6 FUNDING CONSTRAINTS AND OPPORTUNITIES

1) The Problem

6.1 The simple fact of life is that public sector funding is not limitless. Yes, government can borrow, but this simply transfers the burden to future generations, and therefore not sustainable in the long run. Other important services and sectors compete for public funds. This is true in Vietnam as elsewhere. The transportation sector is only one of them, albeit an important one. Increased levels of funding for the transportation sector, therefore, are not expected to be large.

6.2 Vietnam's development creates large demands for transportation investment in maintenance, upgrading and new projects. The combined requirements of all committed and planned projects to 2020 amount to about USD45 billion, excluding the HSR and those without as yet some cost estimate. On an annual basis, the requirement is about USD2 billion a year from 2011 to 2020. In comparison, actual investments in the last few years only averaged USD0.9 billion a year. What this implies is that only modest levels of financing, i.e., approximately ½, will be available compared to requirements. The credit crunch has re-enforced this reality.

6.3 Therefore, increasing sector financing must be part of transportation strategy. Increasing user charges (e.g., the recently announced Road Fund) and private sector participation (PSP) are practical ways of raising sector funds while also supporting economic efficiency. But PSP will take time to implement—maybe 5–10 years. During this transition period, it seems inevitable that sector funding will need to be a combination of:

(i) Public sector budgets, sourced from taxes and bonds;

(ii) ODA, like JICA, IBRD, ADB;

(iii) Tolls and other forms of direct user charges, which are still insignificant; and

(iv) Bilateral aids and grants, which are usually small and restricted.

2) Example of Infrastructure Finance in the Road Subsector

6.4 There are five potential sources of funding for road development which are: (i) tax revenue, (ii) capital market, (iii) private sector participation, (iv) user charge, and (v) ODA. The current situation of each funding source in Vietnam is explained below.

(1) Tax Revenue

6.5 When government wishes to utilize tax revenue for road development there has to be a mechanism, which earmarks a considerable portion of gasoline- and diesel-related tax revenue, and use it specifically for road development, as the tax revenue comes from the road users. This kind of earmarking mechanism is still weak in Vietnam; thus, allocation of state budget for road development is not at the sufficient level at a moment. The total tax revenue from newly purchased vehicles and fuel is roughly estimated at about USD 500 billion for the period 2010-2030, assuming VAT at 10% on car and fuel, consumption tax on car at 45% and import tax on fuel at 35% (tax rate as of July 2009). This is well larger than the budget envelope mentioned above. If this revenue, even a certain percentage, could be earmarked for selected purposes of the transport sector such as road maintenance and promotion of private sector participation, the burden shouldered by the state budget will be much more alleviated. Moreover, by

strengthening this economic mechanism, the use of private mode of transport may be controlled as advocated by Decision No.153/2004/QD-TTg.

(2) Capital Market

6.6 GOV has exercised some government guaranteed bond issuing in the past for the expressway development mainly through VEC at the domestic capital market. However, main buyers are SOE banks and short term therefore the depth of the procurement and the terms may not match for funding the development of road, especially expressway. Since GOV's credit rating for long-term foreign currency borrowing is currently still at sub investment grade, this makes it difficult to borrow long-term money from the international capital market for infrastructure development.

(3) Private Sector Participation

6.7 In the road subsector, PSP could only be promoted when user charges can be imposed on road users.[9] Expressway projects are potential subject of private sector participation; however, the result of PSP has been limited due to the following reasons:

(i) Lack of proper PPP framework to enable various modalities of PPP projects;

(ii) Lack of institutional capacity and financial support mechanism to properly structure PPP project; and

(iii) Lack of government policy to facilitate explicit risk allocation in concession contract and fair competition and selection of concessionaire.

6.8 Formulation of a proper PPP framework has just started in Vietnam and it usually has taken more than 10 years from its inception to become able to solicit large volume of private sector participation, which has been experienced in various developed countries such as UK, Japan and other European countries.

(4) User Charges

6.9 User charge could cover as stated in the above mentioned general principle a part of service provision cost, but could not usually be set at the full cost recovery level including the fair share of construction cost. Toll level for expressway is still controlled in Vietnam under the regulation of Ministry of Finance and facing also social risk for its adjustment on the basis of inflation.

(5) ODA

6.10 Majority of expressway sections under construction and being planned by VEC have been financed or to be financed by ODA funding from JICA, ADB, WB, and so on. And at the same time the ODA players have positive policy for development of expressway network in Vietnam. Since the credit rating of Vietnam is still at subinvestment grade, GOV could not either borrow long-term funding from international capital market in volume nor procure inexpensive equity and debt from the international investors circle. Thus, ODA may be the only option available for GOV to maximize its current level of credit worthiness as a country to procure long-term and inexpensive funding to develop the expressway network. It is also important to consider that there is certain threshold level of par capita income for the privilege of borrowing soft loan from the bilateral and multi-lateral donors, which is likely for Vietnam to reach within 10 years.

[9] There are examples of shadow tolling in UK where government pays the concessionaire service payment based on the volume of traffic; but this is an exception.

This is another reason for Vietnam to be better off focusing on the utilization of ODA funding for the development of expressway network.

3) Asset Maintenance Fund

6.11 The maintenance of roads, waterways, and railways are often relegated into second priority. The budget for maintenance suffers even more in times of overall funding constraint. Typically, maintenance yields higher economic benefits than the construction of new transportation projects. While it is the most cost effective form of investment, maintenance is not so attractive when compared to new projects.

6.12 Recently, the National Assembly has approved the establishment of a road maintenance fund – to be funded by a levy on petrol and diesel, registration fees from motor vehicles, a levy on sale of automobile tires, parking and warehousing fees, and fees from the issuance of driving licenses. However, there are still no implementation details available.

6.13 The approval of a fund, however, represents an opportunity to raise and stabilize funding for road maintenance. With proper design, it can be an effective instrument – and could also include the maintenance of other transportation assets such as waterways.

4) Available Public Funding

6.14 VITRANSS 2 has prepared estimates of future public funding under three scenarios for the future GDP growth rates and also three scenarios for the percentage of GDP that can be spent for transportation sector investment. The former assumes:

(i) Annual GDP growth rate for 2011–2020: 5.5% (Low), 6.5% (Medium), 7.5% (High)

(ii) Annual GDP growth rate for 2021–2030: 4.5% (Low), 5.5% (Medium), 6.5% (High)

6.15 And the latter, the share of GDP for transportation sector investment: 3% (Low), 5% (medium), and 7% (High). Table 6.1 presents the possible public investment amount for the transportation sector. As economy grows, the amount increases in an accelerated manner.

Table 6.1 Possible Public Investment for the Transportation sector by Period

(USD bil)

Period	Possible Investment as % of GDP								
	3			5			7		
	Low	Med	High	Low	Med	High	Low	Med	High
2009&2010	5	5	5	8	8	8	11	11	11
2011-2015	14	15	15	24	24	25	33	34	35
2016-2020	19	20	22	31	33	36	43	47	51
2021-2030	53	61	72	89	102	120	124	143	168

Source: VITRANSS 2 Study Team.

6.16 VITRANSS 2 has prepared estimates of future public funding, under three scenarios. Case 1 takes the most recent trend at 3.0% of GDP, while Case 2 assumes a high investment rate of 5% of GDP going into transportation. In all scenarios, the economic growth of Vietnam is assumed to continue.

6.17 As can be seen from Table 6.1, the estimated size of the “budget envelope” range from a low of USD33 billion to a high of USD86 billion for the period 2010–2020, and with a further USD53–168 billion for the period 2020–2030. Taking a 10-year horizon

for purposes of a financing program, a sustainable budget envelope is approximately USD55 billion; and maybe, an additional USD4 billion under favorable factors.

6.18 Assuming that the cost of maintenance/minor projects, urban transportation and rural transportation not covered by VITRANSS 2 are at 20%, 20% and 5%, respectively, of the central value of the budget envelope, the total investment requirement was calculated at USD59.8 without NSHSR and USD78.9 billion with partial completion of NSHSR. This amount falls in the range of the budget envelope, however, in its high side. The percentage of the transportation sector investment in GDP should be 6–7%, which is usually an ambitious target experienced seldom anywhere else in the world.

5) Possible Solution

6.19 What VITRANSS 2 proposes is a combination of the following:

(i) Scale down on expenditures (which is to say, defer many less viable projects into later years) leading to a core investment program for 2011–2020;

(ii) Raise additional funding from users of the transportation system, through tolls and tariffs they pay for use of the infrastructure (implementation of a 2nd priority package of projects to depend on success in this front);

(iii) Closer integration of priorities to transportation strategy, so that the division of expenditure between sectors would not be a hostage to past trends, but be based on stringent priorities established by analysis, recognizing the level of commitments, and the potential for private sector involvement in funding. Front-loading of more viable (financially and economically) projects would then expand the budget envelope in future years.

6.20 The private sector can usually provide services more efficiently, and more responsively, than government. Where the private sector assumes the burden, the funding is considered “additional” to public funding (e.g., build-operate-transfer, or BOT projects). In this case, it is still users who pay, through tolls and tariffs.

6) Role of PSP Projects

6.21 PSP will not happen without regulatory and institutional reform that create a predictable enabling environment, and demonstrate commitment to private sector participation for the medium and long-term. Effective PSP also delivers private financing; that is, when there is effective risk transfer private financing is its consequence, and subject to ensuring it provides value-for-money (when compared against public sector delivery) PSP will likely be very beneficial. Of course private financing is not ‘free funding’ – the private sector provides up-front financing to be repaid by a combination of users of the system and government. A major thrust of transportation strategy therefore needs to be to deploy PSP more effectively.

6.22 If transportation projects were ‘profitable’, the transportation ‘budget’ could be large - because there would be large ‘additional’ funds from the private sector. But this is not the case - very few transportation projects are profitable: a few bridges, a very few expressways, and only a very small number of railways in the world.

6.23 The reason is known: many projects produce large benefits for other transportation users and they cannot be expected to be profitable based only on user tolls and tariffs. But the consequence is of the first importance: only exceptionally will major transportation infrastructure projects be ‘profitable’. All others - the vast majority -

will require the government to contribute to funding (either directly, through the provision of investment subsidies, or indirectly, by providing guarantees).

6.24 There is a second problem: it has proved very difficult, just about everywhere, to implement BOT projects. This will change slowly; but, taken with the poor prospects for profitability, assuming that private sector participation will produce rapid progress, or be 'the funding solution', should be taken cautiously for neither is likely. In short, private sector BOT projects do not provide an 'easy answer' to the funding problem. The 40% contribution from PSP, as envisaged in the 2004 National Transportation Development Strategy document, is therefore unrealistic and unlikely to be realized.

7) Recommendation and Way Forward to Promote PSP in Expressway Development

6.25 Based on the above discussion the following measures are recommended and would need further attention and examination for detailed implementation mechanism:

(i) Infrastructure financing policy and mechanism focused explicitly on the general principle of matching cost and benefit of service provision;

(ii) Institutional setup for administration, funding and implementation of expressway network development based on the proper understanding of financial viability of expressway business – leadership role and function by the government entities;

(iii) Preparation of Viability Gap Funding Mechanism as soon as possible;

(iv) Utilization of ODA funding for financing Viability Gap Funding Mechanism;

(v) Capacity development for preparing, structuring and properly implementing expressway PPP projects with active initiative by GOV – specially the capacity building of the government officials to utilize outside expertise in implementing the above; and

(vi) Preparation of PPP mechanism based more on ad hoc and commercial contractual arrangement in each specific case of PPP expressway project – initially for the restructuring of ongoing PSP expressway projects.

8) Carbon and Energy Constraints

6.26 Since the 1987, report on Our Common Future came out, the central importance and inter-connected dimensions of sustainability have slowly gained prominence. Not only is this a necessary national goal, it has become an urgent global imperative. Controlling greenhouse gases [GHGs] by greater energy efficiency and changing the energy mix have particular implications for the transportation sector that remains heavily dependent on CO2-intensive fuels. Solutions require a holistic approach to land use development and accessibility, and energy efficiency.

6.27 Vietnam cannot avoid this 'green imperative'. The only question is when and how fast Vietnam would have to move in concert with the international community, in the directions indicated in Table 6.2 below.

Table 6.2 Policy to Tackle Climate and Energy

Fuel/ GHG Emissions =	No. of vehicles X	Km/vehicle X	Fuel/ GHG emissions/ veh-km
1. Policy Implications	• Reduce need for travel • Influence mode choice	• Increase urban densities	• Regulate vehicles and fuels • Manage traffic
2. Examples	• Support NMT	• Plan for city expansion	• Regulate vehicle efficiency
	• Improve bus operations	• Target smart growth	• Introduce efficient / non-carbon fuels
	• Segregate buses		• Control in-use emissions
	• Introduce demand management		• Manage road traffic

Source: VITRANSS 2 Study Team.

6.28 The principles of public sector pricing and funding have been difficult to implement in the transportation sector in most developing countries. It has been difficult to charge road users at the point-of-use on the road network. The sector therefore remains under-funded, having to rely on unreliable public sector decisions, rather than generating its own funds. Moreover, where there are road funds these are not secure, and governments faced with competing demands raid them. The result is often no security of funding even for maintaining the basic infrastructure. A long-term agenda, therefore, is to re-examine the cost to society of each transportation mode so that their true social, economic, and environmental costs are accounted properly. Imposition of a carbon tax would probably become necessary in the future – the proceeds of which can be channeled back to maintenance of transportation assets.

6.29 The above policies may seem to constrain transportation. In the long-term horizon, they also represent opportunities for infrastructure funding. ODA would shift their priorities towards projects that reduce GHG. Imposition of a carbon tax would probably become necessary, and politically acceptable, in the future – the proceeds of which can be channeled back to maintenance of transportation assets.

6.30 An obvious opportunity is to convert the 18 million or so motorcycles into electric or LPG. Aside from its environmental benefits to urban areas, the carbon credits that it generates can be converted into cash via the Asian Carbon Trading market and use to subsidize or fund the conversion. One study on motorcycles in Bangkok found out that a 4-stroke motorcycle emits 8.38 grams/km of hydrocarbon and 16.69 grams/km of carbon monoxide.[10]

6.31 Emission trading is an administrative approach used to control pollution by providing economic incentives for achieving reductions in the emissions of pollutants. It is sometimes called cap and trade – where a central authority (usually a government or international body) sets a limit or cap on the amount of a pollutant that can be emitted. Companies or other groups are issued emission permits and exceed the cap, limiting total emissions to that level. Companies that need to increase their emission allowance must buy credits from those who pollute less. The transfer of allowances is referred to as a trade. In effect, the buyer is paying a charge for polluting, while the seller is being rewarded for having reduced emissions by more than was needed. Thus, in theory, those who can easily reduce emissions most cheaply will do so, achieving the pollution reduction at the lowest possible cost to society.

[10] Shing Tet Leong, et.al. “Evaluation of Air Pollution Burden from Contribution of MC Emission in Bangkok”, AIT (Aug 2000).

7 MASTER PLAN UP TO 2020

1) Identification of Candidate Master Plan Projects

7.1 The identified projects are categorized by subsector, as shown in Table 7.1. The categorization reflects major provisions to address transportation issues in each subsector.

Table 7.1 Categories of Identified Transportation Projects by Subsector

Subsector	Project
1. Road	• Construction of new expressways (Proposed:32 projects committed:12 projects) • Construction of new roads (Proposed: 25 projects Committed:16 projects) • Construction of bypasses (Proposed: 21 project Committed:5 projects) • Improvement of roads/bridges (Proposed: 62 projects Committed: 51 projects) • Securing all-weather 2-lane roads on corridors (Proposed: 7 projects) • Improvement of traffic safety (Proposed: 9 projects Committed: 3 project)
2. Railway	• Improvement of existing lines for capacity expansion (Proposed: 6 projects Committed: 2 project) • Construction of new lines (Proposed: 5 projects Committed: 3 projects)
3. Ports & Shipping	• Expansion and upgrading of ports (Proposed: 25 projects Committed 13 projects)
4. IWT	• Waterway improvement (Proposed: 37 projects Committed: 9 projects) • Improvement of river port Proposed: 6 projects Committed: 3 projects) • Landing stages improvement (Proposed: 1 project Committed: 1 project) • Safety improvement (Proposed: 2 projects) • Ship building (Proposed: 2 projects) • Institution improvement (Proposed: 3 projects Committed: 2 projects) • Maintenance (Proposed: 1 project Committed: 1 project)
5. Aviation	• Construction of new airport (Proposed: 1 project Committed: 1 project) • Capacity Expansion of existing airport (Proposed: 13 projects Committed: 7 projects) • Improvement of navigation facility (Proposed: 2 project Committed: 2 projects)
6. Multimodal (Logistics)	• Construction of new facility for multimodal cargo handling (Proposed: 5 projects)

Source: VIRANSS2 Study Team

7.2 The total cost of ongoing/committed projects and Proposed projects is around USD27 billion and USD140 billion, respectively. Both projects are listed in ***Appendix A*** and their locations are shown in ***Appendix B***. All ongoing/committed projects are automatically included in the master plan up to 2020. However, proposed projects are still the candidates and are subject to the evaluation described in the next section.

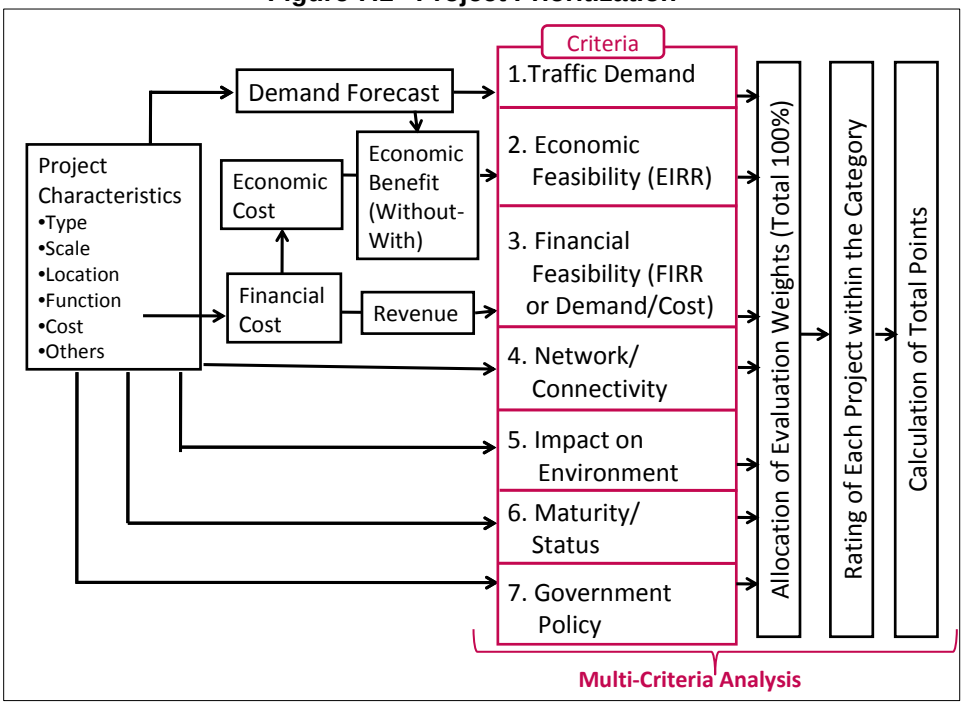
2) Evaluation of the Candidate Projects

7.3 Multi-criteria analysis was adopted in evaluation and prioritization of the candidate projects as shown in Figure 7.1 and briefly as follows;

(i) Among the criteria, economic feasibility (EIRR) is considered as the most important indicator. In principle, economic benefit of a project was estimated based on the procedure of “with and without” comparison wherein generalized transportation costs were estimated.

(ii) Multi-criteria analysis (MCA) takes into account of evaluation criteria including: (i) demand, (ii) economic feasibility, (iii) financial feasibility, (iv) network connectivity, (v) environmental impact, (vi) maturity of the project for implementation and (vii) compliance with national development policy.

Figure 7.1 Project Prioritization



Source: VITRANSS 2 Study Team.

7.4 It is always a headache for the government to determine the priority of proposed projects within limited fund availability. It is almost impossible to set a ranking 100% objectively for a number of projects of various sectors. The MCA carried out in VITRANSS2 as presented here can be a good basis to conduct the project prioritization. Though not 100% scientific, it provides, at least, a common and transparent ground for discussion to attain a consensus among stakeholders. This will make decision making much easier and clearer.

3) Selection of Master Plan Projects

(1) Investment Priorities in Roads

7.5 Projects in the road sub sector were evaluated, further subdividing them into five categories of expressways, highways, urban bypass projects, bridges and all-weather two-lane roads, by a simplified method, which did not consider modal shift. The economic benefit of each project was expected to accrue only through diversion of traffic to the project and reduction in transportation cost

7.6 If all candidate road projects are to be implemented, the available funds would not be enough even assuming the share of private sector investment. And this does not yet include funding requirements for urban transportation projects, rural transportation, and maintenance works. It is estimated that these projects, which were not covered in VITRANSS 2 would account for about 45% of the overall transportation funds. Moreover, there will no longer be money left for other priority projects in other subsectors.

7.7 A review of all subsectors and other funding needs, it was determined that for the period 2011–2020, only committed road projects and proposed roads projects that scored the highest in the MCA can be accommodated. Therefore the recommended road development program for the period 2011–2020 would require a funding of USD 30.7 billion covering 142 projects (Table 7.2). Maintenance works for overall transportation

mode is roughly estimated to require 20% of budget envelop (under the assumption that 5% of GDP will be invested for the transportation sector in the scenario of Medium GDP growth case) and, for road subsector, USD6.6 billion for the same period. Projects not included in the core program are to be implemented for the period 2021–2030.

Table 7.2 Road Development Core Program

	0. Candidate Projects (2011–2030)			1. Committed Projects			2. MCA Score 5 Proposed Projects[2] (2011-2020)			1+2. Core Program (2011–2020)		
	No.	Cost (USD million)		No.	Cost (USD million)		No.	Cost (USD million)		No.	Cost (USD million)	
		Total	To Gov't[1]		Total	To Gov't[1]		Total	To Gov't[1]		Total	To Gov't[1]
Expressway	44	67,648	47,354	12	11,691	8,184	7	7,169	5,019	19	18,860	13,202
Nat'l Highway	187	19,815	19,815	72	8,935	8,935	40	2,057	2,057	112	10,992	10,992
Others	12	1,936	1,936	3	136	136	8	690	690	11	826	826
Total	243	89,399	69,105	87	20,762	17,255	55	9,916	7,765	142	30,678	25,020

Source: VITRANSS 2 Study Team.
[1] For % of cost to government for expressway, 70% is assumed
[2] Score5 refer to the highest priority group among five ranking groups

(2) Investment Priorities in Rail

7.8 The total investment costs in the new proposed projects for master plan in the railway sector cost USD4.3 billion, excluding HSR. Current commitments amount to USD1.5 billion. The list of rail projects for the VITRANSS 2 Master Plan (proposed projects only) is presented in Table 7.3.

Table 7.3 Core Rail Development Program (Proposed Projects)

Category	Project No.	Project Title	Project Description	Project Cost (USD mil.)
Improvement of existing line for capacity expansion	R01	Function-Improvement Items (Hanoi-Saigon Line)	To improve facilities (signal station, automatic level crossing & fence/barrier, depot, workshop etc) to provide 50 trains/day flequency of service on a single truck in Hanoi-Saigon Line.	2,465.3
Construction of new line	R07	Trang Bone – Vung Tau New Railway Construction (SRI & SMI) (713km)	To develop a new railway (standard gage double track) between Trang Bone and Vung Tau (71.3km)	1,848.8
Total				4,314.1

Source: VITRANSS 2 Study Team.

(3) Investment Priorities in Maritime Subsector

7.9 They comprise USD0.7 billion for high priority projects to be implemented 2010–2020 and current commitments amounting to USD3.1 billion. The list of port projects for the VITRANSS 2 Master Plan (proposed projects only) is presented in Table 7.4.

(4) Priority Investments in IWT

7.10 VITRANSS 2 has prepared priority projects for 2010–2020, some but not all having been announced by the Prime Minister Decision in 2008. They comprise: (i) maintenance, USD0.12 billion, and (ii) high-priority IWT Infrastructure, USD0.60 billion. Current commitments amount to USD0.26 billion. The total claim against the budget is thus USD0.86 billion.

7.11 Committed/ongoing projects and projects identified from the long list of projects are to be implemented during the period 2011–2020. The breakdown of projects by region and by role is in Table 7.5. The 2011–2020 portfolio of project aims to primarily strengthen the core routes, and some key regional and industrial routes. Limited funds are allocated to port investment, which is proposed to be devolved to provincial government and/or private operators. In total more than USD600 million is needed for IWT infrastructure development for the period 2011–2020, or an average of USD60 million per year. The historical average of IWT funding is USD20 million for the period 1999–2007. The funding for infrastructure projects will come from state funding.

7.12 Maintenance works is to be given high priority however there is currently no clear information on how much maintenance works will entail, including backlog maintenance. A VIWA plan sets funding of USD120 million for the period 2011–2020 for maintenance, and is assumed by VITRANSS 2. A review of waterway maintenance is recommended and a long-term maintenance program be instituted. The funding for maintenance works will come from state funding, however it is proposed to transition in user fees for maintenance works.

7.13 Other non-infrastructure projects, which include safety, navigation, institutional development, database development, vessel registry, and capacity building, are not expected to be substantial in amount, but it will result in significant benefits. It is therefore recommended to attach a high priority to these types of projects. Technical assistance from multilateral and bilateral agencies would be practical for technology transfer.

(5) Investments in Airports

7.14 Besides committed projects, the indicative investment requirements for airports amount to USD6.4 billion. Current commitments amount to USD 1.3 billion. The list of aviation projects for the VITRANSS 2 Master Plan (proposed projects only) is presented in Table 7.6.

Table 7.4 Core Port Development Program (Proposed Projects)

Category	Project No.	Project Title	Project Description	Project Cost (USD mil.)
Expansion and upgrading of port function	P02	Hai Phong Seaport (Lach Huyen) Development (Stage 1, original schedule: 2010-2015)	To upgrade navigation channel for Lach Huyen Area to -10.3m including construction of sand dyke, develop new deep-water terminals at Lach Huyen for container/general and liquid cargo, and convert the function of part of Hoang Dieu Terminal for other public interest in Hai Phong Seaport	450.0
	P05	Cua Lo Seport Channel & Terminal Development	To construct sand dyke for Nothern Channel and expand the terminal in Cua Lo seaport to handle cargo to/from the northern central zone	26.0
	P19	Ho Chi Minh Seaport (Hiep Phuoc - Stage2 + other) Channel and Terminal Development	To upgrade navigation chalnnel for Hiep Huoc Area to accommodate vessels up to 25,000-30,000 DWT, develop new deep-water container terminal at Hiep Phuoc area to handle container cargo, convert of the function of Nha Rong-Khanh Hoi Terminal into cruise ship terminal and others, and develop new terminal which will substitute for Ben Nghe Terminal	220.0
	P22	Expansion of terminal in Can Tho seaport	To expand a terminal at Cai Cui and at Tra Noc in Can Tho seaport to handle container/general cargo to/from Mekong Delta Area	25.0
Total				721.0

Source: VITRANSS 2 Study Team.

Table 7.5 Core Inland Water Development Program (Proposed Projects)

Category	Project No.	Project Title	Project Description	Project Cost (USD mil.)
Waterway improvement	W01	Upgrading of Quang Ninh/Hai Phong - Ha Noi Route (to ClassII) (166km)	To upgrade the 166-km section of waterway to conform to Class II standards throughout the route	38.2
	W06	Upgrading of Quang Ninh - Pha Lai Route (to ClassII) (128km)	To upgrade the section of 128.0 km to class II through the route	29.4
	W13	Upgrading Cho Gao Canal Route (11km)	To improve 28.5-km section connecting the north and south routes (dredging, widening, raising bridge clearance	138.0
	W14	Improvement of Sai Gon - Kien Luong/Lap Vo canal Route (315km)	To establish consistent channel conditions over the 315-km section of the route	72.5
	W16	Improvement of Sai Gon - Ca Mau/Xa No canal Route (336km)	To establish consistent channel conditions over 336 km of the route	77.3
	W17	Improvement of Sai Gon - Ca Mau/coastal Route (367km)	To establish consistent channel conditions over 367 km of the route	84.4
	W21	Improvement of Sai Gon - Hieu Liem Route (88km)	To establish consistent channel conditions over 88 km of the route (Implemented 6 years ago; need to rehabilitate after 15 years)	15.0
Maintenance	W38	Maintenance Dredging to reduce backlogs	Multi year program of maintenance dredging to re-establish and maintain set standards (2011-2020)	120.0
Safety Improvement	W47	Search and rescue	To improve search-and-rescue capability in north & south regions, by acquiring essential equipment and its operation	5.0
Institution Improvement	W52	Database: River Surveys and Vessel Registry	To develop capability for continuous surveys of channel status (depth, width, bends, etc.) and to improve vessel registry system	20.0
Total				599.8

Source: VITRANSS 2 Study Team.

Table 7.6 Core Aviation Development Program (Proposed Projects)

Category	Project No.	Project Title	Project Description	Project Cost (USD mil.)
Construction of new airport	A01	Long Thanh Airport	To construct a new international airport with the capacity of 8 to 10 mppa.	6000.0
Capacity expansion of existing airport	A11	Runway Improvement at Danang international Airport	Shifting of taxiway E6 to widen clearance from 75 m to 150m	-
	A13	Expansion of Tan Son Nhat International Airport	To expand capacity of Tan Son Nhat International Airport to handle 25 mppa	200.0
Improvement of navigation facility	A15	Control tower Construction at Tan Son Nhat International Airport	To construct a new control tower	50.0
	A16	Air Navigation System	Modernization of the air traffic management system	100.0
Total				6,350 .0

Source: VITRANSS 2 Study Team.

(6) Investments in Logistics

7.15 The list of logistics projects for the VITRANSS 2 Master Plan (Proposed projects only) is presented in Table 7.7.

Table 7.7 Core Logistics Development Program (Proposed Projects)

Category	Project No.	Project Title	Project Description	Project Cost (USD mil.)
Construction of new facility for multimodal cargo handling	L01	North Logistic Park Development	To develop the LP facility which has an area of 500,000 square meters and be designed to have the services of customs clearance for inbound and outbound shipments, warehousing of goods for regional distribution and for exports to cater to the requirement of FDI enterprises in the nearby industrial parks, cross-docking facility, consolidation and deconsolidation, customs-bonded warehouse, container transportation management system, and value-added logistics services.	199.8
	L02	South Logistic Park Development	To construct a distribution / collection centre for international container traffic via international container terminal and international airport	40.0
	L03	Lao Cai Cross-border gate improvement	To Improve, expand and provide a customs clearance office, inspection area, a truck terminal, etc. for trade facilitation with China	6.0
Total				245.8

Source: VITRANSS 2 Study Team.

(7) Investment in Urban Transportation

7.16 The central government has given the go-signal for several urban railway lines in HCMC and Hanoi, totaling USD14.85 billion. More than one-third of these appear to be already committed - 4 metros requiring an investment of USD4.2 billion, plus USD990 million for 2 railway projects of VNR, or a total of USD5.2 billion. There are other projects through five cities costing USD781 million. As suggested earlier, additional railway lines should be deferred – pending review of results in the first 2 lines that are already under construction.

7.17 For the present therefore, an urban transportation budget of USD 13 billion has been assumed up to 2020.

(8) Summary of Master Plan Projects

7.18 Based on the analysis above, priority projects (Core Projects) were selected as shown in Table 7.8.

4) Investment Requirement vs. Fund Availability

7.19 Table 7.9 compares the investment requirement and the available fund. Assuming that the cost of maintenance/minor projects, urban transportation and rural transportation not covered by VITRANSS 2 are at 20%, 20% and 5%, respectively, of the central value of the budget envelope, the total investment requirement was calculated at USD70.0 billion without NSHSR and USD89.1 billion with partial completion of NSHSR. This amount falls in the range of the budget envelope, however, in its high side. The percentage of the transportation sector investment in GDP should be 6–7%, which is usually a difficult target experienced seldom in the world.

