

MINISTRY OF PUBLIC WORKS AND TRANSPORT
LAO PEOPLE'S DEMOCRATIC REPUBLIC

JAPAN INTERNATIONAL
COOPERATION AGENCY

THE STUDY
OF
MASTER PLAN
ON COMPREHENSIVE URBAN TRANSPORT
IN VIENTIANE
IN LAO PDR

FINAL REPORT
MAIN REPORT

SEPTEMBER 2008

KATAHIRA & ENGINEERS INTERNATIONAL

PREFACE

In response to a request from the Government of Lao People's Democratic Republic, the Government of Japan decided to conduct “The Study of Master Plan on Comprehensive Transport in Vientiane” and entrusted to the study to the Japan International Cooperation Agency (JICA).

JICA selected and dispatched a study team headed by Mr. Tatsuyuki Sakurai of Katahira and Engineers International between April, 2007 and August, 2008.

The team held discussions with the officials concerned of the Government of Lao People's Democratic Republic and conducted field surveys at the study area. Upon returning to Japan, the team conducted further studies and prepared this final report.

I hope that this report will contribute to the promotion of this project and to the enhancement of friendly relationship between our two countries.

Finally, I wish to express my sincere appreciation to the officials concerned of the Government of Lao People's Democratic Republic for their close cooperation extended to the study.

September, 2008

EIJI HASHIMOTO,
Deputy Vice President
Japan International Cooperation Agency

Mr. Eiji Hashimoto,
Deputy Vice President
Japan International Cooperation Agency

September 2008

Dear Sir,

Letter of Transmittal

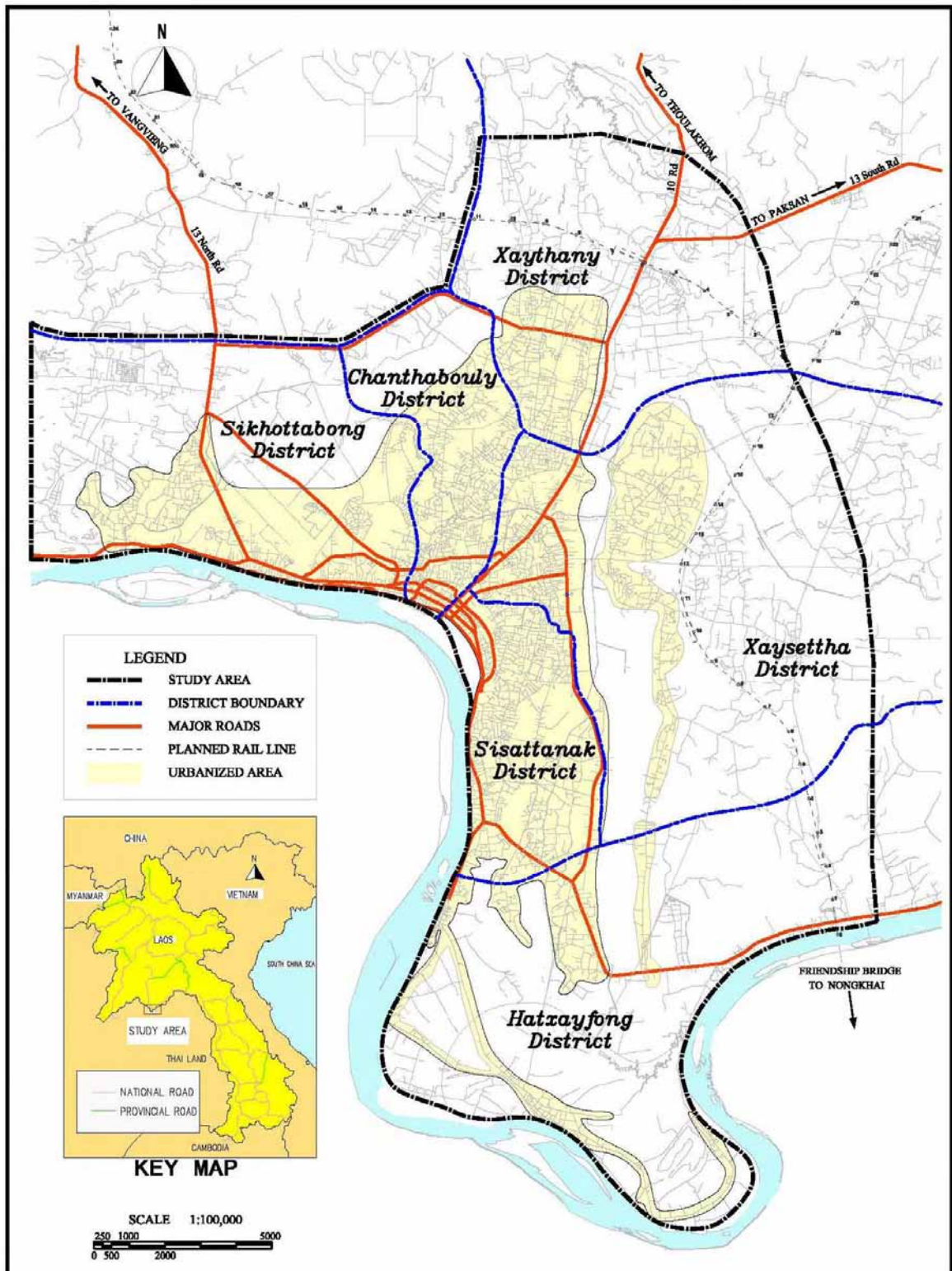
We are pleased to submit herewith the Final Report of the “The Study of Master Plan on Comprehensive Transport in Vientiane”. The report compiles the results of the Study and includes the advices and suggestions of the authorities concerned of the Government of Japan and your agency as well as the comments made by the Ministry of Public Works and Transport, Lao People’s Democratic Republic.

