D F I D **M O T**

PROJECT MANAGEMENT UNIT N_O.5

UPDATING OF THE RURAL TRANSPORT DEVELOPMENT STRATEGY IN VIETNAM

Final Report

Main Text

December - 2006

Transport Development and Strategy Institute

TDSI

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ABBREVIATIONS

ADB	Asian Development Bank
BOT	Build - Operate - Transfer
CPRGS	Comprehensive Poverty Reduction and Growth Strategy
DFID	Department for International Development
DPC	District People's Committee
DPI	Department for Planning & Investment (under MOT)
GDP	Gross Domestic Products
I.W.	Inland Waterway
JBIC	Japanese Bank for International Cooperation
LTU	Local Transport Unit (under DPI-MOT)
MARD	Ministry of Agriculture and Rural Development
MOF	Ministry of Finance
MOT	Ministry of Transport
MPI	Ministry of Planning and Investment
ODA	Official Development Aid
PDOT	Provincial Department of Transport
PPC	Provincial People's Committee
RT	Rural Transport
TA	Technical Assistance
TDSI	Transport Development and Strategy Institute
USD	US dollar
VND	Vietnamese dong
WB	World Bank

FOREWORDS

Since there are 76.5% of population and 73% of national labour force living in the rural area, the development of rural transport will help to improve rural area conditions, reduce the gap between urban and rural, mountainous and flat regions, as well as to facilitate goods transportation, which contribute to the Comprehensive Poverty Reduction and Growth Strategy (CPRGS) and the economic reform and development of the Government of Vietnam (GoV) with particular emphasis on rural and agriculture.

Having aware of the importance of rural transport development, for many years the GoV have set out policies and guidelines for the development of rural transport. Upholding the policy of "the Government and the people are working together, whereas the people play the key role with support and instructions from the Government", the Government already spent a remarkable funding source - including ODA funding by multilateral and bilateral international organizations for rural transport development.

In terms of planning and strategy, in 1998, UK Department for International Development (DFID) funded a "Rural Transport Strategy Study" within the rural access programme. The Study was carried out by a UK company (I.T. Transport) and completed in 2000. However, 5 years have passed since then, many data and statistics of the above strategy study are out of date and there have been many changes to the development of rural transport. Due to the great demand of rural transport development in the near future whereas funding sources are limited, the Ministry of Transport requested DFID to fund a study on "Updating of the Rural Transport Development Strategy in Vietnam" in order to find out appropriate policies for prioritising investments for rural transport as well as improving management capacity for central and local authorities. The Study was started in mid 2005. Objectives of the Study are to: i) Update and finalise Rural Transport Development Policy of Vietnam; ii) Identify priorities for development investment of rural transport; iii) Recommend mechanism and policy for management and development of rural transport with consideration of local economic conditions and iv) Improve capacity of planning, development of rural transport strategy for localities (provinces and districts).

This Report is the Final Report comprising 5 chapters, conclusions and recommendations. It includes all contents in the TOR approved by the Prime Minister; has revised basing on comments and conclusions from the Acceptance Board organized on 30th, November 2006, by the Official Letter No. 623/TB-BGTVT on 13th, December 2006; and supplements several issues on capital mobilization mechanisms in conformity with the Law on Budget and Post-WTO, inland waterway transport safety, and rural transport database maintenance.

CHAPTER 1

ANALYSIS, ASSESSMENT OF CURRENT SOCIO-ECONOMIC AND RURAL TRANSPORT CONDITIONS

1.1. Review of Completed or On-going Studies and Projects related to Rural Transport since 2000

1.1.1 Differences between Rural Transport Development Strategy completed by I.T. Transport of UK in 2000 (as Strategy in 2000) and this Strategy

This Rural Transport Development Strategy is updating and finalizing the rural transport development strategy completed by UK I.T. Transport in 2000, therefore we are going to analyze in details differences in approach, study method and *issues to be updated and improved in this Strategy*.

Approach and Study Methods

The implementation method in the Strategy in 2000 is a top-down approach. This means UK international consultants mainly worked with MoT, other relevant ministries, agencies and donors, and analyzed available data, data reported by some provinces (collected from Statistics Team - Department of Planning & Investment - MOT) or some few figures and information collected by sub-consultants (i.e. specialists of TDSI and University of Water Resources) in their field surveys in 4 provinces and several other provinces. At that time, a database was initially established but it was very difficult for foreign consultants to process since the data and information are insufficient, collected from various sources so often contradictory with each other.

This strategy's approach is a top-down one (the same as that of UK I.T Transport) and from bottom up. That means the survey process to determine right starting points of the Strategy shall be carried out in 64 cities and provinces and most of districts in the country. This rural transport strategy is built in 8 economic zones and upon its completion (including priority investment program), we shall once again discuss to get contribution from provinces represented for various regions.

Waterway is included in the survey and shall be developed into a more detailed development strategy, especially in Red River Delta and Mekong Rive Delta.

On the other hand, after each report there shall be a workshop to widely get contribution opinions from relevant stakeholders, based on that adjustments will be done. With such a procedure, this Strategy is clearly more realistic.

Unclear Planning Target Year and Schedules for Strategy in 2000

The Strategy completed in 2000 by I.T. Transport did not clarify the target year of its planning and strategy, therefore it is impossible to compare between this Strategy and Strategy 2000 in term of timeframe. The unique target year mentioned in investment requirement scenarios of

I.T. Transport is 2010 for 2 investment options in commune and district roads (with USD 800 million, equivalent to VND 12,500 billion, and USD 1.8 billion, equivalent to VND 27,000 billion, respectively), and then the Strategy suggested an alternative option of USD 1.4 billion (VND 21,000 billion), but unexplained why that option was selected and investments were not phased for 2001-2005 and 2006-2010 periods. According to the data collected from provinces in our surveys, however, from 2000 to 2004, nearly VND 30,000 billion (USD 1.8 billion – to be analyzed in Section 1.2) have been mobilized for rural transport development in the whole country, higher than the estimated by I.T. Transport Consultants for 10 year period. In short, estimated figures and unit prices given by I.T. Transport Consultants in 2000 were low and unrealistic. This directly affects the estimate of unit prices and road classes in Rural Transport Project 2 (with unit prices of about USD 12-14,000 per km and road surface is mainly at low level – gravel) and is unfeasible for some provinces.

Issues in the Strategy 2000 to be updated in this Strategy

The issues to be continuously updated and mentioned in this Strategy include:

- General objective for rural transport development is integration of rural areas into the economy;
- Rural transport concepts: rural transport system includes rural roads, inland waterways, transport services and users of transport means. As for roads, commune and district roads are core system;
- Planned maintenance: establishment of maintenance culture was mentioned several times in the Strategy 2000, but maintenance demands and investment phases were not taken into consideration in a detail manner. However, maintenance culture has drawn significant attention from donors and become one of 3 objectives in the TA of RT 2 project carried out by WSP (UK) as mentioned above. Such issues shall be further developed and addressed in this Strategy, and maintenance demands, investment phasing as well as proposed policies for the execution of the Strategy shall be clarified; and
- Issues on local capacity development: shall be updated and improved by providing a preliminary proposal on a management and organization model and accompanied training demands for the capacity enhancement.

Problems of Strategy in 2000 that need to be handled in this Strategy

Besides many advantages, the Strategy in the year 2000 met with some limitations due to its wide studying scope and its completion 5 years ago, as follows:

- Vietnam rural transport is characterized by regions and territories. Strategy proposals by regions and sub-sectors (roads, inland waterways) were neither clear nor highlighted;
- Policies and solutions for execution of the Strategy, including capital mobilizing policy and investment priority policy were not clearly mentioned;
- Rural transport database and maps were not established; and
- Changeable data and information were not updated.

Therefore, this Strategy shall update and address the abovementioned problems in 5 chapters of this Report.

1.1.2. Rural Transport Studies, Technical Assistances and Projects

Study on National Transport Development Strategy (VITRANSS)*:* funded by JICA, implemented by ALMEC Corporation and PCI Company (Japan) in participation with Transport Development Strategy Institute (1999-2000). Since it was a comprehensive transport strategy study covering all transport sub-sectors and issues, the rural transport was cursorily mentioned in the report. Technical Report No.10 relating to rural transport and cross border transport only presented the rural transport sub-sector in a general manner basing on survey results in Long An and Phu Yen provinces which could not be representative for Vietnam's rural transport.

Technical Assistance (TA) under the Rural Transport Project 2 (RT2): funded by DFID, implemented by WSP in coordination with Transport Development Strategy Institute (Oct. 2000 – Feb. 2006). This TA focuses on main objectives as follows (i) Improve institutional capacity for MoT and provincial authorities on rural road management; (ii) Establish rural road maintenance culture, and (iii) Support for small scale contractors. During the project implementation, there have been some supports in institutional strengthening for MoT and localities, Rural Transport Maintenance Manual for commune staff has been completed. The project has established 5 regional management centers, carried out training for communes covered in RT 2 and trained the remaining communes in the country for one year.

Project: ***Development of Rural Transport in support for the Comprehensive Poverty Reduction and Growth Strategy***: prepared by Department for Planning and Investment (MOT) and Transport Development Strategy Institute (2001). This Project sets rural transport development objectives and policies in support for poverty reduction and growth. Most of the project contents were included into the Comprehensive Poverty Reduction and Growth Strategy approved in 2002.

Studies on Rural Transport in the South East Asian Community Access Program (SEACAP)

- Project: "Institutional, Incentive and Capacity Analysis of the Rural Transport Sector" carried out and completed by TDSI in 2005. The project analyses institutional issues, incentive mechanisms in rural transport and provides relevant recommendations.
- In addition, there are many other on-going projects under SEACAP, i.e. (i) S*tudy on Rural Road Surfaces* (being implemented by INTECH and TRL), (ii) *Estabishment of Digitalized Maps for Provinces uncovered in RT 2 (*completed by TDSI in 2005), (iii) *Involvement of Private Sector in Rural Transport (*carried out by Mekong Economics), (iv) *Survey on Time and Distance* (on going), and etc.

Rural Transport Projects

Rural Transport Project 2 (2000-2006)

After the success of RT 1 project, WB and DFID co-funded for RT 2 project, with a total budget of US$ 145.3 million (including US$ 15.2 million from the counterpart fund of GoV) to upgrade and improve 13,000 km of roads in 41 provinces in the nationwide. The Project was implemented within 6 years from 2000 to 2006, and as of May 2006, a majority of work of nearly 2000 contracts have been disbursed, and a number of about 15,811,000 persons, including 925,000 poor people have been benefited from this Project. In localities covered in the Project, the economic, political and social life of local people has been significantly improved, resulting in improvement of rural community's access ability to social services, creation of incomes in farmer leisure time, promotion of local economic development and etc.

Besides the success, the Projects still have some problems relating to its management coordination and implementation that need to be handled (for example, PPCs' inconsideration in the planning and approval procedures for an ensured coordination of financial resources from various projects), *investment rate for one km of road is low* in the Project, with majority of gravel surface roads. Hence, some wealthier provinces have been able to contribute additional budget to solidize road surfaces while poor provinces have not complied with design standards in some components due to increasing prices.

- Rural Bridges in the Central Region and Central Highland Project (funded by JICA): with total estimated budget of about VND 482 billion to rehabilitate and upgrade 45 weak bridges in the Central Region and Central Highlands. By 31, December 2005, VND 257 billion was disbursed and the remaining of VND 225 billion shall be done in the period of 2006-2010.

- Project on 38 Rural Bridges in Mekong Delta (funded by JICA): with total budget of about VND 589 billion. The Project was essentially finished in 2005, with VND 565 billion disbursed and those rural bridges completed in Mekong Delta basically.

In addition, there are certain projects combined under some programs carried out by domestic funds such as: Project on Replacement of Monkey Bridges in Mekong Delta (implemented by the Central Youth Union), Rural Infrastructure projects in Program 135, Program on Midland and Mountainous Regions in the North, and Central Highland Program, and so on.

In general, the abovementioned projects, plans and studies have focused on certain issues, at certain points of time and based on various sources of data/information. An overall and comprehensive study on rural transport is unavailable.

1.2. Overview of National Socio-economic Development in 2000- 2004 period

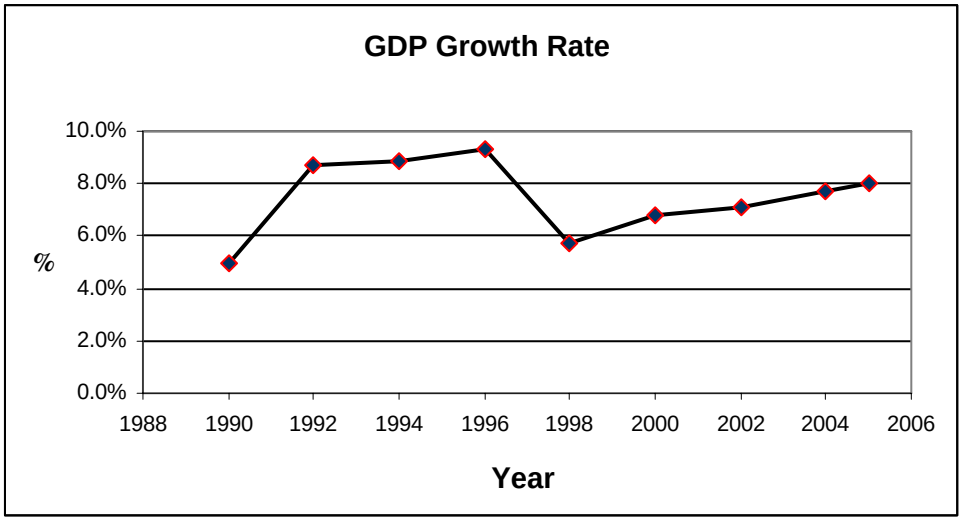
Vietnam comprises 64 provinces and cities, dividing into 8 economic regions of Red River Delta (11 provinces), North East (11 provinces), North West (4 provinces), North Central Coast (6 provinces), South Central Coastal (6provinces), Central Highland (5 provinces), North East South (8 provinces) and Mekong River Delta (13 provinces). As per the 2004 statistics, Vietnam population is 82 million people, with 60% of population concentrating in 3 regions, i.e. Red River Delta, Mekong Delta and North East South.

Minority people accounts for 14% of the nationwide population, living mostly in 4 regions: North East, North West, South Central Coast and Central Highland. In the North West Region, the minority people accounts for 79% of regional population.

1.2.1 Economic Growth

After several years of being curbed by the global economic recession and the financial crisis in Southeast Asia, Vietnam economy has recovered again since the year 2000. As a comparison, the Gross Domestic Products (GDP) growth rate was 5% in 1990 whilst the average GDP was 6.9% per annum and 7.5% per annum in the period 1996-2000 and 2001-2005, respectively. Thus, Vietnam GDP growth rate is relatively high, ranking the second in the Asian region following China (economic growth is highest in the North East South and lowest in the North West).

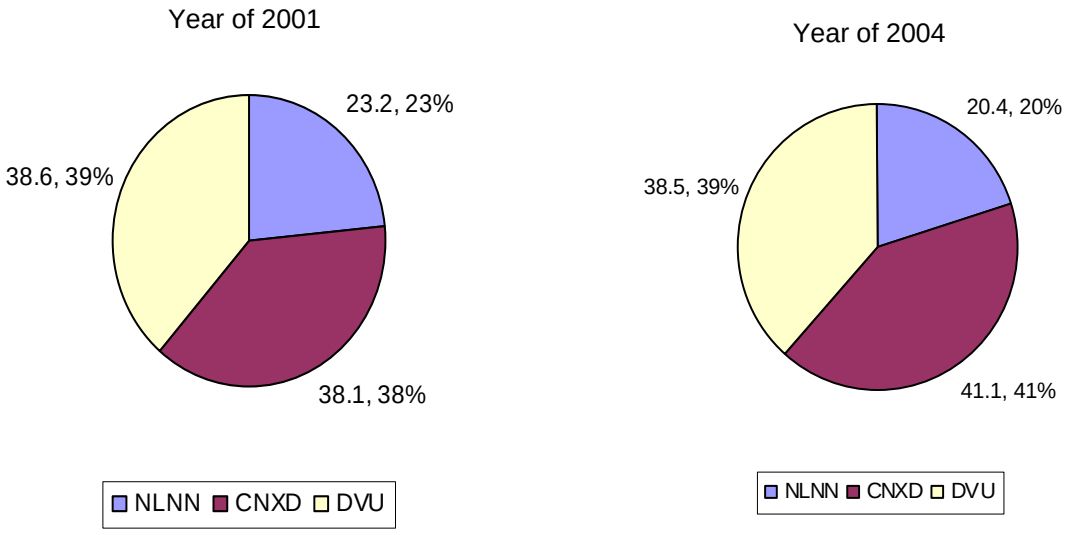
Figure 1.2.1.1: GDP Growth Rate in period 1990-2005



Average per capita GDP in 2005 is about VND 10 million (USD 640) at the current price. The highest per capita GDP is seen in the North East South Region (about US$ 1,339.2 per person which is 2.09 times higher than the average), whereas the lowest is in the North West Region (about USD 200 per person which is about 35% of the average in the nationwide). However, economic development is still slow in rural areas; and per capita GDP of agricultural, forestry and fishery sectors is about USD130 (about VND 2 million).

The economy structure has positively changed. The percentage of agriculture, forestry, and fishery in total GDP has decreased from 23.2% in 2001 to 20.4% in 2004 whereas the percentage of industry and construction has rapidly increased, reaching 41% of GDP in 2004 compared to 38.1% in 2001. After 3 years of continuous reduction, the service sector has recovered its development pace reaching 38.5% in 2004 compared to 38.2% in 2001.

Figure 1.2.1.2 : Economic Structure in 2001 and 2004



Note: NLNN: Agriculture, Forestry, Fishery; CNXD: Industry, Construction; DVU: Service.

1.2.2 Differences in Natural and Socio-economic Conditions among the Regions

Typical differences in natural and socio-economic conditions have been identified among studying regions. Major differences are caused by the following 6 interactive factors:

- Terrain: high mountain, rolling, plain and coastal area;
- Rural population density, percentage of minority people;
- Rural natural resources creating economic potentials;
- Poverty level;
- Economic structure; and
- Accessibility.

As for North West Region

As mentioned above, there are 4 provinces in the North Weat Region characterized by following features:

- 92% of the area are mountainous and rolling, and difficult to travel around;
- Population density is lowest compared to that of other regions, people are living dispersedly;
- Nearly 80% of the population is ethnic minorities, occupying a highest rate in the country;
- Economy is dominated by agriculture with low productivity;
- Povery rate is highest in the country;
- Weak acessibility to public and social services; and
- Being the most disadvantaged region in the country, with 59% of the total communes are extremely underprivileged ones.

Given such abovementioned features, rural road building is very difficult and costly with limited economic effectiveness as population density is thin and roads connecting to communes are long but damageable by the weather, climate and terrain.

As for North East Region

- 6 mountainous and rolling provinces in this region have similar terrain as the North West region's; whilst 5 other provinces are lowland nearby Red River Delta with higher population density;
- Ethnic minorities account for 42% of the population, rank the second highest among regions in the country;
- Economy is dominated by agriculture with low productivity;
- Povery rate is high, ranking the third in the country;
- Better accessibility to public and social services than the North West Region;
- In particular, Quang Ninh province has a high urbanized rate and tourist potential leading to economic development; and
- 49% of the total communes are extremely difficult ones, ranking the second in the nationwide, but the number of extremely difficulty communes is 920, accounting the highest rate (39%) of the total extremely difficulty communes (i.e. 2362) in the nationwide.

Given such above features, rural road building in these provinces is easier than that in the North West but still meeting with difficulties.

As for Red River Delta Region

This Red River Delta comprises 11 provinces with the following features:

- Terrain: mainly lowland and plain area (97%);
- Population density is the thickest among other regions in the country;
- Ethnic minorities account for only 0.7% of the regional population;
- Economy develops in terms of agriculture, industry and services;

- Fairly low poverty rate, ranking the fifth in 8 regions of the nationwide;
- Good accessibility to public and social services;
- There are two centrally run cities i.e. Hanoi and Haiphong with strong urbanization and developed economies;
- Only 1% of the total communes in the region is extremely difficult, ranking the lowest rate in the country; and this Region accounts for only 1% of total difficult communes in the country; and
- Favored accessibility to public and social services.

These features are completely opposite to those of the North West region. An effective transport system shall contribute to fully exploit economic potentials in the Red River Delta and help strengthen economic development for not only the region but also the nationwide.

As for North Central Coast Region

With 6 provinces spreading from national border in the West to the coast in the East, North Center Region is characterized as follows:

- Terrain: 64% of the area is lowland, however each province has mountainous/highland areas and one narrow coastal strip;
- Population density is similar to the average level in the country, while population density in mountainous/highland areas is far thinner than that in lowland areas;
- Ethnic minorities account for more than 10% of the regional population, and concentrate in northern mountainous/highland of this region;
- Economy is dominated by agriculture; driven by fishery in coastal strips;
- High poverty rate, standing the third in the whole country;
- Accessibility to public and social services is similar as average level in the country, but more difficult in mountainous/highland area;
- Thanh Hoa and Nghe An provinces are large in terms of geography and population, standing the first among provinces in the country; and
- Nearly 347 communes in this region are in extremely disadvantaged conditions, accounting for 21% of the total communes in the region and 15% of the great total difficult communes in the whole country.

This region is affected by seasonal flood and its infrastructure needs to be constructed according to flood fighting standards. In addition, the region is mainly mountainous with large area, high poverty rate and limited economic potentials that create obstacles in mobilizing local resources to rural road investment.

As for Highland Region

The Highlands has similar features as the North East but its population density is thinner. Details are as follows:

- Terrain: 70% is mountainous/highland area but less severe than North West region. Population density is thin and less than half of average level of the country;
- 36% of the total population is ethnic minorities, standing the third after North West and North East regions;

- Economy is dominated by industrial crops with far larger potentials than North East region;
- Poverty rate is high, standing the second in the country (after North West region);
- Weak accessibility to services and public-social infrastructure, just a little bit better than North West region; and
- 45% of the total communes are extremely difficult, nearly twice higher than the average level of the country.

This region comprises many ethnic minorities and is politically sensible, with difficulties in terrain conditions. Development of an effective rural transport system is a priority but a challenge of the Government.

As for South Central Coast

6 provinces in this Region spread along the eastern coastal line with following features:

- Except Quang Nam with 50% mountainous/highland area, all the remaining provinces are characterized by terrains of lowland, narrow coastal strip and highland;
- Population density is lower than the average level in the country, but people mainly live in lowland areas and along coastal areas;
- Ethnic minorities account for more than 15% of the regional population;
- Economy is dominated by agriculture and fishery, and productivity is higher than that of North Central Coast;
- Poverty rate is lower than that of North Central Coast and nearly the same as the average level of the country;
- Accessibility to services and public-social infrastructure is nearly the same as the average level of the country;
- In the region, Da Nang city is a centrally run city with developed economy; and
- 26% of the total communes are in extremely difficult conditions, accounting for 8% of difficult communes in the whole country.

This is a potential economic region, therefore investments in rural transport development are more favored than in other regions. However, this region frequently live with flood in rainy and storm season.

As for North East South Region

The North East South is the most developed region and contributes 32% in GDP of the nationwide. Its features are as follows:

- Hochiminh city and Ba Ria-Vung Tau are two cities with strong developed urbanization. Industries in these two provinces and 3 peripheral provinces of Dong Nai, Binh Duong and Binh Phuoc are the most developed in the country;
- Terrain: 83% of the area is lowland, mountainous/midland and plain areas are limited;
- Population density is nearly the same as the average level in the country. Ethnic minorities account for more than 8% of regional population, and lower than the average level of the country;
- Economy is mainly driven by industry and services. Industrial output accounts for 60% of national industrial outputs, average income per capital is the highest in the country. Poverty rate is lowest in 8 regions;
- Favored accessibility to services and public-social facilities, but Ninh Thuan and Binh Thuan are in more difficult access conditions; and
- 23% of the total communes are extremely difficult, lower than the average level in the country and account for 6% of total difficult communes in the country.

Establishment of an effective rural transport system is advantaged since this Region enjoys a level of high economic activities, large local resources and favored terrains. However, Ninh Thuan and Binh Thuan provinces meet more difficulties and challenges.

As for the Mekong River Delta Region

Mekong Delta has the following features:

- 100% of the terrain is plain, most of provinces are inundated in flood season;
- Population density is nearly twice higher than the average level in the country;
- Ethnic minorities account for 7.7% of the regional population, mainly Kho Me people;
- Economy is dominated by agriculture. Agricultural productivity is high. Rice yield contributes 52% of the country;
- Poverty rate is lower than the average level in the country;
- Accessibility to services and public-social facilities is approximately same as the average level in the country. Although many communes have no basic access roads, they enjoy convenient inland waterways; and
- Extremely difficult communes account for 18% of total communes in the Region and 9% of great total communes in the country.

Rural transport improvement is a priority, and aims to support for the improvement of agricultural productivity, stimulate the development of non-agricultural economic activities and mitigate a reliance on inland waterway transport.

Road building meets many difficulties due to terrains of lowland and riverside, seasonal floods, high road construction costs, unavailability of local construction materials and long transport distances.

Details on regions are listed in Table 1.2 overleaf.

FIGURE 1.2: MAP OF STUDY AREAS

Table 1.2: Difference in Indicators among Regions in 2004

No	Indicator	Unit	Region								
			North East	North West	Red River Delta	North Central Coast	South Central Coast	Central Highland	North East South	Mekong River Delta	Whole Country
1	**Number of provinces**	**Province**	**11**	**4**	**11**	**6**	**6**	**5**	**8**	**13**	**64**
2	**Land**										
	Area	sq. km	63,63	37,336	14,812	51,511	33,069	54,474	34,743	39,739	329,314
	Farming land area	sq. km	9,106	4,359	8,507	7,568	5,493	13,269	17,411	29,605	95,318
	% of farming land	%	14	12	57	15	17	24	50	74	29
	Terrain (% per type)	%	100	100	100	100	100	100	100	100	100
	Mountain/Rolling		56	92	3	31	28	70	7	0	42
	Low land		42	8	89	64	67	30	83	0	43
	Plain		1	0	7	0	0	0	9	100	13
3	**Population**										
	Average population	1000 person	9244.8	2524.9	17836	10505	6981.7	4674.2	13190	17076	82032
		%	11	3	22	13	9	6	16	21	100
	Rural population	1000 person	7534.2	2199.3	13589	9078.5	4940.4	3405.8	6077.8	13616	60441
	Rural population per nationwide population	%	12.5	3.6	22.5	15.0	8.2	5.6	10.1	22.5	100
	Density of farming population	person/sq. km	118	59	917	176	149	63	175	343	184
	% of minority people	%	45	79	0.7	10.5	15.3	33	8	7.7	14
4	**Economy**										
	GDP by Region/National GDP	%	7	1	21	7	6	4	35	19	100
	Economic structure	%	100	100	100	100	100	100	100	100	100
	Agriculture	%	36	51	11	38	31	49	6	53	21.8
	Industry, Construction	%	31	16	44	24	30	17	56	21	40
	Services	%	33	33	45	38	39	34	38	26	38.2

Table 1.2: Difference in Indicators among Regions in 2004 (continued)

No.	Indicator	Unit	Region								
			North East	North West	Red River Delta	North Central Coast	South Central Coast	Central Highland	North East South	Mekong River Delta	Whole country
5	**Programme 135**										
	No. of districts under P. 135		73	30	5	43	151	46	19	53	420
	No. of communes under P. 135		885	308	12	347	789	236	90	222	2889
	Population under P. 135	1000 peron	2461.8	1058.7	57.3	1187.6	3180	924.2	711.5	2700.4	12282
6	**Poverty rate**										
a	According to national poverty standard	%	10.36	14.88	6.13	13.23	9.56	11.03	2.25	7.4	8.3
b	According to international poverty standard	%	31.7	54.4	21.1	41.4	21.3	32.7	6.7	19.5	24.1
7	**Accessibility**										
	Average distance from villages without road to the nearest road for motorized veh.	Km	4.31	4.33	1.7	5.39	7.99	11.63	1.9	5.98	5.28
8	**Access to facilities**										
a	Average distance from villages without road to the nearest CPC	Km	3.47	3.77	1.38	2.35	2.64	5	3.23	3.31	2.77
b	Average distance from villages without road to the nearest Post Office	Km	8.5	13.9	2.49	5.87	4.9	12	3.8	4.25	5.68
C	Average distance from villages without road to the daily market	Km	10.49	11.44	2.34	4.34	5.6	11.6	4.5	3.5	5.86
9	**Access to transport vehicles**										
a	% of villages having motorized vehicles	%	24.85	17.65	30.37	24.85	43.46	28.57	44.69	73.93	40.3
b	Average distance from villages without passenger transport vehicles to the nearest pickup station.	Km	11.05	10.11	3.81	7.55	8.82	16.03	7.82	2.95	7.46

Source: Population, land, economy: Statistical Yearbook 2004; Accessibility to roads, infrastructure: survey on living standard 2002 of General Statistics Office; Program 135 of CEM 2003.

1.2.3. Achievements in Poverty Reduction and Impacts of Rural Transport on Poverty and Economic Growth

Poverty figures are collected from two main sources, i.e. Ministry of Labor, Invalid and Social Affairs (MOLISA) and General Statistics Office (GSO).

Ministry of Labor, Invalid and Social Affairs *(MOLISA)* carries out poverty surveys on a monthly, quarterly and annually basis from commune level, with a uniform survey form applicable in the whole country. Poverty line regulated for 2001-2005 period is VND 80,000/person/month in rural and island areas, VND 100,000/person/month in plain area and VND 150,000/person/month in urban areas. From 2006-2010 period, MOLISA will apply a new poverty standard in line with international one: i.e. VND 200,000/person/month in rural areas and VND 260,000/person/month in urban areas.

General Statistics Office (GSO) delivers 2 poverty lines: poverty in terms of food and general poverty based on sampling surveys from households across the country in 1993 and 1998, and surveys on household living standards in 2002 and 2004. From 2002, surveys on household living standards are carried out every two years. General poverty line according to GSO data was VND 149,000/person/month in 1998, VND 160,000/person/month in 2002 and VND178,000/person/month in 2004.

Analysis shall be carried out based on the data provided by GSO and by provinces from general surveys to consolidate and analyze for 8 provinces in the whole country.

National Poverty Reduction Programs

There are 2 national programs on poverty reduction approved by the Prime Minister in Vietnam, i.e. Program 133/1998/QD - TTg (HEPR) and Program 135/QD - TTg, namely Prog. 133 and Prog. 135 in short, respectively. Program 135 is a socio-economic development program for communes in mountainous, isolated and remote areas that are considered as extremely difficult communes.

The Program 133 (HEPR) implemented in 1996 and controlled by MOLISA aims at 11 special aspects, including health care, education and credit granted to the poor. In the period 2001-2005, this Program mainly focuses on addressing the 'absolutely poor' – misery in terms of food.

The Program 135 (managed by the Committee of Ethnic Minorities and Mountainous Areas-CEMMA) aims to gather up government funding resources for the construction of basic infrastructures for poor and underprivileged communes locating in mountainous and remote areas with high rate of minority people. The Program was commenced in 1999 for 1,715 poor communes including 1,000 poorest ones, and in 2004 the total of covered communes was up to 2,374 under 355 districts, 49 provinces. Since 2005, the scale of Program 135 has been reduced with more focused investments. Many communes have escaped from poverty and withdrawn from Prog. 135 list (particularly, An Giang province with 14 communes).

Table 1.2.3.1: Underprivileged Communes in Program 135

	Region	Total number of communes	Number of underprivileged communes	Rate of difficult communes (%)	% difficult communes in total number of communes	% ethnic minorities in difficult communes
1	North East	1859	920	39	49	76
2	North West	525	308	13	59	91
3	Red River Delta	1902	12	1	1	46
4	North Central Coast	1632	347	15	21	68
5	South Central Coast	690	181	8	26	57
6	Highlands	524	236	10	45	67
7	North East South	599	136	6	23	23
8	Mekong delta	1239	222	9	18	28
	Total	8970	2362	100	26	57

Source: CEMMA – from annual plan in 2003

After 7 years of implementation, basic infrastructures for living and production have been provided by Program 135. So far, 56% of communes have received sufficient investments in 8 infrastructure works according to regulations and 5 primary infrastructure works have been constructed in 70% of communes. The investment under this Prog. 135 is about VND 1.6 trillion/year, with the highest average investment for 1 commune is VND 500 million per year.

Comprehensive Poverty Reduction and Growth Strategy (CPRGS)

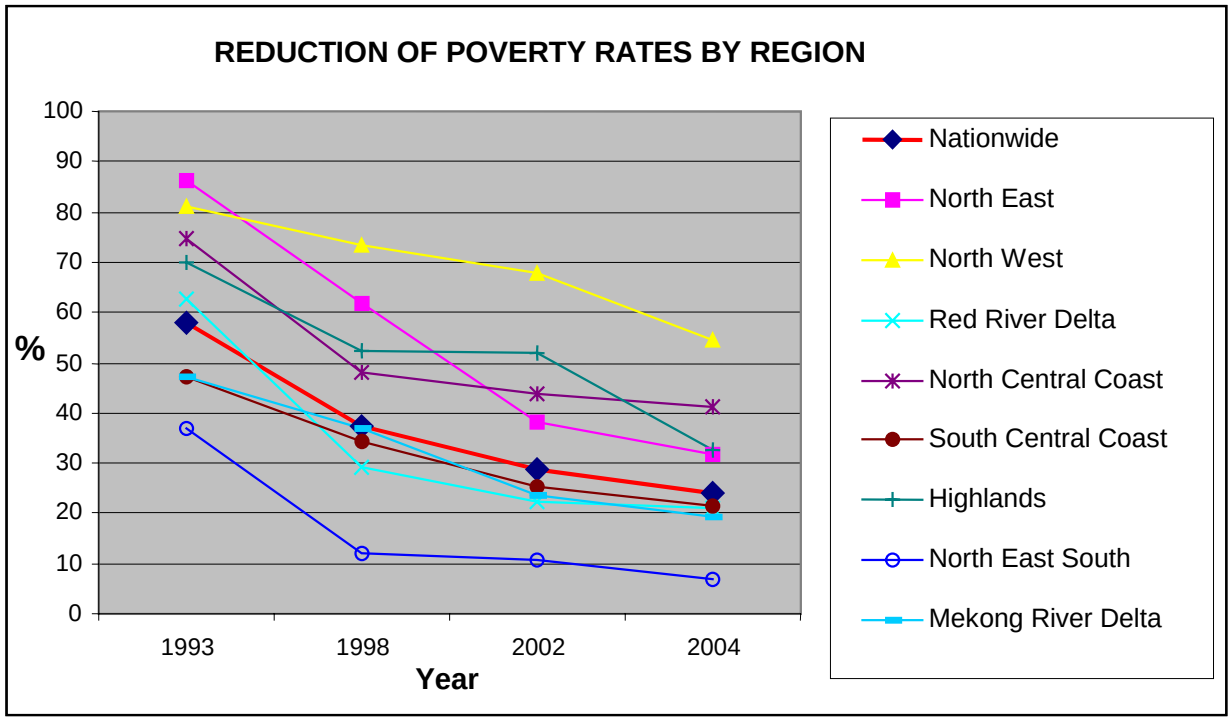
In May 2002, the GoV. approved a series of development objectives in the CPRGS. One of the objectives is to ensure the development of infrastructures for the poor. As a result, policies and solutions related to rural transport set out in this CPRGS include:

- By the year 2005, all commune centers and commune clusters must be connected by roads for automobile, i.e. construction of roads for small and medium motorized vehicles to the center of communes and commune clusters in mountainous provinces; firstly opening of roads for horse-carts and then widening for motorized vehicles in severe terrain areas; ensuring of 30% of roads paved with cement concrete, 70% of rural roads to be passable in all weather; and 80% of monkey bridges replaced in Mekong Delta.
- Gradually use public means of transport to serve goods and passenger transport in rural and poor areas.

During the implementation of the above Strategy and within 20 years of the renovation process, the poverty reduction has gained many significant achievements and brought great meanings in terms of economic, social and political aspects as well as national defense and security, thanking to the Government's execution of appropriate policies and mechanisms. The achievement in poverty alleviation has been one of the most successful goals in the economic development in several past years. According to a GSO's survey, the poverty rate

reduced from 58% in the past decade to 24.1% in 2004; the food poverty rate also decreased from 13.3% in 1999 to 8.3% in 2004. Rate of poor households in accordance to national and international poverty line has rapidly decreased, by 2% annually on average. Among 64 provinces/cities, there are 36 provinces with less than 10% of poor households (among that there are 12 provinces with less than 5%); 4 provinces with over 20% of poor households including Bac Can, Dien Bien, Lai Chau and Soc Trang.

Rate of poor households has rapidly reduced across the country, in which regions with high rates of poor households trend to decrease more rapidly than those with low rates of poor households. Poverty rates of North East and Red River Delta regions are recorded to be most rapidly decreased in the country.



Thus, Viet Nam has reached the millennium development goal of poverty reduction 10 years ahead of the plan. Investment in rural transport and rural roads is considered as a way to help people in remote and isolated areas access to markets and activities that generate incomes and social services such as schools, health care centers as well as other needs in social relationship. According to statistics from provinces, investments in rural transport in the whole country in 2000-2004 accounted nearly 1% of the nationwide GDP and poverty rate reduced by more than a half, from 14.1% to 7.3% (according to the national line), *i.e every investment of 1% of GDP per year in rural transport helps poverty rate reduce by 1.5%/year*. Rural transport has actively contributions to the economic growth and poverty reduction. The providing of roads access to remote areas and ethnic minority areas has created opportunities for the poor benefited from the economic growth.

However, the achievements of poverty reduction are not sustainable. Number of poor households and re-poor households, and rate of poor households according to international line are still high. There have been many challenges related to the poverty that need considering and addressing in the coming years, details are as follows:

- *Poverty reduction rates are different among regions and tend to be slow down*: economic growth and poverty reduction index from 1-0.7 in 1992-1998 reduced to 1-0.3 in 1998-2004;
- *Poverty is characterized by geography*, among 15 poorest provinces of Vietnam, the poverty is mainly concentrated in 4 regions of North East, North West, North Central Coast and Central Highland. Details are shown in the following table.

Table 1.2.3.2. Poverty rate by regions

No.	Region	Early 2000	Late 2003	Estimated for 2004
	The whole country	**17.2**	**11.0**	**8.3**
1	North East	22.3	13.8	9.5
2	North West	33.9	18.7	16.4
3	Red River delta	9.7	8.1	6.1
4	North Central Coast	25.6	15.7	12.7
5	South Central Coast	22.3	12.2	8.8
6	Central Highlands	24.9	17.4	13.6
7	North East South	8.9	6.3	3.1
8	Mekong River Delta	14.2	9.3	7.3

Source: MOLISA (according to national poverty line)

- *Poverty is still concentrated in rural area*: poverty is a common phenomenon in rural areas with about 90% of the poor living. Poor farmers are unable to access to information system. Ability to transfer to non-agriculture activities is limited;
- *Poverty rate is rather high in mountain, remote areas where most of minority people are living*: up to 70% of the poor are concentrated in mountainous areas in the North, North Central Coast, Highlands and South Central Coast. The poverty rate is still high in mountainous areas, with 1.7 to 2 times higher than the national average.
- *The rate of poor households is particular high among minority people*: the rate of poor households in minority areas tends to increase (from 21% in 1992 to 36% in 2005) in the total of nationwide poor households. This proves that the poverty rate of ethnic minorities decreases more slowly than that of the nationwide. Highest rates of poor households are 60.3% in Van Kieu minority; 58.5% in Pako and 35% in H'mong in 2003 - 2004.

Thick poverty density concentrates mainly in Red River Delta and coastal areas in the Central Region, where population density is high and urbanization capacity is increasingly large.

Unsustainable poverty reduction has been caused by various reasons, however problems in rural transport are considered as big impediments in the poverty reduction and improvement of living standards. All targets of rural transport set in the Comprehensive Poverty Reduction and Growth Strategy have not been met by 2005. Even though the rural transport has strongly developed, and the number of communes with no basic access roads (more than 600 communes before 2000) has decreased yearly, there are still 290 communes without roads for motorized vehicles to the center of communes and commune clusters, according to provincial reports. *Therefore, the volume of rural transport roads building in the coming time is very large. More effectiveness in rural transport investment and management is an important input to achieve rural development and poverty alleviation targets set by the Government.*

1.3. Analysis and Assessment of the Current Situation of Vietnam Rural Transport

1.3.1. Road Transport Network

Road transport network is extensively distributed across the country with a total road length of 292,014 kilometers, particularly:

Table 1.3.1.1. Length of Roads in the Nationwide

Road Type	Length (km)	Rate (%)
National Roads	16,761	5.74
Province Roads	22,885	7.84
District Roads	45,999	15.75
Commune Roads	130,864	44.81
Urban Roads	7,193	2.46
Specialized Roads	7,126	2.44
Village Roads*	61,187	20.95
Total	292,014	100

*Note: *Village roads are not fully totaled up from localities.*

Rural roads comprise district roads and lower class roads, including district roads, commune roads and village roads. However, only district and commune roads are classified under the Governmental Decree 186/2004/ND-CP dated 5, November 2004 stipulating on the management and protection of road transport infrastructures, whereas village roads (incl. inter village/hamlet roads, inner village/hamlet roads, connectors from village center to higher class roads) and roads from home to field and uphill roads have not been classified yet. Since local statistics are not sufficient and forms are not unified, many localities make a separation between commune roads and village roads whilst many others combine them (i.e. Central

Highlands); some provinces in North West Region fail to separate district and commune roads, while some regions such as North Central Coast cannot total up village roads. Therefore, we have to process the collected data and this Report mainly focuses on the analysis of district and commune roads, and only reviews village roads if necessary and in case of sufficient data.

According to local statistics in 2004, the length of district and commune roads is 176,863 kilometers in the whole country, accounting for 60.57% of the total length of the road network, of which district roads are 45,999 km long, accounting for 15.75%; commune roads are 130,864 km long, accounting for 44.81%. In terms of area, road density is 0.54 km per sq. km; the highest density is 1.42 km per sq. km in the Red River Delta while the lowest is 0.23 km per sq. km in the North West. In terms of population, rural road density is 2.15 km per 1000 persons; the highest density is in the North West (3.38 km per 1000 people); the lowest is in the Red River Delta (1.18 km per 1000 people). This figure shows, despite of a high index of road density per area, the Red River Delta has lowest index of road density per population since it is a densely populated area, whereas the North West has lowest road density per area but highest road density per population due to its thin population density. This partly shows gaps in the development of economy and rural transport among regions in the country.

