds), especially for road, inland water, railway and multimodal transport that currently have no proper legal framework,
- development of effective safety/environmental programs to increase enforcement and achievement of those minimum standards, and to minimize adverse impacts of transport, especially for road, maritime and aviation transport which involve serious safety and environmental issues, and
- minimizing barriers to competition in order to promote efficiency, by consolidating the recent reduction in transport licensing restrictions and maintaining safety/environmental standards through stricter licensing of drivers/captains/seafarers and vehicles/vessels.

Pricing and cost recovery policies: Competitive conditions can be enhanced in the short-term by implementing those policies that can, in practice, remove major distortive impacts on competition (for example remaining price controls and inadequate cost recovery from road users), and agreeing specific objectives for implementing other policies and working out the next steps to be taken.

The recommendations include the phasing out of remaining general fares and tariffs controls[1] and other distortions such as differential infrastructure charges for coastal and international shipping, introducing an axle load fee for road vehicles, and seeking the agreement of the MOT with the Ministry of Finance on the principles of charging for infrastructure provision.

Equitization and reform of transport SOEs: The equitization program needs to be accelerated through the MOT's current equitization project by defining a timetable for equitizing small-scale transport entities (especially the road transport

[1] If government wishes to keep tariffs below cost, replace these controls by specific subsidies awarded to transporters who can provide the service most efficiently (at minimum cost to government).

and the smaller inland water and maritime transport enterprises) and implementing it. Monitoring the results will allow the equitization rules to be further developed and applied to large-scale equitization (for example, to shipping enterprises).

For SOEs not to be equitized in the short-term, the priority is to implement, sometimes on a pilot project basis, a range of commercialization or corporatization reforms so that these can increase efficiency of SOEs and identify practical reforms that can be applied more generally in the long-term (especially the railway, ports and shipping enterprises as mentioned in the previous chapter).

Development of Effective Planning Capability

Efficient planning is hindered by the lack of delegation of basic infrastructure management functions to the specialized MOT departments, which have inadequate capacity to act as state administrators for each mode of transport, other than for particular purposes such as direct management of infrastructure maintenance.

The lack of a clearly defined, hierarchical transport network makes it difficult to handle investments and share administrative roles between the central and local governments. Defining the primary, secondary and tertiary network proposed in the VITRANSS should be further elaborated and institutionalized in terms of functional status, technical standard and specific management responsibility. In order to develop the network at tertiary level, capacity to make and evaluate plans by provincial and district authorities should be considerably strengthened.

At present, the database for network planning is extremely weak in Vietnam especially at provincial and local levels. The ad hoc approach through special studies like VITRANSS, is not a permanent solution. For sustainable planning and policy formulation in Vietnam's transport sector, an adequate institutional arrangement and system for database management is vital. One suggested approach would involve (a) coordinating data management between key transport agencies to consolidate their operation and management information, (b) conducting periodically (say, 3-5 years) national transport surveys for key aspects as undertaken by the VITRANSS, and (c) strengthening a unit in MOT/TDSI for transport database management. Database management at provincial levels needs to be strengthened in a similar way.

Development of Adequate Construction Services

To provide better quality infrastructure at minimum cost, short-term actions include raising technical standards and improving competition in the planning/design/construction business. To raise the quality of Vietnamese contractors and consultants in the short-term requires (1) stronger incentives for

training (through higher qualification standards), and (2) investment in better equipment and construction systems. To improve competition in the construction, dredging and similar businesses, measures should be introduced such as (1) step-by-step equitization of SOEs, (2) clarification of procurement guidelines, (3) removal of restrictions on foreign construction companies bidding for foreign contracts, (4) removal of price controls, (5) encouragement of more contractors to enter the bidding process, and (6) stricter monitoring of procurement activities.

Establishing an Adequate Infrastructure Maintenance Capability

To ensure that the infrastructure improved under the master plan provides better transport conditions over the expected lifetime, high priority must be given to improving maintenance standards and systems in the short-term, both for primary/secondary infrastructure mainly under direct central government management, and for tertiary infrastructure mainly under local government management.

On the improvement of maintenance of primary and secondary infrastructure, a wide range of measures have been proposed in past studies and institutional strengthening projects in all subsectors to (1) increase standards of maintenance, (2) introduce modern infrastructure maintenance management systems, (3) strengthen the capacity of MOT specialized departments to manage maintenance, with new guidance documents and procedures, and training for personnel in new systems and procedures, (4) increase management incentives by extending the amount of maintenance carried out under competitive contract, and (5) increase management incentives in internal maintenance units by giving them greater autonomy but making them more accountable for services offered.

Relatively little improvement has taken place in maintenance of tertiary infrastructure so this deserves close attention in the next five years. However sustainable progress cannot be achieved until the basic networks and facilities, and their technical standards, have been defined, and responsibilities for maintenance been clarified. Improvements in maintenance are generally required in all areas, often involving the replacement of existing ad hoc arrangements with completely new systems and working arrangements, including (1) definition of technical standards, (2) linking maintenance planning and financing to the planning of rehabilitation/upgrading/ new construction, (3) development of modern maintenance systems and maintenance programs adapted to suit needs at tertiary level, (4) capacity strengthening of provincial maintenance units, guided by the MOT agencies, and (5) where opportunities exist, conducting trials of various ways of delegating maintenance responsibilities to local organizations under contract.