Table 7.8 Selection of Core Projects for the Master Plan

Subsector		0. Candidate Projects (2009–2030)			1. Committed Projects			2. RankA Proposed Projects (2009–2020)			1+2. Core Program (2009–2020)		
		No.	Cost (USD million)		No.	Cost (USD million)		No.	Cost (USD million)		No.	Cost (USD million)	
			Total	To Gov't		Total	To Gov't		Total	To Gov't		Total	To Gov't
1. Road	Expressway	44	67,648	47,354	12	11,691	8,184	7	7,169	5,019	19	18,860	13,202
	Nat'l Highway	187	19,815	19,815	72	8,935	8,935	40	2,057	2,057	112	10,992	10,992
	Others	12	1,936	1,936	3	136	136	8	690	690	11	826	826
	Subtotal	243	89,399	69,105	87	20,762	17,255	55	9,916	7,765	142	30,678	25,020
2. Vietnam Railway (excluding NSHSR)		16	47,051	47,051	5	1,502	1,502	2	4,313	4,313	7	5,815	5,815
3. Maritime		38	13,980	9,786	13	3,076	2,153	4	721	505	17	3,797	2,658
4. IWT	River Port	9	267	240	3	7	6	0	0	0	3	7	6
	Waterway	46	1,647	1,647	9	245	245	7	455	455	16	700	700
	Others	13	2,263	2,263	4	12	12	3	145	145	7	157	157
	Subtotal	68	4,178	4,151	16	265	264	10	600	600	26	864	864
5. Aviation	New Airport	2	6,056	4,845	1	56	45	1	6,000	4,800	2	6,056	4,845
	Existing Airport	20	5,562	4,450	7	1,152	922	2	200	160	9	1,352	1,082
	Navigation Facility	4	263	263	2	113	113	2	150	150	4	263	263
	Subtotal	26	11,881	9,557	10	1,321	1,079	5	6,350	5,110	15	7,671	6,189
6. Logistics		5	264	132	0	0	0	3	246	123	3	246	123
Total (without NSHSR)		396	166,753	139,782	131	26,925	22,253	79	22,146	18,416	210	49,071	40,669
(NSHSR)		4	44,531	44,531	0	0	0	2	19,094	19,094	2	19,094	19,094
Total (with NSHSR)		400	211,284	184,313	131	26,925	22,253	81	41,240	37,510	212	68,165	59,763

Source: VITRANSS 2 Study Team.
[1] NSHSR was tentatively assumed to have four sections; i.e., Hanoi-Vinh, HCMC-Nha Trang, Vinh-Da Nang, and Nha Trang-Da Nang. The former two sections are included. The cost of NSHSR excludes that of rolling stock that is likely to be acquired by the operator.
[2] % of cost to government: expressway - 70%, maritime - 70%, river port - 90%, airport - 80%, logistics - 50%.
[3] See list of ongoing/committed projects in *Appendix A*.

Table 7.9 Investment Requirement vs. Fund Availability[1]

Investment Requirement for the Master Plan Period (2011–2020) (USD billion)	
1. Outside of VITRNASS2	
1) Maintenance/minor projects not covered (20% of assumed budget envelope)	13.0
2) Urban transportation (20% of assumed budget envelope)	13.0
3) Rural transportation (5% of assumed budget envelope)	3.3
Subtotal	29.3
2. VITRANSS 2 Projects	
1) Ongoing/committed Projects	22.3
2) New Projects (Proposed Projects)	18.4 (without NSHSR) or 37.5 (with NSHSR)
Subtotal	USD billion 40.7 or 59.8
Total	USD billion 70.0 or 89.1
Ref: Possible Available fund 2009-2020[2]	USD billion 37-96

Source: VITRANSS 2 Study Team.
[1] The budget equal to 5% of GDP under the medium growth scenario was assumed
[2] The budget equal to 3% of GDP under the low growth scenario was assumed (37 USD billion) as low side while the budget equal to 7% of GDP under the high growth scenario was assumed as high side.

8 MEDIUM-TERM PLAN

1) Criteria for Selecting Priority Projects for the Medium-term Plan

8.1 Priority projects for inclusion in the Medium-term Plan were selected from the Master Plan based on: (i) priorities within each subsector, (ii) priorities in corridor development, and (iii) balance among subsectors. Moreover, the total investment cost of the selected projects must fall within the budget envelop available for the MTP period.

2) Subsector Program for MTP

(1) Roads

8.2 While road traffic has been increasing rapidly, the road sector must meet urgent needs to remove bottlenecks and, at the same time, to increasing demand for high-quality transportation services. The sector must also attend to long pending maintenance and traffic safety issues. Thus priorities were given as follows:

(i) Road maintenance and traffic safety;

(ii) Improvement of existing arterial roads;

(iii) Removing bottlenecks including at river crossing near Hanoi and HCMC; and

(iv) Construction of expressways connecting major economic centres such as Hanoi, HCMC, Hai Phong, and Danang.

Table 8.1 Road Projects Selected for the Medium-term Plan (up to 2015 and 2020)

Project		Project Cost (USD mil.)		Assumed	Schedule		
No.	Name	Total	2009-2015	Schedule	-2013	-2015	-2020
Construction of New Expressway							
CH01	Cau Gie – Ninh Binh Expressway (50km)	452.4	180.9	06-10			
CH02	Da Nang – Quang Ngai Expressway (131km)	1048.2	1048.2	11-15			
CH03	Phan Thiet – Dau Giay Expressway (100km)	1003.8	1003.8	11-15			
CH04	HCMC – Long Thanh – Dau Giay Expressway (55km)	1110.8	888.7	08-12			
CH05	HCMC- Trung Luong Expressway (40km)	776.5	129.4	04-09			
CH06	Trung Luong – My Thuan – Can Tho Expressway (92km)	1510.0	1510.0	11-15			
CH07	Lang Son – Bac Giang – Bac Ninh Expressway (130km)	1176.3	705.8	13-17			
CH08	Ha Noi – Hai Phong Expressway (105km)	1441.2	1441.2	11-15			
CH09	Ha Noi – Lao Cai Expressway (264km)	1218.7	1218.7	09-12			
CH10	Ha Noi – Thai Nguyen Expressway (62km)	248.2	82.7	05-10			
CH11	Lang – Hoa Lac Expressway (30km)	450.0	112.5	06-09			
CH12	Ha Long – Mong Cai Expressway (128km)	1254.7	250.9	15-19			
H01	Ninh Binh – Thanh Hoa Expressway (75km)	827.6	413.8	13-18			
H02	Thanh Hoa – Vinh Expressway (140km)	2128.0	0.0	16-20			
H03	Vinh – Ha Tinh Expressway (20km)	201.5	0.0	16-20			
H10	Long Thanh – Nhon Trach – Ben Luc Expressway (45km)	738.6	738.6	11-15			
H21	Bien Hoa – Vung Tau Expressway (76km)	696.5	417.9	13-17			
H30	Ring Road No.4 in Ha Noi (90km)	1350.5	1350.5	11-15			
H32	Ring Road No.3 in HCMC (83km)	1226.9	1226.9	11-15			
Subtotal		18860.3	12720.5				
Construction of New Road							
CH13	Can Tho Bridge Construction	284.8	35.6	02-09			
CH14	Border Ring No1 Construction (Hai Giang - Lao Cai) (151km)	300.4	136.5	03-13			
CH15	Border Ring No2 Construction (Northern Part)	17.2	1.9	01-09			
CH16	Border Ring No2 Construction (Northwest Part, Pho Rang - Minh Thang) (160km)	140.9	94.0	07-12			
CH17	Border Ring C3 Construction	30.1	20.0	07-12			
CH18	Linh Dam Bridge Construction (NH15, Ha Tinh)(2 lane)	13.6	13.6	10-12			
CH19	Ong Bo Bridge Construction (NH1A, Quang Nam)(2 lane,108m)	1.4	0.9	06-13			
CH20	Huong Anh bridge Construction (NH1A, Quang Nam)(4lane, 250m)	8.4	8.4	11-13			
CH21	Dinh Vu Bridge	200.0	200.0	11-13			

Project		Project Cost (USD mil.)		Assumed	Schedule		
No.	Name	Total	2009-2015	Schedule	-2013	-2015	-2020
CH22	Vinh Thinh Bridge Construction (Ha Tay)	80.0	80.0	11-15			
CH23	45 Rural Traffic Bridges in Central and Central Highland Provinces	32.8	6.6	01-10			
CH24	Ben Thuy II bridge Construction (NH1&NH8B, Nghe An-Ha Tinh) (2lane, 1km)	74.1	74.1	09-11			
CH25	Dong Nai bridge Construction	121.8	121.8	12-13			
CH26	Cau Phung Bridge Construction (NH32)	18.6	15.5	08-13			
CH27	Border Ring Road No 1 Construction (Ha Giang – Lao Cai) (151km)	67.8	67.8	11-15			
CH28	NH279 Construction (Tuyen Quang – Bac Can) (94.5km)	67.3	67.3	10-13			
H33	Economic axle-road Construction (24km)	82.8	82.8	11-15			
H35	NH1A (Chi Lang - Bac Giang) Construction (Pho Gio)) (40km)	182.1	0.0	16-20			
H36	NH21 Construction (Phu Ly – Nam Dinh) (25km)	86.2	0.0	16-20			
	Subtotal	1810.2	1026.7				
Construction of Bypass							
CH29	NH1A Bypass (Thanh Hoa) (10km)	38.3	38.3	11-15			
CH30	NH1A Bypass (Dong Hoi, Quang Binh) (19.3km)	38.6	38.6	11-15			
CH31	NH1A Bypass (Ha Tinh) (16.3km)	20.8	20.8	11-15			
CH32	NH1A Bypass (Phan Rang, Ninh Thuan) (8.3km)	32.2	32.2	11-15			
CH33	NH2 Bypass (Vinh Yen (Vinh Yen – Vinh Phuc)) (10.6km)	36.2	36.2	11-13			
H59	NH1A Bypass (Van Gia, Khanh Hoa) (10km)	46.3	0.0	16-20			
H63	NH1A Bypass (Phan Thiet, Binh Thuan) (10km)	34.5	0.0	16-20			
H64	NH1A Bypass (Duc Pho, Quang Ngai) (9.7km)	36.3	0.0	16-20			
H65	NH1A Bypass (Vinh Long) (7.5km)	25.9	25.9	11-15			
H68	NH91 Bypass Construction (Thot Not, Can Tho) (10km)	34.5	34.5	11-15			
H73	NH60 Bypass (Ham Luong (Ben Tre – Mo Cay))(10km)	34.5	0.0	16-20			
H74	NH38 Bypass (Hoa Mac, An Giang)(10km)	34.5	34.5	11-15			
	Subtotal	412.6	261.0				
Construction of Road/Bridge							
CH34	NH 25 Upgrading (Le Bac Bridge - To No pass) (11.5km)	4.6	4.6	11-13			
CH35	Mekong Delta River Infrastructure Development (NH53,N54,NH91 & PHs; WB5)	119.5	85.4	07-13			
CH36	NH 1 Widening (Dong Ha - Quang Tri)	31.5	31.5	13-15			
CH37	Highway Rehabilitation Project III (NH1, Can Tho - Nam Can) (288km)	186.0	46.5	03-10			
CH38	Bridge Rehabilitation Project - Phase III (NH1)	84.9	33.9	06-10			
CH39	NH2 Upgrading (Noi Bai - Vinh Yen) (22km)	66.8	13.4	05-09			
CH40	NH10 Upgrading (Tan De bridge - La Uyen bridge) (5.5km)	25.5	14.1	05-13			
CH41	East-West Corridor Improvement (NH12A) (182.3km)	98.9	22.0	02-10			
CH42	NH 21B & NH21 Upgrading (Hanoi)(76km)	44.2	44.2	13-15			
CH43	Ho Chi Minh Highway Phase 2 Upgrading (Pac Bo - Dat Mui excluding Hoa Lac - Ngoc Hoi) (2,072km)	1591.1	1193.3	08-11			
CH44	Rehabilitation Project (NH19, NH20, NH26, NH27, NH28)	85.4	71.2	08-13			
CH45	NH 2 Improvement (Hanoi - Ha Giang) (261km)	107.2	13.4	02-09			
CH46	NH 3 Improvement (Hanoi - Cao Bang) (310km)	155.3	77.6	05-12			
CH47	NH 6 Improvement Phase 2 (Son La - Dien Bien)	68.9	11.5	04-09			
CH48	NH 32 Improvement (Hanoi - Lai Chau) (358km)	178.8	39.7	02-10			
CH49	NH 50 Improvement (HCMC - My Tho) (88km)	148.8	148.8	09-13			
CH50	NH 80 Improvement (My Thuan - Vam Cong) (50km)	35.2	10.1	04-10			
CH51	NH 60 road and bridges Improvement	168.5	140.4	08-13			
CH52	NH 61 Improvement (Can Tho - Kien Giang)	23.8	6.0	06-09			
CH53	NH22B Improvement (Go Dau - Xa Ma) (73km)	23.9	4.0	04-09			
CH54	Secondary Road Network rehabilitation Program	664.4	553.7	08-13			
CH55	Tertiary Road Improvement Project	201.9	144.2	07-13			
CH56	Rural Road Projects improvement III (2,500km)	155.6	103.8	07-12			
CH57	Improvement of Rural Bridges in Central Coast & Central Highland Provinces	32.3	4.0	02-09			
CH58	Other Roads and Bridges Improvement	202.0	202.0	11-13			
CH59	NH1 Upgrading (My Thuan - Can Tho) (38.4km)	108.4	108.4	11-13			
CH60	Thang Long Bridge Surface Repair	3.5	3.5	12-13			
CH61	Road Network Improvement and Upgrading of (WB4) (Improvement component) (629km)	310.5	258.8	08-13			
CH62	Road Network Improvement and Upgrading (WB4) (maintenance and institutional improvement component)	112.5	112.5	09-13			
CH63	NH 1 Rehabilitation (Phase 3)	87.4	87.4	11-13			
CH64	Rural Traffic Project No.3 (3150km)	155.6	129.7	08-13			
CH65	Rehabilitation of Weak bridges (140 bridges) ((Phase 1)	98.1	98.1	09-13			

Project		Project Cost (USD mil.)		Assumed	Schedule
No.	Name	Total	2009-2015	Schedule	-2013 -2015 -2020
CH66	Southern Coastal Corridor Upgrading (NH80 & NH63) (225km)	290.9	242.4	08-13	
CH67	NH6 Upgrading (Tuan Giao – Lai Chau) (96km)	138.8	138.8	11-13	
CH68	NH 27 Upgrading (98km)	56.9	40.6	07-13	
CH69	NH 32 Upgrading (Vach Kim – Binh Luu) (72km)	33.8	33.8	09-13	
CH70	NH 32 Upgrading (Dien – Nhon) (7km)	57.7	57.7	10-13	
CH71	NH 91 Upgrading (Chau Doc- Tinh Bien) (27.3km)	55.7	55.7	11-13	
CH72	Storm No.5 Recovery Projects on NH6 (Hoa Binh – Son La)	4.6	4.6	11-13	
CH73	NH 279 Upgrading (Ttan Son – Than Muoi, Dong Mo – Tu Don)	14.8	12.4	08-13	
CH74	NH3B Upgrading (Xuat Hoa-Po Ma) (60km)	79.8	79.8	10-13	
Ch75	Weak Bridge Rehabilitation Project (Stage 2: 83 bridges)	207.5	207.5	11-13	
CH76	NH 31 Upgrading (Huu San – ban Chat) (61km)	59.4	59.4	11-13	
CH77	NH53 (not including Km56-Km60 and Km130-Km139 in WBS project) (121km)	81.1	81.1	11-13	
CH78	NH8A Upgrading (Ha Tinh) (37km)	69.2	69.2	11-13	
CH79	NH24 Upgrading (Pho Phong – Quang Ngai) (8km)	23.3	23.3	11-13	
CH80	NH24 Upgrading (Pho Phong – Kon Tum) (160km)	294.1	294.1	11-13	
CH81	NH25 Upgrading (Phu Yen – Gia Lai)(160km)	294.1	294.1	11-13	
CH82	NH15 Upgrading (Mai Chau - Hoi Xuan) (109km)	117.6	117.6	11-13	
CH83	NH1A Upgrading (Hoa Cam – Hoa Phuoc, Danang) (8.4km)	32.8	0.0	16-18	
CH84	NH20 and Other Sections Repairment and Upgrading (268km)	16.6	16.6	10-13	
H79	NH 14 Widening (Dong Xoai - Chon Thanh)(34km)	115.4	115.4	13-15	
H82	NH 51 Widening(Dong Nai - Vung Tau)(73.6km)	184.1	184.1	11-13	
H85	NH5 Upgrading (106km)	155.8	155.8	11-13	
H90	NH 6 Widening (Ba La - Xuan Mai) (20km)	52.7	52.7	11-13	
H92	NH 20 Improvement(Dau Giay - Lien Khuong) (250km)	201.8	201.8	11-13	
H96	NH10 Improvement (Lai Thanh - Tao Xuyen) (50km)	24.3	24.3	11-13	
H109	NH 40 Rehabilitation (24km)	9.8	9.8	11-13	
H111	NH31 Rehabilitation (An Chau - Dinh Lap) (48km)	23.7	23.7	11-13	
H112	NH3B Rehabilitation (Yen Lac - That Khe) (44km)	21.7	21.7	11-13	
H113	PR507(NH47) Rehabilitation (Thuong Xuan - Kheo Border) (60km)	32.9	32.9	11-13	
H114	NH48 Rehabilitation (Thai Hoa - Kim Son) (74km)	40.6	40.6	11-13	
H116	NH32B Rehabilitation (Xom Giac - Muong Coi) (21km)	8.4	8.4	11-13	
H117	NH2B Rehabilitation (Vinh Yen - Tam Dao) (25km)	10.6	10.6	11-13	
H118	NH2C Rehabilitation (Vinh Yen - Son Duong) (60km)	23.7	23.7	11-13	
H119	NH23 Rehabilitation (NH2 - Phuc Yen) (27km)	10.0	10.0	11-13	
H120	NH47 Rehabilitation(NH1 - NH15) (61km)	21.8	21.8	11-13	
H121	NH45 Rehabilitation(Pho Ria - Thanh Hoa - Yen Cat) (136km)	49.3	49.3	11-13	
H122	NH49 Rehabilitation(Cang Thuan An – HCM Road) (75km)	28.0	28.0	11-13	
H123	NH25 Rehabilitation (Tuy Hoa - HCM Road) (180km)	72.9	72.9	11-13	
H124	NH27 Rehabilitation(Phan Rang Thap Cham - Buon Ma Thuot) (276km)	113.1	113.1	11-13	
H125	NH49B Rehabilitation (Cau My Chanh - Vinh Hien, Thu Thien Hue) (89km)	31.1	31.1	11-13	
H126	NH24B Rehabilitation (NH1 - An Hai, Quang Ngai) (18km)	6.3	6.3	11-13	
H127	NH27B Rehabilitation(Tan Son - NH1) (48km)	17.3	17.3	11-13	
H128	NH1D Rehabilitation(Quy Nhon - Song Cau, Binh Dinh & Phu Yen) (33km)	11.5	11.5	11-13	
H129	NH1C Rehabilitation (Dien Khanh - Nha Trang) (17km)	5.9	5.9	11-13	
H130	NH56 Rehabilitation (Xuan Thanh - Ba Ria) (50km)	17.5	17.5	11-13	
H131	NH62 Rehabilitation (Tan An - Binh Hiep) (77km)	26.9	26.9	11-13	
H132	NH54Rehabilitation (Cai Von - Tieu Can) (167km)	58.3	58.3	11-13	
H133	NH53 Rehabilitation (Vinh Long - Duyen Hai - NH54) (132km)	46.1	46.1	11-13	
H134	NH63 Rehabilitation(Minh Luong - Camau) (109km)	38.1	38.1	11-13	
	Subtotal	8769.4	7105.9		
Improvement of Traffic Safety					
CH85	Road Safety Improvement Program	33.4	33.4	10-13	
CH86	Northern Vietnam National Roads Traffic Safety Improvement Project (NH 3, NH 5, NH 10, NH 18)	60.7	60.7	09-13	
CH87	Railway and Road Safety Traffic System Building	41.7	41.7	10-13	
H148	Black Spot Improvement Plan	95.0	95.0	11-13	
H149	Traffic Safety Audit Development Plan	40.0	40.0	11-13	
H150	Traffic Safety Corridor Development Plan	40.0	40.0	11-13	
H152	Vulnerable Road User Accident Prevention Plan	75.0	75.0	11-13	
H153	Expressway Safety Development Plan	112.5	112.5	11-13	
H154	Road Work Traffic Safety Development Plan	20.0	20.0	11-13	
H155	Traffic Safety Monitoring and Maintenance Plan	35.0	35.0	11-13	

Project		Project Cost (USD mil.)		Assumed	Schedule		
No.	Name	Total	2009-2015	Schedule	-2013	-2015	-2020
H156	Urban Road Traffic Safety Development Plan	272.5	272.5	11-13			
Subtotal		825.9	825.9				
Total		30678.3	21940.0				

Source: VITRANSS 2 Study Team.

(2) Railways

8.3 Railway could and must much more important role in overall transportation system in Vietnam by improving its capacity and service quality to avoid excessive load on roads, reduce traffic accidents and greenhouse gas, and reduce energy. It is also expected that the railway forms an alternative national backbone of the country. For this, long-term commitment and realistic step-wise development is the key for success. For the MTP, the first sate improvement of existing railways to expand line capacity to 50 trains/ both directions/ day and improve service was included.

Table 8.2 Railway Projects Selected for the Medium-term Plan (up to 2015)

Project		Project Cost (USD mil.)		Assumed	Schedule		
No.	Name	Total	2009-2015	Schedule	-2013	-2015	-2020
Improvement of Exisitng Line for Capacity Expansion							
CR01	Improvement and Upgrading in North – South Railway Line	965.4	965.4	10-15			
CR02	Improvement of Railway Routes in the North	291.6	102.1	01-20			
R01	Function-Improvement Items (Hanoi-Saigon Line)	2465.3	0.0	16-20			
Subtotal		3722.4	1067.5				
Construction of New Line							
CR03	Yen Vien-Pha Lai railway line	118.4	84.5	07-13			
CR04	Ha Long- Cai Lan railway line	58.9	42.1	07-13			
CR05	Railway line from Chua Ve to DAP factory-Dinh Vu (Hai Phong)	67.7	67.7	10-13			
R07	Trang Bone – Vung Tau New Railway Construction (SRI & SMI) (71.3km)	1847.8	0.0	16-20			
Subtotal		2092.8	194.4				
Total		5815.2	1261.9				

Source: VITRANSS 2 Study Team.

(3) Ports and Shipping

8.4 Ports and shipping are lifelines for trade-oriented economy with growth centres distributed along long coast stretched coastlines. Especially, unless bulky cargo with long haulage is properly accommodated by the sector, negative impacts on economy and environment would be enormous. It is also important that the ports must be effectively connected with hinterland access including roads, railways and inland waterway. Priorities are given to:

(i) Deep-sea ports including access channels in SFEZ and NFEZ;

(ii) Enhancement of port function in the SFEZ and NFEZ as competitive distribution centres through integrated development access in the hinterlands; and

(iii) Introduction of RORO system to promote modal shift from road to coastal shipping.

Table 8.3 Ports and Shipping Projects Selected for the Medium-term Plan (up to 2015)

Project		Project Cost (USD mil.)		Assumed	Schedule		
No.	Name	Total	2009-2015	Schedule	-2013	-2015	-2020
Expansion and Upgrading of Port Functions							
CP01	Cam Pha Seaport Channel Development	7.0	7.0	12-13			
CP02	Hon Gai Seaport (Cai Lan) Terminal Development (Committed Stage)	120.0	120.0	10-13			
CP03	Hai Phong Seaport (Dinh Vu) Channel & Terminal Development	411.0	411.0	11-13			
CP04	Nghi Sonr Seaport Channel & Terminal Development	24.0	24.0	11-13			
CP05	Cua Lo Seaport Channel Development (Committed Stage)	4.0	4.0	11-13			
CP06	Vung Ang Seaport Terminal Development (Committed Stage)	40.0	40.0	11-13			
CP07	Dung Quat Seaport Terminal Development (Committed Stage)	41.0	41.0	11-13			
CP08	Quy Nhon Seaport Channel & Terminal Development (Committed Stage)	74.0	74.0	11-13			
CP09	Van Phong Seaport Terminal Development (Stage 1)	190.0	190.0	11-13			
CP10	Ba Ngoi Seaport (Cam Ranh) Terminal Development (Stage 1A)	88.0	88.0	11-13			
CP11	Vung Tau Seaport (Cai Mep - Thi Vai) Channel and Terminal Development (Stage 1)	1675.0	1675.0	11-13			
CP12	Ho Chi Minh Seaport (Hiep Phuoc) Channel & Terminal Development (Stage1)	204.0	204.0	11-13			
CP13	Quan Chanh Bo Channel Development Project	198.0	198.0	11-13			
P02	Hai Phong Seaport (Lach Huyen) Development (Stage 1, original schedule: 2010-2015)	450.0	270.0	13-17			
P05	Cua Lo Seport Channel & Terminal Development	26.0	0.0	16-20			
P19	Ho Chi Minh Seaport (Hiep Phuoc - Stage2 + other) Channel and Terminal Development	220.0	132.0	13-17			
P22	Expansion of terminal in Can Tho seaport	25.0	25.0	11-13			
Subtotal		3797.0	3503.0				
Total		3797.0	3503.0				

Source: VIRANSS2 Study Team.

(4) Inland Waterway

8.5 Inland Waterway must play a longer role, especially in NFEZ and SFEZ to meet increasing demand on bulky industrial goods, thereby avoid unnecessary load on roads. Priority projects include strengthening of maintenance work on arterial channels, removal of bottlenecks and improvement of river ports.

Table 8.4 Inland Waterway Projects Selected for the Medium-term Plan (up to 2015)

Project		Project Cost (USD mil.)		Assumed	Schedule		
No.	Name	Total	2009-2015	Schedule	-2013	-2015	-2020
Inland Waterway Improvement							
CW01	Upgrading of Northern Trans Mekong coriddor (to Class III)(253km)	99.3	99.3	11-13			
CW02	Updating of Southern coastal coriddor (to Class III) (153km)			13-15			
CW03	Upgrading of the feeder canals in Mekong Delta region (to Class IV) (58km)	8.5	8.5	11-13			
CW04	Improvement of the east-west northern corridor in the northern delat regeion (Viet Tri - Quang Ninh) (280km)	59.8	59.8	11-13			
CW05	Upgrading of the north-south western corridor in the northern delta region (to Class I) (295km)	6.5	6.5	11-13			
CW06	Improvement to Ninh Co River Estuary	63.7	63.7	11-13			
CW07	Inter-connecting canal between the Day and Ninh Co River	0.0		11-13			
CW08	Improvement of Sai Gon-DongThap-Long Xuyen Route	4.4	4.4	11-13			
CW09	Improvement of Thi-Vai-Nuoc ManCanal Route	3.1	3.1	11-13			
W01	Upgrading of Quang Ninh/Hai Phong - Ha Noi Route (to ClassII) (166km)	38.2	38.2	11-13			
W06	Upgrading of Quang Ninh - Pha Lai Route (to ClassII) (128km)	29.4	29.4	11-13			
W13	Upgrading Cho Gao Canal Route (11km)	138.0	138.0	11-13			
W14	Improvement of Sai Gon - Kien Luong/Lap Vo canal Route (315km)	72.5	72.5	11-13			
W16	Improvement of Sai Gon - Ca Mau/Xa No canal Route (336km)	77.3	0.0	16-18			
W17	Improvement of Sai Gon - Ca Mau/coastal Route (367km)	84.4	0.0	18-20			
W21	Improvement of Sai Gon - Hieu Liem Route (88km)	15.0	0.0	16-18			
Subtotal		700.0	523.3				
Improvement of River Port							
CW10	Improvement of Viet Tri Port	4.3	4.3	11-13			
CW11	Improvement of Ninh Phuc Port	2.8	2.8	11-13			
CW12	Demonstration investment for provincial port facilities in Mikong Delta region	-	-	11-13			
Subtotal		7.0	7.0				
Land Stages Improvement							
CW13	Invesgtment of small ferry boats stages	4.6	4.6	11-13			
Subtotal		4.6	4.6				
Safety Improvement							
W47	Search and rescue	5.0	5.0	11-13			
Subtotal		5.0	5.0				
Institutional Improvement							
CW14	Institutional development concerned with Mekong Delta Inland waterways	1.6	1.6	11-13			
CW15	Institutional development concerned with Northern delta Region Inland waterways	5.1	5.1	11-13			
W52	Database: River Surveys and Vessel Registry	20.0	20.0	11-13			
Subtotal		26.7	26.7				
Maintenance							
CW16	Pilot maintenance project	1.0	1.0	11-13			
W38	Maintenance Dredging to reduce backlogs	120.0	60.0	11-20			
Subtotal		121.0	61.0				
Total		864.3	627.6				

Source: VIRANSS2 Study Team.

(5) Aviation

8.6 Considering the air traffic growth, attending to major airports including Noi Bai, Tan Son Nhat and Danang will be focused on.

Table 8.5 Aviation Projects Selected for the Medium-term Plan (up to 2015)

Project		Project Cost (USD mil.)		Assumed	Schedule		
No.	Name	Total	2009-2015	Schedule	-2013	-2015	-2020
Construction of New Airport							
CA01	Phu Quoc Island Airport	56.0	56.0	11-13			
A01	Long Thanh Airport	6000.0	3000.0	11-20			
Subtotal		6056.0	3056.0				
Capacity Expansion of Existing Airport							
CA02	Terminal Construction at Danang International Airport	84.0	84.0	10-13			
CA03	T2 Terminal Construction at Noi Bai International Airport	800.0	800.0	12-13			
CA04	Cargo Terminal Expansion at Noi Bai International Airport	20.0	20.0	10-13			
CA05	Runway upgrading and terminal Construction at Can Tho Airport	23.0	23.0	09-13			
CA06	Runway Extension and Apron Expansion at Danang International Airport	75.0	45.0	13-17			
CA07	Passenger Terminal Expansion at Danang Internaitional Airport	100.0	0.0	18-23			
CA08	Cargo Terminal Constrcution at Tan Son Nhat International Airport	50.0	50.0	09-15			
A11	Runway Improvement at Danang international Airport	-	-	13-17			
A13	Expansion of Tan Son Nhat International Airport	200.0	200.0	11-15			
Subtotal		1352.0	1222.0				
Improvement of Navigation Facility							
CA09	Control Tower Construction at Noi Bai International Airport	100.0	100.0	12-13			
CA10	Terminal Building and Control Tower Construction at Cam Ranh Airport	12.5	12.5	11-13			
A15	Control tower Construction at Tan Son Nhat International Airport	50.0	50.0	11-13			
A16	Air Navigation System	100.0	100.0	11-13			
Subtotal		262.5	262.5				
Total		7670.5	4540.5				

Source: VITRANSS2 Study Team.

(6) Logistics

8.7 Multimodal cargo handling facilities will be developed in the NFEZ and SFEZ to establish a base for promoting logistics services. To meet increasing cross-border traffic between the southwest China, facilities at Lao Cai gate will be improved.

Table 8.6 Logistics Subsector Project Selected for the Medium-term Plan (up to 2015)

Project		Project Cost (USD mil.)		Assumed	Schedule		
No.	Name	Total	2009-2015	Schedule	-2013	-2015	-2020
Construction of New Facility for Multimodal Cargo Handling							
L01	North Logistic Park Development	199.8	199.8	11-13			
L02	South Logistic Park Development	40.0	40.0	11-13			
L03	Lao Cai Cross-border gate improvement	6.0	6.0	11-13			
Subtotal		245.8	245.8				
Total		245.8	245.8				

Source: VITRANSS2 Study Team

(7) Summary of Investment Requirement

8.8 Total investment costs of the selected projects for inclusion in Medium-term Plan up to 2015 are estimated to be US$32.1 billion (or US$26.3 billion to the Government) of which about 60% are for on-going/committed projects and only about 40% are for new projects (see Table 8.7).