According to statistics reported from localities (but insufficient), village roads are 61,187 km long in total, accounting for 20.95% of the total road length in the nationwide, mainly distributed for residential groups, and serving for daily life of local people. These village roads are of small scales, low standards and mainly earth roads (about 22,053 km).

Table 1.3.1.2. Current Status of Rural Roads by Regions in the Country

Unit: km

No.	Region	Total	District roads	Commune roads
1	North Central Coast	29,989	9,286	20,703
2	Red River Delta	21,057	3,909	17,147
3	North East South	21,984	5,946	16,037
4	South Central Coast	13,597	4,092	9,505
5	Central Highlands	8,830	2,922	5,908
6	Mekong River Delta	41,522	8,402	33,120
7	North West	8,490	2,704	5,786
8	North East	31,395	8,737	22,658
	Total	176,863	45,999	130,864

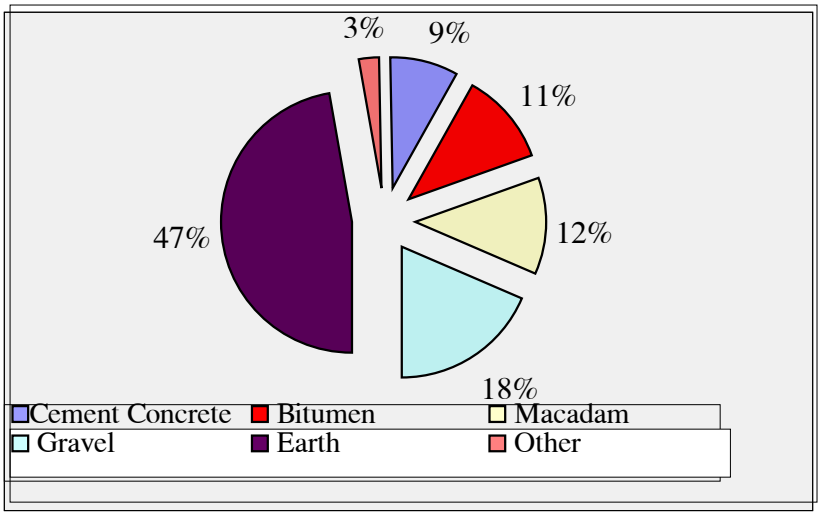
Source: According to report data of provinces

Generally, rural roads are in low class or have not been conformed to technical classification so they fail to satisfy peoples' traveling needs and socio-economic development requirements (to be analyzed closely in Section 1.3.3 below).

Rural Road Surface Structures

Figure 1.3.1.1 Percentage of Different Rural Road Surfaces

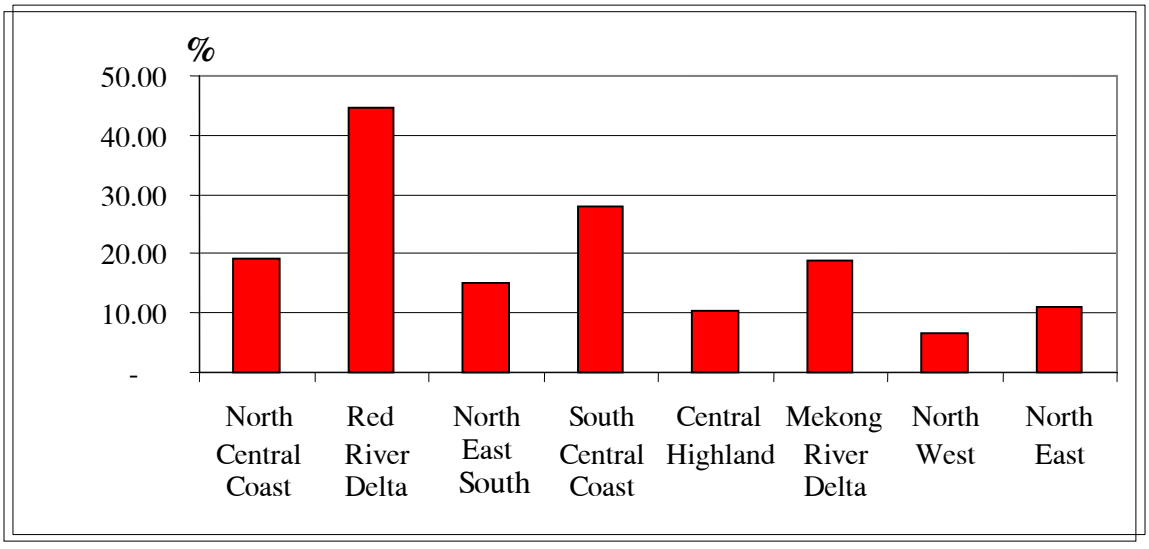
(District and commune roads)



As for district and commune roads, the percentage of paved roads is low, especially for roads with bitumen and cement concrete surfaces (only 19.27%). The remaining includes macadam, gravel and earth roads, of which earth roads account for a highest percentage of about 45.58% (about 78,468 km).

In the 8 studying regions, the percentage of bitumen and cement concrete roads is highest in the Red River Delta (about 44.52%), followed by South Central Coast (28.05%) and North Central Coast (19.11%); North East (11.02%), Central Highland (10.48%); and lowest in the North West (6.61%).

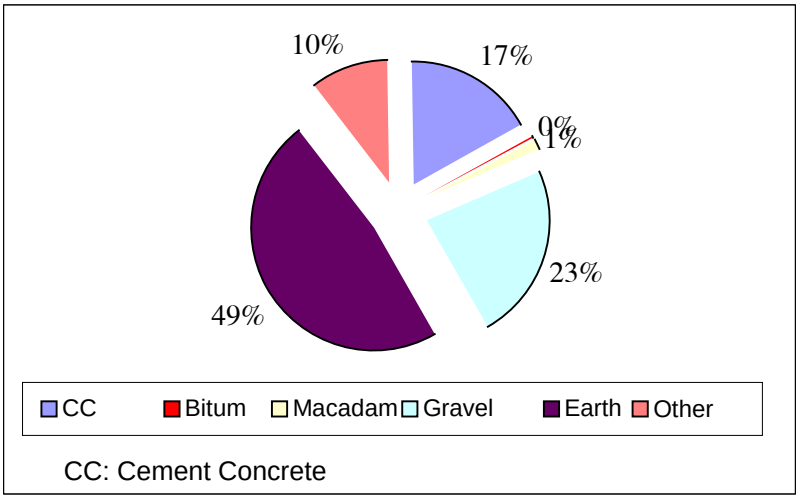
Figure 1.3.1.2: Paved Rural Roads by Region



For village roads, the percentage of bituminous and cement concrete surfaces accounts for only 17.61%, while the remaining are macadam, gravel and earth surfaces with extremely high percentage of earth roads (about 49%). Details are shown in the following Figure 1.3.1.3.

Figure 1.3.1.3. Percentage of Rural Road Surfaces

(Village roads)



Coverage, Connectivity and Accessibility of Rural Roads

The nationwide density of rural roads is 0.87 km per sq. km in terms of area, and 3.45 km per 1000 persons in terms of population, of which the density of district and commune roads is 0.54 km/sq. km and 2.15 km/1000 persons. The density of commune roads is higher than that of district roads (i.e. 1.58 km/1000 people compared to 0.57 km/1000 people and 0.4 km/sq. km compared to 0.14 km/sq. km). Furthermore, village roads also contribute a large proportion. Given insufficient statistics from provinces, density of village roads is about 0.65 km/1000 people and 0.16 km/sq. km.

The following Table 1.3.1.2 show that the rate of different road systems *in the nationwide* is relatively reasonable in terms of coverage among national roads, provincial roads, district roads and commune roads, with 1:1.37:2.79:7.83 (on average, every 1 km of national road corresponds with 1.37, 2.79 and 7.83 km of provincial road, district road and commune road, respectively). Nevertheless, this rate varies among regions, particularly presented as follows:

Table 1.3.1.2: Rate of Road Types by Region

Region	National Roads	Provincial Roads	District Roads	Commune Roads
Red River Delta	1	2.02	2.96	12.90
North East	*1*	*1.20*	*2.08*	*5.50*
North West	*1*	*0.94*	*2.60*	*3.20*
North Central Coast	*1*	*0.80*	*2.70*	*6.10*
South Central Coast	1	1.80	2.80	9.40
Central Highland	*1*	*1.04*	*1.55*	*3.00**
North East South	1	2.62	4.20	5.00
Mekong River Delta	1	1.80	4.30	16.90
Nationwide	**1**	**1.37**	**2.79**	**7.83**

*Note: * Data includes hamlet/village roads, but estimated for commune roads only.*

The Table above displays the connectivity of road types and characteristics of each region. Whereas the Red River Delta ranks the first in terms of road density, rate of road types, road quality and connectivity, other regions like North East, North West, North Central Coast and Central Highland have various problems in satisfying such terms due to difficult topography and high poor rate; especially in the North West, North East and the Central Highland.

Taking in to account rural transport network in particular, the average rate of district roads/commune roads is 1:2.79 in the country. However, this rate varies among regions, i.e. the lowest is in North West (1:1.2), Central Highland (1:2), North East (1:2.2), North East South (1:2.5) and the highest in Red River Delta (1:4.4). This states that people in poor regions meet difficulties in accessing to all road types. Due to weak connectivity as mentioned above, localities in mountainous, remote and isolated areas have poorest accessibility. According to figures in Table 1.2.3.3, Section 1.2, the average distance from commune and village to the closest roads (for motorized vehicles) is about 5 km in the country, but still this data varies among regions. Shortest access distance is shown in Red River Delta and North East South (nearly 2 km), while the longer ones are in North West, North East (about 5-10km), Central Highland (12km) and South Central Coast (8km). In order to develop an adequate and sufficient rural transport network to satisfy social requirements, important commune roads need to be opened and primary village/hamlet roads need to be upgraded into commune roads in the future, especially in regions meeting with difficulty such as North West, Central Highland and North East.

Furthermore, there are still *blank areas of road transport*. By end of 2005, there are 290 communes without *access roads for automobile,* among which 172 communes locating in Mekong Delta (excluding 46 island communes), 46 communes in South Central Coast, 35 communes in North Central Coast. In addition, many communes in other regions are only accessible in dry season. In 8 study regions, only Red River Delta has 100% of communes with roads carrying motorized vehicles, and North East South Region remains one commune without basic access roads. However, since Mekong Delta is enjoyed an extensive inland waterway network, its remote communes (without basic access roads) can be accessed by inland waterway with boats or junks as major means of transport (shown in following table).

Table 1.3.1.3. Number of Communes without Roads for Motorized Vehicles (as of end 2005)

No.	Region	Number of communes without road	Length of roads to be built (km)	Bridge	
				Quantity (bridge)	Length (m)
1	North Central Coast	35	482	37	2,027
2	North East South	1	23	1	100
3	South Central Coast	46	396.6		
4	North West	12	287		
5	Central Highland	24	309.4	35	1,073
6	Mekong River Delta	172	1,641	741	34,613
	Total	290	3,139	814	37,813

Source: Data reported from provinces.

It is very difficult for communes without basic access roads to access to district/provincial/ national roads. Average distance from commune centers and clusters to existing transport routes is nearly 6-8 km in the country; from the farthest communes is around 40 km (i.e. Nam Gion, Muong La, Son La), 30 km (Nam Han, Sin Ho, Lai Chau); the closest distance to existing roads is 2-3 km, mainly in Mekong Delta. A reason restraining the development of access roads is that those communes are separated from highways by big rivers such as Red River, Da river, etc. Therefore, it is necessary to invest in construction of large bridges (with more than 100m span) in order to address problems of communes without basic access road.

Investments in Rural Road Development (2000-2004)

From 2000 to 2004, investments in rural transport increased year by year. According to provincial statistics, the total investment within the past 5 years hit a record of VND 29,241 billion, nearly 2.7 times higher than that in the period of 1996-2000 (VND 11,000 billion), accounting for 1% GDP and about 5% GDP of agricultural sector (agro-forestry and fishery). For the country as a whole, a WB's recent survey on public expenditures shows that investments in the transport sector in the past 5 years have increased 3 times higher than GDP growth rate, accounted for 4-4.2% of GDP (e.g. 4.5% in 2002 – a relatively high rate in comparison with those of other regional countries). Therefore, investment in rural transport system accounts for about 25% of the total investment funds in the nationwide transport system. This reflects great efforts of the Government, support from donors and success of the policy 'The State and the people are working together'. Details are presented in the following table.

Table 1.3.1.4: Rural Roads Investment by Region

Unit: Million VND

No.	Region	Investments by year						Annual average
		Total	2000	2001	2002	2003	2004	
1	Red River Delta	5.528.320	705.595	906.236	1.131.982	1.303.152	1.481.355	1.105.664
2	North Central	5.921.105	707.659	1.008.993	1.346.116	1.267.405	1.590.932	1.184.221
3	South Central	2.912.903	95.988	610.833	775.834	700.583	729.665	582.581
4	North East	4.453.921	378.017	776.067	1.025.657	950.723	1.323.458	890.784
5	North East South	2.641.507	289.009	400.425	532.132	642.241	777.699	528.301
6	Mekong Delta	4.406.285	571.260	804.867	951.241	1.090.023	988.894	881.257
7	North West	1.179.217	34.954	223.466	251.625	383.424	285.748	235.843
8	Central Highland	2.197.883	332.340	341.782	429.607	510.329	583.826	439.577
	Total	**29.241.141**	**3.114.822**	**5.072.668**	**6.444.193**	**6.847.880**	**7.761.577**	**5.848.228**

Source: Reports from provinces, excluding compulsory labor

As per region, the North Central Coast received highest amounts of investment (about more than VND 1 trillion per year) and followed by Red River Delta. Taking into account the average investment per year per province for the whole period, the North Central Coast received a highest investment (about VND 150 billion/ province/year), and followed by the Red River Delta (about VND 100 billion/ province/year) whereas Mekong Delta received the lowest investment of about VND 76 billion per province in 2004. Comparing investments to GDP of each region, the highest rate is in North West (investments in rural transport contribute about 6% of regional GDP), North Central Coast (more than 5%), Central Highland (~3%), North East (3.5%), South Central Coast (~2%), Red River Delta (1.5%) and the lowest is in North East South (0.52% of regional GDP/year). This reflects a significant consideration from the Government to poor regions in the country, especially North West, North Central Coast, North East and Central Highland, and to be analyzed thoroughly in Section 1.2.6 below.

Existing Problems in the Rural Road Network

- Rural transport network is relatively dense in the nationwide. However, there are still 290 communes without access roads to commune centers and many communes can be accessed only in dry season. In order to ensure smoothness and good access to communes without basic access roads, it is necessary to widen rural transport network and build missing roads in disadvantaged areas serving for people's needs, especially people in remote and isolated areas.

- Technical standards are inappropriate, loading capacity of bridges is still low, and unsatisfying increased demands of large vehicle types as well as people's movements. This shall be further analyzed in Section 1.2.3.
- The percentage of rural roads paved with bitumen and cement concrete is still low, i.e. 19% compared to the targeted 30% in CPRGS (reaching more than 60% of the set target). All weather roads constitute about 50% of rural roads compared to the targeted 70%. Earth roads still occupy a high percentage (1/2), as a result of difficulties in local people's travel in rainy season.
- Quality of roads is low (in road formation, surface, and drainage system - culverts, ditches); most of roads are narrow with insufficient technical standard.
- On the existing rural road system, bridges and culverts are inadequate, the number of weak and temporary bridges is still high, which cannot accommodate medium and heavy vehicles.

1.3.2. Inland Waterway (I.W) Network

Vietnam is enjoyed an abundant and diversifying system of rivers, channels and ditches, including 2,300 of rivers, channels and ditches of all sizes with a total length of about 198,000 km. However, only 41,900 km of rivers and channels have been operated, of which nearly 11,226 km satisfy navigational requirements in terms of depth. Most of rivers, channels and ditches run through rural areas to cities, provincial centers and economic centers, creating a convenient waterway transport system. The average density of rivers and channels is 0.127 km per sq. km in the nationwide; 0.45 km per sq. km in Red River Delta; and 0.68 km per sq. km in Mekong Delta.

There are 9 main river systems in the country, 4 of them are in the North (i.e. Bang Giang-Ky Cung river, Red River, Thai Binh river and Ma river), and 3 of them are in the Central Region (i.e. Lam river, Thu Bon river and Ba river).

Although there are two rivers of Dong Nai and Mekong in the Mekong Delta, these river systems are linked through channels and ditches creating a waterway transport network convenient for transport in this region.

Due to geographical conditions, the Vietnam I.W network is mainly concentrated in the Red River Delta and Mekong River Delta. Inland waterway transport is insignificant in the Central Region and other regions. Therefore, in this report, we just focus on studying rural inland waterway transport in the above two delta regions.

Current Conditions of Local Inland Waterway Network

Local Inland Waterway (River) Infrastructure

As for Channels

There are 6,026 km of natural rivers and channels in Red River Delta, of which 3,073.6 km are under operation; 1,639 km are centrally managed; and 1,436.6 km are locally managed (accounts for 46.68%). Centrally managed rivers include big rivers such as Red river, Lo river, Duong river, Cau river, Thai Binh river, Da river and Day river, etc… Locally managed rivers are small ones, mainly at Class V and Class VI, with dry channels, narrow width and small curve radius; and mainly operated in natural conditions.

Five main routes under the central government consist of HCM.C - Ca Mau Inland Waterway; HCM.C - Ha Tien I.W.; HCM.C - Dong Thap Muoi - Long Xuyen Quadrangle I.W.; Mekong River Transport Route; and Bassac River Transport Route.

In addition, there are hundreds of rivers under the management and operation of local authorities, creating a diversified and convenient rural transport network by inland waterway from home to home, from commune to commune. Rivers, channels and ditches form an integrated transport network among sub-regions and connecting to major inland waterway trunks.

Assessment of Rural Inland Waterway Channels

- The river density in Red River Delta is 0.45km/sq. km, whereas it is 0.68 km/sq. km in Mekong Delta.
- Rivers are in natural conditions and greatly affected by natural factors such as hydrology and flood; The Mekong Delta is also affected by tidal waves.
- The minimum depth of channels in Red River Delta is 1.5-2 m, whereas it is 2.5-3 m in Mekong Delta.
- The minimum width of I.W routes is 30 - 60m in Red River Delta, and 30 - 100m in Mekong Delta.
- Water level difference between dry and wet season is 2.5 - 7m.
- In Mekong Delta, the river network is connected to a dense channel network, forming a convenient inland waterway transport network.

As for River Ports/Berths

In Red River Delta, there are 75 river berths, in which 55 in Hai Phong, 6 in Bac Ninh, 6 in Nam Dinh, 5 in Ha Noi and the other 3 in Hai Duong. All river berths are located in basin of main rivers such as Red river, Cau river, Thai Binh river, Duong river and Ninh Co river…with medium scales, equipment and facilities; area of around 10,000 sq. meters; berth length of 200m and mainly managed by the Central government.

Cargo loading/unloading berths are managed by district authorities and operated by private sector. These berths are in small scale with simple equipment combined with manual

methods. Main commodities include construction materials serving for local people and people in surrounding areas. Cargo throughputs are in low volume.

Mekong Delta is enjoyed an abundance of channels and ditches, as a result, there are many river ports and hundreds of river berths dispersed across the region. Large ports such as Can Tho, My Tho, Vinh Long, My Thoi, Sa Dec and Tra Noc, etc.. are equipped with relatively modern loading and unloading equipments. In addition to the above ports, there are many other local small ports such as: Dai Ngai (Soc Trang), Ca Mau port, Nam Can, Ong Doc (Ca Mau), Hon Chong (Kien Giang) and hundreds of river berths with through capacity of 10,000-50,000 tons/year. Small berths are generally invested and managed by private sector to serve inner-field transport and transport of materials and construction inputs... in support for people lives.

In general, common features of rural river ports and berths in Red River and Mekong Delta are:

- Small scale ports with low capacity;
- Many seasonal berths, operation of manual loading and unloading;
- Some ports are equipped with loading and unloading equipment, but mechanization is in low level; most of equipment is old and out of date;
- Insufficient capacity of warehouses;
- Non-integrated connection of most of ports to the national transport network due to insufficiency of access roads.

Problems in Local Inland Waterway Development

As for I.W. Management, Operation and Maintenance

In Red River Delta and Mekong delta, even though it is rather convenient to develop I.W. transport for satisfying travel needs and goods transport requirements in the areas where the construction of road network is very costly or impossible, most of rivers and channels are operated in natural conditions. Most of rural channels originate from ports/berths in city/province/district centers and run to other berths in the same districts, communes/villages and to berths in other provinces.

Local rivers/channels and local ports/berths have not been satisfactorily invested since they are considered as natural resources and free of charge. In recent years, local channels have been examined and along-river berths have been repaired and maintained in these two regions. Moreover, some funds from central budget has been allocated for provinces in Mekong Delta such as Long An and Tra Vinh to repair local ports and berths, but the improvement and upgrading of rivers has been invested in only main waterway transport routes. Local river channels in general have not been budgeted to improve, upgrade, maintain, dredge and clear obstacles.

It can be seen that there have been almost no *maintenance* activity. Many rivers and channels are eroded, river banks are corroded up to 1-2m, or even 2-3m in some sections. River bank erosion resulting in a destroy of residential areas, vegetations, rice fields and etc. is a fact that needs consideration.

Unplanned berths and yards are resulting in an disorder as present. Signs, warning lights of obstacles are insufficient; obstacles remained from some facilities are not absolutely cleared in river bed. These are causes of inland waterway accidents.

Problems of Rural Inland Waterway Transport

- *Channels:* There is almost no survey on the width and depth of rural inland waterways. Channels are left in natural conditions due to no fund for maintenance. Most of rural inland waterway sections cannot accommodate river-crafts at night time due to a lack of navigation aids. Linkage to the general transport network is not so convenient.
- *Ports and berths:* Ports are of small scale and with low average capacity. Port equipment and facilities are insufficient, out of date or non-synchronous.
- *Boat/vessel fleet:* Most of boats/ships are old. Due to a budget restraint, boats are not regularly maintained nor repaired, resulting in a frequency of incidents. Loading capacity is low. Non-driving license steersmen of most of river-crafts, particularly small boats often cause accidents.
- *Management and institution:* appropriate and transparent policies are still insufficient. Inland waterway sub-sector has not been rationally invested, especially in Red River Delta. Legal framework for the operation of transport and ports is inadequate, for example, in field of issuing transport license, boat/ship registration, port operation license and etc. Local people are key persons involving in rural transport but they operate in a small scale. Funding mechanisms for rural I.W infrastructure should be adequately improved.

1.3.3 Technical Standards in Rural Transport

1.3.3.1. Rural Roads

Standards for Rural Road Classes

Technical Procedures

Existing standards applicable for rural roads at the moment include the following:

- As for highway designing standards: the recently issued TCVN 4054 - 2005 standard is applied for the public highway network in place of former TCVN 4054-85 standard and TCVN 4054-98 standard. According to the new Standard, roads are classified into six, of

which lowest classes would be applied for rural roads; and required geometric dimensions are larger for roads in plain and hilly areas.

- The rural road design standard, namely 22TCN 210-92 is applied for commune roads and lower levels, including Type A and Type B. Type A is used for roads carrying motorized vehicles whilst Type B is used for roads carrying non-motorized vehicles.

- In the meantime, the MoT's interim guidance under the Decision No. 1582/1999/QD-BGTVT stipulates technical standards for roads from district to commune centers including 2 types for flat (AH) and mountainous terrains, which are higher than standards in Type A and Type B.

Thus, existing rural roads can include classes from VI to IV according to TCVN-4054-05, Type A, B in 22TCN 210-92, or type AH and AH_{MN} according to temporary regulations on selection of technical scales for rural roads from districts to communes. Details are as follows:

Table 1.3.3.1: Current Road Design Standards

Standard title	TCVN4054-2005			22TCN-210-92		1582-99
Class, type of roads	Class IV	Class V	Class VI	Type A	Type B	Type AH
Design speed (km/h)						
Flat terrain	60	40	30	10-15	10-15	25 (20)
Mountainous terrain	40	30	20			20 (15)
Design load (Axle load)	8	8	8	6	2.5	>=6
Bridge/culvert load (vehicle fleet)				H8	2.8T	
Surface/Subgrade (m)						
Flat terrain	7.0/9.0	5.5/7.5	3.5/6.5	3.5/5.0	3.0/4.0	3.5/5.5
Hard Mountainous terrain	5.5/7.5	3.5/6.5	3.5/6.0	(3.0/4.0)	(2.5/3.5)	(3.0/5.0)
Max Longitude Gradient (%)	6(8)	7(10)	9(11)	10	6	9 (10)
Max length of slope (m)	500	400-500	300-400	200	300	400(300)
Applied for:	NR, PR, DR	PR, DR, CR	DR, CR	CR (medium motorized vehicles)	CR (light motorized, non-motorized vehicles)	From district to Commune centers

Note:
NR: National Road; PR: Provincial Road; DR: District Road; CR: Commune Road

Facts of Application

Basically, the abovementioned standards are still applied, i.e rural roads for automobile are in classes of IV, V and VI and Type A and B, while residential roads for motorcycles and non-motorized vehicles are unclassified or in lower class. In more advantaged regions, roads can be constructed in higher class (with larger scale).

Existing rural roads: Some of roads used to satisfy standards of rural road Class VI, Type A or B, however, after an operation duration but negligence of maintenance, they are now degrading, their carriageway and geometric dimensions are deformed. Moreover, increasing vehicle loads (that are higher than design capacity of roads) are aggravating the condition of rural roads. Many rural transport roads can not be ranged in any class but evaluated by criteria of formation width and surface. Some district roads paved with gravel or butimen have not been degraded. *Newly built and upgraded rural roads* in general *tend to satisfy higher technical classes than those recommended in guidelines, however standards often rely on economic conditions of each region.*

Class V, VI and upper

These classes are extensively applied for district roads in Red River Delta, North East South, Central Highland, South Central Coast, Mekong Delta and some flat localities in mountainous areas. In mountainous areas of North East, North West and North Central Coast, district roads are often in Class VI and lower. Some commune roads in more developed regions with plain terrain e.g North East South, Red River Delta and South Central Coast can satisfy Class VI.

Type A and Type B

These types are applicable for commune and village (or hamlet) roads, but in some mountainous regions with difficult and severe terrain conditions in the North or Central region, or in some provinces in Mekong Delta where local materials are unavailable, Type A is still applied for district roads.

Most of village roads have not been conformed to technical classification of rural transport roads, they are formed and existed naturally so unsatisfied any standards on geometric dimension or criteria of a road. Commune road system contributes a fairly high rate, however they have not been decentralized so the management, construction and maintenance are mainly done by local people; these roads are small in scale, low in quality, and mainly in Type B and lower.

Some Problems to be Addressed in Road Technical Standards

- *Application of standards:* TCVN-4054-2005 is considered as a uniform standard for public highways and possibly applied for district and commune roads. However, construction costs will be very high if this Standard is applied for severe terrain areas such as high mountainous areas, but at least it is used for district roads. Type A for rural transport should be still used for motorized vehicles operating on commune roads, but it is necessary to provide guidances on restriction of vehicle types, load capacity limit to make a distinction with highways. Regarding Type B in 22TCN 210-92, it is necessary to review geometric factors and gradients to be applicable for severely mountainous areas in the North and Central Region. This type is relatively appropriate for construction of roads carrying light motorized vehicles which run to village roads. As a matter of fact, it is very difficult to deal with gradient problems in high mountainous terrains since roads have

been developed in places where possible, except dangerous areas. Currently, many routes are unable to meet required technical standards in terms of gradient, particularly with high gradient of 10-12%, or even 15% on some roads.

- *Speed and loading capacity*: Designed speeds in TCVN 4054-2005 for Class V and Class VI have been increased by 5km/h comprared to those in previous standards. Hence, it is necessary to consider the application of higher designed speeds for rural roads since the design speed of 15-25 km/h is no longer appropriate for rural transport demands in the modernization and industrialization period. Loading capacity of rural vehicles need determining to be higher than H6 and H8; some localities have needs of large vehicles with high loading capacity up to H18, and even higher. However, a balance between requirements and costs, and determination of transport demands and vehicle volumes should be done in order to obtain investment effectiveness.

- *Geometric dimensions:* for roads carrying automobile, it is necessary to ensure a carriageway width of 3.5m, or at least 3.0m (on sections with difficult conditions), and formation width of minimum 5m (for safety purposes in operation). On difficult sections, it is possible to allow 4.5m wide formation to ensure safety.

- *Surface structure:* there are many problems arisen in rural road surfaces. Traditional surface types such as gravel, earth consolidated with hard materials (i.e. gravel, small gravel and broken bricks), water-bound macadam and dressed stone mainly for non-motorized vehicles are no longer suitable for motorized vehicles with higher speed. Moreover, environment issues need to be taken into account. It is thought in many localities that if the budget is insufficient, they will not construct roads, if they do, they desire good conditions. Therefore, it is necessary to review, research and pilot various surfacing options to find out surface types appropriate for typically local conditions in terms of economy, material availability and terrain.

- *Bridges, culverts and drainage systems:* The density of bridge and culvert per km in all regions is very low. Many old bridges and culverts which have low design capacity, are no longer appropriate. It is trending to build permanent bridges by reinforced concrete in rural transport sub-sector.

Used Surface Types

Existing Road Surface Standards

In general, designing standards and road surface construction procedures have sufficiently promulgated and there are no problems in technical terms.

Table 1.3.3.1.2: Standards and Procedures on Road Surface Construction

No.	Surface Type	Design Standards	Procedures on Work Construction and Acceptance
A	**Soft Surface**	22TCN 211-93	-
1	Hot bitumen concrete	-	22TCN 249-98
2	Bitumen sealed, and bitumen penetrated	-	22TCN 270-2001; 22TCN 271-2001 (replace for 22 TCN 09-77)
3	Water-bound macadam	-	22TCN 06-77
4	Gravel, small gravel and macadam	-	22TCN 07-77
5	Laterite	-	22TCN 11-77
6	Earth consolidated with cement, lime	-	22TCN 81-84; Training materials in 1999
7	Acid emulsion sealed		22TCN 250-98 (22TCN 10-77)
B	**Solid Surface**	22TCN 223-95	-
1	Cement concrete, reinforced cement concrete	-	Training materials in 1999

Details on surface types and ability of using local materials are analyzed in Section 1.2.3 below.

Road Bridges and Culverts

Current Status of Road Bridges and Culverts

Although designing and construction standards of brigde and culvert works meet no problem, quality and quantity of bridges and culverts are not sufficient for the operation of roads in conformity with technical requirements due to limited local budgets.

Issues on Road Bridges and Culverts

As for terrain: terrain affects on the requirements of bridges and culverts i.e. there are compeletely different requirements between mountainous regions and Mekong Delta region. Mountainous regions include North West, North East, North Central Coast and Central Highland where rivers and streams are in large number, resulting in a high quantity of bridges and culverts according to design standards (about 10-20 culverts and small bridges per 1km). Whilst Mekong Delta has a flat terrain but dense channels, so requirements on bridges are higher than on culverts (about 10 bridges per km). In addition, local people here are very poor with thin density, as a result of low investment capacity, however requirements on facilities are extremely high, thus the coordination from the Government and supports from outside are needed.

Designing Loads

Standards on design loading of road surface and works are unclear by road class but are generally regulated in designing standards for the road pavement, as a result, on the same

route, loading capacity of the road pavement and works are inconsistent. Loading capacity is basically from H8-H10 for the bridge and culvert system on district roads and H13 in some areas, H8 for permanent bridges and culverts on commune roads, and lower for temporary bridges and culverts.

1.3.3.2. Classification of Inland Waterways

According to the Decision No. 247/QD dated 23, May 1992 regarding the Vietnamese Standard No. TCVN-5664-1992, inland waterways are classified into 6 classes as follows:

Classification of Vietnam Inland Waterways (TCVN 5664 - 1992)

Class	Technical specifications					Specifications of river crossing facilities			
	River		Channel			Bridge			Clearance (m)
	Depth (m)	Width (m)	Depth (m)	Width (m)	Curve radius R (m)	Clearance Width		Clearance (m)	
						River	Channel		
I	> 3	> 90	> 4	> 50	> 700	80	50	10	12
II	2 - 3.0	70 – 90	3 – 4	40 – 50	500 – 700	60	40	9	11
III	1.5 – 2	50 – 70	2.5 - 3	30 – 40	300 – 500	50	30	7	9
IV	1.2 - 1.5	30 – 50	2-2.5	20 – 30	200 – 300	40	25	6 (5)	8
V	1 - 1.2	20 – 30	1.2- 2.0	10 – 20	150 – 200	25	20	3.5	8
VI	< 1.0	10 – 20	< 1.2	10	60 – 150	15	10	2.5	8

At present, 8,013 km of rivers have been managed, of which 6,231 under the Central management and 1.782 km under the local management, particularly:

I.W. Class 1: 1,797 km;

I.W. Class 2: 1,206 km;

I.W. Class 3: 3,228 km; and

I.W. Class 4 – 6: 1,782 km.

I.W routes in Class 4-6 are almost managed by local authority. Map of I.W. classification in Red River Delta and Mekong River Delta is illustrated in the Appendix.

However, on the base of the Law on Inland Waterways (effective from 1, Jan 2005), MoT issued the Decision No. 27/2005/QD-BGTVT, dated 17, May 2005 stipulating that the inland waterway include central, local and special inland waterways. According to this Decision, local I.Ws are managed by provinces or cities under the central authority to support for the local socio-economic development.

Rural inland waterways have not been classified and managed in almost all provinces in the Red River Delta and Mekong Delta, except in some provinces.

1.3.4. Exploitation and Use of Materials in Rural Transport Construction and Maintenance

In general, materials used in construction and maintenance of rural roads are mainly for filling embankment, paving surfaces and building related facilities (i.e. bridges, culverts, fords and etc.). It includes natural materials like filling earth, gravel and treated materials like chippings, cement, bitumen, steel, etc.

Materials used for filling embankment include granular soils with the nature satisfying technical standards, i.e. hill soils, gravel, sand, rock, waste materials, mix of consolidating materials… These are available materials at local, therefore in building rural roads, materials for filling embankment mainly consist of availably natural materials at local, with reasonable transport distance and in conformity with other standard conditions.

Materials used for surface construction mainly include natural gravels, bricks, rocks, cement, steel, bitumen, asphalt concrete, etc… Natural materials are often locally available and used for low class surfaces, for example gravel. Whilst other surfaces using processed materials are mostly paved in localities where cement and steel factories and brick manufacturing establishments or quarries and etc…are located, with short transport distances and cheap costs.

Materials used for constructing drainage works on the roads mainly are rocks, bricks, cement and steel. These are processed materials, thus, advantages and types of surfacing structures and prices depend upon whether localities are close to sources of the materials or not.

Exploitation and utilization of local materials depend on local terrain and geological conditions. As mentioned in Section 1.2, Vietnam consists of 8 economic regions, and have 5 types of typical terrain, with availability of materials as following:

- *Mountainous areas*: mainly concentrated in North West, Central Highland and North East regions. These areas are often at altitude of more than 1500m, covered by forest or in highlands, easy to be landslided and possibly eroded. Availably natural materials can be used for building roads including gravels and soils; transport distance is short, with less than 1 km. Materials need to be processed to build roads are relatively abundant, such as sand, grinded rocks…however, transport distance can be far, from 20-50 km.

- Midland areas: mainly concentrated in Central Highland and North East regions. Their altitude is from 500-1500m. These areas are subject to erosion but in moderate extents. Available natural materials in the distance of less than 1km include soils and gravels. Processed materials such as sand or grinded rocks…are in a transport distance of more than 20 km in general.
- Lowland plain area: mainly in Red River Delta and North East South regions which include riverside or plain-closed valleys with altitudes of less than 500m. These areas can be eroded by landslides. Available natural materials in the transport distance of about 5 km consist of soils and gravels. Processed materials such as macadam are transported in a distance of 5 - 20 km in general, however bricks can be made in neighboring areas.
- Plain area: at altitude of less than 30m in Mekong Delta in general. Erosion can be happened due to weak soil intensity. Processed natural materials such as gravels, macadam are available but in long distance (probably more than 200 km).
- Coastal sandy soil area: mainly concentrated in North Central Coast and South Central Coast regions with altitude of less than 50m. Coastal strips with continuous sand banks can create spreading erosions in some areas. Materials tend to be damaged and eroded due to landslide. Natural materials such as gravels and processed materials such as macadam must be transported from 5 to 15 km even though they are available.

With respect to the above 5 types of terrain in overall, the rate of terrain types in 8 nationwide regions is presented in Table 1.3.4.1 below. Based on that, available materials and transport distances by region in the country can be seen.

Table 1.3.4.1: Terrain Types by Region

Terrain Type by Region					
Region	Mountainous	Midland	Lowland	Plain	Coastal sandy soil
North East	14%	42%	42%	1%	0%
North West	77%	16%	8%	-	-
Red River Delta	-	3%	89%	7%	1%
North Central Coast	7%	24%	64%	-	6%
South Central Coast	6%	22%	67%	-	5%
Central Highland	15%	55%	30%	-	-
North East South	-	7%	83%	9%	0%
Mekong Delta	-	-	-	100%	-

Source: Rural Transport Development Strategy – by I.T.Transport in 2000.

Typically local materials used in the construction and maintenance of rural roads in Vietnam can be divided in 7 main groups as follows:

- Sandy soils: in coastal provinces such as Da Nang and Quang Nam, and in some plain provinces. This type can be consolidated by cement or made into emulsion to be used for road foundation.

- Dusty clays: in Mekong Delta and Red River Delta and in some valleys between mountains. This material can be consolidated by lime to be used for building road foundation and potentially used for technically paving roads with brick.

- Hilly gravels: often covering on hard rocks along hillsides, seen in Central Highland and northern mountainous region. This material can be used for making the gravel pavement layer in relevant areas or road foundation. However, many hilly gravel areas are not included in the technical guidelines so they need to be thoroughly surveyed during the time of design and implementation.

- Laterite gravels: in weathered soils in some hilly areas, and can be used for the gravel pavement in relevant areas or for road foundation.

- Laterite (red soils): is a weathered layer covering on hard rocks - in some cases can be misunderstood as “laterite gravel”. This material can be used as mechanical consolidating or lime consolidating materials for road foundation.

- River gravels: this material is found in streams and river bed – mainly in rivers and streams derived from highlands in the Central Region or in the North. It can be used for making road foundation but in nature of low aggregation, then it can be mixed (mechanically consolidated) with red soils to make the road foundation layer.

- Hard rocks: a kind of homogenous materials such as granite or basalt. It can be used in methods of building roads by manual, such as block stones and paving stones.

Frequently used Road Surfaces

In recent years, the type of gravel surface is often recommended to be used in rural transport upgrading and improvement projects. However, due to typical features of Vietnam, it has exposed many weaknesses. A program on assessment of gravel surfaces carried out by Intech-TRL consultants in 766 survey places has shown serious limitations in the type of gravel surfaces in almost 16 provinces selected for the study caused by factors relating to material quality, material availability, climate, terrain, drainage system and maintenance. Data on the status of gravel loss shows that there are about 58% of surveyed locations are badly degraded while around 28% of losing materials; the rate of lost materials is twice higher than the sustainability, generating a burden on the maintenance and pollutes the environment with dust. All above types of gravel surfaces need soil and rock materials which are not available everywhere. Earth mountain areas in the North and in Mekong Delta are lack of sand and rocks, while some areas in Mekong Delta are insufficiency of earths for filling embankments. In disadvantaged and thin populated areas, the mobilization of investment capitals meets with difficulties.

- *As for bituminous surface*: this type contributes a higher rate compared to other types in district and commune roads in Red River Delta, Central Coast and North East South. In more disadvantaged regions such as mountainous areas in the North (i.e. North West and North East), and Mekong Delta…the rate of this type is lower, even very low.
- *As for cement concrete surface*: if this type is paved in conformity with standards for roads carrying automobile, the cost will be higher than that of bituminous surface roads so it is often made in a small scale for roads serving people's life. However, this type of surface is paved in more developed economic regions only (such as Red River Delta and North East South), in provincial centers, towns and peripheral urban areas of the remaining less developed economic regions.
- *As for gravel, macadam and soil consolidated with earth and gravel*: these surfaces are popular, but less used in better economic development areas. However, roads surfaced with these types are not clearly recognized in many places, especially after a duration of being operated.
- *As for natural earth*: this type is predominated in difficult areas such as mountainous and midland regions, i.e. North West, North East and Central Highland, however it takes a lower rate in better economic development regions with thick population density. In hilly and mountainous areas, the natural earth is mixed with solid granules; while in lowland plain areas, the natural earth is made of mixed sand, clay and mud that create many constrains for the travel in rainy season.

Through local facts, bituminous and cement concrete surfaces are ideal for the operation (in terms of loading capacity, durability and smoothness), maintenance and environment but require high construction costs and are not affordable for every locality. In terms of techniques, gravel surface is acceptable in transition period but rapidly damaged in inundated conditions and drifted by slope, therefore the maintenance cost is very high and becomes a burden for poor regions.

Assessment of the Exploitation and Using of Materials in Rural Transport Construction

In general, in eight regions of the whole country, Mekong Delta meets with the most serious problems in terms of both natural and treated material resources. Since this is a wholly plain area with geological characteristic of weak soils, natural material resources here are very limited and unable to satisfy required specifications for building roads and facilities. At the same time, treated materials must be transported in long distances, resulting in high construction costs. Scarce of material resources is one of major restraints on the development of rural transport in this Region.

Red River Delta and South East regions enjoy convenient conditions for the development of rural transport. These two regions are abundant in natural materials with good quality and appropriate for building roads and drainage facilities. As for the Red River Delta, there are resources of black sand with high reserves along the rivers of Hong (Red), Day, and Duong;

pebble and yellow sand (coarse sand) in Lo river. Moreover, lime stones are concentrated in Ninh Binh province. Hill gravel with abundant reserves is available in the midland while clay is available in Bac Ninh province. These natural materials are appropriate for the building of road foundations and surfaces. Furthermore, treated materials like cement, steel and bricks are also available thanking to a short distance from manufacture factories, therefore construction costs are lower. In the North East South, red gravels and stones are abundant in everywhere, bitumen and cement sources are also available, so the transport distance is short and as a result of low construction costs. This is one of the outstanding advantages to develop a rural road network with high quality surfaces compared to other regions. This is one of the advantages to develop a rural road network with good quality and high standard surface. Currently, this Region has the highest percentage of bitumen and cement concrete roads in the whole country (44%).