Provision of Financial Mechanisms for Development, Maintenance and Management of Infrastructure

Implementing the master plan requires improved financing in the short-term, both for maintenance/management and for rehabilitation/upgrading/improvement/new construction of infrastructure.

Maintenance Financing: The first priority is to improve maintenance planning and management, so that available resources are allocated more effectively and the need for additional resources is minimized. However, even after making such improvements, current financial allocations would be completely inadequate to meet future needs, and better mechanisms are required to implement the planned maintenance programs. The possible improvements include (1) implementing radically new mechanisms such as the commercially managed fund proposed for roads, in which a board (including road user representatives) manages an off-budget fund derived from user charges (not earmarked taxes), (2) some other form of fund in which tax revenues from users are allocated by the Ministry of Finance for maintenance purposes and (3) a more straightforward maintenance budgeting system in which future needs are provided based on planned maintenance programs. At present, Vietnam has none of these. Allocations of funds are only approximately based on simple norms (like cost per km of route) and control of financial effectiveness is impossible.

Any of the three types of improvement could be considered in Vietnam for each mode of transport. The commercially managed road fund is being actively considered in Vietnam. The road fund concept has many potential advantages for Vietnam such as (1) enabling finance for road maintenance to be raised with the active support of road users, and (2) improving efficiency and accountability. However until the practical problems with such an approach are sorted out, priority should be given to improving the budget system for each mode: (1) reviewing current budgetary procedures and need for improvement, (2) making any necessary changes to budgetary responsibilities and procedures, and (3) introducing improved systems for maintenance planning and costing, and for monitoring infrastructure condition.

A start has been made along such lines for roads. Similar improvements in maintenance planning are being made for inland waterways with a view to implement an improved system within five years, but work has yet to start on improving maritime maintenance planning (which is a priority area for improvement).

New Sources of Development Finance: Developing new sources of investment finance must be duly considered. Over the master plan period it is expected that decreased reliance can be placed on ODA funding of transport, and the government is actively considering new sources of investment finance which can

be mobilized through a transport development fund, including a savings account that can raise local finance. New sources of finance are also required if the private sector is to invest in large-scale shipping. Improving the supply of local finance in the short-term could potentially help to promote much greater investment in transport because, according to the Ministry of Finance, many foreign investments cannot currently be disbursed because of lack of reliable supply of counterpart finance.

There is scope for attracting foreign investment finance for infrastructure through direct investments, Joint Ventures and BOT-type arrangements. However at present there is limited interest in making such investments. Nevertheless, to encourage increased foreign investment in the longer term, the following steps can be taken by the government, working together with MOT: (1) removal of obstacles to foreign investment such as restrictive laws on foreign businesses, controls on prices, use of foreign capital and repatriation of profits, (2) removing the transport sector from the list of sectors subject to special restrictions on foreign investment (especially considering that, in connection with modern logistics systems, transport is often considered as a mere link in the production process), (3) clarification of the conditions under which liabilities would be placed on government (for example development risks under BOT schemes) and the foreign investor (labor obligations), and (4) monitoring how Vietnamese banks offer credit to private companies compared to SOEs, and where possible remove obstacles to supply of credit (both domestic and foreign).

Strengthening of Sector Management

The overall master plan strategy for sector management development involves enhancing management through decentralization, divesting of commercial functions and promoting human resources. To implement this strategy in the short-term, in conjunction with the wide-ranging reforms necessary for the transport sector, is a major challenge for the MOT in the following seven key areas:

Establishing the regulatory framework: Continued guidance is required from MOT to ensure that the drafting efforts at subsector level produce proposals that are consistent with government's overall transport policies and strategy, especially for (1) multimodal and international aspects, which cannot be handled adequately at subsector level, (2) ensuring that the recent removal of licence restrictions is consolidated into a regulatory regime with low entry barriers, and (3) helping to define the role of local authority in transport regulation.

The MOT should also seek agreement with the Ministry of Finance on the principles of charging for infrastructure and work with other ministries to phase out remaining tariff controls on (1) provincial bus routes, if any controls remain, (2) truck tariffs in mountainous areas, replacing these if required with subsidies for specific services offered, (3) movements of rice and fertilizer on the railway,

(4) railway passenger tariffs (with two tier charging for foreigners and Vietnamese), (5) maritime and inland water port tariffs, (6) air transport tariffs (for both Vietnamese and foreigners), and (7) support services such as dredging and construction.

Strengthening planning and policy-making capacity of MOT: Planning and policy-making capacity of MOT is insufficient because there are not enough staff with the required experience in areas such as regulation, pricing, subsidy and cost recovery policy-making; project and policy evaluation; strategic planning; and monitoring of policy and project implementation. Furthermore, existing expertise is spread out in different general departments and in external institutes. Planning data is also difficult to obtain although the VITRANSS study has managed to assemble and develop this during the last year.

