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Analytical and Advisory Activity Report

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**An Expressway Development Strategy  
for Vietnam**

December 2008

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# 1 Introduction

## 1.1 Vietnam's Rapid Growth and the Rationale for Expressway Development

Over the past decade, Vietnam has achieved impressive economic growth and poverty reduction rates, with real Gross Domestic Product (GDP) growing at an annual rate of 7.2 percent between 1995 and 2005, and reaching 8.2 percent in 2006. Poverty, measured at the US\$1 a day threshold, dropped significantly from 51 percent of the population in 1990 to just 8 percent in 2006.<sup>1</sup> GDP per capita increased from US\$170 in 1993 to US\$726 in 2006 and is expected to reach US\$1,000 by 2010. Exports continued their expansion to reach US\$40 billion (54 percent of GDP). Foreign direct investment, considered to be one the highest in the world relative to the size of the economy (almost 10 percent of GDP)<sup>2</sup> reached US\$10.2 billion in 2006, an increase of 49 percent over its 2005 level.

The transport sector has contributed positively to these trends, both directly and indirectly, through better linkages and access to markets, education and health facilities. Vietnam is among the world's leaders in infrastructure investment, with annual expenditures reaching an equivalent of a 9-10 percent of GDP, about half of which is in transport. This high rate of transport infrastructure investment has been a major enabler of, and catalyst for, this economic progress.

However, Vietnam's rapid economic growth continues to create new demands for transport infrastructure and services. Bottlenecks to business activities caused by infrastructure constraints are already appearing in several areas. High rates of urbanization, rising traffic accidents, new capacity constraints, and a large increase in asset preservation requirements to meet the fast expansion of transport assets presents further challenges to the sector. To address these infrastructure bottlenecks, and to gradually remove the transport constraints on industry, Vietnam is embarking on an ambitious expressway development program.

Vietnam's impressive economic performance has undoubtedly accelerated traffic growth. Over the past 15 years, Vietnam has seen an expansion of its road transport activity by 230 percent compared to 200 percent<sup>3</sup> growth in GDP over that same period (annual rates of 8.3% and 7.6% respectively). While road traffic growth in the country as a whole is around 8 percent per annum, recent studies suggest that rate is even higher in the Northern Red River Delta and the Southern Mekong Delta. (A recent analysis of the Northern Delta region suggests that road traffic has been growing by 29 percent per annum.) The recent expansion of the vehicle fleet is also impressive, recording a 100 percent increase in vehicle sales year on year for the first two months of 2007.

To date the transport sector has facilitated this growth principally through the rehabilitation and widening of existing arterial roads. The national road network has expanded to 17,000 km, the overall condition has improved with 66 percent of the network being in good and fair condition and 84 percent of the network is now paved.

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<sup>1</sup> reference

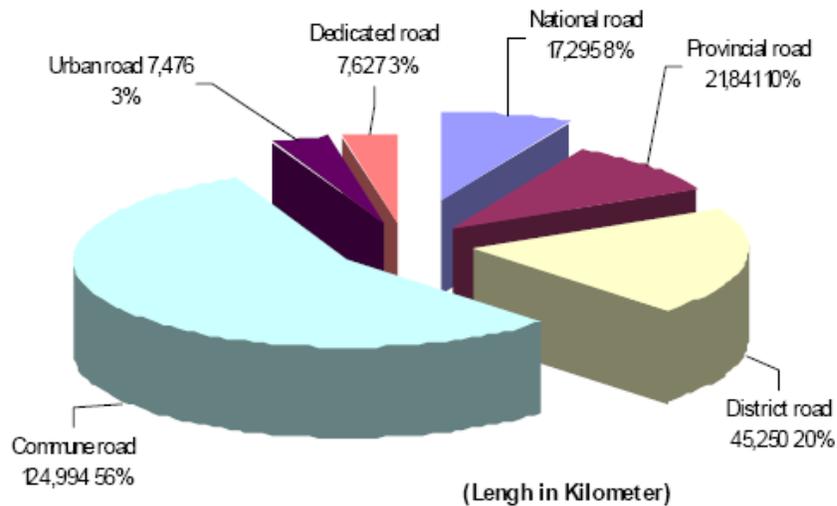
<sup>2</sup> VDR 2006--Business

<sup>3</sup> UN Data in Constant Currency. See <

<http://data.un.org/Data.aspx?d=SNAAMA&f=qrID%3A102%3BcurrID%3ANCU%3BitID%3A24>>

However, only four percent of the network has four or more lanes and capacity constraints are beginning to emerge in the network particularly around Hanoi and HCMC. If traffic growth rates continue at their current rate these constraints could adversely impact future economic development. The outline of the overall network size is shown in figure 1.

**Figure 1: Vietnam Road Network 2004/5**



There is also a growing problem of “urbanization” of road space where residential and commercial activities spill over from the road reserve onto the road. The ribbon development that takes place along the roads makes widening existing roads an expensive and time consuming proposition. The roads also suffer from mixed traffic streams where pedestrians, non-motorized traffic, motorcycles and slow moving vehicles all merge with the faster trucks and buses. As a consequence average vehicle speeds are very low and Vietnam has a poor road safety record.

Given its expanding economy, a rapidly growing population and a significant widening of its industrial base, Vietnam has reached a stage of development where there is a need for creation of a high capacity, controlled access trunk highway system as the backbone of the roadway network.

Vietnam has embarked on the development of an expressway network for both strategic and practical reasons. It will take most of the next 20 years to build that system which will provide a high speed, high capacity link from north to south and form radial and circular links around the major cities. An expressway master plan was completed in early 2007 and that plan with its subsequent updates now forms the basis for ongoing construction prioritisation and detailed financing discussions with the various financial partners and donor agencies. While priorities for key sections are set, a degree of fluidity in setting remaining priorities exists, based both on the interest of donors and their commitments for portions of the network as well as the political considerations regarding regional balance and distribution of development benefits.

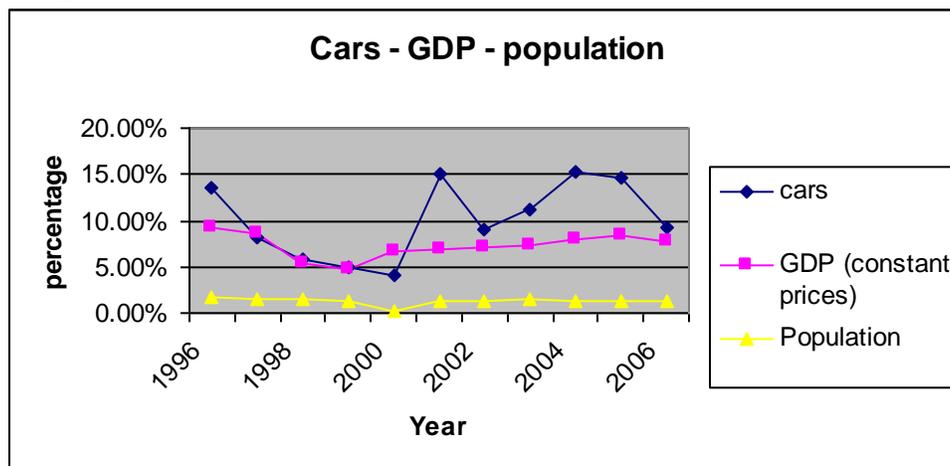
The successful development of an expressway system is a significant physical and financial commitment which will require a number of changes to laws, regulations, institutions and operations of the network.

### The demand for expressways

The tripling of transport activity over the past 15 years and the increase in passenger and goods transport by 70% and 100% respectively between 1999 and 2005 are manifestation of the rapid growth in the demand for transport services. Ownership of four-wheel vehicles in Vietnam is estimated to be about one million, and is considered low by international and regional standards. This is not surprising however, as per capita income, the main determinant of auto ownership, is still relatively low in Vietnam. Nevertheless, Vietnam's auto ownership level of about 12.5 autos per 1000 persons is higher than that of many countries when they were at the same stage of economic development. For example, auto ownership per 1000 of the population in Hungary and Poland in 1970 was 12 and 10 respectively, and 13 in Germany in 1950.<sup>4</sup> At those times, these countries had significantly higher levels of income than that of Vietnam at present.

However, more recently there has been a sharp increase in the number of new vehicle registrations (including motorcycles) which have risen by over 400% over the last decade. From 1995-2006, registered vehicles have grown from about 4 million to almost 20 million. In 2006, Vietnam registered 19.6 million vehicles of which 18.6 million were motorcycles and 970,000 cars<sup>5</sup>, respectively 4.2 and 1.9 times the numbers of 1995. Though the growth in motorbikes is still larger than cars, the gap is converging gradually. Figure 2 shows annual growth rates for autos, the economy and population between 1996 and 2006. The figure below shows that auto ownership has grown more rapidly than GDP over that period.

**Figure 2: Annual Growth rates of Autos, GDP and Population, 1996-2006**



The average annual growth in autos between 1995 and 2006 was 10.1%. This growth rate is expected to be even higher over the next decade, given the low base, the expected growth in income and the reduction of import duties on imported vehicles. Many countries have sustained decade long rates of growth in auto ownership as high as 15-20% per annum. Under the conservative assumption that auto ownership rates

<sup>4</sup> Reference. John Pucher...

<sup>5</sup> Cars: registered vehicles with 4-wheels or more

will continue to grow at 10.1% per annum, the number of autos in Vietnam is estimated to reach 4.2 million in 2020, more than 4.5 times the current level.

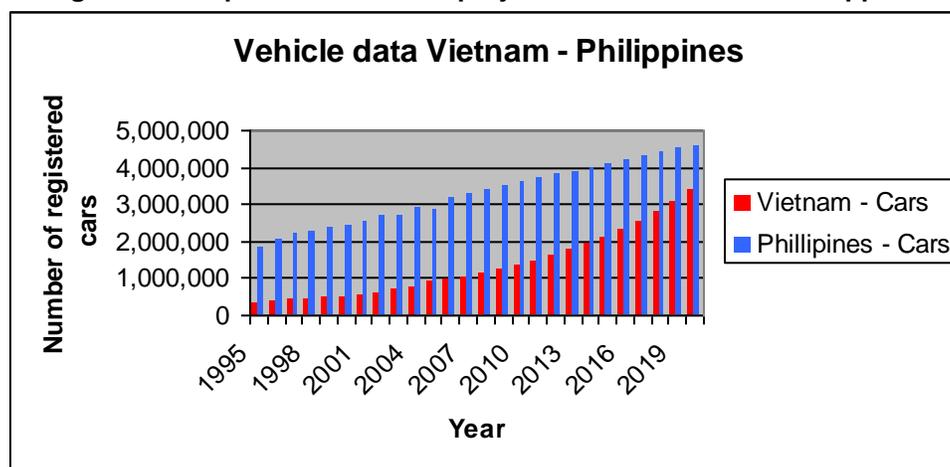
The number of cars in Vietnam is also growing fast compared to other countries in the region. Table 1 shows, for Vietnam and a number of countries in the region, the growth rate in auto ownership between 1995 and 2005 and the projections for 2020.<sup>6</sup> The table shows that though the numbers of cars in Vietnam grew only modestly during the period 1995-2005, this will change significantly in the coming period.

**Table 1: Auto Ownership in Vietnam and Select East Asian Countries, 1995-2005 and 1995-2020**

Car Development	Number of cars 2005 (mln)	Number of cars 2020 (mln)	Number of Cars/cap 2005	Number of Cars/cap 2020	Total increase '95-'05	Total increase '05-'20
Vietnam	0.9	3.4	0.011	0.033	161.5%	277.21%
Philippines	2.9	4.6	0.034	0.042	55.7%	59.96%
Thailand	7.5	9.4	0.116	0.139	61.9%	25.46%
China	30.9	149.9	0.024	0.105	207.8%	385.27%
Indonesia	9.6	26.0	0.043	0.099	132.3%	170.89%
Malaysia	0.6	0.9	0.022	0.027	75.1%	52.16%
Singapore	0.6	0.7	0.141	0.150	19.9%	21.21%

Figure 3 shows the number of cars in Vietnam and the Philippines, two countries with a similar size of population. Though absolute numbers are lower for Vietnam, the figure shows an exponential growth of cars in Vietnam versus a more linear growth in the Philippines.

**Figure 3: Comparison of vehicle projection in Vietnam and Philippines**



<sup>6</sup> Based on UN Statistics Division: <http://unstats.un.org/unsd/default.htm>

## 1.2 Overview of Master Plan for Expressway Development (MPED)

The Ministry of Transport (MOT) has developed a master plan for expressway development supported by the Asian Development Bank.<sup>7</sup> The plan emphasizes development of the north-south corridor parallel to Highway 1, expressways radiating out from the major cities and ring roads linking them together further supporting growth in the main economic zones. A total of 4,700 km are planned at a total cost of about US\$27 billion (in 2006 prices). Tables 2a-c provides an overview of the expressway master plan and figure 4 shows the location of the planned network links.

The master plan for expressway development (MPED) prioritises the development of the expressway network based on economic and financial returns and on the capacity of the Vietnam Expressway Corporation (VEC) to undertake the development of this network. MPED includes short, medium and long term investment plans (see Table 2a-c) which also form the basis for ongoing investment planning by VEC, development partners and private investors.

The total length of projects in the short term program (2006-2015) is 1,518 km at a cost of US\$8.9 billion (143,127 billion VND); in the medium term program (2016-2025) is 912 km at a cost of US\$5.6 billion (89,042 billion VND), and in the long term program (2026 and beyond) is 2,294 km at a cost of US\$12.5 billion (200,691 billion VND).<sup>8</sup> While the MPED provides a basis for development, prioritization of investment still appears fluid.<sup>9</sup>

The master plan indicates that all projects in the short and medium term plans are economically viable and yield positive economic net present values at a discount rate of 12%. Projects in the longer term plan do not appear viable and will require further analysis in the future. The financial viability of the projects based on the government proposed tariffs varies. Based on the tariff multiplier, defined as the least multiple of the proposed tariff needed to yield a positive financial net present value (NPV), there were only six links for which the tariff multiplier was less or equal to 2.5.<sup>10</sup> Even those links will likely require some form of blended funding with a need for some level of government financial support.

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<sup>7</sup> Expressway Network Development Plan Project, No. TA 4695-VIE, Final Report –Volume 3 , April 2007. The TA provided a review of the government's original master plan and provided recommendations for prioritizing based on further traffic, financial and economic analyses.

<sup>8</sup> All prices are 2006 prices.

<sup>9</sup> For instance, the Chinese government is interested in supporting the link from Hanoi to the Chinese border at Lang Son which is not in the short term program.

<sup>10</sup> A tariff multiplier of 2.5 implies that the current tariff would need to be raised 2.5 times for the financial NPV to become positive. This is under the simple assumption that tariff levels will not be affected by the increase in toll rates.

**Table 2a: Short term (2006-2015) expressway network development program.**

Highway Number	Expressway Name	Length (Kms)	Number of Lanes	Investment Cost	
				US million	VND Billion
2A	Ninh Binh –Thanh Hoa	63	4	359.7	5,755
2B	Thanh Hoa - Vinh	170	4	970.7	15,531
5A	Dau Giay – Ninh Thuan	240	4	1,677.6	26,841
5B	Ninh Thuan – Na Trang	79	4	552.2	8,835
6	Da Nang – Quang Ngai	140	4	755.4	12,086
7A	Ho Chi Minh City – Long Thanh	25	4	184.3	2,949
7B	Long Thanh – Dau Giya	30	4	199.5	3,192
8	Trung Luong –Can Tho	95	4	544.1	8,706
13	Hanoi – Hai Phong	105	4	643.9	10,302
14B	Noi Bai – Lam Thao	65	4	380.9	6,094
16	Hanoi – Thai Nguyen	61	4	374.1	5,986
18	Lam Thao – Lao Cai	220		938.4	15,014
21B	Hai Phong – Quang Ninh	40	4	200.4	3,206
22	Bien Hoa – Ba Ria	58	4	318.6	5,097
23A	Ho Chi Minh City – Thu Dau Mot	25		164.3	2,629
23B	Thu Dau Mot – Chon Thanh	45	4	295.7	4,731
25	Ben Luc – Nhon Trach – Long Thanh	57	4	385.6	6,170

**Table 2b: Medium term (2016-2025) expressway network development program**

Highway Number	Expressway Name	Length (Kms)	Number of Lanes	Investment Cost	
				US million	US million
	Lang Son – Bac Giang-Bac Ninh	118	4	554.6	8,874
3	La Son –Da Nang	70	4	447.3	7,157
4	Quang Ngai – Nha Trang	332	4	2,048.4	32,774
12B	Tan Thanh – Rach Gia	125	4	671.9	10,750
14A	Noi Bai – Mai dich	23	4	419.9	6,718
19	Bac Ninh – Ha Long	110	4	654.4	10,470
21A	Ninh Binh – Hai Phong	82	4	410.9	6,574

26	Ho Chi Minh City – Moc Bai	52	4	357.7	5,723
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**Table 2c: Long term (2026 + ) expressway network development program**

Highway Number	Expressway Name	Length (Kms)	Number of Lanes	Investment Cost	
				US million	VND Billion
9A	Hoa Lac – Pho Cau	368	4	1,770.9	28,334
9B	Pho Cau – La Son	415	4	1,997.1	31,954
11B	Buon Me Thuot – Chon Thanh	234	4	1,089.5	17,432
12A	Chon Thanh – Tan Thanh	115	4	618.1	9,890
15	Noi Bai – Bac Ninh	22	4	125.1	2,002
20	Hoa Lac –Hoa Binh	25	4	121.9	1,950
24	Dau Giya –Da Lat	189	4	985.9	15,774
27	Da Nang – Ha Nha	50	4	303.2	4,851
30*	Pho Chau – Tay Son	33	4	170.8	2,733
31*	Dong Ha – Lao Bai	55	4	284.6	4,554
32*	Quy Nhon – Plei Ku	115	4	595.1	9,522
33*	Soc Trang – Chau Doc	160	4	883.2	14,131
34*	Bac Lieu – Ha Tien	195	4	1,076.4	17,222
35*	Can Tho – Cau Mau	185	4	1,021.2	16,339
36*	Tan An – Soc Trang	133	4	1,500.2	24,003

Since the inception of the master plan (prior to revisions and updated), development has been slow similar to most expressway programs in their early stages. Implementation has been hindered by a lack of capital and an over reliance on domestic SOEs forming joint ventures to finance and undertake the works. Under this practice referred to as the “domestic BOT” very little non-state capital is mobilized.



### 1.3 Objectives of the Study

While MOT has developed a master plan for expressway development that broadly lists priorities in three categories, many of the institutional and implementation questions regarding the program are yet to be answered. MOT has requested the Bank's support in this regard.

The objective of this paper is to synthesise the experience of other countries to provide guidance on key financing, regulatory and institutional issues for the organisation of the expressway sector in Vietnam. While this paper does explore various public and private financing options, its primary purpose is to advise MOT on setting up regulatory and institutional frameworks so that the appropriate decisions on how projects will be developed, financed, constructed, managed and regulated can be made.

There are a number of other World Bank initiatives addressing infrastructure finance more broadly. These include: (i) Vietnam Infrastructure Finance (World Bank Analytical and Advisory Assistance (AAA) to the Government of Vietnam (GOV) June 18, 2008), (ii) Private Public Partnership in the Road Sector (World Bank Analytical and Advisory Assistance (AAA) to the Government of Vietnam (GOV) June 18, 2008) and (iii) a forthcoming project to identify specific PPP transactions for WB finance. While it is inevitable that these initiatives will have some overlap, this paper, in developing an overall strategy for expressway development, aims to draw these elements together into a coherent whole.

The study is structured in six sections including the introduction. Section 2 briefly presents Vietnam's experience with project financing in the transport sector. Section 3 provides a synthesis of the different approaches and models for the development and implementation of expressway programs based on the experience of other countries. Short case studies of these countries are presented in Annex 1.

Section 4 addresses the financing framework for expressway development, operation and maintenance. It addresses the financial sustainability of the network, the phasing of the investment and the strategic utilization of the different sources of finance (public, private, multilateral, bilateral).

Section 5 deals with the broader institutional framework necessary for an expressway program. It analyses the different legal, regulatory and organisational structures dealing with: expressway ownership, responsibilities for development, management and regulation of expressways, and particularly the role of the Vietnam Expressway Corporation (VEC) that was established by the government in conjunction with the development of the expressway program. Operational efficiency, an important factor in selecting the appropriate institutional framework, is also addressed in this section. This will address issues such as standards, tolling, data collection, etc.

Based on the analysis presented in the earlier sections of the paper, Section 6 proposes a plan for moving forward with the development of the expressway network in Vietnam.

## 2 Project Finance Experience in Vietnam

### 2.1 Spectrum of Public Private Participation (PPP) Models

The choice of an appropriate institutional and financing framework for an infrastructure project depends on the desired level of private participation in the project. This in turns depends on a number of key factors including the efficiency and expertise to be gained from the private sector as well as the availability and relative cost of financing. The wide range of possible PPP models for infrastructure projects is presented in figure 5 and the responsibilities for the different phases under each of the models is shown in table 3.

Figure 5: Spectrum of PPP Modalities for Infrastructure Projects

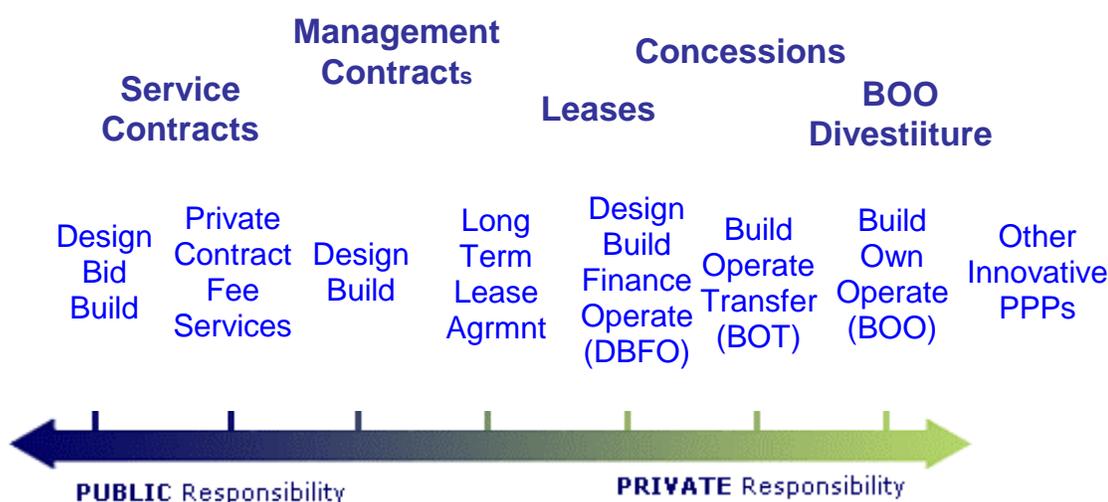


Table 3: Public and Private Responsibilities under the Different PPP Models

Modality	Own	Conceive	Design	Build	O&M	Finance
<b>Design-Bid-Build</b>	Public	Public	Private by Fee Contract		Public	Public
<b>Private Contract Fee Services</b>	Public	Public or Private	Private by Fee Contract		Public or Private by Fee Contract	Public
<b>Design-Build</b>	Public	Public	Private by Fee Contract		Public	Public
<b>Long-Term Lease</b>	Public	Public	Public or Private by Fee Contract		Private	Capital Public, Lease Private
<b>Design-Build-Operate-Maintain</b>	Public	Public	Private by Fee Contract			Public, Public/Private, or Private
<b>Design-Build-Finance-Operate</b>	Public	Public or Private	Private by Contract			
<b>Build-Own-Operate</b>	Private	Public or Private	Private by Ownership			
<b>Divestiture</b>	Private	Public	Public or Private		Private	

The role of the private sector can be as little as a fee-for-service contract (for the design/and or construction of the road, for example) or as much as a Build, Operate and

Transfer (BOT) contract (or one of its variations) where the private sector will build and operate the facility, either owning it or operating it on behalf of the government before transferring it back after a 20-40 year period.