Other regions all have advantages in using local materials for the construction of roads. South Central Coast and North Central Coast regions are rich in natural materials for filling embankments and paving low-grade gravel surfaces. Transportation of treated material resources like cement, steel, bitumen is also convenient in midland and coastal area. In the west mountain area, these treated materials are not available due to a far distance from factories leading to higher costs of construction.

In Central Highland, there are a lot of hilly gravels and basalt soils with good quality and abundant reserves that are suitable for building foundations. Hilly and stream gravels are also available here. In the North East Region, natural materials are available for construction. However, treated materials such as cement are not locally available and must be transported in long distance. In the North West Region, natural materials are available but in long transport distances.

1.3.5. Operation and Maintenance of Rural Transport Infrastructure

1.3.5.1. Operation of Rural Transport Infrastructure

The rural road network (including district, commune and village roads) directly serve travel and transportation demands of the rural people. In order to identify the operation of rural roads, it is necessary to group roads under using and operation purposes, e.g district roads, commune roads, intercommune roads, intervillage roads and hamlet roads.

- As stated in Section 1.2.2, most of ***district roads*** are in Class 5, Class 6 and Type A, except a very small proportion of newly built or upgraded roads in 2000-2005 period is in higher class. Some sections running through important towns/center of commune clusters have recently been widened according to standards of regional urban roads. Main goods and passenger flows in districts are often carried on these roads. Due to no limitation on loading capacity of vehicles, some sections of the existing roads with design capacity for vehicles of less than 6 tons are being seriously damaged. As 'cong nong' vehicles are prohibited or limited to run on national/provincial roads but unprohibited in serving for the agriculture, they are used for collecting agricultural products during harvest time in

cropping areas and hill and mountainous areas that are difficult to access, and generally carry very heavily. Therefore, they rapidly damage roads surfaced with inadhesive materials or earths in rainy season since it leaves wheel tracks or creates large muddy road sections. Trucks carrying agricultural products, construction materials, raw materials and products of the small industry and handicraft sector are often operated with more than 6 tons. Due to a typical feature of building roadside houses, people often live along the roadside and gradually form large and crowded residential areas. Since roads Type A are very narrow so it is difficult for 2 cars, especially for medium trucks to give way, as a results of frequent accidents, especially in crowded residential areas. Dust, noise and exhaust fumes from motorized vehicles are unavoidable.

- Differing from district roads, commune roads mainly serve daily needs of local people, so they must satisfy traveling requirements of the people in their daily life and production. Commune roads are often in Type A and B, with surface structures of cement concrete or bitumen and gravels; and used for goods distribution – mainly articles of daily necessity, construction goods and production inputs in communes – from goods collection places along district roads (provincial or national roads located in the area of communes) to retail places within the commune or directly to consumers. Moreover, commune roads directly and mainly serve the transportation of agricultural, industrial products, as well as products of the small industry and handicraft sector; and needed raw materials to manufacture these products. Affordable vehicles on these roads include light trucks, while popular ones are non-motorized vehicles and motorbikes, or even bikes. The transport of passengers by bus is inappropriate since it is impossible to pick up the required number of passengers, therefore passenger transport vehicles on these routes are mainly taxi motorbikes (xe om). In pure farming areas such as Red River Delta, local people often go to the field by bike and motorbike; and carry their agricultural products by improved cart, delivery tricycle, and by Cong nong (including converted ones) during the harvest time. Since these routes are directly under the commune management and serve daily needs of the commune people so they are put in high consideration of commune authorities. At present, there is a movement executing in the whole country, it is the installation of barriers to limit vehicles' loading capacity and placement of stakes to prevent cars from entering in on solid surface roads. Such roads mainly serve pedestrians, bikes and motorbikes and improved carts (or light truck), and road surfaces are still in good conditions and undamaged in case the construction quality is ensured. Nevertheless, these roads limit the development of vehicles, transport facilities and constrain the economic development in communes. In communes with specialized trades or pre-processing of products, such limit measures fail to be applied. Protection measures in these places mainly focus on the collection of fees for vehicles in the commune, but cannot deal with vehicles entering from outside. Another constraint occurred in traditional plain villages is, village roads, especially hamlet roads are in very small width (often 1.5-2-2.5m), used to be suitable for bulk vehicles such as ox carts and improved carts but now become too narrow and often cause accidents.

- Village roads concentrate in residential areas and lead to home, fields and up to hills. In flat area, these roads are normally paved with cement concrete with a thickness of 8-10cm on the previous ground or paved with bricks. Road surfaces are gravel in the midland and mainly earth in mountainous areas. In the areas where lands can be exchanged for infrastructure, roads are paved with concrete and side ditches for drainage are constructed. However, these ditches become the place where contains waste water from families and from the animal husbandry so they are causing air pollution in the whole areas. Village roads serving daily travelling requirements of the people are mainly for walking, bikes and motorbikes, and for improved carts in harvest time. These roads are paved with cement concrete and in clean conditions. Gravel and earth roads cause dust, dirt and difficulties for traveling in rainy season but they are rarely damaged. The maintenance of these roads mainly includes weeding, roadside planting and filling up pot-holes.

Normal potentials damaging rural roads are break-down of cross culverts constructed long time ago. Old culverts cannot satisfy future transport demands and need to be prioritized to renew in the Draft of road construction and upgrading for the next period when setting out requirements on the harmonization between construction and mainternance. In addition, roads are seriously damaged by human factors, i.e. cutting across the road surface to install electricity, water and communication lines... and after the completion, road surfaces have not been recovered their former situation; such actions are especially harmful for cement concrete surface. Cracks are derived from those cut places and rapidly spread out.

At present, the break-down and crack of cement concrete surfaces can be seen in some sunken plain areas; such surfaces fail to accommodate heavy vehicles since they were paved on a former surface layer made of earth, gravel or brick, in a 8 - 10 - 12 thick layer. In Mekong Delta, due to expensive cost of materials, the cement concrete layer is made of gravels with a flatted mortar cover. Therefore, the cement mortar cover is lost after an operation duration. In mountainous, midland and even in plain areas, gravel roads are damaged after 2 years of operation, the gravel layer is distorted. As a result, these roads cause damage for vehicles and nuisance for travelers. Even the roads constructed under RT1 and RT2 are easily damaged due to low investment rates and paved with gravel, especially in inundated or eroded areas such as mountainous and midland areas in the North, North Central Coast or Mekong Delta.

Thus, among 3 road groups mentioned above, district roads have been and shall be used more and more whereas their maintenance is restrained. These roads are suffering from traffic increase in terms of volume, loading and density. This situation is the same to some commune roads running through residential areas where services or secondary manufacture activities are developed and heavy commodities are transported. If this situation is going on, the service life of district roads shall be shortest, and followed by commune roads. In addition, all these 3 road types (district, commune and village roads) running through residential areas are not usually constructed with wide enough shoulders. Visibility at intersections of village and

commune/district roads is insufficient, resulting in accidents (often for rural children) since motorized vehicles in rural area have been increasing while rural people have not been fully trained on traffic safety issues.

Traffic Corridors Protection and Traffic Safety

Attention has been paid to the rural transport safety corridors in recent years, through propaganda on mass media, communications, radio, television and organization of training courses for rural transport dedicated staffs in communes, quarters and towns on the Ordinance on Protection of Transport Infrastructure, Decree No. 172/ND-CP and Decree No. 186/ND-CP of the Government. In many provinces, the local people living along the roadside are noticed on the right of way, landmarks of the road protection corridor; illegal encroachment of transport corridors is inspected and treated. However, there are still a lot of violations in transport corridors that require more publicity, inspection and treatment.

At present, ***traffic accidents*** on rural roads trend to be increasing. Minor accidents e.g. collision, crash are in great number but unreported, while heavy accidents are reported but insufficiently. The estimated number of accidents on rural roads is about 40% of the total number (about 35-56% depending on each district), mainly occurred on district, inter-commune, inter-village roads, and even on roads in good condition in thinly populated areas. On district roads and main village roads, accidents are partly caused by 'Cong Nongs', trucks and motorbikes, by sun-drying rice straw and other agricultural products, using the road surface to pluck rice off the ears, temporarily restore farm products and raw materials in harvest time and due to poor awareness and knowledge on transport rules by road users. 70% of accidents are caused by motorbike.

Traffic accidents and potential increase of accidents are mainly caused by:

- The development of rural road infrastructure has not kept pace with the rapid growth of motorized vehicles e.g. motorbike, automobile in the areas with rapid economic growths such as Red River Delta, North East South and Mekong River Delta. High growth rates of vehicles (especially motorbikes) are recorded in these regions, with about 10-15% per annum in the past five years. There are about 14 million motorbikes in the country, in which 50-65% operating on rural roads. These motorbikes are mainly secondhand or made in localities in China with cheap price and low quality. A typical example is in the first 9 months in 2005, 32,500 motorbikes were registered in Dak Lak, even in remote and isolated areas. At the same time, there were 40,000 traffic accidents, of which 30,000 caused by motorbikes. In the Red River Delta, trucks smaller than 5 tones increased by 20%/year in 2005.
- Moreover, rural road infrastructures have not kept pace with the growth rate of vehicles in technical terms i.e. width, loading capacity, geometric factors, or traffic safety regulations. Roads in the plain area (especially in Red River Delta) are narrower than required standards; particularly hamlet roads, the existing pavement have not accommodated

actual traffic volumes and vehicle loads. In addition, weak, narrow and damaged bridges in rural areas are not timely repaired and upgraded, resulting in traffic accidents.

- Lack of safety signs due to no compulsory regulations.
- Low awareness and in-execution of traffic rules by road users. Many motorbike drivers have no driving licenses or have not been trained on traffic rules.

Training people on transport safety is carried out on a national scale for all types of roads. In addition to the provision of guidance on transport regulations by mass media such as newspaper, radio and television, PDOTs cooperate with Departments of Training and Education to include transport safety issues in the training curriculum. At primary school level, transport safety is a compulsory content in the curriculum while at higher level, it is included in the extra-curriculum. The existing weakness is that transport safety is compiled for all training levels, contents are not logical and teachers are not specialized so pupils are not very interested in this issue.

Although attention has been paid to the *environment* issue, for example, after being constructed, roads are maintained, the surface and ditches are kept clean; hamlet roads are managed by unions or households, however a high percentage of unpaved roads (about 80%) causes significant vehicle depreciations, low speeds, inconvenience in wet season and dust in dry season, resulting in environmental pollution.

1.3.5.2. Maintenance of Rural Transport

Awareness on Maintenance Work and Establishment of a Maintenance Culture

After the 'Rural Transport Strategy' funded by DFID and implemented by I.T. Transport in cooperation of TDSI was completed in 2000, the maitenance has drawn much of attention from *donors*. WB and DFID have required all provinces under the Rural Transport Project 2 (if their roads are rehabilitated under the RT 1) to make commitments on maintenance of all roads funded by donors' loan resourse. Under the RT2's framework, the TA was funded by WB and DFID, implemented by WSP in participation with TDSI and other relevant agencies of MoT, with the establishment of a "Maintenance Culture" is one of the three set objectives. Within the past five years, all provinces subjected to RT2 have executed their maintenance agreements. Another important contribution of this TA is that WSP consultants had coorperated with MoT to publish "Rural Road Maintenance Manual for Commune level' at the end of 2002. And under this Project framework also, 5 regional support centers were established to coordinate, arrange agreements with provinces and support for the training of district and commune staff in RT2 provinces using the abovementioned Manual as training materials. In the first year, many training courses were carried out for a total of up to 5600 trainees from 90% of RT2 communes and districts. After that, SEACAP (funded by DFID) has maintained follow-up training courses in accordance to actual requirements; by this way, RT2

provinces can select training contents and methods appropriate for their needs through the SEACAP 11 whilst provinces out of RT2 are trained on maintenance through the SEACAP 10. There have been 43 provinces and cities, 356 districts and more than 6000 communes participated in training courses under the SEACAP 11, and 3218 trainees participated in 96 training courses in 21 provinces under the SEACAP 10. A maintenance manual for district and province staffs is being completed by MoT under the framework of this TA project. Road maintenance has been increasingly interested in. A part from the above SEACAP 10 and 11, through SEACAP, DFID has supported some projects i.e. Appropriate Road Surface Plot (SEACAP 1); Study on Gravel Surface Type; Develoment of Digitalized Maps of Rural Transport Network in the Nationwide (SEACAP 12); SEACAP 16; and etc.... In RT3 project, WB, DFID and the GoV agreed to spend 10% of the total investment for maintenance activities.

Accompanied with donors, *MoT* – the State administration agency on rural transport, has paid much attention to maintenance in general and rural transport maintenance in particular. MoT has paid many efforts, in which the most impressive one is giving directions to draft the Road Fund several times to be submited to the GoV; this effort reflects the MoT's determination in seeking for sustainable fund sources for the maintenance as well as MoT leaders' requirements for a concentration on maintenance activities in this Rural Transport Strategy.

PDOTs which participated with the agencies under MoT and international consultants in the TA under RT2, were trained on the maintenance work, and then provided training courses for district and commune staffs. In comparison with the year 2000, the awareness of PDOT leaders designated to rural transport have been considerably improved, with higher attention and more understanding of the necessity of maintenance activities. However, *actions* taken by PDOTs to implement the maintenance have not seen in progress.

* At district level: this level is least interested in rural road maintenance even though it has been decentralized as a direct and highest level to manage rural roads in the past period. A possible reason is, there have been a change in fuctional divisions in the nationwide (i.e. the establishment of economic infrastructure division) leading to mass changes in long-standing staffs in charge of rural transport. On the other hand, due to a think that district roads are newly built and significantly upgraded under RT1, RT2 and next coming RT3, and able to be operated so the maintenance is considered not to be an immediate work. In addition, the effectiveness obtained from the building of new roads has resulted in desires for newly building or upgrading roads in district leaders who are not specialized in transport infrastructure, nor trained on the importance of road maintenance and the harm of road operation without timely maintenance activities, but responsible for decision making.

At commune level and for local people: in many places, commune authorities are highly responsible for the quality of roads under the commune management. The tendency is upgrading of road surfaces. Most of commune roads are kept clean and weeded along the roadsides. Earth roads are immediately repaired if they are flooded in rainy season. Gravel, cement concrete or bituminous surfaces are only left in damaged and unrepaired conditions in

case of difficulties in mobilizing funds. As for seriously damaged roads caused by natural disasters, repairing plans shall be made and submitted to districts for allocation of support funds if commune budgets and local people's constributions are insufficient. In order to lessen road damages and protect rural roads, it is necessary to provide clear regulations on vehicles coming in or out, and barrier placement.

In spite of encouraging changes, in general, there have been many activities to be done to make the planned maintenance become 'an indispensable habit' of all management levels responsible for rural transport. Road maintenance has not been properly interested in, and this issue is to be detail analyzed in the coming sections of this Report.

Organization and Decentralization of Maintenance Activities

On the base of our surveys, we have recognized some organization models which are suitable for rural transport maintenance work. In every district, transport facility groups or transport holding companies are in charge of the maintenance and repairing of roads under district management, and economic infrastructure divisions or similarly functional divisions are responsible for rural transport management. Commune and village roads, especially village roads are mainly self-controlled and repaired by the local people. Decentralization for households living along roadsides to manage the maintenance of roads is being piloted in some provinces, e.g. in Yen Loc commune, Yen Mo district (Ninh Binh province), the Commune Chairman signs a contract to assign households to manage roads, in turns they get paddy, but this model is meeting difficulties due to an insufficiency of paddy to pay for such households. In Bac Lieu, the commune also assign households to be in charge of maintaining each road section. And the PDOT is proposing to establish transport counties ("hat" in Vietnamese) responsible for maintaining roads by region.

However, the management organization of RT maintenance is still unclear in terms of decentralization of responsibilities and duties for each level. There are still problems with reporting and inspection procedures and forms. The working relationship, coordination among departments and agencies are not closely established. Many districts fail to formulate transport plans, resulting in an unsustainable and temporary development of rural transport.

At the moment, transport movements have just satisfied requirements of making road clean and a part of road construction. There is a trend of waiting until roads need upgrading and improving if such roads are assessed to be in bad conditions. Local people and governments desire to further improve road conditions and lives of the people living along the roadside by paving close-textured surfaces. Unexpected repairing demands are not high, mainly for damages caused by natural disasters in coastal and mountainous areas, and sometimes in sunken land areas, since existing district roads are in fairly good quality, especially in plain areas. In critical places which are subject to flooding and inundation, road construction has been prioritized under the Gov. programs on channel/canal consolidations in the past period.

Maintenance Funds

Statistics on rural transport outcomes and funds used for rural transport development show a sad result of the road maintenance practice. Only a negligible progress has just been made since 2000. Most of fund resources from state budget, loans from international organizations, people's contributions and charitable supports from individuals are transferred to the transport construction. The state budget is mostly allocated for the maintenance of district roads and for unexpected repairing of damages caused by natural disasters; labors are mainly mobilized for the above activities and for seasonal maintenance of roads through transport movements. Most of resources for the maintenance of commune roads come from public interest works, cash or in kind contributions, but are negligible. Village roads are self-controled and repaired by the local people. In reports on rural transport activities and rural transport movements submitted from district level to province level, the basic achievement is the mobilization of capitals and labors for new construction, improvement and upgrading of roads. In the current situation, most of local available budget is limited. In addition to a small budget committed by provinces for the maintenance of roads funded by foreign loans, some modest amounts for district roads are allocated from local budget. Small repairing and tidying up are mainly achievements of rural transport movements done by the local people, schools and youth union. In workshops on rural transport development, the lack of maintenance activities are explained by an absence of sustainable budgets and labors.

According to provincial reports, the maintenance work is paid the most consideration in Red River Delta. However, if taking into account the whole period from 2000-2004, the maintenance is unsatisfactory. Investment capitals are mainly focused on new construction, upgrading and improvement of roads, accounting for 91.26%, while the rate for maintenance is low - just 8.74%. More importantly, as for only the year 2004, the rate of maintenance expenditures in the total investment budget decreased to 2.47%. Details are as follows:

Table 1.3.5.2. Investment Budget for Road Construction and Maintenance

Category	Total in 2000 - 2004		2004	
	Mil. VND	%	Mil. VND	%
Total investment budget for construction and maintenance	6,257,363.8	100.00	1,481,354.72	100.00
Investment budget for construction	5,710,333.1	91.26	1,444,753.72	97.53
Investment budget for maintenance	547,030.7	8.74	36,601.00	2.47

In other regions, the rate of maintenance expenditures in the total investment is insignificant, taking about 4% in North Central Coast, South Central Coast and North East South regions, and only 3.74% in Mekong Delta and even lower (1%) in Central Highland, North West and North East regions. In An Giang, the budget for rural road maintenance in each district is VND

500-700 mil/year which is too small in comparison with actual requirements. This reflects an unusual relation between investments in upgrading, improving and in maintenance of rural transport. Financial resources have only met about 20-25% of maintenance requirements (for maintainable roads). This shows that investments in the construction of roads will be less sustainable. Together with the new construction of roads or rehabilitation of roads which are able to be maintained, maintenance needs shall increase. If budgets allocated for maintenance remain and even decrease as in Red River Delta case, accumulative maintenance volumes shall be increasing and expenditures for periodic maintenance or repairing shall be costly.

The situation will be worse if there is no sustainable mechanism in place for funding maintenance activities. According to a WB's report, the system of district and commune roads is under provincial management, while maintenance costs for it account for only 4% of the total expenditures in transport sector. Therefore, provinces need either to allocate from province budgets or mobilize contributions from local people for the maintenance. Also according to that report, 10/11 provinces in North East, 4/4 provinces in North West and 6/6 provinces in Central Highland cannot balance between revenues and expenditures. The local contribution is only sufficient for maintenance in better-of communes but not in remote and poor communes where maintenance costs become higher while people's contribution is lower and beyond the ability of the poor.

Besides, periodic maintenance becomes more and more urgent when 19% of rural roads are paved with bitumen or cement concrete. It is partly due to a lack of maintenance budgets and provinces try to lessen the burden on short term maintenance by surfacing asphalt or cement concrete for these roads to make them maintainable. In short and medium terms, periodic maintenance for asphalt roads is fairly costly and in overall, maintenance budgets in the coming period need to be significantly increased. Implementation measures and mechanisms are recommended in Chapter 3 of this Report.

In summary, within the past 5 years, even though the MoT, government authorities at all levels and especially donors have been trying to strengthen the awareness, establish the maintenance culture and actually obtained encouraging changes, the maintenance work still needs more considerations, the budget for maintenance activities should to be stable and increased, and mechanisms for the maintenance implementation need to be more appropriate in order to achieve sustainable rural transport development. In very poor areas with many difficulties, supports should be allocated from the state budget, even for maintenance activities.

1.3.6. Development and Management of Rural Transportation

1.3.6.1 Goods and Passengers Transport Operation by Road

Goods and Passengers Transport Volumes

Thanking to a high economic growth in 2001-2005 (nearly 7.5% per annum), the volume of

goods and passengers increases rapidly in the whole country in general and in provinces in particular. In the country as a whole, the growth rate of goods transport volumes in 2000-2004 (unfortunatedly, there is no staticstics collected in 2005) is 8% (8% by road in particular) in terms of tons and 10% (7% by road in particular) in terms of Tkm. Average passenger tranport volumes grow 12% (13% by road in particular) in terms of Pax. and 10% in terms of Pax.km (8% by road). It can be seen that goods and passenger transport growth rates are higher than GDP growth rate (nearly 1.1 times higher in terms of goods and 1.3-1.5 times higher in terms of passengers). Even though the growth rate of movement volumes is lower (especially in terms of goods and passenger movement volume by road), it is nearly similar or higher than GDP growth rate.

However, through field surveys, most of localities have no statistics on goods and passengers transport volumes on rural roads. Therefore, we failed to collect statistic data and estimates of rural tranportat volumes in time series so we have just estimated relative indexes basing on an assessment of transport growth rates. Through survey data from various sources, it can be assessed that from a low starting point, in the past 5 years, rural transport has been in a developing period – the growth rate is even though higher than the previous period but still at medium level, equal to or lower than that of GDP, i.e. about 6-7% in terms of passengers transport volumes and 5-6% in terms of goods transport volumes.

As for goods transport: at present, rural economy is no longer self-sufficient, in stead, agricultural products are more and more diversified and in a rapid transition to goods oriented. Natural resources in rural areas consist of land, water and climate conditions that are focused for an effective exploitation. This feature makes rural areas as a market and an 'industrial works' producing industrial and handicraft products. A quick increasing of consuming demands for agricultural products in satisfaction for requirements of urban areas or export and focal industrial zones have resulted in a significant growth of goods volumes to be transported on district, commune and even village roads, especially in harvest time. As analyzed in Item 1.2.4, district roads are used for transport of goods from main goods concentration points in provinces to smaller scaled distribution places located on district roads; for transport of goods collected from different places in districts, transport of passengers in some given directions and for satisfying people travelling requirements from one to the another place within districts.

In the meantime, *passenger transport routes* are formed and operated mainly from province centers to other areas, other provinces and among districts in a province along highways, provincial roads and some district roads. At the moment, in every province, there are passenger transport routes from province centers to district centers. On the other hand, thanks to better conditions of roads, the people's travelling is more convenient, travel time is shortened in comparison with that in the previous period, except some communes in remote and isolated areas and communes without basic access roads.

As for transport management: The PDOTs are now responsible for directing the coordination among local transport agencies; stabilizing goods and passenger transportation routes to meet the transport demands; coordinating with other relevant departments to manage and ensure safety for people, goods and transport vehicles.

As for the involvement in the transport operation: transport operators are from different economic sectors such as SOEs (central and local), non-SOEs (collectives, private organizations, individuals and mixed entities) and foreign firms. Among which the non SOEs play a key role in rural goods and passenger transport.

Road Transport Vehicles

It is unfortunate that there is no separate inventory on the number of vehicles operating on rural roads in the nationwide. However, there are some highlights found from our surveys, as follows:

- There are various types of goods and passenger transport automobiles operating in rural roads, i.e. IFa, Kia, Hyundai, Daewoo, Toyota, converted vehicles which are made in different countries such as China, Korea, Japan, Vietnam, etc...
- Due to low technical standards of rural roads, loading capacity of transport vehicles operating on these roads is normally low, i.e. less than 5 tons or 24 seats and below. Only in some regions i.e. Red River Delta, North East South and in some economic developed provinces, rural road networks are built in higher technical standards so they can accommodate trucks with loading capacity upto 10T and buses up to 35 seats. Sometimes, vehicles exceeding permitted loading capacity are also operated on rural roads resulting in seriously damages of the road surface.
- In the past 2 years, trucks with small capacity (1-3.5 tons) has rapidly increased in localities and become an important type of vehicles providing goods transport services in rural areas.
- Buses and trucks tend to operate mainly in urban areas and on main highways so their presence in rural areas accounts a small rate of 30% of the whole country. In recent years, motorbikes have quickly increased with an average of more than 10% per annum in 2000-2005; at present, the total of motorbikes is nearly 14 million units in the nationwide, of which 4 million are operating in Hanoi and Hochiminh city. However, most of motobikes operating in rural areas are either secondhand or brandnew but cheap and imported from China. Such motorbikes contribute a high transport share of goods and passengers on rural roads in localities.

The assessment of existing transport vehicles in rural areas is based on findings from sampling surveys in some localities (carried out in VITRANSS, 2000 and in RT2, 2003, and SEACAP 1 in 2004, 2005) and then cross checked with various sources of data from some typical sampling studies recently implemented by TDSI in some provinces with different terrain

conditions. Although such sampling studies are in small scale, their illustrated figures have displayed important features of the rural transport.

Through processing of sampling data, it can be seen that rural transport vehicles have following limitations:

- The operation of common motorized vehicles on rural roads is limited by technical class of rural transport facilities.
- In rural areas, the transport of goods and passengers mostly rely on light trucks, converted vehicles, motorbikes, bicycles, animal carts (or on-foot).
- In mountainous areas, local people mainly travel on foot and they have to walk over a long distance to reach the facilities like schools, clinics and markets, etc.

Goods and Passenger Transport Terminals

At present, there is almost no terminal for rural goods transportation since rural goods is often in small volumes so most of goods are gathered at home or exploitation sites (for agricultural, forestry and fishery products). In terms of rural passenger transportation, there are bus stations with small scale in every district center, and there are bus stations or bus stops but only in some commune or cluster center of economic developed areas (i.e. in Red River Delta, North East South regions and some provinces in Mekong Delta).

1.3.6.2. Goods and Passenger Transport Operation by Inland Waterway

Transport Rivercrafts

The number of transport rivercrafts operating in provinces is totaled up in Table 1.2.5.3 as follows:

Table 1.2.5.3. Number of in-operation Rivercrafts in Provinces

No.	Region	Number (units)	Total engine capacity (HP)	Tonnage of goods transport fleet (Tons)	Tonnage of passenger transport fleet (people)	Average age
1	Red River Delta	9,346	626,451	1,186,583	20,866	10.92
2	Mekong Delta	62,241	2,343,099	1,886,161	189,843	9.4

River-crafts are mainly small boats, barges, tug boats, self-propelled barges and etc. with small capacity from 50 to 150 tons. In Mekong Delta, there are many small boats built by local people (for family use) with various loading of 5-10 tons, managed by local authority, operated by private sector running on locally small rivers. Average age of the river-craft fleet is rather old: from 10.92 – 15 years. Surveys conducted in a province in Mekong Delta show that 45% of the number of households own boats, of which more than a half is motorized boats (family-used boats). However, as reported by provinces, it is very difficult to total up family-used boats (since local people do not register them), therefore, we have no detailed data about such type of river-crafts.

Volumes of Goods and Passenger Transport

At the moment, the organization, management and operation of rural goods and passenger transport by I.W. in Red River Delta and Mekong Delta are implemented by 3 main transport groups, i.e. state owned transport operators (central and local), cooperative transport operators and private transport operators. Goods transported in rural areas include exports, imports serving agriculture and construction such as fertilizer, pesticide, cement, fruit, paddy, local agricultural products, etc…

Inland waterway network is rather extensive in Red River Delta, however, it is less competitive than road transport, especially in passenger services since roads are more developed. About 60% of inland waterways in operation conditions locate in Mekong Delta so rural goods and passenger transported by boat is very popular. From our surveys, majority of paddy are transported to grinding stations by farmers; boats or small traders' boats. Finished rice is mainly transported by I.W. from grinding stations to Can Tho port for export. Similarly, 70-80% of export rice are transported by I.W. to Hochiminh city, only a small volume of high quality rice is transported by road.

The operation ability of river-crafts in Mekong Delta is stable in general; and inland waterways share a reasonably large transport proportion. Many river-crafts are well contributing in the transport of rural goods and passengers among districts, among communes and in inner field serving for agriculture and construction. In some districts and island communes along big rivers without bridge connecting to local roads, local people have to travel mainly by ferry and boat before accessing to main roads. Nevertheless, in other areas in the whole country, the operation ability and transport share of inland waterways accounts a negligible rate.

1.3.6.3 Some Problems of Transport and Means of Transport in the Nationwide

- Transportation services have not met the local demand in terms of both quantity and quality. There are passenger transport vehicles running to district centers, but due to low volume of rural passengers and few number of transport vehicles, local people's transport demands have not been satisfied, especially in remote and isolated areas.

- Transportation cost is high on rural roads due to low traffic volumes, poor quality of rural roads as a result of frequent damages and congestions in rainy and storm season, and local people have to pay high costs for their traveling.

- Currently, there is almost no terminal for transportation of rural goods in the nationwide.

- The rural inland waterway system plays a very important role in satisfying transport demands in Mekong Delta, for example, it has a relatively stable operation ability, large I. W. transport shares, and many in-operation river-crafts in the transport of rural goods and passengers among districts, among communes and in inner field serving for agriculture and construction, however, in some districts and island communes along big rivers without any bridge connecting to the local road network, most of local people have to go by ferry and boat before accessing to main roads.

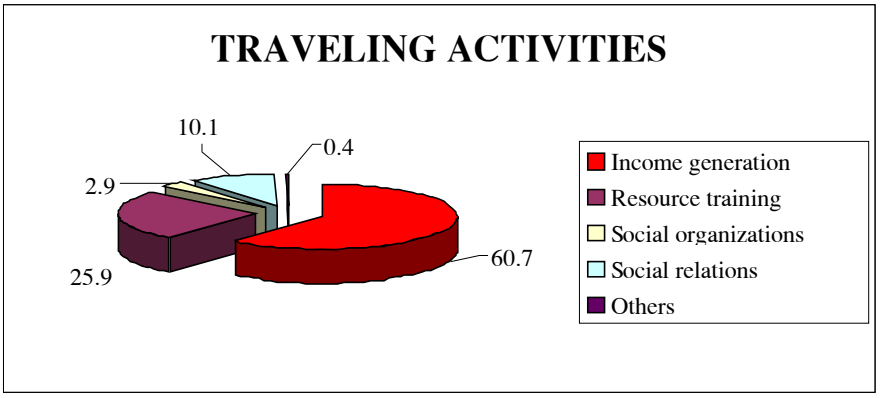
1.3.6.4. Current Status of People's Traveling in Communes without Basic Access Roads and in Island Communes

In Communes without Basic Access Roads

As mentioned in the previous parts, by the end of 2005, there had been 290 communes without access roads to commune and cluster centers in the whole country. It is difficult for the travel of local people in remote and isolated communes without or limited road access so that buses can not come. As a result, local people have to go to social facilities such as market, clinics, hospital or schools or bus stop mainly on foot or by individual vehicles such as bicycle, taxis motorbike (xe om), horse-drawn carriage or motorbike. The average distance to public bus station is longest in North West and Central highland (more than 20 km) whilst it is about 5 km in Red River Delta.

In 2003, a survey was carried out in 4 villages of Hung Yen and Lao Cai province, in each province, two villages with difficult accessibility (without or limited road access) were selected. The survey showed some interesting issues related to the access: in places without basic access roads (i.e. Nadin village, Lao Cai province), the average number of trips/person/year was 80-85% of that in the commune with basic access roads (i.e. Ban Xeo village). And the similarity happened in two villages in the plain area of Hung Yen Province: i.e. Dinh Cao village (with limited road access) and Kha Duy village (with basic access roads), but such rate was above 90%. However, the average distance in the place with limited road access was only 70% of that in the place with easier accessibility. This means, that the people who meet with difficult access conditions mainly go to look for livelihoods; 65% of trips in Nadin village relate to income generation activities (traveling to fields or harvesting), of which nearly 70% of trips are on foot, despite an average travel distance of 5.3 km. The remaining include trips on foot in combined with other vehicles; e.g. 6.68% are on-foot and bus trips, and 5.51% are on-foot and bicycle trips, etc.

Figure 1.3.6.3.1: Traveling Activities of People in Surveyed Villages



Due to such a difficult accessibility, the local people have to walk or go by non-motorized vehicles with low speed. In a same distance and by a same type of vehicles, the travel time of the people in Nadin village (Lao Cai) is 1.2-1.5 times higher than that of the people in Kha Duy village (Hung Yen).

Traveling in Island communes

Due to geographic and terrain features, basic access roads have not been constructed in 46 island communes with relatively dense populations in Mekong Delta. The travel of local people is meeting with many difficulties, especially in annual rainy and flooding season; even in some years with high floods, such island communes are isolated and inaccessible. Local people have to use boats, junks to access to the commune center, district center or to basic access roads with a rather long distance of 8-10 km on average.

As a consequence of economic difficulties, almost all households in these communes are poor. Their boats and junks are completely family-used, just a few are motorized. Therefore, in flood season, their travelling is very difficult, especially for school pupils. There have been some regreted accidents.

1.3.7. Analysis, Assessment on Rural Transport Development Institutions and Policies

1.3.7.1. Management Organization and Decentralization of Rural Transport System

At Central Level

MoT administers the rural transport sector, including formulation of rural transport development strategy and policy, development of rural transport standards and legal

documents. At present, the Local Transport Division (under the Department of Planning & Investment - MOT) are in charge of giving advisory to MoT about rural transport at macro management level. In addition, functions such as formulation of strategies, planning and policies; compilation of technical standards, training, etc… are executed by departments, administrations and institutions under MoT, i.e. TDSI, Research Institution for Science and Technology, Department of Science and Technology, Department of Personnel and Organization, Vietnam Road Administration and so on.

MPI and MoF*:* are responsible for (i) setting up investment plans in the development of rural infrastructures, including rural transport; (ii) allocating funds for localities (based on local plans and comprehensive socio-economic development strategy of the country).

Ministry of Construction: is responsible for setting up policies and mechanisms for the management of rural transport investment and construction; issuing norms and unit costs; stipulating operation regulations for rural transport construction management units at locals; and providing guidance on investment, construction and tendering regulations for authorities of all levels, sectors and localities.

At Provincial Level

PDOTs are responsible for transport management within the provincial area, including national roads authorized by MOT or Vietnam Road Administration. Under each PDOT, there is a Transport Management Division in charge of rural transport, a Project Management Unit responsible for managing all transport project within the provincial area. Provincial staff who have technical, economic and management profession, and educational degrees at professional college or upper are qualified to manage rural transport.

At District Level

Districts are responsible for management of district roads and major inter-commune roads. In every District People's Committee, there is a Transport Management Unit under the Transport and Industry Division, the Construction, Land and Environment Division, the Economic Infrastructure Division or the Industrial and Commercial Division. These divisions are in charge of the management in various sectors: i.e. transport, industry, construction, irrigation, commerce, science and technology, natural resources and environment, and there is an especial case of a division managing 7 different aspects (i.e. Industrial and Commercial Division of Vo Nhai district, Thai Nguyen province). In regards to rural transport in districts, one or two staff from the abovementioned divisions are assigned to manage rural transport field. However, such staff sometimes hold other positions i.e. relating to industry or construction. At district level, administrative staffs often hold middle-ranking degrees and about 50% own university degrees of right profession.

At Commune Level

Communes are responsible for management, maintenance and operation of commune road network, and some district roads (in commune boundary) delegated by districts. There is usually one staff in each commune to be in charge of transport, land, and other works. Most of them have not received specialized training on techniques and profession of the rural transport management, and unqualified for the job.

Problems in the Management of Rural Transport

At macro level: there are only 2 staffs in charge of rural transport in the Local Transport Division - Planning and Investment Department (MOT). With such a number of staff, it is very difficult to execute functions such as monitoring, supervising and evaluating, especially in the case of unavailability of a frequent reporting system from provinces as present. Therefore, it is necessary to supplement enough staff and equipment and further train for existing staffs so that they can fulfill their state management tasks related to rural transport.

- *A consistent and appropriate management model for rural transport* is unavailable in the country, particularly at district and commune levels.
- *The rural transport management capacity at provincial level has not met required qualifications*, and varies among regions and even among provinces within a region, especially in the fields of making transport development master plans and plans, prioritizing investments and managing rural transport projects.
- *District staff assigned to management rural transport are insufficient and their capacity is still inadequate*. Staffs in charge transport are limited and they are often assigned with several tasks. Surveying, monitoring and collecting transport data are normally unexecuted or loosen. There is a lack of staffs specializing in management, technical monitoring, reporting and statistics.
- Due to holding of various tasks, *commune staffs* have not been trained in technical profession, so *their management and technical competence are poor in the field of rural transport*. The staffs in charge of land and transport management at commune level are assigned following the elected term so their working environment is not stable. Many managerial officers who have already been trained on rural transport management and maintenance, are changed to another position in the next election term, resulting in difficulties for new officers to take over.
- System of information and data is insufficient, dispersed and unreliable. There have been no regular reporting system from grassroots level to managerial levels. The information sharing culture has not been established between relevant departments/agencies causing difficulties for management of rural transport system.

1.3.7.2 Incentive Policies for Rural Transport Development

As stated in Section 1.1, major policies and measures supporting for the development of various sectors and areas, and assurance of a sustainable growth and hunger elimination and poverty reduction under the ‘Comprehensive Poverty Reduction and Growth Strategy’ relate to the *road development as following:*

- *By 2005 :* ensure basic access roads to the center of communes and commune clusters; 30% of road surfaces paved with cement concrete; 70% of rural roads passable all year around; and 80% of monkey bridges eliminated in Mekong Delta.
- *In difficult terrain areas,* roads for horse carts should be opened at first, then widened for carrying automobiles in order to create opportunities for poor communes and the poor to access to public services.
- *In remote and isolated communes and rural industrial zones,* the State provides special policies to build roads linking with main transport routes and upgrade degrading roads.
- *As for upgrading, improving and widening inner-commune roads,* investment capitals are mainly contributed by local people (60% in labor and local materials), but the State should support 30% in the form of primary materials such as cement and steel. Investment in improvement and upgrading of the existing roads should be prioritized with a focus on the roads impassable in 4 seasons.
- *With regards to the improvement and upgrading of inter-village roads, roads connecting communes to districts and to main road trunks in poor communes,* the State supports most of primary materials, expenditures for machines, bulldozer, and the remaining is mobilized from local resources.
- It is necessary to combine and integrate budgets from Program 135, Program on the Construction of Commune Clusters' Centers in High Terrain Areas, Program on Socio-economic Development in 6 disadvantaged Provinces in Northern Mountainous area in 2001-2005, Central Highland and Mekong Delta.
- People participations in poor communes and poor communities should be publicized to select and decide the construction, improvement and upgrading of transport roads.
- Selection and decision-making on the construction of roads should be open, democratic with community participation and based on resources that can be mobilized from localities.

The creating of resources for rural transport development should depend on *local* socio-economic conditions; each province or locality has its own policies to develop rural transport, such as (i) spending of a percentage of funds from provincial budget in the development of rural transport, (ii) mobilization of contributions in cash and labor days from local people and local enterprises or organizations, (iii) mobilization of contributions from local owners of means of transport, including motorbikes with cylinder capacity of 49 cubic centimeters and upwards, and (iv) leasing of land resources to raise funds for the construction of planned roads.

Shortcomings in Rural Transport Development Policies

- Achievements in hunger elimination, poverty reduction and rural transport development *are still unsustainable,* the poor have met many limitations in their access to rural transport and enjoying of basic services. Risks of re-poor are high. There are still 290 poor communes without basic access roads. Lacking of a planned maintenance policy causes remarkable difficulties for the sustainable development of rural transport.

- Core regions in need of access roads to commune centers include remote and difficult terrain communes. However, the difficult terrain leads to high investment rates in the construction of rural transport, large budget demands, and un-attraction of private investment resources. This is a great challenge since the government fund is restrained and local people's contributions are limited because they are extremely poor.
- Incentive policies on poverty reduction and rural transport development have been in place but still insufficient, non-synchronous and even unclear, non-transparent or non-democratic in some cases. The policies are inappropriate with local specific conditions and as a result the execution is not so effective.

1.3.7.3. Mobilization and Management of Rural Transport Investment Resources

Decentralization and Allocation of Rural Transport Investment Resources

The Governmental Decree No. 167/1999/ND-CP dated 26, Nov 1999 and Governmental Decree No. 186/2004/ND-CP dated 5, Nov 2004 stipulate the management and protection of road transport infrastructures (including rural transport).

Investment capital resources are regulated as follows:

- Investments for district roads mainly come from local budget and other fund sources.
- Investments for commune roads are mainly mobilized from local people, commune budget, partially supported from upper level budgets and other sources.
- It is unregulated for the allocation of funds for lower level roads like trails, village roads, or paths leading to the field. New construction, management and maintenance of such roads are mobilized from local people or from other support funds.

Mobilization of Rural Transport Investment Funds

As in other sectors, mobilized resources for rural transport development includes the following:

- Domestic Investment Resource includes central budget allocation. Supports from MoT for the rural transport development in provinces account only a small rate in comparison with the total rural transport investments (about 2%) and instable between years as well as among provinces in the same region. In addition, there are counterpart funds of the GoV. in ODA projects and programs; and rural transport investment funds combined in Prog. 135 and in programs on the development of midland areas, North Mountainous Region, Mekong Delta, Central Highland; Prog. on construction of commune centers in mountainous, high terrain areas; and programs on combination of irrigation, flood control and transport development, especially for waterway transport. Some localities, especially poor localities are supplied with materials and equipments for rural transport development.

- Local (provincial) budgets: an earmarked amount of budget is allocated from each province for the rural transport development. Each district allocates an amount of annual budgets to invest in district roads, and an amount of recurrent budgets to the road maintenance, which are mobilized from remained revenue sources and funds delegated from province for specific plans. This resource is used for a series of construction, upgrading, minor rehabilitation, repairing and maintenance projects. Moreover, each commune also has a small amount of budget spent on roads, which come from the remained revenue sources and any funds delegated from province or district. Some CPCs collect tolls as a revenue for commune budget.
- Foreign Investment Resource includes ODA fund from donors (i.e. WB, DFID, ADB, JICA and etc.), grant aid from NGOs and fund from economic development projects invested by foreign organizations or by joint ventures in localities.
- People's contribution resource includes local people's contributions by labour days or in cash, or mobilization of local people's contributions for the construction and development of public facilities including rural transport (depending on specific conditions of each local).
- Contributions from local enterprises, co-operatives, organizations or individuals involving in the investment for rural transport development.
- Contributions from domestic movements and associations such as armed forces, military (to help poor communes build roads in the Central Highland), Youth Union (in the program on removing monkey bridges in Mekong Delta) to carry out prioritized rural infrastructure programs.
- *Funding for Rural Transport:* as stipulated, funds for district roads come from local budget; funds for commune roads mainly come from local people's contributions.