To strengthen MOT's capacity it is recommended that (1) an institutional reform plan is developed with the aim of strengthening MOT capacity in the core areas in planning and policy-making (perhaps by concentrating economics/planning expertise in one department), (2) strategic planning is improved through modern planning/evaluation methods and clear guidelines, so that investment priorities can be established on a rational basis and decision-making delegated to a lower level, allowing senior decision-makers to focus on overall policy and strategic matters, (3) the VITRANSS model should be developed to update the forecasts as and when better planning data become available, (4) regulatory and cost recovery policies are developed using financial analysis tools, (5) systems are developed for monitoring policy implementation, and (6) an external agency, such as the TDSI, is appointed to maintain and develop the VITRANSS planning database.

Improve supply of reliable information to decision-makers and planners: The MOT considers that only 30% of the information it needs is actually available. Existing statistics reflect the requirements of the past rather than needs of future decision-makers under market conditions. Many important items such as numbers of vehicles, traffic flows, tariffs, and accidents are either completely lacking or cover only part of the sector. Generally the data are often unreliable.

To supply decision-makers with adequate information it is recommended that in the short term the MOT (1) coordinates a review of information needs by its agencies at all levels (central, provincial and district) and (2) identifies measures required to obtain the required information at least cost based on the review and an assessment of existing database systems.

Coordinate institutional change and promote decentralization: The MOT should help its agencies to strengthen policy implementation capacity in areas that (1) involve decisions that can only be taken at government level, (2) involve significant overlap between modes, or (3) require a common approach between modes.

This involves (1) renewing the ministry's commitment to delegating powers and responsibilities for infrastructure management to MOT's specialized departments, as part of the MOT's current review of responsibilities in the transport sector, (2) reviewing current procedures for implementing projects through PMUs to try to streamline administration and reduce delays, (3) taking a strong lead in improving the management of provincial and district transport infrastructure, (4) establishing a clearer legal basis for cooperation between ministries and PPCs, especially to deal with seemingly insurmountable difficulties that are sometimes experienced at local level (such as getting detailed vehicle registration data from the Ministry of Police), and (5) initiating liaison groups that involve transport users more fully in the MOT's work.

Coordinate human resource development: To foster long-term human resource development, the priority in the short-term is to start formulating comprehensive human resource development policies and strategies for the whole of the transport sector. It is recommended that (1) the MOT should renew its commitment to human resource development by a clear statement of policy objectives, including increasing training incentives (through raising qualification standards both for MOT staff and for its external contractors), and training opportunities (upgrading training programs to serve future needs), (2) in accordance with this policy, the Labor and Personnel Department of MOT should work with other ministries to develop a human resource development strategy that covers general technical, management other basic needs in the sector, in addition to the specific training needs in the transport sector identified by VITRANSS and other studies, (3) the strategy should also cover the specific needs of senior MOT decision-makers and specialists in transport economics, planning and policy analysis.

Strengthen the basis for financing infrastructure and operations: To implement proposed improvements in finance of infrastructure and operations, the subsector agencies need MOT to obtain government support in the short-term for (a) off-budget funds for infrastructure maintenance (initially the proposed road fund), (b) raising additional resources for transport investment (through the transport development fund), and (c) reducing barriers to foreign participation in transport (for increasing potential finance for container terminals and for purchasing ships).

Implement equitization and SOE reforms: MOT is responsible for taking the lead in the equitization program, which requires much to be done in the short-term. This requires the MOT (a) to appoint full time staff to define and implement a timetable for carrying out the equitization program, (b) to establish a monitoring mechanism to allow progress to be assessed and improvements made to the program, (c) to assess the possible need for greater government support to deal with staff redundancies caused by SOE reform, (d) to work with government to enable the SOEs remaining within the large corporations (VINALINES, VINASHIN

and VAC) to have greater autonomy, (e) to seek government support for broader reforms such as changing the legal status of public interest SOEs to give them adequate financial autonomy while making them more accountable for use of state assets and for level of service offered, (f) to seek government support to establish ferries, pilotage services and other inherently commercial units as business SOEs rather than as public service SOEs.

7.3 Implementing Considerations

The above recommended short-term implementation plan is summarized in Table 7.3.1 for each mode and in Table 7.3.2 for the sector management aspects.

This plan involves many policy actions to be taken in conjunction with the master plan investments. To make the process manageable, the many recommendations listed above have to be prioritized further, realistic targets defined and initial implementation steps defined in more detail. Then they could be included as measures to be adopted during the government's next five year plan.

As a first step, the recommendations listed in the summary tables have tentative targets and schedules. However only when further work on implementation is done would it be possible to define realistic implementation schedules. Meanwhile the suggested dates and targets given in the summary tables should only be regarded as tentative suggestions on which to base further discussion.