The report analyses the present and future conditions and demand of transport in Vientiane. It comprehensively covers the issues of transport including road, public transport, traffic management, traffic safety, institution, financing and environment. The report proposes ‘Completion of Road Network Scenario’ and ‘Bus Favored Scenario’ as the optimum scenario for comprehensive urban transport master plan with the target year in 2025. Also the report proposes 50 road projects, 5 bridge projects and 7 intersection improvement projects which are to be implemented in Short Term: 2009-2013, Medium Term: 2014-2018, and Long Term: 2019-2025.

We wish to take this opportunity to express our sincere gratitude to your agency and the Ministry of Foreign Affairs and the Ministry of Land, Infrastructure, Transport and Tourism. We also wish to express our deep gratitude to the Ministry of Public Works and Transport, as well as other Governmental Agencies concerned in Lao People’s Democratic Republic for the close cooperation and assistance extended to us during the Study. We hope this report will contribute to the development of the Lao People’s Democratic Republic.

Very truly yours,

Tatsuyuki Sakurai
Team Leader,
The Study of Master Plan on
Comprehensive Transport in Vientiane, Lao PDR



LOCATION MAP

The Study of Master Plan on Comprehensive Urban Transport in Vientiane

FINAL REPORT

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ABBREVIATIONS

| | |
|--------|--|
| AC | Asphalt Concrete |
| ADB | Asian Development Bank |
| AFD | Agence Française de Développement |
| ATC | Area Traffic Control |
| B/C | Cost Benefit Ratio |
| BCI | Bus Capacity Improvement |
| BOOT | Build, Own, Operate and Transfer |
| BOT | Build-Operation and Transfer |
| BRT | Bus Rapid Transit |
| BST | Bituminous Surface Treatment |
| CBD | Central Business District |
| CBS | Central Bus Station |
| CCTV | Closed Circuit Television |
| CDM | Clean Development Mechanism |
| CDR | Crude Death Rate |
| CEC | Company Experienced Cost |
| CPC | Committee for Planning and Cooperation |
| CPI | Consumer Price Index |
| CPI | Committee for Planning and Investment |
| DANIDA | Danish International Development Agency |
| DCO | Office of Chief of District |
| DCTPC | Department of Communication, Transport, Post and Construction of Vientiane Capital |
| DHUP | Department of Housing and Urban Planning |
| CMD | Office of Mayor of the City |
| DOE | Department of Education of Vientiane Capital |
| DOF | Department of Finance |
| DOL | Department of Land |
| DOR | Department of Roads |
| DOT | Department of Transport |
| DOV | Department of Aviation |
| DPACS | Department of Public Administration Transport, Posts, and Construction |
| DPRA | Development Project Responsible Agency |
| DRB | Department of Road and Bridge |
| DTP | Department of Telecom and Post |
| ECC | Environmental Compliance Certificate |
| EIA | Environmental Impact Assessment |
| EIRR | Economic Internal Rate of Return |
| EMDPs | Ethnic Minority Development Plans |
| EMP | Environmental Management Plan |
| EPL | Environmental Protection Law |
| ER | Employed persons by sector on Residence base |
| ESD | Environmental and Social Division |
| EST | Environmentally Sustainable Transport |
| EU | European Union |
| EW | Employed persons by sector on Working place base |
| FDI | Foreign Direct Investment |
| FIRR | Financial Internal Rate of Return |

| | |
|---------|--|
| FS | Feasibility Study |
| GDP | Gross Domestic Product |
| GEF | Global Environment Facility |
| GMS | Greater Mekong Sub-region |
| GNI | Gross National Income |
| GOJ | Government of Japan |
| GOL | Government of the Lao People's Democratic Republic |
| GPS | Global Positioning System |
| GRDP | Gross Regional Domestic Product |
| GVA | Gross Value Added |
| ICOR | Incremental Capital – Output Ratio |
| IEE | Initial Environment Examination |
| I/M | Inspection and Maintenance |
| IMF | International Monetary Fund |
| IRR | Inner Ring Road |
| ISA | Initial Social Assessment |
| IUCN | International Union for Conservation of Nature and Natural Resources |
| JBIC | Japan Bank for International Cooperation |
| JETRO | Japan External Trade Organization |
| JFPR | Japan Fund for Poverty Reduction |
| JICA | Japan International Cooperation Agency |
| JOPI | Johannesburg Plan of Implementation |
| LACRs | Land Acquisition and Compensation Reports |
| LAL | Law on Local Administration |
| Lao PDR | Lao People's Democratic Republic |
| LDCs | Least Development Countries |
| LECS | Lao Expenditure and Consumption Survey |
| LOS | Level of Service |
| LTP | Land Titling Project |
| LRT | Light Rail Transit |
| MAD | Mean Absolute Difference |
| MCTPC | Ministry of Communication, Transport, Post and Construction |
| MDG | Millennium Developments Goals |
| MIH | Ministry of Industry and Handicraft |
| MOF | Ministry of Finance |
| MOFA | Ministry of Foreign Affairs |
| MOH | Ministry of Health |
| MOS | Ministry of Security |
| MPS | Ministry of Interior/ Public Security |
| MPWT | Ministry of Public Works and Transport |
| MRT | Mass Rapid Transit |
| NBCA | National Biodiversity Conservation Area |
| NBS | Northern Bus Station |
| NEDA | National Economic and Development Authority |
| NGO | Non Government Organization |
| NMT | Non-Motorized Transport |
| NORAD | Norwegian Agency for Development Cooperation |
| NPV | Net Present Value |
| NRSC | National Road Safety Committee |
| NSC | National Statistical Center |