Revenues and the Management

- The Governmental Decree No. 24/2001/ND-CP stipulates the organization of activities on mobilization, management and using of voluntary contribution sources raised from local people for building infrastructure (including rural transport) in communes and towns.
- At local level, following decentralization is applied in most of provinces: provincial authorities collect contribution sources from local enterprises (except the ones already contribute to districts) and then allocate to districts as per general provincial plans. District authorities collect and manage contribution sources raised from transport vehicle owners, local enterprises and then allocate for the construction and maintenance of roads under the district management as well as partly support for some difficult communes. Commune authorities collect contributions raised from transport vehicle owners (motorized vehicles, trucks less than <1 ton) and then allocate for the construction and maintenance of commune roads but not to hand over to district budgets.

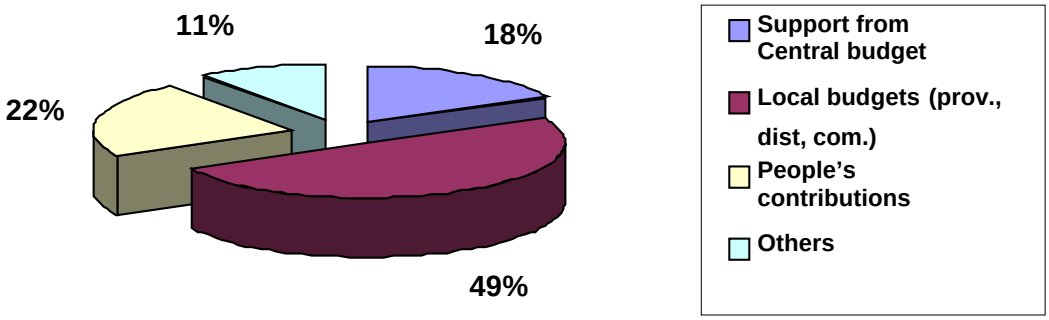
Using of Funds for Rural Transport Development

- Within the past 5 years, the State has kept borrowing ODA from WB and DFIF to invest in RT2 projects (after the success of RT1) and are preparing for RT3. For RT2 in particular, total budget is USD 157 mil. (including GBP 6 mil. newly supplemented by DFID). The project has rehabilitated and improved more than 13,000 km of rural roads. ADB already invest in the project of northern provincial roads with a total budget of nearly USD 100 mil. and has committed to provide loans for Central Region Transport Network projects. In addition, JICA also supports rural bridge projects for provinces in the Central Region, Central Highland (45 bridges with total budget of VND 482 billion and VND 257 billion has been disbursed) and in Mekong Delta (38 bridges with total budget of VND 589 billion and VND 565 billion has been disbursed). The investment in rural transport development is combined in the programs supported by donors for other projects under MPI and MARD. In addition, some NGOs also support rural transport development in the Central Region. A Swiss benefactor also supports the replacement and new construction of many bridges in Mekong Delta. Such projects have provided access roads for many remote and isolated communes, and communes meeting with difficulties in Vietnam and have been highly appreciated by local people.
- Every year, the State (both central and local levels) allocate an amount from the state budget and other sources to support for rural transport development projects, focusing on facilities that require high technical standards such as bridges, culverts, fords and etc.; and for building/upgrading district roads and basic access roads to commune centers.
- In addition, the State also supports rural transport development under different scopes and support modes depending on each region, e.g. investment in equipments and machines such as small rollers, small mobile mixing stations, mobile asphalt boiling stations, asphalt, cement and steel for bridge making (in plain and midland areas); supporting of explosives for rock breaking, small rock grinding and screening stations, rollers, asphalt (in mountainous areas); and supporting beams or fixative bridges in assembling modules (in Mekong Delta).
- Commune and village roads and inner field transport are mainly made by the local people. In recent years, rural transport construction movements of local people are significant, contribution rates of local people in total budgets for investment and development of rural transport in almost all provinces are very high, i.e. 30% in Red River Delta, especially 40% in Vinh Phuc province (in some communes in flat areas, local people's contributions for building cement concrete surface account for 70-75%). In North East South region, capital resource mobilized from the people takes about 20-40%. Quang Binh province (in North Central Coast) has mobilized 40% from the people for building commune roads (35% for mountainous communes). However, in some poor provinces in North West, North East and Central Highland, especially in remote and isolated communes, the contribution rate of the people is low, only about 5%. For roads newly opened by the people, capital structures

include a major contribution from local people (90%), and a small district budget allocated for route survey and explosives with an amount of VND 20-50 million/Km.

Within 5 years, more than VND 29,000 billion were mobilized for rural transport development, among which VND 5,263 billion from the central budget and VND 14,328 billion from local budgets (accounting about more than 60% for both); VND 3,217 billion (more than 11%) from other sources, VND 6,433 billion (more than 22%) from local people. Percentage of mobilized fund is shown below:

Figure 1.3.7 Breakdown of Investments in Rural Transport in 2000-2004



Some Problems in Mobilization and Management of Rural Transport Development Funds

- The mobilization of investment funds for rural transport development has been successful more than expected. During the 5 year period of 2000-2004, more than VND 29,000 billion were mobilized, which is 2.7 times higher than that of the period of 1996-2000. However, it is still *unsustainable* due to a serious imbalance between demands and ability to mobilize funds, between investment and maintenance funds.
- As for ODA projects, the approach by project have shown many advantages but still with some weaknesses. Since rural transport development projects comprise of many small facilities spreading out countrywide and therefore it seems more reasonable to apply a sector wide approach (as recommended by the donors). However, in order to execute this sector-wide approach, a complete financial and legal framework is needed to assure benefits of all stakeholders and appropriateness for the actual situations.
- There is no detailed and feasible plan as well as solutions for mobilization and using of funds for rural transport development in provinces, districts and communes. *A suitable system for reporting and sharing information on the mobilization, using of funds and the development of rural transport has not been in place*. Therefore, *it is difficult for management authorities at all levels to get an accurate figure about fund mobilization and using for rural transport development*.
- The allocation of funds for rural transportation maintenance is unstable due to lack of

information on maintenance situation. Rural transport maintenance is still the biggest problem.

1.3.7.4. Capacity of SOEs, Private-sector and Local Communities in the Development of Rural Transport

- In recent years, the private sector's involvement in transport construction has been increased. Given the nature of small sizes, restrained funds, out of date technologies and limited construction experience, private enterprises are particularly suitable for the construction of small scale and low technical standard facilities like rural roads. There are about 1,000 private enterprises involving in rural transport under the form of contractors, including liability limited companies and joint-stock companies in cities and provinces, whose contract value is about 52% of the total investment in the nationwide. For RT2 in particular, there have been more than 575 private enterprises participating in construction with nearly 1000 bidding packages. Total contract value is VND 966,398 million. Nearly 5000 km of roads and 1000m of bridges have been upgraded, improved and newly built under RT2.

- SOEs are big companies with large funding capacity, advanced technology and good experience in the implementation of large scale projects with high technical standards like national roads and provincial roads. In such fields, private enterprises have not kept pace with them.

Therefore, human resources for construction and maintenance of the rural transport system now are sufficient but they need adequate incentive measures and right capacity assessments in order to participate in tendering and ensure project quality and schedule.

CHAPTER 2

UPDATING OF THE RURAL TRANSPORT DEVELOPMENT STRATEGY UP TO THE YEAR 2020

2.1. Five-year Socio-economic Development Plan (2006 - 2010) and Orientation to the year 2020 in the Nationwide and in Regions.

In the Nationwide

Period of 2006-2010

The Resolution passed by the 10th Central Committee Congress of the Vietnam Communist Party already set out the overall goals in the socio-economic development for 5 year (2006-2010) period, including:

- Acceleration of the economic growth, significant improvements in the efficiency and sustainability of the development, bringing of the country out of the less developed status;
- Significant improvement of physical and spiritual life for the people;
- Creating of a foundation to accelerate the process of industrialization and modernization and to develop the knowledge economy;
- Remaining of political stability and social safety and order; protection of the independence, sovereignty, territorial integrity and national security; and
- Heightening of Vietnam's position in the region and in the world.

In order to achieve the above objectives, some socio-economic development indicators to be obtained include the followings:

- The Gross Domestic Products (GDP) of Vietnam (at comparative price) in 2010 is 2.1 times higher than that in 2000. Total GDP by 2010 will be between USD 85 and 89 billion and per capita GDP will be about USD 1,000. The annual average GDP growth rate is between 7.5 and 8%, and more than 8%. GDP structure is expected to be 15-16% for agriculture, forestry and fishery; 42-43% for industry and construction; and 41-42% for services. Social investments will reach about 37-38%.
- Continue to pursue committed Millennium objectives up to 2010, including the completion of the universalization of junior high school education, ensuring of 100% of households to have a house with an average of 14-15 sq. m per person and a density of over 35 telephone sets per 100 people.
- The population is to be about 88.6 million people with 27 million in urban areas and 61.6 million in the rural areas. The average life expectancy is to be 72 years old. The unemployment rate in urban areas is to be under 5%.
- In 2010, agricultural labors accounts for 50% of the social labor force.
- By 2010, the death percentage of children under 1 year old is to be 20%; the undernourishment percentage of children under 5 years old is to be under 20%.
- Elimination of all households in hunger and reduction of poor households from 25-26% in 2005 to 15-16% in 2010 according to international poverty criteria.

As for the development of rural transport related to the socio-economic development plan: ensure basic access roads to the existing 290 communes without roads; step by step maintain the roads to be maintainable under the plan; rehabilitate, upgrade and newly build roads in places necessary for the socio-economic development and sustainable poverty reduction as well as the modernization of rural agriculture.

Orientation between 2011 and 2020:

By the year 2020, Vietnam will be basically developed into an industrialized country with a rapid and sustainable economic growth rate, a workforce at the medium level of development in the region, a comfortable and happy life for the people, and a society of equity and civilization.

The economic growth rate is expected to be 7-7.5% per year. Per capita GDP will be doubled of that in 2010. The population is forecasted to be 95.5 million with the population growth rate of 0.8%. The urban population will account for 37 - 40%.

Strategic Orientation for the Development of Sectors and Regions

One of orientations for the development of sectors and economic regions related to rural transport is ***a promotion of strong improvements in agricultural production and rural economy*** as agriculture, peasantry and rural areas shall be still strategic issues in the short and long terms. Put a premium on speeding up the industrialization of rural agriculture, development of a diversified commodity agriculture with rapid and sustainable development and high productivity. Continue to invest in the development of rural socio-economic infrastructures in a synchronous manner. Speed up the structural shift from agriculture and rural economy to production of products which are oriented by the markets and have high economic efficiency. Speed up the development of industry and services in the rural areas. Strengthen the processing industry for agricultural, forestry and fishery products. Focus on the development of farming economy, and development of small and medium enterprises.

Orientations for Regional Development Policies: promulgate appropriate policies to facilitate a stronger development for all regions in the country based on comparative advantages; develop a rational economic structure for each region and among regions. Strengthen linkages among regions and within each region in order to overcome the isolation by administrative boundary. *Especially for the disadvantaged rural areas*, there is a need to focus on the development of infrastructures, firstly the transport networks, then irrigation system, and clean water supply; develop training and education; improve people's education level and quality of the human resource. Form central urban areas at the provincial level. Gradually shorten and remove the gap in social development among regions. Improve the economic status of the poor regions in the national economy. Speed up hunger eradication and poverty reduction in the nationwide and especially in disadvantaged areas. Formulate policies on resource supports for the development of disadvantaged areas, especially remote and isolated areas, border areas, islands and the ethnic minority areas. Supplement incentive

polices for all economic sectors, including foreign enterprises to involve in investment or business activities in disadvantaged areas.

Specific orientations for the development in each region are as follows.

In Northern Mountainous and Midland Areas (North East and North West)

In order to eliminate hunger, reduce poverty and shorten the gap of living conditions and social progress in comparison with other regions in the country, *the objectives of these regions aim* to achieve a more rapid pace in socio-economic developments, exploit regional strengths in terms of land, climate, mineral resources, hydro-electricity, and advantages of the border gate and border areas to develop economic industries; significantly improve the system of economic infrastructures; complete the task of moving the people back to the border area; preserve and develop the ethnic minority's characters.

In order to realize the abovementioned objectives, the annual per capita GDP growth rate is to be 9-10% in the period 2006-2010 (equal to 1.2-1.3 of the nationwide average). Average per capita GDP is to be USD 460-520. By 2010, the economic structure in GDP is to reach 26% in agriculture-forestry-fishing, about 34% in industry-construction and about 40% in services. The percentage of poor households is to decrease from 43% in 2005 to 27-28% in 2010 (according to the new poverty standard).

In Red River Delta Region

Objectives set for this region is to continue promoting the role as a driving force to enhance the economic growth so as to significantly contribute to the economic growth of the whole country; and draw and support other regions to develop. Promote its strengths and show its important role as a hub for international and regional trades and cooperations.

Development indexes by 2010: the average GDP growth rate in the period 2006-2010 is to be high at 9% per year, equal to 1.2 times the average growth rate of the whole country. Average per capita GDP is to be USD1,000-1,100. The economic structure in GDP is expected to be roughly 13.5% in agriculture-forestry-fishing, about 42.2% in industry-construction and about 44.3% in services. Exports are to increase at an average of 15% per annum, the export turnover of the region is to account for 25% the national export turnover. The percentage of poor households is to decrease from 20% in 2005 to 10-11% in 2010 (according to the new poverty standard).

In North Central Coast and South Central Coast

With the *objectives* to develop the North Central Coast and South Central Coast to be dynamic developing regions, keep the pace with other regions in the country, minimize effects of natural disasters and stablize politics and social safety and order, the annual GDP growth rate must be 8-9% per annum in the period 2006-2010. Per capita GDP is to reach an average of USD 600 - 630. By 2010, the economic structure in GDP is to be 19% in agriculture-forestry-fishing, about 39% in industry-construction and about 42% in services. The

percentage of poor households is to decrease from 33% in 2005 to 20-21% in 2010 (according to the new poverty standard).

In the Central Highland

In order to make the Central Highland become a region prosperous in economy and strong in national defense and security, the proposed *objective* is to promote its potentials, advantages, geographic locations and natural conditions so as to create a dynamic development at a high and stable growth rate. The direction which is considered a critical breakthough in development strategy in the Central Highland is to develop the forestry in a comprehensive and effective manner. Preserve and develop the characters of ethnic peoples in deep and isolated areas, create a driving force for a rapid growth rate so as to facilitate hunger elimination and poverty reduction.

Major development indexes by 2010: the average GDP growth rate in the period 2006-2010 is to be 8-8.5% per year. The average per capita GDP is to be USD 600 - 650. The economic structure in GDP by 2010 is expected to be roughly 35.5% in agriculture-forestry-fishing, about 29.5% in industry-construction and about 35% in services. Regional export turnover in 2010 is expected to be 4.5 times higher than that in 2000. The percentage of poor households is to decrease from 52% in 2005 to 37-38% in 2010 (according to the new poverty standard).

In North East South

General objectives: mobilize the most of resources in order to exploit regional potentials and advantages in an effective manner, become an economic-motivative region of the whole country and an effective bridge linking trade and economic cooperations with regional countries; create positive influences on Mekong River Delta region and provinces in Central Region.

Major development indexes by 2010: the average GDP growth rate in the period 2006-2010 is to be over 9% per year. The average per capita GDP is to be USD 2,100 - 2,300. The economic structure in GDP by 2010 is expected to be roughly 3.2% in agriculture-forestry-fishing sector, about 50% in industry-construction sector and about 46.8% in service sector. Exports are expected to increase 18% per annum. The percentage of poor households is to decrease from 10% in 2005 to 2% in 2010 (according to the new poverty standard).

In Mekong River Delta

General objectives: mobilize the most of resources to exploit regional potentials and advantages in an effective manner; enhance industrialization and modernization of agriculture and rural areas in the Region; create large and centralized goods production areas.

Major development indexes by 2010: the average GDP growth rate in the period 2006-2010 is to be 9% per annum. The average per capita GDP is to be US$ 860 - 910. The economic structure in GDP by 2010 is expected to be roughly 40% in agriculture-forestry-fishing, about 30% in industry-construction and about 33% in services. Exports are expected to increase 20% per annum. The percentage of poor households is to decrease from 21% in 2005 to 11-12% in 2010 (according to the new poverty standard).

Table 2.1. Strategic Orientations for the Development of Regions in 2006 - 2010 Period

No	Indicators	Unit	Region								
			North East	North West	Red River Delta	North Central Coast	South Central Coast	Central Highland	North East South	Mekong River Delta	Whole Country
1	**Number of Provinces**	**Province**	**11**	**4**	**11**	**6**	**6**	**5**	**8**	**13**	**64**
2	**Land**										
2.1	Area	Sq. Km	63.63	37.336	14.812	51.511	33.069	54.474	34.743	39.739	329.314
2.2	Farming land area	Sq. Km	9.106	4.359	8.507	7.568	5.493	13.269	17.411	29.605	95.318
2.3	Proportion of agricultural land	%	14	12	57	15	17	24	50	74	29
2.4	Terrain (% by type)	%	100	100	100	100	100	100	100	100	100
	Mountainous / rolling areas		56	92	3	31	28	70	7	0	42
	Low land		42	8	89	64	67	30	83	0	43
	Delta		1	0	7	0	0	0	9	100	13
3	**Population in 2010**										
3.1	Average population	1,000 people	9,985	2,727	19,264	11,345	7,540	5,048	14,246	18,443	88,598
		%	11	3	22	13	9	6	16	21	100
3.2	Rural population	1,000 people	7,888	2,317	13,870	9,303	5,052	3,584	6,126	14,201	62,341
3.3	Rate of rural population over total	%	12.7	3.7	22.2	14.9	8.1	5.7	9.8	22.8	100
3.4	Density of agricultural population	people/sq. km	124	62	936	181	153	66	176	357	189
3.5	Proportion of ethnic minorities	%	45	79	0.7	10.5	15.3	33	8	7.7	14

Table 2.1. Strategic Orientation for Development of Regions in 2006 – 2010 (continued)

No	Indicators	Unit	Regions								
			North East	North West	Red River Delta	North Central Coast	South Central Coast	Central Highland	North East South	Mekong River Delta	Whole Country
4	**Economy**										
4.1	GDP growth rate (2006 -2010)	%	9-10		9	8 - 9		8 – 8.5	9	9	7.5- 8
4.2	GDP per capita (2010)	USD	460-520		1100	600 - 630		600 – 650	2100-2300	860-910	950-1000
4.3	GDP structure by region	%	5.2		25.3	13.4		3.3	37.6	15.2	100
4.4	Economic structure by sector	%	100		100	100		100	100	100	100
	Agriculture	%	26		13.5	19		35.5	3.2	37	15-16
	Construction, Industry	%	34		42.2	39		29.5	50	30	42-43
	Service	%	40		44.3	42		35	46.8	33	41-42
5	**Poverty and Hunger Rate (according to new criteria)**										
	2005	%	36.1	62.3	19.8	39.7	23.3	52.2	10.2	20,8	26,7
	2010	%	27 - 28		10	20 - 21		37 - 38	2	11 - 12	15 -16

Source: Population, land, economy: Five-year Socio-economic Development Plan (2006 - 2010), Ministry of Planning and Investment.

2.2. Rural Transport Development Strategy

2.2.1. Objectives of the Rural Transport Development Strategy

Overall objectives

The Resolution passed by the 10th Central Committee Congress of the Vietnam Communist Party already set out the overall goals in the transport sector development for 15 coming years, particularly: mobilize all resources to prioritize the fundamental completion of road, inland waterway, railway, maritime and aviation transport infrastructures under the light of modernization, so as to contribute to the achievement of national development objectives (as mentioned in Section 2.1) concerning economic growth, hunger elimination and poverty reduction, safety enhancement, environment protection and international economic integration. Based on the completion of the planning, the State gives priority to pouring the budget and mobilizing other resources to hasten the infrastructure contruction in each region in the whole country, considering it as a breakthough to develop the country in the current period and prepare for following steps. Encourage economic sectors including foreign invested enterprises to take part in this infrastructure development.

Based on that, overall objectives of the rural transport development strategy in the Resolution include, strongly develop local transport infrastructures in order to meet the requirements of the industrialization, modernization of agriculture and rural areas; link the local transport networks into the national transport network; and create an integrated transport network with transport costs appropriated for most of the people. Rural transport should be considered as an important component in the road transport network, and as a motive for the development of agricultural and handicraft economy for the majority of people, and should be provided with appropriate investments and maintenance following required technical requirements to ensure a long-term operation efficiency.

At the Prime Minister's Decision No. 206/2004/QD-TTg on ratifying the Vietnam Transport Development Strategy up to 2020, the Rural Transport Development Strategy is as below:

- Maintain, reinforce and upgrade the current transport network according to the technical standards of rural transport roads in order to meet requirements on rural agriculture mechanization. Concentrate on opening new roads accessing to commune centres and commune clusters without basic access roads, to farms, afforestation yards and rural industrial focus points. Pursue the construction of inter-commune and inter-village road systems in order to create an integrated rural transport network among communes and villages; link the rural transport network to the national one. Gradually build a system of viaducts and fly-overs at intersections of expressway, national highway and local road; ensure traffic safety.
- As for the Mekong River Delta, it is necessary to combine road transport and inland waterway transport as well as transport and irrigation in order to form access roads to villages and communes, residential areas as a facilitation for their life in flooding season; and take full advantages of inland waterway transport.
- Improve and construct the system of bridges and culverts meeting technical standards.

- Develop small motorized transport vehicles in conformity with present conditions of the rural transport infrastructure. Make transport costs affordable for local people.

In order to meet the above-mentioned overal objectives on rural transport development, it is necessary to define specific objectives for each phase as follows:

Specific Objectives

By 2010, basic access roads will be provided to commune centers and commune clusters. 30% of roads will be paved with concrete, 70% of rural road will be year-round passable, 80% of monkey bridges will be replaced in the Mekong River Delta. In difficult terrain areas, there is a need to construct roads for horse-pulled carts at first, and then widen them for accommodation of 4-wheel vehicles in order to provide opportunities for poor communes and poor people to access public services.

Maintenance should be gradually done under the sustainable development plan for rural transport. Efforts should be made so that 65-70% of rural road will be maintainable by 2010.

By 2020: Sustainable development of rural transport will be continued. The rural transport system will be upgraded and constructed synchronously. 50-60% of rural roads (district and commune roads) will be paved with bitumen or concrete, 100% of rural roads will be year-round accessible, monkey bridges replaced in the Mekong River Delta. 90-100% of rural roads will be maintainable.

2.2.2. Rural Transport Development Strategy

2.2.2.1. Rural Transport Network Development and Investment Strategy

Issues to be reviewed in the Strategy

As mentioned above, the rural transport development plan up to 2010 and the development strategy orientation up to 2020 are to develop a rational, synchronous and integrated rural transport network linking to the national road system (national highways and provincial roads) and rural infrastructures.

The Rural Transport Development Strategy should focus on the following areas:

- Clarification of the role and functions of all transport modes;
- Classification of the transport network by function;
- Formulation of rural transport network planning;
- Identifying of economic, cultural, security and national defense functions in the rural areas; and
- Forecast of potentials on commodity and passenger transport development.

The abovementioned issues are analyzed in the following paragraphs.

***Roles and Functions of Transport Modes*:**

In the development of the Strategy, roles and functions of each mode of transport should be clearly defined and clarified in the national transport network (by service function) in order to

facilitate the formulation of an investment and maintenance strategy for this system. In the rural transport system, the role of each transport mode should be clearly clarified.

The role and functions of transport modes in the comprehensive transport system were defined in the Study on National Transport Development Strategy (VITRANSS) completed in 2000 by the ALMEC Consultants (Japan) in combination with the Transport Development and Strategy Institute. Details can be seen below:

Table 2.2.2.1. Prospective Roles of Transport Modes in Vietnam

Role	Aviation	Maritime	Railway	Road	Inland Waterway
International	Xxx	xxx	X	x	x
Inter-regional	Xxx	xxx	xxx	xx	
Inter-provincial	Xx	xx	xxx	xxx	x
Provincial		x	X	xxx	xx
Local				xxx	x

Notes : x shows the importance

Source : The Study on National Transport Development Strategy - VITRANSS, 2000.

In rural transport, road sub-sector plays the most important role, followed by the inland waterway sub-sector. Inland waterway plays a supporting and linking role in the rural transport, especially in the Red River Delta and Mekong River Delta.

Classification of the Transport Network by Function

The classification of the transport network by function and in accordance with international practices was also presented in the National Transport Development Strategy (VITRANSS) mentioned above. Following this Strategy, the transport network has been divided into 3 types: primary, secondary and tertiary. The primary network (Class 1) has the national level importance while the secondary network (Class 2) links provincial development centers to the primary network. The tertiary network provides suitable access to/from the remaining areas.

In accordance with the above classification, the rural transport network belongs to tertiary network. Its function is to link the transport system in rural areas to the provincial transport network (Class 2) and the national transport network to create an integrated transport network in support for the socioeconomic development of the country.

Similarly, functions of the rural roads were reviewed by I.T Transport's consultants (UK) in the Rural Transport Development Strategy completed in 2000. In the rural transport network, district and commune roads system is functioned the 'core system' which is the most important. In 15-20 years time, the role of these 2 types of roads will remain. Therefore, in this Strategy, we pay special attentions to this 'core' system. Village roads are considered as an auxiliary road network for the 'core' road system mentioned above.

Rural Transport Network Planning

In order to ensure the integrated connection of the rural transport network, it is necessary to re-plan the transport network to make it more appropriate; ensure a linkage between the rural transport network and secondary network, as well as between districts and communes/villages.

- As for road system for instance, it is necessary to consider the road network and the connectivity from low class roads to higher ones: village roads, commune roads, district roads as well as the linkage to the system of provincial and national roads. In consideration of current conditions of these road types (as shown in Table 1.2.2 in Chapter 1), besides the construction of roads for automobiles to communes without access roads to the commune centre and commune clusters, important commune routes need to be opened and major village routes need to be upgraded into commune roads in the short term and medium term, while some essential commune roads need to be upgraded into district ones, especially in difficult regions such as North West, Central Highland and North East.
- As for inland waterway: According to the plan, I.W. routes under the central management play a leading role in the transportation on inter-regional and inter-provincial trunks; depending on their locations, small I.W. routes operated by the local authority will be classified into secondary transport routes in order to become inland waterway transport routes at provincial-level, district-level or commune-level. Those transport routes will be managed, invested and operated by provinces and districts. Low class channels (Class VI and inner-field) will be directly managed by communes based on transport routes of provinces and districts in order to form an inner-field rural transport routes. The inner-field channels play a role of transporting finished products (paddy, rice, material plants, fertilizer, insecticides...) from the production place to the gathering point (processing place or transit storage) to facilitate production activities.

Identifying of Economic, Cultural, Security and National Defense Aspects in Rural Areas

Based on the right identification of the starting point of the Strategy in Chapter 1 and in order to provide a suitable investment strategy, it is necessary to have an optimal balance among the functions of serving the economy, society, and maintaining national defense and safety so as to provide effective strategic interferences in the future in rural areas through sound investment decisions according to phases and avoid waste of resources in construction.

Based on socio-economic development objectives and indexes stated in Table 2.1 as well as with the consideration of the strategic orientation by sectors and territorial regions, we can see that by 2010, despite numerous efforts to reduce the difference in development, the gap between regions will still be unavoidable. In the whole country, the Mekong River Delta has per capita GDP equal to the average index of the whole country, the Red River Delta region's

is 1.2 times higher than that and the South East region's is twice higher than that while the other regions have lower per capita GDP than the average of the country. Therefore, even in the rural areas, there exist both rather developed areas and less developed areas due to their low starting points and disadvantages in terms of terrain, natural conditions and economic development potentials. It is the similar situation among provinces in an economic region and among districts in a province.

Therefore, there should be a rural transport development strategy appropriate for socio-economic conditions of each region and different economic areas in a region, as well. And this Strategy is temporarily considered in three levels of socio-economic development, as follows:

- *Regions of poor and difficult communes without access roads to commune centers and commune clusters*: include more than 290 communes without basic access roads and island communes.
- *More developed economic regions*: include (i) semi-urban rural areas – which locate at the edge of urban areas, are under the pervasive influence of centralized urban areas in Hanoi and Ho Chi Minh city as well as in focal economic zones of the North, Centre and South regions, and will become hubs of goods gathering, materials and products supply for export and development of agricultural industry; (ii) deltas near urban areas (towns, center of commune clusters), traditional trade villages, wood material areas for processing and export, coastal aquaculture areas oriented to produce in mass for export and domestic markets, as well as industrial centers which process agricultural, silvicultural and piscicultural products, service centers, farming economic locations, production and goods exchange areas, etc.
- *Less developed economic regions*: are poor rural areas, isolated and remote areas which locate far away from trade centers or urban areas (towns, center of commune clusters) and have no potentials or have not been able to exploit their potentials nor strengths in local economic development. Such areas are characterized by low starting points in the Strategy, scattered settlements, and poor living standards, therefore, the construction of rural transport works mainly relies on the investment and support of the government as well as of domestic and international organizations in short and medium terms; however this support will be gradually reduced in the long run.

Forecast of Potential Goods and Passenger Transport in Rural Areas

As mentioned in Chapter 1, since the statistics on rural transport has not received sound attention, the volume of transported goods and passengers of provinces presents only the ones transported inner/inter provinces, which are controlled by the provinces. Meanwhile, rural goods and passenger services are transported dispersedly and in small volume but in a large area and by various providers or by the local people themselves, so the reported statistics is certainly much smaller than the actual volume. Therefore, it is impossible to separate the number of vehicles and the volume of goods and passengers transported in rural areas. As a result, forecasted volumes of vehicles and transported goods and passengers are only

potential ones. Potential goods and passenger transport volumes in rural areas are forecasted basing on results from some traffic count surveys conducted on rural roads in different moments, then crosschecked with the volumes of goods and passengers reported from provinces in order to identify starting points (base data) of the Strategy. Based on socio-economic development indexes and the general trend of economic structure movement, rural and agricultural industrialization and modernization, we have analyzed and relatively forecasted potential goods and passengers transport volumes in rural areas, and displayed them by growth rates of goods and passenger transport as well as relative growth rates of vehicles in rural areas.

Therefore, the forecast of goods and passenger transport development potentials of in rural areas bases on the forecast of general goods and passenger transport demands in the whole country together with GDP growth rate, population growth rate, urbanization of different regions, and analyses and evaluations of other sources of data. Specific results are shown in the following Table 2.2.2.1.

Table 2.2.2.1. Forecast of Potential Goods and Passenger Transport Development in Rural Areas in Studying Regions by 2020

Unit %

	NE	NW	RRD	NCC	SCC	CH	NES	MKD
2006-2010								
(general)	9-10	9-10	8-10	9-10	9-10	9-10	8-10	8-10
- DE region	10-12	10-12	10-12	10-12	10-12	10-12	10-12	10-12
- LDE region	8-9	8-9	8-9	8-9	8-9	8-9	8-9	8-9
2011-2020								
(general)	8-9	8-9	8- 8,5	8-9	8-9	8-9	8-8,5	8-8,5
- DE region	8-9	8-9	8-8,5	8-9	8-9	8-9	8-8,5	8-8,5
- LDE region	8-9	8-9	8-8,5	8-9	8-9	8-9	8-8,5	8-8,5

Note: NE: North East; NW: North West; RRD: Red River Delta; NCC: North Central Coast; SCC: South Central Coast; CH: Central Highlands; NES: North East South; MKD: Mekong River Delta; DE: Developed economic region; LDE: Less developed economic region

For figures in column, numbers goods and passenger growth rates per annum are shown on the left and right hand, respectively.

An explanation to be noted for such high growth rates is that when the starting points of rural goods and passengers transport are low in the Strategy, regional growth rates are always higher than the general growth rate of the whole country in the first period of development. However, in the first period of the Strategy, growth rates of developed economic regions will be higher than those of less developed regions in rural areas, because of the influence of economic structure movements and higher incomes of the regions as well as of inhabitants in more developed areas.

2.2.2.1.1. Rural Road Transport Development Investment Strategy

Rural Transport Development Investment Strategy for Disadvantaged Communes without Access Roads to the Commune Centers and Commune Clusters

This Strategy is to facilitate the integration of isolated rural areas with extremely disadvantaged conditions into the national economy, contributing to the hunger elimination and poverty reduction.

As analyzed in Chapter 1, by the end of 2005, there have been 290 communes without basic access roads in the nationwide, of which Mekong River Delta is the region with highest number of communes without access roads i.e. 172 communes, followings include South Central Coast with 46 communes, North Central Coast with 35 communes, North East with 107 communes accessible in dry season only. Red River Delta have no commune and the North East South remain 1 commune without access roads to the centre.

According to the survey, communes without road access are those in remote and isolated areas, and are poor and extremely difficult ones. However, a contradiction is that due to topographic conditions (high mountains, dangerous access terrains, or divided by rivers and channels resulting in a high requirement of bridges), access distances are long and unit costs for the construction of 1km of road are very high leading to high total investment demands for the construction of access roads in those communes. According to a preliminary estimate, it is necessary to build 3,139km of roads and 37.813m of bridges with an estimated total cost of 4,828 billion Vietnamese dongs. While the demand in poor regions is very high, for instance in the Mekong River Delta, North Central Coast, South Central Coast, North West, North East and Central Highlands, the mobilization of local people's resources will become a burden for the poor and exceed the budget capacity of poor provinces with expenditures higher than revenues. However, this is an important priority to integrate such poor communes into other regions of the economy, the top priority of the GoV. in the process of poverty reduction and hunger eradication, removal of areas *without access roads*, and to be thoroughly analyzed in Chapter 3 regarding priority programs of this Report.

In addition, there have been 46 ***island*** communes without basic access roads in Mekong River Delta. It is impossible to construct roads to these areas due to requirements on the construction of long span bridges which are costly and uneffective. Therefore, in these communes, there must be a combination between road transport and waterway transport, between transport and irrigation, satisfaction of requirements on living together with floods, and exploitation of advantages in waterway transport.

As for infrastructure, since the construction of bridges for linking with the major transport network is restrained by difficult terrains, it is recommended to focus on the construction of river wharfs and ports at commune level as an implementation of the government's policy on eliminating communes without access transport network in order to establish a convenient transport network in support for the needs on transporting and travelling to and from district centers as well as central and urban areas of local people living on islands and in island districts.

Rural Transport Development Strategy for More Developed Areas

The rapid development of the rural economy in such areas will quickly increase traffic volumes and the need for using large capacity vehicles. It also leads to indispensable and emergent requirements for the construction of road and bridge facilities in rural areas in order to meet demands of the socio-economic development. The rural transport development strategy in such areas will focus on:

- Upgrading and improving road sections at central locations which satisfy road standards of Class VI, V or higher class to enable required transport volumes; paving road surfaces with bitumen or cement concrete.
- Upgrading and improving rural roads which link urban clusters in the rural areas to rural residence areas, satisfy Class A or higher to ensure the exchange of goods and meet the daily needs of rural people in a most convenient manner.
- Upgrading and improving village roads to meet the standard of Road Class B or higher.
- Constructing synchronous structure systems (bridges, culvers, side ditches), especially the bridge system on primary district and commune roads to meet H13-X60 standards or higher.

The development timetable is as follows:

In 2006 – 2010 period:

As mentioned above, in this period, it is necessary to provide a synchronous and appropriate rural transport system satisfying rural industrialization and modernization demands in developed economic areas in the Red River Delta, Mekong River Delta, North East South; in coastal areas; areas in the edge of cities/towns; goods processing areas, farms, trade villages and etc. in other regions. Specifically, the Rural Transport Development Strategy needs to achieve the following targets:

- ***As for district roads***: 100% of roads are paved with bitumen or cement concrete; over 90% of roads satisfy Class VI, V; bridges and culverts should meet design loads of H13-X60 or higher; and side ditch systems should be completed and synchronized.
- ***As for commune roads***: 80% of roads are paved with bitumen or cement concrete; commune roads meet Class A or higher, bridges and culverts on commune roads satisfy design loads of H8 or higher; side ditch systems are synchronously constructed.
- ***As for village roads***: Village roads meet Class B or higher to well serve daily needs of local people.

In 2011 – 2020 period:

This is a higher development period of the agricultural economy in rural areas. Therefore, rural transport structure systems need to meet following criteria:

- As for district roads: Continue to upgrade district road systems in the pavement quality; 100% of district roads meet standards of Class VI, V; bridges and culverts are completed to satisfy loading capacity of H13-X60 or higher; continue to upgrade side ditches completely and synchronously.
- As for commune roads: 100% of roads are paved with bitumen or cement concrete; 50% of commune roads are gradually improved to meet Class VI or higher; continue to upgrade and complete bridges, culverts and side ditches.
- As for village roads: Step by step upgrade village roads to meet standards of Class A or higher (about 50%); improve the quality of drainage facilities (bridges, culverts and ditches) to ensure good drainage and satisfaction of local people's needs.

The rural transport development in these more developed areas will be mainly based on local resources. Therefore, a sustainable mechanism for mobilizing funds for rural road maintenance and development should be set up. This issue is to be thoroughly analyzed in Chapter 4 of this Report.

Rural Transport Development Strategy for Less Developed Areas

With an aim to promote economic development and improve physical and spiritual life for rural people in remote and isolated areas as well as in less developed economic areas, the Rural Transport Development Investment Strategy should focus on opening new roads to residential areas (i.e. Class B rural roads in the short term); upgrading and improving core roads in conformity with the standard of Rural Road - Class A or higher to link to development centers (towns, commune cluster centers) and high class national roads, shorten the gap between less developed regions and well developed regions, facilitate cross cultural activities, and promote trade among regions. In order to ensure favorable development conditions in the future, provide optimal services for rural people, and reduce the maintenance burden for the poor regions, either bitumen or cement concrete surfaces would be selected for core roads depending on specific terrains and geology conditions at local. As for flat areas, gravel surface can be provided.

As for inner-commune and inter-village roads, there is a need for constructing roads of Class A, B with bitumen, cement concrete or gravel surfaces depending on local specific conditions (terrain and geology), and synchronously completing drainage facilities (i.e. culverts, ditches).

All inner-village roads, field access roads and hill access roads would be gradually upgraded. Implementation timetables for the short term and long term are as follows:

In 2006 - 2010 period

In this period, the economic development of these less developed regions remains much lower than the average growth of the nationwide, therefore, targets required for the rural transport system should be as follows:

- As for district roads: 50% of roads to be paved with bitumen or cement concrete; about 50% of district roads to meet the standards of Road Class VI, V or higher; bridges and culverts on the district roads to satisfy design loads of H13-X60 or higher; side ditch systems to be synchronously constructed.

- As for commune roads: 40% to be paved with bitumen or cement concrete; commune roads to meet the standards of Road Class A or higher; bridges and culverts on the commune roads to satisfy design loads of H8 or higher; side ditch systems to be synchronously constructed.
- As for village roads: village roads to meet the standards of Road Class B or higher, and satisfy daily needs of all local people.

In 2011 - 2020 period

In this period, the rural transport system needs to be developed as follows:

- As for district roads: 100% of roads meet standards of Road Class VI, V, with bitumen or cement concrete surfaces; culverts and bridges on the district roads satisfy design loads of H13-X60 or higher; side ditches are completed and synchronized.
- As for commune roads: about 70% are paved with bitumen or cement concrete; about 50% of roads are gradually improved to meet standards of Road Class VI or higher; and bridges, culverts and drainage ditches are continually upgraded and completed.
- As for village roads: about 30% of roads satisfy standards of Road Class A or higher; drainage facilities (bridges, culverts and ditches) are improved in terms of quality in order to ensure good drainage and meet the daily needs of local people.

These are the regions which are not as developed as the others in the country, so the mobilization of local resources will be more difficult and should be scheduled. In the period from now to 2010, the mobilization of funds for rural transport development will mainly rely on the Government's budget (both central and local, and even loans from donors), especially for district roads and partly for communes roads. In the long term of up to 2020, fund mobilization would be gradually implemented when the economy is more developed. Fund mobilization policies shall be specifically discussed in Chapter 4 of this Report.

2.2.2.1.2 Rural Inland Waterway Transport Development Strategy

Inland waterway (IW.) transport is enjoyed some advantages, such as requirement of small investment funds, low transport costs, little environmental pollution, no occupation of cultivated lands, so the IW. transport strategy aims to take full advantages of the natural channels and rivers, to provide investment and management for making full use of I.W. transport in order to shoulder a part of traffic volumes from roads. Therefore, it is necessary to make the most of existing infrastructure capacity, invest in demanded areas to achieve good effects, and attach importance to waterway transport in the Mekong River Delta region, especially in remote and isolated areas in order to contribute to hunger elimination and poverty reduction and shorten gaps on living standard between rural and urban areas. The investment must be synchronous among routes, ports and fleets, so that I.W. transport would combine with other modes of transport to create an integrated transport network in the region. There should be a diversification of investment capital sources, methods of investment, and make the most of capital resources to invest in the infrastructure. Private economic sector should be encouraged to operate I.W. transport. There should be a combination between the development of I.W. transport and the development of irrigation, agriculture, aquatic and seafood products, between the transport operation and environment management and protection.

Objectives for Rural Inland Waterway Development up to 2020

- To enhance the role of rural waterway transport, inner field transport from communes to districts/provinces and to the national transport network, especially waterway transport in the Mekong River Delta; to share the burden of traffic volumes with local road transport; decrease the transport cost for farmers to promote rural economic development; to eliminate hunger and reduce poverty.
- To improve the efficiency and effectiveness of the management for rural inland waterway transport; to classify rural inland waterways; to ensure the navigation in 24h/24h on main rural inland waterways in Red River Delta and Mekong River Delta; to invest in the management of rivers, channels, local river landing stages, especially in Mekong River Delta in order to take full advantages of the rivers and channels for transporting goods to communes and commune clusters.
- To review and develop the inland waterway transport network (channels, routes, berths, yards) together with other technical infrastructures in conformity with IW. classes and transport capacity in order to ensure the integrated connection among regions, and safety and efficiency transport; to improve vehicle capacity for transporting local goods and passengers; to improve speed of boats and ships; to ensure inland waterway transport safety and minimize environmental pollution.