## **2.2 Vietnam's Experience with PPP**

Prior to 1994 no PPP's were implemented in Vietnam. Between 1994 and 2006, private investment in infrastructure projects has been mainly focused on the Energy and Telecoms sectors (accounting for 92% of the total investment with PPP). The transport sector has comprised only 3% of the US\$4 billion invested in PPP's up to the end of 2006.<sup>11</sup> These were in seaports and airports.

A 2008 report, on Vietnam Road Sector PPP<sup>12</sup> collected information on 13 operational road sector BOT projects in Vietnam. In most cases the investor has been an SOE or a joint stock company with majority shareholding by SOEs. Public-Business-Partnership (PBP) has been used to refer to these schemes. A few of these BOTs do not involve government support, while others involve some form of government support such as an explicit capital grant (equal to 60% of the investment cost in the case of Rach Mieu Bridge) or indirect support such as land development rights or the right to collect tolls on an adjacent facility.

Only one expressway project was identified as operating as a PPP, the 31-Km Phap Van - Cau Gie expressway (between Hanoi and Ha Tay). In March 2007 Vietnam Expressway Corporation (VEC) auctioned the toll collection rights to South Cau Gie station on the Phap Van - Cau Gie Expressway. Only one company attended the auction, the Vung Tau-based Hai Chau Company, who bid 239.1 billion VND (US\$14.9 million) for the five year collection period. The bid was marginally higher (18 million VND or US\$1,100) than the reserve price set by Government. The contract was subsequently signed in June 2007.

The 2008 report states that the use of the PBP in the road sector has helped in the mobilization of additional capital resources for road infrastructure and has helped in speeding up the development of the infrastructure although some projects have experienced delays in starting. The report points to certain deficiencies in the approach particularly with respect to achieving value for money. The following are some of the main findings of the review:

### **2.2.1 Project appraisal and selection process**

The selection of PBP projects for implementation does not appear to be carried out in a clear way following a prioritised master plan. In particular the adverse economic and financial implications of developing competing facilities in the same corridor needs to be highlighted. There is a clear need for a more rigorous process of project identification and prioritisation to avoid duplication of investment and to provide assurances to investors that a competing facility will not be constructed that will adversely impact on toll revenue and reduces the economic and financial viability of the competing projects.

There is currently no established framework for government support to public private partnerships in the road sector in Vietnam. The level and/or type of support appear

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<sup>11</sup> World Bank PPI Database

<sup>12</sup> Public Private Partnership.....DHV

to be ad hoc. It is not clear how the cost of the government support is evaluated or how it is reflected in the budgetary process.

### **2.2.2 Transparency of bidding and negotiation process**

With the exception of the auctions of toll collection rights on National Highways there has been negligible competition for PBP projects. The current process applied is similar in nature to unsolicited bids, whereby a potential investor prepares a proposal to develop a specific project and submits the proposal to the Government. After a period of review by relevant ministries and agencies, and based on negotiation the investor is awarded the right to develop the project by a decision of the Prime Minister and the Authorized State Body to manage the project is named.

The investors for the PBP projects in Vietnam appear to be overwhelmingly SOE's. This is understandable as there are very few private companies with the financial strength to provide sufficient equity for road sector infrastructure. There is almost a complete absence of private foreign investors in most projects. With projects currently operational or in implementation the few private companies that have invested in PPP's have generally done so as minority shareholders in an SOE led Joint Stock Company. The status of VEC as both owner and investor of expressways is also an area of concern. VEC has a mandate to develop the Vietnam Expressway network and to manage toll collection, carry out business and services in order to repay loans and make profits. With this mandate VEC competes directly with the business sector for the right to develop projects, however with preferential borrowing terms, explicit or implicit government support, VEC has a distinct advantage over private business entities that are required to pay commercial rates for loan finance. The absence of private investors can be attributed in part to the costs and risks in preparing such projects, the uncertain aspects of government support and the more favourable position of SOEs.

### **2.2.3 Time over-runs and cost escalation**

Time over-runs appear to be very common for major PBP projects in Vietnam. The main reasons are the delays in land acquisition; delays by investors in mobilizing capital; and protracted administrative procedures required for negotiation and award of contracts. These issues in turn lead to large cost escalations. The contract structure used provides no incentive for the investor to correctly estimate costs prior to commencing construction, or to minimise construction costs during implementation. Many of the projects reviewed also had increases in the amount of government contribution to (partially) offset increases in construction cost. The massive increase in cost has been attributed in part to the under estimation of the cost of land during the project feasibility stage. The process used to estimate construction and land acquisition costs needs review to ensure that estimates at feasibility study and preliminary design more accurately reflect actual costs.

### **2.2.4 Public acceptability of tolls**

In general the projects that have involved direct user charging through tolls have been accepted by the motoring public. However the current toll levels are relatively low by international standards but affordability is an issue (see Section 5.2.6). The road user reaction to higher tariffs, in return for reduced travel time and improved safety roads, is uncertain. The interprovincial road 15 project in Ho Chi Minh City is

one example of a failed project as a result of public opposition to toll fees and congestion at toll booths in an urban area.

### **2.2.5 Government Management of PPP's**

The review identified the multitude of Government agencies at National and Provincial level that are currently implementing road sector projects through "BOT" type contracts. There is however a shortage of government officials with the training and experience required to ensure that such projects are planned and implemented effectively. While many projects have been implemented through SOE's with both parties acting in the public interest, as more private sector investors become involved the level of complexity of the contracts and associated negotiations are likely to exceed the capabilities of the authorized state bodies mandated to manage the contracts.

On current PBP projects there has been no explicit identification and allocation of project risks. This has tended to result in the government's bearing most project risks. The current contract structure and risk allocation mobilizes additional capital for the road network but it does not provide incentives for private sector efficiencies nor ensure greater value for money than conventional procurement process.

### 3 International Experience

#### 3.1 Synthesis of International Experience

In trying to determine the best approach for expressway development in Vietnam it is useful to examine how other countries have addressed the institutional and financial aspects of their program. This section summarizes some of the key findings from a review of seven countries i.e. China, India, Malaysia, Thailand, Indonesia, South Africa and Japan.

The development of toll roads has typically followed an evolutionary process, initiated by the decision to embark on an expressway program and then followed by a number of developments to make that decision realistic. One of the critical components of that development is to establish the appropriate institutions to ensure competent development, financing, operation and monitoring of the expressway program. Each country has developed its own institutional structure to assist in delivering road transport services. Each country has a different approach to the use of public and private sectors to finance and implement their expressway systems. However, in reviewing the different systems it is clear that there are a number of factors that are fairly consistent between countries and can form the basis for the Vietnam program.

It is worth noting that expressway development is a long term process. Almost all developed countries took 20 to 30 years to complete their expressway network in three different stages: slow start phase, large-scale construction phase, and steady development and optimization phase. For example, it took the United States about eight years to set out its expressway development starting from the mid-40's with less than 1000km per year, and 22 years fast development between 1956-1978 with 3000km per year, and it spent the following 20 years to optimize the network with less than 300km new construction each year. Large developing countries such as China appear to follow the same steps. It took China approximately eight years to test the water and sort out how to best develop its expressway network, and then it enjoyed more than 10 years of rapid development. Hence expressway network development in Vietnam is envisaged to be a long-term effort with phased construction.

The experiences of eight countries are discussed and their history of development, sources of finance and approach to implementation are detailed in Annex 1. The main findings of relevance to Vietnam are set out in the rest of this section. Table 4 below provides a framework for analysis of the various organizational models. For each country it sets out the main roles and responsibilities for a series of functions. These include: (i) the policy, legislation and regulation for the sector; (ii) the planning and prioritization of the network; (iii) funding and regulatory oversight; and finally (v) the arrangements for the design, implementation, operations and maintenance of the system.

Table 4: Comparison of Organisational Structure for Toll Roads in Selected Countries

Roles and Responsibilities	Indonesia	China	India	Malaysia	Thailand	South Africa	Korea	Australia (States)
<b>Policy Development</b>	Ministry of Public Works	MOT	MOST	Ministry of Transport	Ministry of Transport	Ministry of Transport	Bureau of Public Roads MOCT	MOT Federal, and DOT (State)
<b>Develop Legislation</b>	Ministry of Public Works	MOT	MOST	Ministry of Transport	Ministry of Transport	Ministry of Transport	Bureau of Public Roads MOCT	MOT Federal, and DOT (State)
<b>Develop Regulations</b>	Ministry of Public Works	Mot	MOST	Ministry of Transport	Ministry of Transport	Ministry of Transport	Bureau of Public Roads MOCT	MOT Federal, and DOT (State)
<b>Planning</b>								
<b>Prioritizing</b>	Ministry of Public Works	MOT - Provincial Communicaitons Department (PCD)	MOST/NHAI	Malaysian Highway Authority	NESDB	National Roads Agency	MOCT, KEC	Road Administration (State)
	Ministry of Public Works	PCD	MOST/NHAI	Malaysian Highway Authority	NESDB, MOT	National Roads Agency	MOCT, KEC	Road Administration (State)
<b>Examine Funding Options</b>	Ministry of Public Works, BAPPENAS, M of F.	MOT, NDRC and PCD	MOF, NHAI	Malaysian Highway Authority	DOH, NESDB, Cabinet	National Roads Agency	MOF, KEC	Federal Subsidy, State MOF, Road Administrations
<b>Fund Public Expenditure</b>	Ministry of Public Works based on allocation from M of Finance	MOC, NDRC, PCD and Local Gov't	Parliament through MOF, NHAI	Malaysian Highway Authority	DOH, NESDB, Cabinet	Ministry of Transport	MOF, KEC	Federal Subsidy, State MOF, Road Administrations
<b>Monitor Performance</b>								
<b>Adjudicate</b>	Toll Road Regulatory Body	Province Expressway Bureau	NHAI	Malaysian Highway Authority	DOH, Expressway and Rapid Transit Authority	National Roads Agency	KEC	Road Administrations
	Toll Road Regulatory Body	Province Expressway Bureau	NHAI	Malaysian Highway Authority	DOH, Expressway and Rapid Transit Authority	National Roads Agency	KEC	Road Administrations
<b>Design</b>	DGH, Jasa Marga, private concessionaires	Provincial Expressway Corporations, Concessionaires	Private contractors / Concessionaires	Malaysian Highway Authority and Private Concessionaires	DOH, Expressway and Rapid Transit Authority, Concessionaires	National Roads Agency, Private Concessionaires	KEC, Private concessionaires	Road Administration contractors and Concessionaires
<b>Develop Infrastructure</b>	DGH, Jasa Marga, private concessionaires	Provincial Expressway Corporations, Concessionaires	Private contractors / Concessionaires	Malaysian Highway Authority and Private Concessionaires	DOH, Expressway and Rapid Transit Authority, Concessionaires	National Roads Agency, Private Concessionaires	KEC, Private concessionaires	Road Administration and Concessionaires
<b>Finance Investment</b>	DGH, Jasa Marga, private concessionaires	Provincial Expressway Corporations, Concessionaires	NHAI/Concessionaires	Malaysian Highway Authority and Private Concessionaires	DOH, Expressway and Rapid Transit Authority, Concessionaires	National Roads Agency, Private Concessionaires	KEC, Private concessionaires	Road Administration and Concessionaires
<b>Operate and Manage</b>	DGH, Jasa Marga, private concessionaires	Provincial Expressway Corporations, Concessionaires	NHAI/Concessionaires	Private Concessionaires	DOH, Expressway and Rapid Transit Authority, Concessionaires	National Roads Agency, Private Concessionaires	KEC, Private concessionaires	Road Administration and Concessionaires

MPW – Ministry of Public Works,  
MOC – Ministry of Communications,  
JM – Jasa Marga,  
MHA – Malaysian Highway Authority,  
PEB - Provincial Expressway Bureau,  
DOH – Department of Highways,  
NRA – National Roads Agency

MOT – Ministry of Transport  
MOF – Ministry of Finance  
NHAI – National Highway Authority of India  
PCD – Provincial Communication Department  
PEC – Provincial Expressway Corporation  
ERTA – Expressway and Rapid Transit Authority

MOCT – Ministry of Construction and Transport  
KEC – Korean Expressway Corporation



### 3.1.1 Policy, Legislation and Regulation

This is a government function. All countries develop **policy, legislation and regulation** at the ministerial level. However, it is also clear that the policy of setting up an expressway network normally comes first followed by the legislation and the enabling regulations. As new institutions develop related to the development, operation and management of the expressways, then regulations are usually needed to define the roles of those organisation and their powers under the law. Providing a regulatory framework is the best way to clarify how the institutions should work together.

From the viewpoint of expressway development, because most countries combine both public and private investment, some form of **regulation is needed to ensure that the public interest is ensured** and that the organizations responsible for developing and delivering infrastructure and service are treated fairly and equitably and that all transactions are carried out at arms length and with full transparency.

### 3.1.2 Planning and Priority Setting

This is also a government function. The responsibility for **planning and prioritization** may be done by a Ministerial Department but it may also be allocated to a formal **specialized organization** charged with the development of the national expressway network such as NHA in India, MHA in Malaysia and NRA in South Africa or the KEC in Korea. In China, while the central government through the MOC/MOT provides for overall strategic planning of major linkages, the provinces remain responsible for prioritising within their provinces and for developing the detailed physical and operational plans.

In China, while the overall km targets for the NTHS have already been reached, there still remain a number of missing links in the strategic system because strategic connectivity was not necessarily the highest priority for the provinces. On the positive side, where a strong planning and financing role has been given to the provinces, there is a much stronger link of ownership to the expressways and an ongoing commitment to upgrading, efficient operation and management. In Australia, national policy is set by the Federal Government but State policy and legislation is set by each state.

### 3.1.3 Examine Funding Options and Provide Public Funding

This is also a government function. **Delivery of expressway infrastructure involves the public sector to some degree in all cases.** In no case has it been possible to completely develop the network without public support. This may be equity support as in the case of the People's Republic of China or capital support as in the case of South Africa and Malaysia. But private finance cannot do the job by itself. This is a critical issue for the government. The government must decide whether the project first is economically viable and second if it is financially viable as a cost recoverable investment. In cases where the project is economically viable but not financially viable, the government may choose to partly finance the project through a number of mechanisms.

Funding is normally the prerogative of the Ministry of Finance. In most countries the role is shared with the line departments since funding allocation can be done at the national budget level or it can be deal with as specific requirements for support at a project level. This also takes into account issues such as land acquisition and contingent liabilities that may have longer term budget impact but are not necessarily apparent at the point of project approval. In some countries like India with NHA and Korea with KEC, those

statutory organizations have independent sources of finance through bond issues or dedicated fuel tax and the Ministry of Finance only offers oversight control on that spending. In the successful cases, the public sector was able to leverage its equity investment with about double that investment in debt.

**This relied on a stable commitment of public funds allocated to the expressway program.**

#### **3.1.4 Monitor Performance and Adjudicate Delivery**

This is also a government function. In all cases the responsibility for defining standards, assessing adherence to regulations and monitoring performance of operators and concessionaires remains with the road/highway/expressway administration or authority. In Indonesia, this role is split between the Directorate General Highways, for technical, safety, operational and environmental regulations and BPJT for commercial regulations. Monitoring of performance of companies who are developing or operating high capacity roads in Indonesia is also split between the DGH and BPJT along the above lines. The BPJT is also responsible for monitoring contracting, the process of contracting out and contract adherence.

#### **3.1.5 Delivery of Infrastructure Assets**

This may be a shared function. Several models for project delivery have been used but one common approach is to establish a **purpose-driven corporation** to develop the expressways with funding from a variety of sources as needed. This provides for clear ownership of the project and institutional clarity in terms of the size and delivery of government support to the project. But the actual delivery of the project in all the above examples has involved some level of State Owned Enterprise (SOE) and also some involvement from the private sector.

The steps followed are normally sequential. The government through a SOE takes the lead in financing and building part of the network. Once it has been shown that the network is viable and traffic has started to become heavy enough to attract private investment, then the government moves to some form of PPP that combines private and public investment. Once the predictability of traffic on the high volume roads is more stable, then the private sector becomes more the lead and the government the support agency.

Different models exist for this including the NHAI in India, the KEC in Korea, the various expressway corporations and holding companies in China, and PLUS Bhd in Malaysia. But in most cases this level of delivery is carried out through some form of corporatized structure including SOEs and private companies.

## 4 The Financing Framework

### 4.1 Financing Requirements and Constraints on Finance

All countries including the two largest, the US and China, have used public finance at least in part to develop their expressway networks. The US financed 90% of their program through the federal government. China has financed only 15% through the national government but 40% has been financed by provincial loans (i.e. through State Owned Commercial Banks) and some of the balance has come from diverting revenues from the road maintenance fee to construction and through tolls on other roads<sup>13</sup>. As noted in Section 3, only 5-8% in the case of China has been financed by the private sector and IFI's have contributed about 1.3%.

The current program of expressway expenditure in Vietnam estimates an annual requirement until 2015 of about Dong 15 trillion (US\$0.9 billion) which is about 1.5% of GDP<sup>14</sup> which compares to 1.16% of GDP for the China trunk roads program and between 1.3% in 1960 and 3.3% in the 1980's for the US freeway program. This rate seems to be at an appropriate range that is unlikely to crowd out other important expenditure priorities and would still allow for reasonable investment in the maintenance of the of the road network and for the development of the non-expressway network. As The more pressing issue is whether Vietnam can actually implement that level of road investment with the existing institutions and companies.

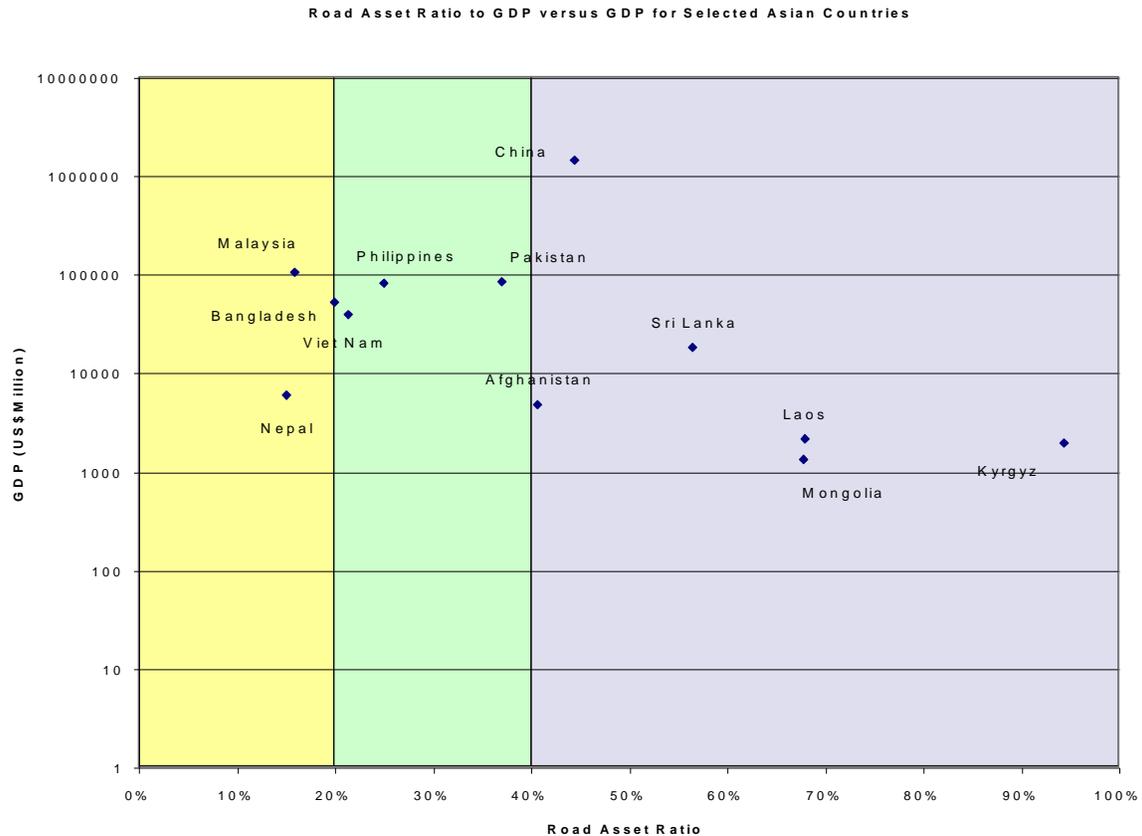
The cost of building infrastructure is just the first step in the long term management of that asset. In all countries the value of the road system is normally the largest asset owned by the country and Vietnam is no exception to this rule. . Figure 9 illustrates one measure of a country's ability to sustainably finance the construction and maintenance of a network and shows an asset indicator of "*existing asset value to GDP*" for a selection of countries in the region. If the asset value to GDP ratio is too low, Vietnam would be under investing in transport infrastructure negatively impacting mobility, access, connectivity and economic development. If the asset to GDP ratio is too high, the economy will be unable to support the ongoing upkeep of all the roads without forgoing other priorities and the road assets will begin to deteriorate. The middle range, that is an asset value of between 20 and 40% of GDP is a sustainable range and allows the economy to grow while also providing enough economic strength to both expand the roads at about the rate of growth in the economy as well as to maintain those roads already in existence.

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<sup>13</sup> A recent review of Heilongjiang Province in China showed that approximately 20% of the maintenance fee collected was being spent on maintenance with the remaining 80% allocated to new capital works. It is likely that similar situations exist in the other provinces in China.

<sup>14</sup> Estimated 2010 GDP based on annual growth rate from 2005 at 8% per annum. Expenditure of US\$30 billion over 10 years.