| | |
|--------|--|
| NSEDP | National Socio-Economic Development Plan |
| NUOL | National University of Laos |
| OCTPC | Office of Communicational Transport, Post and Construction |
| OD | Origin and Destination |
| ODA | Official Development Assistance |
| O&M | Operation and Management |
| ORR | Outer Ring Road |
| PCU | Passenger Car Unit |
| PGO | Office of Governor of Province |
| PIP | Public Investment Program |
| PMO | Prime Minister's Office |
| PMU | Project Management Unit |
| PPA | Participatory Poverty Assessment |
| PPP | Public Private Partnership |
| PTMC | Public Transport Management Committee |
| RA | Railway Authority |
| RC | Reinforced Concrete |
| RMP | Road Management Program |
| ROW | Right-of-Way |
| RP | Resettlement Plans |
| SA | Social Assessment |
| SBS | South & International Bus Station |
| SED | Social and Environmental Division |
| SIDA | Swedish International Development Agency |
| SRT | State Railway of Thailand |
| STEA | Science, Technology and Environment Agency |
| TDM | Transportation Demand Management |
| TFR | Total Fertility Rate |
| TOR | Term of Reference |
| TPD | Traffic Police Division |
| TTC | Travel Time Cost |
| UDAA | Urban Development Administration Authority |
| UN | United Nations |
| UNCRD | United Nations Centre for Regional Development |
| UNCTAD | United Nations Conference on Trade and Development |
| UNDP | United Nations Development Programme |
| URI | Urban Research Institute |
| VCO | Office of Chief of Village |
| VMO | Vientiane Mayor's Office |
| VOC | Vehicle Operating Cost |
| VRDLS | Vehicle Registration and Driver Licensing System |
| VSDP | Sixth Five Years Social Economic Development Plan of Vientiane |
| VSTEO | Vientiane Science, Technology and Environmental Office |
| VTC | Vientiane Transport Committee |
| VUDAA | Vientiane Urban Development and Administration Authority |
| VUISP | Vientiane Urban Infrastructure and Services Project |
| VWU | Vientiane Woman's Union |
| WASA | Water Supply Authority |
| WREA | Water Resource and Environment Agency |
| WWF | Worldwide Fund for nature |

PART I

INTRODUCTION

CHAPTER 1

THE STUDY

CHAPTER 1 THE STUDY

1.1 BACKGROUND

The Lao People's Democratic Republic is well on the way to motorization resulting from the rapid economic growth since the 1990s. Especially in Vientiane with a population of 693,000, the vehicle registration increased vastly from about 80,000 in 1990 to about 220,000 in 2004. This trend is expected to hold in the future. The traffic in Vientiane is characterized by high occupancy of two-wheelers accounting for about 65 %. Furthermore, four-wheel vehicles also increased recently. As a result, the main trunk roads in Vientiane are operated with mixed traffic of various types of vehicles.

However, due to underdeveloped transport infrastructure, poor traffic management system and lack of public awareness of traffic safety, traffic accident rate and fatalities in Vientiane are high comparing to other cities.

Under such situation, the Government of the Lao People's Democratic Republic (GOL) requested a technical cooperation from the Government of Japan (GOJ) for the conduct of "the Study on Comprehensive Traffic Safety Plan in Vientiane". In response to the request, GOJ decided to conduct the study and to entrust it to the Japan International Cooperation Agency (JICA), the official agency responsible for the implementation of the technical cooperation programs of GOJ. JICA dispatched the first preparatory study team to discuss the framework of the study in November 2004.

In the first preparatory study, GOL and the JICA first preparatory study team had a series of discussions and confirmed that the main subject of the study would be modified from traffic safety planning to urban transport development planning, namely "the Study of Master Plan on Comprehensive Urban Transport in Vientiane" (the Study). It is because traffic safety could not be secured without comprehensive measures based on urban transport development strategy and traffic safety should be considered based on urban transport development plan. The Scope of Work (S/W) for the Study was agreed upon between the Ministry of Communication, Transport, Post and Construction (MCTPC) and JICA in February 2005.