Table 7.3.1
Policy and Institutional Reform Actions at Subsector Level

Sub-sector	Action	Main Responsibility
ROAD	*(1) Competitive Framework*	
	• Establish the road act within two years and the implementing regulations within three years, with (a) clear/enforceable technical standards, (b) no quantity controls or fares controls by provinces on non-urban bus services, (c) no additional minimum financial requirements other than those defined in the business licence, and (d) consistency with international requirements such as for vehicle size and weight regulations for container trucks	MOT
	(2) Institutional Changes	
	• Incorporate the short-term recommendations of the World Bank's Road Safety Strategy Study in the Traffic Safety Strengthening Program proposed to government by NTSC to reduce the number and severity of road accidents: (a) establishing an accident database, (b) including road safety audits in all road improvement designs, (c) developing measures to prevent encroachment of roads, (d) improving education/publicity on road safety, (e) improving driver training and enforcement. (f) This requires increasing the NTSC road safety budget from about US$ 1.5 million to US$ 3 million and including a greater input initially from international specialists to establish a firm cost-effective foundation for the safety program.	Government, MOT and other NTSC members
	• Implement fully the recommendations of the ADB's Institutional Strengthening TA to MOT/VRA, deepen the reforms of VRA and extend them to provincial/district levels to enable the whole of the primary and secondary networks (and at least 20% of tertiary roads) to be under proper maintenance within five years	MOT, VRA, PPC, PTAs
	• Target training at road management aspects such as pavement and maintenance management and contracting procedures	MOT, VRA, PPC, PTAs
	(3) Funding	
	• Depending on the results of the forthcoming World Bank workshop, establish a road fund within two years for regular maintenance activities, using off-budget funds raised from road users, with a management board responsible to the MOT or the Ministry of Finance. Allocate to the fund: (a) VND 250 per litre of diesel and gasoline consumed in Vietnam, initially, to establish the fund without increasing the budget allocation to road maintenance, (b) then raise the allocation step-by-step by introducing an axle weight fee and by increasing the gasoline levy by about 50% within five years This could raise road maintenance finance from about US$ 80 million to US$ 150 million	MOT with Ministry of Finance
	(4) Operations/Management	
	• Equitize all remaining bus and truck SOEs under MOT and provinces within three years	MOT, PPC
RAILWAY	*(1) Competitive Framework*	
	• Establish the railway act within two years and implementing regulations within three years	MOT/VR
	• Establish railway inspection unit within MOT within one year to oversee safety aspects	MOT
	(2) Institutional Changes	
	• Establish VR as a corporation, within one year, with six separate HQ business departments for passenger, freight, operations, rolling stock maintenance, infrastructure and administration (with equivalent units within each region or union)	MOT
	• The HQ and the three regions jointly prepare realistic business plans within three years for passenger, freight and other support departments	VR

	• Develop management systems (MIS, costing tools, business/financial planning, marketing) within two years, and implement on a pilot basis within three years before applying throughout the railway within four years.	VR
	• Introduce low cost marketing measures within two years (ticketing, customer information and customer relations etc.)	VR
	(3) Funding	
	• Based on the business plans, establish a performance agreement within four years between MOT Planning and Investment Department and VR to define the medium-term contractual basis for VR's payment for infrastructure (fixed annual fee plus proportion of revenue earned) and government subsidy (clear operational/financial targets and obligations on each side)	MOT/VR
	• Remove remaining controls on railway fares and tariffs, including the two tier fare structure for foreigners and Vietnamese, within two years	GPC
	(4) Operations/Management	
	• Rehabilitate and renew existing equipment and infrastructure to sustain carrying capacity in the next three years at minimum investment	VR
	• Define the technical standards for future development of infrastructure and new purchases of equipment with modern technology within two years	VR
	• Define new operating procedures and rules for adoption of new technology within three years.	VR
	• Train management and staff in new systems, manuals and procedures resulting from the organizational reforms and proposed use of new technology within four years.	VR
INLAND WATER	*(1) Competitive Framework*	
	• Establish the inland water transport act within two years and implementing regulations within three years, with (a) clear/enforceable technical standards (b) no restrictions on area or route of operation (only restrictions based on classification of waterway) (c) no additional minimum financial requirements other than those defined in the business licence	MOT/VIWA
	(2) Institutional Changes	
	• Establish improved VIWA management systems according to Canada-Vietnam TA project, including new organization, basic management systems, vessel inspections, procurement/contracting framework, environmental monitoring plan, and waterways maintenance plan within three years. On-the-job training provided throughout.	VIWA
	• Implement Canada-Vietnam TA pilot project with new policies, plans and systems in 2002	VIWA
	• Replicate pilot project nationally in 2003	VIWA
	(3) Funding	
	• Improve fee collection system to improve cost-effectiveness and assess potential for even greater cost-effectiveness by replacing waterway-use fees with vessel-based fees, within one year.	VIWA
	• Depending on the results of the proposal to establish a road fund, implement within three years a water transport fund on a similar basis (or extend the scope of the road fund). Establish the water fund with a fuel levy of VND 27 per litre of diesel consumed in Vietnam. This could provide US$ 9 million in 2005 (50% higher than current waterway maintenance expenditure)	MOT/VIWA
	(4) Operations/Management	
	• Equitize all inland water transport SOEs within five years	MOT/Provinces
	• Transfer port ownership to provinces and commercialize port management by issuing management contracts within five years	Government/MOT/ Provinces
	• Lease out port facilities to private investors to provide container handling facilities in at least one pilot project within five years	Provinces
MARITIME	*(1) Competitive Framework*	
	• Formulate regulations, within one year, for ship inspections and other aspects, as required to meet international agreements	VINAMARINE