Figure 12: Road Assets to GDP Ratio Compared to GDP (2003)



Source: World Development Indicators 2005

In terms of the macro economic context the following is an extract from the joint World Bank/IMF debt sustainability report for 2007:

*Vietnam remains at low risk of external debt distress over the medium term, provided that external borrowing will continue to be guided by the prudence that has characterized government policies over the last few years. However, the inclusion of domestic debt in the analysis paints a somewhat more nuanced picture, as prolonged maintenance of an expansionary fiscal policy or a permanently lower GDP growth rate could pose risks to long run fiscal sustainability. These considerations reinforce the need for the adoption of a more restrained fiscal stance over the medium term, along with accelerated reform and equitization of SOEs.*

From an external debt perspective it appears as though Vietnam can realistically take on the additional financing for this type of large scale infrastructure. However, from a domestic stand point there are greater risks. The SOEs in the transport sector have suffered from a high debt burden in the past which must have had a negative impact on the financing institutions. Any expressway development plan which relies too heavily on these SOEs without the accelerated reform and equitization mentioned above could pose risks to the overall financial sustainability.

The recent instability in the financial markets and high inflation in the country have highlighted the risks of high debt exposure. In this environment it is even more important to prioritise the most economically and financially viable links and to prepare good feasibility studies to fully understand the risks. However, economists seem to agree that although the recent market instability is going to reduce the short term growth prospects, the medium and long term outlooks for Vietnam look good with prudent public investment and continued SOE reform.

As already discussed, if the asset value of a country's roads falls within the sustainable range, it will need to expand at approximately the same rate as the growth in the economy. Then if the economy is expanding at a rate of 7 to 8%, the road assets should also expand at that rate. Further, in order to keep those assets maintained, approximately 2 to 2.5% of that asset base needs to be allocated to maintenance funding. In this regard a positive step was the recent agreement by the Prime Minister of Vietnam that a road fund would be established based on fuel tax. This is important since it moves Vietnam into the same category of funding as are India and China. That is Vietnam will have a dedicated and longer term source of funding for both capital works and maintenance that will grow along with the network expansion and the resulting increase in vehicle usage. While details of this agreement will still need to be worked out, the longer term implications are positive. Vietnam will be able to lever the capital base afforded by the road fund to raise debt both internally and externally and thereby broaden its investment options.

MOT is confident that suitable funding to develop the expressway network will be available both from domestic funds, from international borrowing and private investment. The different sources of financing would have different impacts in terms of longer term commitments by the Government, the need for separation of economic return from financial return and the need for resolution of the uncertainties of land acquisition cost, resettlement cost and environmental mitigation cost, have yet to be considered by the MOT and VEC. Longer term issues such as the sustainability of the network under limited traffic, the role of the private sector in providing finance, the management of the longer term debt burden and the need for significant increases in maintenance funding for the current network<sup>15</sup> need to be carefully considered. At the moment, the focus is on capital works without much consideration of the longer term implications of that development on network sustainability.

Land acquisition cost may be a major looming problem. It tends to be the dominant issue controlling development of expressways in many countries. The current legal structure for expressway development in Vietnam calls for land cost to be carried by the developer/concessionaire. The current plans note that land cost is not excessive and in conversation with the MOT, there was no appreciation that acquiring land may become the dominant constraint limiting the pace and extent of the construction of the national expressway network. The estimated time for acquisition of agricultural land is 1 to 1.5 years with in some cases up to 6 years to acquire residential land<sup>16</sup>.

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<sup>15</sup> World Bank Sector Review, Executive Summary argues that the current maintenance funding is about 50% of current need and that without a significant increase in the level of funding, the quality of the existing network will decline rapidly.

<sup>16</sup> Expressway Network Development Plan Project, No. TA 4695-VIE Final Report – Volume 3, pg. 46

A related land issue in Vietnam is the rapid rate of conversion of land from agricultural usage to industrial and urban usage estimated to be about 8% per annum in 2007. Expressway development consumes about 40 ha per km plus the land converted for generated development in its vicinity. This is also a significant concern in China where the Ministry of Communications has commissioned 30 pilot expressway project designs with the objective of maximising land saving and minimising land acquisition.

## 4.2 Sources of Finance and Life Cycle Cost

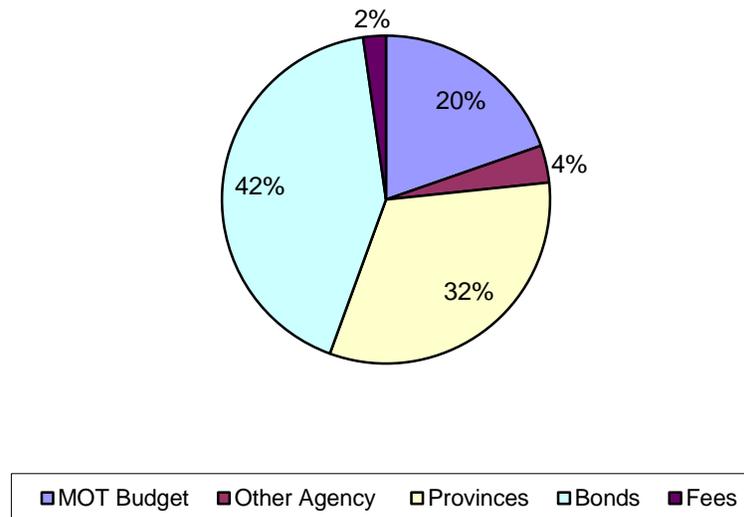
### 4.2.1 Domestic Sources

#### Bonds

In 2006, capital funding for transport raised from various sources is shown in the following figure 13.

**Figure 13: Breakdown of Expenditure By Source of Budget**

**2006 Capital Budget Transport**  
(32,078 Billion Dong)



Government bonds, which are considered off budget are the largest single source of funding. The second largest source of funds for transport is from the provinces. However, all government funding, from MOT, other agencies and from provinces is really an allocation of general revenue from the Ministry of Finance (MOF). The MOF is reluctant to earmark any of its current revenue to the transport capital works program other than a commitment to consider all needs as part of the normal budget planning cycle.

The bond financing, which represents over 40% of the total, pays between 6.5 and 7% to the bond holders. However, with an inflation rate of over 7%, these bonds are only sold to major institutional investors and cannot tap into broader individual (retail) investors.

Another developing market for bond financing is municipal. Both HCMC and Hanoi are now issuing limited bonds backed by the Municipality. These are again, likely limited to banks and other institutional investors, but in other countries this type of bond is attractive to individual investors and it may become a significant source of investment capital. The same can be said of provincial bonds which may be used to cover the cost of provincial contributions to development capital although this market will need more time to develop.

From a financing point of view, the government bond market is the cheapest source of domestic capital. At 6.5% the 25 year cost of debt is almost exactly the same as the size of the capital loan, that is, at 6.5% the cost of the borrowing is exactly double the size of the loan. However, bonds cannot be sustained at rates lower than inflation.

#### **4.2.2 Private Debt/Equity**

Commercial debt is running at about 4% higher than government debt. Commercial banks are paying interest on deposits of approximately 8% and loaning money at around 10%. In some countries, private equity is a viable source of investment. China for instance, has been able to use securitisation as one means of financing some of its toll roads. Currently about 20 toll road companies are listed on the stock exchange in China but their performance over the past few years has not been very impressive and as a result this form of financing has not become very popular.

Individual companies have also invested in Chinese toll roads on a BOT or lease basis. The return on private equity is normally expected to be about 18 to 20% per year in nominal local currency, depending on the risk assumed by the private investor. In Vietnam, where there is no track record of successful toll road operation and history of traffic growth, the risk is high and private investors would need at least the above level of return in investment.

More recently in China, commercial, revenue backed bonds have started to be used by some provinces. These rely on bundling together a number of mature or maturing toll roads that are generating free cash flow which can then be used as security for the bond issue. This approach is being used in some Chinese provinces, and financing is typically limited to about 50% of the revenue stream.

In Vietnam it is not likely that either securitisation or commercial bonds will be a viable source of funding for toll roads in the next 10 years. Normally both sources of funding require some track record of performance, and until some toll roads in Vietnam have been in service for about 5 to 10 years and have a sound financial performance profile, it is unlikely that private equity will be interested in the sector.

The yield on Vietnamese corporate bonds due at the end of 2007 was approximately 14% on a typical 5 to 8 year bond.<sup>17</sup> The analysis assumes that this bond financing can be rolled over at the maturity date and it further assumes that the debt will be paid off over the 30-year life cycle. There is a risk that the bond financing cannot be refinanced at the maturity date, but it is not a large risk since the financial viability of a toll road company is usually stronger over time as revenue improves with traffic growth. The other risk is that

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<sup>17</sup> See < <http://www.bes.co.id/market/ccoupon.asp> >

the interest rate will increase in the future depending on the impact of inflation in the general economy.

### **4.2.3 IFI Sources**

At the moment, IFI funding for Vietnam is under IDA and is concessional. The limitation in this case is the size of the IDA envelope available to Vietnam and the absorptive capacity of the sectors of the Vietnamese economy.

In December 2007, the WB announced that Vietnam had reached a level of growth and creditworthiness that qualified for International Bank for Reconstruction and Development (IBRD) financing, and the government has expressed a desire to move towards a blend of International Development Assistance (IDA) and IBRD finance. This approach will pave the way for the use of IBRD funds to finance large infrastructure projects including the expressway program.

While no non-concessionary IFI loans have yet been established in Vietnam, it is likely that all money from the IFIs allocated to expressway development will be on commercial non concessional or blended terms. The likely interest rate for those loans will be in the range of 2-3% although these are variable rates and relatively low at present. While borrowing from IFIs remains attractive particularly in cases where other sources of funding are limited, borrowing typically carries a number of conditions which middle income countries may consider to impose additional costs.

### **4.2.4 Bilateral Loans**

Bilateral sources of finance are very mixed. Bilateral funds may be in the form of loans or grants. Both loans and grants may be tied or untied depending on the country. Untied funds administratively are close to IFI funds and in interest rate terms maybe concessional or commercial. Normally, fully commercial bilateral sources are not very attractive and while many countries maintain large pools of commercial export support funding, the takeup of such funds is relatively minor.

#### **Tied or Partially Tied**

In this area the most active sources of bilateral funding are Japan, Korea and more recently China. Of these the Japanese funds available through either JBIC or JICA. The interest rate on these funds is approximately 1.4% with 10 years grace and 40 years amortization. One concern is that even in the case of untied bilateral funding, the actual cost of the project may be higher because of the unofficial bias toward suppliers from the country providing the finance. Based on the differential of 2.5% between untied IFI funding and untied or partially tied bilateral funding, the increment of increased project cost that remains viable without increasing the effective cost of the bilateral funds above the IFI rate is about 25%. If the bilateral premium on cost is less than 25% the bilateral concessional finance is less expensive than the IFI funding. If the premium is greater than 25% and the interest rate differential remains at 2.5%, then the bilateral funds are about the same cost as IFI funds. However, in both cases, the funding is significantly less expensive than equivalent domestic borrowing. The appreciation of the foreign currency is a potential risk that needs to be considered.

## **Fully Untied**

Untied bilateral funding is administratively similar to IFI funding. In many cases it will be concessional and is usually less expensive than equivalent IFI funds. Even if it is similar in cost to IFI funds, the administrative burden may be less and for that reason, it may be an attractive source. Typically, untied bilateral funding is often bundled with IFI funds into a combined loan and grant package that allows for a combination of technical assistance under grant finance provided by the bilateral donor and longer term loans from the IFI. Currently both the WB and ADB are considering parallel financing opportunities with JBIC.

## **Available Bilateral Finance**

The People's Republic of China is offering bilateral loans at 1% with an 8-year term of repayment. The Japan Bank for International Cooperation is providing attractive financing at 1.3-1.5% with 10 years grace and 40 years to repay. JBIC finance is now mostly untied and procurement can be carried out under normal domestic and international competitive bidding procedures. Chinese debt is still tied to use of Chinese contractors and Chinese made equipment.

Such bilateral loans do however carry a very high risk of currency fluctuation. Inflation in Japan is usually very low. Over the life of the loan, the difference to the inflation rate in Vietnam may change the relative value of the currencies. This is the principal risk of borrowing in international currencies. If the exchange rate is simply a reflection of the differential in rates of currency inflation and if the receipts of the borrower are adjusted for the effect of inflation, then the exchange rate is not much of a problem. The difficulty comes when, as in the 1997/8 Asian crisis, the revenue generated by the government debt was not enough to cover the carrying cost of the debt, because users were not able to absorb the impact of the currency fluctuations. So borrowing in foreign currency is always a risk but less so if the revenue stream can be adjusted for the effect of inflation. Unfortunately, this is not always the case. Another important risk is that of foreign currency real appreciation. The large difference between the interest rates of Yen and VND denominated debt (about 4-5%) is an indication of the potential appreciation of the Yen against VND.

### **4.2.5 Private Public Partnerships or BOT Funding**

Private Public Partnerships in a financial sense are simply a combination of public finance – either from tax revenue or from public bonds or fee revenue combined with private equity and debt. The expectation of return on private equity is approximately 18 to 20% per year on average and as noted above, the cost of private debt is in the range of 10 to 12%. Public debt at the moment is 6.5 to 7%. So viewed from the economy as a whole, private financed projects are more expensive to fund than government financed projects.

The justification for private finance boils down to essentially two reasons.

First, it can be argued in some cases that the process of project development, construction and operation by the private sector is significantly more efficient than the equivalent development by the government. Estimates in the UK put this “efficiency” margin at approximately 15%. Research in Australia comparing contract maintenance

and force account maintenance showed a significant drop in cost under private contracting, but also, once private contracts were initiated, a significant improvement in the comparable force account work in the same area. That is, the insertion of private “competition” also improved the efficiency of “force account” works. The UK requires that a public – private value for money comparison take place before projects are considered suitable for private finance. Only those cases that can show that because of improved efficiency that they are less costly are approved.

Second, private investment, either directly as in a BOT project or through public-private partnership may simply expand the size of budget available for infrastructure investment. Where public funding is fully committed, private fund raising capacity can significantly expand the size of the infrastructure development portfolio. But a note of caution should be raised here. Most projects in the developing world are not financially viable on their own and require a significant injection of government seed money to make them viable. This diminishes the benefit of budget support offered by the private sector but it does not totally diminish that support. In China for instance, over the first 15 years of the development of its very extensive expressway network the level of “private investment” including joint venture investment is approximately 5 to 7%.

Justification of government support to these projects lies in the potential regional development benefits that go beyond financial revenues potential employment benefits and affordability. Open competition from the private sector for minimum capital support sets the break even point for government investment.

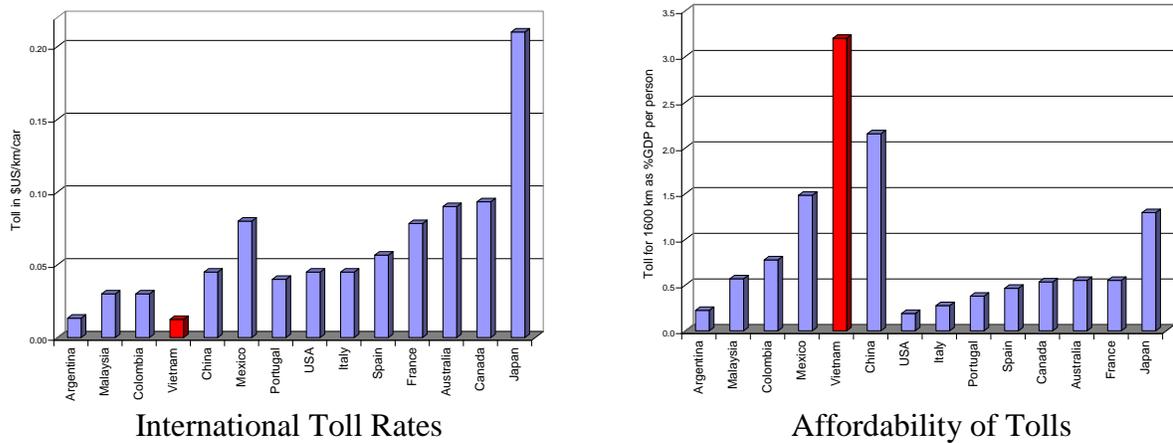
#### **4.2.6 Tolls Revenue**

Key to the sustainability of the expressway network will be traffic levels and ability to raise revenue from these facilities, principally through toll collection. Toll revenues should cover operations and maintenance expenses but also partially (and in a few instances fully) service any outstanding debt repayments.

Figure 14 shows how Vietnamese toll rates compare with other countries both in terms of charges and affordability of those tolls given Vietnam’s current income levels. It shows that while current toll rates are low compared to international standards, the affordability of those tolls is also very low. Current toll rates are about \$0.0125/km for cars and \$0.1/km for trucks. China for example, which has relatively high rates compared with other developing countries, has a toll rate of \$0.045/km for cars and between \$0.12/km and \$0.21/km for trucks.

India also has low toll rates in the range of \$US 0.02 per pcu km (2008) but the very rapid growth rate in traffic generated by the high growth in car ownership and the heavy truck volumes results in a revenue stream for the concessionaires that exceeds in many cases the original estimates. However, this high growth rate in traffic is unlikely in Vietnam for many years both because of the lower density of population and the very high motorcycle ownership.

**Figure 14: International Comparison of Highway Tolls at Nominal and Purchasing Power Parity Levels**

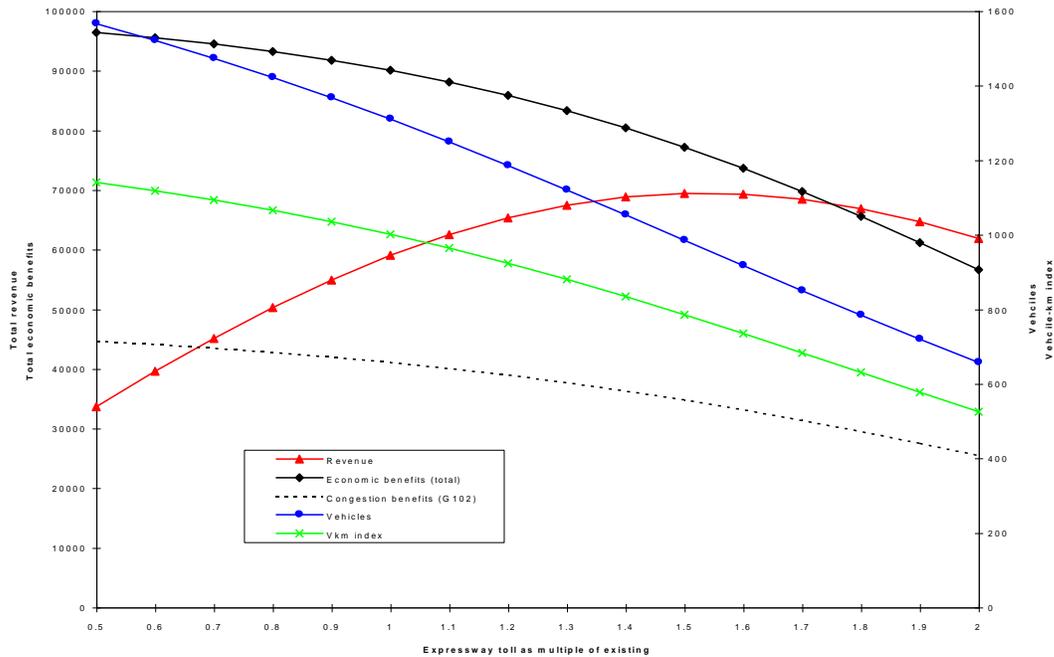


An analysis of Vietnamese toll rates for the ADB study have suggested that current truck toll rates are close to their optimum levels but that car and bus rates should be increased. The setting of toll rates will be very critical where affordability is so low because of the tendency for road users to keep using the free network despite longer travel times and higher vehicle operating costs. This is a major problem in China where truck traffic is diverting onto the secondary road network, leading to rapid deterioration of that network and lost revenues from the expressways.

But measuring affordability for developing countries is often difficult particularly when the level of car ownership is so low. At this stage of Vietnam's economic development car owners are typically in the highest income brackets so tolls set at \$0.05 to 0.08/km may not be unsupportable.

Since user fees will be one of the major sources of revenue for sustainable development of the expressways, whether by the government directly or through PPP projects, it will be important to study the toll setting carefully to ensure that the tolls are set at the desirable rate that balances socioeconomic considerations with financial returns. A tolling study carried out in China in 2000 figure 15 showed that at that revenue maximising rate, the traffic carried was approximately 70% of the non tolled traffic. This is clearly a loss of economic benefits and reflects the trade off between financing road development through tolling versus financing through direct government investment with users paying through a fuel tax or through national taxation.

**Figure 15: Comparison of Maximum Revenue Toll and Traffic Levels**



There is also a danger that operational efficiency will be compromised by lack of standards. Efficient use of the network will be enhanced if toll collection systems are compatible, if standards for vehicle loading are both established and enforced through mandated weigh scales, if information transfer such as emergency notification along the network uses a common protocol and if common data collection and reporting standards are mandated for all operators. These standards together with other performance criteria will need to be defined and built into bidding documents for each contract. Overloading in particular, if not properly controlled, raises the risk, and the subsequent financial return required by the operator.

### 4.3 Comparison of Sources of Funding

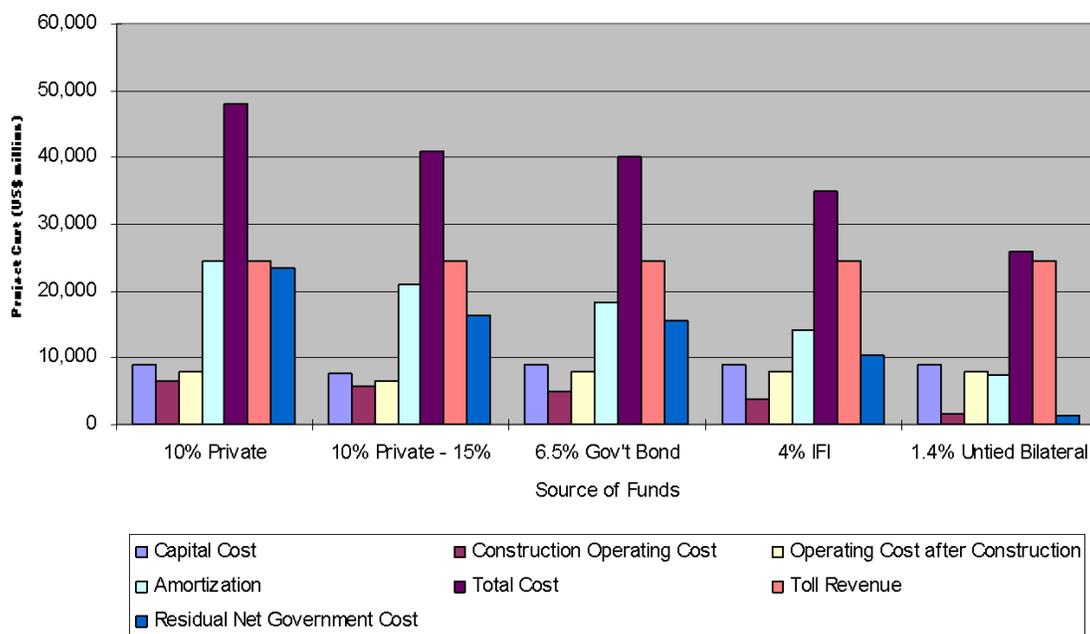
The above discussion has outlined the types of funding available for development of the expressway network and the approximate comparative cost of those sources of funding. The creation of a sustainable financial plan will need a careful consideration of those potential sources and an analysis of the financial/debt capacity of the Vietnamese economy to support that network.