Table 8.7 Investment Requirement in the Medium-term Plan (up to 2015)

		Master Plan Projects (2009–2020)			1. Committed Projects (2009-2015)			2. New Projects (2009–2015)			1+2. Mid-term Plan (2009–2015)		
		No.	Cost (USD million)		No.	Cost (USD million)		No.	Cost (USD million)		No.	Cost (USD million)	
			Total	To Gov't[3]		Total	To Gov't[3]		Total	To Gov't[3]		Total	To Gov't[3]
1. Road	Expressway	19	18,860	13,202	12	8,573	6,001	7	4,148	2,903	19	12,721	8,904
	Nat'l Highway	112	10,992	10,992	72	6,757	6,757	40	1,637	1,637	112	8,394	8,394
	Others	11	826	826	3	136	136	8	690	690	11	826	826
	Subtotal	142	30,678	25,020	87	15,498	12,926	55	6,475	5,230	142	21,973	18,157
2. Vietnam Railway (excluding NSHSR)		7	5,815	5,815	5	1,262	1,262	2	0	0	7	1,262	1,262
3. Maritime		17	3,797	2,658	13	3,076	2,153	4	427	299	17	3,503	2,452
4. IWT	River Port	3	7	6	3	7	6	0	0	0	3	7	6
	Waterway	16	700	700	9	245	245	7	278	278	16	523	523
	Others	7	157	157	4	12	12	3	85	85	7	97	97
	Subtotal	26	864	864	16	265	264	10	363	363	26	628	627
5. Aviation	New Airport	2	6,056	4,845	1	56	45	1	3,000	2,400	2	3,056	2,445
	Existing Airport	9	1,352	1,082	7	1,022	818	2	200	160	9	1,222	978
	Nav'l Facility	4	263	263	2	113	113	2	150	150	4	263	263
	Subtotal	15	7,671	6,189	10	1,191	975	5	3,350	2,710	15	4,541	3,685
6. Logistics		3	246	123	0	0	0	3	246	123	3	246	123
Total (without NSHSR)		210	49,071	40,669	131	21,258	17,547	79	10,860	8,725	210	32,119	26,273
(NSHSR)[2]		2	19,094	19,094	0	0	0	0	0	0	0	0	0

Source: VITRANSS 2 Study Team.

Notes: 1) Partially spent before 2009.

2) NSHSR was tentatively assumed to have four sections; i.e., Hanoi-Vinh, HCMC-Nha Trang, Vinh-Da Nang, and Nha Trang-Da Nang. The former two sections are included. The cost of NSHSR excludes that of rolling stock that is likely to be acquired by the operator.

3) % of cost to government: expressway - 70%, maritime - 70%, river port - 90%, airport - 80%, logistics - 50%.

8.9 The total fund requirements estimated for the Medium-term Plan will be USD40.7 billion wherein the fund requirements for maintenance, minor projects, urban and rural transportation were assumed (see Table 8.8). As possible available fund for the period is between USD19 and 46 billion, possible inclusion of new projects will highly depend on the future economic growth.

Table 8.8 Required Investment vs. Fund Availability for the Medium-term Plan

Investment Requirement for the Medium-term Plan Period (2011–2015) (USD billion)	
1. Outside of VITRNASS2	
1) Maintenance/minor projects not covered (20% of assumed budget envelope)	6.4
2) Urban transportation (20% of assumed budget envelope)	6.4
3) Rural transportation (5% of assumed budget envelope)	1.6
Subtotal	14.4
2. VITRANSS 2 Projects	
1) Ongoing/committed Projects	17.6
2) New Projects (Proposed Projects)	8.7
Subtotal	26.3
Total	40.7
Ref: Possible Available fund 2009-2015[2]	19–46

Source: VITRANSS 2 Study Team.

[1] The budget equal to 5% of GDP under the medium growth scenario was assumed

[2] The budget equal to 3% of GDP under the low growth scenario was assumed (19 USD billion) as low side while the budget equal to 7% of GDP under the high growth scenario was assumed (46 USD billion) as high side.

9 CONTINUED REFORMS FOR THE TRANSPORTATION SECTOR

1) Institutional Framework

9.1 This section focuses on how the transportation sector is planned, developed, and managed by the public sector and how the entire range of business processes and activities are distributed horizontally and vertically.

9.2 The transportation sector has wide ranging impacts and requires a broadly-based agenda because transportation makes a multifaceted contribution to development that includes passenger and freight operations, spans urban and rural areas, includes public and private transportation, meets economic and social needs, and serves domestic and international demands. Because of this diversity, there is a consequent need to adopt a simple model (one that is in common usage internationally), in order to assist an understanding of the main institutional developments and changes.

9.3 There must be greater clarity in government transportation agencies, concentrating on what only they can do best. A new institutional model has been introduced in many countries, and is a sound basis for effective action. It involves transforming the public sector to the role of:

(a) **Policy/ Strategy Maker:** in which government determines policy and strategy

(b) **Administration/ Regulator:** Regulator to create competitive markets. (An economic regulator ensures market access and guards against abuse of monopolistic behavior, while a technical regulator determines common technical standards - where these are required - and ensures that safety standards are enforced.)

(c) **Project and Program Management:** Facilitator of increased private sector activity, ensuring that the institutional, policy and legal framework is right, and

(d) **Service Delivery:** Purchaser of services from the private sector, which are socially or economically desirable, but not profitable.

9.4 The four-pronged transportation institutional activity categorization framework (commonly applied by the World Bank worldwide) has been used as the basis to categorize the current institutional landscape in the transportation sector in 2009. This institutional landscape is indicated in Table 9.1. With the possible exception of urban transportation, the basic institutional structure is now in place within each transportation subsector. However, some additional steps need to be taken. Amongst these, include the definition of the future framework for the introduction of PSP options in the transportation sector.

9.5 Institutions need to change in accordance with the challenges of executing new policies and new strategies. Vietnamese institutions are adapting – but not fast enough. The paradigm shift is required – from top-down to collaborative planning, from agencies that push to institutions that pull, from a regime where infrastructure is 100% provided by the State to where private sector participation is maximized.

9.6 To some extent, Vietnam has already started to re-structure its institutions in accordance with the above model. In the past seven years, several laws have been enacted, among them are:

(i) The Road Traffic law was updated in 2008;

(ii) The IWT Law was updated in 2004;

(iii) The Maritime Code were updated in 2005;

(iv) Railway law was updated in 2005, and

(v) The Aviation Law was updated in 2006.

Table 9.1 Current Institutional Landscape in the Transportation Sector in Vietnam

	ROADS	Expressway	RAILWAYS	INLAND WATER	PORTS/ SHIPPING	AIR TRANSPORT
1. Planning and Policy	(1) Multimodal					
	MOT	MOT	MOT	MOT	MOT	MOT
	(2) Sectoral					
	Vietnam General Road Administration (GVRA), reports to MOT	MOT in general but not clear for Expressway	Vietnam Railway Administration (VRA), reports to MOT Vietnam Railway Corporation (VNR) reports to Prime Minister	Vietnam Inland Waterway Administration (VIWA), reports to MOT	Vietnam National Maritime Bureau (VINAMARINE), reports to MOT, VINALINES reports to PM Office	Civil Aviation Administration of Vietnam (CAAV), reports to MOT
2. Regulation: Technical	(1) Safety, Standards, etc					
	GVRA	GVRA in general but not clear for Expressway, for O&M very limited standards is existing	VRA	VIWA for ports, channels, & vessel operations	VINAMARINE for ports & ship operation	CAAV
	(2) Licensing					
	Drivers licensing by Traffic Police	Drivers licensing by Traffic Police	Train/Locomotive Operator, by VNR	Vessel Pilots licenses by VIWA	Seafarers registration by VINAMARINE	Pilots and aircraft technicians licensed by CAAV
	(3) Registration					
	Motor vehicles registered by Traffic Police; Vehicle Inspection: VR, Traffic enforcement: GVRA	Motor vehicles registered by Traffic Police; Vehicle Inspection: VR, Traffic enforcement: GVRA	VR	VIWA registers & inspects vessels	Vietnam Maritime Register, under VINAMARINE	CAAV registers & inspects aircrafts
3. Regulation: Economic	(1) Entry & Competition					
	Transport Business on Road: PDOT and TUPWS of company registration (Bus and freight service, for cross border service: MOT) Toll Road Business: MOT in general but for concessioning: MOT, GVRA, VEC and PPC (PDOT and TUPWS) for PH and DH	Transport Business on Road: PDOT and TUPWS of company registration (Bus and freight service, for cross border service: MOT) Toll Road Business: MOT in general but for concessioning: MOT, GVRA, VEC and PPC (PDOT and TUPWS) for PH and DH	Monopoly: VNR	Most barges are private for own-use; otherwise VIWA	Unclear on ports; shipping services from VINAMARINE	CAAV
	(2) Pricing					
	Fares on public transport set by respective Peoples Committees (PCs) Toll Rate: MOF	Fares on public transport set by respective Peoples Committees (PCs) Toll Rate: MOF	VNR set fares, subject to MOF approval	VIWA sets river fees; subject to MOF approval; PC's sets port charges	Fees, air fares, charges subject to MOF approval	Fees, domestic economy air fares, charges subject to MOF approval
4. Program Management	(1) Investment programming					
	MOT, MPI, MOF (by Govt Budget) MOT is authorized Govt Agency (for PPP)	MOT, MPI, MOF (by Govt Budget) MOT is authorized Govt Agency (for PPP)	MOT, MPI, MOF	MOT, MPI, MOF	MOT, MPI, MOF	MOT, MPI, MOF
5. Infrastructure Delivery	(1) Construction					
	PMU's under MOT and under GVRA (excl. expressways & local roads), Other Tender Winners	Awarding contractors under Expressway Owners including Concessionaires	Track infrastructure, by VRA and VNR	Ports and channels, by PMU's under VIWA (except LGU ports and local rivers)	Minor ports by VINAMARINE; major ports owned, built & maintained by Port Enterprises with varied ownership	By 3 Regional Airport Corporations, under CAAV
	(2) Maintenance					
	GVRA (excl. expressways & local roads)	Contractors under Expressway Owners	VNR	Dredging by VINAWACO	Ditto	Ditto

	ROADS	Expressway	RAILWAYS	INLAND WATER	PORTS/ SHIPPING	AIR TRANSPORT
		including Concessionaires				
	(3) Concessioning					
	Authorized State Agencies (ASA): MOT, GVRA, Vietnam Expressway Corp. (VEC) and PPC (PDOT and TUPWS)	Authorized State Agencies (ASA): MOT, GVRA, Vietnam Expressway Corp. (VEC) and PPC (PDOT and TUPWS)	In theory VNR	No single agency	No single agency	By 3 Regional Airport Authorities
6. Service Delivery	(1) Carriers					
	Bus operators owned by LGU's, cooperatives, private companies	Bus operators owned by LGU's, cooperatives, private companies	Railway Transport Companies of VNR	Barging service by private companies & SOE's; VIWA's fleet is minority (~10%)	Vietnam National Lines (VINALINES) with 7 subsidiary companies, other shipping companies	Vietnam Airlines Corp, Jetstar Pacific, VASCO, Service Flight Corp (heli)
	(2) Public Users					
	Private cars, trucks, motorbikes	Private cars, trucks, motorbikes	None	Bancas and small craft	Bancas and small craft	Private aircraft
7. Basic Law	Land Road Traffic Law 23/2008/QH12	Land Road Traffic Law 23/2008/QH12	Vietnam Railway Law No. 35/2005/QH11	Inland Waterway Traffic Law 40/2005/QH11	Maritime Code of Vietnam 40/2005/QH11.	Civil Aviation Law 66/2006/QH11
8. Enforcement	Road Traffic Polices and Transport Inspectors of GVRA	Road Traffic Polices and Transport Inspectors of GVRA or others if any	VRA/VNR	15 VIWA River Management Stations	Vietnam Marine Police	Vietnam Air Traffic Management under CAAV

Note: Compiled by the VITRANSS2 Study Team based on existing information and available documents.

9.7 Apart from the laws, decisions and decrees that define the organizations of the transportation sector, there are legal issuances and circulars focusing on technical and economic regulations – some of which have elicited initial confusion, as maybe expected in effecting reforms. While laws have provided the broad framework for the sector, it is regulation that will provide the guidance for how the laws are to be interpreted and further, who and how it will be applied.

2) New Challenges

9.8 Some recent government actions have created new and unexpected problems. In the road subsector, the creation of VEC has led to a rapid roll-out of expressway projects, but has conflicted with the role of the VRA in maintaining a balanced and hierarchical road network. New urban rail entities have been created to for rail based mass transit projects, but these have given rise to conflicts with other rail projects. Ports are undergoing capacity expansion as their hinterlands are also expanded by improvements in the road network. Subsector institutions are being strengthened as they should be, but multimodal planning is in its infancy.

9.9 Whether the issues are strategic seaport and airport policy for each of the three FEZs or Hanoi's urban transportation strategy, there will be an increased role for better co-ordination within the main government process. Without this, strategy could become distorted. While all agencies may subscribe to coordination, in practice it is difficult to achieve.

9.10 An essential element for achieving coordination is to mainstream a 5-year rolling transportation investment program. In short, the 5-year SEDP of the government should be accompanied by a 5-year Core Investment Program (CIP) in the Transportation Sector. It is suggested that the CIP process include the following features:

(i) Explicit prohibition against off-program and off-budget items;

(ii) Recognition of funding limits (i.e., budget envelope) within the subsector;

(iii) Sharpening of cost estimates for projects in the list, i.e., supported by feasibility studies and basic engineering analysis;

(iv) Precedence of the program over prior years' master plans, i.e., the CIP shall be taken as an official amendment of previous approvals; and

(v) Post-evaluation of some projects, to guide the formulation of the next 5-year rolling CIP.

9.11 A performance monitoring system needs to accompany the aforementioned CIP – so that their status, cost overruns, and implementation delays get resolved immediately. Monitoring, in turn, will require the adoption of performance indicators. The indicators can be derived from a Logical Framework Matrix (which the government has begun to adopt in project feasibility studies) for each project in the CIP. They should measure outcomes, more than inputs, and might include the following:

(i) Capital recovery ratio within the subsector;

(ii) Greenhouse gases per pax-km and ton-km;

(iii) Energy consumption by transportation mode;

(iv) Realization of planned investments, actual vs. plan; and

(v) Accident rates by transportation mode.

3) Cross-sectoral Issues

9.12 Some crosscutting institutional issues have been identified as follows.

(1) Planning Coordination

9.13 In all transportation subsectors, long-term transportation planning is characterized by 'silo-thinking' wherein the lead modal agency looks only at its mode, in disregard of other transportation modes. A multimodal framework of coordinated transportation planning is missing. The MOT could take a lead role in this matter.

(2) Lack of Competitive Tendering

9.14 In the construction of infrastructure, the usual practice has been to assign the engineering design to an affiliate Engineering SOE, and the construction works to another affiliate CIENCO without a competitive tender.

9.15 There has been no arms-length or impartial contractual relationships between the three parties – the owner (i.e., the project-owning agency), the design group, and the construction company since control and ownership of the three agencies belongs under the MoT or its agencies. A conflict occurs when the project is funded by ODA, since Donor's regulations often specify competitive tendering. A solution could be to equitize or move the engineering and construction companies out of the agency's (and MOT's) influence.

(3) Role of PMUs

9.16 Ideally, when a project or program has been completed, the assigned Project Manager and project team should return to their lead agency. In practice, this has been difficult and complex to implement. The PMUs somehow have managed to continue in operation even after their remits have been completed. The return to lead agency may be seen as a demotion – if not in rank, at least in remuneration and perks. A challenging new assignment may often not readily be available within the lead agency.

9.17 If the project personnel are released at the conclusion of the project or program, then the agency would lose valuable talents whose experience would be beneficial to the agencies and to MOT.

(4) Development of PSP/PPP

9.18 PPP is also seen as a crosscutting issue. At present, there are no formal PSP/PPP institutions in the infrastructure/ transportation sectors, although plans are currently being formulated. Vietnam has recently established the basis for a PPP Unit in the MPI and has established a steering committee with members from MOF, MPI and MOT. This could form the basic framework for implementation of future PSP/PPPs in infrastructure projects.

9.19 A draft decree on PPP was under preparation with World Bank financing. Suggested PPP institutional arrangements were made in the Draft Final Report (World Bank, DHV Consultants). The BOT Law (Decree No. 78) was regarded as inappropriate since it did not consider more recent forms of PSP such as O&M contracts. It is thought that the scope for PSP might be greatest within the road sector; however other sectors are being considered. In the road sector viability gap funding is expected to be required.

4) Attracting the Private Sector

9.20 In common with other economies that are becoming increasingly market-oriented, the role of government and the private sector is changing. The role of government is increasingly to enable and regulate competition for infrastructure and operations services by the private sector. The customers of the system are its users – passengers and freight users, and satisfying their needs has become the new focus. Increasingly Vietnam needs to attract private sector entrepreneurs to participate more in its transportation sector.

9.21 The rationale for PSP is to drive sector efficiency in many ways, encourage innovation, and secure additional sector financing when the private sector bears risks and PSP projects provide value for money. PSP is more than a means to raise additional financing for infrastructure. It is a major direction of change. All the evidence internationally supports this thrust, and Vietnam can benefit by fast-tracking the learning curve others have faced, adapting it to its own particular circumstances. This requires:

(i) Government to provide the framework to enable competition in infrastructure services between private operators. This requires the development of institutions, legislation and implementing rules, and the development and accumulation of experience in government in procuring private sector concessions. Experience suggests this will take 5-10 years from now to achieve;
(ii) International infrastructure operators need to be attracted to Vietnam's opening market. This requires market testing of PSP developments to ensure there are willing bidders for concessions;
(iii) Concessions should be trialed for necessary and high-profile projects with high PPP potentials, such as Terminal 2 of Noi Bai Airport; and
(iv) Public counterpart investment is necessary - international experience is compelling that very few so-called 'BOT' expressway or metro or HSR projects are financially profitable as stand-alone projects. Most create large benefits for non-users (e.g., reduced traffic congestion), and government's role is to invest to secure these other benefits. New-build private sector concessions usually require large public investment – so so-called 'BOT' projects are by no means cost-free for government.

9.22 How much can be raised from private financing? This is likely to be modest at the beginning - while institutions learn and because of the impact of the global financial meltdown on capital markets in Asia. On the first decade (2010–2020), about 5% to 10% of the CIP is a reasonable target. By the 2nd decade (2020–2030), this could jump from 20% to 35%. In other words, PSP will likely deliver increasing levels of sector financing in the medium and long-term. The pay-offs can be earlier, if the government process gets streamlined sooner. Institutional reform will take time before it can deliver a pipeline of 'good', funded projects and attract the private sector in transportation infrastructure provision.

9.23 To create a more hospitable environment for PSP, two concrete measures might be considered: (i) the use of market-based financing, and (ii) hybrid ODA and PSP. The first would encompass a wide range of methodologies such as corporatization and public offering of infrastructure operating company, strategic partnership to form joint ventures to build and operate transportation infrastructure, and so on. This can piggyback on the equitization of key SOEs. The underlying principle is to tap funding for the development and operation of transportation infrastructure from the capital market in the form of equity and various form of borrowing such as loan, debentures and notes issuance.

9.24 The second measure is to utilize ODA financing towards mitigating the viability-gap risks faced by many BOT projects in Vietnam. Transportation assets can be disaggregated into their different components as illustrated in Table 9.2.

Table 9.2 Managing Viability Gap Risk in PSP Projects

Sector	Port	Airport	Highway	Railway
1. Private	• Gantry Cranes/ • Operating Equipment	• Terminals	• Toll Facilities/ • Pavement	• Rolling Stock /Equipment Mechanical System
2. Public	• Berths	• Runways	• Structures, Civil Works	• Structures, Civil Works

Source: VITRANSS 2 Study Team.

5) Involving Local Governments

9.25 There are some transportation projects that should preferably be devolved to the provinces in terms of planning, funding and operation. These infrastructure projects are important in the local context, but not in the sub-national or national context. Among these transportation projects are inland river ports, class 3 seaports, and Provincial and rural roads.

9.26 Although the revenues of provinces mostly come from fiscal transfers from the national government, the evidence suggests that these can be substantial. Some of the projects in the past had cost-sharing arrangements. Together with burden-sharing, the greater participation of local governments in the planning and management of transportation projects is consistent with decentralization and the principle of subsidiarity.

10 RECOMMENDATIONS

10.1 Recommendation for Subsectors

1) Roads

10.1 The VRA should be made to grow into its intended role of becoming the road authority in Vietnam – by resolving its favor the conflicts with VEC (with regards to overall network planning and determination of scale of expressways) and MOC (with regards to intra-urban transportation development). [11]

10.2 The regulatory function over toll roads should be taken out of VEC, so that the latter can focus on its main role as developer and partner of private investors in expressways.

10.3 Other key recommendations in the road sub-sector are the following:

(i) Institutionalization of a Five-Year Road Investment Program;

(ii) Creation of a Project Management bureau to formalize the status of PMUs and leverage the accumulated experiences of the staff;

(iii) Spin off the CIENCOs into joint-stock companies, one at-a-time, so that they can evolve into competitive civil works contractors, on arms-length relationship with MOT and its associated agencies;

(iv) Study the possibility of merging the unit responsible for development of technical standards and the unit responsible for the quality of construction into a “Road Technology Research and Development Institute”.

(v) Formalize the system of usage of the road maintenance fund

2) Railways

10.4 Railway projects should be given a higher proportion of resources out of the total transportation investment budget to enable the railway to compete with other transportation modes. However, the allocation should be limited to those corridors where railway is the more efficient – energy and cost-wise.

10.5 Instead of a shotgun approach of trying to cater for everybody, the railway sector should target the specific market niches in which it has the best chance of becoming competitive – line by railway line. Clearly, the North-South Line is the most important with potentials for container transportation. On the shorter Hanoi-Haiphong Line, massive investments may not be able to overturn its disadvantage to trucking and to buses, when the parallel expressway gets built.

10.6 VITRANSS2 has identified a basic package of improvement works; just enough to keep existing railway assets functioning at a capacity of 50 trains for both directions a day. This can be further decomposed and prioritized to support the railway’s marketing plan. With additional funding, a second stage of railway improvements can be pursued – involving system rehabilitation and selective double-tracking that will result in step-increase in capacity and improved services. A third stage of system modernization will entail substantial technology upgrades, and should be last in priority.

[11] During the study period, the institutional reform was conducted; VRA has changed to VRD (Vietnam General Road Directorate) covering also a part of road development in addition to O&M of national highway and all transportation companies moved from VRA to Vietnam General Automobile Company.

10.7 The HSR project is very capital-intensive and the development of full section should be deferred beyond 2030. There are other lower cost alternatives to improve the north-south linkage before then.

3) Ports and Shipping

10.8 The plans for the ports of Saigon and Haiphong are under implementation. Hence, the focus should now shift to improving the connectivity of ports to roads, railways, and inland waterways. They are vital to the success or viability of the new deep-seaports.

10.9 For example, the Lach Huyen Port complex will need a bridge (about 2.4 –km long) to connect it to the mainland of Haiphong. In the south, an expressway must be provided, in time, for the full operation of Cai Mep – Thi Vai. The same can be said about channel dredging of the Soai Rap channel to coincide with the completion of terminals in Hiep Huoc Area, or the navigation channel to Lach Huyen. Linkages to the ports of Can Tho and My Thoi also require improvements – especially with the completion of Quang Chanh Bo channel.

10.10 At the local level, every port area has to be planned and developed harmoniously with its surrounding communities. This can be realized through a multi-sectoral Port Management Board that will be responsible for regulating and concessioning of terminals, setting performance targets, the maintenance of harbors and common navigation channels, and provision of ship traffic management around the ports.

10.11 The connectivity issue, compounded by changing trade patterns as a consequence of the global economic meltdown, warrants caution about the accelerated development of Lach Huyen Port. The case for the Van Pho Transshipment Port is even weaker, and may have become moot with the first call of a direct transpacific vessel at Cai Mep.

10.12 Separating the ports development burden from the shipping business is recommended as a long term direction for VINALINES. A special financing facility for domestic fleet expansion should be established and be made available to other shipping companies. This should lead to greater competition, and efficiency, in domestic shipping services.

10.13 MOT and its maritime arm – VINAMARINE – have to step into the role of a ‘Conductor’ in an orchestra of diverse players. It needs to become an effective planning and regulatory body – leaving the rest of the tasks and burden to others. It can take the baton, and enable a system of ports hierarchy to emerge. At the top of the hierarchy will be three international gateway ports – Cai Mep – Thi Vai, Haiphong, and Danang. More than 60% of national capacity will be for the SFEZ, 30% for the NFEZ, and less than 10% for the CFEZ. Without the guiding hand of a Conductor, surplus capacities may co-exist with shortages.

4) Inland Waterway

10.14 The sector should make a fundamental shift in strategy. Instead of aspiring to do more, the IWT sector should undertake a strategic retreat – by concentrating its limited resources on a core set of river corridors where it could be competitive and which it could defend and maintain adequately. The ‘retreat’ will mean: (i) devolving responsibilities over most river ports to provinces, (ii) focusing on improving the road-river and river-seaport interfaces, (iii) leaving ferry and barge services to the private sector, and (iv) allocating its

full resources on channel navigability. Instead of planning for a 'do-maximum' scenario, the sector has to scale down its ambitions to where it can be most effective. A sustainable plan that it can adopt should entail investments of at least US$700 million but not exceeding US$1,400 million over 10 years (from 2010-2020).

10.15 From the limited funds that it could get from the State Budget, it should give highest priority for the maintenance of a core set of waterways. Rivers need to be desilted regularly, and its curvature protected, in accordance with the technical standards to which they have been classified. It is said that 40% backlog in maintenance is occurring every year. Therefore, the sector needs to recover lost grounds by embarking on a major maintenance program in the next 10 years. In order to be effective, this needs to be empirically-based, a product of regular and continuous river surveys.

10.16 To stabilize funding for waterway maintenance, the sector should aim to establish a river maintenance fund. The National Assembly has recently approved the creation of a Road Maintenance Fund, but implementing details have yet to be formulated. The IWT should seek a share of this fund - to the extent that the sector also accounts for a large portion of the country's fuel consumption, which would be subjected to levy. In addition, the sector should harness the support of its primary customers – the industrial enterprises that locate along riverbanks and use the waterway as lifelines for their viability. With their support, two alternative sources of maintenance funds can be tapped: a) annual fees on river fleet registration and inspection, and b) frontage tax on commercial and industrial properties along the rivers. The first would require a corollary improvement of the vessel registration system, while the second would need the support of local governments as it partakes of a land-use charge.

10.17 Next to asset maintenance, safety of river navigation deserves priority. Safety can be boosted through an annual process of vessel inspection and registration, as well as a more rigorous pilot licensing and training program.

5) Air Transportation

10.18 Aside from building bigger terminals and/or more runways, the regional airport authorities should pursue system innovations – which require little investment – to improve productivity (which results in higher throughput without new infrastructure).

10.19 It should adopt standards for airport development, including technical classification to guide planning and development of every airport in the national system, using ICAO and international best practices as templates.

10.20 The capital recovery mechanism should be reviewed and revised in the light of changes in the institutional set up. This is intended to improve the sector's financial sustainability. Also, a subsidy policy for 'missionary' routes should be defined.

10.21 Caution must be exercised in the development of tourist-dependent airports, since traffic is seasonal and uncertain. The same caution should apply on a cargo hub airport (in Chu Lai) as its success hinges on the presence of large cargo volumes generated internally and is contingent on the entry of a global logistics player specializing in the business of air express delivery.

10.22 The sector should re-examine its priorities and back this up with a realistic 10-year capital investment program that takes into account the budget envelope. The inadequacy of investments and the need to upgrade its airports to international standards

should prod the government into pursuing private sector participation (PSP). There is a window of opportunity – in the development of a new passenger terminal in Noi Bai, a new cargo terminal in Noi Bai and in Tan Son Nhat, and the new Long Thanh International Airport. For the smooth development of Long Thanh, the airport manager at TSN should be involved closely.

6) Logistics

10.23 The most basic step to move up the country status in logistics – from 1PL to 3PL level – is the upgrading of logistics competence. A wider appreciation of supply chain management in government and private circles is the key to subsequent reforms in policies and management practices. Organizing a public-private logistics forum, spearheaded by the freight forwarders' association, can trigger and push this agenda forward.

10.24 For its part, the government should proceed with the full-scale implementation of EDI and paperless transaction system at Customs and border gates. The logistics industry will have no choice but to follow and adapt to this game-changing measure; then move farther up the ICT ladder into E-payments, B2B transactions, and cargo visibility.

10.25 Thirdly, the government should consider amending its laws and regulations on foreign participation in logistics services. They are more restrictive than China's, and will only delay the country's logistics development.

10.26 Lastly, the government should re-calibrate its transportation infrastructure program by giving priority to the multimodal needs of its large (and growing) FDI-enterprises. Containerization in shipping and railway should be promoted. As an added catalyst, it should establish two international Logistics Parks that are also multi-modal transportation hubs: one northeast of Hanoi, the other between HCMC and Cai Mep – Thi Vai. Going beyond the traditional ICD concept, these proposed logistics parks shall encompass: (i) a free-trade zone for customs bonded warehouse operations, (ii) a product exchange and trade exhibition center, (iii) a railway container depot, (iv) a regional warehouse distribution center with cross-docking facility, and (v) advanced ICT-based logistics application systems.

10.2 Need for Further Technical Assistance

10.27 While VITRANSS 2 is unable to respond to all the important issues facing the transportation sector in Vietnam, areas that can be given possible technical assistance for further study have been identified as shown in Table 10.1.This tentative list will be farther explained and elaborated based on subsequent discussions with relevant agencies.

Table 10.1 List of Possible Technical Assistance Projects

Sector	Title/ Description	Responsible Agency
1. General	• Transportation Sector Management Capacity Strengthening Projects: This intends to strengthen the transportation planning and management capacity of related subsector agencies. It will cover: (i) strategic planning, (ii) project identification and evaluation, (iii) project implementation.	• MOT and related subsector agencies
2. Roads and Road Transportation	• Road Maintenance and Asset Management Project: This intends to strengthen the road maintenance and asset management capacity of primary roads including expressways.	• MOT and GRA, VEC
3. Railway	• Project on Upgrading and Management Improvement of Existing Railways: This intends to formulate strategies and concrete steps to upgrade existing railways and improve management systems. Its main components are: (i) establishment of a method to assess the structural soundness of railway facilities and recovery systems, (ii) disaster prevention and recovery system, and (c) improvement of level crossings.	• VNR
	• Capacity Building for Railway-related Business Development: This intends to identify opportunities for various railway-related businesses and establish adequate mechanisms and management systems.	• VNR
	• Detailed Study for HSR: This intends to tackle the remaining issues of HSR, such as consistency with city planning, station location particularly in Hanoi and HCMC and operational requirement.	•
	• Hai Van Tunnel Development: This intends to study the feasibility of Hai Van tunnel both for HSR and existing VR line.	•
4. Maritime	• Port Management Strengthening Project: This intends to strengthen VINAMARINE's port management capacity. Its main components are: (i) establishment of a Port Management Body, (ii) establishment of design evaluation systems, (iii) formulation of port facilities ledgers, and (iv) revision of the maritime code.	• VINAMARINE, model sea ports
	• Van Phong Port Development:: This is a feasibility study of Van Phong Transhipment port focusing on its future potential in comparison with other port projects of the region.	•
5. Inland Waterway	• Comprehensive Inland Waterway Transportation Development and Management Plan for the Red River and Mekong River Deltas: This intends to formulate a comprehensive inland waterway network development and management plan for the two deltas	• MOT/ VIWA, related Provinces
6. Aviation	• Aviation Subsector Capacity-development Projects; Its main components are: (i) enhancement of the English proficiency of pilots and air traffic controllers, (ii) enhancement of business capacity to enable Vietnamese airports to be managed commercially, and (iii) development of environmental management capacity, especially for aircraft noise monitoring and aircraft emissions.	• CAAV, VANSCORP, Airport Corporations, Airlines
7. Multimodal Transportation	• Multimodal Transportation Development Project: Its main components are: (i) institutional/ regulatory framework development, (ii) FS on the development of logistics parks in NFEZ and SFEZ, and at cross-border gateways.	• MOT. VNR
8. Transportation Environment	• Urban Transportation Air Pollution Control Plan: This intends to formulate a comprehensive, integrated plan to reduce air pollution from mobile sources in major urban areas. Its main components are: (i) policy formulation, (ii) database building and management, (iii) awareness raising, (iv) capacity building, and (v) equipment support.	• MOT, Hanoi PC, HCMC PC, Others

Source: VITTRANSS 2 Study Team.