	(2) Institutional Changes	
	• Clarify responsibilities between VINAMARINE and VIWA for infrastructure management by assigning responsibility to VINAMARINE for all coastal areas (except in designated cases) and designated rivers from the coast (to Haiphong, Saigon and Can Tho Ports) within one year	MOT
	• Divest remaining ports and other commercial functions from VINAMARINE within one year	MOT
	• Target training at improving port state control inspectors, to implement minimum international technical standards of ships, and infrastructure management	VINAMARINE
	• Strengthen VINAMARINE capacity to manage maritime sector (improving dialogue with shipping industry and shippers, planning and infrastructure maintenance)	VINAMARINE
	(3) Funding	
	• Secure private investment in container handling facilities in general purpose ports, in accordance with their planned future role (through leasing, joint venture, or BOT) in at least one port within five years	VINAMARINE
	• Unify coastal shipping and ocean shipping charges for use of maritime infrastructure within one year	VINAMARINE
	• Remove GPC control over port charges and allow ports to base charges on their costs within one year	Ministry of Finance
	(4) Operations/Management	
	• Equitize remaining maritime service SOEs within one year	MOT
	• VINALINES should immediately adopt a passive ownership role towards remaining shipping and port SOEs to foster competition, (a) avoiding direct financial assistance, and (b) replacing the present uniform levy charged to members with a lower levy but charging additional fees for management services offered to its members	MOT
	• Commercialization of ports by establishing each port as an independent corporation with management board having local shippers and other representatives - by introducing reform at one port on a pilot basis within two years and applying the reforms to all other main ports within five years	MOT
	• Contract out handling and other services in order to foster competition within two more ports within two years, and within all remaining ports in five years	VINALINES
	• Target training at port management (management systems, modern handling methods) and skilled staff (use of modern equipment)	VINALINES
AVIATION	*(1) Competitive Framework*	
	• Incorporate international technical standards and agreements into Vietnamese law within two years by implementing the regulatory changes recommended by the French/Vietnamese TA.	CAAV
	• Phase out current fare controls to allow more market-based fares and to remove the two tier fare structure for foreigners and Vietnamese, within two years. Keep option to impose maximum fares controls under monopoly conditions.	GPC
	(2) Institutional Changes	
	• Strengthen management capacity of CAAV within four years through adopting modern traffic forecasting, facility life cycle management, and planning techniques that involve a broad range of stakeholders in airports. Requires training support.	CAAV
	• Strengthen sector management within five years by introducing/revising legal basis for airport authorities and VATM to focus on core regulatory oversight responsibilities, not commercial activities such as airport ground services and training.	CAAV
	• Provide training on introducing new CNS/ATM system within five years	VATM
	(3) Funding	
	• Base airport charges on the infrastructure provision costs at each port, base air traffic control charges on ATM service costs, and remove discounts to Vietnamese airlines within two years in accordance with international agreements	CAAV
	(4) Operations/Management	
	• To foster real competition in the domestic market, VAC's ownership of Pacific Airlines should be reduced to that of passive investor, concerned only with obtaining minimum return on investment and not with business strategy.	MOT

	• Aviation support units such as supply companies, air service companies, catering and goods handling should be divested from VAC, starting with three pilot cases within three years, followed by the rest within five years.	VAC
	• New airport corporations should be established to manage the commercial airport and infrastructure management functions in each of the three areas covered at present by the airport authorities. Local interests should be represented on the management boards. Initially, in the next five years, one such corp. should be created as a pilot case.	Government/ CAAV
	• Provide training in airport management, including passenger service, business development strategies, costing, financial planning, and contracting, to enable increased commercialization of airport management and ultimate creation of airport corporations.	CAAV
MULTI-MODAL	*(1) Regulatory Framework*	
	• Establish the legal framework for freight carriage (limits of liability, legal basis for multimodal transport operators and basis for freight forwarders to act as principals rather than agents) within three years, based on international agreements	MOT
	• Seek support from government to reform customs regulations, to allow modern clearance systems and use of efficient logistics systems within three years.	MOT
	• Accede to main international agreements on international trade and transport, and incorporate these into Vietnamese law within three years	MOT
	(2) Institutional Changes	
	• Seek support for training in multimodal operations from international operators within three years	MOT
	(3) Funding	
	• Encourage private financing by planning development of container ports and inland depots within two years and providing land and good access links within five years	MOT
	• Seek to remove government restrictions in foreign investment in transport within three years	MOT
	(4) Operations/Management	
	• Seek international support for assistance in establishing a shippers council in Vietnam to represent users within three years	MOT
RURAL	*(1) Regulatory Framework*	
	• Phase out transport tariff controls in mountainous areas to establish a level playing field and allow sustainable financing of rural transport services (if necessary with subsidies awarded by competitive tendering to least-cost operators)	GPC
	(2) Institutional Changes	
	• Establish within one year and train, over the next three years, a rural transport unit in MOT	MOT
	• Strengthen capacity for managing rural transport in provincial and district PTAs (planning and evaluation of infrastructure development, maintenance management)	MOT/PTAs/VRA
	(3) Funding	
	• Establish a firm basis for financing rural road/water maintenance and development, based on the recommendations of the Rural Transport Strategy Study	PTAs/Ministry of Finance/MOT
CROSS-BORDER	*(1) Regulatory Framework*	
	• Seek bilateral agreements with neighboring countries that allow efficient, through movement of transport vehicles/vessels between countries within five years	MOT
	• Ensure that Vietnamese transport legislation is consistent with international agreements and main protocols within five years	MOT
	(2) Institutional Changes	
	• Seek support from government to streamline customs and other procedures within three years	MOT
	(3) Funding	
	• Establish a monitoring system for cross-border flows, by transport type and traffic type, to identify potential bottlenecks so that investments can be targeted where they are most needed, within one year	MOT