It is likely that some blending of sources of funds will offer the best advantage to the Government of Vietnam. Irrespective of the scenario of finance chosen, the people of Vietnam will end up paying for the investment, either through direct user charges or through the taxation and fee system operated by the government.

Figure 16 shows the impact of sources of funding at varying interest rate on the overall life cycle cost of the project. The data in the comparison are taken from the planned

Vietnamese expressway network and estimated traffic as outlined in the Expressway Network Development Plan<sup>18</sup>.

**Figure 16: Comparison of Project Cost by Source of Funds**



The comparison considers the financial cost of the investment in the 18 roads included in the ENVP investment priority list over a 30-year life. The chart shows the relative difference in that life cycle cost based on the source of funds ranging from the private sector borrowing to the concessional loans provided by the large bilateral donors. Because of the normal assumed efficiency premium accorded to the private sector of about 15%, the second set of bars is the 10% private options less 15% of the capital and operating cost. This results in a slightly more costly option than the 6.5% government bond option and this is similar to the value for money analysis often recommended prior to the decision to use private investment or entertain a PPP option<sup>19</sup>.

The key point to be taken from the comparison is that the cost of money is one of the important decisions to be made in structuring the project. The Government has many

<sup>18</sup> Expressway Network Development Plan Project No. TA 4695-VIE, Asian Development Bank Final Report, Volume 1, Hanoi

<sup>19</sup> The above comparison is based on the same capital and operation and maintenance cost for all four options and does not take into account the following differences between public and private projects that are difficult to quantify:

- (i) Public projects generally experience higher cost overruns and longer delays than private projects. This may lead to a difference of approximately 15% in developed countries and significantly more in developing countries;
- (ii) In private projects, such overruns and delays are borne by the project sponsors rather than users;
- (iii) Public projects are often oversized and sometimes premature;
- (iv) Because of superior managerial and technical expertise, there are usually operation and maintenance cost savings in private projects; and
- (v) Maintenance of public projects may be neglected, causing higher costs to users than anticipated, while for private projects, proper maintenance is ensured through the concession agreement.

options to secure funding and the cost of those options varies widely. As noted above, each option also carries a different level of risk that also needs to be carefully assessed. Sometimes it is better to have that risk borne by the Government and sometimes it is better to have the risk assumed by the private sector. But the selection of the source of finance is a significant decision that will have a strong impact on the financial viability of the project<sup>20</sup>.

While the Government has many options to secure funding and the cost of those options varies widely, the interest rate is but one of the important decisions to be made in structuring the project. Each option also carries a different level of risk that also needs to be carefully assessed and could involve a different level of construction and operational efficiency.

#### 4.4 International Experience and Lessons Learned for Vietnam

Again, regional experience may be of use to Vietnam in framing the options for financing the development of the expressway network. China and India have over the past decade created the largest high capacity road investment programs in the region and the structure of their funding process is summarised in Annex 1, and some key findings are presented below.

- A sustainable source of finance can provide a basis for expanded investment by the private sector, initially through vehicles like annuity based BOTs but later, also through leasing and concessioning of roads built under a normal Government funded or IFI funded approach.
- A stable and sustainable source of funding for road development such as a road fund will allow the leverage of public financing, as is the case in both India and China, to sustain their road investment programs.
- While there is no best solution and a combination of different sources of funding is likely the most appropriate option, it is clear that where the government has borrowing space and a willing donor, there is a significant cost advantage to the project to use the government credit rating first<sup>21</sup>. But often the advantage of using the private sector is more evident in the efficiency achieved during construction and/or operation. A practical solution to this is to finance through the government but construct and operate using the private sector. A prudent option would be to maximize the use of development funds – either from IFIs or from bilateral donors – initially to build the most financially viable sections of the network.
- **A staged approach** to developing the expressway network is the most prudent approach for the Government of Vietnam. As noted earlier, based on the growth in the economy, there does not appear to be an urgent imperative to quickly build the expressway network. Rather, a staged investment that targets the high demand areas is most prudent. The expressways created in those areas of high

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<sup>20</sup> PUBLIC-PRIVATE PARTNERSHIP IN THE ROAD AND TRANSPORTATION SECTORS ADB TA 4728-INO: Support for Infrastructure Development (SID), Jan. 2008

<sup>21</sup> A real life example of this was the financing of the 407 toll road north of Toronto in Canada. The private sector consortium that won the concession bid presented its finance plan but the government decided to finance the project itself from government borrowing and as a result the project was converted from a full BOT to a design build operate project.

demand are also the ones that will be most financially attractive. Once those sections are in place and operating they will be attractive investment targets for the private sector as operating and maintenance concessions. The GOV could then concession those completed road, for which much of the risk has been removed, and use the money realised through selling those concessions for onward expansion of the network. The attraction of that approach is the effective conversion of debt financing from the IFIs and bilateral donors into equivalent equity finance for the second round of investments.

## 5 The Institutional Framework

### 5.1 The Framework of Legislation

Vietnam currently has three main regulations of particular relevance to the development of the expressway program: “The Law on Land Road Traffic<sup>22</sup>”, the decree, “Prescribing the Management and Protection of Road Traffic Infrastructure<sup>23</sup>” and the 2007 (revised) BOT decree.<sup>24</sup> The first two regulations are essentially descriptive and identify types of road by administrative jurisdiction, and include expressways as a “road reserved only for high speed vehicles with median strips dividing the carriageways and with grade separation of crossings”. The BOT decree is a generic law broadly applying to infrastructure (transport, power and water). To date, Vietnam has not passed legislation specifically targeted to public private participation in the road sector.

But the development of an expressway network is a unique activity. In many countries, the decision was made to establish a separate authority or agency directly responsible for the development, monitoring and management of the expressways. For example, in China these are called the Provincial Expressway Administration Bureaus (PEAB), in Malaysia, the Malaysian Highway Authority (MHA) and in South Africa the National Roads Administration (NRA). These bodies are established and obtain their legal mandate through legislation. That legislation also defines the process for project delivery. This is an area where lack of clarity may impede the pace of expressway development in Vietnam.

Three key areas where legal instruments are necessary are:

- Roles, responsibilities, authorities and accountability for each in the expressway life cycle: development, financing, managing, operating and maintaining and regulation;
- Ownership of the expressway, its operating rights, its tolls, its onward concession rights and authority to manage operations including overloading and illegal behaviour;
- Technical and economic regulation for public welfare. These include environmental and safety issues, quality of service issues and regulation of tolls and public service obligations, if any.

#### 5.1.1 Explicit Expressway Legislation

It is common for countries to have an expressway law and sections within a road or PPP law devoted to expressway development. The enabling legislation is the legal instrument that provides the foundation policy for the development financing, managing, operating and maintaining and regulating of expressways. As such, Vietnam needs to either enact an expressway law or incorporate amendments to the current road law to more clearly cover issues specific to expressways. One of the key components of the legislation is the allocation of roles and responsibilities. At present, the responsibility for

<sup>22</sup> Law No. 26.2001/QH10 of 29 June 2001

<sup>23</sup> Decree No. 186/2004/ND-CP, dated 5 November 2004, states that the national highway network shall include main axis roads and those which play an especially important role in serving socio-economic development, national defence and security of the country or the regions.

<sup>24</sup> reference

the various aspects of the Vietnam expressway development and management structure is unclear. For instance, financing could be mobilized from the Ministry of Finance, from direct borrowing by VEC or by equity or borrowing by other SOEs with no clear parameters governing the process.

The legislation also needs to define who is responsible for setting standards, for enforcing standards, for establishing minimum acceptable conditions for safe operation, for defining data collection and data sharing standards. Actual standards are typically part of the implementing regulations supporting the legislation.

### 5.1.2 Transfer of Ownership Rights

An important legal question when undertaking PPPs in general is ownership rights, specifically in the case of expressways, who holds the ownership rights for land, the constructed road facilities including services and buildings along the road. Typically, the owner is the Ministry of Transport, which either builds the road directly or provides a transfer of operating rights to an SOE or to some other form of investor/operator as may be the case with a PPP project. So for instance, as the developer, Vietnam Expressway Corporation (VEC) could be given the legal operating rights to the expressway, to finance it, to manage its development, to use the toll revenue to pay back the loans and so on. There needs, however, to be a legal instrument that passes on the ownership right.

China typically transfers operating rights to an SOE, and as such has developed a standard “Operating and Management” agreement to be signed by the Government and the SOE that lays out the rights and obligations of each party in the development of the roadway.<sup>25</sup> The main aim of this agreement is to ensure that the legal foundation is in place to allow the SOE to carry out the development, construction and operation and more importantly, to allow the SOE to on lease or concession various aspects of that development to other parties, who may or may not be other SOEs or private investors. For instance, this agreement provides for on leasing of service centers, signage, toll collection and so on and forms a legal foundation for those agreements. Standardizing the agreement ensures that there is no difference in treatment between an SOE and a private company. This kind of ownership rights transfer is also often imbedded in the PPP or BOT law.

### 5.1.3 Regulation and Ensuring Public Welfare<sup>26</sup>

In addition to the development of policy, legislation and plans, it is also within the public sphere of responsibility to manage and monitor development activity through regulation. While laws provide the broad framework for the sector, it is regulation that provides the guidance for how the laws are to be applied and interpreted and further, who will enforce regulations and how that will be done.

There are three primary regulatory functions:

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<sup>25</sup> Corporatization, Leasing and Securitization of Toll Roads in China, Asian Development Bank, Final Report, TA PRC 2952, (Standard) Framework Agreement between XXXX Provincial Government and [Project Company] For [ ] Expressway, 2003.

<sup>26</sup> Some of the following material is extracted from “Enhancing Private Sector Participation in Infrastructure Development At State Level, Asian Development Bank, TA No. 3791Final Report, 2005”.

- ❑ Concession or license award and revocation, i.e. the control of access to the relevant sector, rights available under the concession and operational control of those rights;
- ❑ Economic regulation in the form of control of “output”, tolls for instance and the changes in the toll rate, and, in some circumstances, “input” expenditures of developer/investor, for instance to limit environmental damage or to ensure certain conditions of safe operation are achieved;
- ❑ Quality of service regulation, which includes technical regulation - the control of technical quality standards such as road condition, road safety, overloading, hours or days of operation, provision of services to travelers - the control of customer service quality, such as response times to customers’ requests and complaints, control of access, overloading control, data collection and transmission etc.

The objectives, which should guide the choice of scope and form of regulation, are:

- ❑ *Efficiency*. The regulation should encourage both allocative and productive efficiency and should not unduly increase transaction costs.
- ❑ *Equity*. The regulation should balance the interests of all stakeholders in the sector including Government, the operator and customers within the overall regulatory framework set by law. Other features of equitable regulation are that it should be:
  - (i) *Non-discriminatory*. It should ensure equal regulatory treatment of all parties in the same circumstances (except where explicitly required by Government, for example, to provide essential subsidy).
  - (ii) *Consistent*. For example, in reaching a regulatory decision, the regulator should take due account of its past decisions on similar matters.
- ❑ *Practicality*. The regulation should take due account of practical issues such as making regulation commensurate with the scale, skills and resources of the regulated company(ies);
- ❑ *Transparency*. All regulatory decisions should be published together with clear supporting reasoning (though there would be a need to take account of commercial confidentiality in certain cases); appeal against such decisions should be possible;
- ❑ *Accountability*. The regulation should ensure clear accountability for economic and quality of service regulation with no gaps or overlaps among the regulatory institutions;
- ❑ *Reduction of regulatory risk*. As far as possible, consistent with the above principles, the regulatory risk faced by the developers/investors should be minimized. This implies clarity of the regulatory framework and consistency of objectives and actions. It is important that all stakeholders can determine from the overall regulatory framework the objectives of the regulator and its likely position on all key matters. Reduced uncertainty should ultimately lead to a reduced cost of capital as the financial markets recognize a lower regulatory risk premium and, in turn, customers should benefit through lower tariffs.

These objectives often conflict. For example, a regulatory framework, which ensures economic efficiency (by setting users charges that recover marginal costs), will not be necessarily equitable (as it will not allow cross-subsidy for social reasons and it will fail to cover average costs in natural monopolies). Accordingly, there are decisions to be made on the relative importance of the various objectives when adopting a regulatory framework.

There are essentially two models for how regulatory control can be exercised. One example leaves the regulatory authority to the Ministry involved, either directly or through one of the departments of the Ministry - Thailand and Vietnam are examples of this approach. The second approach, followed in Indonesia, Malaysia and China, uses a multi-sectoral regulator responsible for economic regulation in a number of sectors.

The first model has evident limitations. There is both a real and perceived conflict of interest in a department or Ministry, acting as owner or license issuer, judging a dispute with a concessionaire or contractor. As a result, some countries establish a separate regulator independent from the Ministry.

## **5.2 Institutional Structure – Roles and Responsibilities**

Legal instruments define roles and responsibilities which in turn define organisations. So the legal instruments are the foundation documents for the establishment of organisations that are designed to manage the design, development, operation and management of the Vietnamese expressway network. The structure of those organisations and the options available to Vietnam are discussed below.

### **5.2.1 Conceptual Model**

Figure 6 presents the elements of a modern model for development and delivery of a national transport system and the roles of the Government and services suppliers.

#### **Central Government/Finance/Planning (Financing Government Investment )**

- ❑ Determine the source of finance;
- ❑ Jointly consult on the choice of modality;
- ❑ Approve level of Government investment;
- ❑ Monitor Financial and Economic Return

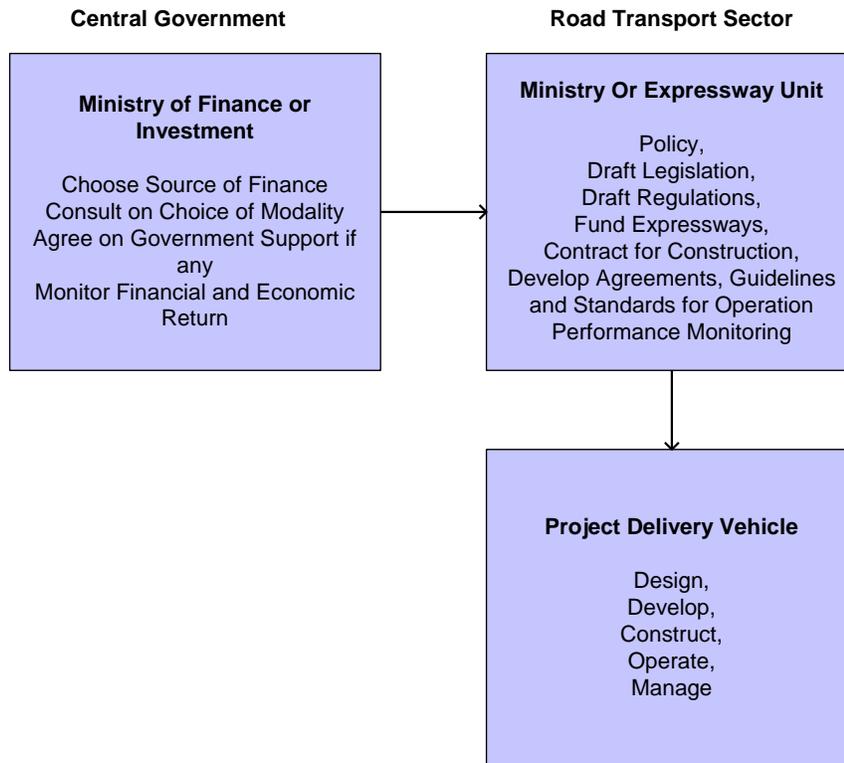
#### **Ministry of Transport (Purchaser of Transport Infrastructure and Service)**

- ❑ policy setting - including developing legislation and regulations;
- ❑ longer term strategic planning for the sector;
- ❑ prioritization and allocation of financial resources based on the above planning framework to sector subunits;
- ❑ monitoring and evaluation of transport infrastructure development and operation; and
- ❑ monitoring of quality of service delivery by transport service operators.

### Public corporations or the private sector (Suppliers of Transport Infrastructure and Service)

- ❑ development, design and construction of transport infrastructure;
- ❑ operations and maintenance of transport infrastructure;
- ❑ operations and management of transport service delivery.

**Figure 6: Structure of roles and responsibilities**



Many transport ministries around the world have decided that it is appropriate to separate the functions of policy, planning, regulation and public finance (core activity) from the functions of operations and service delivery. This has become particularly important as the models for service delivery become more complex and involve both public and private sector organizations.

The highest mandate and role of the core is to set policy following the direction of the Minister, issue revised legislation as needed, and to determine appropriate regulations to protect the public interest and to adhere to international commitments of the government. Further, it is the role of the core to ensure that the government policy and regulations are followed by the implementing units of the transport system and that public funding provided is used in a fiscally prudent and cost effective manner.

Where transport activity is simply commercial, then regulation is needed only to protect the public interest against undue monopoly, unfair pricing of service or lack of care for safety or environmental standards. However, where the Government determines that policy requires a more interventionist social or industrial role for a transport unit, then

that policy should be backed by sufficient resources to make it happen. For instance, if on grounds of affordability, certain economic groups will be given access to the railway at subsidized rates, then the access should be charged at full commercial rates. It is not the role of the transport provider to offer subsidies to anyone. In other words, it is the role of the core to determine where and what “public service obligation” is needed and then to fund that service directly so that transport can operate and be assessed on commercial principles..

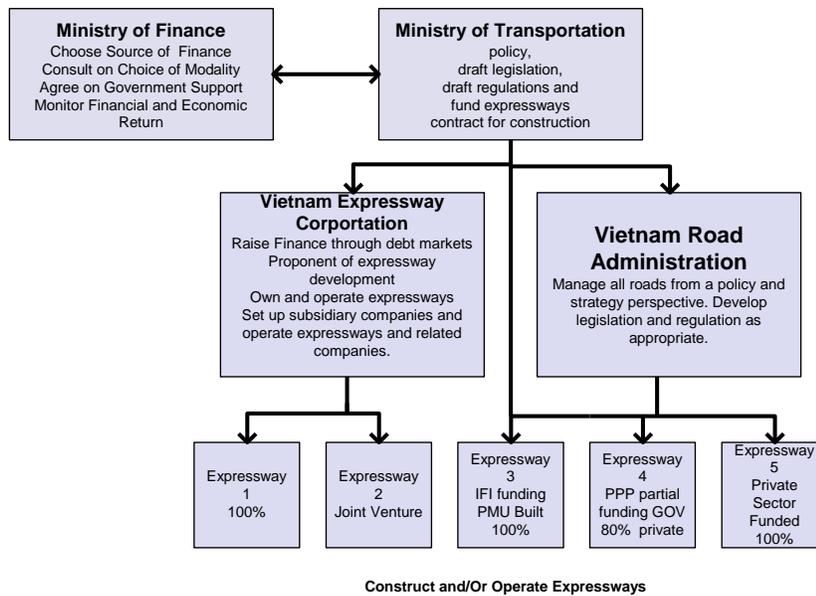
Service delivery and operational units may take many forms but their primary obligation is to deliver safe, affordable and high quality transport service to shippers and travelers. Typically service providers may be authorities, public corporations, joint ventures or contracted companies. But all operate under the overall umbrella of the rules and policy set by the core and the core retains the right and obligation to ensure that the development and operation of the transport system is safe, affordable and of high quality.

In examining how best to recommend a structure to assist in the effective development of the expressway network over the next 20 years we are guided by the overall intent of the above international norm. That is, high level activity remains with the ministry which also needs the necessary knowledge and capability to undertake the high level activity while delivery of both infrastructure and transport services is best done by a combination of public and private organisations dedicated to that task under the overall monitoring and oversight of the ministry.

### 5.2.2 Current Structure for Road Development

The simplified current structure of road and expressway development in Vietnam is shown in figure 7 below.

**Figure 7: Current Structure and Responsibility for Road Transport Development**



In moving from the above organisational structure to one that will fit the needs of the future some key role and responsibility issues will need to be considered. These include:

- ❑ The role of MOF/MPI in terms of assessment of contingent liability and financing modality;
- ❑ The role of MOT;
- ❑ The role of VEC as it develops over time;
- ❑ The role of State Enterprise Corporations (SEC) in supporting and implementing the expressway program;
- ❑ The role of VRA.

#### **5.2.2.1 Ministry of Finance/Ministry of Planning and Investment**

The two key ministries in approving and financing all public investment including that in the transport sector are the Ministries of Finance, and Planning and Investment. Ideally, between the two ministries there needs to be capacity to assess when support for the road sector is good public policy. Some countries maintain a separate transport capacity within the budget planning unit of the Ministry of Finance to assess priorities for public finance in transport<sup>27</sup>. The responsibilities of the two central ministries include:

- ❑ Choice of the source of finance for road development;
- ❑ Consultation with MOT on the choice of modality to be used for the investment;
- ❑ Decision on the level and availability of public finance to support PPP projects;
- ❑ Monitor the financial and economic return achieved by the transport investments.

#### **5.2.2.2 Ministry of Transport (MOT)**

The Ministry of Transport is tasked with the responsibility of setting policy guidelines, carrying out longer term planning of the network to meet national goals, balancing investment among the modes and providing guidance on the provision of public finance to support the investment. MOT is also charged with managing the legal framework for the road sector including drafting laws and regulations that underpin the road sector.

The central agency also has an important role in the ongoing monitoring and evaluation of the service delivery as the oversight agency in charge of the road network. It is responsible for ensuring the effective functioning of the whole network to the benefit of the users and the public interest and for ensuring compliance with environmental commitments, quality of service commitments and other technical issues related to the effective functioning of the concessions and contracts.

The monitoring and evaluation role targets effective operation. This includes the original definition of standards for design, maintenance, security, safety and operations. But perhaps the most important function to support network efficiency is to ensure standard protocols for data collection, transmission, toll setting, toll collection systems, vehicle loading limits and enforcement and definition of standards of service.

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<sup>27</sup> A good example of this is the Ministry of Finance in India where the Ministry takes a strong role in determining the financing support provided to a wide range of PPP activities and including administration of the project development revolving fund and viability gap financing.

### 5.2.2.3 Vietnam Expressway Corporation

Vietnam Expressway Corporation (VEC) was established in October 2004 to develop the expressway network in Viet Nam. VEC has a headquarters office in Hanoi and a branch in Ho Chi Minh City. The charter of VEC describes and lists the lines of business they are allowed to engage in, including:

- Investment in expressway construction, management, maintenance and organizing toll collection on the national expressways;
- Investment in construction of other transport infrastructure by different modalities;
- Operation and doing business by providing services along expressways; such as: rest houses, restaurants, filling stations, advertisement and construction materials;
- Transport Engineering Consultancy: Studying the national expressway network development, preparing pre-feasibility and feasibility studies, designing and supervising transport infrastructure construction works;
- Studying development of service in the adjacent areas to the expressways.