APPENDIX A

List of Transportation Projects

APPENDIX A

Long List of Transportation Projects

Table A-1 Major Ongoing/Committed Transportation Projects (Fund source is already settled)

Subsector	Project			Original Schedule	Implementing Agency	Total Project Cost (USD mil.)	Fund Source
1. Road	Construction of new expressway	CH01	Cau Gie – Ninh Binh Expressway (50km)	06-10	• VEC	452.4	• SB • CB
		CH02	Da Nang – Quang Ngai Expressway (131km)	-20	• MOT	1048.2	• WB
		CH03	Phan Thiet – Dau Giay Expressway (100km)	-15	• BITEXCO	1003.8	• BOT[1)]
		CH04	HCMC – Long Thanh – Dau Giay Expressway (55km)	08-12	• VEC	1110.8	• ADB • JBIC
		CH05	HCMC- Trung Luong Expressway (40km)	04-09	• MOT	776.5	• GOV • SB
		CH06	Trung Luong – My Thuan – Can Tho Expressway (92km)	-10	• BIDV (BEDC)	1510.0	• BOT[1)]
		CH07	Lang Son – Bac Giang – Bac Ninh Expressway (130km)	11-14	• VEC	1176.3	• [1)]
		CH08	Ha Noi – Hai Phong Expressway (105km)	08-11	• BOT company	1441.2	• Local BOT
		CH09	Ha Noi – Lao Cai Expressway (264km)	09-12	• VEC	1218.7	• ADB • GOV
		CH10	Ha Noi – Thai Nguyen Expressway (62km)	05-10	• MOT	248.2	• JBIC
		CH11	Lang – Hoa Lac Expressway (30km)	06-09	• BT Company	450.0	• BT
		CH12	Ha Long – Mong Cai Expressway (128km)	12-15	• VEC	1254.7	• [1)]
	Construction of new road	CH13	Can Tho Bridge Construction	02-09	• MOT	284.8	• JBIC
		CH14	Border Ring No1 Construction (Hai Giang - Lao Cai) (151km)	00-10	• MOT	300.4	• GOV
		CH15	Border Ring No2 Construction (Northern Part)	01-08	• MOT	17.2	• SC • GOV
		CH16	Border Ring No2 Construction (Northwest Part, Pho Rang - Minh Thang) (160km)	04-09	• MOT	140.9	• GOV
		CH17	Border Ring No3 Construction	02-07	• MOT	30.1	• GOV
		CH18	Linh Dam Bridge Construction (NH15, Ha Tinh)(2 lane)	08-10	• VRA	13.6	• GOV
		CH19	Ong Bo Bridge Construction (NH1A, Quang Nam)(2 lane,108m)	02-09	• VRA	1.4	• GOV
		CH20	Huong Anh bridge Construction (NH1A, Quang Nam)(4lane, 250m)	08-10	• VRA	8.4	• GOV
		CH21	Dinh Vu Bridge Construction (Hai Phong)	-	• N/A	200.0	• N/A
		CH22	Vinh Thinh Bridge Construction (Ha Tay)	-	• N/A	80.0	• N/A
		CH23	45 Rural Traffic Bridges in Central and Central Highland Provinces	01-10	• VRA	32.8	• ODA
		CH24	Ben Thuy II bridge Construction (NH1&NH8B, Nghe An-Ha Tinh) (2lane, 1km)	09-11	• VRA	74.1	• Gov(Bond)
		CH25	Dong Nai bridge Construction	08-09	• VRA	121.8	• BOT company
		CH26	Cau Phung Bridge Construction (NH32)	05-10	• VRA	18.6	• Gov(Bond)
		CH27	Border Ring Road No 1 Construction (Ha Giang – Lao Cai)	10-	• VRA	67.8	• Gov(Bond)

Subsector	Project			Original Schedule	Implementing Agency	Total Project Cost (USD mil.)	Fund Source
			(151km)				
		CH28	NH279 Construction (Tuyen Quang – Bac Can) (94.5km)	07-10	• VRA	67.3	• Gov(Bond)
	Construction of bypass	CH29	NH1A Bypass (Thanh Hoa) (10km)	-	• VRA	38.3	• BOT company
		CH30	NH1A Bypass (Dong Hoi, Quang Binh) (19.3km)	-	• VRA	38.6	• BOT company
		CH31	NH1A Bypass (Ha Tinh) (16.3km)	-	• VRA	20.8	• BOT company
		CH32	NH1A Bypass (Phan Rang, Ninh Thuan) (8.3km)	-	• VRA	32.2	• BOT company
		CH33	NH2 Bypass (Vinh Yen (Vinh Yen – Vinh Phuc)) (10.6km)	08-10	• VRA	36.2	• BOT company
	Improvement of road/bridge	CH34	NH 25 Upgrading (Le Bac Bridge - To No pass) (11.5km)	07-09	• VRA	4.6	• GOV
		CH35	Mekong Delta River Infrastructure Development (NH53,N54,NH91 & PHs; WB5)	07-13	• VRA	119.5	• ODA
		CH36	NH 1 Widening (Dong Ha - Quang Tri)	-	• VRA	31.5	• BOT company
		CH37	Highway Rehabilitation Project III (NH1, Can Tho - Nam Can) (288km)	03-10	• MOT	186.0	• WB
		CH38	Bridge Rehabilitation Project - Phase III (NH1)	06-10	• MOT	84.9	• JBIC
		CH39	NH2 Upgrading (Noi Bai - Vinh Yen) (22km)	05-09	• Song Da BOT	66.8	• GOV • BOT
		CH40	NH10 Upgrading (Tan De bridge - La Uyen bridge) (5.5km)	08-10	• BOT	25.5	• BOT
		CH41	East-West Corridor Improvement (NH12A) (182.3km)	00-08	• MOT	98.9	• GOV
		CH42	NH 21B & NH21 Upgrading (Hanoi) (76km)	-	• MOT • BOT	44.2	• GOV • BOT
		CH43	Ho Chi Minh Highway Phase 2 Upgrading (Pac Bo - Dat Mui excluding Hoa Lac - Ngoc Hoi) (2,072km)	07-10	• MOT	1591.1	• GOV
		CH44	Rehabilitation Project (NH19, NH20, NH26, NH27, NH28)	03-08	• MOT	85.4	• GOV • SC
		CH45	NH 2 Improvement (Hanoi - Ha Giang) (261km)	02-09	• MOT	107.2	• GOV
		CH46	NH 3 Improvement (Hanoi - Cao Bang) (310km)	03-10	• MOT	155.3	• GOV
		CH47	NH 6 Improvement Phase 2 (Son La - Dien Bien)	04-09	• MOT	68.9	• GOV
		CH48	NH 32 Improvement (Hanoi - Lai Chau) (358km)	02-09	• MOT	178.8	• GOV
		CH49	NH 50 Improvement (HCMC - My Tho) (88km)	06-10	• MOT	148.8	• GOV
		CH50	NH 80 Improvement (My Thuan - Vam Cong) (50km)	03-09	• MOT	35.2	• GOV
		CH51	NH 60 road and bridges Improvement	00-05	• MOT	168.5	• GOV • BOT • SC
		CH52	NH 61 Improvement (Can Tho - Kien Giang)	03-06	• MOT	23.8	• GOV
		CH53	NH22B Improvement (Go Dau - Xa Ma) (73km)	03-08	• MOT	23.9	• GOV
		CH54	Secondary Road Network rehabilitation Program	02-07	• MOT	664.4	• JBIC • WB • ADB • SC

Subsector	Project			Original Schedule	Implementing Agency	Total Project Cost (USD mil.)	Fund Source
	CH55	Tertiary Road Improvement Project		02-08	• MOT	201.9	• ADB • WB
	CH56	Rural Road Projects improvement III (2,500km)		07-12	• MOT	155.6	• WB
	CH57	Improvement of Rural Bridges in Central Coast & Central Highland Provinces		01-08	• MOT	32.3	• JBIC
	CH58	Other Roads and Bridges Improvement		-	• MOT	202.0	• GOV
	CH59	NH1 Upgrading (My Thuan - Can Tho) (38.4km)		07-09	• VRA	108.4	• Gov
	CH60	Thang Long Bridge Surface Repair		08-09	• VRA	3.5	• Gov
	CH61	Road Network Improvement and Upgrading of (WB4) (Improvement component) (629km)		04-09	• VRA	310.5	• WB
	CH62	Road Network Improvement and Upgrading (WB4) (maintenance and institutional improvement component)		05-09	• VRA	112.5	• WB
	CH63	NH 1 Rehabilitation (Phase 3)		07-09	• VRA	87.4	• JICA
	CH64	Rural Traffic Project No.3 (3150km)		07-12	• VRA	155.6	• WB, UK
	CH65	Rehabilitation of Weak bridges (140 bridges) ((Phase 1)		05-09	• VRA	98.1	• JICA
	CH66	Southern Coastal Corridor Upgrading (NH80 & NH63) (225km)		09-14	• VRA	290.9	• EDCF
	CH67	NH6 Upgrading (Tuan Giao – Lai Chau) (96km)		10-	• VRA	138.8	• Gov(Bond)
	CH68	NH 27 Upgrading (98km)		05-11	• VRA	56.9	• Gov(Bond)
	CH69	NH 32 Upgrading (Vach Kim – Binh Luu) (72km)		04-08	• VRA	33.8	• Gov(Bond)
	CH70	NH 32 Upgrading (Dien – Nhon) (7km)		05-08	• VRA	57.7	• Gov(Bond)
	CH71	NH 91 Upgrading (Chau Doc-Tinh Bien) (27.3km)		09-after 10	• VRA	55.7	• Gov(Bond)
	CH72	Storm No.5 Recovery Projects on NH6 (Hoa Binh – Son La)		-09	• VRA	4.6	• Gov(Bond)
	CH73	NH 279 Upgrading (Ttan Son – Than Muoi, Dong Mo – Tu Don) (43km)		05-10	• VRA	14.8	• Gov(Bond)
	CH74	NH3B Upgrading (Xuat Hoa-Po Ma) (60km)		09-12	• VRA	79.8	• Gov(Bond)
	CH75	Weak Bridge Rehabilitation Project (Stage 2: 83 bridges)		10-	• VRA	207.5	• Gov(Bond)
	CH76	NH 31 Upgrading (Huu San – ban Chat) (61km)		-09	• VRA	59.4	• Gov(Bond)
	CH77	NH53 (not including Km56-Km60 and Km130-Km139 in WBS project) (121km)		09-11	• VRA	81.1	• Gov(Bond)
	CH78	NH8A Upgrading (Ha Tinh) (37km)		09-11	• VRA	69.2	• Gov(Bond)
	CH79	NH24 Upgrading (Pho Phong – Quang Ngai) (8km)		10-	• VRA	23.3	• Gov(Bond)
	CH80	NH24 Upgrading (Pho Phong – Kon Tum) (160km)		10-	• VRA	294.1	• Gov(Bond)
	CH81	NH25 Upgrading (Phu Yen – Gia Lai)(160km)		10-	• VRA	294.1	• Gov(Bond)
	CH82	NH15 Upgrading (Mai Chau - Hoi Xuan) (109km)		10-	• VRA	117.6	• Gov(Bond)
	CH83	NH1A Upgrading (Hoa Cam –		07-09	• VRA	32.8	• BOT company

Subsector	Project			Original Schedule	Implementing Agency	Total Project Cost (USD mil.)	Fund Source
			Hoa Phuoc, Danang) (8.4km)				
		CH84	NH20 and Other Sections Repairment and Upgrading (268km)	10-	• VRA	16.6	• BOT company
	Improvement of Traffic Safety	CH85	Road Safety Improvement Program	06-09	• NRSC	33.4	• WB
		CH86	Northern Vietnam National Roads Traffic Safety Improvement Project (NH 3, NH 5, NH 10, NH 18)	09-13	• VRA	60.7	• JICA
		CH87	Railway and Road Safety Traffic System Building	09-12	• VRA	41.7	• Gov(Bond)
					Subtotal	20,762	
2. Railway	Improvement of exisiting line for capacity expansion	CR01	Improvement & Upgrading in North-South Railway Line	07-20	• VNR	965.4	• ODA • GOV
		CR02	Improvement in Railway Routes in the North	01-20	• VNR	291.6	• ODA • GOV
	Construction of new line	CR03	Yen Vien-Pha Lai Railway Line	04-10	• VNRA	118.4	• GOV
		CR04	Ha Long- Cai Lan Raiway Line	04-10	• VNRA	58.9	• GOV
		CR05	Railway line from Chua Ve to DAP factory-Dinh Vu (Hai Phong)	07-10	• VNR	67.7	• GOV
					Subtotal	1,502.1	
3. Ports & Shipping	Expansion and upgrading of port functions	CP01	Cam Pha Seaport Channel Development	08-09	• VINAMARINE	7.0	• GOV
		CP02	Hon Gai Seaport (Cai Lan) Terminal Development (Committed Stage)	08-11	• Cai Lan International Container Terminal Company	120.0	• Cai Lan Port JSC (VINALINES Group) • SSA Holdings International Vietnam
		CP03	Hai Phong Seaport (Dinh Vu) Channel & Terminal Development	-10	• VINAMARINE • VINALINES • Vietnam Petroleum Transport JSC	411.0	• GOV • VINALINES • Pha Rung Shipbuilding Company (VINASHIN Group) • AP Moller Maersk A/S • VIPCO Vietnam • Petroleum Transport JSC (Petrolimex Group)
		CP04	Nghi Son Seaport Channel & Terminal Development		• VINAMARINE • Petrovietnam • Vietnam Electricity	24.0	• GOV • Petrovietnam • JICA • Cong Thanh Cement • Thanh Hoa Cement
		CP05	Cua Lo Seaport Channel Development (Committed Stage)	-10	• VINAMARINE	4.0	• GOV
		CP06	Vung Ang Seaport Terminal Development (Committed Stage)		-	40.0	• Formosa Plastic Group • Sun Steel Co. • TaTaSteel Global Holding Pte Ltd. • Vietnam Steel Corp. • Vietnam Cement Industries Corporation
		CP07	Dung Quat Seaport Terminal Development (Committed Stage)	-10	• Gemadept • Petrovietnam	41.0	• Gemadept • Petrovietnam
		CP08	Quy Nhon Seaport Channel & Terminal Development (Committed Stage)	-10	• VINAMARINE • Gemadept	74.0	• GOV • Gemadept

Subsector	Project			Original Schedule	Implementing Agency	Total Project Cost (USD mil.)	Fund Source
		CP09	Van Phong Seaport Terminal Development (Stage 1)		• VINALINES	190.0	• VINALINES, N/A
		CP10	Ba Ngoi Seaport (Cam Ranh) Terminal Development (Stage 1A)	-10	• VINALINES	88.0	• VINALINES
		CP11	Vung Tau Seaport (Cai Mep - Thi Vai) Channel and Terminal Development (Stage 1)	-11	• MOT • VINAMARINE • SP-PSA International Port Co., Ltd. • Cai Mep International Terminal Co., Ltd. • SP-SSA International Container Services JVC Saigon International Terminal Vietnam Ltd. • Saigon New Port Company	1675.0	• GOV • JICA • Saigon Port (VINALINES Group) • PSA Vietnam Pte Ltd. • VINALINES • AP Moller - Maersk A/S • SSA Holdings International Vietnam • Saigon Investment Construction & Commerce Co., Ltd. • Hutchison Ports Mekong Investment S.A.R.L • Saigon New Port
		CP12	Ho Chi Minh Seaport (Hiep Phuoc) Channel & Terminal Development (Stage1)	-09	• VINAMARINE • Saigon Premier Container Terminal Ltd.	204.0	• Tan Tuan Industrial Promotion Company • DP World
		CP13	Quan Chanh Bo Channel Development	-10	• VINAMARINE	198.0	• GOV
					Subtotal	3076.0	
4. Inland Waterway	Waterway Improvement	CW01	Upgrading of Northern Trans Mekong coriddor (to Class III)(253km)	-15	• VIWA	99.3	• WB • Vietnam
		CW02	Updating of Southern coastal coriddor (to Class III) (153km)	-15	• VIWA		
		CW03	Upgrading of the feeder canals in Mekong Delta region (to Class IV) (58km)	-15	• VIWA	8.5	• WB • Australia
		CW04	Upgrading of the east-west northern corridor in the northern delat regeion (to Class II)(Viet Tri - Quang Ninh) (280km)	-15	• VIWA	59.8	• WB • Vietnam
		CW05	Upgrading of the north-south western corridor in the northern delta region (to Class I) (295km)	-15	• VIWA	6.5	
		CW06	Improvement to Ninh Co River Estuary	-15	• VIWA	63.7 including CW07)	• WB • Vietnam
		CW07	Inter-connecting canal between the Day and Ninh Co River	-15	• VIWA	63.7 including CW06)	
		CW08	Improvement of Sai Gon-DongThap-Long Xuyen Route		• VIWA	4.4	• Vietnam
		CW09	Improvement of Thi-Vai-Nuoc ManCanal Route		• VIWA	3.1	• Vietnam
	Improvement of river port	CW10	Improvement of Viet Tri Port	-15	• VIWA	4.3	• WB • Vietnam
		CW11	Improvement of Ninh Phuc Port	-15	• VIWA	2.8	
		CW12	Demonstration investment for provincial port facilities in Mikong Delta region	-15	• VIWA	-	
	Landing Stages Improvement	CW13	Invesgtment of small ferry boats stages	-15	• VIWA	4.6	• WB • Vietnam
	Institutional improvement	CW14	Institutional development concerned with Mekong Delta In-	-15	• MOT VIWA	1.6	• WB

Subsector	Project			Original Schedule	Implementing Agency	Total Project Cost (USD mil.)	Fund Source
			land waterways				
		CW15	Institutional development concerned with Northern delta Region Inland waterways	-15	• MOT • VIWA	5.1	• WB
	Maintenance	CW16	Pilot maintenance project	-15	• VIWA	1.0	• WB
					Subtotal	264.6	
5. Aviation	Construction of new airport	CA01	Phu Quoc Island Airport	08-10	• SAC	56.0	• GOV
	Capacity Expansion of existing airport	CA02	Terminal Construction at Danang International Airport	08-11	• MAC	84.0	• GOV
		CA03	T2 Terminal Construction at Noi Bai International Airport	09-10	• NAC	800.0	• GOV
		CA04	Cargo Terminal Expansion at Noi Bai International Airport	09-12	• NAC	20.0	• GOV
		CA05	Runway upgrading and terminal Construction at Can Tho Airport	05-09	• SAC	23.0	• GOV
		CA06	Runway Extension and Apron Expansion at Danang International Airport	08-15	• MAC	75.0	• GOV, MAC, Private
		CA07	Passenger Terminal Expansion at Danang Internaitional Airport	15-25	• MAC	100.0	• GOV, MAC, Private
	Improvement of navigation facility	CA09	Control Tower Construction at Noi Bai International Airport	09-10	• VANSCORP	100.0	• GOV
		CA10	Terminal Building and Control Tower Construction at Cam Ranh Airport	07-09	• MAC	12.5	• GOV
					Subtotal	1320.5	
Total						26,925.2	

Note: 1) Locations of the projects are shown in the attached maps

2) Through the discussion with MOT, it was decided to add the following 4 projects to the list because of the maturity for implementation: CH03 Phan Thiet - Gia Ray, which WB selected as one of the priority projects, CH06 Trun Luong – My Thuan – Can Tho, for which BOT by VIDB is expected for Trung Luong – My Thuan section and FS review is requested to JICA for My Thuan – Can Tho section, and CH 07 Lang Son – Bac Giang – Bac Ninh & CH12 Ha Long – Mong Cai, for which TAs for reviewing F/S and D/D are committed by ADB.

3) Regarding to IWT projects, CW01, CW02, CW03, CW08, CW09, CW12, CW14 and CW15 are the components of WB project which is "Development of Transport Infrastructure of the Mekong Delta" . On the other hand, CW04 CW05, CW06, CW07, CW10, CW11, CW13 and CW16 are the components of "Development of Transport in the Northern Delta Region".

4) Compiled by the VITRANSS 2 Study Team.

Table A-2 Proposed Transportation Projects

Subsector		Proj. No.	Project Title	Project Description	Proj.Cost (USD mil.)
1. Road	Construc-tion of new express-way	H01	Ninh Binh – Thanh Hoa Ex-pressway (75km)	A part of North-South expressway in the East. (75km, 6 lane)	827.6
		H02	Thanh Hoa – Vinh Expressway (140km)	A part of North-South expressway in the East. (140km, 6 lane)	2,128.0
		H03	Vinh – Ha Tinh Expressway (20km)	A part of North-South expressway in the East. (20 km, 4-6 lane)	201.5
		H04	Ha Tinh – Quang Tri Expressway (277km)	A part of North-South expressway in the East. (277km, 4 lane)	2,641.2
		H05	Quang Tri – Hue Expressway (73km)	A part of North-South expressway in the East, also a part of East-West corrider of GMS corrider network.(73km, 4 lane)	711.9
		H06	Hue – Da Nang Expressway (105km)	A part of North-South expressway in the East, also a part of East-West corrider of GMS corrider network. (105km, 4 lane)	1,778.0
		H07	Quang Ngai – Quy Nhon Ex-pressway (150km)	A part of North-South expressway in the East. (150km, 4 lane)	1,787.8
		H08	Quy Nhon – Nha Trang Ex-pressway (240km)	A part of North-South expressway in the East. (240km, 4 lane)	3,390.1
		H09	Nha Trang – Phan Thiet Ex-pressway (280km)	A part of North-South expressway in the East. (280km, 4-6 lane)	2,890.3
		H10	Long Thanh – Nhon Trach – Ben Luc Expressway (45km)	A part of North-South expressway in the East. (45km, 6-8 lane)	738.6
		H11	Doan Hung – Hoa Lac – Pho Chau Expressway (457km)	A part of North-South expressway in the West. (457km, 4-6 lane)	4,813.1
		H12	Ngoc Hoi – Chon Thanh – Rach Gia Expressway (864km)	A part of North-South expressway in the West. (864km, 4-6 lane)	7,974.4
		H13	Thai Nguyen – Cho Moi Ex-pressway (28km)	Expressway in Northern Region. (28km, 4-6 lane)	256.9
		H14	Hoa Lac – Hoa Binh Expressway (26km)	Expressway in Northern Region. (26km, 4-6 lane)	214.0
		H15	Bac Ninh – Ha Long Expressway (136km)	Expressway in Northern Region connecting with Ha Noi City and World Heritage. (136km, 6 lane)	1,618.8
		H16	Ninh Binh – Hai Phong – Quang Ninh Expressway (160km)	Expressway in Northern Region connecting with Hai Phong Port. (160km, 4 lane)	1,189.4
		H17	Hong Linh – Huong Son Ex-pressway (34km)	Expressway in Central Region connecting with coastal area and mountain area. (34km, 4 lane)	302.0
		H18	Cam Lo – Lao Bao Expressway (70km)	Eexpressway in Central Region, also a part of East-West corrider of GMS corrider network. (70km, 4 lane)	699.1
		H19	Quy Nhon – Pleiku Expressway (160km)	Expressway in Central Region connecting with North-South expressways. (160km, 4 lane)	1,615.1
		H20	Dau Giay – Da Lat Expressway (189km)	Expressway in Southern Region. (189km, 4 lane)	1,871.0
		H21	Bien Hoa – Vung Tau Express-way (76km)	Expressway in Southern Region connecting with Vung Tau Port. (76km, 6 lane)	696.5
		H22	HCMC – Thu Dau Mot – Chon Thanh Expressway (69km)	Expressway in Southern Region. (69km, 6-8 lane)	996.3
		H23	HCMC – Moc Bai Expressway (55km)	Expressway in Southern Region. (55km, 4-6 lane)	410.5
		H24	Soc Trang – Can Tho – Chau Doc Expressway (200km)	Expressway in Southern Region. (200km, 4 lane)	1,439.6
		H25	Ha Tien – Rach Gia – Bac Lieu Expressway (225km)	Expressway in Southern Region. (225km, 4 lane)	1,619.5
		H26	Can Tho – Ca Mau Expressway (150km)	Expressway in Southern Region. Lenth is (150km, 4 lane)	1,755.7
		H27	Quang Ngai – Dak To Express-way (170km)	Expressway in Central Region. (170km, 4 lane)	2,073.6
		H28	Nha Trang – Da Lat Expressway (80km)	Expressway in Southern Region. (80km, 4 lane)	1,062.5

Subsector		Proj. No.	Project Title	Project Description	Proj.Cost (USD mil.)
		H29	Da Nang – Ngoc Hoi Expressway (250km)	Expressway in Central Region. (250km, 4 lane)	3,094.2
		H30	Ring Road No.4 in Ha Noi (90km)	Ring road system in Hanoi. (90km, 4-6 lane)	1,350.5
		H31	Ring Road No.5 in Ha Noi (320km)	Ring road system in Hanoi. (320km, 6 lane)	2,583.2
		H32	Ring Road No.3 in HCMC (83km)	Ring road system in HCMC. (83km, 6-8 lane)	1,226.9
	Construc-tion of new road	H33	Economic axle-road Construction (24km)	New road in Dan Phuong - Phuc Tho - Son Tay section in Ha Tay Prov-ince. (24km).	82.8
		H34	Do Xa - Quan Son Highway Con-struction (30km)	New road in Do Xa - Quan Son section in Ha Tay Province. (30km, 4lane)	103.5
		H35	NH1A (Chi Lang - Bac Giang) Construction (Pho Gio)) (40km)	New road in Chi Lang - Bac Giang (Pho Gio) section. (40km, 4lane)	182.1
		H36	NH21 Construction (Phu Ly – Nam Dinh) (25km)	New Class-I road from Liem Tuyen intersection. (25kmm 4lane).	86.2
		H37	Vam Cong Bridge Construction (An Giang&Can Tho)	New bridge on HCM Highway.	316.0
		H38	Cao Lanh Bridge Construction (Dong Thap)	New bridge on HCM Highway.	236.0
		H39	New Coastal Road Construction (100km)	Roads along coastal area in Northern Vietnam, mainly in Thanh Hoa Prov-ince. (100km)	344.8
		H40	NH20 Extension(Da Lat – Nha Trang) (85km)	New road in NH20 (85km, 4 lane)	476.6
		H41	Hau River Bridge Construction (NH60, Soc Trang) (4lane)	New bridge on NH60 (4 lane).	500.0
		H42	Van Tien Bridge Construction (Quang Ninh)(1341m)	New bridge in Van Don, Quang Ninh Province. (Cable stayed, 1341m in length and 18m in width.)	200.0
		H43	NH47 Construction (Sam Son – Thanh Hoa City) (5km)	New road in NH47, Sam Son- Thanh Hoa city section. (5km, 4 lane)	17.2
		H44	NH14E Extension(Ha Lam along PR 613 – Binh Duong) (21.2km)	New road for the extension of NH14E. (21.2km)	47.0
		H45	Road Access to Cam Pha Port	To develop an access road connecting Cam Pha and expressway network	20.0
		H46	Road Access to Hon Gai Port	To develop an access road connecting Hon Gai and expressway network	20.0
		H47	Road Access to Hai Phong Port	To develop an access road connecting Hai Phong and expressway network	20.0
		H48	Road Access to Nghi Son Port	To develop an access road connecting Nghi Son and expressway network	30.0
		H49	Road Access to Cua Lo Port	To develop an access road connecting Cua Lo and expressway network	24.0
		H50	Road Access to Vung Ang Port	To develop an access road connecting Vung Ang and expressway network	30.0
		H51	Road Access to Quy Nhon Port	To develop an access road connecting Quy Nhon and expressway network	32.0
		H52	Road Access to Van Phong Port	To develop an access road connecting Van Phong and expressway net-work	26.0
		H53	Road Access to Nha Trang Port	To develop an access road connecting Nha Trang and expressway network	36.0
		H54	Road Access to Vung Tau Port	To develop an access road connecting Vung Tau and expressway network	20.0
		H55	Road Access to Sai Gon Port	To develop an access road connecting Sai Gon and expressway network	20.0
		H56	Road Access to Dong Nai Port	To develop an access road connecting Dong Nai and expressway network	20.0
		H57	Road Access to Can Tho Port	To develop an access road connecting Can Tho and expressway network	20.0
	Construc-tion of bypass	H58	NH1 Bypass (La Ha, Quang Ngai) (15km)	Bypass road on NH1 in Quang Ngai Province. (15km, 4 lane).	68.3
		H59	NH1A Bypass (Van Gia, Khanh Hoa) (10km)	Bypass road for diversion of thru traffic from urban area.(10km,4lane)	46.3
		H60	NH1A Bypass (Ninh Hoa, Khanh Hoa) (10km)	Bypass road for diversion of thru traffic from urban area. (10km,4lane)	34.5
		H61	NH1A Bypass (Cam Ranh, Khanh Hoa) (10km)	Bypass road for diversion of thru traffic from urban area. (10km,4lane)	44.6
		H62	NH1A Bypass (Cho Lau, Binh Thuan) (10km)	Bypass road for diversion of thru traffic from urban area. (10km,4lane)	39.8
		H63	NH1A Bypass (Phan Thiet, Binh Thuan) (10km)	Bypass road for diversion of thru traffic from urban area. (10km,4lane)	34.5

Subsector		Proj. No.	Project Title	Project Description	Proj.Cost (USD mil.)
		H64	NH1A Bypass (Duc Pho, Quang Ngai) (9.7km)	Bypass road for diversion of thru traffic from urban area. (9,7km,4lane)	36.4
		H65	NH1A Bypass (Vinh Long) (7.5km)	Bypass road for diversion of thru traffic from urban area. (7.5km,4lane)	25.9
		H66	NH14 Bypass (Ea Drang, Dak Lak)(10km)	Bypass road for diversion of thru traffic from urban area. (10km,4lane)	44.4
		H67	NH14 Bypass (Buo Ho, Dak Lak)(10km)	Bypass road for diversion of thru traffic from urban area. (10km,4lane)	44.4
		H68	NH91 Bypass (Thot Not, Can Tho)(10km)	Bypass road for diversion of thru traffic from urban area. (10km,4lane)	34.5
		H69	NH91 Bypass (An Chau, An Giang)(10km)	Bypass road for diversion of thru traffic from urban area. (10km,4lane)	34.5
		H70	NH91 Bypass (Cai Dau, An Giang)(10km)	Bypass road for diversion of thru traffic from urban area. (10km,4lane)	34.5
		H71	NH10 Bypass (Nga Son, Thanh Hoa)(10km)	Bypass road for diversion of thru traffic from urban area. (10km,4lane)	34.5
		H72	NH60 Bypass (Mo Cay, Ben Tre)(10km)	Bypass road for diversion of thru traffic from urban area. (10km,4lane)	34.5
		H73	NH60 Bypass (Ham Luong (Ben Tre – Mo Cay))(10km)	Bypass road for diversion of thru traffic from urban area.. (10km,4lane)	34.5
		H74	NH38 Bypass (Hoa Mac, An Giang)(10km)	Bypass road for diversion of thru traffic from urban area. (10km,4lane)	34.5
		H75	NH21B Bypass (Binh Da, Ha-noi)(10km)	Bypass road for diversion of thru traffic from urban area. (10km,4lane)	34.5
		H76	NH21B Bypass (Kim Bai, Ha-noi)(10km)	Bypass road for diversion of thru traffic from urban area. (10km,4lane)	34.5
		H77	NH21B Bypass (Van Dinh, Ben Tre)(10km)	Bypass road for diversion of thru traffic from urban area. (10km,4lane)	34.5
		H78	NH21B Bypass (Que, Ha Nam)(10km)	Bypass road for diversion of thru traffic from urban area. (10km,4lane)	34.5
	Improve-ment of road/ bridge	H79	NH 14 Widening (Dong Xoai - Chon Thanh)(34km)	To widen 2-lane section to 4-lane.(34km)	115.4
		H80	NH 14 Widening (Gia Lai - Kon Tum)(50km)	To widen 2-lane section to 4-lane.(50km)	184.0
		H81	NH 18A Upgrading (Mong Duong - Mong Cai)(122km)	To upgrade to required standard.(122km)	150.8
		H82	NH 51 Widening(Dong Nai - Vung Tau)(73.6km)	To widen 4-lane section to 6-lane.(73.6km)	184.1
		H83	NH8 Upgrading (Hong Linh - Cau Treo Border) (77km)	To upgrade to required standard.(77km)	164.6
		H84	NH9 Upgrading (Pho Lai (Song) - Cua Viet) (14km)	To upgrade to required standard.(14km)	21.7
		H85	NH5 Upgrading (106km)	To upgrade to required standard.(106km)	155.8
		H86	NH21 Upgrading(Son Tay - Xuan Mai) (32km)	To upgrade to required standard.(32km)	31.1
		H87	NH21 Upgrading (Nam Dinh - Thinh Long) (61km)	To upgrade to required standard.(61km)	59.4
		H88	NH22 Upgrading (HCMC - Moc Bai) (82km)	To upgrade to required standard.(82km)	82.1
		H89	NH80 Upgrading (Cau My Thuan - Xa Xia) (213km)	To upgrade to required standard.(213km)	207.3
		H90	NH 6 Widening (Ba La - Xuan Mai) (20km)	To widen 2-lane section to 4-lane.(20km)	52.7
		H91	NH6 Extension (PR 127 Lai Chau – border corridor line in Muong Te, through Pac Ma – Nam La border) (120km)	To upgrade to required standard.(120km)	180.2