Rural Inland Waterway Transport Development Strategy

- Technical infrastructures of rural waterway transport include: channels for navigation of ships and boats, and ports; therefore, the rural I.W. transport investment and development strategy should invest in both channels and berths/ports in a synchronous manner.
- According to the planning, I.W. routes/channels under the central managed play a pivotal role on inter-regional and inter-provincial transport trunks while small inland waterways which are operated by local authorities would be classified as the secondary routes, depending on their locations in order to function as provincial, district and commune IW. transport routes. These inland waterways are to be managed, invested and operated by provinces and districts. These secondary transport routes need upgrading and improving to be conformed into technical class as regulated.
- Low class channels (Class VI and inner-field channels) are to be directly managed by commune authority to connect to provincial and district transport routes and to create an inner-field rural IW. transport network. Inner-field rivers play a role of transporting finished products (i.e. paddy/rice, material plants, fertilizer, pesticide, and etc.) from production places to gathering places (processing or transit storages) for production.
- District-level and commune-level river berths in both Red River Delta and Mekong River Delta have a small scale and simple facilities combined with manual work; some river berths are managed by DPC, the others are mainly operated by state or private enterprises. In order to improve loading and unloading productivity and transport safety, in this Project we propose that the State budget should allocate a financial support of about 20% of the total funds for improvement and upgrading of river ports, mainly in components of land, access roads to the port, power supply and etc., which can not be dealt by local enterprises.

2.2.2.1.3 Preliminary Estimate of Funds Required for Rural Transport Development

Investment funds for the rural transport development in all regions from 2006 to 2020 are summarized as follows:

- Funds for new construction, upgrading and widening of rural transport are VND 93,296 billion, of which VND 93,177 billion (accounting for 99.9%) are for rural road network development; and VND 119 billion (accounting for 0.1%) for inland waterway network.
- Funds required for maintenance of the rural transport system are VND 10,959 billion, of which VND 10,949 billion (99.9%) are for roads and VND 10.8 billion (0.1%) for inland waterway.
- Total funds for rural transport construction and maintenance are VND 104,256 billion, of which VND 104,126 billion (99.9%) and VND 130 billion (0.1%) are for rural road network and rural I.W. network, respectively.

Specific investment requirements are estimated in the 2 tables overleaf, while maintenance requirements are estimated and explained in Item 2.2.2.2 below.

Table 2.2.2.1.3a Investments in Rural Inland Waterway Transport in the Red River Delta and Mekong River Delta, 2006-2010 and 2011-2020

No	Items	Unit	Quantity	Investment Rate (mil. VND)	Budgets (million VND)	Central Gov.	Local Gov.
	Red River Delta						
A	**2006-2011 period**						
	I.W. maintenance	Km	1,056.1	2.0	2,112.2	422.4	1,689.8
B	**2011-2020 period**						
	I.W. maintenance	Km	1,419.6	2.0	2,839.2	567.8	2,271.4
	Improvement of rivers	Km	872.6	100	87,260.0	17,452.0	69,808.0
	Improvement & upgrading of river berths		186	100	18,600.0	3,720.0	14,880.0
	Sub-total (B)				**108,699.2**	**21,739.8**	**86,959.4**
	Sub-total (A+B)				**110,811.4**	**22,162.3**	**88,649.1**
	Mekong River Delta						
A	**2006-2011 period**						
	I.W. maintenance	Km	1,200	1.5	1,800.0	360.0	1,440.0
	Improvement & upgrading of river berths		54	80	4,320.0	864.0	3,456.0
	Sub-total (A)				**6,120.0**	**1,224.0**	**4,896.0**
B	**2011-2020 period**						
	I.W. maintenance	Km	2,700	1.5	4,050.0	730.0	3,320.0
	Improvement & upgrading of river berths		115	80	9,200.0	1,840.0	7,360.0
	Sub-total (B)				**13,250.0**	**2,570.0**	**10,680.0**
	Sub-total (A+B)				**19,370.0**	**3,794.0**	**15,576.0**
	Grand total of 2 regions				**130,181**	**25,956**	**104,225**

Table 2.2.2.1.3b Total Investment Needs in the Construction, Upgrading and Improvement of Rural Roads in the Nationwide, 2006 - 2020

No	Region	Total (km)	District Road				Commune Road				Total invest-funds (million VND)
			Total (km)	Surface Type	Road Class	Funds (mil. VND)	Total (km)	Surface Type	Road Class	Funds (mil. VND)	
1	Red River Delta	11,721	2,074	Bitumen, AC, CC	III, IV, V, VI, A, B	3,267,058	9,647	Bitumen Seal, Gravel, CC	A, B, V, VI in plain	5,360,545	8,627,604
2	North East	26,806	9,339	Bitum Seal, CC, Gravel	VI, V	10,131,821	17,467	Bitumen Seal, CC, Earth	V, VI, A	6,539,394	16,671,215
3	North West	4,858	0	Bitum Seal, CC		-	-	Bitum Seal, CC, Gravel		-	5,792,600
4	South Central Coast	9,478	2,682	Bitumen, Gravel, CC	VI, V, VI	4,115,419	6,796	Bitumen, Gravel, CC	V, VI, A, B	4,702,428	8,817,846
5	North Central Coast	20,866	8,043	Bitum Seal	IV, V	7,571,767	12,823	Bitum Seal, Gravel	A, V	12,615,533	20,187,300
6	North East South	16,950	6,164	Bitumen, Gravel	III, IV, V, VI	6,468,750	10,786	Bitumen, Gravel, Earth	IV, V, VI	7,298,040	13,766,790
7	Mekong River Delta	18,611	6,514	Bitum Seal, CC	III, IV, V, VI	4,102,737	12,097	Bitum Seal, CC	VI, A, B	8,125,740	12,228,477
8	Central Highlands	11,135	2,852	Bitumen, Gravel	V, IV	2,054,000	8,283	Bitumen, Gravel	VI	5,031,200	7,085,200
	Total	**120,425**	**37,669**			**37,711,552**	**77,899**			**49,672,880**	**93,177,032**

Note: AC: Asphalt Concrete; CC: Cement Concrete.

2.2.2.2. Rural Transport Maintenance and Operation Strategy

The *specific objectives* and schedules in this Strategy include:

Period of 2006 - 2010 is the stage in which the maintenance will be introduced into practice in the nationwide. Planned maintenance activities are to be gradually conducted for the sustainable rural transport development. Efforts should be made so that in 2010, 65-70% of rural roads would be maintained, of which 100% roads in good and fair conditions to be maintained. Management of road operation activities will be gradually put in place and rural roads are managed by linking the network to district level.

Period of 2011 - 2020: the road maintenance will be continually improved and completed in the nationwide. Efforts should be made so that in 2020, 90-100% of rural roads would be maintained; 100% of rural roads would be managed by linking the network to commune level.

Relation between New Investment and Maintenance

Investment in new construction, and rehabilitation and improvement of roads are to create and put roads into use. The maintenance of road quality during the process of road operation will ensure the service level of existing roads and lengthen their serving duration, which will help to save capitals for addition investment in further development or improvement of road quality where necessary. Therefore, after new construction and rehabilitation of roads, it is necessary to carry out maintenance activities and put priority to the planned maintenance in order to maintain the road accessibility, prolong the road operation duration and help farmers enjoy the benefits from roads. That is the effective usage of resources.

According to various researches on investment-maintenance relation, it can be seen that if 1 Vietnamses dong of funds is not spent on maintenance, 4 Vietnamese dongs must be spent on the rehabilitation of roads due to serious damages.

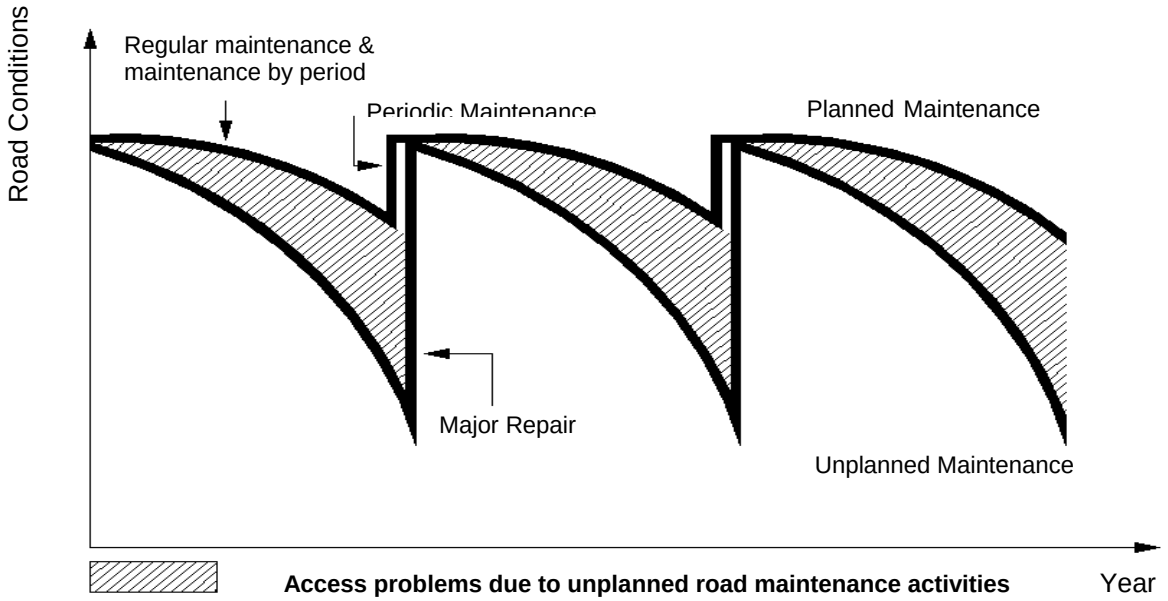


Figure 2.2.2.2: Benefits from the Planned Maintenance

The figure 2.2.2.2 above shows a comparison of the status of roads with planned maintenance activities and roads without any maintenance activity until they need major repairs. The stripe parts display road damages due to unmaintenance.

According to researches, total expenditures for annual planned maintenance will be less than total investments in repairing and rehabilitation of roads every several years when the planned maintenance is not carried out during the whole service duration of a road. Therefore, the method of planned maintenance will be more economical in term of investment capitals, and if taking into consideration of the whole service life of a road, more benefits will be brought thanking to better accessibility of the road in a longer time.

With the above reasons, the planned maintenance is very necessary. Planned maintenance is carried out in order to:

- Maintain the improved service level of rehabilitated and improved roads.
- Maintain benefits and positive impacts of the accessibility by improved roads on socio-economic conditions of farmers;
- Avoid waste of limited resources which may be caused due to careless investments.

The Strategy on Prioritization of Maintenance in parallel with Construction

The process of construction and maintenance of rural roads before 2005 shows that due to a serious lack of access roads to commune centres and commune clusters in more than past decade, the top priority objective (of all levels) was to construct, ugrade and rehabilitate roads to link with communes without roads and improve roads in bad or too bad conditions. In the period of 1991-1999 only, 34,485.3km of roads were constructed, 141,329km were improved and 68,000 bridges of all kinds were built with a total expenditure of VND 12,630 billion. The nvestment in rural transport in period 2000-2004 was 2.7 times higher than that in 1996-2000 with a result of around 50,000-60,000 km of roads rehabilitated, improved and newly constructed. The number of communes without basic access roads decreased from thousands of communes in 1997-1998 to 290 communes in 2005.

As presented in the Rural Transport Development Strategy (mentioned in Item 2.2.2.1) and the National Transport Development Strategy, by the year 2010, major transport roads in rural areas will have been rather completed and 100% communes will have had access roads to commune centres and commune clusters. In the new period, requirements on transport infrastructures are to be changed. Although demands for new construction decrease, top priority will be given to infrastructures with higher operation quality to ensure traffic safety and environment protection. Together with the demand for upgrading and improving roads, road users also have higher requirements for service quality of roads during the operation time, and as a result, roads should be placed in a situation of being cared for and maintained regularly. ***Maintenance of roads is an indispensable and critical requirement, and needs to be developed in line with construction.***

This means that, when setting up upgrading plans for certain roads that need to be newly constructed or upgraded and improved but unmaintainable due to their seriously damaged conditions, it is necessary to prepare maintenance plans for such roads concurrently. If there is no other resource for maintenance, it is compulsory to earmark a part of the investment amount for it, therefore a reasonable proportion of construction to maintenance should be reviewed so that the transport infrastructure is both developed and properly maintained.

During the last 5 years, the importance of road maintenance has been raised at many levels of authority, however, there have not been satisfactory changes in practices so far. This is blamed for a lack of funds so there is no sustainable capital resource for road maintenance. Yet looking at the whole process of preparation for road maintenance, it can be seen that all the past activities were just initial steps prepared for road maintenance. Such preparations were carried out in long time but still insufficient. And in fact, what have been done in the past time are only recommendations on road maintenance but not introduction of maintenance activities into practice. Therefore, the strategy set for road maintenance includes the following:

- *Road maintenance should be a compulsory task equivalent to construction of road infrastructure*. In order to do that, it is necessary to obtain a unity in the awareness of all level authorities and agencies on the maintenance and planned maintenance. The rural road maintenance should be legalized for various authorities and agencies by a Governmental regulation which clarifies the responsibilities of various levels and lines for the implementation of maintenance as that of capital construction. In the first period (2006 - 2010), interests in the infrastructure provision should be attached to responsibilities for the infrastructure maintenance and operation through a "maintenance agreement" signed by all authorities and beneficiaries. The "maintenance agreement" should include proposals on options for the establishment of sustainable and feasible funds, and risks to be borne in case the implementation of this agreement fails. Authorities of various levels should be aware that the lack of maintenance will result in accumulated maintenance work, and repair costs of a quickly damaged road are much higher than its accumulated maintenance costs.

Sustainable funds should be generated for maintenance activities

The preparation of RT3 and implementation of RT1 & RT2 have shown that provinces are able to arrange funds for maintenance if they find it beneficial. In fact, if commune/village people contribute to construct roads for themselves, they can maintain them very well. Therefore, an advantage of the policy on maintenance agreement is to facilitate the beneficiaries in consideration of their interests in order to regulate their fund sources and develop measures for the sustainable and effective operation. However, a compulsoriness to provinces in signing a "Maintenance Agreement" for all the rural transport network in the province will put a burden on them. Provinces will share this burden with districts and communes. Actually, what the provinces commit will be the maintenance for district roads and important commune roads, however districts and communes are mainly responsible while provinces support for unexpected repairs and a part of periodic repairs. A similar decentralization is also applied for districts.

In addition to the governmental budgets, and ODA loan resources, there are some forms of funding, i.e. mobilization from the beneficiaries and charitable individuals. It is proposed that funds for maintenance should focus on mobilizations from the beneficiaries through tolls and charitable sources to establish Road Maintenance Fund. However, it is unclear how stable the resources are and how large scale the fund is in, in order to ensure sustainable maintenance for the road network within an administrative location. The mobilization of annual contributions from transport beneficiaries has been clearly regulated by many provinces. However, it is limited by a possible collection amount and mechanisms on receipts and expenditures. It is quite feasible if the maintenance of village roads is assigned to village people and only supported from upper level in case of unexpected damages caused by natural disasters or human.

At present, beneficiaries from new roads are those living in the area and those who use transport vehicles. Tolls are classified into 2 categories, i.e. collection by head with consideration to their incomes and collection by type of vehicles.

However, a comprehensive assessment on the maintenance funding has shown that:

- A percentage of the Government's transport budget at various levels can be allocated for road maintenance by re-balancing investment rates for construction and maintenance.
- More positive measures for generating revenues and encouraging economic demands in more developed areas should be implemented by applying higher fees (difference in land rent) for the people living along the roadside, and leasing lands or shops near the road for trading or production. This resource will be managed by local authorities and only used for the road maintenance.

The Maintenance Strategy in Medium and Long terms include 3 requirements as follows:

1. Planned maintenance of rural roads becomes a national policy of the government and of the transport sector, and is compulsory at all levels: village, commune, district, province and the centre. In other words, planned maintenance of roads is implemented in a national scale.
2. Build up a maintenance culture among the population.
3. Harmoniously develop road construction and road maintenance.

In rural transport, road maintenance is a task, of which the importance should be equally placed to that of the road construction and improvement since it brings efficiency for the road usage and therefore contributes to an increase of investment effectiveness.

The purpose of planned maintenance is to minimize road damages during the operation time, to prevent minor damages from developing into major ones in order to maximize the service life of the roads.

Planned maintenance presents the continuity and the frequency of this task. The maintenance activities include routine maintenance and periodic maintenance.

An effective road maintenance system includes: i) arrangement of the road maintenance management with a dedicated organization which has effective management methods and responsibilities; ii) measures related to road usage; iii) sufficient, sustainable and secured funding sources for road maintenance; and iv) willing involvement of communities in the road maintenance.

As for inland waterways, apart from the rehabilitation and upgrading of inland waterways in Class 3 as discussed in Item 2.2.2.1.2, the I.W maintenance should be more considered so that inland waterway transport can support for rural road transport in an active manner.

As analyzed in Chapter 1, the local I.W. network is being operated in natural conditions and has not been maintained regularly during the past time. Since expenditures for the investment in and improvement of the I.W. network are negligible in comparison with those for the road network (only accounting for 0.1% the total expenditures for rural transport development), it is necessary to spend a reasonable expenditure for maintenance work, removal of obstacles in order to promote the advantage of I.W. transport in Red River Delta and Mekong River Delta. As similar as roads, it is necessary to ensure a harmony between the construction and the maintenance, especially expenditures for the maintenance of river routes.

Moreover, it is necessary to spend an expenditure for the assurance of regular navigation, for example, dredging, rescuing of wreckages, repairing of stations, maintenance, embanking, repairing of signs and equipment/facilities, prevention of unexpected floods and storms.

Estimated Maintenance Needs up to 2020 and Consideration of Capital Resources

From an analysis of operation characteristics of rural road groups, it can be seen that village roads can be well maintained by people living along the roadsides since these roads are rarely affected by high traffic volumes and heavy loads, so the demand on maintenance funds for this kind of roads is not defined in this Report.

In this section, the maintenance needs will be estimated for district and commune roads which provide more services for the communities and are subject to robust pressures of the transport development (in terms of density, frequency, loading and traffic safety) resulted from the pressure of socio-economic development. Moreover, interventions and supports on funds and maintenance policy should be provided from the government levels for these roads due to unclear responsibilities of beneficiaries.

Maintenance requirements are defined for those roads regulated to be maintainable. In the future, when the maintenance task has been regularized, there will be clear definitions and regulations on “maintainable” conditions. The “unmaintainable” conditions in this period mean that the road is seriously degraded and needs improving and rehabilitating. In this Strategy, those roads which are evaluated to be in good or medium quality will put in the list of roads

requiring care and maintenance. Those in bad conditions need to be put in the construction and improvement plan.

Maintenance volumes in 2006 – 2010 period include roads in good and medium conditions inventoried up to 2004, roads constructed in 2005 and those planned to be constructed and improved in 2006 - 2010 period. Maintenance volumes in 2011- 2020 period include the roads to be constructed in periods of 2006 – 2010 and 2011 – 2020, and a part road volumes constructed in the period before 2005.

In each planned period, the maintenance funds shall not be estimated for the construction, improvement and upgrading of roads that are completed in the first year since these roads are still in the contractor's guarantee duration. The estimated maintenance unit cost is VND 8 - 10 million per kilometer per year for district roads and VND 5 - 7 million per kilometer per year for commune roads, depending on each area.

As for inland waterways, we estimate an average of VND 2 million per 1 kilometer per annum for rivers in support for rural transport. Maintenance funds required for local inland waterways are 10.8 billion Vietnamese dongs in Red River Delta and Mekong River Delta from 2006 to 2020, of which VND 4.9 billion and VND 5.9 billion are for Red River Delta and Mekong River Delta, respectively.

Total maintenance needs for roads and inland waterways are budgeted to VND 10,959 billion in the period of 2006 - 2020, of which VND 10,949 billion (99.9%) are for roads and VND 10.8 billion (0.1%) are for inland waterways. Total maintenance funds are VND 3,502 billion, accounting for 32% in the period of 2006 - 2010, and VND 7,446 billion, accounting for 68% in the period of 2011 – 2020. Specific maintenance funds for each region are presented in the Appendix.

Comparing to the total investment fund needs, the maintenance fund need accounts for 10.5% in 2006 – 2020 period, 8.4% in 2006-2010 period and 11.9% in 2011 – 2020 period.

Chapter 3 and Chapter 4 will mention these contents in more details.

Orientation on Rural Transport Corridors and Traffic Safety in Rural Areas

Transport Corridor (right of way): The urbanization process will occur rapidly in rural areas. In the residential areas, permanent houses will be constructed along main roads within the district boundaries. Therefore, it is necessary to notify the transport corridor boundary (right of way) and its protection requirements to local people. The selection of roadside lands for lease or for commercial purposes with an aim to generate revenues for the road maintenance fund should be considered in order to ensure the visibility and road widening possibilities, as well as to prevent local residents from free encroachment and development.

Traffic Safety**:** it is necessary to strictly, strong and immediately improve road visions, widen roads and enhance rural road design standards in consideration of differences between the roads in outer residential areas and the roads in inner residential areas; place transport signs; clear navigational channels; improve farmers' awareness on traffic safety and vehicle usage in order to gradually lessen traffic accidents in rural areas.

Requirements and tasks for ensuring rural transport safety, especially in road transport include the followings.

In relation to road technical specifications

- Improvement of the rural road design standards;
- Upgrading and widening of high traffic volume roads, provision of shoulders wide enough for pedestrians and non-motorized vehicles; and
- Placement of road signs and loading limit signs on district and commune roads, and placement of notice signs at the junction of village/hamlet roads and main commune roads with a high volume of motorized vehicles.

In relation to vehicles: gradual inspection of vehicles, enabling of only vehicles satisfying required standards to be in operation.

In relation to community awareness: implementation of national transport safety activities in each village and commune, in remote and isolated areas.

In relation to prevention of a sudden increase in the volume of automobiles in rural areas: application of some measures to limit sudden increases as well as measures to ensure a safe adaptation in new situations.

Enhancement of I.W. Transport Safety, especially at Cross-river Passenger Berths

Recently, there have been heart-rending accidents at some cross-river passenger berths, causing boat wreck and fatality. In order to enhance transport safety at cross-river berths, provincial governments (particularly PDOTs) should firstly coordinated with local authorities to list all cross-river berths at each local, with a high attention to accident-prone locations, then analyze accident causes (i.e. location, weather, or human factor) and propose transport safety enhancement measures, particularly:

- The operation of all cross-river berths should be licensed by relevant PDOTs. Unlicensed private cross-river berths should be stopped operating right in the year of 2007;
- Construct bridges at dangerous locations (i.e. accident-prone locations) on a base of local economic conditions, likely by a combination with local budgets and mobilization of benefactors;
- Berths and waiting cabinets would be constructed by a support from local budgets in accordance to relevant Government regulations, and managed in conformity with the Law on I.W. Transport;
- Prohibit the operation of passenger boats/ships which fail to satisfy required technical and safety standards. Increase the number of new-built river crafts to be in place;
- All river crafts, including family-used boats should be registered;

- The equipment of lifebuoys would be based on the number of registered seats on river crafts and should be frequently controlled and monitored; and
- Organize training courses and issue driving license for steersmen. Prohibit all non-driving license steersmen to operate river crafts.

2.2.2.3 Orientation on Road Technical Standards

As for the rural transport development strategy in the coming period, the selection of technical scales should be based on various factors like topography, materials, economy and social aspects. Geometric scales, pavements, structures and loading capacity should be appropriate.

Issuance of Technical Design Standards

Basically, current standards are still appropriate for the demand and application ability. However, a large number of concurrent standards has caused difficulties in the application (i.e. a mixed application of various standards). Recommendations are as follows:

- As for roads carrying motorized vehicles (automobiles), specific guidance documents on criteria to be applied in designing should be provided for the newly issued Standard - TCVN 4054 - 2005. This is a single standard applied to design public roads with a rather high volume of automobiles, at a speed of at least 30 km per hour, with reinforced pavements, and applied to both rural roads carrying motorized vehicles and other public roads (national and provincial roads). Moreover, it is necessary to revise and issue guidance documents for the Standard 22 TCN 210-92 for Type A and Type B roads which are internally used in communes.
- As for unclassified roads (roads serving for residents' life), it is unnecessary to develop a standard set but design guidance should be provided for such roads (which have narrow width and low loading capacity), and it is necessary to make a clarification between motorized vehicles (motorbikes), non motorized vehicles and animal-pulled carts. Maximum gradient of such roads should be appropriate for the existing terrain, and for motorized and non motorized vehicles. The geometric scale of this road type can be smaller than Class B standards (1.5 - 2.5 m)

Orientation on Technical Classes for Rural Roads

The technical class of rural roads should be selected by balancing between requirements and funds (i.e. basing on requirements, and local terrain, material, social and economic conditions).

Table 2.2.2.3: Selection of Technical Scales by Requirements and Regions

Selection of Technical Scales based on Requirements and Four Criteria of the Regions					
	Requirements	Appropriate Criteria of the Regions by			
		Terrain	Material	Economic	Social
1. Roads for carrying automobiles					
Class IV and above	District roads - economic axial routes, with a traffic volume of over 300 veh.; possibility of urbanization	Plain, midland, low hill (Red River Delta, Northeast, North Central Coast, South Central Coast, Central Highland, N.E. South, Mekong River Delta)	Availability of stones and gravels	Well developed regions, high demands for transport, local revenues enough for minimum expenditures	Crowded population, density of > 300 people per sq. km
Class V, VI	District roads - inter-commune roads or commune roads with traffic volume of 50 - 300 veh.;	Plain, midland, high mountains with few difficulties	Relative availability of stones and gravels	Fairly developed regions, local revenues enough for minimum expenditures	Medium population, density of 150 - 300 people per sq. km
2. Local Roads					
Type A (inner commune areas)	Commune roads with an unstable volume of motorized vehicles	Plain, midland, high mountain with few difficulties	Stones, sand, gravels	Poorly developed regions, revenues not enough for minimum expenditures	Scattered population, density of less than 150 people per sq. km
Type B (inner commune areas)	Roads serving for residents' lives with high volumes of motorbikes, animal-pulled carts and cattle	Plain, midland, low hill, stable sub-grade	Gravel and stones, coarse sand (optimum)	Fairly developed, in-cash contribution	Medium population, density of over 100 people per sq. km
Type 1.5 - 2.5 m (for residents)	Roads serving for residents' lives with low volumes of motorbikes, non motorized vehicles and cattle	High mountain with sub-grade of hard rocks and flowing soils	Gravel and stones, coarse sand (optimum)	Poor, only labor contribution	Scattered population, density of less than 100 people per sq. km
(*) Applied for district roads, select similar or the next lower level for commune roads					

Orientation on Loading Capacity for Rural Road Facilities

- The Strategy on loading capacity of road facilities i.e. bridge, culvert, spillway and etc. must be oriented for the period by 2020 but not based on the Strategy for 2010, since such facilities need a large proportion of investments but cannot be upgraded like the road foundations or surfaces; they must be destroyed and re-constructed if a higher load capacity is required. Therefore, loading capacity of road facilities should be defined under a long-term strategic vision but not on current needs nor available funding capacity in order to avoid wasting investments in a short term.
- For the district roads, minimum loading capacity should be H10 for mountainous, remote and isolated areas where heavy vehicles are in low volume; H13 for the plain, midland, low hill areas where there is a medium volume of heavy vehicles; and at least H18 for some locations in large production areas or in heavy industrial zones. For the commune axle roads, minimum loading capacity should be H10 because these roads are in small scales so the cost for them is not much different; and at least H6 for other commune roads. The roads to be newly constructed or improved/upgraded need to follow these loading capacity levels in order to avoid wastes in case they are continuously upgraded.

2.2.2.4. Strategy on Using of Locally Available Materials for Rural Road Development

The objective of the Strategy on Using of Locally Available Materials for Rural Road Development aims to:

- Ensure a sustainable development of the existing rural road network. A sustainable development of the existing rural road network can be achieved only by accepting appropriate technologies or using local materials which, in some cases, have non-standard geo-technic characteristics. Therefore, one of critical objectives in the sustainable construction of rural transport roads is to make available materials suitable for road functions and local environment conditions.
- Take full advantages of local resources and reduce construction costs to some extents. The thorough using of local materials will bring about significantly economic effects and considerably reduce construction costs thanking to a decrease in transport costs resulted from short distances of transport of local materials. In addition, the using of local workforces will contribute to shorten the construction duration, reduce costs and be convenient for the development of rural road transport.
- Facilitate maintenance activities and contribute to a decrease in the maintenance costs. Since local materials are used for the construction, they can be used for maintenance, thus the costs of maintenance shall be low owing to cheap prices of local materials. Moreover, it is possible to take advantages of local labors who are used to the construction and maintenance by those materials, and the cost of maintenance will be partly reduced.

Proposed Appropriate Surfaces in Consideration with Potentials on Locally Available Materials

Surfaces suitable for different road types

As for district roads

Bituminous surface is the first priority to be selected in normal conditions in terms of topography (not so high gradient), hydrography (non-inundation), maintenance ability, accommodation of a relatively high traffic volume on a long route.

Gravels or soils consolidated with hard granulars or inorganic aggregated substances (i.e. cement, lime, new chemicals) will be applied for areas with poorer conditions on materials and fund resources, and applied for roads with medium traffic volumes and unpassing densely populated areas.

As for commune roads

Bituminous surface is recommended in normal conditions in terms of topography (not so high gradient), hydrography (non-inundation), maintenance ability, and meeting all the criteria of funds and operation effectiveness.

Gravels or soils consolidated with hard granulars or inorganic aggregated substances (i.e. cement, lime, new chemicals) will be applied for areas with poorer conditions on materials and fund resources, and applied for roads with medium traffic volumes and unpassing densely populated areas.

As for roads serving residents' lives

Non-reinforced cement concrete surface must be encouraged in areas with availablity of local materials i.e. sand, stones and local cement. This type is only suitable for a medium thickness.

Gravels or soils consolidated with hard granulars or inorganic aggregated substances (i.e. cement, lime, new chemicals) will be applied for areas with poorer conditions on materials and fund resources.

Brick, dressing stone or laterite surfaces can be applied depending on available materials at local.

As for specific cases

Bituminous or cement concrete surfaces must be paved on the roads passing densely populated areas to minimize environmental pollution.

Cement concrete surfaces must be applied for the roads in areas with disfavourable conditions, such as high gradients, difficulties in construction, and inundation.

Table 2.2.2.4. Appropriate Surfaces for Each Area to be Applied

No	Surface Type	Applied areas with appropriate criteria				
		Road Type	**Topography**	**Local materials**	**Economic capacity**	**Social aspects**
1	Hot asphalt concrete	District roads		Not to be subject	Highly developed	Highly densely populated
2	Hot bitumen	District & Commune Roads	Except much sloping, remote and isolated areas	Convenient if stones are available	Developed	Densely populated
3	Emulsion bitumen	Used for maintenance				
4	Cement concrete 1(*)	District & Commune Roads	Stable subgrade	Convenient if stones and sand are available	Highly developed	Densely populated
5	Gravel	District & Commune Roads	Not so sloping and not so high rainfall	Areas with hills and streams	Medium	Not so densely populated
6	Water bound macadam	Very limited	Not so sloping	Areas with lime stones	Medium	Very limited
7	Cement concrete 2(*)	Commune roads and town roads	Not to be subject	Convenient if stones and sand are available	Fair and medium	Encouraged
8	Stabilized soil with lime and cement	District, Commune and Town Roads	Not to be subject, appropriate for weak and flooded sub-grade	Areas with sandy soil and mixed clay	Fair and medium	
9	Stabilized soil with hard aggregates	Commune and Town Roads	Not to be subject	Areas with sandy soil and mixed clay	Medium and poor	
10	Hand packed stones, dressed stones	Town Roads	Not to be subject	Areas with dressed stones	Medium	
11	Bricks	Town Roads	Not to be subject	Areas with clays for producing bricks	Medium and poor	Densely populated and medium populated
12	Natural soil	Commune and Town Roads	Not to be subject	Except the areas with rocky mountains and swamps	Poorly developed	Sparsely populated

In order to achieve objectives set in the Strategy on Using of Locally Available Materials for Rural Road Development, the Study's proposals on appropriate surfaces, taking into account the potential of locally available materials are very necessary.

- *Bituminous surfaces:* include asphalt concrete, bitumen sealed and bitumen penetrated surfaces. This type of surface is mainly applied in plain, midland areas and in some mountainous areas with low gradient, and in densely populated areas; it is also suitable for the roads with high traffic volumes. Its advantages consist of long service duration, smooth transport and no environmental pollution. However, major disadvantage of this surface type is that local materials are only used to construct the road foundation, resulting in high costs and difficulties in construction and maintenance. This type of surface can be used for more developed economic regions such as the Red River Delta, coastal areas in North Central Coast and South Central Coast, North East South and some areas in the Mekong River Delta. Asphalt concrete surface is paved for district roads in two main regions, i.e. the Red River Delta and the Mekong River Delta, both of which are developed economic regions with district roads at higher technical classes in compared to those in other regions, and with convenient sources of materials. In other regions, such as the North Central Coast, South Central Coast and Mekong Delta River, asphalt concrete surface type is used only for district roads passing densely populated towns and commune cluster centers. Meanwhile, bitumen sealed and bitumen penetrated surfaces are paved on district roads in the regions. However, these surface types can be used for primary commune and inter-commune roads in plain areas. Local materials are mainly used for the construction of road foundations. Some regions use locally available materials to construct the foundation, for example, mixed stones, ashlars packed with sand, hill soil aggregate, mixed stone aggregate (in Red River Delta); natural aggregate, hill soil aggregate (in North Central Coast, South Central Coast) or red gravels (in North East South) and consolidated clays (in North West) and so on.
- Cement surface type: includes cement concrete, mortar mixed cement, and sand mixed cement surfaces which are paved for roads in flood-prone regions and for roads with high longitudinal gradient. This type of pavement should be used only in regions with many low-grade cement manufacturing establishments (low price), such as in North East, Red River Delta, North Central Coast, South Central Coast and North East South. The advantages of this type are long service duration, anti-erosion, anti-pollution. However, its disadvantages are high cost and difficulty in repairing. This type of surface should be used mainly for district roads in inundation-prone locations, roads passing densely populated areas and small scale roads serving residents' lives in densely populated areas.
- Gravel surface: this type exposes its disadvantages in both rainy and sunny weathers, so it is accepted only in transitional periods and in following conditions: rainfall of less than 1000mm per year and longitudinal gradient of less than 6%; rainfall of less than 2000mm per year and longitudinal gradient of less than 4%, transport distance of less than 10 km. This type of surface should be applied only in coastal plain areas, midlands, thinly

populated and low traffic density areas. Therefore, it is suitable for commune roads in all regions and partly for district roads in some regions like North West, North East, Red River Delta (in mountainous areas in Hai Duong, Bac Ninh, Ha Tay, Ninh Binh, Vinh Phuc provinces, etc.), North Central Coast (coastal and midland areas), South Central Coast (midland in western mountainous area and some coastal areas).

- Soil consolidated with lime or cement, this surface type is used in the Mekong River Delta region. Types of soil being consolidated with lime or cement include loamy clay soil, loamy sand soil and etc… which are suitable for local materials in the Mekong River Delta.

Apart from the abovementioned types of surface, other types have been studying in the Rural Road Surface Pilot Program by Intech-TRL Consultants in order to use local materials in an effective and efficient manner. These types can use not only non-standard materials in road designing such as bricks or soils consolidated with lime, but also non-traditional materials in traditional road designing, for example, bamboo reinforced concrete surface. The Intech-TRL's Study has brought many useful results in using local materials to develop rural transport.

2.2.2.5 Strategy on the Development of Rural Transport and Means of Transport

2.2.2.5.1 Proposals of Vehicle Types for Goods and Passenger Transport in Rural Areas

The development of rural transport must conform to technical conditions of the road and reasonable use of vehicles in order to increase transport effectiveness and improve transport quality for the public. In addition, due to differences in natural conditions, transport infrastructures, socio-economic development and etc. in each region, transport vehicles need to meet corresponding requirements. The selection of vehicle structures appropriate for each economic region mainly depends on the following criteria:

- Appropriateness between vehicle technical specifications and infrastructure conditions.
- Appropriateness between the transport capacity of vehicles and transport demands.
- Appropriateness between vehicle types and characteristics of freights, transport routes.
- Natural conditions; economic, social and environmental efficiency.
- The development growth of the transport sector and regional economy.
- Some other targets.

Road Transport Vehicles

It is noted that vehicles running on the roads in mountainous areas should be selected under following elements: low prices, minimum technical and safety conditions to be affordable for local people. In addition, such vehicles should satisfy general requirements, such as strong machine, firm frame and high floor board.

Besides, in medium and long-terms, non-motorized vehicles which are used for transporting goods and passengers will be still seen in rural areas. Particularly, individual vehicles used for passenger transport, such as motorbikes and bicycles, will increase in number in rural areas, and in both more developed and less developed economic regions.

Based on the criteria above, motorized vehicles should be selected for each region as follows:

Table 2.2.2.5.1: Transport Vehicles on Rural Roads by Topography

Means of Transport	Mountainous Area		Midland Area		Plain Area	
(Load)	2010	2020	2010	2020	2010	2020
Passenger car/bus						
< 12 seats	DR/ICR		CR			
< 15 seats		ICR	DR	CR		CR
< 30 seats		DR		DR		DR
< 60 seats						
Truck						
< 3.5 T	CR					
< 5 T		CR	CR	CR	CR	
< 8 T	DR		DR			CR
< 10 T		DR		DR	DR	
< 15 T						DR

Note: CR: Commune Road; DR: District Road; ICR: Inter Commune Road

Source: data collected from studying regions.

Inland Waterway Means of Transport

The river transport fleet in regions is as below:

In Red River Delta:

The fleet of cargo ships carrying coals, construction materials, fertilizer on major transport routes consists of barges with tonnage of 800 ÷ 1,200 tons and capacity of 135 ÷ 150 HP; and self-propelled barges with tonnage of 100 ÷ 200 T. Self-propelled barges of 50 ÷ 100 T are used for transport of construction materials and other goods within a province.

In Mekong River Delta

The fleet of cargo ships transporting foods, construction materials and fertilizer includes 100 ÷ 300 T self-propelled barges with engines of 95 ÷ 180 HP capacity, or barge fleets (tonnage of 1,000 ÷ 1,600 T), tug boats with engine capacity of 225 ÷ 250 HP. Barges with tonnage of 30 ÷ 100 T are used for transporting goods within a province or inner fields. Passenger ships are those with 10-15 seats and 20-30 seats.

Additionally, there are also family-used boats (with engine), most of which are small boats with tonnage of 1-5 tons used for inner-field transport, and 10-20 ton ships operated on inter-district and inter-commune I.W. routes.

Currently, although many local I.W. routes are able to accommodate larger ships, the development of I.W. transport is inconsiderable due to a lack of other auxiliary transport conditions such as lack of river wharfs and ports at commune and district levels; and insignificant sources of goods and passengers. Therefore, existing I.W. means of transport still play an important and vital role in the region, which cannot be changed before the year 2010. Through discussions and close working with local experts who are in charge of transport in provinces of Mekong River Delta, it can be seen that family-used boats will be still an important and major transport force in the future because they have been used for hundreds of years and can't be replaced easily in the inner-field transport in the Mekong River Delta.

Forecast of Means of Transport Growth Rates

The growth rate of means of transport is forecasted basing on the growth rate of goods and passenger volumes in Item 2.2.2.1 above as well as the consideration of economic characteristics, incomes of each region and of local population in the future, and under a set schedule for 2010, which is, formulation of development orientation for means of transport manufacturers, and strategy for operation and maintenance of means of transport. Besides, it is necessary to take into account the process of international economic integration (to become a member of the World Trade Organization - WTO and the ASEAN Free Trade Area - AFTA), since the trade liberalization will create a big decrease in the price of means of transport owing to reduced tax, so domestic building workshops must have high competitiveness in order to increase the quality but decrease the price of their products.

Regarding the growth rate of passenger transport vehicles: because of improved economic conditions, better road quality and better accessibility, the growth rate of commercial passenger transport vehicles of 12-36 seats in the local area will be higher than that of goods volume. It is estimated to be 9-10% per annum in the period of up to 2010 and about 10-12% per annum in following periods.

For motorbike alone, there will be still a high growth rate of 10-15% in the period to 2010 and about 10% in the period to 2020. It will be an individual transport vehicle type, taxi motorbike (for transport of passengers) or used for transport of goods in small volumes in rural areas. Bicycle will be still a favorable vehicle in rural areas.

Regarding the growth rate of goods transport means

The growth rate of goods transport means will be different depending on load capacity of each type. In our opinion, vehicles of less than 5 tons will increase quickly in number from now to 2010, with about 10-12% per annum, and about 10% after the year 2020, because such vehicles are of low starting points in the Strategy and relatively popular in rural areas in the

future, and roads will be better improved. Higher capacity vehicles will mainly be operated on district roads, so their growth rate will be roughly 10% in the period to 2010 and remain after the year 2011, owing to the economic development. As for river-crafts, the growth rates in the coming period will be around 7-8% per year for goods transport ships and only 5-6% for passenger transport ships, since I.W. ships will be less attractive to passengers when the economy is developed. The reason is, the transport time by I.W. is longer than by road and I.W. transport is less convenient than road transport. However, I.W. transport is still favorable in some communes with limited road access or in island communes in Mekong River Delta.

2.2.2.5.2 Proposals on Means of Transport in Disadvantaged Areas and Island Areas

As mentioned in Section 2.2.1, despite of efforts for a balanced development to narrow the gap between regions and areas, as of 2010 and 2020, there will exist difficult regions and areas due to their disadvantages in geographic locations (remote and isolated communes, island communes). Rural road quality is low in these areas. Among those communes which can access to the commune centre, many still meet difficulties in accessibility during rainy seasons. Therefore, beside the overcoming of restrains in rural transport infrastructure, it is necessary to propose how people can travel in difficult areas. In this Study, we have following proposals:

- A manner which is not related to transport (non-transport measure) but can promote the effects of transport infrastructures is to re-plan inhabitant clusters in thinly populated areas. If it is successful, this will increase the number of beneficiaries within road access radius.

- For the communes with sparse population and low population density but failing to re-plan of residents (especially for ethnic minorities living in high land areas and in remote areas), it is possible to use small vehicles (as the transport demand is not high) with high mobility and capacity, i.e. trucks with the loading capacity of 0.5-1.5 T, passenger cars of 6-12 seats, and fixed transport frequency from 1-3 trips per day depending on local people's demands in such areas.