VEC is a fully state-owned company and was set up with a capital of 1,000 billion VND. The Ministry of Finance initially released 50 billion VND and the remaining capital was to be provided by granting VEC tolling collection rights for Cau Gie and Phu Dong tolling plazas for ten 10 years from January 2005. In mid 2008, VEC has raised 281.4 billion VND, of which 202.4 billion VND has been provided by MOF and 79 billion VND from toll collection sources.

VEC business activities at the moment consist of promoting and developing four active expressway projects as well as developing the expressway network plan. On financing, VEC is proceeding with the first bonds as well as starting negotiations on mixed IBRD/OCR loans and discussing PPP/BOT approaches.

As more toll roads are developed, either directly by VEC or by VEC in cooperation with other partners or in some cases by the private sector directly, there will be a potential for a conflict of interest if VEC is left as the only arbiter of when, where and how the national expressway network will be developed and financed. The roles define a typical owner of an expressway, a developer, an operator, designer and supervisor of construction or toll collection agency. It is not clear that all these roles are appropriate for one organisation.

Other more immediate concerns with VEC's mandate are: (i) a lack of dedicated focus on expressways runs the risk of diverting attention of VEC toward development of hotels, other transport systems, or ancillary services rather than development of expressways; (ii) the human resource capacity to undertake functions like research and development or consultancy divert resources needed to focus on the key role of expressway development.

### 5.2.2.4 Vietnam Road Administration

The Vietnam Road Administration (VRA) was established in 1993 as the MOT agency responsible for administering the road system. VRA is responsible for the development,

planning and maintenance of the national road network. Its role, if any, in the planning and development of the expressway program has not yet been clearly defined.

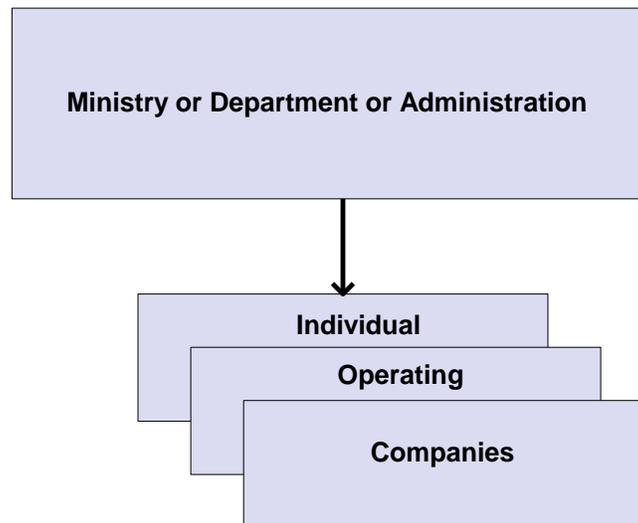
### 5.2.3 Organizational Models from International Experience<sup>28</sup>

The following are three possible organizational models that reflect the range of options for expressway development found in other countries.

#### 5.2.3.1 Government Owned Individual Development and Operating Companies<sup>29</sup>

Under this model, the ministry, one of its departments or administrations is directly responsible for the management of the expressway program. A number of provinces in China use this model as did Japan when it embarked on its expressway program. It is also similar to the model used in India although the ownership options are wider in India and include Special Purpose Vehicles (SPV) and private companies. The government companies may typically be either wholly owned or owned in combination with other shareholders, both SOEs and private firms. Financing under this option is typically dominated by the government budget (which for some countries includes resources from IFIs or bilateral donors). Experience has shown that it is normally preferable to have these companies as shareholding companies. This allows for eventual listing of the companies on the stock market, if desired, providing access to cheaper finance.

**Figure 8: Individual Operating Companies**



#### 5.2.3.2 The National Expressway Management Corporation

Under this model, a national government expressway management company effectively controls the development and overall operation of all toll roads. Under this company are

<sup>28</sup> The following material on generic models is adapted from "Commercialisation Of Toll Roads – Review Of Policy And Models In China", The World Bank, 2005

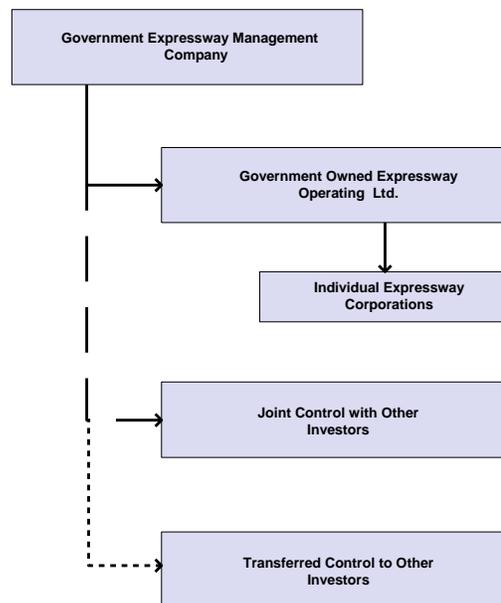
<sup>29</sup> The following material on generic models is adapted from "Commercialisation Of Toll Roads – Review Of Policy And Models In China", The World Bank, 2005

a number of specific operating companies, some directly managed by the management company and some indirectly linked through joint shareholding with other private or state entities. This model also allows for transfer of toll expressway assets to other companies with the management company retaining no direct operating interest. This model is found in some provinces in China, South Africa, Korea and to a certain degree in Malaysia.

In addition to direct investment of Government funds, other sources of funding include:

- ❑ Loans provided by domestic and overseas banks, or government of foreign countries;
- ❑ Funds raised by issuing stock shares and/or bonds;
- ❑ Public listing of expressway corporations on domestic and international exchanges;
- ❑ Investment by domestic and overseas organizations and individuals;
- ❑ Funds raised by transfer of right of operation for expressways.

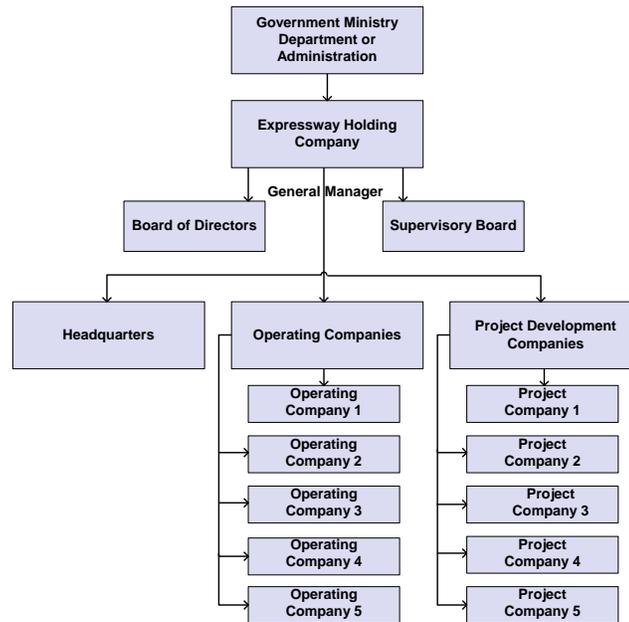
**Figure 9: National Expressway Management Corporation**



One of the criticisms of this structure is the blurring of responsibility for government functions to manage the expressways – setting toll levels for instance or negotiating concession agreements – with the functions of a commercial enterprise, aiming to make a profit as a provider of infrastructure assets. Some countries try to get around this problem by making the expressway corporation a “non for profit corporation” as in Korea. However, the danger exists of senior managers becoming significant shareholders in the companies that are under their umbrella, either as declared shareholders or as undeclared shareholders. For these kinds of reasons, it is now becoming more common to set this infrastructure delivery vehicle up as a purely commercial corporation with government ownership.

### 5.2.3.3 Holding Company – Government Owned or Privatised

Under this model a government-owned holding company provides finance for further expansion of the toll road system and holds shares in operating and project companies. This option also allows for “BOT” private companies together with joint venture operating companies. Governments may also use the cash flow of the operating companies to float bonds as a means of raising funds for further highway construction.



**Figure 10: Full or Partial Government Owned Holding Company**

This model can evolve into a public listed company once some of the toll roads start operating and generating toll revenues. The operating companies' expected revenue stream allows for the public listing and helps provide capital for further expansion.

A good example of this model is the Guangdong Provincial Communications Group. The group was formed in 2000 to bring together a number of companies owned by the Guangdong Provincial Transportation Department. It controls 80% of the expressways in Guangdong. Two of the member companies are listed on the stock exchange. It issues both restricted enterprise bonds and commercial bonds through the listed companies. The major focus of the company is on the investment, construction, operation, and management of toll highways and bridges in Guangdong Province. It owns all or part of the interest of those highways and bridges and is one of the biggest highway enterprises of China.

Jasa Marga in Indonesia is also a good example of this model in that it remains a partly government owned SOE with some securitization of ownership. It has bundled a number of individual toll road operations together as a basis for raising bond financing. However, the GOI's role is now limited to that of a shareholder like any other shareholder and Jasa Marga's motivation and commitment is now to operate a profitable company for its shareholders on fully commercial principles.

### 5.2.4 Evaluation of the Strengths and Weakness of Each Model

Table 5 lays out the strengths and weaknesses of the three models.

**Table 5: Strengths and Weakness of Expressway Development Organizational Models**

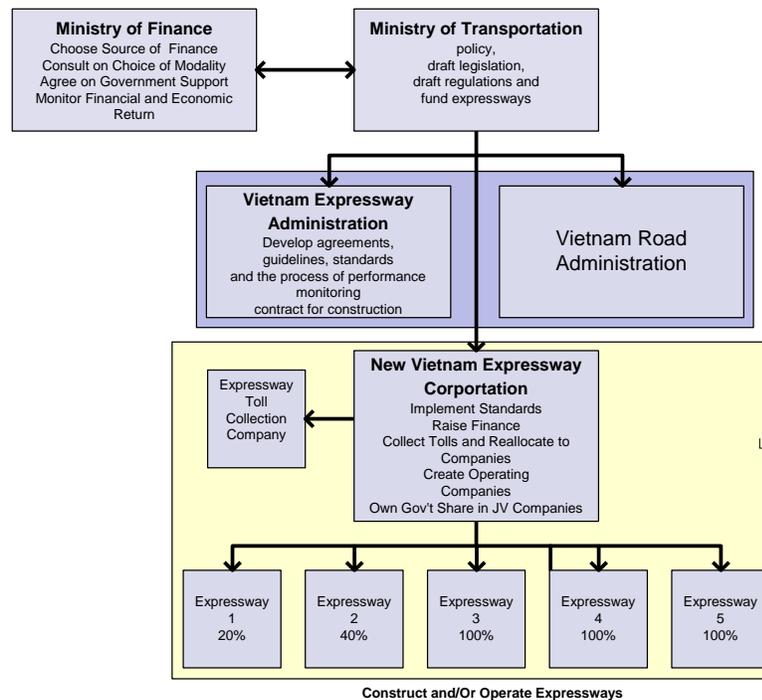
Organizational Model	Strengths	Weaknesses
<p style="text-align: center;"><b>Model 1</b></p> <p>Government-owned Expressway Operating Companies under the Ministry, its department or administration (the SOEs model).</p>	<p>Simple structure for operating companies;</p> <p>Each company is held accountable for its own performance</p> <p>Similar to the current structure using PMUs to build highways in many countries. Could convert PMUs into development and toll road operating companies.</p> <p>Can be expanded beyond SOEs as in India to include SPVs and private companies under capital support or annuity based concessions;</p> <p>Retains flexibility of allowing JVs or PPP options.</p>	<p>Ownership of expressway is more complicated since each of the companies requires a separate legal agreement transferring operating rights.</p> <p>Administratively more complicated to manage;</p> <p>Limited governance oversight;</p> <p>Cannot bundle expressways to generate additional finance; difficult to securitize.</p> <p>Tendency to be operationally more varied. Different toll systems and collection methods unless strong government management is applied.</p> <p>Relies heavily on government developed funding. Government assumes the majority of the risk.</p>
<p style="text-align: center;"><b>Model 2</b></p> <p>Government Owned Central Expressway Management Company</p>	<p>More focused management;</p> <p>Can apply and adhere to common standards of tolling, and operations Better operational control;</p> <p>Financing can be extended to forms of securitization but only for those roads falling as direct subsidiaries of the management company;</p> <p>Maintains strong Government involvement</p>	<p>Some confusion between functions of government and operating company. Expertise in management company assumes government role but also operates expressways. May cause some conflict of interest.</p> <p>Limited ability to bundle expressways to use cash flow as security for loans to expand the system.</p>
<p style="text-align: center;"><b>Model 3</b></p> <p>Expressway Holding Company</p>	<p>This option captures all the benefits of the above option.</p> <p>Additional benefit is the ability to securitize the revenue stream of subsidiary companies to back bond issues and expand scope of investment.</p> <p>Usually less confusion over roles since the articles for the holding company are normally strict particularly if they are bundling assets to use for collateral for debt or other securities.</p> <p>If fully securitized, the holding company reports to shareholders, one of whom may be the government but as an independent body.</p> <p>All decisions are then taken on a business basis rather than on a government or social benefit basis so less responsive to government policy.</p>	<p>Less government control of the development process. The holding company is autonomous and can make independent decisions.</p> <p>If securitized, all decisions are taken on a business basis rather than on a government or social benefit basis.</p> <p>Very limited government control so need for strong government oversight</p> <p>There thus remains a requirement for an expressway authority, or bureau or administration to determine government policy, planning and guidelines for network development.</p>

## 6 Summary of Key Issues and Recommendations

### 6.1 An Organization Option for Consideration

Figure 11 presents an institutional model that can evolve over time to meet the increasing demands of the expressway network development program in Vietnam. Roles and responsibilities are discussed in what follows.

**Figure 11: Structure of roles and responsibilities**



#### 6.1.1 The Central Ministries (Planning/Finance/Transport)

The roles of the central ministries is clearly stated in figure 11 above. MPI and MOF will play an important role in determining the level of government support if any, to a project. MOF will have the responsibility for dealing with the contingent liabilities associated with these projects. The PPP unit established in MPI with representation from the concerned ministries has been given these responsibilities.

#### 6.1.2 Establish a Vietnam Expressway Administration

The administration of the road sector is now allocated to the Vietnam Road Administration (VRA). VRA is responsible for ongoing development of the national road network and for maintaining it in good condition. An equivalent organization is needed to manage expressways. A new separate expressway administrative unit may be established or it may be set up as a new unit within the highways administration by dividing VRA into two parts, one devoted to highways and one devoted to expressways. That choice depends largely on the need for specialized staff, the common functions and

tasks in both administrations, separate legal instruments or the need to deal with different areas such as PPP which may not occur in the highways administration. In Vietnam, that choice will depend on the preference of MOT and the need to maximize the effectiveness of limited technical capacity. Most of the functions proposed for the Vietnam Expressway Administration (VEA), listed below, are not being performed by VRA:

- ❑ Plan, evaluate and prioritize development of the expressways;
- ❑ Develop agreements, guidelines and standards as part of the regulation process;
- ❑ Monitor toll setting and toll rates;
- ❑ Develop, sign and monitor concessions;
- ❑ Contract for development of Expressways;
- ❑ Monitor the performance of expressway development and operating companies and address deficiencies where necessary.

### 6.1.3 Providers of Expressway Infrastructure and Operations

The service delivery role can be either filled by a public corporation as in the case of VEC, Jasa Marga in Indonesia, or the many Chinese provincial toll road companies or by some form of PPP or private concessionaire. In all cases, the target of these companies is to develop a safe and efficient expressway – tolled or untolled – that serves the needs of the traveling public. It is important that the responsibilities of these organizations be focused on the development and operation of the expressway, rather than on a wide variety of other non core activities.

At the moment, Vietnam has three or four types of expressway infrastructure providers. VEC, a fully 100% SOE, is one type of provider. Joint venture companies are also active in developing part of the network. Private companies are proposing to provide part of the network. VEC at the moment is involved in three different enterprises and in the layout of blocks in figure 11, VEC is one of the operating companies along the bottom line. However, as the network expands, it may be more appropriate for a “new” VEC to change into a holding company for all the GOV’s investments in the expressways. This would move VEC more into the style of corporation represented by the Guangdong Expressway Group.

A holding company makes good sense since the GOV will have varying stakes in different operating companies. A holding company can use those stakes and the resulting cash flow to issue bonds, raise other finance if necessary and act as a general manager of the government’s investments. It may also become necessary for some government agency to collect tolls on behalf of all companies and reallocate those tolls to the companies based on their vehicle kms of travel. The “new” VEC could also fill that role. The functions that such an organization may fill are:

- ❑ raise finance;
- ❑ collect tolls and reallocate to companies;
- ❑ create operating companies;
- ❑ own government share in JV companies;

- Implement operating standards.

The bottom line in figure 11 represents the various types of companies that operate the expressway network. They range from 100% state owned enterprises to fully private companies. Each of these companies should have a clear legal framework for their section of the network in the form of an agreement or a concession. For private or PPP investors, the concession agreement lays out the full gamut of obligations and responsibilities. Under this model, it is important to avoid any overlap in the responsibilities between the “administration” and the “corporation”.

#### **6.1.4 Role of State Owned Enterprises in Managing the Network**

At this stage of its development, the use of state owned enterprises to advance the expressway program is the most viable option for Vietnam. All other countries in the region have followed this model with some success. Indonesia initially used Jasa Marga, its state owned toll road company, as the vehicle for direct investment and for forms of joint venture and shared ownership. The Philippines used the Philippines National Construction Company (PNCC) in a similar capacity. Japan and PRC both used government owned corporations as the developer and operator of their expressway links. Similarly, Thailand, Malaysia and South Africa have also used this vehicle as a way to develop their expressways and offer an effective way to eventually partner with other investors. Given the potential conflict of interest facing the corporation under this model, this model needs to be accompanied by a strong regulatory function.

In all countries it has seemed important to have a company attached to a specific road segment to essentially take ownership of that road – usually less than 200 kms long. This is very useful during construction but less useful during operation. During construction, the company needs to manage contractors, manage quality control, manage development funding and so on and the company structure needed to do that fits the mid range size of construction. But during operation, larger units are more efficient and the physical works demand is less so the size of organization needed to manage a roadway is normally less than during construction. Further, many of the operational tasks can easily be contracted out allowing for a smaller and tighter operating company structure.

#### **6.1.5 Role of State Owned Enterprises in Building the Network**

The scale of the program of expressway development set out by the Ministry of Transport will require a step change in the performance of domestic contractors and consultants. To date the majority of the construction capacity sits within MOT with their various CIENCOs and subsidiary companies. The same applies for the consultancy sector where there will be increasing demand for high quality feasibility studies, design work and construction supervision services. Again most of the capacity exists within MOT in the Technical Engineering Design Institute (TEDI).

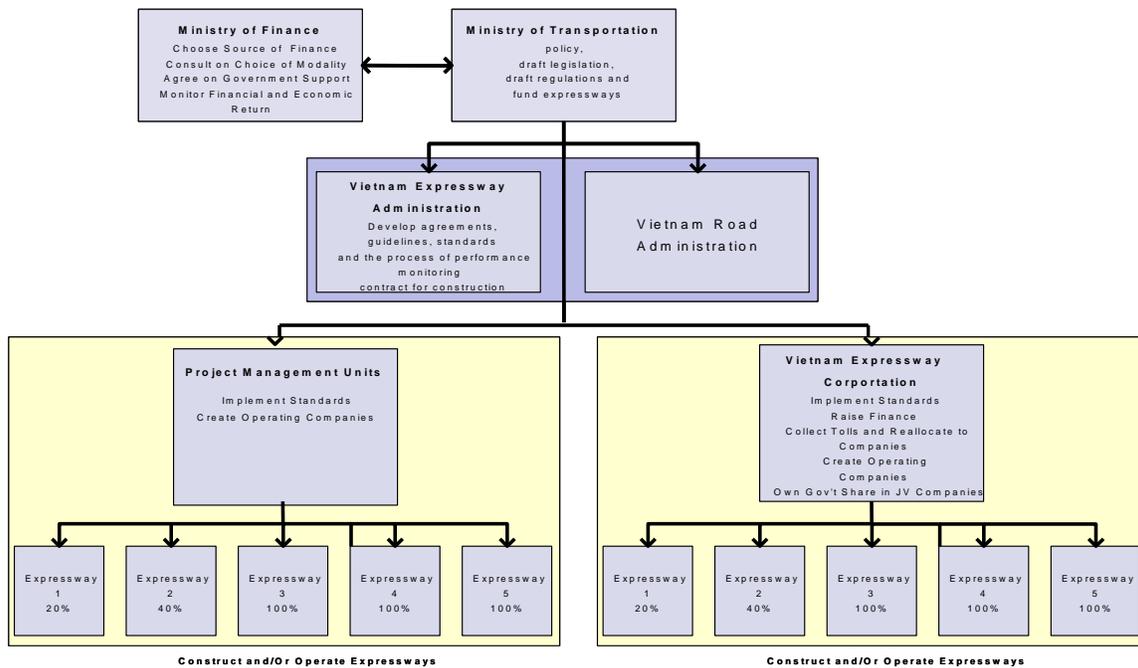
If the domestic sector is to respond to the challenges of building the expressway system it is important that the proposed equitization program for both contractors and consultants is expedited. Good companies need the freedom to grow, weaker companies should be allowed to disappear and new companies should be encouraged to enter the market. The importance of the construction and consultancy sector cannot

be over estimated. A well constructed road will increase the benefits to the economy and reduce the long term operating costs of the network.

### 6.1.6 Role of Project Management Units

It is likely that PMUs will maintain an important role in managing the implementation and operations of the expressway system in the short to medium term. This is simply because the requirements for expressway development are huge and most of the domestic capacity for managing these types of projects rests with the PMUs. One of the short term dangers of bringing in private/state companies developing the network is that they do not have the experience and are often more interested in the land deals than the expressway development. China continues to use PMUs for managing the design and implementation of expressway projects for about 40% of its network development. Figure 12 below shows a diagram similar to Figure 11 but can be considered an interim measure before the creation of a new VEC. In this organization structure there are two main ways to develop an expressway section either through VEC or through the conventional PMU route.

Figure 12: Structure of roles and responsibilities – interim case



While the PMUs currently exist in Vietnam, the legal question of longer term ownership and transfer of operating rights argues that a SOE structure in the longer term is a more stable base from which to develop the expressways. China for instance, normally transfers the expressways once constructed into a SOE for operation.

### 6.1.7 Responsibility for Debt Repayment

Under the current Vietnam expressway development model, responsibility for debt repayment rest with VEC or with one of the JV or concessionaire companies. In the new model, the new VEC would take on the overall responsibility for debt repayment across the network wherever government funds were involved. This would have the advantage

of providing some flexibility in terms of cross subsidization between the more profitable and less profitable parts of the network. To extent that there will be government support, this will be channeled through VEC.