Subsector		Proj. No.	Project Title	Project Description	Proj.Cost (USD mil.)
		H92	NH 20 Improvement(Dau Giay - Lien Khuong)(250km)	To improve to minimum requirement.(250km)	201.8
		H93	NH12B Upgrading (Tam Diep - Hang Tram) (46km)	To upgrade to required standard.(46km)	85.3
		H94	NH7 Upgrading (Do Luong - Con Cuong) (54km)	To upgrade to required standard.(54km)	100.1
		H95	NH19 Upgrading(Quy Nhon - NH14) (169km)	To upgrade to required standard.(169km)	357.8
		H96	NH10 Improvement (Lai Thanh - Tao Xuyen) (50km)	To improve to minimum requirement.(50km)	24.3
		H97	NH3 Improvement (Thai Nguyen - Ta Lung) (274km)	To improve to minimum requirement.(274km)	161.3
		H98	NH4A, 4B Improvement (Cao Bang - Tien Yen) (225km)	To improve to minimum requirement.(225km)	132.8
		H99	NH37 Improvement (Sao Do - Co Noi) (533km)	To improve to minimum requirement.(533km)	316.7
		H100	NH34 Improvement (Ha Giang - Cao Bang) (260km)	To improve to minimum requirement.(260km)	168.8
		H101	NH43 Improvement (Gia Phu - Pa Hang) (113km)	To improve to minimum requirement.(113km)	72.5
		H102	NH7 Improvement (Dien Chau - Do Luong) (36km)	To improve to minimum requirement.(36km)	17.5
		H103	NH12A Improvement (Vung Ang - NH1(connection to Vung Ang port), Ha Tinh) (10km)	To improve NH12A connecting to Vung Ang Port to minimum require-ment.(10km)	4.9
		H104	NH14B Improvement (Da Nang - Thanh My) (78km)	To improve to minimum requirement.(78km)	41.9
		H105	NH14D Improvement (HCM Road - Lao Border) (75km)	To improve to minimum requirement.(75km)	48.3
		H106	NH13 Improvement (Chon Thanh - Hoa Lu Border) (142km)	To improve to minimum requirement.(142km)	92.9
		H107	NH30 Improvement (An Huu - Dinh Ba Border) (121km)	To improve to minimum requirement.(121km)	58.9
		H108	NH61 Improvement(Tan Phu - Vinh Loi) (96km)	To improve to minimum requirement.(96km)	46.7
		H109	NH 40 Rehabilitation (24km)	To provide minimum, all-weather accessibility wiith the existing ROW or road width (24km)	9.8
		H110	NH217 Wideining (NH217 – NH1, Thanh Hoa) (30km)	To widen 2-lane section to 4-lane.(30km)	87.1
		H111	NH31 Rehabilitation (An Chau - Dinh Lap) (48km)	To provide minimum, all-weather accessibility wiith the existing ROW or road width (48km)	23.7
		H112	NH3B Rehabilitation (Yen Lac - That Khe) (44km)	To provide minimum, all-weather accessibility wiith the existing ROW or road width (44km)	21.7
		H113	PR507(NH47) Rehabilitation (Thuong Xuan - Kheo Border) (60km)	To provide minimum, all-weather accessibility wiith the existing ROW or road width (60km)	32.9
		H114	NH48 Rehabilitation (Thai Hoa - Kim Son) (74km)	To provide minimum, all-weather accessibility wiith the existing ROW or road width (74km)	40.6
		H115	NH32 Widening (Hanoi - Son Tay) (32km)	To widen 2-lane section to 4-lane. (32km)	84.3
		H116	NH32B Rehabilitation (Xom Giac - Muong Coi) (21km)	To provide minimum, all-weather accessibility wiith the existing ROW or road width (21km)	8.4
		H117	NH2B Rehabilitation (Vinh Yen - Tam Dao) (25km)	To provide minimum, all-weather accessibility wiith the existing ROW or road width (25km)	10.6
		H118	NH2C Rehabilitation (Vinh Yen - Son Duong) (60km)	To provide minimum, all-weather accessibility wiith the existing ROW or road width (60km)	23.7
		H119	NH23 Rehabilitation (NH2 - Phuc Yen) (27km)	To provide minimum, all-weather accessibility wiith the existing ROW or road width (27km)	10.0

Subsector		Proj. No.	Project Title	Project Description	Proj.Cost (USD mil.)
		H120	NH47 Rehabilitation(NH1 - NH15) (61km)	To provide minimum, all-weather accessibility wiith the existing ROW or road width (61km)	21.8
		H121	NH45 Rehabilitation(Pho Ria - Thanh Hoa - Yen Cat) (136km)	To provide minimum, all-weather accessibility wiith the existing ROW or road width (136km)	49.3
		H122	NH49 Rehabilitation(Cang Thuan An - HCM Road) (75km)	To provide minimum, all-weather accessibility wiith the existing ROW or road width (75km)	28.0
		H123	NH25 Rehabilitation (Tuy Hoa - HCM Road) (180km)	To provide minimum, all-weather accessibility wiith the existing ROW or road width (180km)	72.9
		H124	NH27 Rehabilitation(Phan Rang Thap Cham - Buon Ma Thuot) (276km)	To provide minimum, all-weather accessibility wiith the existing ROW or road width (276km)	113.1
		H125	NH49B Rehabilitation (Cau My Chanh - Vinh Hien, Thu Thien Hue) (89km)	To provide minimum, all-weather accessibility wiith the existing ROW or road width (89km)	31.1
		H126	NH24B Rehabilitation (NH1 - An Hai, Quang Ngai) (18km)	To provide minimum, all-weather accessibility wiith the existing ROW or road width (18km)	6.3
		H127	NH27B Rehabilitation(Tan Son - NH1) (48km)	To provide minimum, all-weather accessibility wiith the existing ROW or road width (48km)	17.3
		H128	NH1D Rehabilitation(Quy Nhon - Song Cau, Binh Dinh & Phu Yen) (33km)	To provide minimum, all-weather accessibility wiith the existing ROW or road width (33km)	11.5
		H129	NH1C Rehabilitation (Dien Khanh - Nha Trang) (17km)	To provide minimum, all-weather accessibility wiith the existing ROW or road width (17km)	5.9
		H130	NH56 Rehabilitation (Xuan Thanh - Ba Ria) (50km)	To provide minimum, all-weather accessibility wiith the existing ROW or road width (50km)	17.5
		H131	NH62 Rehabilitation (Tan An - Binh Hiep) (77km)	To provide minimum, all-weather accessibility wiith the existing ROW or road width (77km)	26.9
		H132	NH54Rehabilitation (Cai Von - Tieu Can) (167km)	To provide minimum, all-weather accessibility wiith the existing ROW or road width (167km)	58.3
		H133	NH53Rehabilitation (Vinh Long - Duyen Hai - NH54) (132km)	To provide minimum, all-weather accessibility wiith the existing ROW or road width (132km)	46.1
		H134	NH63 Rehabilitation(Minh Luong - Ca Mau) (109km)	To provide minimum, all-weather accessibility wiith the existing ROW or road width (109km)	38.1
		H135	NH1 Widening (to 4 lane,Lang Son - Hanoi) (185km)	To widen 2-lane section to 4-lane.(185km)	150.0
		H136	NH1 Widening (to 4 lane, Hanoi - Vinh) (365km)	To widen 2-lane section to 4-lane.(365km)	365.0
		H137	NH1 Widening (to 4 lane, Vinh - Danang) (650km)	To widen 2-lane section to 4-lane.(650km)	570.0
		H138	NH1 Widening (to 4 lane, Da-nang - Nha Trang) (510km)	To widen 2-lane section to 4-lane.(510km)	485.0
		H139	NH1 Widening (to 4 lane, Nha Trang - HCMC) (350km)	To widen 2-lane section to 4-lane.(350km)	280.0
		H140	NH1 Widening (to 4 lane, HCMC - Ca Mau) (385km)	To widen 2-lane section to 4-lane.(385km)	310.0
	Securing All-weather 2-lane roads on corri-dors	H141	NH279 Improvement(Tay Trang - Viet Quang) (242km)	To improve and widen 1-lane section to 2-lane. (242km)	151.2
		H142	NH6 Improvement (Moung Khen - Lai Chau) (19km)	To improve and widen 1-lane section to 2-lane. (19km)	9.8
		H143	New Road Construction(Ky Anh - Tan Son) (45km)	To construct new road (45km, 2 lane)	100.7
		H144	NH15Improvement (Tan Son - Thanh Lan) (20km)	To improve 1 lane section to 2-lane. (20km)	10.8
		H145	NH12AImprovement (Thanh Lan - Cha Lo) (7km)	To improve 1-lane section to 2-lane. (7km)	3.4
		H146	New RoadConstruction (Ngan Dua - Vi Thanh) (25km)	To construct new road (25km, 2 lane)	53.1

Subsector		Proj. No.	Project Title	Project Description	Proj.Cost (USD mil.)
		H147	New RoadConstruction (HCMC - Long Xuyen) (140km)	To construct new road (140km, 2 lane)	264.4
	Improvement of traffic safety	H148	Black Spot Improvement Plan	To review the black spot improvement guideline, implement the black spot improvement pilot project including training for engineers and capacity development, develop an exchage system for human resources and techniques/expertise related to black spot improvement system, promote understanding of black spot improvement system to the road management authorities and promote black spot improvement implementation to local governments	95.0
		H149	Traffic Safety Audit Development Plan	To revise RSA guideline, RSA pilot project, and promote RSA system to the road management authorities	40.0
		H150	Traffic Safety Corridor Development Plan	To develop the database for inventory of encroachment and road conditions, set land value based on market price and apply to land land acquition, improve the compensation system for affected people, improve the public consultation system and mandatory requirement of resettlement plan in road projects, strengthen and enforce sanctions against returning illegal dwellers, development planning focusing on heavy access sections, strengthen regulation for access from heavy traffic generating road side facilities, and legal system improvement for encroachment	40.0
		H151	Highway Traffic Safety Facility Enhancement Plan	To improve design standards and guideline basing on Vietnam's unique traffic, improve design standards and guideline basing on regional characteristics and budgetary situations, integrate design standards and development of design standard instruction, develop standard design drawing, improve traffic regulations and operation in accordance with local conditions, improve traffic regulation for arterial road, improve railway crossing, develop service roads on residential areas and urban sections, develop traffic control and information system for inter-city road, develop traffic signal and control system, improve intersections, develp passing lanes and road stations for inter-city road, improve traffic safety facilities, improve safety facilities for roads along residential areas, and improve systematic road network in residential improvement in residential and commercial zones	1,110.0
		H152	Vulnerable Road User Accident Prevention Plan	To improve pedestrian facilities along school routes and for high-risk accident areas and develop exclusive bicycle lane facilities	75.0
		H153	Expressway Safety Development Plan	To establish an efficient cooperation body between VEC and traffic police for expressway traffic control and develop traffic regulation for expressways, traffic safety measures guidelines for expressways, and advanced traffic control system (ETC) for expressways	112.5
		H154	Road Work Traffic Safety Development Plan	To develop road maintenance database, a comprehensive management system for national highways, regulations, and guidelines for safety measures during road construction and maintenance	20.0
		H155	Traffic Safety Monitoring and Maintenance Plan	To establish a monitoring and evaluation unit of road safety plan, and develop monitoring and evaluation system for local planning	35.0
		H156	Urban Road Traffic Safety Development Plan	To improve traffic regulations for urban road, develop coordinated traffic signal systems, wide area and flexible signal control systems , illegal parking prevention facilities, and an efficient parking regulation system, formulate regulations making parking facilities compulsory in every building, develop comprehensive parking system plan, public transport prioritizing facilities, promote public transport usage facilitation, and develop measures promoting traffic dispersion during peak hour and park and ride systems	272.5
			Subtotal		68,637.4
2. Railway	Improvement of existing line for capacity expansion	R01	Function-Improvement Items (Hanoi-Saigon Line)	To improve facilities (signal station, automatic level crossing & fence/barrier, depot, workshop etc) to provide 50 trains/day flequency of service on a single truck in Hanoi-Saigon Line.	2,465.3
		R02	Function-Improvement Items (Hanoi-Lao Cai Line)	To improve facilities (signal station, automatic level crossing & fence/barrier, depot, workshop etc) to provide 50 trains/day flequency of service on a single truck in Hanoi-Lao Cai Line	401.9
		R03	Function-Improvement Items (Hanoi-Dong Dang Line)	To improve facilities (signal station, automatic level crossing & fence/barrier, depot, workshop etc) to provide 50 trains/day flequency of service on a single truck in Hanoi-Dong Dang Line	116.4

Subsector		Proj. No.	Project Title	Project Description	Proj.Cost (USD mil.)
		R04	System Reinforcement Items (Hanoi-Saigon Line)	To improve exitsting track to double track (meter gage) and system in some sections of Hanoi-Saigon Line (Hanoi – Nam Dinh (86.8 km), Hue – Da Nang (83.1km;including Hai Van Tunnel), Da Nang – Quang Ngai (136 km), Trang Bone – Saigon (48.7km))	6,747.5
		R05	System Reinforcement Items & System Modernization Items (Hanoi-Dong Dang Line)	To improve existing track to electrified double track (dual gage) to Hanoi and Dong Dang section (156km)	3,431.7
		R06	System Modernization Items (Hanoi-Saigon Line)	To improve extisting track to double track (meter gage) and system in overall section of Hanoi-Saigon Line (excluding sections upgraded as double track by R04)	18,508.8
	Construc-tion of new line	R07	Trang Bone – Vung Tau New Railway Construction (SRI & SMI)	To develop a new railway (standard gage double track) between Trang Bone and Vung Tau (71.3km)	1,848.8
		R08	Hanoi-Lao Cail New Railway Constrcution (SRI &SMI)	To develop a new railway (standard gage, double track) between Lao Cai and Hanoi (280km) besides exisiting railway line.	5,671.1
		R09	Hanoi-Hai Phong New Railway Constrcution (SRI &SMI)	To develop a new railway (standard gage, double track) between Hanoi and Hai Phong (112km) besides exsititng railway line.	1,892.8
		R10	HCMC – Loc Ninh New Railway Line Construction	To develop a new railway (dual gage, single track) between HCMC and Loc Ninh (134km)	670.0
		R11	HCMC – Can Tho New Railway Line Construction	To develop a new railway (standard gage, double track) between HCMC andCan Tho (146km)	3,796.0
	Subtotal				45,549.4
3. Ports and Shipping		P01	Hon Gia Seaport (Cai Lan) Ter-minal Development	To upgrade navigation channel for Lach Huyen Area to -10.3m including construction of sand dyke, develop new deep-water terminals at Lach Huyen for container/general and liquid cargo, and convert the function of part of Hoang Dieu Terminal for other public interest in Hai Phong Sea-port	90.0
		P02	Hai Phong Seaport (Lach Huyen) Development (Stage 1, original schedule: 2010-2015)	To upgrade navigation channel for Lach Huyen Area to -10.3m including construction of sand dyke and develop new deep-water terminals at Lach Huyen for container/general and liquid cargo in Hai Phong Seaport	450.0
		P03	Hai Phong Seaport (Lach Huyen) Development (Stage 2, original schedule: 2015-2020)	To develop new deep-water terminals at Lach Huyen for container/general and liquid cargo in Hai Phong Seaport	945.0
		P04	Hai Phong Seaport (Lach Huyen) Development (Stage3, original schedule: 2020-2030)	To construct sand dyke for Nothern Channel and expand the terminal in Cua Lo seaport to handle cargo to/from the northern central zone	5,270.0
		P05	Cua Lo Seport Channel & Ter-minal Development	To expand the terminal for general cargo in Vung Ang seaport to/from the northern central zone	26.0
	Expansion and up-grading of port func-tion	P06	Vung Ang Seaport Terminal De-velopment	To construct breakwater for specialized terminal in Song Duong	50.0
		P07	Son Duong Breakwater Devel-opment	To expand the terminal for general cargo/cruise ship in Chan May seaport to handle container/general cargo to/from CFEZ	200.0
		P08	Chan May Seaport Terninal De-velopment	To expand Tien Sa Terminal, develop Tho Quang Terminal and Lien Chieu Ternimal for container/general cargo, and covert the function of Han River Terminal for other public interest in Danang Seaport	80.0
		P09	Danang Seaport Terminal Devel-opment	To construct multi-purpose terminal to handle container/general cargo to/from Dung Quat Economic Zone and the breakwater/revetment in the west part, and develop port facility for Steel Plant at Dung Quat Economic Zone in Dung Quat Seaport	258.0
		P10	Dung Quat Seaport Terminal & Breakwater/Revetment Devel-opment	To upgrade navigation channel for Lach Huyen Area to -10.3m including construction of sand dyke, develop new deep-water terminals at Lach Huyen for container/general and liquid cargo, and convert the function of part of Hoang Dieu Terminal for other public interest in Hai Phong Sea-port	340.0
		P11	Quy Nhon Seaport Terminal De-velopment	To expand the terminal at Quy Nhon, develop a terminal to handle con-tainer/general cargo at Nhon Hoi, and develop petroleum terminals to handle petroleum product at Quy Nhon in Quy Nhon Seaport for southern central zone	270.0
		P12	Van Phong International Tran-ship Terminal Development (Stage 2, original schedule:	To develop container a terminal in Van Phong seaport to handle interna-tional transhipment cargo	395.0

Subsector		Proj. No.	Project Title	Project Description	Proj.Cost (USD mil.)
			2010-2015)		
		P13	Van Phong International Transhipment Terminal Development (Stage 3, original schedule: 2015-2020)	To develop container a terminal in Van Phong seaport to handle international transhipment cargo	925.0
		P14	Nha Trang Seaport Channel & Terminal Development	To improve the North Channel for passenger ships up to 50,000 GRT and convert the function of Nha Trang Terminal into passenger terminal	1.0
		P15	Ba Ngoi Seaport (Cam Ranh) Terminal development Development (Stage 1B, original schedule: -2010)	To develop oil terminal at Cam Ranh to handle petroleum product and terminal for industrial zone at Cam Ranh in Ba Ngoi seaport	15.0
		P16	Ba Ngoi Seaport (Cam Ranh) Terminal development Development (Stage2: original schedule: 2010-2020)	To develop a oil terminal to handle petroleum product, a terminal for industrial zone and a multipurpose terminal to handle container/general cargo at Cam Ranh in Ba Ngoi seaport	265.0
		P17	Ca Na Seaport Industrial Port Facility Development	To develop of a port facility for steel plant at Doc Ham Industrial Zone in Ca Na seaport	10.0
		P18	Vung Tau Seaport (Cai Mep Thi Vai - stage2 + other) Terminal Development	To develop deep-water container terminal at Cai Mep Thi-Vai and at Den Dinh-Sao to handle container cargo and multi-purpose terminal at Cai Mep-Thi Vai to handle container/general cargo and develop a port facility for oil refinery at Long Son	980.0
		P19	Ho Chi Minh Seaport (Hiep Phuoc - Stage2 + other) Channel and Terminal Development	To upgrade navigation chalnnel for Hiep Huoc Area to accommodate vessels up to 25,000-30,000 DWT, develop new deep-water container terminal at Hiep Phuoc area to handle container cargo, convert of the function of Nha Rong-Khanh Hoi Terminal into cruise ship terminal and others, and develop new terminal which will substitute for Ben Nghe Terminal	220.0
		P20	Expansion of terminal in My Tho seaport	To expand terminal in My Tho seaport to handle general cargo to/from Mekong Delta Area	2.0
		P21	Expansion of terminal in Dong Thap seaport	To expand a terminal at Cao Lanh in Dong Thap seaport to handle general cargo to/from Mekong Delta Area	2.0
		P22	Expansion of terminal in Can Tho seaport	To expand a terminal at Cai Cui and at Tra Noc in Can Tho seaport to handle container/general cargo to/from Mekong Delta Area	25.0
		P23	Expansion of terminal in My Thoi seaport	To expand a terminal in My Thoi seaport to handle container/general cargo to/from Mekong Delta Area	5.0
		P24	Coal Fired Thermal Power Stations Port Facility Development	To develop port facilities for coal thermal power station at Cat Khanh, Ninh Thuy, Vinh Tan, Tra Vinh, Soc Trang, and Kien Luong	60.0
		P25	Industrial Terminal Development	To develop port facilities for oil refinery at Hoa Tan, My Giang and Ke Ga Cape	20.0
			Subtotal		10,904.0
4. IWT	Waterway improvement	W01	Upgrading of Quang Ninh/Hai Phong - Ha Noi Route (to ClassII) (166km)	To upgrade the 166-km section of waterway to conform to Class II standards throughout the route	38.2
		W02	Upgrading of Lach Giang - Ha Noi Route (to Class I) (192km)	To upgrade the section of 192 km to class I through the route (45.5 mill. USD); channel stabilization (125.6 mill. USD); navigation channel improvement (17.1 mill. USD); Duong Bridge improvement (21.9 mill. USD)	210.1
		W03	Upgrading of Ha Noi – Viet Tri - Lao Cai Route (to Class II III and IV) (362 km)	To upgrade the section of 362 km to class II III and IV (Hanoi to Viet Tri: class II Viet Tri to Yen Bai: class III and Yen Bai to Lao Cai: III or IV)	133.3
		W04	Improvement of Quang Ninh - Ninh Binh Route (266.5km)	To establish consistent channel conditions over 266.5-km section of waterway	61.2
		W05	Upgrading of Cua Day - Ninh Binh (to Class I)(74.0km)	To upgrade the section of 74.0 km to class I through the route	17.0
		W06	Upgrading of Quang Ninh - Pha Lai Route (to ClassII) (128km)	To upgrade the section of 128.0 km to class II through the route	29.4
		W07	Upgrading of Pha Lai - A Lu Route (to Class III) (33.0 km)	To upgrade the section of 33.0 km to class III through the route	7.6
		W08	Upgrading of Pha Lai - Da Phuc Route (to ClassIII) (87km)	To upgrade the section of 87.0 km to class III through the route	20.0
		W09	Upgrading of Viet Tri - Tuyen Quang – Na Hang Route (to	To upgrade the section of 115 km to class III and IV/V (Viet Tri to Tuyen Quang: class III and Tuyen Quang to Na Hang: class III/IV)	36.8

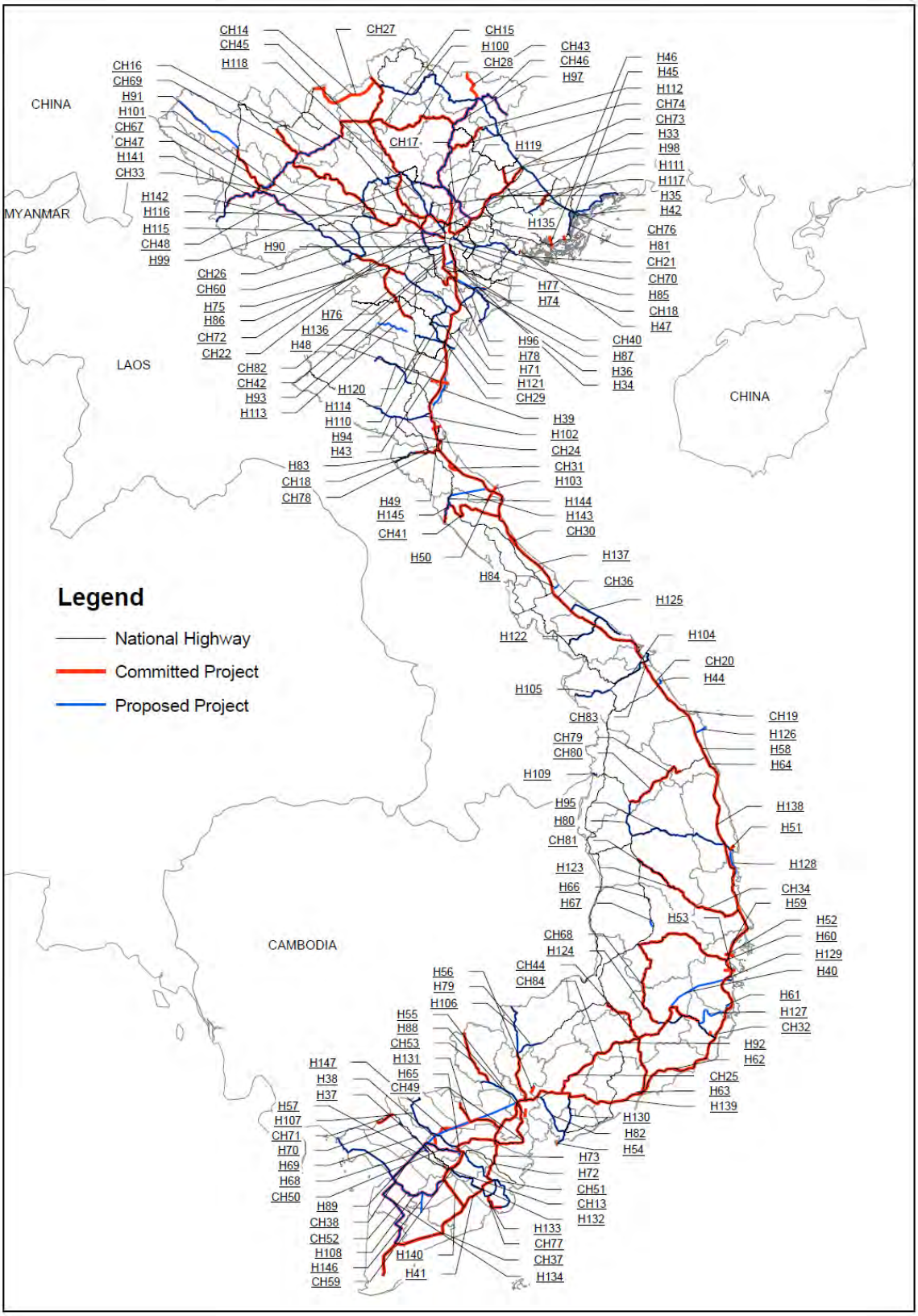
Subsector		Proj. No.	Project Title	Project Description	Proj.Cost (USD mil.)
			class III and IV/V) (115km)		
		W10	Improvement of Hong Đa T-Junction - Hoa Binh Port Route (58.0km)	To establish consistent channel conditions over 58-km section	13.3
		W11	Improvement of Ninh Binh-Thanh Hoa	To improve the section of Ninh Binh-Tainh Hoa Route	11.5
		W12	Various Regional/Feeder Routes	To improve several regional/feeder routes	50.0
		W13	Upgrading Cho Gao Canal Route (11km)	To improve 28.5 km section connecting the north and south routes (dredging, widening, raising bridge clearance)	138.0
		W14	Improvement of Sai Gon - Kien Luong/Lap Vo canal Route (315km)	To establish consistent channel conditions over the 315-km section of the route	72.5
		W15	Improvement of Sai Gon - Kien Luong/Dong Thap Muoi area Route (334km)	To establish consistent channel conditions over 334 km of the route	76.8
		W16	Improvement of Sai Gon - Ca Mau/Xa No canal Route (336km)	To establish consistent channel conditions over 336 km of the route	77.3
		W17	Improvement of Sai Gon - Ca Mau/coastal Route (367km)	To establish consistent channel conditions over 367 km of the route	84.4
		W18	Improvement of Sai Gon - Moc Hoa Route (96km)	To establish consistent channel conditions over 96 km of the route	22.1
		W19	Improvement of Sai Gon - Ben Suc Route (89km)	To establish consistent channel conditions over 89 km of the route	20.5
		W20	Improvement of Sai Gon - Ben Keo Route (166km)	To establish consistent channel conditions over 166 km of the route	38.2
		W21	Improvement of Sai Gon - Hieu Liem Route (88km)	To establish consistent channel conditions over 88 km of the route (Implemented 6 years ago; need to rehabilitate after 15 years)	15.0
		W22	Improvement of Mekong river Delta – Thi Vai - Vung Tau Route (75km)	To establish consistent channel conditions over 75 km of the route	17.3
		W23	Improvement of Cua Tieu – Cambodia Route (223km)	To establish consistent channel conditions over 223 km of the route	51.3
		W24	Improvement of Dinh An estuary - Tan Chau Route (214km)	To establish consistent channel conditions over 214 km of the route	49.2
		W25	Improvement of Moc Hoa - Ha Tien (108km)	To establish consistent channel conditions over 108 km of the route	24.8
		W26	Upgrading of Phuoc Xuyen – Tien river (canal 28) (to Class III) (75km)	To upgrade the 75-km section to Class III standards	17.3
		W27	Upgrading of Rach Gia - Ca Mau (to Class III) (149km)	To upgrade the 149-km section to Class III standards	34.3
		W28	Improvement of Lach Trao-Ham Rong	To establish consistent channel conditions as Class II waterway	2.0
		W29	Improvement of Lach Sung-Len Bridge	To establish consistent channel conditions as Class III waterway	2.0
		W30	Improvement of Cua Hoi-Ben Thuy-Do Luong	To establish consistent channel conditions as Class II and III waterway	4.6
		W31	Improvement of Cua Sot – Nghen Bridge	To establish consistent channel conditions as Class III waterway	2.0
		W32	Improvement of Cua Gianh-Quang Truong	To establish consistent channel conditions as Class II waterway	2.0
		W33	Improvement of Nhat Le Estuary –Long Dai bridge	To establish consistent channel conditions as Class III waterway	2.0
		W34	Improvement of Cua Viet-Dap Tran (spillway)	To establish consistent channel conditions as Class III waterway	2.0
		W35	Improvement of Thuan An-Tuan T-junction	To establish consistent channel conditions as Class III waterway	2.3
		W36	Improvement of Hoi An –Cua	To establish consistent channel conditions as Class I and III waterway	2.3