- For the densely populated communes, it is possible to use vehicles with higher capacity such as trucks with the loading capacity of 1-2.5 T and cars/minibuses of 9-15 seats. However, these vehicles should meet the specifications on high mobility and capacity. These vehicles can provide 2 - 4 trips per day depending on local people's demands in such areas.

For the island districts, island communes (except for tourism related vehicles), *road construction is impossible*, therefore we propose as follows.

- As for means of transport: investments should be focused on river-crafts (i.e. ferries, boats/ships).

- As for remote and isolated communes and island communes: there should be appropriate policies and mechanisms to facilitate the travel of the local people in such areas, i.e. price subsidy, vehicle purchasing support, and tax reduction for the transport operators there (to be further discussed in Chapter 4). Table 2.2. below will display all indicators, outcomes and key inputs of the Strategy.

Table 2.2: Summary of Indicators, Outcomes and Key Inputs of the Strategy.

Indicator/Outcome/Input	**2006 - 2010**	**2011 – 2020**
1. Objectives • Overall • Specific	- Integrate rural areas into the economy - 100% of communes have access roads to the centres and commune clusters. 30 % of district and commune roads are paved with bitumen or cement concrete. 70% of roads are passable in all weather. 65-70% of rural roads are in maintainable conditions.	- Integrate rural areas into the economy - Assure 50-60% of core roads paved with bitumen or cement concrete. 100% of roads are accessible in all weather. 90-100% of rural roads are in maintainable conditions.
2. Outcomes • Network connectivity • Accessibility quality • Transport services	- Medium connectivity level from rural transport network to secondary and primary networks - Medium accessibility index due to only 70% of roads are operated all year round. - Provided basically, lower transport costs (except for the island communes)	- Good connectivity to higher level transport networks - Good accessibility index due to 100% roads are operated all year round. - Higher quality transport services, reasonable costs.
3. Required inputs - Construction - Maintenance	VND 41,790 bill. (VND 8,358 bill. per year) VND 38,284 billion VND 3,506 billion	VND 62,465 bill. (VND 6,247 bill. per year) VND 55,012 billion VND 7,453 billion
4. Budget mobilisation - Communes without roads - Communes in less developed areas - Communes in more developed areas	100% from Central budget, 10% is used for maintenance, one year after the construction completed. Mainly from the centre and local budgets From local budgets + others + local people's mobilisation	From central budget: 100% for maintenance + a part for upgrading From the centre and local budgets + local people's mobilisation From local budgets + local people's mobilisation + others

CHAPTER 3

RURAL TRANSPORT INVESTMENT PRIORITIZATION PROGRAMME UP TO 2010 AND RECOMMENDED MEASURES

At the moment, the 5 - year Plan for the period 2006-2010 is being completed to be submitted to the Prime Minister for approval. As the need for rural road construction and maintenance funds is very high in the coming time (to be analyzed below), but central and local budgets are limited and the people's contributions are modest, it is necessary to invest in rural transport development by each period, with adequate steps in line with economic development situation of the country and of each locality; avoid hasty attribute to take shortcuts; and realize that rural transport development is a regular and long-term process. In order to avoid widespread investments, setting up priorities with adequate scales according to approved projects and towards a regulated standard design to reduce costs is of essential. In this Chapter, we preliminarily provide criteria for investment prioritization. Based on the list of prioritized projects from provinces, in comparison with the set criteria and considerations of the fund available, those projects will be reprioritized after consulting some of the provinces again.

3.1. Rural Transport Development Needs up to 2010

The Plan for Provision of Road Access to Communes without Basic Access Roads

As mentioned in Chapter 1 and Chapter 2, there have been 290 communes without basic access roads by the end of 2005, in which Mekong Delta accounts a highest number with 172 communes, followed by South Central Coast with 46 communes and North Central Coast with 35 communes. In the North East Region, there are 107 communes only accessible in dry season. According to rural transport development targets set in Chapter 2, from now to 2010, investments shall be focused on the construction of basic access roads for the whole 100% of communes.

In order to meet this target, demands are very great on new construction. According to our calculation, there is a need for constructing 3,139 km of roads (mainly new construction), 37,813 m of bridges with a total estimated fund of VND 4,828 billion. Mekong Delta accounts a highest proportion in number of communes without basic access roads in the country (with 59%), 52% in bridge length (km) to be built and 37.9% in construction funds. North Central Coast take 12.2% in number of communes without basic access roads and 15.3% in bridge length (km) to be built, but 26.7% in construction funds. Detailed calculations are in table as follows:

Table 3.1.1. Estimated Costs for Construction of Access Roads to Communes' Centers

No.	Regions	Communes without access road	Total length to be constructed (km)	Bridges		Estimated Cost (mil. VND)
				Quantity (unit)	Length (m)	
1	North Central Coast	35	482	37	2,027	1,290,800
2	North East South	1	23	1	100	22,050
3	South Central Coast	46	396.6			738,081
4	North West	12	287			430,650
5	Central Highlands	24	309.4	35	1,073	516,710
6	Mekong River Delta	172	1,641	741	34,613	1,829,740
	Total	290	3,139	814	37,813	4,828,031

Source: Collected data from the surveys and calculations in studying regions

The Need for Rural Road Development Investments in Studying Regions

According to rural road construction plans for the period 2006 – 2010 collected from studying regions, the total length of roads in needs of new construction and upgrading/improvement is 49,407 kilometers (district and commune roads alone); and total estimated costs are about VND 38,280 billion. On average, the need for construction of rural roads (district and commune roads) is 9,881 km per annum and annual funds needed are about VND 7,656 billion.

The North Central Coast requires the most, then the Mekong River Delta, North East and North East South. In terms of estimation by province and by year, the North Central Coast requires highest investment, with VND 236.8 billion/province/year, and the Central Highlands requires the lowest, with VND 86.77 billion/province/year. In terms of estimation by population, the highest investment is for the North West, with VND 0.37 billion/1,000 persons/year, and the lowest is for Red River Delta, with VND 0.05 billion /1,000 persons/year only.

Table 3.1.2. Summary of New Construction and Upgrading Volumes for District and Commune Roads in the Nationwide, 2006-2010

No	Regions	Total (km)	District Roads				Commune Roads				Total funds (Mil. VND)
			Total (km)	Surface Type	Road Class	Funds (Mil. VND)	Total (km)	Surface Type	Road Class	Funds (Mil. VND)	
1	Red River Delta	5,605	1,483	Bitumen, Bitumen concrete, cement concrete	III,IV,V, VI,A,B	2,426,553	4,123	Sealed, gravel, cement concrete,	A,B,V, VI§B	2,026,480	4,453,033
2	North East	10,875	3,944	Sealed, cement concrete, gravel	V, VI	3,340,253	6,930	Sealed, cement concrete, earth	VI, A	2,290,505	5,630,758
3	North West	3,683		Sealed, cement concrete	V, VI			Sealed, cement concrete, gravel	VI, A, B		4,646,200
4	South Central Coast	4,011	1,373	Bitumen, gravel, cement concrete	IV,V,VI	1,835,313	2,638	Bitumen, gravel, cement concrete	V,VI,A,B	1,695,114	3,530,427
5	North Central Coast	8,034	3,309	Sealed	IV, V	2,364,675	4,725	Sealed, gravel	V, A	4,739,317	7,103,992
6	North East South	7,980	2,790	Bitumen, gravel	III, IV, V, VI	2,346,800	5,190	Bitumen, gravel, earth	IV, V, VI	2,587,090	4,933,890
7	Mekong Delta	5,111	1,414	Sealed, cement concrete	III, IV, V, VI	1,453,107	3,697	Sealed, cement concrete, gravel	VI, A, B	4,359,320	5,812,427
8	Central Highlands	4,108	1,729	Bitumen, gravel	VI, V	931,000	2,379	Bitumen, gravel	VI, A	1,238,200	2,169,200
	Total	49,407	16,042				29,682				38,279,927

Rural Road Maintenance Volumes and Funding Needs

According to our estimation, it is expected that about 114,818 km of district and commune roads need to be maintained up to 2010. Total estimated funds for maintenance are VND 3,502,222 million (see Table 3.1.3 below)

Table 3.1.3 – Maintenance Volumes until 2010

Region	Length (km)			Estimated Costs (mil. VND)			
	Total	District Roads	Commune Roads	2006-2010	Average per region per year	Average per province per year	Average per 1,000 per year
North East	22,004	7,716	14,288	753,116	150,623	13,693	8.4
North West	6,933	6,933		561,809	112,362	10,215	12.2
Central Highlands	6,221		2,917	3,304	291,169	58,234	14,558
North Central Coast	17,462	7,416	10,047	500,670	100,134	16,689	14.3
South Central Coast	6,336	2,617	3,720	115,162	23,032	3,839	2.2
Red River Delta	21,085	3,937	17,148	330,050	66,010	8,251	5.0
North East South	14,015		6,271	7,744	793,446	158,689	12,207
Mekong River Delta	20,762	5,882	14,880	156,800	31,360	6,272	6.7
Nationwide	114,818			3,502,222	700,444	10,944	8.5

In this period, total estimated investments for the rural transportation system are VND 41,790 billion, of which VND 41,782 billion (99.98%) for rural roads, and VND 8.2 billion (0.02%) for inland waterways. Maintenance funds account for 9.15% of the total investment funds for rural roads until 2010. The rate of maintained roads accounts for 66% of the total rural road network (only district and commune roads), also see the attached appendix for details of each region.

In order to implement the Maintenance Strategy, balanced allocations for investment funds and maintenance funds should be considered. Priority should be given to planned maintenance.

3.2. Balanced Allocations for Investment Fund - Maintenance Fund, and Prioritisation

Fund Needs and Balanced Allocations

According to the preliminary estimation above, in order to achieve the set objectives in 2006 - 2010 period, the total fund for investment and maintenance is above VND 41,782 billion, including VND 38,280 billion (91.6%) for rural transport development and VND 3,502 billion (8,4%) for maintenance.

In consideration of the fund availability, we make estimations as follows: the nationwide average GDP value in 2010 would be VND 1,600,000 billion whilst funds for rural transport development and maintenance would be VND 41,782 billion in 2006 - 2010. Thus, on average, there is a need for VND 8,356 billion per year (equivalent to 0.52 % of the nationwide GDP per annum), also see the appendix for further details about regions.

However, it is understood that rural transport investment in the past period has set a record, i.e. 2.7 times higher than the period of 1996-2000. Meanwhile, even though the economy in the following period would be more developed, maximum investments in the whole transport sector could reach about 3,0 – 3.5% of the GDP, of which a maximum of 2 – 2.5% could be come from both central and local budgets for the transport. These budgets are for all sub-sectors of railways, inland waterways, maritime, aviation, urban transport, rural transport, provincial roads and etc. In the other hand, more than 80% of the investments for rural transport in the period of 2000-2004 originated from the central and local budgets, including ODA. If we assume that the estimated demand is 0.52% of the GDP (as mentioned above), then we need 0.48% of the GDP from government budgets for rural transport. Whilst other sources for rural transport are not for sure, we just expect a similar or a little bit higher investment amount (compared to the last 5 year) for the future, i.e. nearly VND 25,000 billion (equal to about 1.3 times of the previous period). Therefore, all the projects recommended by provinces should be reviewed for prioritization.

Prioritization Criteria

At present, there are some studies by local and international experts on the prioritisation indexes in rural transport or rural access. In this Report, we only make a brief introduction and mention on the applicability of such indexes.

ADB's Method for Calculating the Access Index: In a recently published study by Chris Donnges on "Improving the accessibility in rural areas – Guidance for access planning", the authors have proposed to calculate the Access Index for scoring. The location with the highest score will gain the highest priority. Main criteria include poverty, access time and distances, access difficulties. These criteria can provide a weighing factor as follows:

$$\text{Access Index AI} = \sum_{i=1}^{n} \text{Index} * \text{Weighing factor} * \text{Time}$$

However, the calculation of weighing factor and the scoring seem to be subjective and much rely on the qualification of experts. Moreover, the calculation seems to be complicated for local experts, so it is difficult to be applied.

RT2 prioritisation method: this method aims to provide the year-round accessibility for rural roads to commune centers with lowest construction costs. The prioritisation for certain rural roads to the commune or district centers will depend on population and poverty influence scope related to total road construction costs to develop appropriate standards with lowest costs.

$$\text{Prioritisation Index} = \frac{\text{(No. of the Poor) + 0.2 (No. of the non-Poor)}}{\text{Total costs for constructing the road}}$$

RT3 prioritisation method: The RT3 TA Consultant has selected prioritization with the following index:

$$\text{Prioritisation Index : } \frac{\text{Number of the poor users of the road}}{\text{Total funds for constructing the road}}$$

However, the investment prioritization of rural roads should be combined with socio-economic criteria in order to help provinces develop an appropriate plan for investment and development of the rural road network, bring about the benefits for rural people with access to social and economic facilities such as markets, healthcare stations, schools and mass media.

Due to time constraints and difficulties in reviewing and applying the abovementioned criteria, we have agreed the approach as follows:

- Identify priorities for each region/province: construct basic access roads for those communes without road to commune centres; build ferry/boat landing-stages in island communes;
- Rural transport has a great impact on poverty reduction and economic growth, therefore, next priorities should be given to less developed regions in order to maximize the number of beneficiaries from the economy development ;
- For more developed regions, considerations need to be paid to commercial aspects of the projects and the ability of fund mobilization from local people or other sources;

These become the foundation for us to prioritize investments with a viewpoint of implementing on the base of available fund resources.

Investment Prioritization

Basing on the lists of projects sent from provinces, then comparing to the set criteria and reviewing the ability of fund allocation, we have preliminarily arranged the list of prioritized investment projects for each region (also see specific list of each region in regional reports).

3.3. Measures for Implementation of Rural Road Development Investment Program

3.3.1. Measures for Development of Investment and Maintenance Funds

***Investment Fund Resources*:** As mentioned above, the total investment fund required for the coming period is VND 38,280 billion, and we have prioritized projects as follows:

- Highest priority is to construct roads for communes without basic access roads to the center of communes and commune clusters. Funds required for this period are VND

4,828 billion. As analyzed in Section 3.1, in general, communes without basic access roads are very poor and underprivileged, with fairly high poverty rates. Therefore, in order to break their isolation, integrate them into the economy and facilitate local people to access to services and society, it is necessary to construct roads for them. For extremely difficult areas, the road construction can be divided into 2 stages: the first one is building roads for carrying horse-drawn carriages and two wheel vehicles. The next one is building roads for carrying automobiles. The allocation for investments in these roads needs a special consideration from the Government as it is one of the national objectives on social-economic development, hunger elimination and poverty alleviation. Hence, it is essential to invest 100% from the State budget in these communes. In case of restraints in the State budget, it is expected that about VND 4,000 billion from State bonds should be spent for this objective.

- The remaining fund gap in this investment programme for these non-access road communes should be prioritized for allocations from ODA projects i.e. RT3. As RT3 covers 33 provinces (i.e. 9/11 provinces in the Red River Delta, 11/12 provinces in the North East, 4/4 provinces in the North West, 6/6 provinces in the North Central Coast, 4/8 provinces in the South Central Coast) and includes in almost all communes without access roads in these regions, therefore the State bonds only need to cover the projects on opening roads to the center of communes and commune clusters in the remaining provinces in the South Central Coast, Mekong River Delta and Central Highlands.
- Other projects in less developed regions might be integrated into RT3 (about US$ 102.50 million, equivalent to VND 1,650 billion for upgrading of the road network), Mekong Delta Transport Infrastructure Development Project (US$ 100 million or about VND 1,600 billion), and Central Region Transport Network Project, funded by ADB (nearly US$ 100 million, equivalent to VND 1,500 billion). Thus, if taking into account only two resources from government bonds and RT 3 project, there are nearly VND 6,000 billion prioritized for non-access road communes, district roads and partly for commune roads in less developed economic areas.
- The remaining fund gap should be prioritized for allocations from other sources of the Government and donors (if available) for district roads and partly for commune roads in less developed regions. As for district roads in more developed regions, the government budget can provide only a small financial support, the remainder should be mobilized from local resources, such as from local enterprises (including foreign invested enterprises), change-land-for-infrastructure source and local people's contributions. For commune roads in more developed regions, 100% of investment funds will be mobilized from local people, enterprises and other sources of revenue raised locally.

***Maintenance Fund Resources*:** as stated above, the formulation of a maintenance culture is basically completed in this stage, and the enhancement of awareness on the role of maintenance is to be prepared. This is the stage of gradual implementation of the planned maintenance, otherwise rural transport will become unstable and unsustainable in the next

stage. Therefore, it is necessary to form a sustainable and stable maintenance fund resource, particularly:

- For disadvantaged regions: the maintenance of district roads and a part of commune roads will need a financial support from the budget (central and local, including donor funds). The RT3's method can be extensively applied, it is, when allocating construction fund resources for disadvantaged areas, the MOF and provinces should allocate funds for maintenance by earmarking a minimum percentage of 10% of the total transport budget; and the Owners of prioritized projects have to be committed to the planned maintenance in line with the fund allocated for the work.
- For the said method, in addition to the budget provided for maintenance from Rural Transport Project 3, when balancing sources allocated for communes without road access, it is necessary to support 10% (from central and local budgets) for the maintenance of maintenable roads in these provinces/districts. Consequently, total budgets from these two sources (central budget and donor) are approximately VND1,000 billion.
- Central and local budgets will be used for supporting less developed regions following an annual budget support rate for provinces in such regions, i.e. North East, North West and Central Highlands. For the North and South Central Coast regions, the Central budget should support about 20 – 50% for maintenance funds of district and commune roads, whilst provinces and districts provide 30 - 70% of funds; communes should contribute 10 - 20%, and the remainder from commune budget and local people's contributions.
- For more developed areas in the regions of Red River Delta, Mekong Delta, North East South, budgets for the maintenance work should be balanced among provinces/districts. In addition, these regions can establish maintenance funds by collecting road tolls. This revenue resource may be inconsiderable at the beginning, however, it will become a significant source when the traffic volume increases.
- For both short and long terms, there should be a study on establishment of a road maintenance fund for sustainable funding. This will be mentioned in Chapter 4, this Report.

3.3.2. Establishment of a Coordination Mechanism among Ministries, Agencies, Localities and Donors relating to RT in Project Management and Coordination

In addition to domestic funds balanced from central and local budgets such as capital mobilized from local people in more developed areas for RT development and maintenance, many bilateral and multilateral foreign donors have made commitments and signed agreements or are preparing local transport projects or local transport related projects in the period 2006-2010, i.e. Rural Transport Project 3 (RT3), Central Region Transport Network Project, Mekong Delta Transport Infrastructure Development Project, Weak Bridge Project - Second Stage, Rural Transport Development in Northern Provinces Project and etc… At present, donors are interested in a Sector-wide Approach to replace the traditional project approach. This approach is appropriate for small-scale, scattered and extensive rural transport projects. However, in order to execute this sector-wide approach, capacities of all management levels and agencies (especially local authorities responsible for RT

management) should be improved. In order to harmonize the donors' policies and GOV's policies and gradually move towards a common approach for project management, there is a need for establishing an approach mechanism among sectors, localities and donors in transport project management in general, and in rural transport project management in particular so as to utilize the limited resources in an effective and efficient manner. This is a mechanism for coordination, information sharing and management among MOT, MPI, MOF, MARD and coordination with donors in the fields of planning, fund allocation, management, reporting, supervision and audit.

Within RT3 framework, the Government and Donors (i.e. WB, DFID) have come to an agreement on 3 project management models - M1, M2 and M3, as follows:

- Traditional and centralized model (M1): is a traditional model that have been applying up to now. It is, investors manage projects directly, sign contracts, disburse funds and monitor, assess projects.
- Decentralized model: investors empower provinces to directly manage projects; provincial representatives sign contracts, disburse funds and control the implementation of projects.
- Sector-Wide Approach (SWAp): project budgets will be integrated to provincial budgets. Provinces will be in charge of the project implementation in conformity with existing policies. Representatives of investors shall just follow up, check and supervise and speed up projects to be in line with objectives. Donors are piloting this model in Lao Cai and Phu Tho provinces.

In addition, there is a need for coordination among ministries, sectors and localities in allocating resources in public expenditures relating to construction and maintenance fields in this prioritized investment program so that such fields can be implemented in an effective manner, especially for district roads. Some regulations which are no longer appropriate in the management should be reviewed and revised.

According to some professionals and donors, a coordination team should be established to be in charge of transport projects including rural transport projects. The membership of this team should include representatives from the abovementioned ministries, sectors and donors, and the standing organization should be the Planning & Investment Department - MOT.

3.3.3. Measures relating to Road Operation

These are measures on formulation of procedures for maintenance planning, management, monitoring and supervision of the road operation quality, specifications, regulations and standards on construction and repair techniques, and guidelines required for rural roads.

The Maintenance Planning aims to:

- identify the arrangement of resources, ensure the road maintenance in extensive scale, ensure the availability of resources in communes, districts and provinces.
- plan monthly, quarterly and yearly maintenance activities, define the time for mobilization of resources, evaluate the efficiency of maintenance activities.

- develop consistent planning procedures in the nationwide.

Management, Supervision and Monitoring of Road Operations

It is necessary to carefully manage, inspect the quality and operation of roads in order to timely identify implicit and immediate causes for road damages which should be included in preventive plans.

In terms of management, it is necessary to prepare sufficient funds for management. Management activities for rural transport in 2006-2010 period consist of:

- Routine or periodic road inspection and patrol (especially for district roads, patrol is required);
- Traffic counting: this is very essential since there will be a rapid increase in the volume and loading of motorized vehicles, in vehicle types and volume of pedestrians and non-motorized vehicles on rural roads;
- Flood and storm monitoring, emergency inspection; and
- Technical inspection, such as measurement of smoothness, assessment of slipperiness etc, and updating of annual road inventory data.

In terms of Road Operation Techniques: including preventative measures, as follows

- Regulation on load limit on the road;
- Regulation on speed limit;
- Regulation on operation of vehicles in rural areas;
- Regulations on penalties to construction contractors of underground facilities in case the road pavement is damaged after the construction of such facilities;
- Traffic safety measures;
- Regulation on warning signs for rural roads;
- Regulation on prevention of using roads for non-transport purposes resulting in accidents;
- Road maintenance techniques;
- Development of regulations on the supervision of road operation quality;
- Development of specifications, regulations and technical standards on construction, repairing and periodic repairing; and
- Development of other necessary guidance.

3.3.4. Development of a Database and a Reporting & Information Sharing System

Even though it has not been sufficient yet in the scope of this “Updating of the Rural Transport Development Strategy”, a rural transport database has been preliminarily established. With the data collected from provinces and from other surveys, and digitalized maps in RT2-TA and SEACAP 12 updated in this Strategy, an overall picture of the Rural Transport in Vietnam has been drawn. However, as stated in Chapter 1, due to various sources of data collected, inconsistencies in reporting criteria, and unavailability of a reporting and information sharing

system, we have paid so many efforts to eliminate internal contradictions of data sources. As a consequence, in the next 5 years, it is essential to develop a Database and a management information system (MIS) in support for the management and development of rural transport at various levels. In particular:

- It is necessary to develop a system of forms, and reporting and information sharing systems in support for the management and supervision; standardize all statistic forms and sheets (through the Rural Transport Unit) on the base of the ones being used to collect data and information for the MOT's strategies and reports. Regulations on an annual reporting system in the field of rural transport to the Ministry of Transport should be officially issued.
- With such an information system, it is affirmable that governmental agencies and donors shall be provided with essential information supporting for their project coordination and rural transport management.
- It is necessary to develop and operate a rural road network management system in order to provide reliable data on rural road conditions in support for the right decision making, monitoring of the expenditure efficiency in rural transport development, especially for the sustainable maintenance system of the rural transport network.
- Based on the digitized maps produced in SEACAP 12 programme and RT2-TA (first digitized maps on rural transport for each province in the nationwide, posted on the website of MOT), there is a need for fund resources to provide trainings for provinces in using and updating maps.
- Develop a webpage on rural transport.

3.3.5. Monitoring, Supervision and Evaluation of the Programme Implementation

- Since there are great demands on rural transport development, while existing sources of finance are limited, it is necessary to optimize the effectiveness of these sources. At local level, budget is used for improving living standards of population communities – the beneficiaries of transport works. Project components generally take into account forecasted potential risks and more importantly, monitor effectiveness of the project implementation and set up necessary adjustments to minimize risk impacts and maximize the project effectiveness. At project level, budget leaking when projects turn to improvement, upgrading or maintenance periods, or budget misuse allocated for rural transport improvement, upgrading or maintenance is often taken place. Therefore, it is essential to monitor the project implementation in a systematic manner in order to minimize these problems.
- Due to lack of resources, a budget misuse allocated for rural road improvement, upgrading or maintenance has significant impacts on the sustainable rural transport development, poverty alleviation and socio-economic development. Even when budgets have been disbursed in compliance with related regulations, the effectiveness of implemented activities is not so high since there have been shortcomings in either the planning or the implementation.

- It is necessary to closely monitor and assess the effectiveness of budgets used for road improvement, upgrading and maintenance. If the results are not as expected, a survey to look into causes and seek for treatments is needed. It is, therefore, essential to establish a reporting system and monitor investment activities in provinces based on: i) auditing of expenditure contracts related to improvement and upgrading; ii) regular assessment of road conditions in locations where the road is improved and upgraded, and iii) regular taking of photographs of rehabilitated roads at certain points of time.
- It is necessary to involve local people in selection and decision making for the investment, supervision, construction, improvement and upgrading of rural roads. On completion of construction, payment should be made and publicized for local people.

3.4. Economic and Environmental Impact Assessment of Rural Transport

Socioeconomic Efficiency

If the said prioritized investment program is implemented, Vietnam will have a basic and extensive rural road network in the nationwide with planned maintenance by the year of 2010. As 100% of communes have basic access roads, the poorest and most disadvantaged rural regions with the most difficult terrain and most difficult accessibility will be able to integrate into the economy, positively contributing to the poverty reduction. The poor regions such as North East, North West, Central Highland, North Central Coast and South Central Coast can significantly improve the accessibility to higher-class roads such as national and provincial roads (which are improved and upgraded in the same period) to make full economic advantages of the provinces. Other regions, such as Red River Delta and North East South will have a developed rural transport network to serve the economic development, rural industrialization and modernization. In the Mekong Delta alone, the provision of basic access roads for 172 remaining communes and integration of road and inland waterway transport will provide positive supports for economic development in the region and facilitate the travel of local people in a more convenient, faster and more reliable manner.

On the other side, the gradual implementation of planned maintenance will ensure rural roads – a huge asset developed and invested for a long time – to gain sustainability, provide better service and reduce transport costs.

Mitigation of Negative Impacts on the Environment: There is a need for measures to reduce environmental pollutions as follows:

- During the selection of investments in rural roads, environmental impacts should be immediately studied in the planning period, in taking into account plans on ecological and natural reserve areas.
- Environmental issues in the provinces should be considered in the stage of selecting appropriate surfaces. It is necessary to apply the outcomes of SEACAP studies on surfacing trials and gravel effects.

- Where serious problems relating to environment have been found, it is necessary to assess impacts on the environment in order to decide whether a road should be built or not and if yes, it is necessary to identify measures for environment protection.
- Enhance the application of science and technology, adopt advanced technologies in construction of transport facilities, reduce dust during construction, limit and prohibit the operation of obsolete vehicles.
- Plant trees on both sides of the road to control dusts and noises.

Critical impacts on livelihood environment include farmers' losses of land, crops and assets. These may lead to temporary losses of incomes when cultivation lands are occupied for widening or realignment of rural roads. The adoption of proposed design standards and application of guidance on environment will minimize these damages.

CHAPTER 4

MECHANISM AND POLICIES ON RURAL TRANSPORT DEVELOPMENT MANAGEMENT

In order to implement rural transport development strategies, appropriate mechanisms and policies are required in short, medium and long terms. Policies to be stated herein include:

- Policy on mobilization, management and utilization of investment funds for rural transport development;
- Policy on planned operation and maintenance of rural transport;
- Policy on supporting and stimulation of economic sectors to be involved in rural transport development and providing of transport services; and
- Policy on encouragement of local materials and human resources in rural transport development and maintenance.

4.1. Policy on Mobilization, Management and Utilization of Investment Funds for Rural Transport Development

Mobilization of funds for the investment in rural road development focuses on following main sources:

- Central budget (including loans from international organizations);
- Local budget;
- People's contributions; and
- Other sources.

Funds from the Central Budget: include 3 main forms as follows:

- Financial supports from the MOT in accordance with annual plans;
- Counterpart funds and international loans (ODA); and
- Funds from national target programs (following the Government's poverty reduction policy for disadvantaged and extremely underprivileged districts and communes).

Annual supports from the MOT are relatively modest. Funds from the national target programs such as Program 135 have recently been lessened and more intensively invested. However, these budgets are hopefully increased in the future, together with the Government's aspiration in reducing poverty in accordance to the new line. In order to support the poverty alleviation, the Government has recently had a policy on using of government bonds for opening roads to communes without road access (about VND 6 trillion). The utilization of such funds aims to alleviate poverty and integrate rural areas into the economy. As a result, provinces, districts and communes will be allocated with State budgets and use the said funds effectively.

ODA resource for rural transport development has played an important role in providing significant supports for the GoV's efforts to eliminate hunger and reduce poverty in the past years. As mentioned in Chapter 3, Ministry of Transport is in the process of preparing for implementation of RT 3 which is co-funded by WB and DFID. Furthermore, JIBIC, JICA, ADB, EU and other donors are preparing and have made commitments on several transport support projects including local transport system. Rural transport has been continuously gaining considerations from donors as well as the Government in the process of hunger elimination and poverty reduction.

According to our forecasts, from now to 2010, after the year 2010 and in medium term, ODA loans continue to play an important role in transport development in general and in Vietnam rural transport development in particular. However, ODA loans are normally subject to different policies and procedures of various donor. When deciding to fund for rural transport development, foreign donors often raise strict requirements on development plans, identification of projects and prioritization criteria, site clearance, financial transparency, and capacity enhancement of localities. In order to use ODA resources effectively, donors and the GoV. (through Ministry of Transport - MOT) need to cooperate with each others, or in more correct words, the MOT in participation with other ministries such as MPI, MOF – shall be the coordinator to coordinate donors rather than donors do it by themselves. On the other hand, Sector Wide Approach (as donors' recommendations) shall be more adequate for rural transport projects that are in small scales but managed in an extensive area. In addition, this mechanism is essential to make use of rural transport budgets and facilitate an overall and coherent vision into flows of capital to balance for rural transport. To help this be done, management capacity of the transport sector, management capacity of projects, monitoring and evaluation and so on must be enhanced at all levels in the short term.

In addressing these issues, the implementation of 3 models under RT 3 is very useful and facilitate to draw experiences and determine suitable models and move towards the following-up step of the sector wide approach. Moreover, DFID also provides certain budgets for technical assistances of RT3. The MOT and provinces should make use of this opportunity to express requirements on training and institutional strengthening for a better management and development of rural transport in the next stage.

In the long term (from 2010 and afterwards), once the per capita GDP of Vietnam is forecasted to reach to more than USD 1,000 per year, the ODA fund would much decrease. Then, the Central Budget only supports for poor regions with disadvantaged conditions in order to reduce the gap among regions, and for maintenance activities since at that time, the needs for new construction and upgrading of roads will be not as high as those in the short term and medium term.

High priority in the central budget is given to upgrading and maintenance of roads in poor and less developed provinces in the Strategy. Localities need to take full use of funds from the

Central Budget, especially for the poor and disadvantaged regions such as remote and isolated districts.

- Local budgets: The local fund for rural transport development is limited in the short term, but will increase together with the economic growth rate of regions. It is expected that in 5 - 10 years time, the fairly and more developed regions can balance their budget in revenues and expenditures. For these regions, provinces should provide supports of 60% for upgrading and maintenance of district roads. For less developed regions, provinces should provide supports of 70% for district roads and 30% for commune roads. Localities should balance allocations in an appropriate manner, only provide supports for poor and disadvantaged areas, remote and isolated areas, border provinces, islands, and for minor upgrading, routine maintenance and partly for emergency repair of rural transport facilities. In addition, local budgets can be partly used as a counterpart fund (for supporting local people in cash or purchasing explosives to break stones, and etc.) to encourage the contribution from local people for the construction of rural roads, particularly in building roads in remote and mountainous villages/hamlets.

People's contributions

The policy of "the Gov. and the people are working together" will be effective when the people's living standard is improved. Contributions from local people will be more important for the development and maintenance of rural transport. Therefore, it is necessary to provide incentive policies in order to maximize the contribution of local people.

Local people desire to have nice roads and solid bridges in their homeland and they are willing to contrubute their efforts to these facilities. So the State and Ministry of Transport should provide incentive mechanisms to encourage local people's participations and contributions so that they can realize that they are main users and must be responsible for their roads and bridges.

Province and district authorities can allocate a portion from local budgets to support local people by providing essential materials, i.e. technical labor, surveys, design, construction guidelines, supervision, explosives for breaking stones, cements, stones, sand, gravels etc. whilst labor days will be contributed by local people.

Similarly, new construction and/or upgrading of rural transport facilities would be supported by a part of province/district's annual budgets in cash (similar to counterpart funds) and local labor if local people can accept. In-cash counterpart funds from provinces/districts will be used to pay partly for local laborers, and partly for materials required in local areas. This is a very sound mechanism and have been effectively applied, since rural people can earn some more money during their spare time, and they can see their working outputs upon completion of rural transport facilities. Therefore, they are aware of protecting roads made by themselves. This mechanism is suitable for the slogan: "People know, People discuss, People do, People check, People use and manage". However, due to limited knowledge of the local people,

district/commune authorities should provide technical instructions for investigation, design and construction guidance.

Other sources

Together with the economy development and rural agriculture modernization, there will be more and more industrial establishments, i.e. product processing, mining, exploitation of timber and etc. located in rural areas, thanking to improved infrastructures, lower prices of land use and cheaper labours. Therefore, local governments should take advantage of contributions from these economic entities to attach their interests to their obligations in the using of rural roads, by providing incentive policies as well as regulations to optimize funds contributed from these enterprises.

Moreover, it is also possible to mobilize individuals, small traders or benefactors (both inside or outside the country), NGOs and business associations located in the area to partly contribute to the rural transport development work in their living areas.

Rural transport development is the responsibility of both the Government and the people so it should be carried out under the motto "the Gov. and the people are working together". However, the percentage of investments between the GoV and the people should be flexible depending on local conditions. In mountainous communes, the government (both central and local) should provide 60-70% of supports, and the remaining is contributed from local people and other sources. In rolling and flat terrain communes, the government can support 30-50%. In underprivileged communes or in border communes (with strategic location in border defense and social-political stabilization), the government should provide 100% of supports, among which 70% is from the central government and 30% is from the local government.

4.2 Supplement of Mechanism and Policy on Fund Mobilization under consideration of the Law on Budget and Post-WTO

It is firstly noted that a review of post-WTO influences to rural transport issues is out of the approved TOR of this Study. Moreover, all commitments to WTO and Government policy (i.e. the Government shall provide rural transport infrastructures) have not been officialized in writing. However, in accordance to the Acceptance Board's requirements at the Official Letter No. 623/TB-BGTVT dated 13th, December 2006, this Section is supplemented to include such policies as a second fund mobilization option. Supplemental contents are as follows:

- Finance is to be decentralized according to the new Law on Budget; funds for the RT development are mainly decentralized for local budgets;
- Decrease the mobilization of funds from the people in order to execute the Governmental policy which is the State provide infrastructures in conformity with commitments to WTO.

Mechanism and Policy on fund mobilization under consideration of the Law on Budget and Post-WTO are as follows.

In 2006 - 2010 period

We have analyzed and selected several fields to be priotized, as well as fund resource structures, particularly,

- Highest priority should be given to the construction of basic access roads for the remaining 290 communes. Required funds for this priority in 2006-2010 period include VND 4,828 billion (accounting for ~12% of the total investment fund for transport in the whole period). It is recommendable that such funds to be continuously supported from the Central budget resource, including effective ODA resources from donors, i.e. Rural Transport Project 3 in the short term.
- Second highest priority should be given to the rehabilitation and upgrading of rural roads for less developed economic regions. In accordance to the decentralization in new Law on Budget, these activities are to be financed by local budgets. In particular, provincial budgets shall partly support for the rehabilitation and upgrading of district roads and some commune roads in disadvantaged communes/districts of the North West, North East, North Central Coast, South Central Coast, Highlands, Mekong River Delta regions, and in some provinces of the North East South and Red River Delta regions. The remaining is to be covered by district and commune budgets.
- As for more developed regions, the development of rural transport shall be partly allocated from local budgets, but should be mobilized from other sources (for example, mobilization of funds from locally located enterprises, non-government organizations and benefactors).
- In accordance to the policy, in which the State shall provide rural transport infrastructures in conformity with the commitments in accession to WTO, the above mobilized fund resources from the people in more developed regions would be used for the rehabilitation and upgrading of commune roads or planned maintenance of the roads constructed, upgraded or rehabilitated by local budgets.

In 2011 - 2020 period

Fund resources are expected as follows.

- Supports from the central budget source (mainly ODA sources) shall be significantly decreased and might be zero, when the average income level per capita increases to more than US$ 1,000 in and after the year 2010.
- Supports for disadvantaged communes shall be mainly allocated from local budget resources, particularly, provincial budgets are to bear the investments in district and commune roads of the most disadvantaged places in mountainous, remote and isolated provinces, whilst district and commune budgets cover the remaining.
- As for more developed regions, the upgrading and construction of district roads are to be negligibly allocated from provincial budgets but mainly financed from district budgets. The development of commune roads is to be mobilized from district budgets (partly) and from locally located enterprises and organizations. The fund resource mobilized from the people shall be used for the maintenance of roads, especially commune roads, and considered as a counterpart fund for investment budgets in commune roads.

4.3. Mechanism and Policy for Planned Maintenance

Planned maintenance is one of the important focus in this Strategy. In order to carry out planned maintenance, there should be appropriate mechanisms and policies in the coming period. The following three institutional issues need to be considered in order to implement this Strategy, they are:

- further improve awareness and establish maintenance culture;
- harmonize between construction and maintenance; and
- create sustainable funding source for maintenance.

Further improve awareness and establish maintenance culture

As discussed in Section 1.2.3 mentioned above, many efforts in improving awareness and establishing maintenance culture have been made in past years. Through Technical Assistance under RT 2 project, donors requested provinces to commit to maintain roads, at least the ones upgraded by foreign loans, and signed agreements with provinces to organise various training courses based on "Manual for Road Maintenance at Commune Level", and thus more considerations has been given to maintenance. However, greater efforts through appropriate mechanisms and policies are still needed so that the planned maintenance culture is really in place.

Training and development of a maintenance culture have recently been carried out in 43 provinces covered by RT 2, and then the training continues to be organized in other provinces across the country. However, as mentioned in Chapter 3, these efforts need to be going-on in institutional supports under RT 3 funded by DFID and WB, on a base of training requirements from management levels; then continue to disseminate the maintenance culture to the people; strengthen democracy at grassroots level and encourage the people's participation.

This maintenance culture should be firstly set up for professional departments/agencies, local authorities, social organizations and lastly for the people.

Professional departments and local authorities have main responsibility in management and organization of maintenance activities so they need to be aware that the maintenance of rural roads is essential and a manner of saving resources for the society, and they are devoted to the assigned maintenance work.

Social organizations and other agencies should be aware that the maintenance of rural roads is essential for a sustainable development of the local economy.

Experiences gained in the last 5 years (2000-2005) have shown that, even with much attention to road maintenance paid by the Government, since this issue has newly introduced into management levels (mainly in transport sector and governmental levels from provinces to communes) and but not publicized to the people, as a matter of fact, local people's

participation in the protection and maintenance of roads funded by the State budgets or loans is still limited, except for the roads constructed by their contributions.

Establishment of maintenance culture for local people is to make them be aware and understand that they are responsible for protection of the transport infrastructure. They should also be fully aware that the quality of roads is proportional to the benefit they obtain from roads, and it directly impacts on road users' costs.

Local people should understand and estimate the benefits brought by well and sustainably operated roads in terms of their savings in individual/family living costs, community's health and savings of investment budgets to be paid for other social services. Local people should be fully trained on maintenance fields, particularly:

- The importance of maintenance in road operation activities;
- Nature of damages, damage related causes and remedy solutions; and
- Individual responsibility for maintenance.

The key contents of raising awareness and establishing maintenance culture include:

Technical preparations (including technical documents and publications which can be widely disseminated)

- Prepare and establish documents, technical manuals on road maintenance; plan maintenance activities and compile documents related to maintenance techniques;
- Prepare documents for dissemination on transport safety, environment protection and effective road operation for rural areas and farmers; and
- Prepare guidelines to disseminate maintenance culture for various objects in the society.

Methods of dissemination

(1) As for management agencies in the transport sector:

- Introduce into practice an effective and unified maintenance management structure from central to commune levels in line with the rural transport management model proposed in the institutional contents of this Strategy.
- Establish a maintenance culture for the people to widen knowledge and strengthen awareness of road protection for each participants in the society. People need to be fully aware that the quality of roads is proportional to the benefit they obtain from roads, and it directly impacts on road users' costs.
- Disseminate information through training programmes and training courses related to road maintenance and operation.
- The Government should support by allocating budget for training, step by step providing working facilities for maitenance management agencies at district and commune levels; and adjust policy regimes applied for commune transport staff.

(2) As for other objects

- Disseminate knowledge through newspapers and mass media.
- Propagandize information through workshops, competitions on road maintenance, exhibitions and meetings to popularize information to people in communes, villages and hamlets, etc...
- Introduce road maintenance contents into main curricular or extra-curricular at school (e.g. in civic education content).
- Extensively sell publications on general knowledge of rural road maintenance.

(3) Assessment of implementation results

- Creation of a maintenance culture for the people should be included in implementation programmes which are organized, controlled, examined and annually assessed, with the participation of state administration agencies and community supervision.

Policy on harmonization between construction and maintenance

The harmonization development between construction and maintenance means a balanced development between construction volumes and maintenance volumes so as to maintain as many existing and newly constructed facilities as possible, and facilitate the rural transport infrastructures in satisfaction of traffic demands in planned period as well as in following periods. This also means that best technical standards should be considered and selected to assure the service quality for facilities as well as reduce maintenance burdens.

The harmonisation development between construction and maintenance should be reviewed in many aspects such as planning of construction and maintenance, planned maintenance and road techniques (with consideration to the appropriateness of technical standards and the whole life of roads).