In the interim, and where projects are being developed by the PMUs, it is less clear who should be responsible for debt repayment. It could be that the responsibility for repayment rest with the state and that any concessionaire assigned to collect tolls and manage the section would compete for a minimum subsidy agreement. Arrangements could also be developed where the funds are on lent to the eventual concessionaire for operations and they are responsible for repayment of any loans minus any subsidies that have been agreed.

## 6.2 Legal and Regulatory considerations

This section outlines the areas in the legal and regulatory framework where changes will need to be made to accommodate the efficient functioning of the institutional model outlined above.

### 6.2.1 Develop an Expressway Law or Amend the Road Law

Since expressways are significantly different than other roads, the current Road Law may need to be amended or alternatively a new law could be prepared to deal with the specific issues raised by development of expressways. These include ownership, transfer of operating rights, acquisition of land, concessioning, performance standards, monitoring and allocation of organizational responsibilities for the various functions needed to manage the expressway program. The amended law and accompanying decrees may also provide a legal basis for establishment of a toll road regulatory organization.

### 6.2.2 Development of a regulatory framework

This may either be in the form of a new formal regulation focused on toll expressways or it may involve amendments to existing regulations or decrees. A review of the current legal instruments and how they would apply to the expressway network development would define what is needed in this area.

## 6.3 Optimised Sources of Finance

Section 4 dealt extensively with the sources and costs of various forms of finance. In developing the “Vietnam” model we have argued for matching the source of finance, its life cycle cost with the pace of development. The expressway program in Vietnam is still in its infancy. At this point there is no long term history of traffic growth, revenue growth and operating costs. For these reasons it will take some time for private finance to be fully realized and it is likely to take longer for projects to materialize. The required returns by private investors are likely to be high given the high level of uncertainty and the lack of track record.

At this point, it is more prudent to turn to the bilateral donors who offer untied finance, the IFIs who can provide lower borrowing cost but still offer the volume of funding needed to get the system started and government bonds. **We also recommend that the first focus for use of those funds should be the areas most likely to generate the highest traffic volumes and thus the highest financial rate of return on investment. Once those roads are in place and working then the funds invested in them can be**

**extracted by leasing the ongoing operation and maintenance of those roads to the private sector.**

A staged development plan will maximize the value of the IFI and bilateral funding support and will allow for effective PPP involvement in the operating and maintenance of the financially viable links. The funds obtained from those operating and maintenance concessions can then be used as equity stakes in further expansion of the network.

Using an SOE for initial development with eventual transfer of operation and maintenance to the private sector through joint venture, securitization or direct lease offers an attractive model. It is important to note that most of the efficiency gains of the private sector can still be realized under this model as design and construction will be still be carried out by the private sector and service contracts for the operation (and potentially for the operation and maintenance) can be utilized.



## **Annex 1: International Experiences on Expressway Development**

### **Country Case 1: China**

#### **History**

The Chinese Government decided to construct the National Trunk Highway System (NTHS) in 1988 following the successful completion of two expressways with partial funding from the World Bank. There is only very general phasing of expressway development in China. The NTHS was planned to be about 40,000 kms of major trunk roads. This has now been achieved and the next phase is looking at doubling this target to 85,000. Local priorities for completion of the NTHS have largely been left to the provinces and as a result there remain some significant missing links in the network. The NTHS comprised both full expressway standard roads as well as some sections built to lower standard Class I. All sections of the NTHS however were tolled with the objective of using the tolls to cover the operating cost of the roads as well as to repay loans required for their construction.

The overall planning for the NTHS was undertaken by the Ministry of Communication but the actual construction and operation of the roads is the responsibility of the provinces through the Provincial Communications Departments (PCD).

#### **Sources of Finance, Financial Sustainability and Phasing**

- In 1988, construction began on the 35,000 km NTHS with 90% planned at full expressway standard. All roads in the NTHS are tolled. From 1988 to mid 90's, the main sources of funds for constructing the first phase of expressways were road maintenance fee, vehicle registration fee and some state budgetary allocation. Limited bank loan was also absorbed to expressway construction. At that stage, PCDs are the main investment entities, and the institute in charge of the expressway construction normally would transform into the operation management organization of the constructed expressways. During this time period, due to the lack of the experience of expressway management, transport departments still follow the management mode of ordinary highway, and duplicate law enforcement and overlapping management appears in the process of highway administration management and traffic safety management.
- Since the middle 1990s, the new channels of expressway financing and investment became available such as securitization of toll road companies, investment from international and domestic economic development organizations, direct foreign investment and concessioning, greatly promoted the development of china's expressway. The diversification of financing and investment system formed the multi-polarity of expressway asset ownership structure, and further required a more diversified operation and management mechanism. Through nearly a decade of management exploration and development, China's expressway management system has developed its distinctive features: different expressway management systems and mechanisms appear, such as administrative institution type, enterprise management type, and mixed type of enterprise and institution.

- Private funding initiatives for toll roads in China basically rely on four specific instruments/modalities: joint ventures (JVs), securitization, the domestic bond market and commercial rate loans from Chinese Banks. Although a form of leasing/concessioning (Joint Venture) was widely used in China in its expressway construction, the international terms of concessioning that assumes the private investor has complete control of the road asset for a specified period of time without any form of public inclusion is not common in China. Limited examples of this style of contract do exist, but very little transparent competition has been used which complies with international standards.
- China has financed only 15% through the national government but 40% has been financed by provincial loans (i.e. through State Owned Commercial Banks) and some of the balance has come from diverting revenues from the road maintenance fee to construction and through tolls on other roads . The IFI's have contributed about 1.3%. The 15% contribution from the central government in China is based almost totally on new vehicle registration receipts supplemented with limited funds from general revenue, focused mainly on lower class rural roads. With the rapid growth in annual new vehicle registration, the growth in the funds available from registration fees has exceeded the growth in GDP. The 15% covers all classes of road development and is approximately equally divided between the expressway program and other roads. While there is no hard data on the degree of debt assumed by the provincial and tertiary levels of government to finance the roads, we have assumed that debt represents approximately 60% of that category of investment which leads to an overall approximate debt to equity ratio of 2:1 for the network as a whole.<sup>30</sup>
- Of the money invested by the provinces, the majority comes from vehicle maintenance fees. Each vehicle is required to pay a road maintenance fee monthly to the county in which it is registered. In 2006 the road maintenance collections totalled about 100 billion RMB or approximately US\$13 billion which was about 2% of the road asset value. The counties in turn forward the money to the province which then decides on the allocation of spending. In most cases, that has meant almost all the money has been spent on new road construction. Most of the national and provincial roads are tolled and thus are self financing when it come to maintenance and the result is that all the money collected from maintenance fees has been spent on capital. While MOT has issued an order capping the capital spending at 20% of the maintenance fee, this order is often ignored.
- The cost per km is also a useful metric for international comparison. With a political structure similar to Vietnam, China's recent experience offers a useful example. In 1988 -90, the cost per km of the first Chinese expressway was approximately US\$1 million per km<sup>31</sup>. This has grown over the last fifteen years to a point where in 2006/7 the average cost per km had reached US\$5 million. In very expensive hilly areas with extensive viaduct and bridging, the cost may rise to about US\$8 million per km. These costs do not include land acquisition cost but only incorporate relocation and resettlement cost for displaced residents. Depending on the type of land and the cost of the construction, the land cost may normally range from 10 to 30% of the total cost.

<sup>30</sup> People's Republic of China: China Expressway Retrospective Study, World Bank, 2006

<sup>31</sup> World Bank financed Tianjin to Beijing Expressway.

## Legal and Regulatory Framework

The legal framework of the road sector in China reflects the transition from a system of state Owned Enterprises (SOEs) to a mixed system based upon share companies to carry out the market economy and to seek outside investment by means of listing the expressway company on a stock exchange. In the past few years, a series of important pieces of legislation have been enacted, including the Company Law 1993, the Highway Law 1997, and the Security Law 1998, which provide a general legal framework for that process of change. Other relatively new legislation, such as the Contracts law 1999, the Bidding Law 1999, the Arbitration Law 1986, as revised in 1998, also are important in constructing the mixed system and establishing an enabling investment environment. In 1998 the Government of China passed the Road Law which essentially passed administrative responsibility for the road network to the administrative level which owned the roads. So provincial roads are under provincial responsibility and county roads are under country responsibility. This responsibility includes planning, development and operational control. The overall policy related to the development of the national network remains with the national government.

- The Provincial Expressway Administration Bureau establishes the regulatory framework, inspection requirements and training standards to be generally consistent with national government policy. However, because national standards are not specific, there remains a high degree of latitude for individual provincial interpretation.

## Organisational Structure

- In the early days, the ownership and administration of the expressways fall into the same organization. This changed in 1999/2000 whereby the Ministry of Communication required that the functions of the ownership of the expressways and the administration of the expressways be separated into distinct and separate organisations. In most provinces, the PCD will build the expressway either through a project management unit or through a provincial SOE (or concession it out to private partners) and the Provincial Expressway Corporation (PEC) will maintain and operate the expressway. Normally the toll collected will be provided to the Provincial Expressway Administration Bureau (PEAB) under the PCD and the PEC is paid a predetermined fee for its maintenance and operation of the expressway. The key advantage of this model is that the two very different functions: (i) investment and construction, and (ii) maintenance and operation, are separated and are implemented with professional expertise required. The PECs act as holding companies for a variety of operating companies, some wholly owned provincial SOEs, some joint venture companies with a majority state ownership and some essentially private companies where the province only owns a small share.

## China Expressway Management Outlook

With full acknowledgement of the remarkable achievements, the current expressway management system in China still involves various management agencies and the sector management appears inefficient. The development trend of Chinese expressway management includes the following:

- ❑ Strengthen the government's control at macro-level: The functions of the government shall be strengthened in areas of overall planning, market regulation, public service improvement, and legislation enhancement. In addition, the government shall maintain the market order, create an enabling environment for fair competition, and provide proper rights for the potential investors.
- ❑ Synchronize the management function by specific implementation agency: Special expressway administration organization shall regulate areas such as market entrance, market structure, toll standard, investment budget, service standard, to ensure the realization of social benefits.
- ❑ Corporatize the expressway operation: the investment and financing concept of "national investment, local financing, public funding, and foreign capital utilization" changed the original financing model which is solely government financing to multi-channel financing, which in turn promoted the transformation the expressway operation to corporatized modality. Ultimately, the expressways shall be regulated by the government at macro-level, managed by a specialized agency at a sector-level, and operated by corporation through concessioning.

## **Country Case 2: India**

### **History**

Traditionally, roads in India were under the overall mandate of the Ministry of Surface Transportation. However, in the late 1980's India recognized that a massive restructuring of its road network was needed to support the potential for economic growth. The growing population and the developing economy placed unsupportable burdens on the two lane highway system. In some cases, delays crossing one bridge could be measured in days, not minutes with queues of trucks stretching for many kilometers from the choke points. As a result, with the support of the international IFIs and other donors, India embarked on a rapid expansion of its high capacity roads.

The decision was taken in the early 1990s to expand the roads into non controlled access four lane or six lane arterials within the existing right of way, rather than to move to a fully grade separated, controlled access system on a new alignment; The total length of the national highway network is 66,000 km.

### **Sources of Finance, Financial Sustainability and Phasing**

- ❑ The National Highway Development Project, as planned and completed to date, stands at almost 32,000 kilometers (km), comprised of 24,000 of four-lane upgraded arterial roads, 6,500 km upgraded to six lanes including 5,700 km of the previously upgraded four-lane road, and a further 1,000 km of expressways on new alignments.
- ❑ Total budget allocated to the National Highway Development Project amounts to about \$39 billion, excluding the 6,500 km of roads implemented on a Design-Build-Finance-Operate (DBFO) basis.
- ❑ The development of the national highways in India is partly financed by a dedicated fuel tax, part of which is also allocated to development of rural roads. Further, the NHAI can concession roads with or without tolling, it can collect and

use tolling revenue and it can setup and operate Special Purpose Vehicles (SPV) to develop new roads. Donors are very active in India, helping to fund the development of the national roads, but the backbone of the long term sustainability of the network is the commitment of the government to providing long term resources through the fuel tax (cess). This regular source of revenue also allows the NHAI to use that cash flow as security for regular bond financing. In summary, funding is obtained from a variety of sources including multilateral loans, bond market finance backed by fuel tax revenue, fuel surcharge, government budget, private investment, investment by Special Purpose Vehicle (SPV) companies, and toll revenue on completed sections of the highway.

The funding requirements for the development of the national highway system in India between 2001 and 2004 are shown in the table below.<sup>32</sup>

#### NHAI Expenditures (In Rs Million)

Expenditure Category	FY 2001	%	FY 2002	%	FY 2003	%	FY 2004	%
EPC Projects	12,212.8	86.96%	38,082.5	90.91%	52,291.7	77.07%	61,328.6	71.82%
BOT /Annuity Projects	394.0	2.81%	1,884.8	4.50%	13,552.7	19.97%	21,305.2	24.95%
Maintenance	1,436.6	10.23%	1,924.3	4.59%	2,005.9	2.96%	2,752.7	3.22%
Total	14,043.4	100.00%	41,891.6	100.00%	67,850.3	100.00%	85,386.5	100.00%

The sources of funding to provide for that investment and maintenance need is illustrated in the table below.

#### NHAI Source of Funds ( In. Rs million)

Funding Source	FY 2001	%	FY 2002	%	FY 2003	%	FY 2004	%
Cess/Capital Base	18,000.0	128.2%	21,000.0	50.1%	20,000.0	29.5%	19,930.0	23.3%
Capital Grants for EAP	4,608.0	32.8%	8,867.6	21.2%	12,020.0	17.7%	11,591.2	13.6%
Loans from GOI	120.0	0.9%	1,129.4	2.7%	3,010.0	4.4%	2,897.8	3.4%
Loans from IFI	383.0	2.7%	612.6	1.5%	1,549.0	2.3%	1,830.5	2.1%
Private Sector Funding for BOT/Annuity	360.3	2.6%	1,725.0	4.1%	11,388.0	16.8%	17,178.9	20.1%
Receipts for Maintenance	886.2	6.3%		0.0%	1,183.4	1.7%	1,335.7	1.6%
Nett Toll Revenue	474.8	3.4%	730.8	1.7%	3,130.2	4.6%	3,594.5	4.2%
Use of Borrowed Funds	-10,788.9	-76.8%	7,826.2	18.7%	21,528.9	31.7%	39,639.6	46.4%
Total	14,043.4	100.0%	41,891.6	100.0%	67,850.3	100.0%	85,386.5	100.0%

A couple of points are noteworthy in the table. First, private sector financing primarily through the use of annuity based BOTs has grown rapidly reaching 20% of the funding by 2004. The other significant increase in percentage terms is the growth of debt which has risen from nothing in 2001 to almost half of the total funding by 2004. This is because the cess revenue that is being collected has been reassigned to debt carrying cost, rather than lumped into a capital account. This applies both to the borrowed funds as well as to the annuity based BOTs which both rely on repayment over a longer period of time. By applying the cess funds in this way, India is effectively leveraging their revenue stream into a longer term debt and equity package.

The size of the funding need over the coming years is discussed in the following text box.

<sup>32</sup> ADB TA: 3724: Enhancing NHAI's Capacity for Financial Management and Social Issues, Volume 1; Fund Mobilization, 2006.

### Forward Funding Requirements for National Highways India

The funding requirements implied in NHAIs mandates are significantly larger than the level of funding that has traditionally been provided through annual budget allocations. Road development needs over the period 2001 – 2021 have been assessed by MORTH in its report “Vision 2021”. For the period 2001 – 2011, the needs for NHs were estimated at Rs. 1,200 billion in 1999 prices or Rs. 120 billion on average per annum. This estimate covered: (i) four-laning/six-laning; (ii) two-laning with hard shoulders; (iii) strengthening of weak pavements; (iv) bypasses, bridges and safety and drainage; and (v) expansion of the NH system. The World Bank Study, “India – Financing Highways”, estimated total funding requirements in a similar range. Assuming cost inflation at about 4% per annum the annual cost in 2005 prices would be on the order of Rs. 150 billion.

When the average annual cost of adequate road maintenance on the NHDP I & II network alone, tentatively estimated at some Rs. 26.5 billion, is also taken into consideration future total average annual requirements are on the order of Rs. 176 billion (US\$ 4.1 billion).

The discussion of the source of funding for NHAI roads development program is shown in the text box.

### Possible Sources of Funds for National Roads in India

To complement the funds available from traditional central government sources – central government budgets, the cess contributions to the road fund and funds from international financial institutions - NHAI has pursued fund mobilization under two broad approaches.

- NHAI itself raises funds in the capital markets and then uses these funds to finance road works contracted out to private sector parties. Such road works have been contracted mainly in the form of the traditional EPC contract where NHAI pays the contractor based on unit rates and in accordance with the progress of the works
- Project companies established by a sponsor group with the objective of financing, building and operating a road section raise the funds from banks and the capital market.

In practice, the two approaches are complementary even at the level of the individual project where the funds from the two sources can be combined, such as for example when in the case of a BOT project with a viability gap contribution from NHAI, this contribution is sourced from NHAIs borrowing in the markets. This co-mingling of the two sources in individual projects is likely to continue in the future.

In the absence of increased levels of transfers from general taxation borrowing by NHAI and project companies, however, is only feasible if additional funds will be flowing to NHAI or the project companies from user charges. Thus, the establishment of enhanced levels of user charges – direct (tolling) or indirect (gasoline taxes/cess) – are an integral part of both approaches. Tolling as a form of direct user charges is a main requirement for additional fund mobilization

### Legal and Regulatory Structure

- The National Highways Authority of India (NHAI), established by an act of Parliament in 1988 and made operational in 1995, is responsible for development of all national roads, including expressways (see the organization chart in the Figure below);



### Common Standards for Operation

- NHAI is always the project sponsor. There is no confusion as to who is promoting the project, and all preliminary project development work such as feasibility studies and preliminary/detailed design are done by the NHAI or its consultants;
- National highways are managed and operated by the NHAI and are subject to national standards for design, operation and toll setting. For those roads that have been concessioned, the concession agreement sets the parameters for operation.

### Country Case 3: Malaysia

#### History

The initial decision to embark on the development of a toll expressway system in Malaysia was taken in 1977 with the objective of linking all the major cities from north to south along the west coast. To facilitate the development of this route, in 1980, the Government of Malaysia passed the Parliament Act 231, which established the Malaysia Highway Authority.

#### Sources of Finance, Financial Sustainability and Phasing

- Initially, development of the North South Expressway was undertaken with Government of Malaysia funding. This continued until 1986 with the formation of the Highway Concessionaires Berhad, the first highway concessionaire in Malaysia. In 1988 the company name was changed to **Projek Lebuhraya Utara Selatan Berhad (PLUS)** which continued to develop the network as a concessionaire and today is responsible for the overall operation and maintenance of the complete North South Expressway Corridor which was completed in 1994;
- "Project viability is a key concern. Concessionaires are able to receive assistance in the form of soft loans and advances for land acquisition from the government (initially they also received traffic volume guarantees). In addition, there are some cross-subsidization opportunities with commercial development. Direct government support is intended to be reduced gradually as the sector gains maturity and experience."<sup>33</sup>

#### Legal and Regulatory Structure

- The legal functions of the Malaysia Highway Authority are:
  - to supervise and execute the design, construction and maintenance of highways as determined by the Government;

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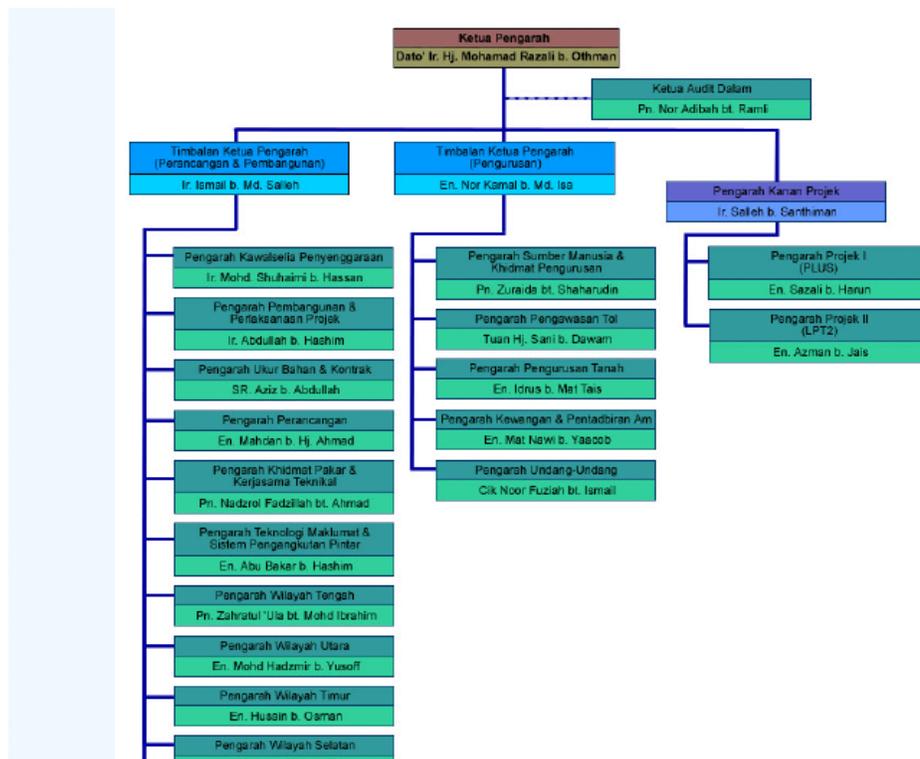
<sup>33</sup> Toll Road Development Under the Current Economic Situation in Malaysia, Ms. Hanifah Hassan, Director of Privatization Section, Economic Planning Unit, Prime Minister's Department in Volume I: Main Text Road Development Under the Current Economic Situation in Asia, Session 1-4, World Bank 1999

- to supervise and execute the design, construction and maintenance of rest and service areas and other facilities that may be deemed necessary along the highways;
- to collect toll from the users of highways and other dues from facilities along highways;
- to plan and carry out research to ensure efficient utilization of highways and other facilities along highways;
- to undertake all related tasks to ensure absolute development of highways and all facilities along them.