Table 7.3.2 Policy and Institutional Reform Actions for Sector Management

Actions	Main Responsibility
(1) Establish a Coordinated Regulatory Framework	
• Work with the Specialized Departments for each mode to develop new MOT guidelines to subsector legal departments, within one year, on basis of drafting future regulation of each mode in order to unify legislation within the sector and make implementation easier. Covering: (a) aspects of the overall legal framework that need strengthening or better coordination, such as the safety, environmental and multimodal aspects highlighted by VITRANSS, (b) level of detail in modal acts and implementing regulations, (c) whether to treat infrastructure and transport activities under the same modal act or as separate acts, (d) scope of licensing provisions, following scrapping of past business licences, to set minimum safety standards while minimizing barriers to competition (e) proposed future responsibilities and authority of central government agencies and PPCs/PTAs over licensing or pricing (for example to guide urban bus services), (f) the economic basis for minimum technical standards (for example based on vehicle condition, not age) (g) how to take account of possible umbrella law on transport and future international agreements that Vietnam is intending to sign up to.	MOT/ VRA/ VR/ VIWA/ VINAMARINE
• Phase out remaining transport price controls within two years to allow prices to reflect the prices of each mode and each operator (see Table 7.3.1 for details). Possibly establish the GPC as a competition regulatory body within five years	GPC/Ministry of Finance
(2-1) Institutional Changes - Strengthening Planning and Policy-Making Capacity of MOT	
• Develop an institutional reform plan aimed at strengthening MOT in its core areas (covering organizational changes, functional definitions, management tools/procedures, staffing and training)	MOT
• Concentrate planning and policy-making functions of MOT in a single department (Planning and Investment) by transferring to it the non-legal functions of the Transport and Legal Department within one year	MOT
• Improve strategic planning through adopting modern planning and evaluation methods and clear guidelines to delegate planning tasks. Within three years.	MOT
• Develop the VITRANSS model as a policy/planning tool to continue analysis of policy options (infrastructure maintenance versus new construction, development options within each corridor, optimum location and type of ports etc.). Define work program within three years and carry out program within five years.	MOT/TDSI
• Develop systems for financial analysis (to assess cost recovery policies), and for operational analysis (to assess infrastructure capacity utilization, transport efficiency and competition) within five years	MOT
• Develop a project and policy implementation monitoring system, within one year, based on the VITRANSS recommendations (master plan investments and policy recommendations - see Table 7.3.1) to assess extent of implementation and enforcement, and need for removal of bottlenecks	MOT

(2-2) Institutional Changes - Improve the Supply of Reliable Information to Decision-Makers	
• Identify information needs of MOT and its agencies for making policy and its implementation, within one year.	MOT
• Identify the means to provide reliable information to decision-makers. Implement within three years.	MOT
(2-3) Institutional Changes - Coordinate Institutional Changes Throughout the Sector	
• As part of its current review of responsibilities in the transport sector, renew the MOT's commitment to delegating powers and responsibilities for infrastructure management to MOT's specialized departments.	MOT
• Complete the current government review of organization responsibilities by the production of legal documents defining the organization, function, tasks and duties of all provincial and MOT agencies involved in transport sector management, to clarify responsibilities, to avoid overlap and establish clear lines of authority and responsibility between them. In particular: (a) Finalize decrees defining the organization, functions, tasks and duties of these departments. (b) Review current procedures for implementing projects through PMUs to streamline administration and reduce delays, by (i) reducing the need for the PMUs to refer decisions up to ministerial level, and (ii) reducing the need for MOT to refer decisions to other ministries. (c) Rationalize other MOT units to reduce reporting lines, to avoid duplicated functions, and to establish institutes and support agencies as either part of the ministry, non-profit-making agencies or as commercially independent units (d) Seek support from government, within one year, for the minister of transport to appoint the PTA director, or at least to veto appointments on technical grounds Prepare draft documents within one year and implement within two years	MOT
• Revise Decree No. 22-CP defining MOT's organization to implement the ministerial changes within two years	MOT
• Take the lead in improving the management of provincial and district transport infrastructure, by: (a) setting technical and planning standards for infrastructure, and procedures for monitoring their application, (b) establishing procedures for ensuring that local plans are consistent with national plans, (c) establishing, in coordination with the Ministry of Finance, detailed guidance documents and procedures for financing local infrastructure, (d) strengthening capacity at provincial and district level for managing infrastructure (not just national and rural infrastructure, but also the intermediate road network and similar provincial infrastructure)	MOT
• Establish joint circulars between MOT and other ministries such as the Ministry of Police, within one year, to provide a basis for exchange of information and other important areas of cooperation	MOT/other ministries
• Establish liaison groups chaired by the MOT with representatives from transport users to disseminate policies and gain support for policy measures such as raising user charges. Establish the first group, for road financing, within one year.	MOT