Harmonisation of technical standard proposals and service life of roads

- Provide construction standards in line with different transport development level to optimize the effectiveness of budget phasing principle for construction and maintenance.
- Propose appropriate road pavement structures.
- Do not impose one design standard for the whole country. In each period, recommendations for each region to apply a model relevant to regional socio-economic development and transport should be made.
- Majority of district roads, as analysed in the road operation content, are serving vehicles with rather high loads, therefore, in technical terms, district roads are requested to accommodate design loading capacity of at least H13 and Class 4. However, in many undeveloped economic areas, the application of this model shall lead to costly construction expenditures and low operation effectiveness (since unused roads are still naturally

depreciated), hence some alternatives with different application conditions should be proposed.

- Standards for roads outside or inside residential areas should be developed in priority projects on transport safety and urban development in rural residential areas.
- Rural residential areas are different from urban residential areas by characteristics of being places for agricultural production (i.e. animal husbandry), small industry, consumption goods as well as storages and places for pre-processing agricultural products during the havest time. These characteristics need to be thoroughly studied when setting up design standards for roads in rural areas.
- Newly constructed or upgraded roads under new standards shall be in high durability so these roads just need to be maintained, and the maintenance should be concentrated for the works which were constructed in the previous stage and presently in good or medium quality, and for unforeseen repairs.

Operation and maintenance of roads:

- In the period of 2006 – 2010, there should be a study on proposed methods on reusing of existing cement concrete and bituminous surfaces in order to avoid road material wastes. The reason is that all bituminous district and commune roads built in the period of 2000 – 2005 or earlier will be periodically repaired from 2010.
- In the short term, the Government should specify that all maintainable rural transport infrastructures have to be maintained and clarify responsibilities of the transport sector, local authorities at all levels and other relevant agencies for maintenance and implementation of maintenance. This aims to include maintenance into the officially social activities of government agencies, other organisations and individuals in the society.
- Maintenance of rural infrastructures is the main responsibility of local authorities. Therefore, it is necessary to provide appropriate mechanisms to encourage local authorities and PDOTs to involve in the management of rural transport infrastructure maintenance as actively as they are doing in the management of rural transport infrastructure construction. This does not eliminate the current decentralisation but it helps provincial authorities understand the actual maintenance needs of districts and they can deal with gaps in the implementation of road maintenance activities in their areas. Through provincial authorities, the GoV. can provide timely supports for the maintenance in less developed economic areas in conformity with the Law on State Budget.

Encourage effective road maintenance activities

- Develop and apply “Maintenance Agreement” rule for all road types and transport facilities: local authorities must be committed by signing a maintenance agreement before receiving funds for development of roads from district level downwards, to secure investment in maintenance. Even for village roads built by village people, beneficiaries

should also be committed to contribute for maintenance. Responsibility of maintenance implementation is then given to an organisation (households or individuals). The maintenance agreement should include estimates and breakdown of maintenance costs for each stage and by each year.

Planned maintenance is an effective manner of management

The rural transport development strategy and timetables by period (including road maintenance) provide procedures for implementation, propose implementation plans, resources and measures to assure the feasibility of plans.

- Basing on local socio-economic development plans, local authorities of each level should develop rural transport development plans, including adequate road operation plans, selection of effective construction and maintenance options, and possibilities of potential resource exploitation for rural transport infrastructures. After being approved by competent authorities, such plans will be the base on which the central Government allocate resources for provinces to develop specific transport facilities.
- In accordance to the approved rural transport development plans, modal agencies of each level should prepare 5 year and yearly construction and maintenance plans to be submitted to upper competent levels for approval of volumes and required funds. Thence, adjustments on the organization or management and implementation plans for the approved works shall be made.
- MoT should develop and issue planned maintenance procedures for all levels so that local authorities can implement in a unique way since 2007. Year of 2007 is the first year to follow these procedures and then lessons will be drawn to make improvements for the next years. In particular, RT3's provinces receiving funds from DFID should be piloted as typical samples. Thus, it is also a condition for the Government to directly access to the determination of maintenance needs targeted by DIFD and WB when the sector-wide approach is introduced into RT 3 project.

Gradually Create a Sufficient, Sustainable and Safety Fund for Maintenance

In the short term, it is necessary to have funding supports from the central budget and ODA loans for the maintenance of rural transport, particularly for less developed areas and regions. In future, local authorities and people in poor regions involved in the Governmental programs on road development may not afford road maintenance costs , therefore funds should be allocated for such regions, possibly from Governmental budget or loans.

In order to ensure a safe budget allocation, it is required to select relevant road technique structures so as to expect and prepare a budget allocation plan for the maintenance, with a

stable mobilization of capitals and minimization of unexpected items. In this case, suggestions from localities in selecting relevant road technique structures are critical.

In the long term, a "road maintenance fund" should be soon established to ensure a sustainable funding source for planned maintenance activities. A road fund used for maintenance of national roads is being developed by the MoT and submitted to the Prime Minister for approval. The revenues for this road fund will come from road users' fees. Although the proposal on establishment, management and using of the road fund for road maintenance activities is supported by the donors, there are still many arguments about this from relevant ministries and experts. However, according to international experiences, it is necessary to set up this fund sooner or later in order to assure a sustainable funding source for the road maintenance. Main revenues for this fund will come from road users' fees and charges in order to attach road users' benefits to their contribution responsibilities for the road using. The fund management body have to assure a transparency on the use of road fund so that road users can believe that they are paying for the road maintenance. Initially, the road fund may be insufficient for maintenance due to limited people's incomes, but when transport demands increase in the long run, the fund can be sufficient for maintenance of all roads including rural roads and it can also be used to support for rural poor and less developed areas.

4.4. Incentive Policies to Involve all Economic Entities in Rural Transport Development and Transport Services Provision

Economic entities play a significant role in rural transport development. Given specific features of rural transport, i.e. small and dispersed scales, un-concentrated and extensive investments and low technical requirements..., an encouragement and attraction of economic entities involving in the rural transport development is essential in order to stimulate effective rural transport developments.

As for the State economic sector and collective economic sector, it is necessary to encourage them to invest in the construction of district roads and providing of transportation services in medium distances between urban areas and district centres. In order to achieve this, there should be favourable policies such as giving soft loans, reduce for some related kinds of tax or charge.

Private economic sector plays an important role in the economic development. This economic sector is becoming developed, displaying its preeminence and contributing more and more in the national GDP. This is an important sector that needs to be prioritized and stimulated to involve in rural transport development. The participation of private sector in construction and maintenance of commune and village roads will bring high benefits and low costs. The participation of local private economic sector will also raise construction contractors'

responsibility, and make the best of local resources to bring good quality for local roads and facilitate the road management. Moreover, the private sector should also be encouraged to provide rural goods and passenger transportation services between district and commune centres and within villages. In order to attract this economic sector in localities, it is necessary to provide supporting policies, for example, soft loans and long refund duration. Local authorities should apply favourable policies for regulated revenues.

It is necessary to provide incentive policies to encourage small scale contractors to involve in construction of rural transport facilities. This will not only create more jobs for local contractors but also create revenues for local budgets from these contractors' fees and taxes, and keep their business under tight control.

Localities (districts and communes) will directly award small and medium scale tender packages to local contractors with sufficient capacity (in terms of finance, profession as well as equipment/facilities). Localities also provide as many supports as possible for contractors in terms of procedures, time and finance so that local contractors can be involved and display their full capacity.

4.5. Incentive Policies on the Use of Local Materials and Labour in Rural Transport Development and Maintenance

One of the factors that build up total investment costs for rural transport is construction materials and labour costs. Material costs take a high percentage in the total investment costs. Haulage distances will directly affect material costs. The use of local materials will create significant advantages, such as low costs, short haulage distances and easiness in future maintenance and periodic repairs. In order to encourage the use of local materials, it is necessary to promulgate encouraging policies, such as tax exemption for the exploitation of natural material mines and filling earth mines within the area of road constructions.

As for local labour, priorities should be given to contractors using local labour for the road construction. Apart from giving employment for local people, the use of local labour helps reduce construction costs, save funds and enhance awareness for local workers since they know that they are building the roads for themselves and for their homeland, as a result the quality of roads will be more ensured.

4.6. Other Policies

Depending on each period and specific local conditions, the GoV. should provide appropriate mechanisms and policies to promote investments for rural transport development. It is necessary to supplement solutions for the management as follows:

- Complete legal documents on transport construction activities. Management can be done centrally but with decentralisation so that enterprises can take the initiatives in their business and production.
- Develop and strengthen a synchronous and unifying management system between central and local governments, and among various management sectors and agencies (i.e. planning, finance, banking and etc.) in order to overcome existing shortcomings.
- Develop a management mechanism to assure the equality for all economic sectors and enterprises working in the construction and maintenance of transport infrastructures.
- Develop and finalise the fund management mechanism in capital construction and maintenance of infrastructures (i.e. road, port, stations, etc.), fund management mechanism in forming of joint ventures with foreign companies and so on.

CHAPTER 5

IMPROVEMENT OF CAPACITY IN RURAL TRANSPORT MANAGEMENT AND INVESTMENT

5.1. Management Requirements and Proposed Management Model for RT at all Levels

5.1.1. Management Requirements for Rural Transport at all Levels

Rural Transport Development Strategy proposed in Chapter 2 requires a fairly large budget resource, following a schedule of 2 phases, 2006-2010 and 2011-2020 to develop rural transport and integrate rural areas into the economy. However, the most important thing to implement a strategy is that the institutions must be able to work properly in a policy environment, particularly there should be:

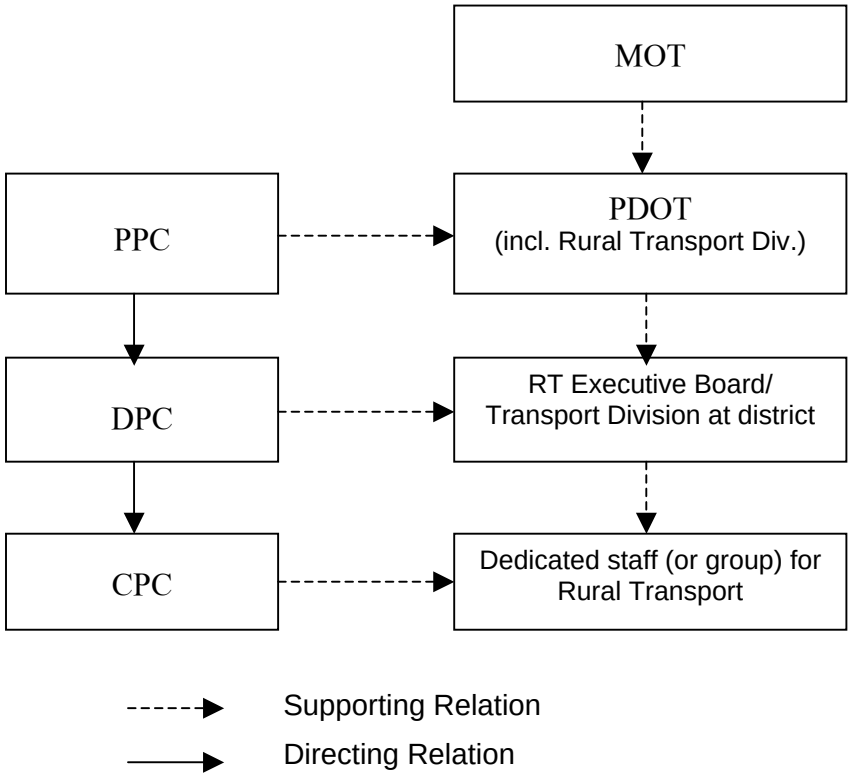
- a suitable and effective organization model for the management of rural transport; and
- a competent staff in the management of rural transport.

Rural transport directly relates to localities and rural areas where more than 75% of existing population are living and nearly 60% of future population to be living by the year 2020. In order to manage this system in a sound manner, a coherent and clear decentralization management model is obviously required at all levels (i.e. central, province, district and commune). In particular, local specialized staff need to be trained on professional knowledge, techniques and management to satisfy competent requirements and should be placed in managerial environment to optimize their own capacity as well as local resources. Strengthening rural transport management capacity can be said as one of leading conditions for the development of a sustainable rural transport system, based on which local people's demands are gradually met and the effectiveness of the national transport network is getting improved.

In general, the improvement of capacity in rural transport management aims to strengthen the organization aspect in rural transport. From an analysis of the organisational structure and requirements on staff (both quantity and quality), it is possible to identify capacity building requirements and training needs in order to improve the management and organization of rural transport at local level. Nevertheless, since trainees are local staff, training objectives are to transfer required knowledge in a rapid and relevant manner. Training objectives are to develop basic capacity on management knowledge and techniques for trainees so that they can settle their issues. Trainees can adjust and develop their own skills and knowledge based on local specific conditions and the transfer to their colleague accordingly.

5.1.2. Proposed Management Model for Rural Transport at all Levels

In order to meet requirements on investment management and sustainable rural transport development in the country, to strengthen investment and operation effectiveness and to satisfy rural transport development targets, we would like to propose an organizational model of rural transport management as the following diagram:



Functions, Tasks and Organization Model of RT Management Agencies at each Level

Construction and maintenance strategy for the coming years displays a high requirement on awareness and consistency in the planned construction and maintenance policy. To achieve this, planning functions of all rural transport management levels, especially commune level, need to be improved. Organizational structure must be consolidated at all levels. Details are as follows:

At MoT

MoT is a State administration organ responsible for the transport sector, including rural transport. MoT's functions in rural transport are to:

- develop rural transport development policies and strategy in the nationwide;
- clarify rural transport management tasks at all levels;
- develop and issue technical standards, procedures, and guidelines to help local authorities in implementing the rural transport strategy;
- provide guidance, trainings and technical supports for localities;
- execute state administration functions in rural transport and in local activities on rural transport; and
- manage external relationships, cooperate with ministries, sectors, localities and donors to commence the implementation of Vietnam Rural Transport Strategy.

In order to carry out these functions, rural transport management structure need to be consolidated to avoid overlapping among functional departments and administrations.

As mentioned in Chapter 1, the Local Transport Unit (LTU) under Department of Planning and Investment (DPI) is in charge of providing advisory on the state administration in rural transport. However, this Unit consists of only 2 staff and a newly graduated staff in probation. Furthermore, functions relating to the formulation of transport strategies, planning and policies are taken by Transport Development and Strategy Institute (TDSI). The establishment of technical standards, including RT technical standards is the responsibility of Department of Science and Technology. Additionally, Vietnam Road Administration (VRA) includes a local transport division which is responsible for cooperation with and support for provinces in the management and maintenance of road networks, and is currently developing a road network management system.

In the institutional support component under RT2, WSP's consultants (UK) already proposed an approach for building capacity of MoT through supporting for MoT's administrations, departments and institutes relating to rural transport management with a special focus on LTU - DPI.

On the base of existing situations, with consideration of the Strategy's requirements in future, we would like to propose the following 3 options:

- *Option 1*: Establish an independent Local Transport Department (LTD) in MoT to be in charge of local transport issues. The justification is, that local transport (i.e. transport system including rural transport managed by provinces in a direct manner) is rapidly developing, and it requires better attention and management due to its increasing values (up to tens of billion US$) and its greater and greater benefits (75% of the existing population and 60% of the population in 2020 are beneficiaries). Meanwhile, the VRA is able to manage the national road system only. However, according to our understanding, the GoV has decided to establish the "Department of Cooperatives" in MoT, therefore it may be not feasible to set up another independent LTD.

- *Option 2*: More staff should be assigned to the LTU-DPI. The minimum number of staff should be 5 or 6.

- *Option 3*: Strengthen the Local Transport Division-VRA, keep the existing number of staff responsible for rural transport in LTU- DPI. Each unit needs about 3 or 4 persons.

Options 2 and Option 3 do not require the setting up of a new organization. Option 1 is more reasonable in light of avoiding overlaps but it is unfeasible in the current context. Hence, it is proposed to select ***Option 2 which supplements staff working in LTU-DPI, i.e. 4 ones as of 2010, and 5-6 ones as of 2020***.

At Provincial Level

Provincial People's Committees (PPC) are responsible for socio-economic development in the area, coordinating provincial departments and sectors including local transport and rural transport. Therefore, PPCs' functions and responsibilities are: i) approve transport development master plans and plans, including rural transport, ii) review and execute policies relating to rural transport management and development; stimulate the development of commercial transport services under requirements of rural areas. Provincial Department of Transport (PDOT) is a professional agency providing advisory for PPC in rural transport management in the province area, particularly in the formulation of transport master plans or plans and management of transport including rural transport.

PDOTs are responsible for management of rural transport, management of the planned maintenance and development of provincial roads; reviewing and balance of plans and rural transport planning of districts; and linkage to neighbouring districts. It is necessary to determine priorities given to maintenance and investment in building provincial roads to create investment opportunities for districts, and reasonably distribute the development of rural transport system across the province. In addition to the implementation of programmes funded by donors and managed by PPC, PDOTs are also responsible for:

- supervising and inspecting all activities on rural transport construction and maintenance in the area of districts and communes;
- involving in investment preparations in rural transport and formulation of comprehensive plan for socio-economic development in the province;
- ensuring dedicated staff to be in charge of rural transport development in the province.
- supporting districts in strengthening of capacity to inventory current status of roads and facilities; prepare investment plans and manage the maintenance of rural transport system in districts.
- organizing training courses within the provincial area, in the fields of: training and providing technical assistance for district and commune levels in planning, preparation of construction and maintenance plans, design, tendering, construction and supervision of the planned maintenance and construction of roads; and
- introducing new standards, regulations and procedures issued by the MoT; planning rural transport networks, applying technical design standards for rural roads; tendering and supervising the construction and managing rural transport maintenance activities.

Regarding the organisation, given the increasing importance of rural transport in the transport development in provinces, it is recommended that there should be a dedicated division for rural transport in PDOT. Functions of this division include, making of proposals on plans and planning for rural transport development in the province; management, monitoring, integration, provision of advisory on and approval of rural transport construction and maintenance plans

based on requests from district level; balance of tasks among districts; cooperation with other divisions in PDOT as well as with districts to recommend solutions on rural transport issues to be addressed by PDOT and PPC. Nevertheless, in the short term as of 2010, due to requirements on administrative reform, one more unit of 2-3 staff can be established in the Transport Management Division - PDOT in order to monitor and manage rural transport. In the long term, this unit would be separated from the Transport Management Division to form a Rural Transport Management Division with a quantity of 5-6 staffs, if necessary.

At District Level

In the field of RT management, District People's Committees (DPC) are responsible for:

- direct management of construction and maintenance of provincial and district roads in the area; unified management of commune roads and provision of technical assistances for communes.
- conducting of surveys and drawing of maps on district rural transport system status.
- management and monitoring of rural transport construction activities in the area.
- management of rural transport maintenance.
- providing of technical assistances on RT construction and maintenance for communes.
- encouragement of the development of private contractors in the area and displaying of healthy competitiveness in designing and construction aspects.

DPC are responsible for managing district road maintenance in conformity with the assignment from provinces and professional guidelines of PDOTs, and carrying out functions and tasks on rural transport organization and management as mentioned above. Therefore, regarding the organisation, there should be some professional staff dedicated in rural transport. This can be a unit of 2 or 3 persons (or an executive board of 3 or 4 persons if the district is in large scale) within the economic infrastructure division. Furthermore, due to increasing management activities for the planned maintenance of the transport system, it is recommendable that a dedicated transport division of 5 or 6 persons be established at district level, depending on the scale and specific requirements of each district.

At Commune Level

Commune People's Committees (CPC) take following responsibilities on rural transport:

- Management of commune roads and other unclassified roads located in the area;
- Mobilization of people's contributions in the area.
- Each commune needs a dedicated staff or group responsible for activities related to rural transport. He/she (they) shall provide advisory for the Chairman of CPC on the execution of state administration functions relating to rural transport in the commune area.

In the short term, due to restricted resources, staff in charge of land survey will be still responsible for transport management. However, there should be a dedicated staff for rural transport at commune level, in the long term.

5.2. Requirements in Planning, Programming and Proposed Planning Procedures in Rural Transport Investment at all Levels

5.2.1. Requirements in Planning, Programming and Proposed Planning Procedures in Rural Transport Investment

Planning on rural transport means the investment orientation in rural transport development aiming at providing guidance and directions for decision makers to invest in the rural economic development program. Rural transport planning aims to i) formulate a rural transport development plan in planning duration; ii) balance investment sources for the development and maintenance of roads within the transport network, and select investment facilities basing on requirements for the locally socio-economic development; and iii) make 5-year and yearly plans on investment allocations for road construction and maintenance. Rural transport development planning is one important managerial work for the development of RT system.

However, the training on transport planning and preparation of investment plans for rural transport development is still limited. Even from the top level as Ministry of Transport, the number of experts dedicated for rural transport is far less than that for other fields in the transport sector. This factual situation makes the planning and preparation of rural transport construction and maintenance plans meet with difficulties. On the other hand, due to an underestimation of the importance of rural transport, most of provinces and districts across the country mainly focus on developing national and provincial roads rather than planning the development of rural road system. This is reflected by a fact that rural transport development planning and plans are not available in almost all districts in the nationwide.

In order to achieve the abovementioned purposes of the rural transport planning, this section discusses basic requirements for rural transport planning/programming at all levels and proposes rural transport investment planning procedures as well as identify training needs for capacity building and improvement in the field of rural transport management and planning at all levels.

Basic Steps of Rural Transport Planning Procedures at Provincial/District Level

Step 1: Conduct surveys to collect road inventory and map out the existing road network.

Step 2: Analyse and assess the service life of the existing road network; identify problems and shortcomings of the road network in terms of coverage, connectivity, accessibility, the relationship between construction and maintenance, and technical issues in construction and maintenance. Basing on disbursed fund flows, analyse the ability of mobilising funds from

various sources and barriers which can be intervened by policy so as to select options on investment scales for the upgrading and new construction of roads; select options on construction locations/sites, or options on techniques and surface structures for the next step.

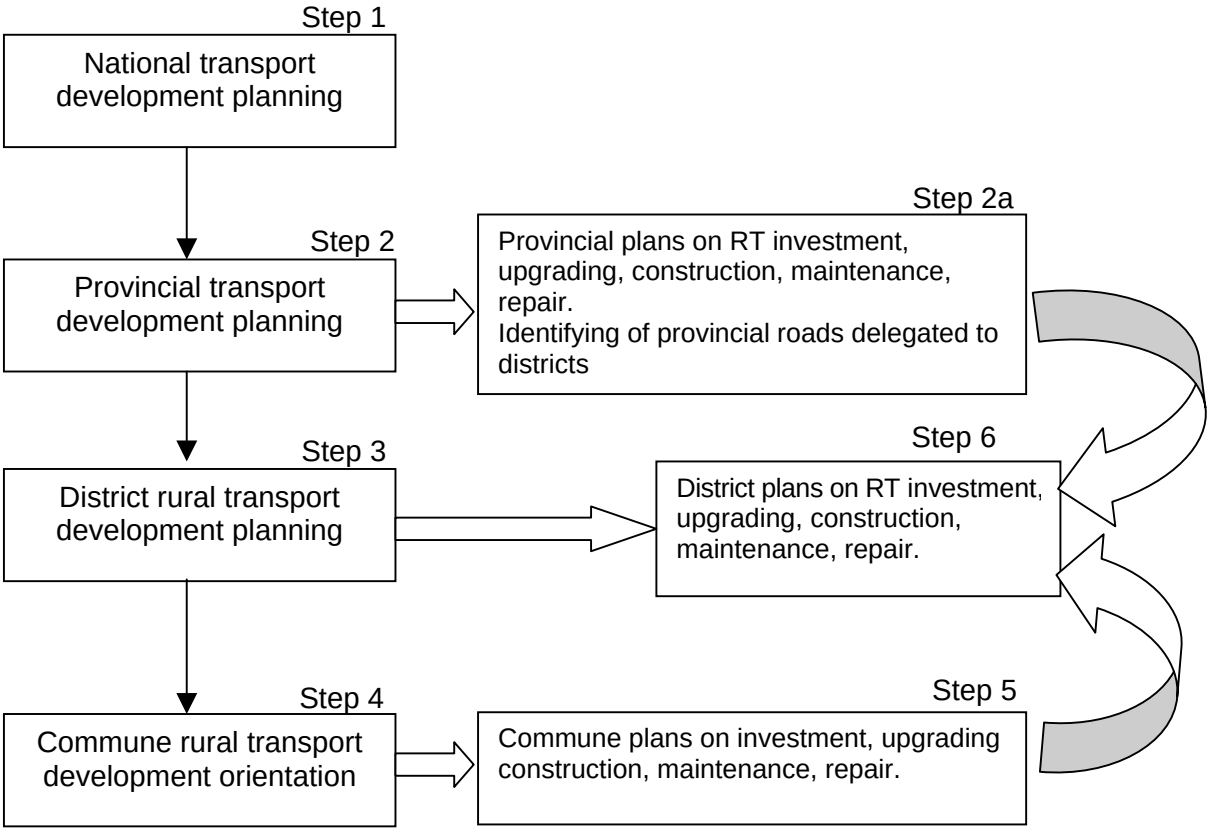
Step 3: On the basis of socio-economic forecasts in short term (1 year), medium term (5-10 years) and long term, and with consideration of funding ability, select options appropriate for master plans, and phase investments for rural transport in districts and communes in order to:

- prioritise investments for transport facilities under a relation between investment effectiveness and local funding abilities in the future.
- plan investment funds required for the construction and maintenance of roads and facilities in the area.

Step 4: Forecasting of Interventions, Solutions/Methods to Implement the Planning

The planning contents and requirements agreed in all provinces will greatly contribute to the MoT's management and supervision in the field of construction and management of rural road system, and help MoT make decisions on the budget allocation for provinces.

Figure 5.2.1. Planning Procedures for Rural Transport Investment at all levels



On the base of approved plans and available investment funding sources in each period, provincial/district/commune authorities prepare investment plans and investment implementation plans for the construction, upgrading/improvement and maintenance/repairing of rural transport facilities in their administration area. Procedures to prepare plans/planning at all levels are described in Figure 5.2.1. The planning framework is demonstrated in the Terms of Reference for planning rural transport development at province level in Annex 13 of this Report.

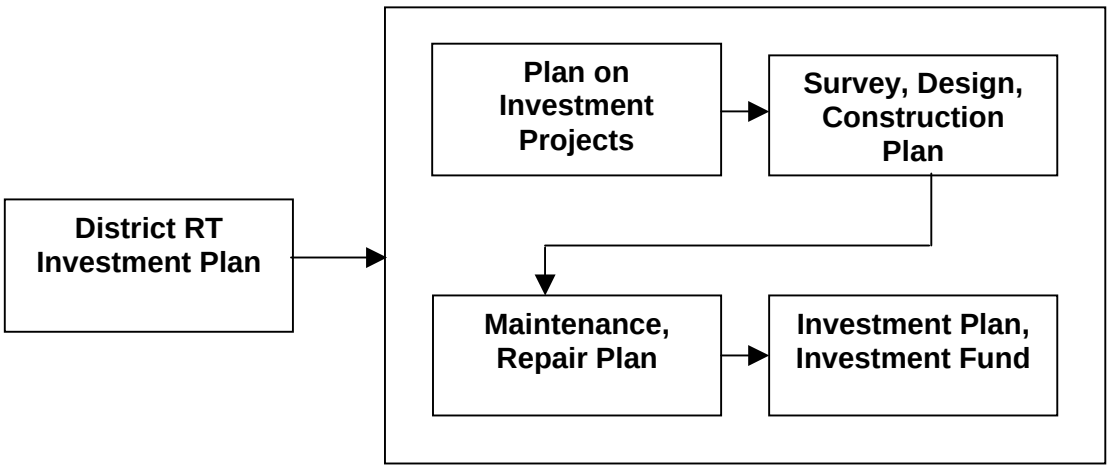
5.2.2. Requirements in Planning and the Proposed Planning Procedures for Rural Transport Investment

Investment Plan for Rural Transport at District Level

Based on the district's transport development plan and availability of fund mobilization in each period, the Economics-Infrastructure Division at district level (with the supports from the Planning Division and Financial Division) will make rural road construction and maintenance plan for the district. A RT investment plan at district level should comprise following contents:

- A construction and maintenance plan of roads managed by the district;
- A plan supporting for construction and maintenance of commune roads;
- A development and maintenance plan of the district rural transport system to be passed by DPC and approved by the Chairman of PPC.
- Chairman of DPC is responsible to PPC for results of the implementation of investment plans, and results of the state administration activities relating to rural transport in his (her) district.
- Chairman of PPC takes responsibilities for approving and evaluating results of the implementation of investment plans and state administration activities relating to rural transport at district level.

The content of rural transport investment plan at district level is illustrated in the following model:



Investment Plan for Rural Transport at Commune Level

Based on the rural road development orientation of the commune, the staff (or a dedicated group) who is responsible for rural transport at commune level, will prepare rural transport construction and maintenance plan for the Commune. The plan will comprise:

- Repair and maintenance plan of district roads delegated to the commune.
- Construction and upgrading plan of commune and village roads.
- The investment plan for RT development and maintenance at commune level is passed by CPC and approved by the Chairman of DPC.
- Chairman of CPC is responsible to DPC for results of the implementation of investment plans, and results of the state administration activities relating to rural transport in the commune area.
- Chairman of DPC is responsible for approval of and assessment on results of the implementation of investment plans and state administration activities relating to rural transport in communes.

5.3. Proposal for Improvement of Rural Transport Management Capacity at all Levels

5.3.1. Proposal for Improvement of RT Management Capacity at all Levels

Improvement of RT Management Capacity at MoT

In order to carry out the State administration functions in the field of rural transport at national-level, rural transport management capacity should be further improved, particularly:

- Further improve MoT staffs' professional qualification in the field of planning, policy making for rural transport development. In the short term, the LTU-DPI (MoT) should be developed into a functional unit with comprehensive capacities so that it can make national decisions on rural transport development strategy.
- Strengthen capacity for the staffs in charge of rural transport in fields of management on the preparation of technical standards and procedures appropriate for each specific region in the country.
- Improve information disclosure to provinces, districts and communes, and provide guidelines on the execution of issued rural transport policies and mechanisms.
- Establish an information sharing system and coordination mechanism with other Governmental agencies and national and international donors.

Improvement of Rural Transport Management Capacity at PDOTs

- MoT and its advisory agencies carry out capacity improvement training courses for staffs dedicated in the field of rural transport in provinces by transferring and training skills on map making, and updating data on current conditions of rural roads in provincial areas.

- Provide training courses and technical assistances in planning and programming of rural transport development for provinces.
- Provide training and improve capacity for provincial RT staffs in the fields of design, procurement, construction and supervision of construction works.
- Train, transfer and provide guidance for the use of RoadNam software program (management of road/bridge data) for all PDOTs' staffs in order to display the management effectiveness of planned road maintenance activities.
- Organize training courses for PDOTs on analysis and evaluation of policy and institutional issues, and socio-economic issues relating to rural transport sub-sector.

Improvement of Rural Transport Management Capacity at District Level

The development and enhancement of RT management capacity at district level is currently a most urgent issue. As mentioned above, DPC is directly responsible for the management of rural road construction and maintenance in the district area, however human and capital resources for the transport management at functional divisions (i.e. economics - infrastructure division) are still restrained. The development of RT management capacity at district level should, therefore focus on the training of practical issues in RT management, and the MOT and PDOTs should carry out following activities:

- Provision of training courses and technical supports for districts in fields of making of transport planning, construction and maintenance plans; design; procurement; construction and supervision of works; maintenance and repairing of rural roads under planned schemes.
- Introduction and instruction on technical standards, procedures and guidelines newly issued by the MoT regarding rural transport.
- Formulation of rural road network planning in the area of districts.
- Application of technical design standards for rural road system.
- Procurement and supervision of construction works.
- Training on the management of rural roads maintenance for districts (through some training programs, i.e. training on the Rural Road Maintenance Handbook for district/commune level).

Improvement of Rural Transport Management Capacity at Commune Level

Currently, most of the CPCs do not have dedicated and competent staff in charge of rural transport at commune level. Training for commune staff is therefore an urgent and essential issue, and should aim to improve not only professional competence but also responsibility in their assigned work, as well. Specific training issues for commune staff include the following:

- Development of simple standards, guidelines and procedures so that local people (unprofessional people) can understand and apply.

- Providing of guidance and instructions for commune staff on main issues related to rural transport infrastructure management at commune level (through PDOTs and Rural Transport Division at district level).
- Training provided by PDOTs and DPCs for commune staffs on methods of preparing construction and maintenance plans for commune roads (through some programs, i.e. training on Rural Roads Maintenance Manual at Commune level which has been implemented in 40 provinces covered in RT2).
- Key issues on management and supervision of commune road construction and maintenance activities.
- Organization of additional training courses for trained commune staffs.

5.3.2 Improvement of RT Development Planning Capacity at all Levels

In both short term and longer term, the planning of rural transport development at all levels needs to be arranged so that it can effectively serve for the management of rural transport development in accordance to plans and planning. In order to achieve that, it is necessary to strengthen capacity of all levels as follows:

At Ministry of Transport

- Train and develop specialists in charge of rural transport; under the program on technical assistances funded by donors, it is necessary to have a technology transfer through on the job training between local and international specialists in order to improve knowledge on planning and programming of rural transport investments. This is an effective training method that is inexpensive but realistic through technical assistance projects and direct training between international and national experts. In addition, training can be done under the form of short term courses or workshops inside and outside the country.
- Coordinate with local agencies in updating and completion of the national database of rural transport on the basis of digitalised maps (SEACAP 12) in order to assist MoT leaders in process of planning and decision making on investments.
- Set up a rural transport forum with the involvement of relevant management agencies, donors, provinces and stakeholders.

At Provincial Level (PDOT)

It is the fact that the planning on rural transport development in provinces mainly focuses on the development of national and provincial roads, and has not been paid adequate attentions. At the moment, there is a lack of much data and figures on rural roads and bridges. There is no updated map of rural transport network conditions. Therefore, training and strengthening capacity to improve rural transport development planning and plans at this level need to focus on the following issues:

- Train, transfer and provide guidance for the use of software programs i.e. Mapinfor (mapping) and RoadNam (management of road/bridge data) for all PDOTs' staffs in charge of the transport field in the nationwide.
- Develop and provide survey forms in conformity with national standards (as in RT2 Operational Manual) but with simplified methods for the selection of survey locations.
- Train and publicise simplified "rules" to provide instructions on standards and decisions relating to the prioritisation of roads, and the allocation of investments in new construction and maintenance (including training on Cost Benefit Analysis for PDOT staffs).
- Provide training courses and technical supports for provinces in the field of rural transport system planning in the provincial area.
- Organize training courses for PDOTs on analysis and evaluation of policy and institutional issues, and socio-economic issues relating to rural transport sub-sector.

At District Level

- Train and improve capacity in the fields of surveying and collection of data on rural road/bridge inventory to facilitate the planning.
- Train and improve capacity for districts in making maps of rural transport network conditions.
- Support for districts in improvement of capacity on preparing investment plans and management of rural transport system maintenance.

At Commune Level

In general, commune staffs in charge of transport at the moment have no professional knowledge related to transport and frequently changed after each election term, work in an environment lacking of essential equipment and facilities so they often record documents by writing in notebooks. Therefore, human resource training is critical at this level in order to prevent the lack of human resource, strengthen professional capacity and capacity in rural transport planning, particularly:

- Training on basic computer skills for commune staff in charge of rural transport.
- Providing guidance on and developing simple forms for collection of rural road/bridge inventory and current condition data.
- Training commune staffs in charge of rural transport on methods of preparing rural transport plans in commune area (provided by PDOTs and DPCs).
- Training on the importance and methods of preparing construction and maintenance plans for road system in the commune area.

5.3.3 Improvement of Capacity for RT Training Establishments in the Nationwide

As mentioned above, rural transport plays a very important role and its importance is increasing with 60-75% of beneficiaries. Training needs are significant in order to strengthen the management capacity in rural transport for province, district and commune levels in the short term as well as in longer terms. According to our assessment, however, the existing system including transport related universities, research institutions, advisory departments of the Ministry of Transport, management schools, colleges and vocational schools is able to provide rural transport training services in the nationwide. Therefore, the following issues need to be taken into consideration in order to ensure the improvement of rural transport training capacity in terms of quality and quantity.

- In order to facilitate the arrangement of rural transport training units in a sufficient and efficient manner, it is necessary to promptly make statistic forms and conduct surveys on rural transport training needs at all levels from central to grassroots by sending survey forms to all levels. This can be done through the technical assistance of RT 3 project or the Department of Personnel under the Ministry of Transport.
- Integrate MoT's institutions and training schools with sufficient capacity in training of rural transport staffs into the system of rural transport training units. These include Research Institute for Transportation Science and Technology, Transport Development and Strategy Institute, Transport Civil Servants Training College, Transport College No. I and No. II, Transport Technical Profession Schools in the North, Center and Mekong Delta. Make the most of physical and technical facilities of these training units and take advantages of financial resources from donors' technical assistances through rural transport projects (i.e. the TA under RTP3 and projects under SEACAP in the short term) as well as from the government to upgrade physical and technical facilities for training units and improve teachers/trainers.
- Take advantages of and earmark a percentage of budgets for the updating and improvement of available manuals of rural transport projects in order to further provide rural transport training courses for staff at province, district and commune levels, e.g: training on the maintenance through the RT Maintenance Manual for Commune Level (transferred from the TA of RT2), Maitenance Training Modules under the South East Asia Community Access Program (i.e. SEACAP 10 and 11); training on the updating of rural transport maps through SEACAP 12 (ROADNAM); training on the appropriateness of gravel surface in rural transport; selecting appropriate road surfaces through road surface testing project and gravel surface assesment (SEACAP 1 and 4). In order to inherit, improve and strengthen the benefits of TAs under previous rural transport projects and studies/projects under SEACAP, it is necessary to make use of the coming TA under the RT 3 (including a training component). Furthermore, the training to strengthen rural transport management capacity should be highlighted as a critical issue in the management and development of properties valued billions of USD, therefore the Government (central and local level) needs to earmark a percentage of the budgets to allocate for the training with an aim to develop a qualified management staff in the field of rural transport from central to grassroots level in medium and long terms.

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

1. Current Status - Starting Points of the Strategy

The rural transport network serves for more than 75% of the existing population and 60% of the future population in 2020. The rural transport network consists of 200.000 km of roads (excluding village roads) and an intensive waterway network. If this valuable asset (up to billions of USD) is not properly maintained and operated, it will be a waste of resources and badly affect many beneficiaries.

Within the past 5 years, the GoV., with great supports from the donors have concentrated in poverty alleviation including the rural road development. Development of rural transport, construction of roads for the poor and in underprivileged residential areas due to strict topography, remote and isolation, are given the highest priorities by the Government in its Comprehensive Poverty Reduction and Growth Strategy – a strategy received high appreciation and positive supports from donors. Achievements in hunger elimination and poverty reduction including rural transport development are very impressive. Vietnam has completed its millennium targets 10 years earlier than expected, in which the process of hunger elimination and poverty reduction in the country has highly appreciated by donors. Fund resource for rural transport in the period of 2000-2004 is 2.7 times higher than that in the period of 1996-2000. The number of communes without access road to the centre has greatly reduced to 290 communes by the end of 2005. The quality of roads has also been improved with over 19% of roads paved with bitumen, bitumen penetration or cement concrete (compared to 3-5 % in the previous period). Earth roads have been reduced to less than 45%.

However, there are still many problems in the development of rural transport in the past years, particularly:

(1) Many Existing Problems in the Rural Transport Network

As for Roads

- Rural transport network is relatively dense in the nationwide. However, there are still 290 communes without basic access roads to commune centers and many communes can be accessed only in dry season (excluding 46 communes in Mekong River Delta). These are remote, isolated and underprivileged communes.
- Technical standards are inappropriate, loading capacity of bridges/culverts is still low, and unsatisfying increased demands of large vehicle types as well as people's movements.
- The percentage of rural roads paved with bitumen and cement concrete is still low, i.e. 19% compared to the targeted 30% in CPRGS (reaching more than 60% of the set

target). All weather roads constitute about 50% of rural roads compared to the targeted 70%. Earth roads still occupy a high percentage (about 1/2), as a result of difficulties in local people's travel in rainy season.

- Quality of roads is low (in road formation, surface, and drainage system - culverts, ditches); most of roads are narrow, unsatisfying more and more increased demands of the society.
- On the existing rural road system, bridges and culverts are inadequate, the number of weak and temporary bridges is still high, which cannot accommodate medium and heavy vehicles.
- There are significant differences in the accessibility among different regions: in terms of quantity (length, coverage density) and in quality (satisfaction of technical requirements, rate of hardness road surface.., linkage to higher class networks), the region with best accessibility, i.e the best serving ability, is Red River Delta and the second is North East South whereas the regions with worst accessibility, i.e the least serving ability, include North West, North East, Central Highlands and North Central Coast. Even though Mekong Delta has highest number of communes without access roads (172 communes), excluding 46 island communes, the movement and transport in these communes are partly facilitated by an extensive system of inland waterways.

As for Inland Waterways

- *Channels:* There is almost no survey on the width and depth of rural inland waterways. Channels are left in natural conditions due to no fund for maintenance. Most of rural inland waterway sections cannot accommodate river-crafts at night time due to a lack of navigation aids. Linkage to the general transport network is not so convenient.
- *Ports and berths:* equipment and facilities at ports/berths are insufficient, out of date or non-synchronous.
- *Boat/vessel fleet:* Most of boats/ships are old and obsolete. Due to a budget restraint, boats are not regularly maintained nor repaired, resulting in a frequency of incidents. Loading capacity is low. Non-driving license steersmen of most of river-crafts, particularly small boats often cause accidents.
- *Management and institution:* appropriate and transparent policies are still insufficient. Inland waterway sub-sector has not been rationally invested, especially in Red River Delta. Legal framework for the operation of transport and ports is inadequate, for example, in field of issuing transport license, boat/ship registration, port operation license and etc. Local people are key persons involving in rural transport but they operate in a small scale. Funding mechanisms for rural I.W infrastructure should be adequately improved.

(2) Problems in Maintenance of Rural Transport

Although there have been a lot of efforts over the last five years from the Government (through MOT, MOF), donors, PDOTs, districts and communes to raise the awareness of maintenance and to establish maintenance culture, there are still many problems in the maintenance of rural transport. The fund for development of rural transport has increased significantly (2.7 times higher than that in the period of 1996-2000), however, the fund for maintenance is very low, with about 4-5 % of the total. This shows a great unbalance between development and maintenance investments. Local authorities of all levels still favour new construction and upgrading rather than maintenance. This leads to a vicious circle that if maintenance is not done timely and properly, the condition will become worse and need to be rehabilitated. *The rural transport development is therefore unsustainable.*

(3) Some Problems in Rural Transport Organisation and Management, and in Rural Transport Development Policies

- Organisation structure and management capacity of rural transport need to be improved especially at district and commune levels.
- The policy "The Government and the people are working together" has contributed a lot to the rural transport development but it needs to be reviewed to suit for the next stages.