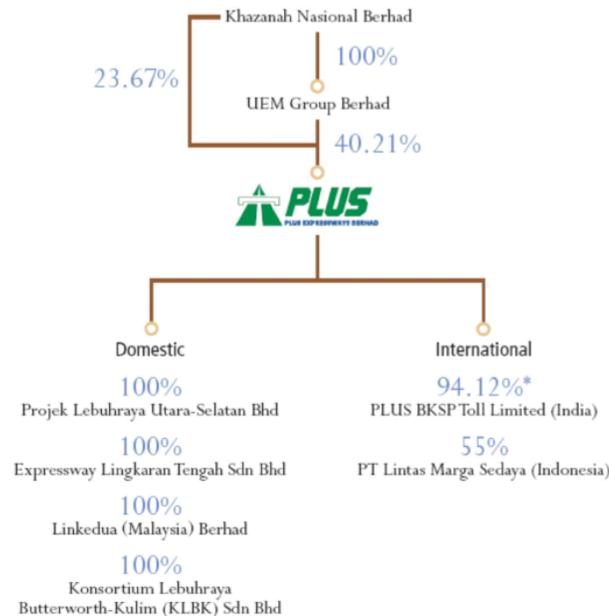
### Organisational Structure

- In practical terms, the Malaysian Highway Authority has become the prime Government agency in charge of the toll road system. Execution of the construction of the system and the ongoing operation of the toll road network has been concessioned to PLUS which operates and manages the system.
- The ongoing responsibility for the remainder of the road network remains with the Highways Department of the Ministry of Public Works and with the State PWDs.

### Malaysian Highway Authority



### Corporate Structure – PLUS Expressways Berhad



### Common Standards for Operation

- Because PLUS operates the whole of the North – South Expressway system in Malaysia, the same operating system and design standards apply to all the roads in the system.

### Country Case 4: Indonesia

Prior to the economic crisis in 1997-98, economic growth in Indonesia, particularly industry and trade, was active and fast paced. At that time, inadequate road infrastructure was unable to cope with the fast rising population and the growth in the economy, resulting in serious congestion on major sections of the arterial roads. This in turn was the main government consideration resulting in the policy of building toll roads as an alternative route to the congested arterials.

### Sources of Finance, Financial Sustainability and Phasing

- Initially, the development of toll road projects was financed by the Government through a combination of the State Budget (APBN) and overseas soft loan funds, developed and operated by a State-Owned Business Enterprise, PT Jasa Marga (Persero). In 1990, the government stipulated through Law No.13/1990, Article 14, that the development of toll roads should not disrupted the State Budget.
- Financing of the toll roads has used a variety of sources. These include:
  - Longer term finance by State Banks for Rupiah;
  - Foreign credit for US Dollars;
  - Foreign bonds;

- Revenue sharing Bonds;
- Share listing on the Jakarta Stock Market;
  
- PT. Jasa Marga and a number of partners and other independent concessionaires have together developed a number of express toll road links in Java. Within Java the focus has mainly been on access to and from Jakarta and around Surabaya, the largest cities with limited intercity links;
- During the financial crisis of 1998, most of these instruments went into default. Jasa Marga was forced to assume responsibility for some of the default companies and other companies negotiated with securities holders for extensions of the bond periods or adjustments in the interest rates;
- However, a number of challenges to completing the Trans-Java Highway needed to be overcome. These include the need to partly subsidise portions of the route which do not provide a financial return to the investor, the need to clarify the cost of land acquisition which has risen dramatically since the expressway concessions were originally tendered and the need to clarify government policy regarding the acquisition of land for new concessions. The GOI after much reflection has now decided to purchase the land itself and provide the land as a contribution to the future concessions. For existing concessions, the investor will be responsible for up to 110% of the original estimated land cost but the GOI will cover the additional cost above 110%.

### **Legal and Regulatory Structure**

- As the economy has improved, the Government of Indonesia has once again begun to push forward with the infrastructure program and to ensure transparency and to improve the level of comfort to potential investors in the toll road network, a number of institutional changes have been implemented to clarify the roles and responsibilities of the government and the investors. These changes are mandated through the publication of a revised Road Act (2004), followed by promulgation of two regulations, regarding respectively, Toll Roads (2005) and Toll Road Regulatory Body (BPJT) (2005).

### **Organisational Structure**

- BPJT is both the regulator and the “owner” of the PPP expressways and responsible for the process of concessioning. BPJT has now moved ahead with a number of other potential PPP opportunities – mainly in cooperation with other levels of government but since the financial viability of these new opportunities is questionable, by mid 2008 none of the non Trans-Java Highway opportunities had been successfully concessioned;
- PT. Jasa Marga through virtue of Government Regulation No.8 /1990 was given the authority to establish joint venture companies with investors from the private sector to construct toll roads.
- In 2008 Jasa Marga was fully corporatized and it is now considered just another potential toll road development and operation company. It has raised significant investment capital as foundation money for future toll road investment.

### Common Standards for Operation

- Because a number of companies have been involved in developing the Indonesian toll roads, there are not standards for operations or for exchange of data. Tolls vary widely depending on when the original toll rate was established and this has led to a number of requests for renegotiation of the concession terms.

### Country Case 5: Thailand

#### History

The Royal Thai Government adopted the master plan in April 1997. The master plan contains 4,150 kilometers of motorway to be built in the next 20 years. Cost estimates in 1997 for the entire motorway projects are approximately 472,360 million baht (US \$ 11,809 million) of construction costs and about 65,600 million Baht (US \$ 1,640 million) of land acquisition and compensation costs (at the rate of 40 Baht to a US dollar)<sup>34</sup>.

Two agencies have primary jurisdiction over toll roads, the Department of Highways (DOH, under the Ministry of Transport and Communications) and the Expressway and Rapid Transit Authority (ETA, under the Ministry of Interior). Unlike DOH, which builds and operates all of the free trunk roads in Thailand, ETA is a state-owned enterprise and as such is not entitled to an annual budget allocation from government revenues; hence, all ETA roads must be tolled.

The ETA built the First Stage Expressway (FSE) joining transportation systems from the north, east and south and allowing vehicles to traverse the city of Bangkok in the 1980s. Budgetary pressure and the need to accelerate development of the Second Stage Expressway (SSE) that would link to the FSE and thereby create a beltway around central Bangkok led the government of the day to decide to build that portion under BOT funding<sup>35</sup>. This eventually led to a broader involvement of private investors in the expressway program in and around Bangkok.

#### Sources of Finance, Financial Sustainability and Phasing

- Department of Highways has set up separate project operating companies that build under a BOT model but ownership remains with the DOH;
- The Expressway and Rapid Transit Authority of Thailand has done the same thing with expressways under their authority.
- The BOT act allows for 25 to 30 year concessions with a reasonable return to the investor. Tolls can be adjusted periodically with agreement of the Government;
- Some private sector money has been invested in the toll road system, notably with the SSE. Originally conceived as a full BOT, lack of traffic revenue resulted in Bangkok Expressway Company Limited (BECL) the concessionaire negotiating with the ETA to share revenue on both the FSE and the SSE. This turned the BOT concession into a PPP package.

<sup>34</sup> Paper "Privatization of Highway Infrastructure in Thailand" Bureau of Planning, Department of Highways, Thailand,

<sup>35</sup> Build, Operate, Transfer: Paving the Way for Tomorrow's Infrastructure, Sidney M. Levy, 1996

### Legal and Regulatory Structure

- ❑ All development process which includes highway development starts with the Office of the National Economic and Social Development Board (NESDB) which formulates the guidelines of the 5-Year National Economic and Social Development Plan (NESDP). Ministries submit their projects to NESDB for approval. The cabinet then gives final approval for the projects submitted by NESDB based on their justification, economic factors and political popularity.
- ❑ One of the problems in Thailand is the lack of an overall regulatory agency that can ensure that the toll expressway development is coordinated among the agencies that may be involved. While the Department of Highways has ultimate responsibility for the policy and planning development, other interests, both public and private, lobby and negotiate for their different concepts which can in the end result in overlap and inefficient use of resources.

### Organisational Structure

- ❑ The Ministry of Finance: provides government support (Investment, guarantees) for projects.
- ❑ National Economic and Social Development Board (NESDB): is under the Office of Prime Minister and responsible for strategic infrastructure planning, but no veto over projects.
- ❑ Department of Highways (DOH) is under the Ministry of Transport and is responsible for construction, repair and maintenance of all highways in Thailand and including the planned 4,345 km tolled motorways.
- ❑ Expressway and Rapid Transit Authority of Thailand (ETA) is a state enterprise that constructs, maintains, and manages the country's expressways and public transportation infrastructure. Established by the Thai Interior Ministry in 1972 in response to increasingly congested roadways, EXAT builds ground-level and elevated toll roads and roadways for monorails, subways, bridges, and boat tunnels, among others. The agency is headed by a governor with deputy governors in charge of various aspects of operations.

### Common Standards for Operation

- ❑ Tolling on all expressways around the Bangkok area is based on open systems with integration of the tolls on the FSE and the SSE. While some inconsistency remains in the spacing of the toll booths on the different expressways, there is no dramatic difference in the operations of any of the tolled expressways.
- ❑ Toll collection systems adopted for the inter-city motorway project will be the close system in which road users have to pay toll according to traveling distance. The concessionaire has the sole right to collect tolls from any users of the inter-city motorway. The Thai Highway Concession Act specifies toll rates of a "closed" toll system as below:
- ❑ The concessionaire may from time to time request to adjust the toll rates so that they are fair to the company in light of changes in the economic situation. The government will assist the concessionaire in land acquisition process. Request

for government subsidy in other areas will be considered in detail during the project negotiation stage.

### Country Case 6: South Africa<sup>36</sup>

#### History

Responsibilities for management of the national road network were originally in the hands of the South African Roads Board - part of the Ministry of Transport. However, studies revealed that the Department's activities could be more efficiently and cost-effectively undertaken in specialised environments by professionally-managed, arms-length agencies functioning on commercial principles. The Department of Transport therefore restructured and rationalised its operations, establishing four different agencies, of which the **National Roads Agency (NRA)** was one.

#### Sources of Finance, Financial Sustainability and Phasing

- Taking into account the disparate demands on tax-based revenues, the expansion of the primary road network needs to be strategically programed and funded under a private sector borrowing/concessioning program, thereby reducing the pressures on the National Treasury. Based on the "user pays" principle, two types of toll road have been introduced since 1995:
  - State toll roads that are funded by loans backed by government guarantees; and
  - Toll roads that are financed, maintained and operated by private companies through concession agreements with NRA.
- Concession agreements offer a number of benefits:
  - Since no property belonging to the State is sold, the Government always retains ownership of these assets;
  - During the concession period, the roads are both built and maintained at no cost to the State;
  - At the end of the concession period, the State is left with an improved asset that is not only of greater value, but also entirely debt-free. Further, since the roads are funded without recourse to a government guarantee and their existence brings both tangible and quantifiable economic benefits, South Africa's international credit rating is improved thereby; and
  - Perhaps most importantly, money that NRA saves the Government from having to spend on maintaining and expanding the road network can be used for social development programs without jeopardizing the Government's long-term fiscal objectives.
- NRA looks increasingly to the private sector for capital to invest in the road infrastructure. NRA's Act entitles it to raise funds by means of loans from any source - including the money and capital markets - with the approval of the Minister of Transport and in consultation with the Minister of Finance.
- Therefore, while NRA has raised capital through the issuing of government-guaranteed loans, it has also put market-making structures in place to facilitate

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<sup>36</sup> The following outline is taken from the NRA website at < <http://www.nra.co.za>>

tradability in the debt. It is NRA's long-term intention to create a market in its debt in order to facilitate borrowing requirements, enhance its liquidity and, in so doing, reduce its cost of borrowing.

- All capital market bonds are listed by the Bond Exchange and can be traded both locally and offshore. Further, all conditions relevant to foreign investors have been met.

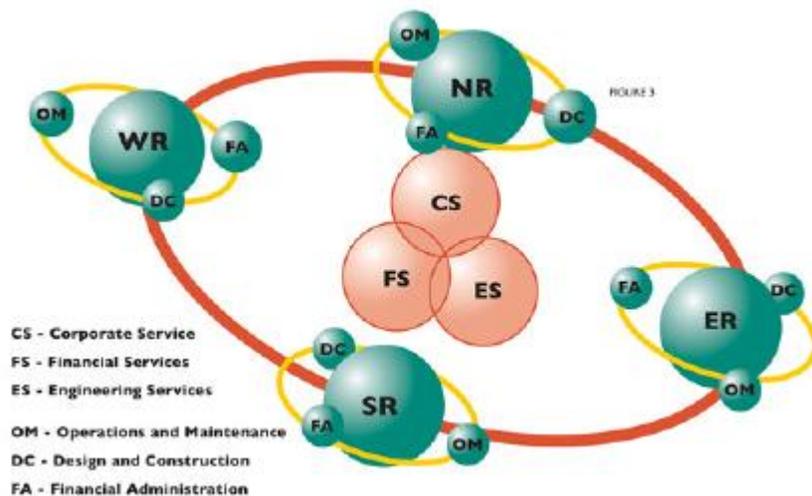
### Legal and Regulatory Structure

- The NRA is an independent, statutory company registered under the Companies Act in 1998 and established in 1998 by the South African National Roads Agency Limited and National Roads Act. The South African government, represented by the Minister of Transport, is the sole shareholder and owner of the Agency. The NRA mandate is to develop, maintain and manage South Africa's 7,200 kilometre national road network excluding land.

### Organisational Structure

- NRA's Board of Directors reports directly to the Minister of Transport via its Chairman. Board members are experts in various spheres of business and infrastructure development. NRA's key strategic challenge is the long-term sustainability of the primary road network. Therefore, a program has been developed to finance the provision of a primary road network consisting of both toll and non-toll roads.
- The organization structure of the NRA is shown below in figure below.

**Organisation Structure for National Roads Agency**

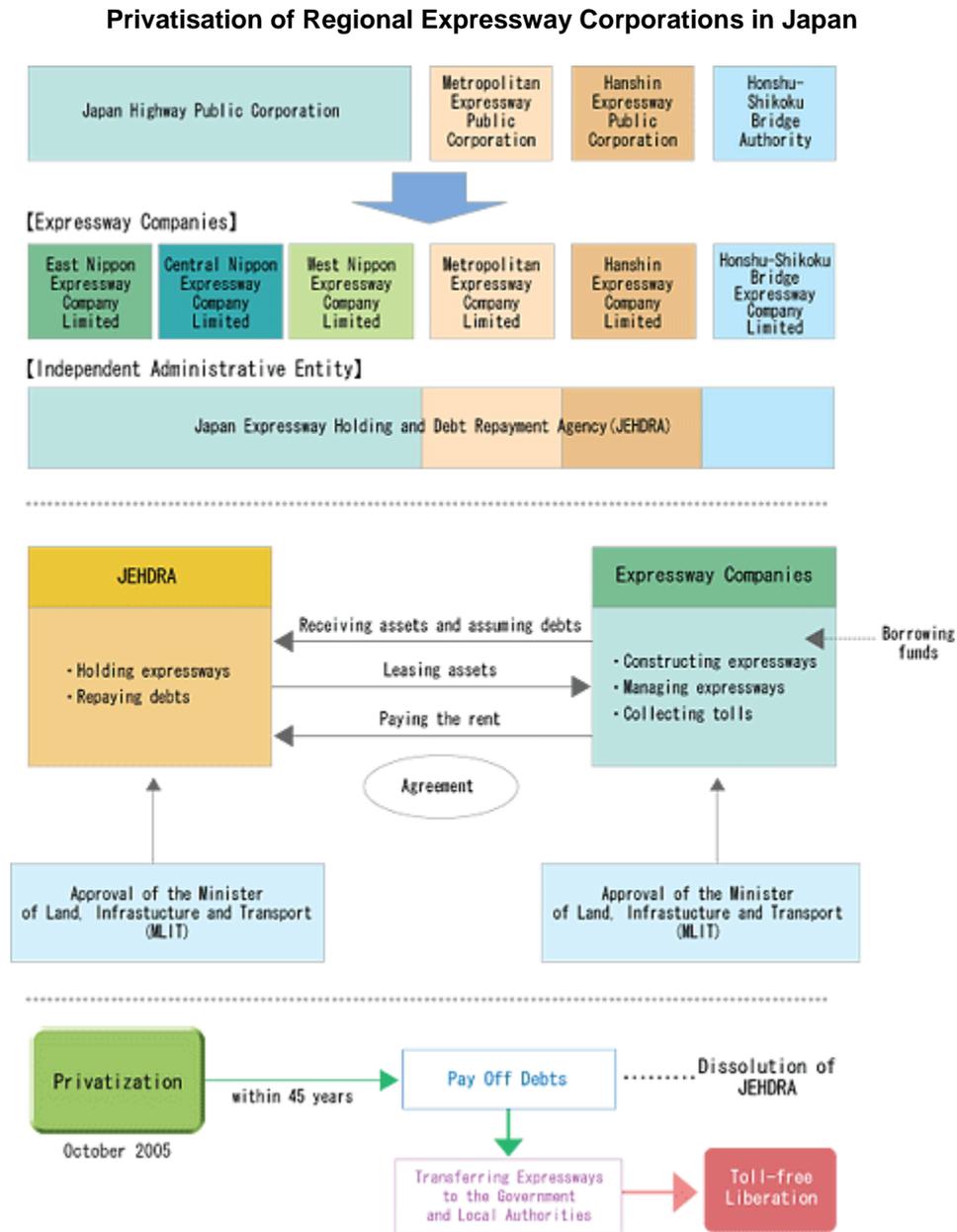


### Common Standards for Operation

- Since all the roads are operated by the NRA the standards are consistent across the network.

### Country Case 7: Japan

In 2005 Japan totally restructured its toll road ownership, operating and financing structure. The new structure and its transition from the earlier structure is as shown in the Figure below.



- ❑ Prior to 2001, Japan’s expressway structure was dominated by four “corporations” which were primarily public corporations;
- ❑ In 2001, Japan decided under the “Consolidation and Rationalization Plan of Government-Affiliated Corporations” to fully privatize the operation of its

- expressway system. The four expressway corporations were privatized into six separate companies with a new holding company, the Japan Expressway Holding and Debt Repayment Agency (JEHDRA) established to hold the expressway assets, pay debt and collect concession fees from the privatized corporations. The target is to clear off 40 trillion yen of interest bearing debt within 45 years and then to transfer the roads into freeways.
- ❑ As shown above, JEHDRA is meant to be a temporary agency. It is an agency set up specifically to achieve the objective of paying off the current debt and to move to a fully freeway operation.
  - ❑ The existing structure remains confusing since the current six corporations are essentially private but the intent is to pay off the current debt and make the expressways into freeways. This issue has not yet been resolved.

### Country Case 8: Korea

#### History

The Ministry of Construction and Transportation was born in December 1994 when the two separate ministries were merged in order to better deal with traffic congestion and to establish more efficient system of linkage between investment in and operation of infrastructures.

Expressway construction entered into the 5 year planning cycle of Korea in the 1960s. The first expressway was started in 1967 with partial opening in Dec. of 1968. The Korea Highway Corporation came into existence with the passing of the Korea Highway Corporation Law in January of 1969 with a capital of 50 billion won and the acquisition of the responsibility for 75 kms of expressway which had just been completed.

The Korea Highway Corporation (KHC), now called the Korea Expressway Corporation (KEC) (2007) is a public corporation charged with constructing, reconstructing and maintaining national expressways, all of which are operated as toll roads. Until the late 90's KHC was solely responsible for the development of the expressway network. By the end of 1997, Korea had 20 expressways with a total length of about 2,000 kms representing about 25% of the national road network and about 5% of the overall public road network<sup>37</sup>. By the end of the 1990s one day travel throughout Korea was a reality.

KEC is currently responsible for approximately 4,000 kms of expressways with an updated objective to reduce travel time to half day to all points in Korea with access to an expressway within 30 min travel from any point.

Average traffic volume is over 45,000 vehicles per day and revenues are pooled with a unified toll fee. Tolls were originally introduced to generate enough revenue to cover only operating and maintenance cost. But shortage of public funds means that KEC now must contribute significant funding to new expressway construction. The Government provides the balance of the money in the form of equity. KEC operates on a break even basis with revenue targeted to cover operating costs, debt cost on both commercial borrowing and interest on government loans.

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<sup>37</sup> Commercial Management and Financing of Roads, By Ian Graeme Heggie, Piers Vickers, World Bank Technical Paper No. 409, 1998

### Sources of Finance, Financial Sustainability and Phasing<sup>38</sup>

As noted above, the original funding for the expressway system came directly from the government through the KHC. Tolls were set to recover maintenance and operating cost including debt. The growth of government funding over the years is illustrated in the following table H1.

**Table H1: Korean Government Expenditure on Roads**

(Unit: One hundred million won)

Classification	1998	1999	2000	2001	2002	2003	2004
Total	132,884	157,376	148,136	167,247	165,436	175,524	170,598
National (S.A.T.F.)	59,203	76,216	79,876	89,134	84,287	93,289	82,143
Local (Supported by Central Government)	15,934	14,998	17,375	23,291	18,050	19,210	17,342
Local	40,172	39,241	23,342	28,322	38,301	42,272	42,574
State owned	17,575	24,950	24,730	23,557	12,859	15,161	14,732
KHC							
Others	-	1,971	2,813	2,943	11,939	5,592	13,807

※ S.A.T.F Special Accounting for transportation facility

※ KHC Korea Highway Corporation

As shown above the KHC share of the total road spending pie has dropped from 16% in 1999 to approximately 8.6% in 2004 with a gradual increase in others, or private sector investment which by 2004 accounted for 7.6%. The combination of the KHC and private investment has been held fairly steady since 1999 at between 25 and 28 hundred billion won.

After the mid 90s the decision was taken to expand the scope of expressway finance to include the private sector. A number of recent investments are either wholly private sector investments or are joint ventures between KHC and the private sector as shown below in table H2.

<sup>38</sup> Status Paper on Road Financing and Improving Road Safety, Ministry of Construction and Transport, Republic of Korea, April 2006

Table H2: Private Investment in Korean Toll Roads

	Incheon airport highway	Cheonan-Nonsan highway	Daegu-Busan highway	Seoul Beltway(Ilsan-Toigyewon) highway	Seoul-Chuncheon highway	Seosuwon-Osan highway	Yongin-Seoul highway	Incheon Bridge	Remarks	
Implementing Authority	MOCT	MOCT	MOCT	MOCT	MOCT	MOCT	MOCT	MOCT	1-1	
Investor	Joint venture	Domestic	Domestic	Domestic	Domestic	Domestic	Domestic	Joint venture	1-2	
Value in USD	1.7 billion USD	1.7 billion USD	2.8 billion USD	2.4 billion USD	2.3 billion USD	1.6 billion USD	0.9 billion USD	1.6 billion USD	1-3	
Length (Number of lane)	40.2km (6~8lanes)	81.0km (4 lanes)	82.1km (4 lanes)	36.3km (8 lanes)	61.4km (4~6lanes)	38.5km (4~6lanes)	22.9km (4~6lanes)	12.3km (6lanes)	1-4	
Proceeding Stage	Under operation	Under operation	Under operation	Under construction	Under construction	Under construction	Under construction	Under construction	-	
Contract Period	30 years	30 years	30 years	30 years	30 years	30 years	30 years	30 years	1-5-1	
PPP Modality	BTO	BTO	BTO	BTO	BTO	BTO	BTO	BTO	1-5-2	
Toll (based on a passenger car)	6,700 KRW	7,600 KRW	8,500 KRW	4,000 KRW (based on the price in Oct. 99)	5,200 KRW (based on the price in Dec. 02)	2,450 KRW (based on the price in Sept. 02)	1,600 KRW (based on the price in Jan. '04)	4,600 KRW	1-6-1	
Method for returning of investment	Toll, S/A income	Toll, S/A income	Toll, S/A income	Toll	Toll	Toll, S/A income	Toll, S/A income	Toll	1-6-2	
Gov. Support	Financial support	-	Supporting 27% of the construction cost	Supporting 28% of the construction cost	Supporting 25% of the construction cost	Supporting 28% of the construction cost	Supporting 28% of the construction cost	Free support for part of construction	Free support for part of construction	1-7
	Land	Land acquisition and free offer								1-7

※ MOCT Ministry of Construction and Transportation, Republic of Korea

## Legal and Regulatory Structure

The Korea Expressway Corporation was set up by the passing of the Korea Highway Corporation Act in 1969 and subsequently updated in 1997 to increase its capital, allow for direct expropriation of land and allow the corporation to invest in other companies such as public private partnerships.