Subsector		Proj. No.	Project Title	Project Description	Proj.Cost (USD mil.)
			Dai– Cu Lao Cham		
		W37	Improvement of Ky Ha Estuary-Hoi An – Vinh Dien T – junction - Cua Han	To establish consistent channel conditions as Class III waterway	13.8
	Mainten-ance	W38	Maintenance Dredging to reduce backlogs	Multi year program of maintenance dredging to re-establish and maintain set standards (2011-2020)	120.0
	Improve-ment of river port	W39	Improvement/upgrading of cargo port system in the northern region	To improve/upgrade/develop one(1) port for accommodation of 3,000DWT vessels, seven(7) ports for 1,000DWT, five(5) ports for 600DWT, one(1) port for 500DWT, seven(7) ports for 400DWT vessels, three(3) ports for 300DWT and seventeen(17) ports for 200DWT	130.1
		W40	Improvement/upgrading of passenger port system in the northern region	To improve/upgrade/develop four(4) ports for accommodation of 150-200seats passenger vessels and two(2) ports for 100 seats	20.0
		W41	Improvement/upgrading of cargo port system in the southern region	To improve/upgrade/develop five(5) Ports for accommodation of 5,000DWT vessels, two(2) for 3,000DWT, three for 2,000DWT, nine(9) for 1,000DWT, three(3) for 500DWT, one(1) for 400DWT and three(3) for 300DWT	20.0
		W42	Improvement /upgrading of passenger port system in the southern region	To improve/upgrad/develop sixteen (16) ports for accommodation of 100 seats passenger vessels	20.0
		W43	Improvement/upgrading of cargo port system in the central region	To improve/upgrade/develop four(4) ports for accommodation of 1,000DWT vessels, one(1) for 400DWT and one(1) for 300DWT	20.0
		W44	Selective Ports Investment Package	Investment in some ports with regional or national importance, plus assistance to provinces in ports devolution	50.0
	Landing Stage Improvement	W45	Improvement of landing stages	To improve existing facilities in qualities and in safety	2.0
	Safety Improve-ment	W46	Installment and improvement of navigation aids	To rehabilitate, improve and expand river traffic management facilities (e.g., buoys, beacons, channel marks, etc.)	5.0
		W47	Search and rescue	To improve search-and-rescue capability in north & south regions, by acquiring essential equipment and its operation	5.0
	Ship Build-ing	W48	Ship building	To build inland waterway ships	2080.0
		W49	Ship building and repair factory	To expand ship building and repair capacity	15.0
	Institution Improve-ment	W50	Organizational Reforms	To improve institutional systems including removal of overlaps between VIWA and VINAMRINE, and improve coordination with other transport sub-sectors	2.0
		W51	Capacity development	To install appropriate systems improvements in the organizational processes, supported by continous training or personnel	2.0
		W52	Database: River Surveys and Vessel Registry	To develop capability for continuous surveys of channel status (depth, width, bends, etc.) and to improve vessel registry system	20.0
			Subtotal		3913.2
5. Aviation	Construc-tion of new airport	A01	Long Thanh Airport	To construct a new international airport with the capacity of 8 to 10 mppa.	6000.0
	Capacity expansion of existing airport	A02	T1&T2 Terminal Expansion at Noi Bai International Airport	To expand T1 & T2 to be able to handle 20 mppa	900.0
		A03	T3 Terminal Construction at Noi Bai International Airport	To construct a new passenger terminal building of T3 with capacity of 15 mppa	1200.0
		A04	Runway Construction at Noi Bai International Airport	To construct a new runway at southern side of the airport	500.0
		A05	Cat Bi Airport Upgrading	To develop Cat Bi Airport to international airport with the capacity of 2 mppa and 3,200 m length runway.	300.0
		A06	Phu Bai Airport Upgrading	-	400.0
		A07	Chu Lai Airport Upgrading for Cargo Transport (Stage1: original schedule: 2009-2015)	To updage Chu Lai Airport to cargo hub airport with capacity of 1.5 million tonnes of cargo per annum.	300.0
		A08	Chu Lai Airport Upgrading for Cargo Transport (Stage2: original	To update Chi Lai Airport to cargo hub airport with capacity of 5.0 million tonnes of cargo per annum.	400.0

Subsector		Proj. No.	Project Title	Project Description	Proj.Cost (USD mil.)
			schedule: 2015-2025)		
		A09	Cam Ranh Airport Expansion	To develop the capacity to 2.65 mppa	100.0
		A10	Runway Upgrading at Na San Airport	To upgrade runway to be capable to opeate A320 and A321 aircraft with the capacity of 300 thousands passengers per annum and 2,000 tonnes of freight per annum.	60.0
		A11	Runway Improvement at Danang international Airport	Shifting of taxiway E6 to widen clearance from 75 m to 150m	-
		A12	Taixway Construction at Danang international Airport	To building a dual parallel taxiway	-
		A13	Expansion of Tan Son Nhat International Airport	To expand capacity of Tan Son Nhat International Airport to handle 25 mppa	200.0
		A14	Other Tertiary Airport Improvement	Minor improvements of several regional airports that provide access to remote areas (Na San, Dien Bien Phu, Ca Mau, Pleiku, etc)	50.0
	Improvement of navigation facility	A15	Control tower Construction at Tan Son Nhat International Airport	To construct a new control tower	50.0
		A16	Air Navigation System	Modernization of the air traffic management system	100.0
			Subtotal		10,560.0
6. Multimodal (Logistics)	Construction of new facility for multimodal cargo handling	L01	North Logistic Park Development	To develop the LP facility which has an area of 500,000 square meters and be desighed to have the services of customs clearance for inbound and putbound shipments, warehousing of goods for regional destribution and for exports to cater to the requirement of FDI enterprises in the nearby industrial parks, cross-docking facility, consolidation and deconsolidation, customs-bonded warehouse, container transport management system, and value-added logistics servises.	199.8
		L02	South Logistic Park Development	To construct a distribution / collection center for international container traffic via international container terminal and international airport	40.0
		L03	Lao Cai Cross-border gate improvement	To Improve, expand and provide a customs clearance office, inspection area, a truck terminal, etc. for trade facilitation with China	6.0
		L04	Lang Son Cross-border gate improvement	To Improve, expand and provide a customs clearance office, inspection area, a truck terminal, etc. for trade facilitation with China	9.0
		L05	Moc Bai Cross-border gate improvement	To Improve, expand and provide a customs clearance office, inspection area, a truck terminal, etc. for reinforcement of regional logistics especially with Thailand via Laos	9.0
			Subtotal		293.8
Total					139,827.8

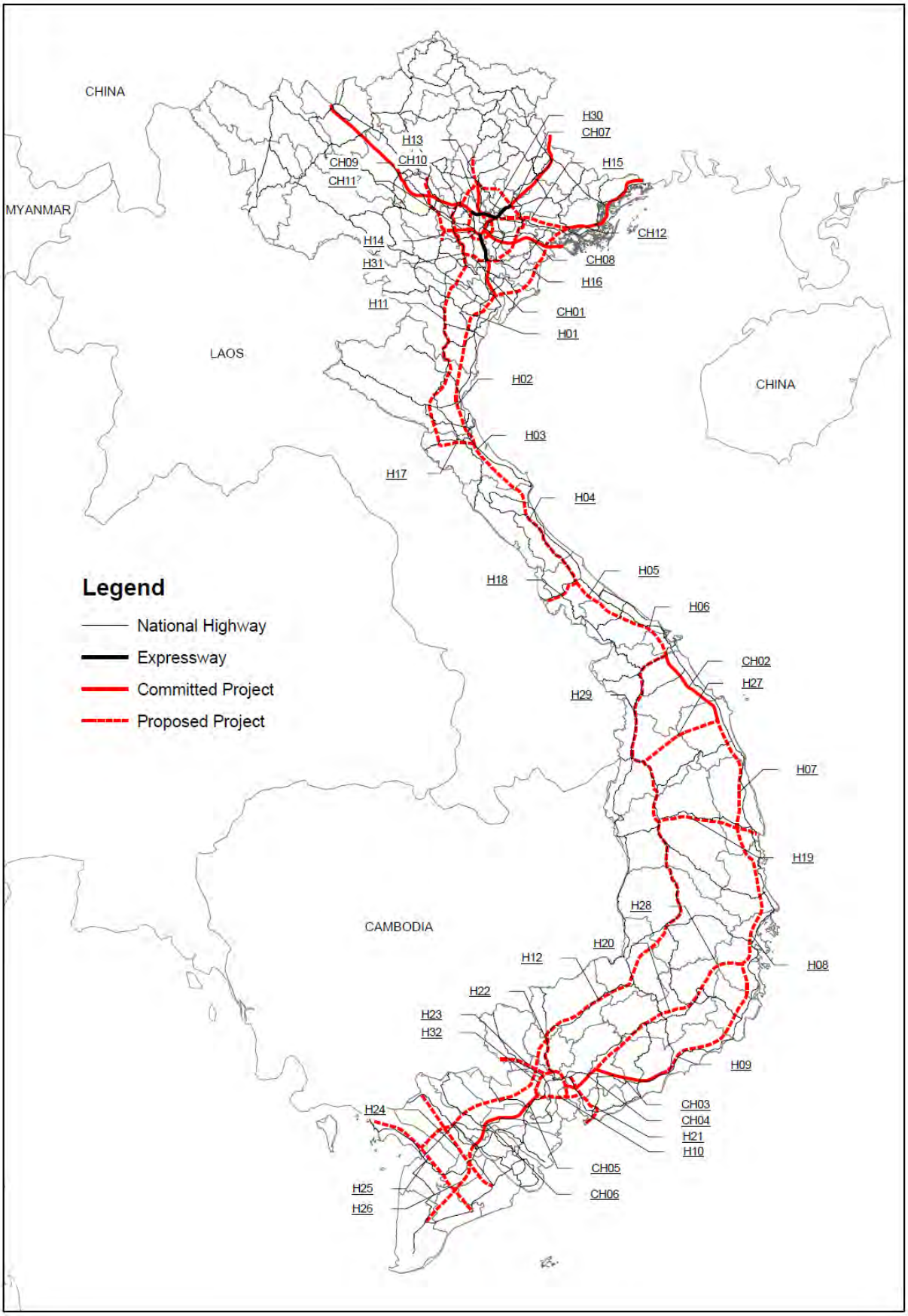
Note: Compiled by the VITRANSS 2 Study Team.

Figure A-1 Identified Road and Road Transportation Projects up to 2030 (National Highway)



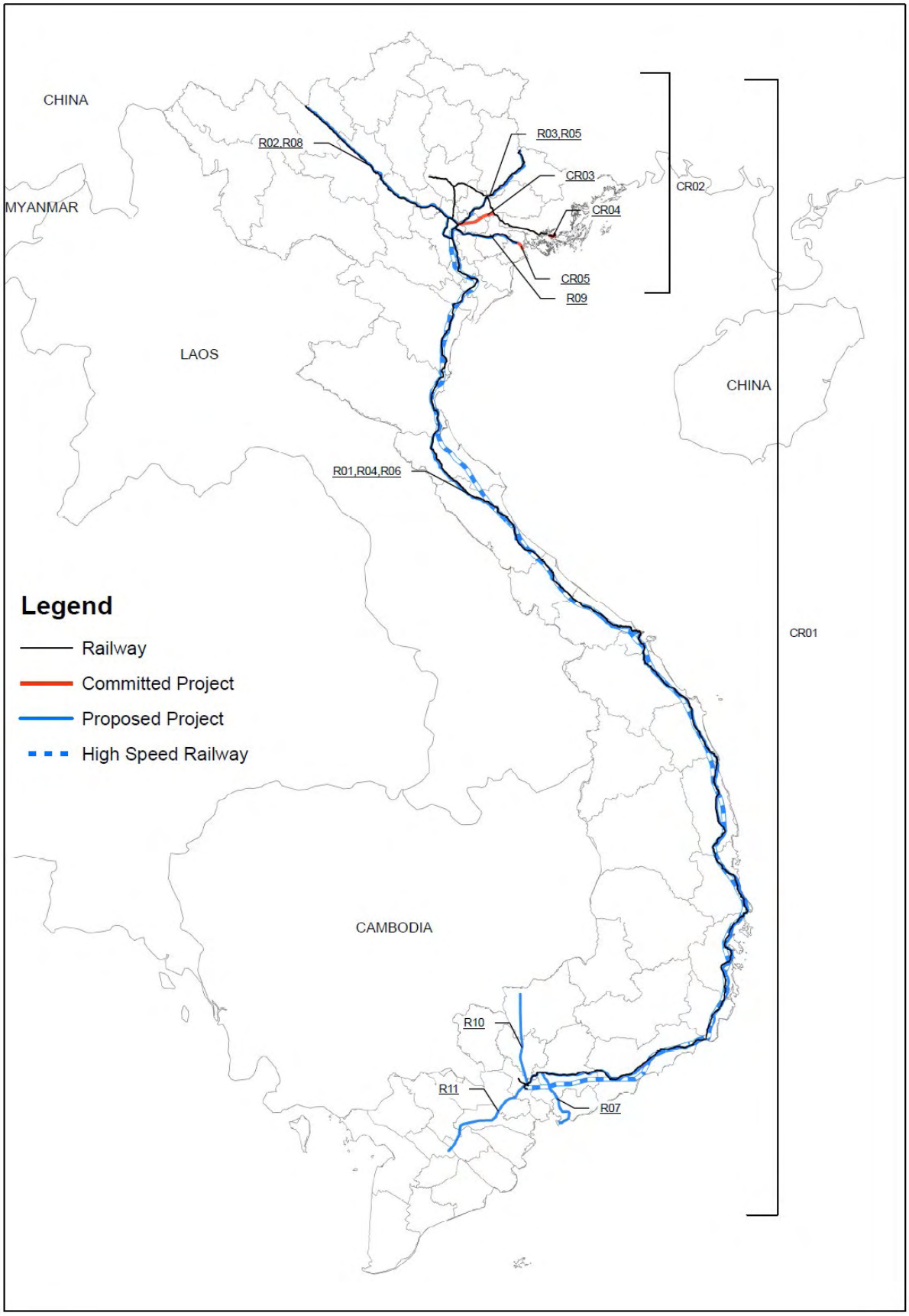
Source: VITRANSS 2 Study Team.

Figure A-2 Identified Road and Road Transportation Projects up to 2030 (Expressway)



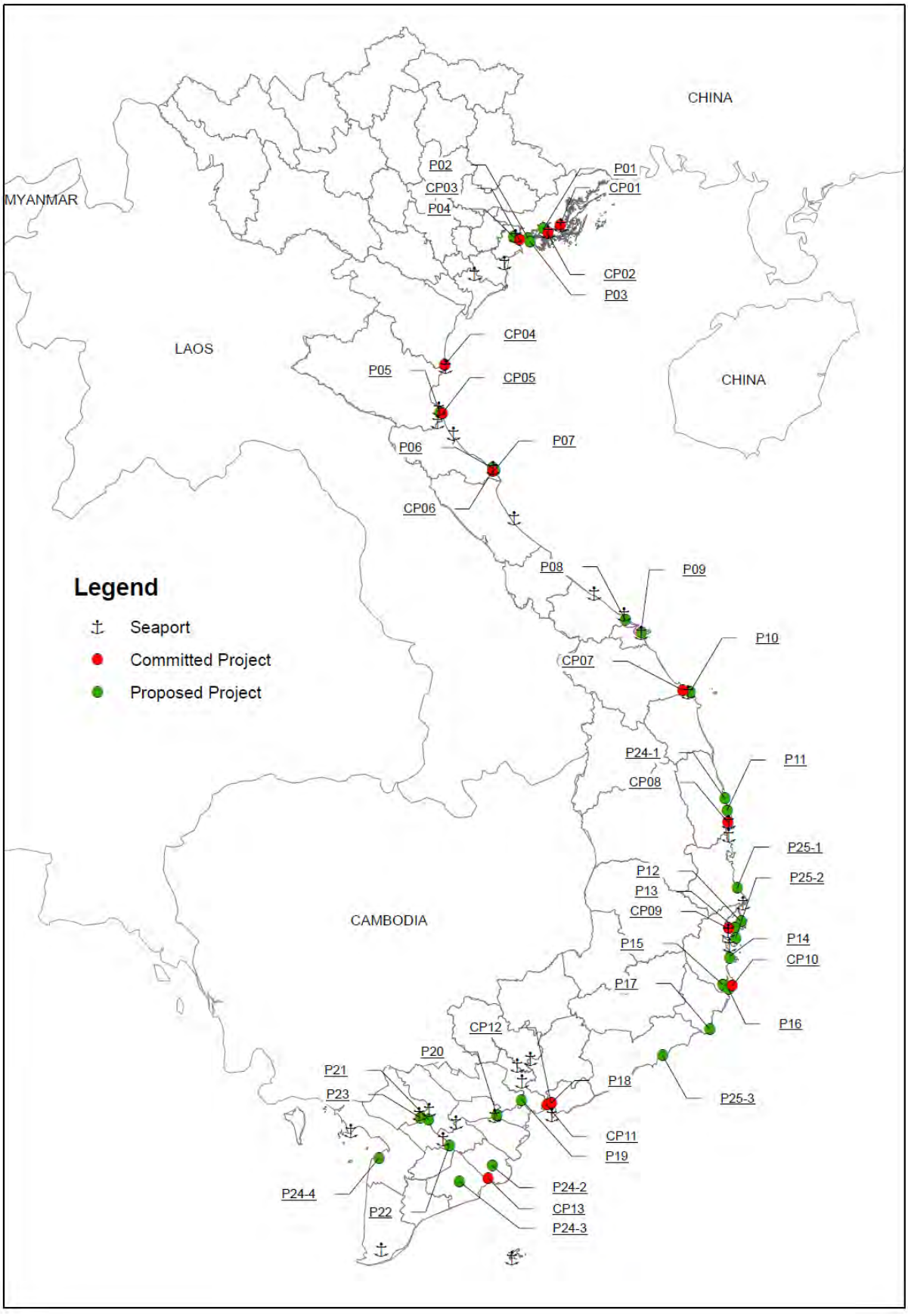
Source: VITRANSS 2 Study Team.

Figure A-3 Identified Railway Projects up to 2030



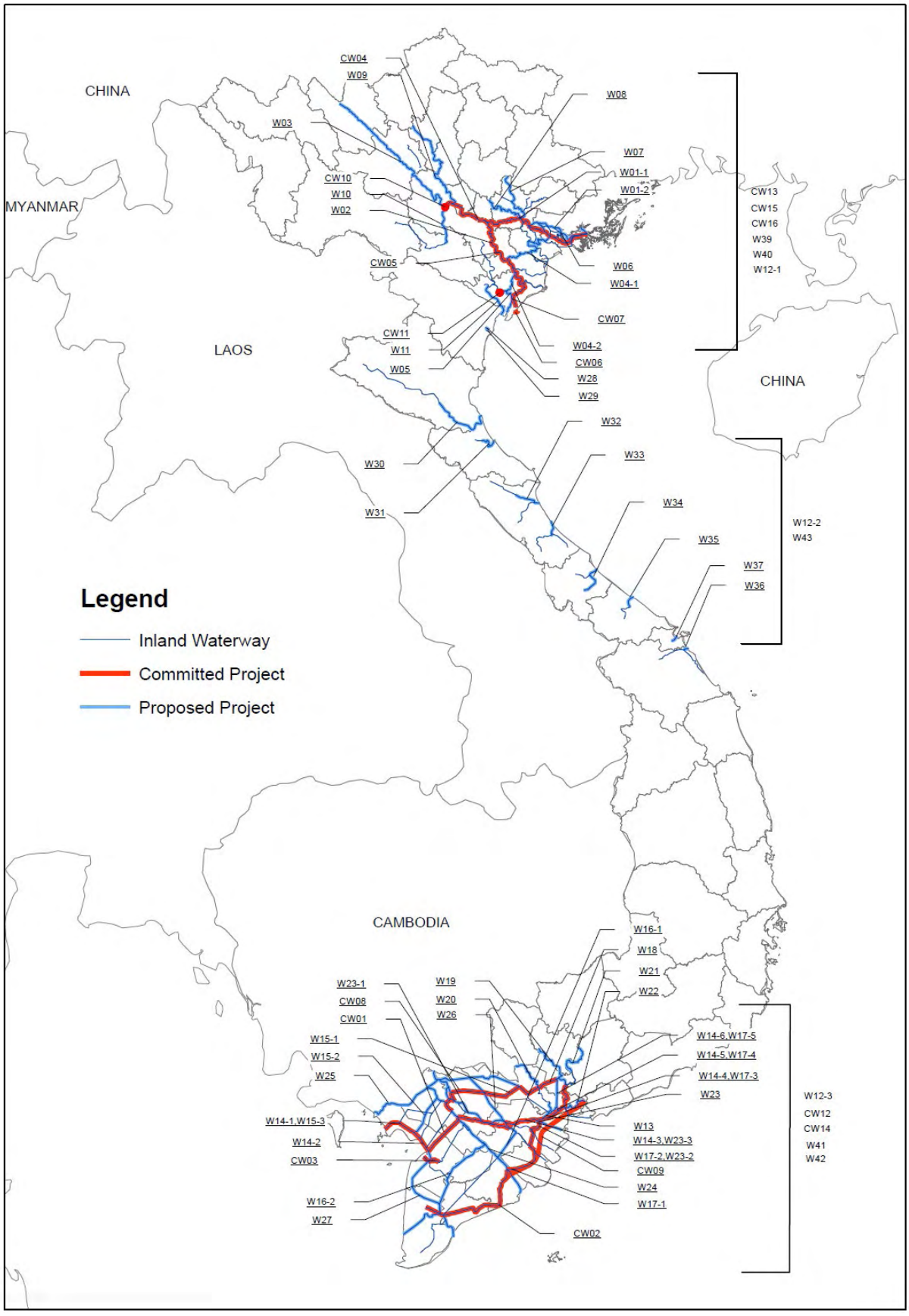
Source: VITRANSS 2 Study Team.

Figure A-4 Identified Port and Shipping Projects up to 2030



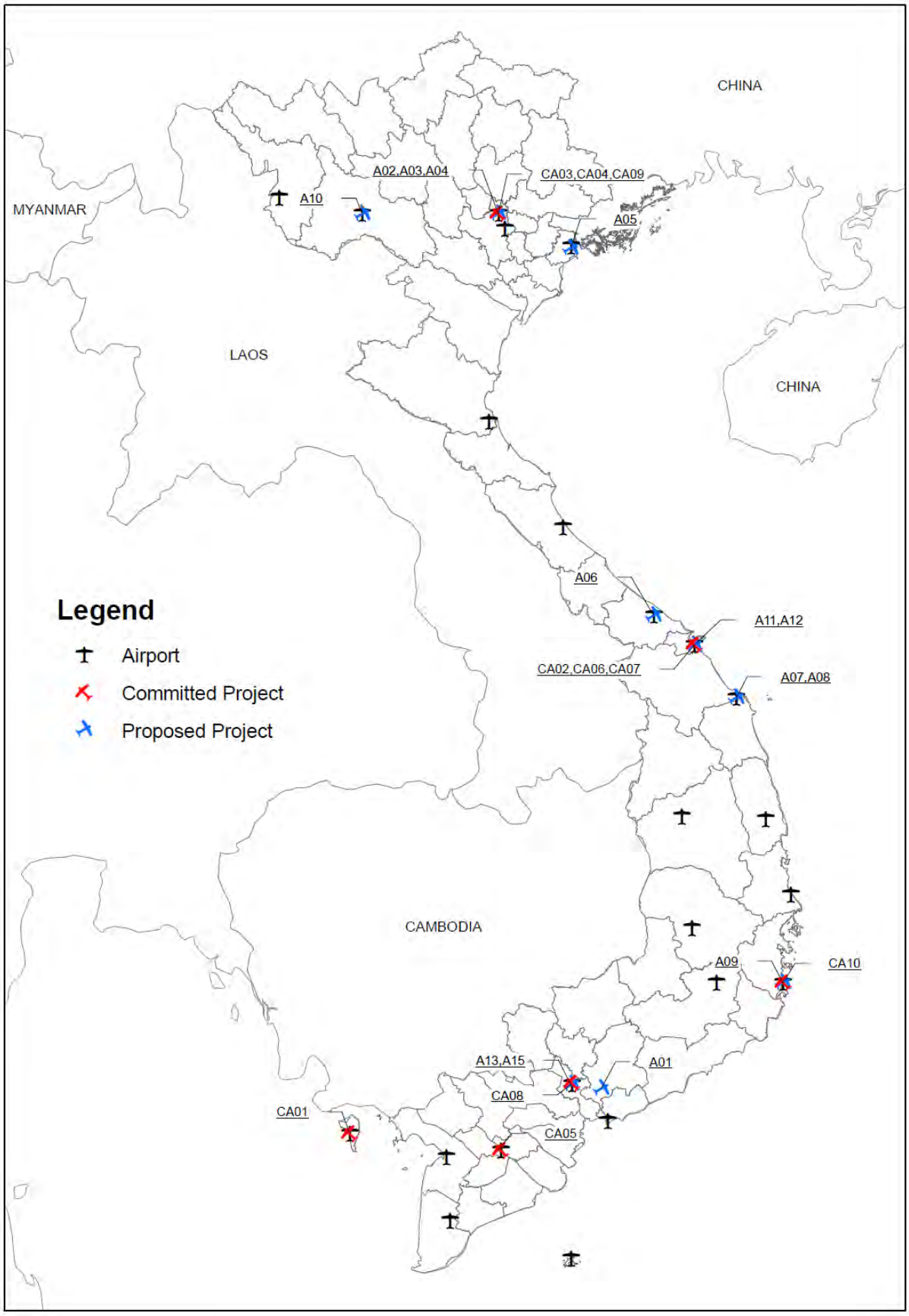
Source: VITRANSS 2 Study Team.

FigureA-5 Identified Inland Waterway Projects up to 2030



Source: VITRANSS 2 Study Team.

Figure A-6 Identified Air Transportation Projects up to 2030



Source: VITRANSS 2 Study Team.

APPENDIX B

Long List of Master Plan Projects

APPENDIX B

List of Master Plan Projects[1]

Table B-1 Projects for the VITRANSS 2 Master Plan (~2020) (Proposed Project only)

Subsector		Proj. No.	Project Title	Project Description	Proj.Cost (USD mil.)
1. Road	Construction of new express-way	H01	Ninh Binh – Thanh Hoa Expressway (75km)	A part of North-South expressway in the East. (75km, 6 lane)	827.6
		H02	Thanh Hoa – Vinh Expressway (140km)	A part of North-South expressway in the East. (140km, 6 lane)	2128.0
		H03	Vinh – Ha Tinh Expressway (20km)	A part of North-South expressway in the East. (20 km, 4-6 lane)	201.5
		H10	Long Thanh – Nhon Trach – Ben Luc Expressway (45km)	A part of North-South expressway in the East. (45km, 6-8 lane)	738.6
		H21	Bien Hoa – Vung Tau Expressway (76km)	Expressway in Southern Region connecting with Vung Tau Port. (76km, 6 lane)	696.5
		H30	Ring Road No.4 in Ha Noi (90km)	Ring road system in Hanoi. (90km, 4-6 lane)	1350.5
		H32	Ring Road No.3 in HCMC (83km)	Ring road system in HCMC. (83km, 6-8 lane)	1226.9
	Construction of new road	H33	Economic axle-road Construction (24km)	New road in Dan Phuong - Phuc Tho - Son Tay section in Ha Tay Province. (24km).	82.8
		H35	NH1A (Chi Lang - Bac Giang) Construction (Pho Gio)) (40km)	New road in Chi Lang - Bac Giang (Pho Gio) section. (40km, 4lane)	182.1
		H36	NH21 Construction (Phu Ly – Nam Dinh) (25km)	New Class-I road from Liem Tuyen intersection. (25kmm 4lane).	86.2
	Construction of bypass	H59	NH1A Bypass (Van Gia, Khanh Hoa) (10km)	Bypass road for diversion of thru traffic from urban area.(10km,4lane)	46.3
		H63	NH1A Bypass (Phan Thiet, Binh Thuan) (10km)	Bypass road for diversion of thru traffic from urban area. (10km,4lane)	34.5
		H64	NH1A Bypass (Duc Pho, Quang Ngai) (9.7km)	Bypass road for diversion of thru traffic from urban area. (9,7km,4lane)	36.3
		H65	NH1A Bypass (Vinh Long) (7.5km)	Bypass road for diversion of thru traffic from urban area. (7.5km,4lane)	25.9
		H68	NH91 Bypass (Thot Not, Can Tho)(10km)	Bypass road for diversion of thru traffic from urban area. (10km,4lane)	34.5
		H73	NH60 Bypass (Ham Luong (Ben Tre – Mo Cay))(10km)	Bypass road for diversion of thru traffic from urban area.. (10km,4lane)	34.5
		H74	NH38 Bypass (Hoa Mac, An Giang)(10km)	Bypass road for diversion of thru traffic from urban area. (10km,4lane)	34.5
	Improvement of road/ bridge	H79	NH 14 Widening (Dong Xoai - Chon Thanh)(34km)	To widen 2-lane section to 4-lane.(34km)	115.4
		H82	NH 51 Widening(Dong Nai - Vung Tau)(73.6km)	To widen 4-lane section to 6-lane.(73.6km)	184.1
		H85	NH5 Upgrading (106km)	To upgrade to required standard.(106km)	155.8
		H90	NH 6 Widening (Ba La - Xuan Mai) (20km)	To widen 2-lane section to 4-lane.(20km)	52.7
		H92	NH 20 Improvement(Dau Giay - Lien Khuong)(250km)	To improve to minimum requirement.(250km)	201.8
		H96	NH10 Improvement (Lai Thanh - Tao Xuyen) (50km)	To improve to minimum requirement.(50km)	24.3
		H109	NH 40 Rehabilitation (24km)	To provide minimum, all-weather accessibility wiith the existing ROW or road width (24km)	9.8
		H111	NH31 Rehabilitation (An Chau - Dinh Lap) (48km)	To provide minimum, all-weather accessibility wiith the existing ROW or road width (48km)	23.7
		H112	NH3B Rehabilitation (Yen Lac - That Khe) (44km)	To provide minimum, all-weather accessibility wiith the existing ROW or road width (44km)	21.7
		H113	PR507(NH47) Rehabilitation (Thuong Xuan - Kheo Border) (60km)	To provide minimum, all-weather accessibility wiith the existing ROW or road width (60km)	32.9
		H114	NH48 Rehabilitation (Thai Hoa - Kim Son) (74km)	To provide minimum, all-weather accessibility wiith the existing ROW or road width (74km)	40.6
		H116	NH32B Rehabilitation (Xom	To provide minimum, all-weather accessibility wiith the	8.4