(2-4) Institutional Changes - Coordinate Human Resource Development	
• MOT renews its commitment to human resource development by a clear policy statement, with specific objectives, including increasing (a) training incentives (higher minimum qualification standards for MOT staff and for external contractors) and (b) training opportunities (reorient training programs to serve real needs). Declare policy within one year and define human resource development programs within three years.	MOT/Subsector Agencies
• Strengthen the Labor and Personnel Department of MOT to develop, within three years, human resource development policies and strategies for the transport sector, including (a) reviewing with the Minister of Labor, qualification levels for skilled technicians, and policies for improving technical training, (b) training needs for senior decision-makers and specialists/experts, (c) training needs for managers of transport enterprises, (d) implementing the specific training needs identified by VITRANSS in inland water, maritime and aviation transport.	MOT
• Coordinate ODA-funded training courses to broaden impact and improve cost-effectiveness (within one year). Identify priority training subjects within two years and develop train-the-trainer courses and upgrade transport training institutes in priority subjects.	MOT/Provinces
(3) Strengthen the Basis for Financing Infrastructure	
• Seek support from government for establishing, within two years, off-budget funds for financing infrastructure maintenance for roads and inland water transport (see Table 7.3.1 for details)	MOT/Ministry of Finance
• Seek support from Ministry of Finance and transport users, within three years, for mobilization of development resources, with a greater contribution from users (higher fuel levy and/or vehicle/vessel import and ownership taxes)	MOT with Ministry of Finance
• Seek support from government and transport users for reducing, within two years, restrictions on foreign investment in transport	MOT/MPI
• Develop plans for possible private investments in ports and other infrastructure within two years, and seek government and user support to remove investment bottlenecks	MOT/MPI
(4) Implement the Equitization and SOE Reforms in the Transport Sector	
• Appoint full time staff in MOT to handle equitization program within one year and give priority to equitizing small-scale transport service and support SOEs under MOT and provinces (see Table 7.3.1). Define priority short-term program within two years and monitor implementation in order to adapt the procedures to improve effectiveness	MOT/Provinces
• Assess, within one year, the possible need for additional compensation or assistance for staff made redundant through equitization or commercialization, and seek government support to reduce bottlenecks to reform of transport SOEs such as ports and railway.	MOT
• For SOEs not for equitizing in the short term, such as ports, shipping and railway, establish these as independent corporations to foster competition (as described in Table 7.3.1). Negotiate performance contracts if necessary to provide a basis for financial support. Establish the first three corporations within one year as pilot cases, before implementing nation-wide.	MOT/Government
• To foster competition amongst SOEs remaining within VINALINES, VINASHIN and VAC, limit the power of these corporations, within one year, to intervene directly in SOE business affairs, but improve monitoring of financial performance.	MOT/Government

• Promote an efficient and internationally-competitive construction industry by including construction units in the short-term equitization program and setting higher qualification standards step-by-step each year (to give incentives for training and modernization). Consider establishing an equipment leasing organization to give broader access for contractors to modern specialist equipment within three years.	MOT
• Establishing ferries and similar enterprises as business SOEs (not as public service SOEs) to allow introduction of greater efficiency incentives and competition	MOT
• Seek government support within two years for establishing infrastructure maintenance units as more financially independent SOEs to allow introduction of greater efficiency incentives and competition	MOT

Poor coordination of implementation would cause substantial losses in terms of delayed investment benefits, excessive investment costs and reduced benefits. Therefore once MOT has finalized a realistic implementation plan based on the master plan proposals, to minimize the risk of delays and poor coordination of implementation, consideration should be given to strengthening project and policy implementation capacity in the transport sector: both through defining the implementation process and allocating implementing responsibilities for: (1) finalizing the implementation plan (2) setting up an implementation monitoring system, and (3) anticipating obstacles to implementation and taking action to remove them (especially where this can usefully and effectively decentralize decision-making).

The proposed strengthening of MOT's policy and project implementation capacity within the Planning and Investment Department could be one measure adopted to strengthen implementation capacity, especially if one person were to be appointed to be responsible for managing implementation.

This would require at least one senior staff member of MOT who is able:

- to finalize the ministry's implementation plan in conjunction with the subsector agencies (who, being ultimately responsible for implementation, must be appointed as responsible for proposing realistic achievement schedules),
- to set up a monitoring system and
- to be responsible for anticipating obstacles and have enough authority for removing them.

An important secondary objective of this person's tasks would be to identify, based on the obstacles encountered in practice, further specific ways in which decision-making can be made more efficient by further decentralization.

To be useful to the MOT, the implementation process must be a dynamic one, based on realistic targets and allowing follow-up of implementation obstacles on a regular basis. Although it would be based on a five year plan, it would have to be reviewed each year or so to allow for changes in priorities. Such a review could be helpful to donor organizations in assessing the effectiveness of their

assistance programs, and giving support in critical areas, earlier than would otherwise be the case.