The Private Participation in Infrastructure (PPI) programme of the Republic of Korea was formally launched in 1994. The limited success of the initial efforts and budgetary constraints after the Asian financial crisis of 1997 prompted the Government to take new initiatives in this area. A new PPI law was adopted in 1998, establishing the Private

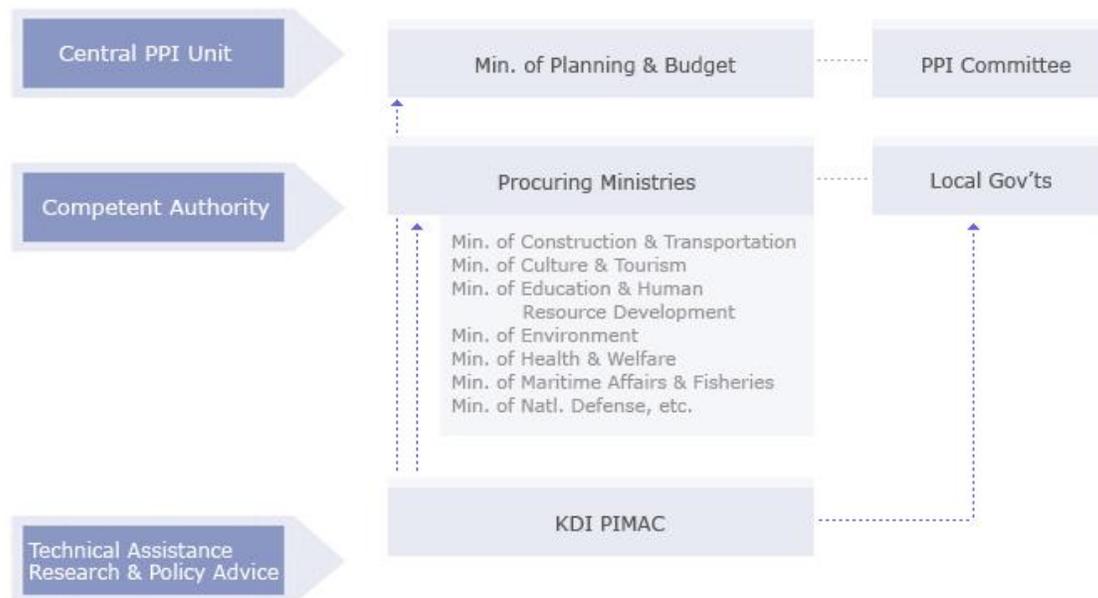
Infrastructure Investment Center of Korea in 1999. The Center acts as a special arm of the Government for the promotion of private sector participation in infrastructure sectors.

The foundation of PPP in the development of toll roads in Korea is the Private Investment Act for Infrastructure Facility.

The Ministry of Strategy and Finance (MPB) is responsible for the development and implementation of national fiscal policies. As the MPB coordinates comprehensive investment plans and resource allocation, the MPB is in charge of national PPI program. The major responsibilities of MPB include the following<sup>39</sup>:

- ❑ Developing primary PPI policies,
- ❑ Coordinating and establishing overall investment plans,
- ❑ Administering the PPI Act and the Enforcement Decree,
- ❑ Designing PPI Basic Plans that regulates major implementation procedure and related governing rules, and
- ❑ Holding the Private Investment Committee which designates national PPI projects and concessionaires.

**Figure H1: Levels of Authority for PPP**



### Organisational Structure

The Korea Expressway Corporation is a partially government owned organisation and partly owned by the major banks as shown below.

<sup>39</sup> See <[http://ppi.mpb.go.kr/PPI\\_Organization.jsp](http://ppi.mpb.go.kr/PPI_Organization.jsp)>

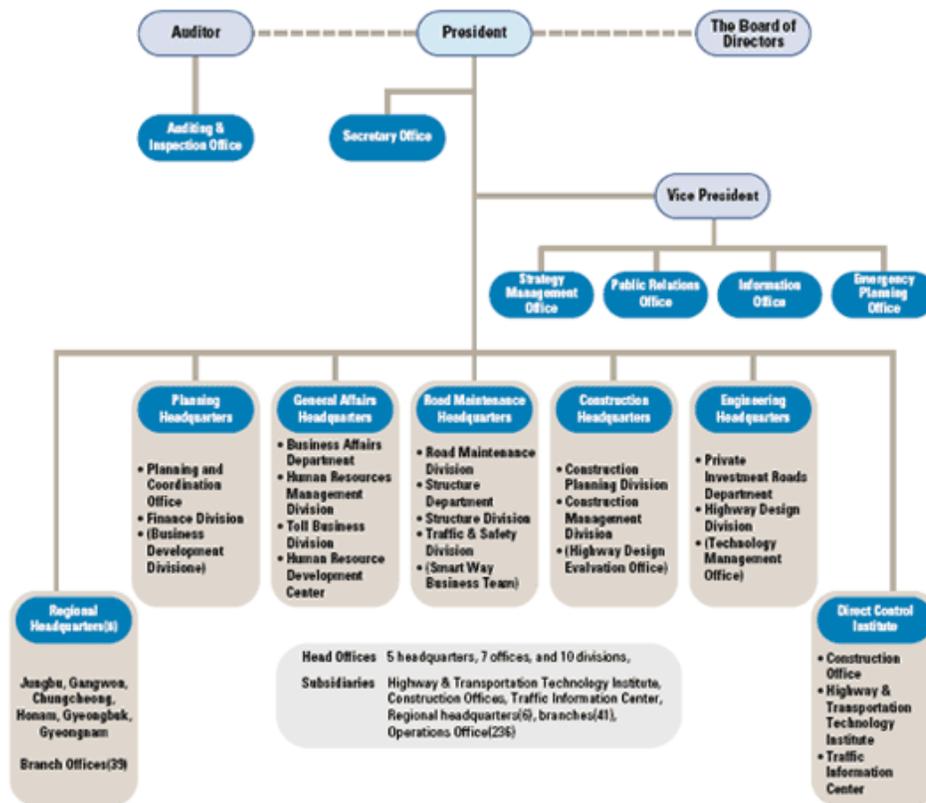
**Table H3: Ownership Shares**

		(KRW billion)
Ministry of Construction and Transportation	15,416	76.56%
Ministry of Finance and Economic	2,334	11.59%
The Korea Development Bank	1,430	7.10%
The Export-Import Bank of Korea	950	4.72%
Kookmin Bank	6	0.03%
SUM	20,136	100%

The Ministry of Construction and Transportation and the Ministry of Finance and Economics together own about 90% of the corporation with the remainder owned by the large banks. But this five shareholder structure allows the corporation to fall under the companies law and thus be accountable to its shareholders in a fully corporate sense.

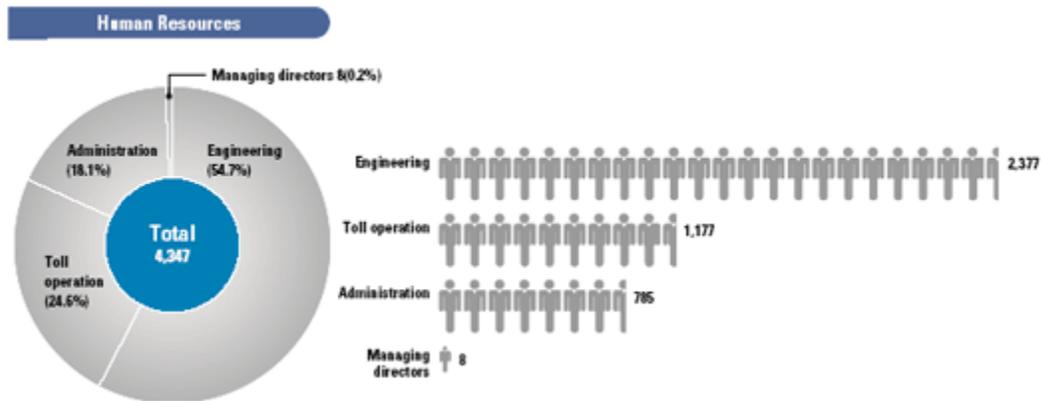
The organisation structure for the KEC is as shown below.

**Figure H2: KEC Ownership Structure**



Total staffing of the KEC is:

Figure H3: KEC Staff Levels



## Common Standards for Operation

### Setting Tolls<sup>40</sup>

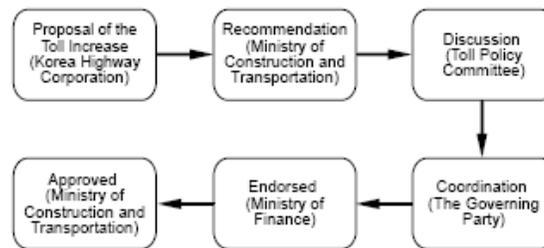
The highway toll levied by the Korea Highway Corporation is based on the concept that the user benefiting from the road should pay for the service. The user benefit obtained by using the highway is normally estimated by comparing the user benefit from the alternative national road system, which is normally free to use. The amount of user benefit is 245 won/km, however, the actual toll levied is 34.8 won/km, which is almost one tenth of Japan and one third of France.

The reason for the far below user benefit concept of the current toll is that the highway toll is tightly controlled by various bodies of governments as well as the congress. It is based on the fact that the toll is significantly influenced by other various manufactured items as well as service prices.

Figure H4 presents the general process of the toll setting processes. The Korea Highway Corporation, the toll collection corporation, proposes the toll increase based on the balance sheets of the Corporation. After the toll increase proposal was submitted, the Ministry of Construction and Transportation (MOCT) recommend to the Toll Policy Committee, which consists of various groups including citizen's representatives. After close review by the Committee, the recommendation is submitted to the Party for coordination. Finally, the Ministry of Finance endorses it, and the MOCT approves the toll increases.

Entering into the tollgates, the highway ticket is given by the highway ticket issuing machine, and vehicles are classified automatically after identification by the vehicle classification system. When arriving at the tollgate of destination, drivers pay the toll by cash or toll card manually.

<sup>40</sup> EVALUATIONS AND IMPROVEMENTS OF THE KOREAN HIGHWAY ELECTRONIC TOLL SYSTEM M.-S. CHANG, K.-W. KANG, Y.-T. OH, H.-W. JUNG,

**Figure H4: Process for Setting Tolls**

Toll collection is based on the principle that those who benefit are those who pay. The money so collected is spent on construction, maintenance and management of the expressways for the benefit of the users.

The basic system is primarily closed with tickets issued at toll booths and tolls collected at the exit toll booth. Recently the system has been expanded to include automated toll collection from transponders, implementation of a “Hi-Pass” which allows payment with a credit card passed close to a reader at the toll gate and recently payment by cell phone.

Prepaid systems like transponders now account for over 35% of usage.<sup>41</sup>

### Country Case 9: Australia<sup>42</sup>

#### History<sup>43</sup>

Australia develops national road transport policy and regulation through the Australian Transport Council (ATC) (previously the Australian Transport Advisory Council, or ATAC), a political body supported by a Standing Committee on Transport (SCOT) and with research based advice provided by a National Transport Commission (NTC).

Powers over road transport are exercised by the states, not the national (Commonwealth) government. Before 1991 efforts to co-ordinate road transport regulation among the states were made by the ATAC, but the process was advisory and relied on implementation by the states. By the early 1990s, the division of powers under Australia’s federal system was seen as impeding economic efficiency – there were significant differences between states over matters like VWD standards, permissible driving hours and road cost recovery from users. As a result the National Road Transport Commission (NRTC), the forerunner of the NTC, was established in 1993.

Like Canada, Australia makes use of formal inquiries – studies commissioned by government into aspects of policy or regulation. Recommendations do not necessarily result in policy or regulatory change but over the longer term they influence policy thinking.

In summary, the key features of the Australian approach to transport policy and regulation are as follows:

<sup>41</sup> Toll Road News, Open road tolling and mobile phones to pay tolls in S Korea, Posted Sun, 2007-09-09

<sup>42</sup> Australia is a federal structure so roads are a State responsibility. We have reviewed here the two largest states, Victoria and New South Wales.

<sup>43</sup> Policy Reform in Road Transport, Project Number: TA 4351-PRC November, Ministry of Communications and Asian Development Bank 2005

- ❑ Because of the division of powers between federal and state governments, joint bodies have been established to help harmonize policies and regulations; in the NTC, Australia has established an agency that makes policy recommendations and draft legislation that is passed on to the political level (ATC) where there is a legislative requirement that the advice is subject to a vote;
- ❑ Australia has gone further than most in combining multiple aspects of road transport regulation and road user taxation (user charges) within one agency (the NTC);
- ❑ Australia has combined policy formulation and regulation for road transport with rail (and intermodal) transport within one agency (the NTC).

### **Victoria<sup>44</sup>**

In 1982 the Road Safety and Traffic Authority was moved from the Ministry of Police and Emergency Services to the Ministry of Transport. In 1983 the Road Safety and Traffic Authority was combined with the TRB and MRB to become the Road Traffic Authority (RTA). The same year, the Country Roads Board (CRB) changed its name to the Road Construction Authority (RCA). The final logical step came in 1989 when the RTA and RCA were merged to become the Road Corporation – better known to millions of Victorians by its trading name – **VicRoads**.

VicRoads manages and develops major arterial roads and freeways (excluding tollways) which form part of Victoria's road network. These roads are the principal routes for public, private and commercial travel, and for on-road public transport.

Victoria's arterial road network comprises approximately 22,300 km of roads and 5,250 bridges and major culverts, and is valued at approximately \$17 billion. Major road development projects are undertaken to deliver the aims of State Government strategies and plans.

### **New South Wales**

The Roads and Traffic Authority (**RTA**) was established on 16 January 1989, under the Transport Administration Act 1988 through an amalgamation of the former Department of Main Roads, Department of Motor Transport and the Traffic Authority.

The road network that the RTA manages includes:

- ❑ 17,912 kilometres of State Roads (including 4268 kilometres of AusLink network and 161 kilometres of privately funded toll roads).
- ❑ 2946 kilometres of Regional and Local roads in the Unincorporated Area of NSW.
- ❑ 4998 bridges, including major culverts and nine vehicular ferries.
- ❑ 3630 traffic signals and other traffic facilities, systems and corridor assets.

It provides financial assistance to local councils to manage 18,474 kilometres of Regional Roads and also provides some funding and support to the 144,750 kilometres of council-managed local access roads which are funded by local ratepayers and federal road assistance grants.

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<sup>44</sup> Material related to VicRoads is reported here from < [www.vicroads.vic.gov.au](http://www.vicroads.vic.gov.au) > and < <http://www.seita.com> > and < <http://international.fhwa.dot.gov/assetmanagement/> >

## Sources of Finance, Financial Sustainability and Phasing Victoria

The Victorian Government's Better Roads Victoria Trust Account provides funding for road improvements across Victoria. The State Government makes payments into the Better Roads Victoria Trust Account along with the revenues from the increase in registration renewals of \$17 per vehicle that was announced in the May 2003 budget. Ongoing annual indexation applied to registration reviews ensures that the real value of the payments is maintained.

Additionally, from 1 July 2005, revenue raised from traffic cameras and on the spot speeding fines was channelled into constructing and maintaining Victoria's roads within the meaning of the Road Management Act 2004, road safety initiatives, and traffic and transport integration programs through the Better Roads Victoria Trust Account.

Under the Better Roads Victoria program there is a special emphasis on projects which will contribute to economic development by reducing transport costs for business and improving the efficiency of our roads. As well, projects funded under the program will:

- improve safety for all road users and make travelling more comfortable
- improve access for local communities
- create much-needed jobs in the construction industry and related support industries
- encourage further tourism.

One third of the trust account is being spent on roads in country Victoria. Asset investment expenditure is reported in the annual budget papers so Victorians can see that their money is being spent where it is most needed.

## Public-Private Partnerships Victoria

The Victoria government has participated in two major public-private partnerships (PPP) for toll roads over the past 10 years. The first PPP project in Melbourne, the **CityLink** project, consisted of 19.3 km (12 mi) of new urban freeways including tunnels, elevated roads, and bridges. It was constructed from 1996 to 2000 for A\$2.2 billion (US\$1.7 billion). Fully dependent on electronic tolling (transponder and video imaging), the CityLink project generates about A\$250 million (US\$189 million) a year. A concessionaire won the bid to construct, operate, and maintain this project for 34 years.

**CityLink** is organized into several divisions or groups, one of which—the Infrastructure Group—is responsible for the owner's (Victoria's) interests and for monitoring performance. These interests were defined as providing travel-time benefits, reliability, and a better road; producing a showpiece asset; maintaining sustained asset performance; assuring an acceptable return on asset investment; assuring safety for users, staff, and contractors; and complying with governance, corporate, and social responsibility mandates. **Operations and maintenance activities are outsourced**, with about A\$20 million (US\$15.1 million) spent for both (40 percent for operations and 60 percent for maintenance).

The most recent PPP project, called **EastLink**, consists of 45 km (28 mi) of freeways (39 km (24 mi) tolled) with twin 1.5-km (0.9-mile), three-lane tunnels. The project has a long history of controversy and public discourse, ending up with substantial commitments to environmental mitigation, which were incorporated into the project costs (and, in the process, extending the concession time frame to 38 years to recover these additional costs). Unlike CityLink, a special authority called the **Southern and Eastern Integrated Transport Authority (SEITA)** was established in 2003 to oversee this US\$2 billion project on behalf of the Government of Victoria.

SEITA has a five member Board appointed by the Governor in Council and responsible to the Minister for Roads and Ports. The Board provides strategic advice and governance to the Authority.

The EastLink Project is being delivered as a Public Private Partnership. Using this model, a private company funds the construction of the roadway based on specific requirements determined by the State. In return for its spending, the Government allows the private company to operate and toll the road for a set period.

SEITA managed the bid process for EastLink and the selection of the private sector partner - ConnectEast. Shortly after the successful award of the contract, ConnectEast was listed on the Australian Stock Exchange. Total equity and debt raised to deliver EastLink was \$3.8 billion. The EastLink Concession Deed outlines the requirements for ConnectEast to fund, design, construct, operate, toll and maintain the road for a period of 39 years.

### **New South Wales**

State roads are funded from the state budget and are normally included in the Major Projects - State Budget Paper 2008-2009 which provides a rolling two year budget timeframe for funding including State and Commonwealth contributions and road user charges.

“The first motorway PPP in Australia occurred in the mid-1980s when the NSW Labor Government responded to an unsolicited bid from the private sector to construct the Sydney Harbour Tunnel. This was followed by a Liberal/National Party Coalition Government using a similar private financing technique for the M4, M5 and M2 Motorways. Upon returning to government in 1995, the Labor Party continued with this approach for the Eastern Distributor, the Cross City Tunnel, the Westlink M7 Motorway and the Lane Cove Tunnel.<sup>45</sup>”

These roads and tunnels have largely been built by the private sector with private investment. In some cases the individual operating companies have been bundled together and listed on the Sydney Stock Exchange, One example is the Sydney Roads Group which was originally owned by Macquarie Bank.

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<sup>45</sup> Forum: Public Private Partnership or Conflict 263 PUBLIC PRIVATE PARTNERSHIP OR CONFLICT: IS IT TIME FOR A NEW APPROACH? PAUL FORWARD, 2006

## Legal and Regulatory Structure

### VicRoads

The functions and objects of the Roads Corporation (VicRoads) are outlined in the Transport Act 1983, Road Safety Act 1986 and the Road Management Act 2004. These Acts provide VicRoads with the powers to manage the 22,320 km of Victoria's arterial road network, implement road safety strategies and programs and provide vehicle registration and driver licensing services.

VicRoads delivers social, economic and environmental benefits to communities throughout Victoria by managing the Victorian arterial road network and its use as an integral part of the overall transport system. Statutory and Government policy obligations and the priorities are set out in Strategic Directions 2008-2010 which defines annual programs and activities.

### RTA

The RTA is the NSW State Government agency responsible for:

- Improving road safety.
- Testing and licensing drivers and registering and inspecting vehicles.
- Managing the road network to achieve consistent travel times.

## Organisational Structure

### VicRoads

VicRoads is the registered business name of the Roads Corporation, a statutory Corporation within the Victorian Government infrastructure portfolio. The infrastructure portfolio comes under the responsibility of the Minister for Roads and Ports. The Corporation employs approximately 2700 staff to work in partnership with other government agencies, local government and the private sector to provide road, registration and licensing services throughout Victoria.

A VicRoads Advisory Board, established by the Transport Act 1983, meets every two months. It provides advice to the Chief Executive on the following matters:

- the needs of the Victorian community in regard to the provision of road and road user services and the development and maintenance of effective policy and strategic responses to such needs;
- the impact of Government strategies and policies on the programs, operations and future directions of VicRoads and its services;
- future needs for road services including integrated and multi-modal transport services;
- the use of new and improved technology for provision of better road services;

- ❑ the fostering of working relationships with user groups across the community and industry in the development of road services;
- ❑ public communication of VicRoads programs; and
- ❑ any other matters referred to the Board by the Minister, the Secretary to the Department of Infrastructure or the Chief Executive.

For the most recent major project, Eastlink, the Government of Victoria established SEITA to be responsible for managing the project on behalf of the Government.

### **New South Wales RTA**

RTA still maintains its role as a classic road administration with most of its responsibilities executed directly by the organisation. It does not appear to have any significant subsidiary organisations.

### **Common Standards for Operation**

#### **VicRoads**

All roads in Victoria are required to operate according to the standard asset management system developed and specified by VicRoads. The concessionaires for Citylink and Eastlink are required to prepare an asset management and toll plan as part of the concession and annual reporting and monitoring of their compliance with that plan are provided to the authorities. The tolling systems in place on the two toll roads are electronic and are compatible with other electronic tolling systems in Australia.

#### **RTA**

The RTA is responsible for collecting all electronic tolls in NSW and for coordinating the move to make all electronic toll roads in Eastern Australia interoperable.