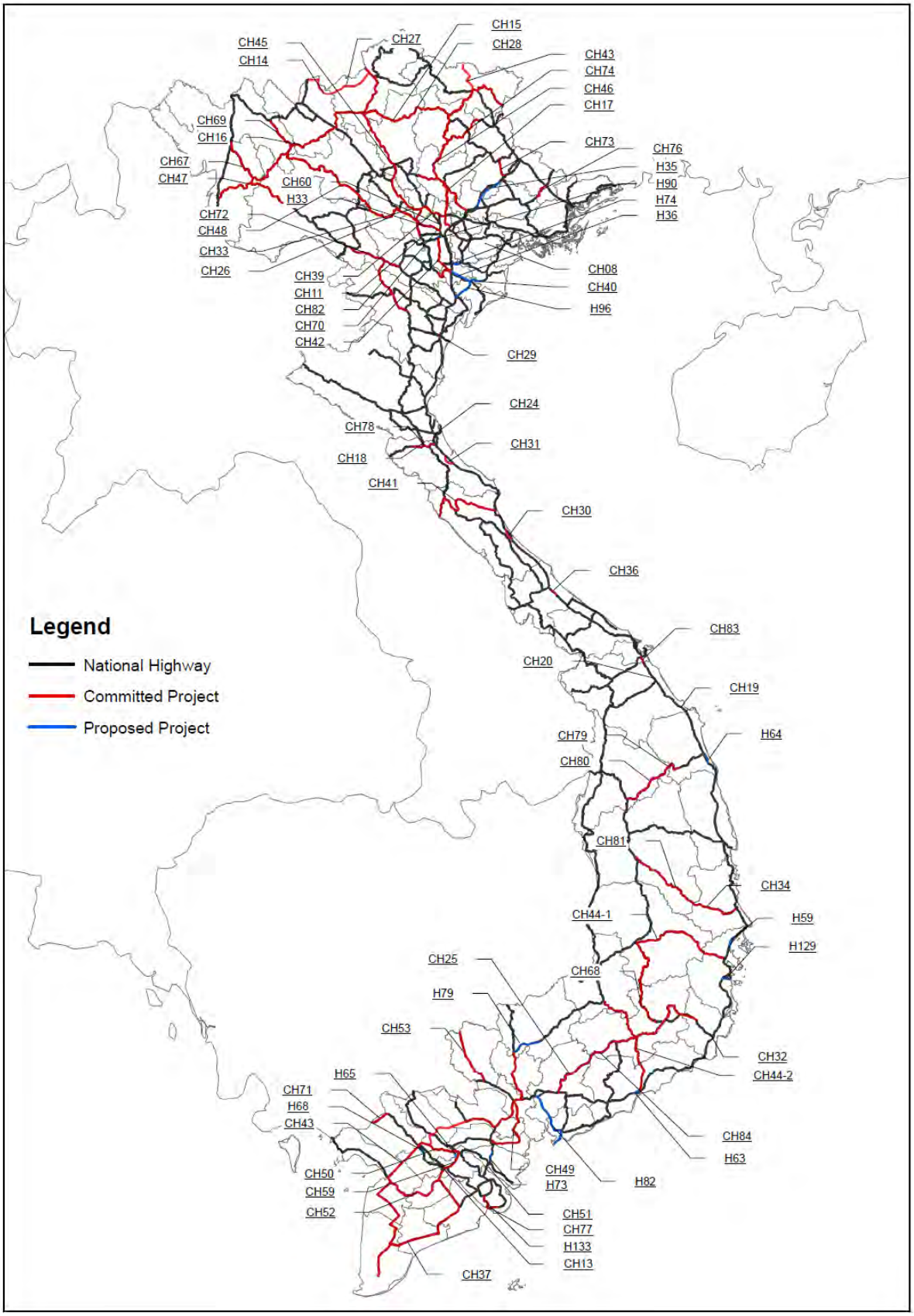
Subsector		Proj. No.	Project Title	Project Description	Proj.Cost (USD mil.)
			Giac - Muong Coi) (21km)	existing ROW or road width (21km)	
		H117	NH2B Rehabilitation (Vinh Yen - Tam Dao) (25km)	To provide minimum, all-weather accessibility wiith the existing ROW or road width (25km)	10.6
		H118	NH2C Rehabilitation (Vinh Yen - Son Duong) (60km)	To provide minimum, all-weather accessibility wiith the existing ROW or road width (60km)	23.7
		H119	NH23 Rehabilitation (NH2 - Phuc Yen) (27km)	To provide minimum, all-weather accessibility wiith the existing ROW or road width (27km)	10.0
		H120	NH47 Rehabilitation(NH1 - NH15) (61km)	To provide minimum, all-weather accessibility wiith the existing ROW or road width (61km)	21.8
		H121	NH45 Rehabilitation(Pho Ria - Thanh Hoa - Yen Cat) (136km)	To provide minimum, all-weather accessibility wiith the existing ROW or road width (136km)	49.3
		H122	NH49 Rehabilitation(Cang Thuan An - HCM Road) (75km)	To provide minimum, all-weather accessibility wiith the existing ROW or road width (75km)	28.0
		H123	NH25 Rehabilitation (Tuy Hoa - HCM Road) (180km)	To provide minimum, all-weather accessibility wiith the existing ROW or road width (180km)	72.9
		H124	NH27 Rehabilitation(Phan Rang Thap Cham - Buon Ma Thuot) (276km)	To provide minimum, all-weather accessibility wiith the existing ROW or road width (276km)	113.1
		H125	NH49B Rehabilitation (Cau My Chanh - Vinh Hien, Thu Thien Hue) (89km)	To provide minimum, all-weather accessibility wiith the existing ROW or road width (89km)	31.1
		H126	NH24B Rehabilitation (NH1 - An Hai, Quang Ngai) (18km)	To provide minimum, all-weather accessibility wiith the existing ROW or road width (18km)	6.3
		H127	NH27B Rehabilitation(Tan Son - NH1) (48km)	To provide minimum, all-weather accessibility wiith the existing ROW or road width (48km)	17.3
		H128	NH1D Rehabilitation(Quy Nhon - Song Cau, Binh Dinh & Phu Yen) (33km)	To provide minimum, all-weather accessibility wiith the existing ROW or road width (33km)	11.5
		H129	NH1C Rehabilitation (Dien Khanh - Nha Trang) (17km)	To provide minimum, all-weather accessibility wiith the existing ROW or road width (17km)	5.9
		H130	NH56 Rehabilitation (Xuan Thanh - Ba Ria) (50km)	To provide minimum, all-weather accessibility wiith the existing ROW or road width (50km)	17.5
		H131	NH62 Rehabilitation (Tan An - Binh Hiep) (77km)	To provide minimum, all-weather accessibility wiith the existing ROW or road width (77km)	26.9
		H132	NH54Rehabilitation (Cai Von - Tieu Can) (167km)	To provide minimum, all-weather accessibility wiith the existing ROW or road width (167km)	58.3
		H133	NH53Rehabilitation (Vinh Long - Duyen Hai - NH54) (132km)	To provide minimum, all-weather accessibility wiith the existing ROW or road width (132km)	46.1
		H134	NH63 Rehabilitation(Minh Luong - Ca Mau) (109km)	To provide minimum, all-weather accessibility wiith the existing ROW or road width (109km)	38.1
	Improvement of traffic safety	H148	Black Spot Improvement Plan	To review the black spot improvement guideline, implement the black spot improvement pilot project including training for engineers and capacity development, develop an exchage system for human resources and techniques/expertise related to black spot improvement system, promote understanding of black spot improvement system to the road management authorities and promote black spot improvement implementation to local governments	95.0
		H149	Traffic Safety Audit Development Plan	To revise RSA guideline, RSA pilot project, and promote RSA system to the road management authorities	40.0
		H150	Traffic Safety Corridor Development Plan	To develop the database for inventory of encroachment and road conditions, set land value based on market price and apply to land land acquition, improve the compensation system for affected people, improve the public consultation system and mandatory requirement of resettlement plan in road projects, strengthen and enforce sanctions against returning illegal dwellers, development planning focusing on heavy access sections, strengthen regulation for access from heavy traffic generating road side facilities, and legal system improvement for encroachment	40.0
		H152	Vulnerable Road User Accident Prevention Plan	To improve pedestrian facilities along school routes and for high-risk accident areas and develop exclusive bicycle lane facilities	75.0

Subsector		Proj. No.	Project Title	Project Description	Proj.Cost (USD mil.)
		H153	Expressway Safety Development Plan	To establish an efficient cooperation body between VEC and traffic police for expressway traffic control and develop traffic regulation for expressways, traffic safety measures guidelines for expressways, and advanced traffic control system (ETC) for expressways	112.5
		H154	Road Work Traffic Safety Development Plan	To develop road maintenance database, a comprehensive management system for national highways, regulations, and guidelines for safety measures during road construction and maintenance	20.0
		H155	Traffic Safety Monitoring and Maintenance Plan	To establish a monitoring and evaluation unit of road safety plan, and develop monitoring and evaluation system for local planning	35.0
		H156	Urban Road Traffic Safety Development Plan	To improve traffic regulations for urban road, develop coordinated traffic signal systems, wide area and flexible signal control systems , illegal parking prevention facilities, and an efficient parking regulation system, formulate regulations making parking facilities compulsory in every building, develop comprehensive parking system plan, public transport prioritizing facilities, promote public transport usage facilitation, and develop measures promoting traffic dispersion during peak hour and park and ride systems	272.5
	Subtotal				9,916
2. Railway	Improvement of existing line for capacity expansion	R01	Function-Improvement Items (Hanoi-Saigon Line)	To improve facilities (signal station, automatic level crossing & fence/barrier, depot, workshop etc) to provide 50 trains/day flequency of service on a single truck in Hanoi-Saigon Line.	2465.3
	Construction of new line	R07	Trang Bone – Vung Tau New Railway Construction (SRI & SMI) (71.3km)	To develop a new railway (standard gage double track) between Trang Bone and Vung Tau (71.3km)	1847.8
	Subtotal				4,313
3. Ports and Shipping	Expansion and upgrading of port function	P02	Hai Phong Seaport (Lach Huyen) Development (Stage 1, original schedule: 2010-2015)	To upgrade navigation channel for Lach Huyen Area to -10.3m including construction of sand dyke, develop new deep-water terminals at Lach Huyen for container/general and liquid cargo, and convert the function of part of Hoang Dieu Terminal for other public interest in Hai Phong Seaport	450.0
		P05	Cua Lo Seport Channel & Terminal Development	To construct sand dyke for Nothern Channel and expand the terminal in Cua Lo seaport to handle cargo to/from the northern central zone	26.0
		P19	Ho Chi Minh Seaport (Hiep Phuoc - Stage2 + other) Channel and Terminal Development	To upgrade navigation chalnnel for Hiep Huoc Area to accommodate vessels up to 25,000-30,000 DWT, develop new deep-water container terminal at Hiep Phuoc area to handle container cargo, convert of the function of Nha Rong-Khanh Hoi Terminal into cruise ship terminal and others, and develop new terminal which will substitute for Ben Nghe Terminal	220.0
		P22	Expansion of terminal in Can Tho seaport	To expand a terminal at Cai Cui and at Tra Noc in Can Tho seaport to handle container/general cargo to/from Mekong Delta Area	25.0
	Subtotal				721
4. IWT	Waterway improvement	W01	Upgrading of Quang Ninh/Hai Phong - Ha Noi Route (to ClassII) (166km)	To upgrade the grade of the section of 166 km to class II through the route	38.2
		W06	Upgrading of Quang Ninh - Pha Lai Route (to ClassII) (128km)	To upgrade the grade of the section of 128.0 km to class II through the route	29.4
		W13	Upgrading Cho Gao Canal Route (11km)	improvement of section of 11km among 28km for connecting the north and south routes (dredging, widening, bench cutting, bank protection, up shifting bridges)	138.0
		W14	Improvement of Sai Gon - Kien Luong/Lap Vo canal Route (315km)	To improve the section of 315km for consistent channel conditions	72.5
		W16	Improvement of Sai Gon - Ca Mau/Xa No canal Route (336km)	To improve the section of 336km for consistent channel conditions	77.3
		W17	Improvement of Sai Gon - Ca Mau/coastal Route (367km)	To improve the section of 367km for consistent channel conditions	84.4

Subsector		Proj. No.	Project Title	Project Description	Proj.Cost (USD mil.)
		W21	Improvement of Sai Gon - Hieu Liem Route (88km)	To improve the section of 88km for consistent channel conditions	15.0
	Maintenance	W38	Maintenance Dredging to reduce backlogs	Underdake a 10-year program of dredging to de-silt channels and to re-establich declared class standards	120.0
	Safety Imrpvement	W47	Search and rescue	To establish the search and rescue system with necessary equipment and its operation	5.0
	Institution Improvement	W52	Database: River Surveys and Vessel Registry	To develop capability for continuous surveys of channel status (depth, width, bends, etc.) and to improve vessel registry system	20.0
	Subtotal				600
5. Aviation	Construction of new airport	A01	Long Thanh Airport	To construct a new international airport with the capacity of 8 to 10 mppa.	6000.0
	Capacity expansion of existing airport	A11	Runway Improvement at Danang international Airport	Shifting of taxiway E6 to widen clearance from 75 m to 150m	-
		A13	Expansion of Tan Son Nhat International Airport	To expand capacity of Tan Son Nhat International Airport to handle 25 mppa	200.0
	Improvement of navigation facility	A15	Control tower Construction at Tan Son Nhat International Airport	To construct a new control tower	50.0
		A16	Air Navigation System	Modernization of the air traffic management system	100.0
	Subtotal				6,350
Multi-modal (Logistics)	Construction of new facility for multimodal cargo handling	L01	North Logistic Park Development	To develop the LP facility which has an area of 500,000 square meters and be desighed to have the services of customs clearance for inbound and putbound shipments, warehousing of goods for regional destribution and for exports to cater to the requirement of FDI enterprises in the nearby industrial parks, cross-docking facility, consolidation and deconsolidation, customs-bonded warehouse, container transportation management system, and value-added logistics servises.	199.8
		L02	South Logistic Park Development	To construct a distribution / collection center for international container traffic via international container terminal and international airport	40.0
		L03	Lao Cai Cross-border gate improvement	To Improve, expand and provide a customs clearance office, inspection area, a truck terminal, etc. for trade facilitation with China	6.0
	Subtotal				246
	Total				22,146

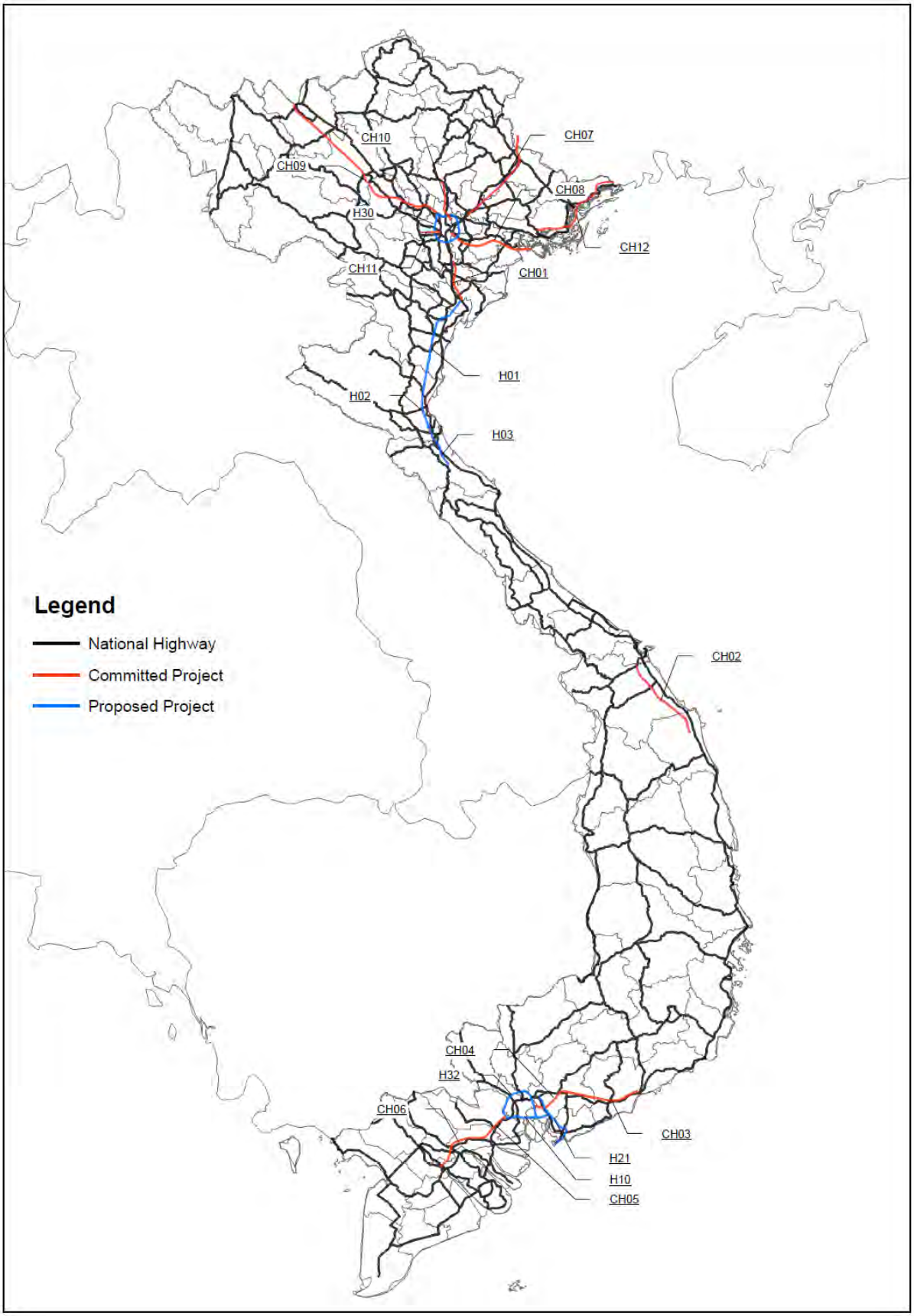
[1] Locations of the projects are shown in the attached maps.
Source: VITRANSS 2 Study Team.

Figure B-1 Master Plan Project Location Map (Road)



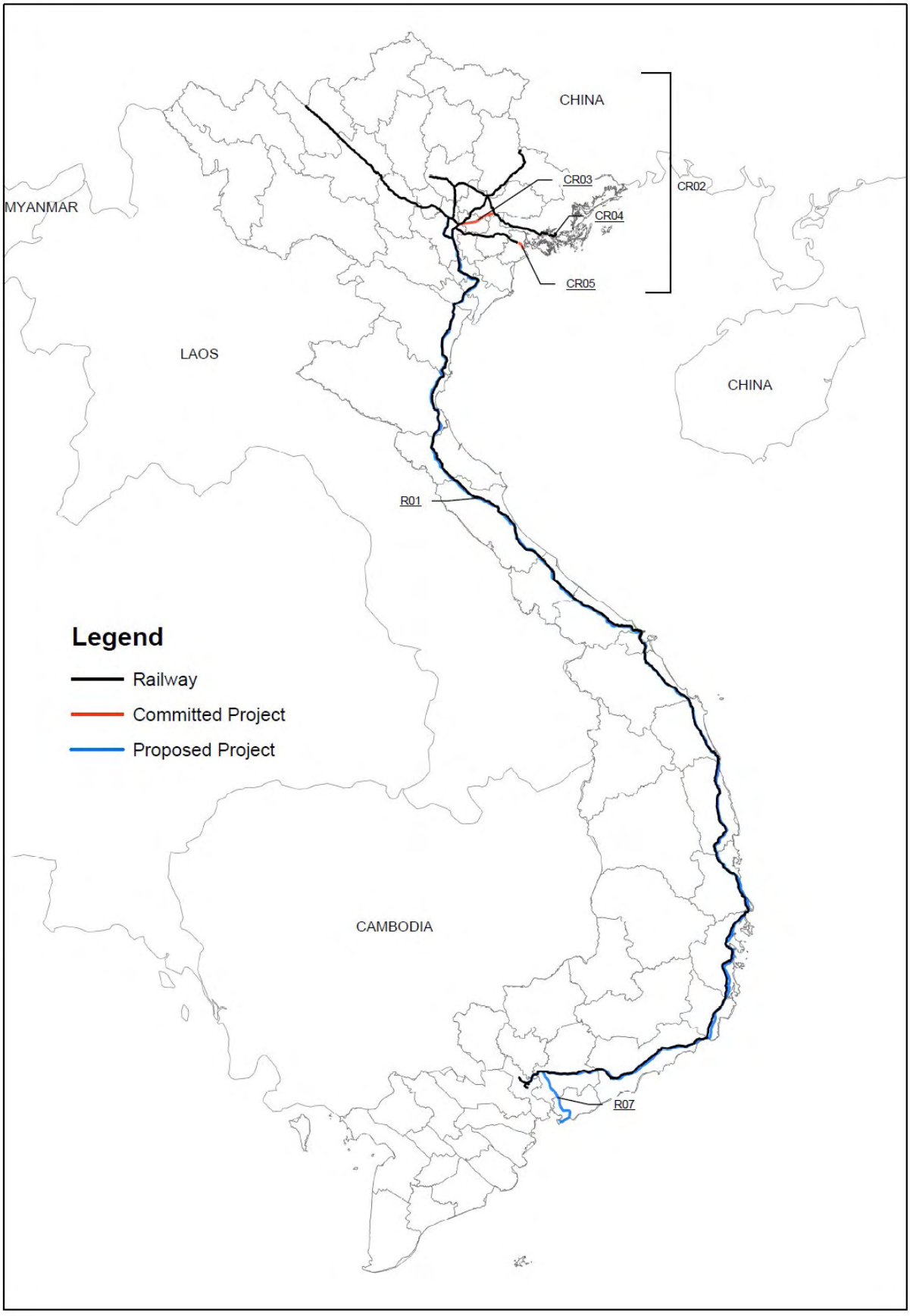
Source: VITRANSS 2 Study Team.

Figure B-2 Master Plan Project Location Map (Expressway)



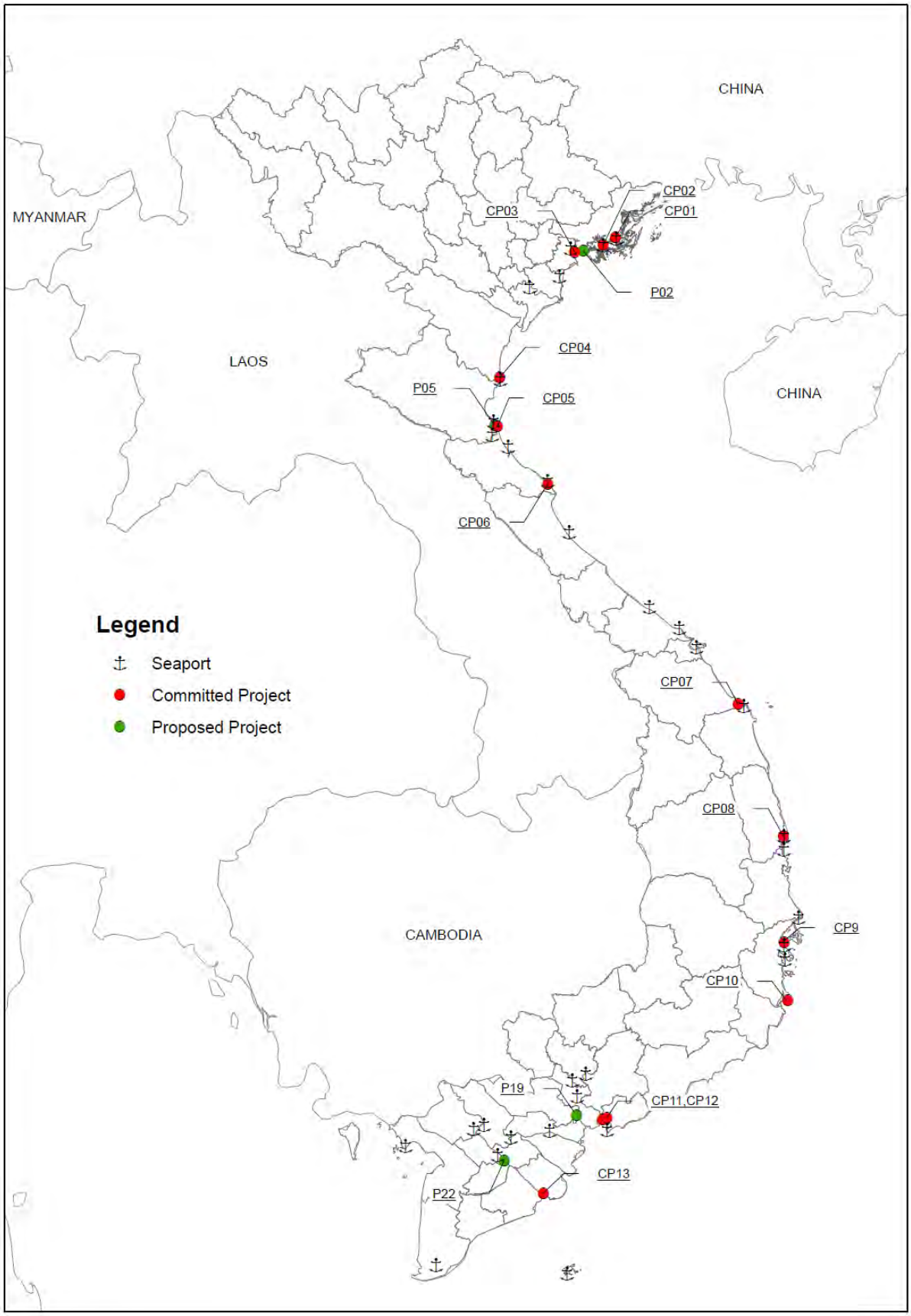
Source: VITRANSS 2 Study Team.

Figure B-3 Master Plan Project Location Map (Railway)



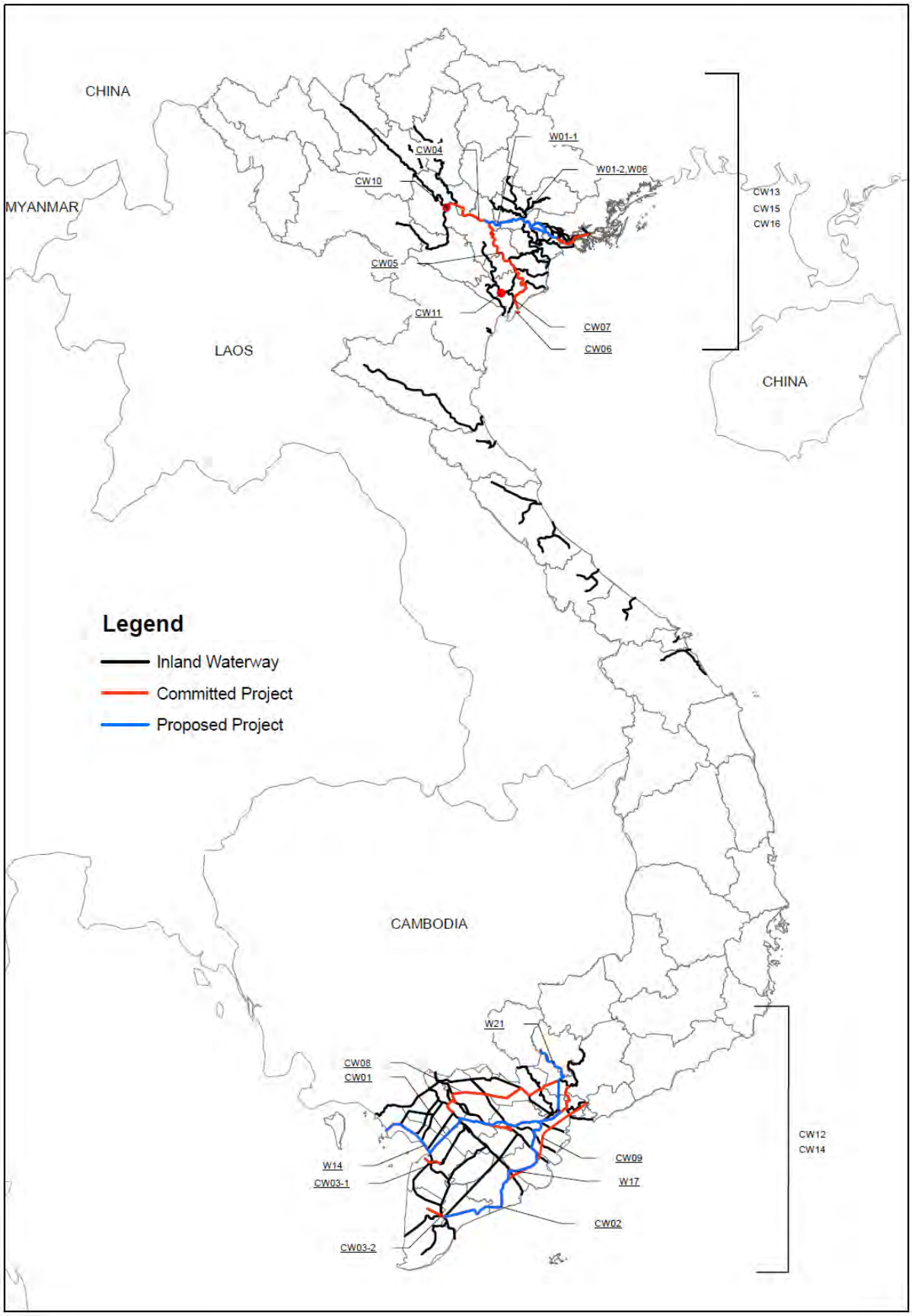
Source: VITRANSS 2 Study Team.

Figure B-4 Master Plan Project Location Map (Port)



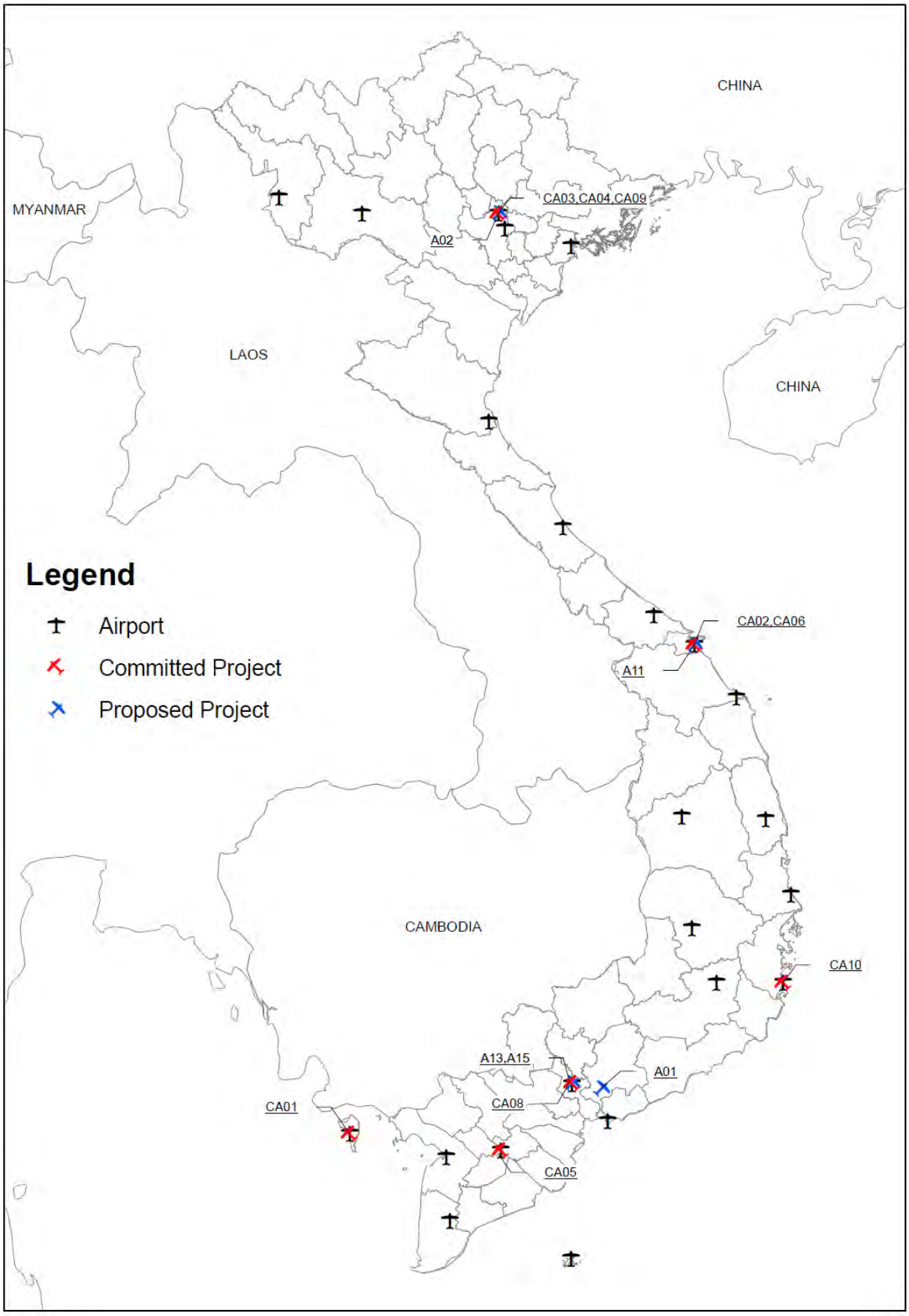
Source: VITRANSS 2 Study Team.

Figure B-5 Master Plan Project Location Map (IWT)



Source: VITRANSS 2 Study Team.