2. Issues to be Addressed in this Strategy Study

In order to meet socio-economic development requirements in the coming period, with an aim to strongly shift economic structures, industrialize and modernize rural agriculture, and reduce the gaps among areas and regions in the whole country, the ***overall objectives of the Rural Transport Development Strategy*** are to develop the local transport infrastructure *meeting the demand of rural-agricultural industrialisation and modernisation*, and link local transport networks to the national transport network in order to create an integrated and seamless transport network with transport costs affordable for majority of population. Rural transport needs to be truly considered as an important component in the road system and a motivation for the development of agricultural economy and small industry for majority of the people and be sufficiently invested and maintained according to technical requirements and ensured with a long term operation effectiveness.

Maintain, improve and upgrade the existing transport network according to rural road technical standards to satisfy rural agricultural mechanized requirements; focus on opening roads to commune centers and commune clusters without access roads, to agricultural and forestry farms and to rural industrial concentrated zones; continue to build inter-commune/ inter-hamlet road system to form a seamless rural transport network linked to communes and hamlets; link rural transport networks to the national transport network; gradually build viaduct and flyover systems at intersections of expressways, national roads and local roads; ensure transport safety.

- As for the Mekong Delta, combine between road transport and inland waterway transport, between transport and irrigation to form a road system to communes and concentrated residential areas, meet requirements of living together with floods; and make the most of inland waterway transport advantages.
- Improve and construct the bridge and culvert system in accordance to required technical standards.
- Develop small size motorised vehicles to be appropriate with current conditions of the rural transport infrastructure. Provide reasonable transport costs according to people's living standards.

Based on the forecasts of socio-economic development, potential goods and passenger transport demands, and growth rates of means of transport, detailed objectives on the development of rural transport infrastructure are as follows:

By 2010

All communes have basic access roads to the centre and to the centre of commune clusters. 30% of rural roads are paved with cement concrete; 70% of rural roads are passable all the year round; and 80% of monkey bridges are removed in the Mekong Delta. In difficult terrains, small paths should be firstly opened for horse carts and then widened for 4-wheel motorised vehicles in order to give access to public facilities for the poor.

Gradually carry out maintenance activities under the sustainable development plan of rural transport, with an objective of reaching 65-70% of rural roads to be maintained by 2010.

By 2020

Continue to invest in sustainable development of the rural transport system. Synchronously upgrade and construct the rural transport system. Assure 50-60% of rural roads (district and commune roads) to be paved with bitumen or cement concrete, 100% of rural roads to be passable all the year round. Remove monkey bridges in Mekong Delta. 90-100% of rural roads to be maintained.

The Rural Transport Development Strategy has analysed functions and roles of the rural transport system in the national comprehensive strategy, and roles of each transport mode in the rural transport; and provide proposals on the base of strategies of 8 regions in the nationwide. In order to avoid wastes in investment, the Strategy has provided proposals in 3 following different areas:

- RT Development Strategy for underprivileged communes without access roads to the commune/commune cluster centre;
- RT Development Strategy for more developed areas; and
- RT Development Strategy for less developed areas.

The new content of this Strategy is the highlighting of the planned maintenance, proposals on revision of technical standards, and the use of local materials and labours, as well as on finalisation of rural transport mechanisms, policies and organization. Due to the imbalance between the demand for funding and the existing budget for the period of 2006-2010, a priority investment program has been proposed based on the list recommended by provinces and priority criteria set by the Consultant.

RECOMMENDATIONS

The recommendations focus on the following areas:

(1) The GoV should approve the Rural Transport Development Strategy as a guideline for future implementation steps. The Strategy should be updated every 5 years.

(2) On the base of the approved Strategy, each province should develop a plan for development and maintenance of rural transport to be submitted to the PPC and People's Council for approval. Districts are required to earmark a certain percentage in their allocated budgets the for planned maintenance of maintainable district roads. The province and its advisory agencies should support districts to formulate their 5 year plans/planning. Communes will prepare their 5 year plans and submit to district level.

(3) A coordination mechanism should be established among ministries and agencies, donors, and provinces in the field of rural transport development management.

(4) Consider and set up a forum on rural transport with the participation of all beneficiaries. Initial funds for this forum can be supported from the Government or donors. In the long term, this forum can be funded by the beneficiaries;

(5) Establish and regularly update rural transport database (including maps) and develop reporting system and information sharing culture for a better management, monitoring and assessment of the rural transport.

(6) Strengthen the management structure for rural transport and deliver training to enhance management capacity at all levels.

(7) A legal document like an inter-ministerial circular between MOT and MOF on maintenance and budget supported for maintenance should be issued.

(8) Increase the flexibility in allocating funds between rural transport construction and maintenance and this should be presented in the form of a legal document authorising local authorities to balance budgets between new construction and maintenance.

(9) Provide training on skills and procedures of preparing rural transport development plans for district and commune staffs. Introduce MOT's institutions and training schools in regions into the system of training establishments of rural transport specialists.

(10) Some of these recommendations should be implemented as a pilot in RT3.

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ANNEXES

Annex 1. SUMMARY OF FUND REQUIREMENTS FOR NEW CONSTRUCTION, UPGRADING AND IMPROVEMENT OF RURAL TRANSPORT IN THE PERIOD OF 2006-2010

No	Region	Total (km)	District roads				Commune roads				Total investment (mill, VND)
			Total (km)	Surface type	Road class	Cost (mill. VND)	Total Km	Surface type	Road class	Cost (mill. VND)	
1	Red River Delta	5,605	1,483	Bitumen, BC, CC	III,IV,V,VI,A,B	2,426,553	4,123	Bitumen seal, gravel, CC	A,B,V,VIĐB	2,026,480	4,453,033
2	North East	10,875	3,944	Bitumen seal, CC, gravel	V, VI	3,340,253	6,930	Bitumen seal, CC, earth	VI, A	2,290,505	5,630,758
3	North West	3,683		Bitumen seal, CC	V, VI			Bitumen seal, CC, gravel	VI, A, B		4,646,200
4	South Central Coast	4,011	1,373	Bitumen, gravel, CC	IV,V,VI	1,835,313	2,638	Bitumen, gravel, CC	V,VI,A,B	1,695,114	3,530,427
5	North Central Coast	8,034	3,309	Bitumen seal	IV, V	2,364,675	4,725	Bitumen seal, gravel	V, A	4,739,317	7,103,992
6	North East South	7,980	2,790	Bitumen, gravel	III, IV, V, VI	2,346,800	5,190	Bitumen, gravel, earth	IV, V, VI	2,587,090	4,933,890
7	Mekong River Delta	5,111	1,414	Bitumen seal, CC	III, IV, V, VI	1,453,107	3,697	Bitumen seal, CC, gravel	VI, A, B	4,359,320	5,812,427
8	Central Highland	4,108	1,729	Bitumen, gravel	VI, V	931,000	2,379	Bitumen, gravel	VI, A	1,238,200	2,169,200
	Total	49,407	16,042				29,682				38,279,927

Note: BC: Bitumen Concrete; CC: Cement Concrete.

Annex 2. SUMMARY OF FUND REQUIREMENTS FOR NEW CONSTRUCTION, UPGRADING AND IMPROVEMENT OF RURAL TRANSPORT IN THE PERIOD OF 2011-2020

No	Region	Total (km)	District roads				Commune roads				Total investment (mill. VND)
			Total (km)	Surface type	Road class	Cost (mill.VND)	Total Km	Surface type	Road class	Cost (mill.VND)	
1	Red River Delta	6,116	592	Bitumen, BC, CC	III,IV,V,VI,A,B	840,505	5,524	Bitumen seal, gravel, CC	A,B,V,VIĐB	3,334,065	4,174,571
2	North East	15,931	5,395	Bitumen seal, CC, gravel	V, VI	6,791,568	10,537	Bitumen seal, CC, earth	V,VI, A	4,248,889	11,040,457
3	North West	1,175		Bitumen seal, CC	V, VI			Bitumen seal, CC, gravel	VI, A, B		1,146,400
4	South Central Coast	5,467	1,309	Bitumen, gravel, CC	IV,V,VI	2,280,106	4,158	Bitumen, gravel, CC	V,VI,A	3,007,314	5,287,420
5	North Central Coast	12,831	4,734	Bitumen seal	IV, V	5,207,092	8,097	Bitumen seal, gravel	A, V	7,876,216	13,083,308
6	North East South	8,971	3,374	Bitumen, gravel	III, IV, V, VI	4,121,950	5,596	Bitumen, gravel, earth	IV, V, VI	4,710,950	8,832,900
7	Mekong River Delta	13,500	5,100	Bitumen seal, CC	III, IV, V, VI	2,649,630	8400	Bitumen seal, CC	VI, A, B	3,766,420	6,416,050
8	Central Highland	7,027	1,123	Bitumen, gravel	V, IV	1,123,000	5,904	Bitumen, gravel	VI, A	3,793,000	4,916,000
	Total	71,018	21,627				48,217				54,897,105

Annex 3. SUMMARY OF FUND REQUIREMENTS FOR NEW CONSTRUCTION, UPGRADING AND IMPROVEMENT OF RURAL TRANSPORT IN THE PERIOD OF 2006-2020

No.	Region	Total (km)	District roads				Commune roads				Total investment (mill.VND)
			Total (km)	Surface type	Road class	Cost (mill.VND)	Total km	Surface type	Road class	Cost (mill.VND)	
1	Red River Delta	11,721	2,074	Bitumen, BC, CC	III,IV,V,VI,A,B	3,267,058	9,647	Bitumen seal, gravel, CC	A,B,V,VI, ĐB	5,360,545	8,627,604
2	North East	26,806	9,339	Bitumen seal, CC, gravel	VI, V	10,131,821	17,467	Bitumen seal, CC, earth	V, VI, A	6,539,394	16,671,215
3	North West	4,858	0	Bitumen seal, CC		-	-	Bitumen seal, CC, gravel		-	5,792,600
4	South Central Coast	9,478	2,682	Bitumen, gravel, CC	IV,V,VI	4,115,419	6,796	Bitumen, gravel, CC	V,VI,A,B	4,702,428	8,817,846
5	North Central Coast	20,866	8,043	Bitumen seal	IV, V	7,571,767	12,823	Bitumen seal, gravel	A, V	12,615,533	20,187,300
6	North East South	16,950	6,164	Bitumen, gravel	III, IV, V, VI	6,468,750	10,786	Bitumen, gravel, earth	IV, V, VI	7,298,040	13,766,790
7	Mekong River Delta	18,611	6,514	Bitumen seal, CC	III, IV, V, VI	4,102,737	12,097	Bitumen seal, CC	VI, A, B	8,125,740	12,228,477
8	Central Highland	11,135	2,852	Bitumen, gravel	V, IV	2,054,000	8,283	Bitumen, gravel	VI	5,031,200	7,085,200
	Total	120,425	37,669			37,711,552	77,899			49,672,880	93,177,032

Annex 4. FUND ALLOCATION FOR NEW CONSTRUCTION, UPGRADING AND DEVELOPMENT OF RURAL TRANSPORT IN THE PERIOD OF 2006-2020

Unit: billion VND

No	Region	Total cost (2006 - 2020)	Investment of 2006-2010					Investment of 2011-2020				
			Cost	Central budget	Local budget	People's contribution	Annual average	Cost	Central budget	Local budget	People's contribution	Annual average
1	Red River Delta	8,628	4,453	485	2,954	1,013	891	4,175	168	2,339	1,667	417
2	North East	16,671	5,631	2,810	2,389	432	1,126	11,040	5,173	4,785	1,083	1,104
3	North West	5,793	4,646	2,950	1,556	139	929	1,146	728	384	34	115
4	South Central Coast	8,818	3,530	748	2,632	150	706	5,287	1,121	3,941	225	529
5	North Central Coast	20,187	7,104	2,344	3,197	1,563	1,421	13,083	3,271	5,887	3,925	1,308
6	North East South	13,767	4,934	493	3,454	987	987	8,833	883	6,183	1,767	883
7	Mekong River Delta	12,228	5,812	4,414	1,257	141	1,162	6,416	2,085	3,895	436	642
8	Central Highland	7,085	2,169	651	1,020	499	434	4,916	1,475	2,311	1,131	492
	Total	**93,177**	**38,280**	**14,897**	**18,458**	**4,925**	**7,656**	**54,897**	**14,904**	**29,725**	**10,268**	**5,490**
	Percentage		100%	38.9%	48.2%	12.9%		100%	27.1%	54.1%	18.7%	

Annex 5. FUND ALLOCATION FOR NEW CONSTRUCTION, UPGRADING AND MAINTENANCE OF RURAL TRANSPORT IN THE PERIOD OF 2006-2020

Unit: billion VND

No.	Region	Total cost (2006 - 2020)	Investment of 2006-2010					Investment of 2011-2020				
			Cost	Central budget	Local budget	People's contribution	Annual average	Cost	Central budget	Local budget	People's contribution	Annual average
1	Red River Delta	10,930	5,206	522	3,386	1,299	1,041	5,724	246	3,231	2,248	572
2	North East	18,077	6,193	3,086	2,623	483	1,239	11,885	5,481	5,254	1,149	1,188
3	North West	6,707	4,937	3,135	1,654	148	987	1,770	1,124	593	53	177
4	South Central Coast	9,401	3,646	773	2,717	155	729	5,755	1,220	4,290	245	576
5	North Central Coast	22,283	7,605	2,344	3,447	1,813	1,521	14,678	3,271	6,685	4,722	1,468
6	North East South	15,009	5,264	526	3,685	1,053	1,053	9,745	974	6,821	1,949	974
7	Mekong River Delta	13,974	6,606	4,876	1,555	175	1,321	7,368	2,404	4,466	498	737
8	Central Highland	7,745	2,326	698	1,093	535	465	5,419	1,626	2,547	1,246	542
	Total	**104,126**	**41,782**	**15,960**	**20,161**	**5,661**	**8,356**	**62,343**	**16,346**	**33,886**	**12,111**	**6,234**
	Percentage		100%	38.2%	48.3%	13.5%		100%	26.2%	54.4%	19.4%	

Annex 6. PERCENTAGE OF FUND ALLOCATION FOR NEW CONSTRUCTION, UPGRADING AND DEVELOPMENT OF RURAL TRANSPORT IN THE PERIOD OF 2006-2020

No.	Region	Percentage of fund in 2006-2010				Percentage of fund in 2011-2020			
		Total	Central budget	Local budget	People's contribution	Total	Central budget	Local budget	People's contribution
1	Red River Delta	100%	10.9%	66.3%	22.8%	100%	4.0%	56.0%	39.9%
2	North East	100%	49.9%	42.4%	7.7%	100%	46.9%	43.3%	9.8%
3	North West	100%	63.5%	33.5%	3.0%	100%	63.5%	33.5%	3.0%
4	South Central Coast	100%	21.2%	74.5%	4.3%	100%	21.2%	74.5%	4.3%
5	North Central Coast	100%	33.0%	45.0%	22.0%	100%	25.0%	45.0%	30.0%
6	North East South	100%	10.0%	70.0%	20.0%	100%	10.0%	70.0%	20.0%
7	Mekong River Delta	100%	75.9%	21.6%	2.4%	100%	32.5%	60.7%	6.8%
8	Central Highland	100%	30.0%	47.0%	23.0%	100%	30.0%	47.0%	23.0%
	Average	**100%**	**38.9%**	**48.2%**	**12.9%**	**100%**	**27.1%**	**54.1%**	**18.7%**

Annex 7. PERCENTAGE OF FUND ALLOCATION FOR NEW CONSTRUCTION, UPGRADING AND MAINTENANCE OF RURAL TRANSPORT IN THE PERIOD OF 2006-2020

No.	Region	Percentage of fund in 2006-2010				Percentage of fund in 2011-2020			
		Cost (mil.VND)	Central budget	Local budget	People's contribution	Cost (mil.VND)	Central budget	Local budget	People's contribution
1	Red River Delta	100%	10.0%	65.0%	24.9%	100%	4.3%	56.4%	39.3%
2	North East	100%	49.8%	42.4%	7.8%	100%	46.1%	44.2%	9.7%
3	North West	100%	63.5%	33.5%	3.0%	100%	63.5%	33.5%	3.0%
4	South Central Coast	100%	21.2%	74.5%	4.3%	100%	21.2%	74.5%	4.3%
5	North Central Coast	100%	30.8%	45.3%	23.8%	100%	22.3%	45.5%	32.2%
6	North East South	100%	10.0%	70.0%	20.0%	100%	10.0%	70.0%	20.0%
7	Mekong River Delta	100%	73.8%	23.5%	2.6%	100%	32.6%	60.6%	6.8%
8	Central Highland	100%	30.0%	47.0%	23.0%	100%	30.0%	47.0%	23.0%
	Average	**100%**	**38.2%**	**48.3%**	**13.5%**	**100%**	**26.2%**	**54.4%**	**19.4%**

Annex 8. FUND ALLOCATION FOR NEW CONSTRUCTION, UPGRADING AND DEVELOPMENT OF RURAL TRANSPORT IN THE PERIOD OF 2006-2020 (BY REGION, PROVINCE, 1,000 PEOPLE, AND COMPARED TO GDP OF ALL REGIONS)

No.	Region	No. of provinces	Population (1000 pax)	Period of 2006-2010				Period of 2011-2020			
				Average per region/year (billion VND)	Average per province/year (billion VND)	Average per 1,000 persons (billion VND)	Compared to GDP	Average per region/year (billion VND)	Average per province/year (billion VND)	Average per 1,000 persons (billion VND)	Compared to GDP
1	Red River Delta	11	17,836	890.6	80.96	0.05	0.22%	417.5	38.0	0.02	0.05%
2	North East	11	9,245	1,126.2	102.38	0.12	1.76%	1,104.0	100.4	0.12	0.73%
3	North West	4	2,525	929.2	232.31	0.37	4.84%	114.6	28.7	0.05	0.17%
4	South Central Coast	6	6,982	706.1	117.68	0.10	0.69%	528.7	88.1	0.08	0.25%
5	North Central Coast	6	10,505	1,420.8	236.80	0.14	1.27%	1,308.3	218.1	0.12	0.57%
6	North East South	8	13,190	986.8	123.35	0.07	0.16%	883.3	110.4	0.07	0.07%
7	Mekong River Delta	13	17,076	1,162.5	89.42	0.07	0.48%	641.6	49.4	0.04	0.13%
8	Central Highland	5	4,674	433.8	86.77	0.09	0.82%	491.6	98.3	0.11	0.37%
	Nationwide	**64**	**82,032**	**7,656.0**	**119.62**	**0.09**	**0.48%**	**5,489.7**	**85.8**	**0.07**	**0.17%**

Annex 9. FUND ALLOCATION FOR NEW CONSTRUCTION, UPGRADING AND MAINTENANCE OF RURAL TRANSPORT IN THE PERIOD OF 2006-2020 (BY REGION, PROVINCE, 1,000 PEOPLE, AND COMPARED TO GDP OF ALL REGIONS)

No.	Region	No. of provinces	Population (1000 pax)	Period of 2006-2010				Period of 2011-2020			
				Average per region /year (billion VND)	Average per province/year (billion VND)	Average per 1,000 persons (billion VND)	Compared to GDP	Average per region/year (billion VND)	Average per province/ year (bil. VND)	Average per 1,000 persons (billion VND)	Compared to GDP
1	**Red River Delta**	11	17,836	1,041.3	94.66	0.06	0.26%	572.4	52.0	0.03	0.07%
2	**North East**	11	9,245	1,238.5	112.59	0.13	1.94%	1,188.5	108.0	0.13	0.78%
3	**North West**	4	2,525	987.5	246.87	0.39	5.14%	177.0	44.2	0.07	0.27%
4	**South Central Coast**	6	6,982	729.1	121.52	0.10	0.71%	575.5	95.9	0.08	0.27%
5	**North Central Coast**	6	10,505	1,520.9	253.49	0.14	1.36%	1,467.8	244.6	0.14	0.64%
6	**North East South**	8	13,190	1,052.8	131.60	0.08	0.17%	974.5	121.8	0.07	0.08%
7	**Mekong River Delta**	13	17,076	1,321.2	101.63	0.08	0.54%	736.8	56.7	0.04	0.15%
8	**Central Highland**	5	4,674	465.2	93.04	0.10	0.88%	541.9	108.4	0.12	0.41%
	Nationwide	**64**	**82,032**	**8,356.5**	**130.57**	**0.10**	**0.52%**	**6,234.3**	**97.4**	**0.08**	**0.19%**

ANNEX 10. ESTIMATED MAINTENANCE VOLUMES BY 2010 AND 2020

Region	Annually Average Maintenance Needs (km/year)					
	Period of 2006 – 2010			Period of 2011 - 2020		
	Total	District Roads	Commune Roads	Total	District Roads	Commune Roads
North East	22,004	7,716	14,288	27,885	8,715	19,171
North West	6,932.6		6,932.6	7,422		7,422
Central Highland	6,221	2,917	3,304	10,353	2,917	7,436
North Central Coast	17,462	7,416	10,047	23,516	8,828	14,688
South Central Coast	6,336	2,617	3,720	10,898	4,146	6,752
Red River Delta	21,085	3,937	17,148	21,085	3,937	17,148
North East South	14,015	6,271	7,744	16,537	7,587	8,950
Mekong River Delta	20,762	5,882	14,880	36,911	9,812	27,099
Whole Country	114,818			154,606		

ANNEX 11. FUND REQUIREMENTS FOR MAINTENANCE OF DISTRICT AND COMMUNE ROADS BY 2010 AND 2020

Unit: billion VND

No.	Region	Total cost (mil.VND)	2006 - 2010			2010 - 2020		
			Cost (mil.VND)	Annual average	Average per prov/year	Cost (mil.VND)	Annual average	Average per prov/year
1	Red River Delta	2,302.8	753.1	150.6	13.7	1,549.7	155.0	14.1
2	North East	1,405.9	561.8	112.4	10.2	844.1	84.4	7.7
3	North West	914.6	291.2	58.2	14.6	623.4	62.3	15.6
4	South Central Coast	582.9	115.2	23.0	3.8	467.7	46.8	7.8
5	North Central Coast	2,095.5	500.7	100.1	16.7	1,594.8	159.5	26.6
6	North East South	1,241.9	330.1	66.0	8.3	911.8	91.2	11.4
7	Mekong River Delta	1,745.6	793.4	158.7	12.2	952.1	95.2	7.3
8	Central Highland	659.5	156.8	31.4	6.3	502.7	50.3	10.1
	Total	10,948.6	3,502.2	700.4	10.9	7,446.4	744.6	11.6

ANNEX 12. EVALUATION OF MAINTAINABLE CONDITIONS OF DISTRICT AND COMMUNE ROADS IN THE PERIOD OF 2006-2020

Region		Period of 2006 - 2010			Period of 2011 - 2020		
		Total	District	Commune	Total	District	Commune
North East	Sub-total length (Km)	31,373	8,715	22,658	31,373	8,715	22,658
	Maintainable Km	22,004	7,716	14,288	27,885	8,715	19,171
	Maintain %	70.1	88.5	63.1	88.9	100.0	84.6
North West	Sub-total length (Km)	9,777			9,887		
	Maintainable Km	6,933			7,422		
	Maintain %	70.9			75.1		
Central Highland	Sub-total length (Km)	10,353	2,917	7,436	9,140	2,917	7,436
	Maintainable Km	6,221	2,917	3,304	10,353	2,917	7,436
	Maintain %	60.1	100.0	44.4	113.3	100.0	100.0
North Central Coast	Sub-total length (Km)	31,855	9,286	22,569	31,855	9,286	22,569
	Maintainable Km	17,462	7,416	10,047	23,516	8,828	14,688
	Maintain %	54.8	79.9	44.5	73.8	95.1	65.1
South Central Coast	Sub-total length (Km)	13,597	4,092	9,505	13,994	4,242	9,752
	Maintainable Km	6,336	2,617	3,720	10,898	4,146	6,752
	Maintain %	46.6	63.9	39.1	77.9	97.7	69.2
Red River Delta	Sub-total length (Km)	21,085	3,937	17,148	21,085	3,937	17,148
	Maintainable Km	21,085	3,937	17,148	21,085	3,937	17,148
	Maintain %	100	100	100	100	100	100
North East South	Sub-total length (Km)	14,015	6,271	7,744	16,537	7,587	8,950
	Maintainable Km	14,015	6,271	7,744	16,537	7,587	8,950
	Maintain %	100	100	100	100	100	100
Mekong River Delta	Sub-total length (Km)	41,528	8,409	33,119	44,775	10,902	33,873
	Maintainable Km	20,762	5,882	14,880	36,911	9,812	27,099
	Maintain %	50.0	69.9	44.9	82.4	90.0	80.0
Whole Country	Total length (Km)	173,583			178,645		
	Maintainable Km	114,818			154,606		
	Maintain %	66.1			86.5		

Option 2:

Annex 1. SUMMARY OF FUND REQUIREMENTS FOR NEW CONSTRUCTION, UPGRADING AND IMPROVEMENT OF RURAL TRANSPORT IN THE PERIOD OF 2006-2010

No	Region	Total (km)	District roads				Commune roads				Total investment (mill, VND)
			Total (km)	Surface type	Road class	Cost (mill. VND)	Total Km	Surface type	Road class	Cost (mill. VND)	
1	Red River Delta	5,605	1,483	Bitumen, BC, CC	III,IV,V,VI,A,B	2,426,553	4,123	Bitumen seal, gravel, CC	A,B,V,VIĐB	2,026,480	4,453,033
2	North East	10,875	3,944	Bitumen seal, CC, gravel	V, VI	3,340,253	6,930	Bitumen seal, CC, earth	VI, A	2,290,505	5,630,758
3	North West	3,683		Bitumen seal, CC	V, VI			Bitumen seal, CC, gravel	VI, A, B		4,646,200
4	South Central Coast	4,011	1,373	Bitumen, gravel, CC	IV,V,VI	1,835,313	2,638	Bitumen, gravel, CC	V,VI,A,B	1,695,114	3,530,427
5	North Central Coast	8,034	3,309	Bitumen seal	IV, V	2,364,675	4,725	Bitumen seal, gravel	V, A	4,739,317	7,103,992
6	North East South	7,980	2,790	Bitumen, gravel	III, IV, V, VI	2,346,800	5,190	Bitumen, gravel, earth	IV, V, VI	2,587,090	4,933,890
7	Mekong River Delta	5,111	1,414	Bitumen seal, CC	III, IV, V, VI	1,453,107	3,697	Bitumen seal, CC, gravel	VI, A, B	4,359,320	5,812,427
8	Central Highland	4,108	1,729	Bitumen, gravel	VI, V	931,000	2,379	Bitumen, gravel	VI, A	1,238,200	2,169,200
	Total	49,407	16,042				29,682				38,279,927

Note: BC: Bitumen Concrete; CC: Cement Concrete.

Option 2:

Annex 2. SUMMARY OF FUND REQUIREMENTS FOR NEW CONSTRUCTION, UPGRADING AND IMPROVEMENT OF RURAL TRANSPORT IN THE PERIOD OF 2011-2020

No	Region	Total (km)	District roads				Commune roads				Total investment (mill. VND)
			Total (km)	Surface type	Road class	Cost (mill.VND)	Total Km	Surface type	Road class	Cost (mill.VND)	
1	Red River Delta	6,116	592	Bitumen, BC, CC	III,IV,V,VI,A,B	840,505	5,524	Bitumen seal, gravel, CC	A,B,V,VIĐB	3,334,065	4,174,571
2	North East	15,931	5,395	Bitumen seal, CC, gravel	V, VI	6,791,568	10,537	Bitumen seal, CC, earth	V,VI, A	4,248,889	11,040,457
3	North West	1,175		Bitumen seal, CC	V, VI			Bitumen seal, CC, gravel	VI, A, B		1,146,400
4	South Central Coast	5,467	1,309	Bitumen, gravel, CC	IV,V,VI	2,280,106	4,158	Bitumen, gravel, CC	V,VI,A	3,007,314	5,287,420
5	North Central Coast	12,831	4,734	Bitumen seal	IV, V	5,207,092	8,097	Bitumen seal, gravel	A, V	7,876,216	13,083,308
6	North East South	8,971	3,374	Bitumen, gravel	III, IV, V, VI	4,121,950	5,596	Bitumen, gravel, earth	IV, V, VI	4,710,950	8,832,900
7	Mekong River Delta	13,500	5,100	Bitumen seal, CC	III, IV, V, VI	2,649,630	8400	Bitumen seal, CC	VI, A, B	3,766,420	6,416,050
8	Central Highland	7,027	1,123	Bitumen, gravel	V, IV	1,123,000	5,904	Bitumen, gravel	VI, A	3,793,000	4,916,000
	Total	71,018	21,627				48,217				54,897,105

Option 2:

Annex 3. SUMMARY OF FUND REQUIREMENTS FOR NEW CONSTRUCTION, UPGRADING AND IMPROVEMENT OF RURAL TRANSPORT IN THE PERIOD OF 2006-2020

No.	Region	Total (km)	District roads				Commune roads				Total investment (mill.VND)
			Total (km)	Surface type	Road class	Cost (mill.VND)	Total km	Surface type	Road class	Cost (mill.VND)	
1	Red River Delta	11,721	2,074	Bitumen, BC, CC	III,IV,V,VI,A,B	3,267,058	9,647	Bitumen seal, gravel, CC	A,B,V,VI, ĐB	5,360,545	8,627,604
2	North East	26,806	9,339	Bitumen seal, CC, gravel	VI, V	10,131,821	17,467	Bitumen seal, CC, earth	V, VI, A	6,539,394	16,671,215
3	North West	4,858	0	Bitumen seal, CC		-	-	Bitumen seal, CC, gravel		-	5,792,600
4	South Central Coast	9,478	2,682	Bitumen, gravel, CC	IV,V,VI	4,115,419	6,796	Bitumen, gravel, CC	V,VI,A,B	4,702,428	8,817,846
5	North Central Coast	20,866	8,043	Bitumen seal	IV, V	7,571,767	12,823	Bitumen seal, gravel	A, V	12,615,533	20,187,300
6	North East South	16,950	6,164	Bitumen, gravel	III, IV, V, VI	6,468,750	10,786	Bitumen, gravel, earth	IV, V, VI	7,298,040	13,766,790
7	Mekong River Delta	18,611	6,514	Bitumen seal, CC	III, IV, V, VI	4,102,737	12,097	Bitumen seal, CC	VI, A, B	8,125,740	12,228,477
8	Central Highland	11,135	2,852	Bitumen, gravel	V, IV	2,054,000	8,283	Bitumen, gravel	VI	5,031,200	7,085,200
	Total	120,425	37,669			37,711,552	77,899			49,672,880	93,177,032

Option 2:

Annex 4. FUND ALLOCATION FOR NEW CONSTRUCTION, UPGRADING AND DEVELOPMENT OF RURAL TRANSPORT IN THE PERIOD OF 2006-2020

Unit: billion VND

No	Region	Total cost (2006 - 2020)	Investment of 2006-2010				Investment of 2011-2020			
			Cost	Central budget	Local budget	Annual average	Cost	Central budget	Local budget	Annual average
1	North East	16,671	5,631	792	4,839	1,126	11,040	0	11,040	1,104
2	North West	5,793	4,647	719	3,928	929	1,146	0	1,146	115
3	Red River Delta	8,628	4,453	648	3,805	891	4,175	0	4,175	417
4	North Central Coast	20,187	7,104	1,723	5,381	1,421	13,083	0	13,083	1,308
5	South Central Coast	8,818	3,530	954	2,576	706	5,288	0	5,288	529
6	Central Highland	7,085	2,169	517	1,652	434	4,916	0	4,916	492
7	North East South	13,767	4,934	22	4,912	987	8,833	0	8,833	883
8	Mekong River Delta	12,228	5,812	1,830	3,983	1,162	6,416	0	6,416	642
	Nationwide	93,177	38,280	7,204	31,076	7,656	54,897	0	54,897	5,490
	Percentage			19%	81%			0%	100%	

Option 2:

Annex 5. FUND ALLOCATION FOR NEW CONSTRUCTION, UPGRADING AND MAINTENANCE OF RURAL TRANSPORT IN THE PERIOD OF 2006-2020

Unit: billion VND

No.	Region	Total cost (2006 - 2020)	Investment of 2006-2010				Investment of 2011-2020			
			Cost	Central budget	Local budget	Annual average	Cost	Central budget	Local budget	Annual average
1	North East	18,077	6,193	792	5,401	1,239	11,884	0	11,884	1,188
2	North West	6,707	4,937	719	4,218	987	1,770	0	1,770	177
3	Red River Delta	10,930	5,206	648	4,558	1,041	5,724	0	5,724	572
4	North Central Coast	22,283	7,605	1,723	5,882	1,521	14,678	0	14,678	1,468
5	South Central Coast	9,401	3,646	954	2,692	729	5,755	0	5,755	576
6	Central Highland	7,745	2,326	517	1,809	465	5,419	0	5,419	542
7	North East South	15,009	5,264	22	5,242	1,053	9,745	0	9,745	975
8	Mekong River Delta	13,974	6,606	1,830	4,776	1,321	7,368	0	7,368	737
	Nationwide	104,126	41,783	7,204	34,579	8,357	62,343	0	62,343	6,234
	Percentage			17%	83%			0%	100%	

Option 2:

Annex 6. PERCENTAGE OF FUND ALLOCATION FOR NEW CONSTRUCTION, UPGRADING AND DEVELOPMENT OF RURAL TRANSPORT IN THE PERIOD OF 2006-2020

No.	Region	Percentage of fund in 2006-2010			Percentage of fund in 2011-2020		
		Total	Central budget	Local budget	Total	Central budget	Local budget
1	North East	100%	14.1%	85.9%	100%	0%	100%
2	North West	100%	15.5%	84.5%	100%	0%	100%
3	Red River Delta	100%	14.6%	85.4%	100%	0%	100%
4	North Central Coast	100%	24.3%	75.7%	100%	0%	100%
5	South Central Coast	100%	27.0%	73.0%	100%	0%	100%
6	Central Highland	100%	23.8%	76.2%	100%	0%	100%
7	North East South	100%	0.4%	99.6%	100%	0%	100%
8	Mekong River Delta	100%	31.5%	68.5%	100%	0%	100%
	Nationwide	**100%**	**18.8%**	**81.2%**	**100%**	**0%**	**100%**

Option 2:

Annex 7. PERCENTAGE OF FUND ALLOCATION FOR NEW CONSTRUCTION, UPGRADING AND MAINTENANCE OF RURAL TRANSPORT IN THE PERIOD OF 2006-2020

No.	Region	Percentage of fund in 2006-2010			Percentage of fund in 2011-2020		
		Total	**Central budget**	**Local budget**	**Total**	**Central budget**	**Local budget**
1	North East	100%	12.8%	87.2%	100%	0%	100%
2	North West	100%	14.6%	85.4%	100%	0%	100%
3	Red River Delta	100%	12.4%	87.6%	100%	0%	100%
4	North Central Coast	100%	22.7%	77.3%	100%	0%	100%
5	South Central Coast	100%	26.2%	73.8%	100%	0%	100%
6	Central Highland	100%	22.2%	77.8%	100%	0%	100%
7	North East South	100%	0.4%	99.6%	100%	0%	100%
8	Mekong River Delta	100%	27.7%	72.3%	100%	0%	100%
	Nationwide	**100%**	**17.2%**	**82.8%**	**100%**	**0%**	**100%**

Option 2:

Annex 8. FUND ALLOCATION FOR NEW CONSTRUCTION, UPGRADING AND DEVELOPMENT OF RURAL TRANSPORT IN THE PERIOD OF 2006-2020 (BY REGION, PROVINCE, 1,000 PEOPLE, AND COMPARED TO GDP OF ALL REGIONS)

No.	Region	No. of provinces	Population (1000 pax)	Period of 2006-2010				Period of 2011-2020			
				Average per region/year (billion VND)	Average per province/year (billion VND)	Average per 1,000 persons (billion VND)	Compared to GDP	Average per region/year (billion VND)	Average per province/year (billion VND)	Average per 1,000 persons (billion VND)	Compared to GDP
1	Red River Delta	11	17,836	890.6	80.96	0.05	0.22%	417.5	38.0	0.02	0.05%
2	North East	11	9,245	1,126.2	102.38	0.12	1.76%	1,104.0	100.4	0.12	0.73%
3	North West	4	2,525	929.2	232.31	0.37	4.84%	114.6	28.7	0.05	0.17%
4	South Central Coast	6	6,982	706.1	117.68	0.10	0.69%	528.7	88.1	0.08	0.25%
5	North Central Coast	6	10,505	1,420.8	236.80	0.14	1.27%	1,308.3	218.1	0.12	0.57%
6	North East South	8	13,190	986.8	123.35	0.07	0.16%	883.3	110.4	0.07	0.07%
7	Mekong River Delta	13	17,076	1,162.5	89.42	0.07	0.48%	641.6	49.4	0.04	0.13%
8	Central Highland	5	4,674	433.8	86.77	0.09	0.82%	491.6	98.3	0.11	0.37%
	Nationwide	**64**	**82,032**	**7,656.0**	**119.62**	**0.09**	**0.48%**	**5,489.7**	**85.8**	**0.07**	**0.17%**

Option 2:

Annex 9. FUND ALLOCATION FOR NEW CONSTRUCTION, UPGRADING AND MAINTENANCE OF RURAL TRANSPORT IN THE PERIOD OF 2006-2020 (BY REGION, PROVINCE, 1,000 PEOPLE, AND COMPARED TO GDP OF ALL REGIONS)

No.	Region	No. of provinces	Population (1000 pax)	Period of 2006-2010				Period of 2011-2020			
				Average per region /year (billion VND)	Average per province/year (billion VND)	Average per 1,000 persons (billion VND)	Compared to GDP	Average per region/year (billion VND)	Average per province/ year (bil. VND)	Average per 1,000 persons (billion VND)	Compared to GDP
1	**Red River Delta**	11	17,836	1,041.3	94.66	0.06	0.26%	572.4	52.0	0.03	0.07%
2	**North East**	11	9,245	1,238.5	112.59	0.13	1.94%	1,188.5	108.0	0.13	0.78%
3	**North West**	4	2,525	987.5	246.87	0.39	5.14%	177.0	44.2	0.07	0.27%
4	**South Central Coast**	6	6,982	729.1	121.52	0.10	0.71%	575.5	95.9	0.08	0.27%
5	**North Central Coast**	6	10,505	1,520.9	253.49	0.14	1.36%	1,467.8	244.6	0.14	0.64%
6	**North East South**	8	13,190	1,052.8	131.60	0.08	0.17%	974.5	121.8	0.07	0.08%
7	**Mekong River Delta**	13	17,076	1,321.2	101.63	0.08	0.54%	736.8	56.7	0.04	0.15%
8	**Central Highland**	5	4,674	465.2	93.04	0.10	0.88%	541.9	108.4	0.12	0.41%
	Nationwide	**64**	**82,032**	**8,356.5**	**130.57**	**0.10**	**0.52%**	**6,234.3**	**97.4**	**0.08**	**0.19%**

ANNEX 13

TERMS OF REFERENCE (TOR) FOR

FORMULATION OF TRANSPORT DEVELOPMENT PLAN AT PROVINCIAL LEVEL

1. Background

In response to the Ministry of Transport's (MOT) requests, the Department for International Development (DFID) decided to finance a study on "Updating of the Rural Transport Development Strategy". The TOR of this Study was ratified by the Prime Minister. The MOT then selected the Project Management Unit 5 (PMU5) as the management agency, and Transport Development and Strategy Institute (TDSI) as implementation agency of this Study. The Study was commenced from mid May 2005 and the Final Report was also completed to be submitted to authorized agencies for approval. Since the rural transport is characterized by region, this Rural Transport Development Strategy has been formulated basing on rural transport development strategies of 8 regions in the nationwide, i.e. North-East, North-West, Red River Delta, North Central Coast, South Central Coast, Central Highlands, North East South and Mekong River Delta.

In order to enable the implementation of the abovementioned Strategy at provincial level, the Strategy has proposed that each province should formulate a provincial transport development plan to submit to authorized agencies for approval. This TOR states a general planning framework for the formulation of transport development plan at provincial level.

2. Objectives

A provincial transport development plan should satisfy following objectives:

(i) Setting up a transport development master plan by 2020 and orientation for the transport development in provincial area after 2020.

(ii) Proposing mechanisms, policies to carry out the master plan.

(iii) Enhancing capacity of district officials in formulation of rural transport plans/programs.

3. Scope of Work

3.1. Assessment of the Socioeconomic Development and Transport Development in Province Area in the past years

1) Reviewing of the Socioeconomic Development Plan in Province Area and the Implementation in the past years

- Geographical locations, natural features, provincial characteristics, area, population, situation on the development of agriculture, industry and services in province area.

- The implementation of socioeconomic development plan in province area in the past years.

2) Assessment of Transport Development Plans in Province Area until 2010 (if any) and the Implementation in the past years

- Assessment of transport infrastructure conditions, particularly: railway system, inland waterways (central and local), maritime, roads (national, provincial and rural roads) in terms of quantity, quality and its ability to meet requirements on socioeconomic development in the province.
- Assessment of the organization of goods and passenger transport, and the capacity of transport system.
- Assessment of transport development policies of the central government in general and of the provincial goverment in particular, in the past years.

3) Advantages and Challenges in Transport Development

3.2. Formulation of Provincial Transport Development Master Plan until 2020 and Transport Development Orientation after 2020.

- The provincial socioeconomic development plans in the period of 2006-2010 and provincial socioeconomic development orientation after 2010.
- Provincial transport infrastructure development planning (construction and maintenance).
- Goods and passenger transport development planning.
- Estimation of funds required for the implementation of plans by period, evaluation of the allocation ability of capital sources, and identifying of prioritization aspects.
- Transport development policies.
- Evaluation of environmental, social impacts and land use.

3.3. Formulation of Mechanisms for Implementing Provincial Transport Plans.

- Mechanism on mobilization of funds for transport development.
- Mechanism on transportat management and maintenance.
- Improvement of district and commune staffs' capacity in the management of transport development.
- Other mechanisms.

4. Required Funds for the Formulation of plan Provincial Transport Development Plans.

- VND 600 – 750 million, equivalent to ~ USD 40-50.000 (depending on the scale of each province).

5. Implementation Duration: 8- 10 months.