7.4 Need for Technical Assistance

Much technical assistance has been given in areas such as legal reform, management systems, databases and training, but this has not always been effective and has not covered all key areas. The approach to human resource development has been piece-meal and ineffective, often through short on-the-job training arrangements during projects. Although many training studies have been carried out, they have not been implemented, partly because relative priorities are not clear (there is no overall human resource development plan for the transport sector and the MOT lacks the capacity to develop it). Donor coordination has been poor. Relatively little assistance has been given to the railway, to MOT or the PTAs.

Past TA projects have made significant achievements such as helping to establish new subsector management organizations such as VRA and the project implementing units. It is clear that to be effective,

- long-term assistance is required in many areas,
- focussed on recognized needs,
- with a realistic assessment of resources required,
- aimed at sustaining improvements by effective transfer of know-how and techniques, and providing future financing mechanisms.

The areas in which technical assistance could be required to support implementation of the VITRANSS master plan in the next five years include the following (see Appendix 7-A for details):

Sector Management: Continued advice on implementing management organizations and systems within the specialized management departments of MOT (VRA, VIWA etc.), to enable MOT to devolve to these organizations responsibility for planning, maintaining and developing infrastructure and to enable these organizations to fulfill their other oversight functions. Such assistance should be extended to provincial and district transport administrations to enable them to make and evaluate local transport plans and to manage infrastructure and implement central government policies. Complementary assistance to MOT in the following areas:

- strengthening capacity for strategic transport planning, policy formulation and implementation (especially in policy aspects such as cost recovery and regulation),
- legal reform in areas such as incorporating international agreements into Vietnamese law, establishing a legal basis for multimodal transport, and developing guidelines for coordinating the legal framework for the sector as a whole,

- establishing a transport database for decision-makers and experts, to provide reliable information for policy development and for monitoring project/policy implementation, at affordable cost,
- establishing a transport planning database for planners to enable updating of the VITRANSS transport planning model and its continued application for forecasting and evaluating transport development options,
- promoting human resource development in the sector through policies and strategies which increase training incentives and opportunities,
- promoting training of transport managers in concepts such as marketing, costing, financial planning, fleet planning and control, investment evaluation, multimodal transport and containerization,
- upgrading technical secondary and vocational training schools and enable them to become demand-driven rather than supply-driven,
- implementing its equitization plan, especially to define a program and timetable, and assist in implementing it,
- finding ways to improve supply of finance and donor support.

Roads: Short-term priorities for assistance are:

- improvement of highway management capacity in VRA,
- establishing management systems associated with road maintenance,
- establishing uniform technical and functional standards for roads and bridges,
- implementing the proposed five year road safety program as part of NTSC's overall transport safety program,
- rural road planning, to develop rural planning policy-making in MOT, to develop planning methods and capacity to implement them at local level,
- provincial transport planning, to strengthen capacity of PTAs to manage provincial roads and waterways,
- establishing provincial road maintenance systems,
- road financing, to study the possible implementation of a road fund,
- planning for development in the long-term of expressways.

Railway: Priorities are to implement:

- a short-term institutional strengthening project to establish a reform strategy and give specific help in reorganization, developing business plans and implementing management systems,
- a longer term institutional strengthening project to implement the reform plans,
- long-term planning of commuter rail services,
- inter-state railway service planning, based on international studies.

Inland Water: Priorities are:

- to complete the ongoing VIWA institutional strengthening project by 2002 and implement the recommendations in the longer term,
- to promote competition and the role of the private sector in transport services, ports and support activities such as dredging.

Maritime: Assistance is required to:

- improve infrastructure management (especially maintenance of access channels to ports, aids to navigation, search and rescue system),
- commercialize ports (development of policies, introducing management systems, developing business plans, encouraging private sector investment),
- gateway port planning, to make more detailed development plans for the main port areas taking account of economic and environmental aspects,
- enhancement of maritime safety and fleet control, to improve safety standards.

Aviation: Assistance is required to:

- strengthen planning/evaluation capacity of CAAV, and its capacity to implement and enforce regulations developed in accordance with international agreements,
- provide training in commercial aspects of airport management,
- upgrading air safety, through training in use of new CNS/ATM systems,
- provide training in meteorology.

Multimodal: Assistance is also required across all modes to:

- foster multimodal transport operators and services, through regulatory reforms, encouraging private participation in container facilities, establishing representative groups and training in modern multimodal concepts.

Although not included in the scope of work of VITRANSS it is clear that, in addition to the areas of technical assistance identified above, attention should also be given to the many urban and rural transport issues that impact on planning and policy-making/implementation in the transport sector. Whereas there are efforts planned for planning rural transport infrastructure (as mentioned in the list of TA projects), there are no specific plans for urban studies.

In view of the special problems encountered in larger metropolitan areas, priority should be given in the short-term to assessing the need for technical assistance which addresses urban transport needs in HCMC and Hanoi. This seems likely to require further transport studies - a comprehensive master plan study in HCMC would be able to build on the piecemeal studies carried out to date and provide a proper strategic planning approach to the transport problems in this city. In the case of Hanoi, a master plan study has already been carried out about five years ago but the results have never been implemented, so the need there is for economic/engineering studies to identify how to implementation can be made successfully.