Figure B-6 Master Plan Project Location Map (Aviation)



Source: VITRANSS 2 Study Team

APPENDIX C

List of Ongoing/Committed Transportation Projects up to 2015 and 2020

APPENDIX C

List of Ongoing/Committed Transportation Projects up to 2015 and 2020

Project		Project Cost (USD mil.)		Assumed	Schedule			
No.	Name	Total	2009-2015	Schedule	-2013	-2015	-2018	-2020
Road								
Construction of New Expressway								
CH01	Cau Gie – Ninh Binh Expressway (50km)	452.4	180.9	06-10				
CH02	Da Nang – Quang Ngai Expressway (131km)	1048.2	1048.2	11-15				
CH03	Phan Thiet – Dau Giay Expressway (100km)	1003.8	1003.8	11-15				
CH04	HCMC – Long Thanh – Dau Giay Expressway (55km)	1110.8	888.7	08-12				
CH05	HCMC- Trung Luong Expressway (40km)	776.5	129.4	04-09				
CH06	Trung Luong – My Thuan – Can Tho Expressway (92km)	1510.0	1510.0	11-15				
CH07	Lang Son – Bac Giang – Bac Ninh Expressway (130km)	1176.3	705.8	13-17				
CH08	Ha Noi – Hai Phong Expressway (105km)	1441.2	1441.2	11-15				
CH09	Ha Noi – Lao Cai Expressway (264km)	1218.7	1218.7	09-12				
CH10	Ha Noi – Thai Nguyen Expressway (62km)	248.2	82.7	05-10				
CH11	Lang – Hoa Lac Expressway (30km)	450.0	112.5	06-09				
CH12	Ha Long – Mong Cai Expressway (128km)	1254.7	250.9	15-19				
Construction of New Road								
CH13	Can Tho Bridge Construction	284.8	35.6	02-09				
CH14	Border Ring No1 Construction (Hai Giang - Lao Cai) (151km)	300.4	136.5	03-13				
CH15	Border Ring No2 Construction (Northern Part)	17.2	1.9	01-09				
CH16	Border Ring No2 Construction (Northwest Part, Pho Rang - Minh Thang) (160km)	140.9	94.0	07-12				
CH17	Border Ring C3 Construction	30.1	20.0	07-12				
CH18	Linh Dam Bridge Construction (NH15, Ha Tinh)(2 lane)	13.6	13.6	10-12				
CH19	Ong Bo Bridge Construction (NH1A, Quang Nam)(2 lane,108m)	1.4	0.9	06-13				
CH20	Huong Anh bridge Construction (NH1A, Quang Nam)(4lane, 250m)	8.4	8.4	11-13				
CH21	Dinh Vu Bridge	200.0	200.0	11-13				
CH22	Vinh Thinh Bridge Construction (Ha Tay)	80.0	80.0	11-15				
CH23	45 Rural Traffic Bridges in Central and Central Highland Provinces	32.8	6.6	01-10				
CH24	Ben Thuy II bridge Construction (NH1&NH8B, Nghe An-Ha Tinh) (2lane, 1km)	74.1	74.1	09-11				
CH25	Dong Nai bridge Construction	121.8	121.8	12-13				
CH26	Cau Phung Bridge Construction (NH32)	18.6	15.5	08-13				
CH27	Border Ring Road No 1 Construction (Ha Giang – Lao Cai) (151km)	67.8	67.8	11-15				
CH28	NH279 Construction (Tuyen Quang – Bac Can) (94.5km)	67.3	67.3	10-13				
Construction of Bypass								
CH29	NH1A Bypass (Thanh Hoa) (10km)	38.3	38.3	11-15				
CH30	NH1A Bypass (Dong Hoi, Quang Binh) (19.3km)	38.6	38.6	11-15				
CH31	NH1A Bypass (Ha Tinh) (16.3km)	20.8	20.8	11-15				
CH32	NH1A Bypass (Phan Rang, Ninh Thuan) (8.3km)	32.2	32.2	11-15				
CH33	NH2 Bypass (Vinh Yen (Vinh Yen – Vinh Phuc)) (10.6km)	36.2	36.2	11-13				
Construction of Road/Bridge								
CH34	NH 25 Upgrading (Le Bac Bridge - To No pass) (11.5km)	4.6	4.6	11-13				
CH35	Mekong Delta River Infrastructure Development (NH53,N54,NH91 & PHs; WB5)	119.5	85.4	07-13				
CH36	NH 1 Widening (Dong Ha - Quang Tri)	31.5	31.5	13-15				
CH37	Highway Rehabilitation Project III (NH1, Can Tho - Nam Can) (288km)	186.0	46.5	03-10				
CH38	Bridge Rehabilitation Project - Phase III (NH1)	84.9	33.9	06-10				
CH39	NH2 Upgrading (Noi Bai - Vinh Yen) (22km)	66.8	13.4	05-09				
CH40	NH10 Upgrading (Tan De bridge - La Uyen bridge) (5.5km)	25.5	14.1	05-13				
CH41	East-West Corridor Improvement (NH12A) (182.3km)	98.9	22.0	02-10				
CH42	NH 21B & NH21 Upgrading (Hanoi)(76km)	44.2	44.2	13-15				
CH43	Ho Chi Minh Highway Phase 2 Upgrading (Pac Bo - Dat Mui excluding Hoa Lac - Ngoc Hoi) (2,072km)	1591.1	1193.3	08-11				
CH44	Rehabilitation Project (NH19, NH20, NH26, NH27, NH28)	85.4	71.2	08-13				
CH45	NH 2 Improvement (Hanoi - Ha Giang) (261km)	107.2	13.4	02-09				
CH46	NH 3 Improvement (Hanoi - Cao Bang) (310km)	155.3	77.6	05-12				
CH47	NH 6 Improvement Phase 2 (Son La - Dien Bien)	68.9	11.5	04-09				
CH48	NH 32 Improvement (Hanoi - Lai Chau) (358km)	178.8	39.7	02-10				
CH49	NH 50 Improvement (HCMC - My Tho) (88km)	148.8	148.8	09-13				
CH50	NH 80 Improvement (My Thuan - Vam Cong) (50km)	35.2	10.1	04-10				

Project		Project Cost (USD mil.)		Assumed	Schedule
No.	Name	Total	2009-2015	Schedule	-2013 -2015 -2018 -2020
CH51	NH 60 road and bridges Improvement	168.5	140.4	08-13	
CH52	NH 61 Improvement (Can Tho - Kien Giang)	23.8	6.0	06-09	
CH53	NH22B Improvement (Go Dau - Xa Ma) (73km)	23.9	4.0	04-09	
CH54	Secondary Road Network rehabilitation Program	664.4	553.7	08-13	
CH55	Tertiary Road Improvement Project	201.9	144.2	07-13	
CH56	Rural Road Projects improvement III (2,500km)	155.6	103.8	07-12	
CH57	Improvement of Rural Bridges in Central Coast & Central Highland Provinces	32.3	4.0	02-09	
CH58	Other Roads and Bridges Improvement	202.0	202.0	11-13	
CH59	NH1 Upgrading (My Thuan - Can Tho) (38.4km)	108.4	108.4	11-13	
CH60	Thang Long Bridge Surface Repair	3.5	3.5	12-13	
CH61	Road Network Improvement and Upgrading of (WB4) (Improvement component) (629km)	310.5	258.8	08-13	
CH62	Road Network Improvement and Upgrading (WB4) (maintenance and institutional improvement component)	112.5	112.5	09-13	
CH63	NH 1 Rehabilitation (Phase 3)	87.4	87.4	11-13	
CH64	Rural Traffic Project No.3 (3150km)	155.6	129.7	08-13	
CH65	Rehabilitation of Weak bridges (140 bridges) ((Phase 1)	98.1	98.1	09-13	
CH66	Southern Coastal Corridor Upgrading (NH80 & NH63) (225km)	290.9	242.4	08-13	
CH67	NH6 Upgrading (Tuan Giao – Lai Chau) (96km)	138.8	138.8	11-13	
CH68	NH 27 Upgrading (98km)	56.9	40.6	07-13	
CH69	NH 32 Upgrading (Vach Kim – Binh Luu) (72km)	33.8	33.8	09-13	
CH70	NH 32 Upgrading (Dien – Nhon) (7km)	57.7	57.7	10-13	
CH71	NH 91 Upgrading (Chau Doc- Tinh Bien) (27.3km)	55.7	55.7	11-13	
CH72	Storm No.5 Recovery Projects on NH6 (Hoa Binh – Son La)	4.6	4.6	11-13	
CH73	NH 279 Upgrading (Ttan Son – Than Muoi, Dong Mo – Tu Don)	14.8	12.4	08-13	
CH74	NH3B Upgrading (Xuat Hoa-Po Ma) (60km)	79.8	79.8	10-13	
Ch75	Weak Bridge Rehabilitation Project (Stage 2: 83 bridges)	207.5	207.5	11-13	
CH76	NH 31 Upgrading (Huu San – ban Chat) (61km)	59.4	59.4	11-13	
CH77	NH53 (not including Km56-Km60 and Km130-Km139 in WBS project) (121km)	81.1	81.1	11-13	
CH78	NH8A Upgrading (Ha Tinh) (37km)	69.2	69.2	11-13	
CH79	NH24 Upgrading (Pho Phong – Quang Ngai) (8km)	23.3	23.3	11-13	
CH80	NH24 Upgrading (Pho Phong – Kon Tum) (160km)	294.1	294.1	11-13	
CH81	NH25 Upgrading (Phu Yen – Gia Lai)(160km)	294.1	294.1	11-13	
CH82	NH15 Upgrading (Mai Chau - Hoi Xuan) (109km)	117.6	117.6	11-13	
CH83	NH1A Upgrading (Hoa Cam – Hoa Phuoc, Danang) (8.4km)	32.8	0.0	16-18	
CH84	NH20 and Other Sections Repairment and Upgrading (268km)	16.6	16.6	10-13	
Improvement of Traffic Safety					
CH85	Road Safety Improvement Program	33.4	33.4	10-13	
CH86	Northern Vietnam National Roads Traffic Safety Improvement Project (NH 3, NH 5, NH 10, NH 18)	60.7	60.7	09-13	
CH87	Railway and Road Safety Traffic System Building	41.7	41.7	10-13	
Subtotal		20762.0	15465.4		
Railway					
Improvement of Exisitng Line for Capacity Expansion					
CR01	Improvement and Upgrading in North – South Railway Line	965.4	965.4	10-15	
CR02	Improvement of Railway Routes in the North	291.6	102.1	01-20	
Construction of New Line					
CR03	Yen Vien-Pha Lai railway line	118.4	84.5	07-13	
CR04	Ha Long- Cai Lan railway line	58.9	42.1	07-13	
CR05	Railway line from Chua Ve to DAP factory-Dinh Vu (Hai Phong)	67.7	67.7	10-13	
Subtotal		1502.1	1261.9		
Port & Shipping					
Expansion and Upgrading of Port Functions					
CP01	Cam Pha Seaport Channel Development	7.0	7.0	12-13	
CP02	Hon Gai Seaport (Cai Lan) Terminal Development (Committed Stage)	120.0	120.0	10-13	
CP03	Hai Phong Seaport (Dinh Vu) Channel & Terminal Development	411.0	411.0	11-13	
CP04	Nghi Sonr Seaport Channel & Terminal Development	24.0	24.0	11-13	
CP05	Cua Lo Seaport Channel Development (Committed Stage)	4.0	4.0	11-13	
CP06	Vung Ang Seaport Terminal Development (Committed Stage)	40.0	40.0	11-13	
CP07	Dung Quat Seaport Terminal Development (Committed Stage)	41.0	41.0	11-13	

Project		Project Cost (USD mil.)		Assumed	Schedule			
No.	Name	Total	2009-2015	Schedule	-2013	-2015	-2018	-2020
CP08	Quy Nhon Seaport Channel & Terminal Development (Committed Stage)	74.0	74.0	11-13				
CP09	Van Phong Seaport Terminal Development (Stage 1)	190.0	190.0	11-13				
CP10	Ba Ngoi Seaport (Cam Ranh) Terminal Development (Stage 1A)	88.0	88.0	11-13				
CP11	Vung Tau Seaport (Cai Mep - Thi Vai) Channel and Terminal Development (Stage 1)	1675.0	1675.0	11-13				
CP12	Ho Chi Minh Seaport (Hiep Phuoc) Channel & Terminal Development (Stage1)	204.0	204.0	11-13				
CP13	Quan Chanh Bo Channel Development Project	198.0	198.0	11-13				
	Subtotal	3076.0	3076.0					
Inland waterway								
Inland Waterway Improvement								
CW01	Upgrading of Northern Trans Mekong coriddor (to Class III)(253km)	99.3	99.3	11-13				
CW02	Updating of Southern coastal coriddor (to Class III) (153km)			13-15				
CW03	Upgrading of the feeder canals in Mekong Delta region (to Class IV) (58km)	8.5	8.5	11-13				
CW04	Improvement of the east-west northern corridor in the northern delat regeion (Viet Tri - Quang Ninh) (280km)	59.8	59.8	11-13				
CW05	Upgrading of the north-south western corridor in the northern delta region (to Class I) (295km)	6.5	6.5	11-13				
CW06	Improvement to Ninh Co River Estuary	63.7	63.7	11-13				
CW07	Inter-connecting canal between the Day and Ninh Co River	0.0		11-13				
CW08	Improvement of Sai Gon-DongThap-Long Xuyen Route	4.4	4.4	11-13				
CW09	Improvement of Thi-Vai-Nuoc ManCanal Route	3.1	3.1	11-13				
Improvement of River Port								
CW10	Improvement of Viet Tri Port	4.3	4.3	11-13				
CW11	Improvement of Ninh Phuc Port	2.8	2.8	11-13				
CW12	Demonstration investment for provincial port facilities in Mikong Delta region			11-13				
Land Stages Improvement								
CW13	Invesgtment of small ferry boats stages	4.6	4.6	11-13				
Institutional Improvement								
CW14	Institutional development concerned with Mekong Delta Inland waterways	1.6	1.6	11-13				
CW15	Institutional development concerned with Northern delta Region Inland waterways	5.1	5.1	11-13				
Maintenance								
CW16	Pilot maintenance project	1.0	1.0	11-13				
	Subtotal	264.6	264.6					
Aviation								
Construction of New Airport								
CA01	Phu Quoc Island Airport	56.0	56.0	11-13				
Capacity Expansion of Existing Airport								
CA02	Terminal Construction at Danang International Airport	84.0	84.0	10-13				
CA03	T2 Terminal Construction at Noi Bai International Airport	800.0	800.0	12-13				
CA04	Cargo Terminal Expansion at Noi Bai International Airport	20.0	20.0	10-13				
CA05	Runway upgrading and terminal Construction at Can Tho Airport	23.0	23.0	09-13				
CA06	Runway Extension and Apron Expansion at Danang International Airport	75.0	45.0	13-17				
CA07	Passenger Terminal Expansion at Danang Internaitional Airport	100.0	0.0	18-23				
CA08	Cargo Terminal Constrcution at Tan Son Nhat International Airport	50.0	50.0	09-15				
Improvement of Navigation Facility								
CA09	Control Tower Construction at Noi Bai International Airport	100.0	100.0	12-13				
CA10	Terminal Building and Control Tower Construction at Cam Ranh Airport	12.5	12.5	11-13				
	Subtotal	1320.5	1190.5					
	Total	26925.2	21258.4					

Source: Vitranss2 Study Team

APPENDIX D

List of Planned Transportation Projects up to 2015 and 2020

APPENDIX D

List of Proposed Transportation Projects up to 2015 and 2020

Project		Project Cost (USD mil.)		Assumed	Schedule			
No.	Name	Total	2009-2015	Schedule	-2013	-2015	-2018	-2020
Road								
Construction of New Expressway								
H01	Ninh Binh – Thanh Hoa Expressway (75km)	827.6	413.8	13-18				
H02	Thanh Hoa – Vinh Expressway (140km)	2128.0	0.0	16-20				
H03	Vinh – Ha Tinh Expressway (20km)	201.5	0.0	16-20				
H10	Long Thanh – Nhon Trach – Ben Luc Expressway (45km)	738.6	738.6	11-15				
H21	Bien Hoa – Vung Tau Expressway (76km)	696.5	417.9	13-17				
H30	Ring Road No.4 in Ha Noi (90km)	1350.5	1350.5	11-15				
H32	Ring Road No.3 in HCMC (83km)	1226.9	1226.9	11-15				
Construction of New Road								
H33	Economic axle-road Construction (24km)	82.8	82.8	11-15				
H35	NH1A (Chi Lang - Bac Giang) Construction (Pho Gio)) (40km)	182.1	0.0	16-20				
H36	NH21 Construction (Phu Ly – Nam Dinh) (25km)	86.2	0.0	16-20				
Construction of Bypass								
H59	NH1A Bypass (Van Gia, Khanh Hoa) (10km)	46.3	0.0	16-20				
H63	NH1A Bypass (Phan Thiet, Binh Thuan) (10km)	34.5	0.0	16-20				
H64	NH1A Bypass (Duc Pho, Quang Ngai) (9.7km)	36.3	0.0	16-20				
H65	NH1A Bypass (Vinh Long) (7.5km)	25.9	25.9	11-15				
H68	NH91 Bypass Construction (Thot Not, Can Tho) (10km)	34.5	34.5	11-15				
H73	NH60 Bypass (Ham Luong (Ben Tre – Mo Cay))(10km)	34.5	0.0	16-20				
H74	NH38 Bypass (Hoa Mac, An Giang)(10km)	34.5	34.5	11-15				
Construction of Road/Bridge								
H79	NH 14 Widening (Dong Xoai - Chon Thanh)(34km)	115.4	115.4	13-15				
H82	NH 51 Widening(Dong Nai - Vung Tau)(73.6km)	184.1	184.1	11-13				
H85	NH5 Upgrading (106km)	155.8	155.8	11-13				
H90	NH 6 Widening (Ba La - Xuan Mai) (20km)	52.7	52.7	11-13				
H92	NH 20 Improvement(Dau Giay - Lien Khuong) (250km)	201.8	201.8	11-13				
H96	NH10 Improvement (Lai Thanh - Tao Xuyen) (50km)	24.3	24.3	11-13				
H109	NH 40 Rehabilitation (24km)	9.8	9.8	11-13				
H111	NH31 Rehabilitation (An Chau - Dinh Lap) (48km)	23.7	23.7	11-13				
H112	NH3B Rehabilitation (Yen Lac - That Khe) (44km)	21.7	21.7	11-13				
H113	PR507(NH47) Rehabilitation (Thuong Xuan - Kheo Border) (60km)	32.9	32.9	11-13				
H114	NH48 Rehabilitation (Thai Hoa - Kim Son) (74km)	40.6	40.6	11-13				
H116	NH32B Rehabilitation (Xom Giac - Muong Coi) (21km)	8.4	8.4	11-13				
H117	NH2B Rehabilitation (Vinh Yen - Tam Dao) (25km)	10.6	10.6	11-13				
H118	NH2C Rehabilitation (Vinh Yen - Son Duong) (60km)	23.7	23.7	11-13				
H119	NH23 Rehabilitation (NH2 - Phuc Yen) (27km)	10.0	10.0	11-13				
H120	NH47 Rehabilitation(NH1 - NH15) (61km)	21.8	21.8	11-13				
H121	NH45 Rehabilitation(Pho Ria - Thanh Hoa - Yen Cat) (136km)	49.3	49.3	11-13				
H122	NH49 Rehabilitation(Cang Thuan An – HCM Road) (75km)	28.0	28.0	11-13				
H123	NH25 Rehabilitation (Tuy Hoa - HCM Road) (180km)	72.9	72.9	11-13				
H124	NH27 Rehabilitation(Phan Rang Thap Cham - Buon Ma Thuot) (276km)	113.1	113.1	11-13				
H125	NH49B Rehabilitation (Cau My Chanh - Vinh Hien, Thu Thien Hue) (89km)	31.1	31.1	11-13				
H126	NH24B Rehabilitation (NH1 - An Hai, Quang Ngai) (18km)	6.3	6.3	11-13				
H127	NH27B Rehabilitation(Tan Son - NH1) (48km)	17.3	17.3	11-13				
H128	NH1D Rehabilitation(Quy Nhon - Song Cau, Binh Dinh & Phu Yen) (33km)	11.5	11.5	11-13				
H129	NH1C Rehabilitation (Dien Khanh - Nha Trang) (17km)	5.9	5.9	11-13				
H130	NH56 Rehabilitation (Xuan Thanh - Ba Ria) (50km)	17.5	17.5	11-13				
H131	NH62 Rehabilitation (Tan An - Binh Hiep) (77km)	26.9	26.9	11-13				
H132	NH54Rehabilitation (Cai Von - Tieu Can) (167km)	58.3	58.3	11-13				
H133	NH53 Rehabilitation (Vinh Long - Duyen Hai - NH54) (132km)	46.1	46.1	11-13				
H134	NH63 Rehabilitation(Minh Luong - Camau) (109km)	38.1	38.1	11-13				
Improvement of Traffic Safety								
H148	Black Spot Improvement Plan	95.0	95.0	11-13				
H149	Traffic Safety Audit Development Plan	40.0	40.0	11-13				
H150	Traffic Safety Corridor Development Plan	40.0	40.0	11-13				
H152	Vulnerable Road User Accident Prevention Plan	75.0	75.0	11-13				
H153	Expressway Safety Development Plan	112.5	112.5	11-13				
H154	Road Work Traffic Safety Development Plan	20.0	20.0	11-13				
H155	Traffic Safety Monitoring and Maintenance Plan	35.0	35.0	11-13				

Project		Project Cost (USD mil.)		Assumed	Schedule			
No.	Name	Total	2009-2015	Schedule	-2013	-2015	-2018	-2020
H156	Urban Road Traffic Safety Development Plan	272.5	272.5	11-13				
	Subtotal	9916.3	6474.6					
Railway								
Improvement of Exisitng Line for Capacity Expansion								
R01	Function-Improvement Items (Hanoi-Saigon Line)	2465.3	0.0	16-20				
Construction of New Line								
R07	Trang Bone – Vung Tau New Railway Construction (SRI & SMI) (71.3km)	1847.8	0.0	16-20				
	Subtotal	4313.1	0.0					
Port & Shipping								
Expansion and Upgrading of Port Functions								
P02	Hai Phong Seaport (Lach Huyen) Development (Stage 1, original schedule: 2010-2015)	450.0	270.0	13-17				
P05	Cua Lo Seport Channel & Terminal Development	26.0	0.0	16-20				
P19	Ho Chi Minh Seaport (Hiep Phuoc - Stage2 + other) Channel and Terminal Development	220.0	132.0	13-17				
P22	Expansion of terminal in Can Tho seaport	25.0	25.0	11-13				
	Subtotal	721.0	427.0					
Inland waterway								
Inland Waterway Improvement								
W01	Upgrading of Quang Ninh/Hai Phong - Ha Noi Route (to ClassII) (166km)	38.2	38.2	11-13				
W06	Upgrading of Quang Ninh - Pha Lai Route (to ClassII) (128km)	29.4	29.4	11-13				
W13	Upgrading Cho Gao Canal Route (11km)	138.0	138.0	11-13				
W14	Improvement of Sai Gon - Kien Luong/Lap Vo canal Route (315km)	72.5	72.5	11-13				
W16	Improvement of Sai Gon - Ca Mau/Xa No canal Route (336km)	77.3	0.0	16-18				
W17	Improvement of Sai Gon - Ca Mau/coastal Route (367km)	84.4	0.0	18-20				
W21	Improvement of Sai Gon - Hieu Liem Route (88km)	15.0	0.0	16-18				
Maintenance								
W38	Maintenance Dredging to reduce backlogs	120.0	60.0	11-20				
Safety Improvement								
W47	Search and rescue	5.0	5.0	11-13				
Institutional Improcement								
W52	Database: River Surveys and Vessel Registry	20.0	20.0	11-13				
	Subtotal	599.7	363.1					
Aviation								
Construction of New Airport								
A01	Long Thanh Airport	6000.0	3000.0	11-20				
Capacity Expansion of Existing Airport								
A11	Runway Improvement at Danang international Airport	-	-	13-17				
A13	Expansion of Tan Son Nhat International Airport	200.0	200.0	11-15				
Improvement of Navigation Facility								
A15	Control tower Construction at Tan Son Nhat International Airport	50.0	50.0	11-13				
A16	Air Navigation System	100.0	100.0	11-13				
	Subtotal	6350.0	3350.0					
Logistics								
Construction of New Facility for Multimodal Cargo Handling								
L01	North Logistic Park Development	199.8	199.8	11-13				
L02	South Logistic Park Development	40.0	40.0	11-13				
L03	Lao Cai Cross-border gate improvement	6.0	6.0	11-13				
	Subtotal	245.8	245.8					
	Total	22145.9	10860.4					

Source: VITRANSS 2 Study Team.

APPENDIX E

Study Team Members

APPENDIX E

Study Team Members

Table E-1 Steering Committee Members

Name	Designation
1. Mr. Ngo Thinh Duc (Chair)	Vice Minister of Transport
2. Mr. Tran Doan Tho (Chair)	Vice Minister of Transport
3. Mr. Truong Tan Vien (Deputy head)	Director, Planning and Investment Department, MOT
4. Mr. Ly Huy Tuan (Deputy head)	Director, Transport Department Strategy Institute
5. Mr. Nguyen Van Quyen	Deputy Director General, Personnel and Organization, MONRE
6. Mr. Vu Van Nhan	Director, Science and Technology Department, MOT
7. Ms. Pham Thi Phuong	Deputy Director. General., Legislation Department, MOT
8. Mr. Tran Ngoc Thanh	Deputy Director. General., Transport Department, MOT
9. Mr. Mai Anh Tuan	Deputy Director. General., VRA
10. Mr. Nguyen Van Doanh	Deputy Director, Vietnam Railway Administration, MOT
11. Mr. Pham Cong Trinh	Deputy Director. General., VNR
12. Mr. Nguyen Xuan Tien	Deputy Director, Foreign Economic Department, MPI
13. Mr. Le Xuan Truong	Deputy Director, Construction Installation Department, MOC
14. Mr. Tran Xuan Sanh	General Director, VEC
15. Mr. Pham Thanh Tung	Director, International Cooperation Department, MOT
16. Mr. Nguyen Ngoc Hue	Deputy Director, VINAMARINE
17. Mr. Luu Thanh Binh	Deputy Director, CAAV
18. Mr. Pham Minh Nghia	Deputy Director, VIWA

Table E-2 Working Group Members

Name	Designation
1. Mr. Mai Anh Tuan	Leader, Road Subsector WG
2. Mr. Nguyen Van Doanh,	Leader, Railway Subsector WG
3. Mr. Nguyen Ngoc Hue	Leader, Port and Shipping Subsector WG
4. Mr. Luu Thanh Binh	Leader, Airway Subsector WG
5. Mr. Pham Minh Nghia	Leader, Inland Waterway Subsector WG
6. Mr. Truong Tan Vien	Leader, Institutional Subsector WG
7. Mr. Tran Ngoc Thanh	Leader, Traffic Safety Subsector WG
8. Mr. Nguyen Van Nhan	Leader, Environmental Aspects Subsector WG

Table E-3 JICA and Study Team Members

Name	Designation
JICA and JICA Advisory Committee	
1. Mr. Tomiaki ITO	Deputy Director, Economic Infrastructure Department and Group leader, Transportation and ICT Group
2. Mr. Hiroshi TAKEUCHI	Director, Transportation and ICT Division 1, Transportation and ICT Group, Economic Infrastructure Department (to 2009)
3. Mr. Yukihiro KOIZUMI	Director, Transportation and ICT Division 1, Transportation and ICT Group, Economic Infrastructure Department (from 2009)
4. Mr. Tatsuhiko SUNOUCHI	Transportation and ICT Division 1, Transportation and ICT Group, Economic Infrastructure Department (to 2008)
5. Mr. Kenichi KONYA	Assistant Director for Planning and Coordination Division and Transportation and ICT Division 1, Transportation and ICT Group, Economic Infrastructure Department (from 2008)
6. Dr. Shigeru MORICHI	Chair, JICA Advisory Committee President, Institute for Transport Policy Studies, and. Professor, Graduate Institute for Policy Studies
7. Dr. Tetsuro HYODO	Member, JICA Advisory Committee Professor, Tokyo University of Marine Science and Technology
8. Mr. Hideji MIYABAYASHI	Member, JICA Advisory Committee Deputy Director of Planning Division, Japan railway construction transport and technology agency
9. Mr. Kunihisa KIMURA	Member, JICA Advisory Committee (to 2008) Director for Planning and Coordination Corporate Strategy Department
10. Mr. Kunihiko OKA	Member, JICA Advisory Committee (from 2009) Director for Planning and Coordination Corporate Strategy Department
11. Mr. Hiroaki NAKAGAWA	Residential Representative, JICA Vietnam (to 2009)
12. Mr. Motonori TSUNO	Residential Representative, JICA Vietnam (from 2009)
13. Mr. Yasuhiro TOJO	Deputy Resident Representative, Vietnam JICA Office (to 2009)
14. Mr. Toshio NAGASE	Deputy Resident Representative, Vietnam JICA Office (from 2009)
15. Dr. Phan Le Binh	Senior Program Officer
16. Mr. Hozumi KATSUTA	Senior Project Formation Advisor
17. Mr Kenji HASHIDA	JICA Expert
JICA Study Team	
1. Dr. Shizuo IWATA	Team Leader
2. Mr. Takashi SHOYAMA	Subleader / Demand Forecast (1) / Comprehensive Transport Planning Model
3. Mr. Ichizuru ISHIMOTO	Subleader / Road Development Planning
4. Mr. Kenji MAEDA	Subleader / Railway Development Planning
5. Mr. Ngo Trung Hai	Urban Planning/ Development Planning along railway lines
6. Mr. Ichiro KOBAYASHI	Regional Development / Socioeconomic Framework
7. Dr. Ian C. ESPADA	Traffic and Transport Survey
8. Mr. Naoshi OKAMURA	Demand Forecast (2)
9. Mr. Tetsuo HORIE	Demand Forecast (3)
10. Mr. Nobuo MONOE	Road Planning
11. Mr. Tomoaki TAKEUCHI	Road Infrastructure Planning (Civil Works)
12. Mr. Masaaki GOTO	Road Infrastructure Planning (ITS)(1)
13. Mr. Hitoshi ISHIGURO	Road Infrastructure Planning (ITS)(2)/ITS/ETC User Service
14. Mr. Kazuharu OIDE	Land Transport / Logistics
15. Mr. Isamu KOIKE	Major Commodity Study
16. Dr. Tetsuji MASUJIMA	North-South Transport Corridor Analysis
17. Mr. Harutoshi HAYASAKA	Railway Infrastructure Planning
18. Mr. Kenji ENDO	Railway Transport Planning

Name	Designation
19. Mr. Isao FUKUNAGA	Conventional Railway Planning
20. Mr. Masahiro YOSHIMI	Port Planning
21. Mr. Tatsuyuki SHISHIDO	Port Strategy / Inland Waterway Planning(1)
22. Mr. Yoshihisa TATENO	International Sea Transport Strategy
23. Mr. Tsuyoshi YAMASAKI	Port Strategy / Inland Waterway Planning(2)
24. Mr. Takao YAMAGUCHI	Aviation Planning
25. Mr. Ippei IWAMOTO	Design / Cost Estimation (Road)
26. Mr. Ryotaro MOTEGI	Design / Cost Estimation (Railway)
27. Ms. Shuji HIROTA	Natural Conditions Study
28. Mr. Tetsuo WAKUI	Economic Analysis
29. Mr. Rene S. SANTIAGO	Financial Analysis
30. Mr. Osamu ISODA	Environmental Impact Analysis
31. Mr. Teleki C. GEZA	Socioenvironmental Study(1)
32. Mr Jayamohan SOMASUNDA-RAM	Socioenvironmental Study(2)
33. Mr. Mitsuhiro SASANUMA	Financial Study
34. Mr. David M. SHELLY	Institutional Study
35. Mr. Roger ALLPORT	Transport Policy
36. Mr. Teodoro T. ENCARNACION	Road Administration
37. Mr. Hitoshi MATSUOKA	Organization Management / Operation
38. Mr. Masayoshi IWASAKI	Privatization and PPP
39. Mr. Joel F. CRUZ	GIS (System Design)
40. Ms. Yuko SAKAI	GIS (Operation & Management)
41. Mr. Tetsuya SATO	Information and Communication Technology
42. Mr. Yoshihisa ASADA	Road Traffic Operation
43. Mr. Nguyen TOAI	Project Implementation Planning(1)
44. Mr. Yosui SEKI	Project Coordination
45. Mr. Takanori SAKAI	Project Coordination/Project Implementation Planning(2)