After the first preparatory study, there have been several projects and programs that could influence the circumstances of transport in Vientiane. For instance, "National Road Safety Action Plan 2005-2010" is being implemented by cooperation of Asian Development Bank (ADB). This plan covers the development of traffic accident data collection and analysis system, traffic education and enlightenment activities, and strengthening of institutional and organizational system including assistance in development of rules and regulation. Furthermore,

some traffic facilities have been improved mainly through donors' assistances such as improvement of the Vientiane No.1 Road by Japan and installation of traffic signals at main intersections by France.

However, no urban transport development plan has yet been formulated for Vientiane. As for urban development plan, Vientiane has "Urban Development Plan Map 2000-2010" which is coming to its target year of 2010 and expected to be updated.

In the said background, JICA dispatched the second preparatory study team in December 2006 to study the current situation of urban transport and traffic in Vientiane before the commencement of the Study. The team had a series of meetings with the officials of the MCTPC and other organizations concerned, and both sides agreed to revise the scope of work.

In accordance with the agreement stated in the above Minutes of Meeting, this Study is to identify the points to be improved in urban transport sector in both hard and soft aspects; to propose a practical plan for improvement; and thus to formulate a comprehensive urban transport master plan for Vientiane with a target year of 2025 as a component of the city planning.

The Study principally covers the following five districts: (1) Chanthabuly, (2) Hadxayfong, (3) Sikhottabong, (4) Sisattanak, and (5) Xaysetha. Future urbanized areas may possibly be expanded beyond the said five districts, such as urbanization along arterial national roads and planned new town. In such case, these neighboring areas outside the five districts will be included in the Study Area.

1.2 OBJECTIVES OF THE STUDY

The objectives of the Study are:

- To formulation a master plan on comprehensive urban transport in Vientiane,
- To prepare an implementation plan of the master plan,
- To conduct pre-feasibility studies, and
- To pursue technology transfer to the counterpart personnel in the course of the Study.

1.3 ORGANIZATION OF THE STUDY

The Study has been carried out by **the Study Team** organized by JICA in partnership with MPWT which is reorganized form MCTPC on November 2007 and other organizations concerned.

The Steering Committee which was established by GOL to ensure the smooth conduct of the Study and to review and oversee the progress of the Study, consisting of the following members:

| | | |
|------------------------------|-------------------------|-------------|
| 1. Mr. Bounchanh Sinthavong | Vice Mayer of Vientiane | Chairperson |
| 2. Mr. Bouaphet Sayasane | DDG of DOT, MPWT | Member |
| 3. Mr. Pothong Ngonphachanh | DDG of DOR, MPWT | Member |
| 4. Mr. Thenkham Thongbonh | DDG of DHUP, MPWT | Member |
| 5. Mr. Ketkeo Syhalath | Vice President of VUDAA | Member |
| 6. Mr. Keophilavanh Aphayath | Director of URI | Member |
| 7. Mr. Someneuk Chandara | Director of TPD, MIPS | Member |
| 8. Mr. Khampheng Saysouly | DD of DCTPC, Vientiane | Member |

Note: **MPWT**: Ministry of Public Works and Transport, **VUDAA**: Vientiane Urban Development and Administration Authority, **URI**: Urban Research Institute, **MPS**: Ministry of Interior / Public Security, **DOT**: Department of Transport, **DOR**: Department of Roads, **DHUP**: Department of Housing and Urban Planning, **TPD**: Traffic Police Division, **DCTPC**: Department of Communication, Transport, Post and Construction of Vientiane, **DDG**: Deputy Director General, **DD**: Deputy Director

The Counterpart Team was formed by GOL to collaborate with the Study Team in carrying out the Study. The Counterpart Team is composed of the following relevant Departments of MCTPC and other organizations concerned.

| | | |
|------------------------------|-------|-------------------------------|
| 1. Dr. Bounta Onnavong | DOT | Project Coordinator |
| 2. Mr. Vilayphanh Sayavong | DOT | Assistant Project Coordinator |
| 3. Mr. Khamphai Souvatdy | DCTPC | Assistant Project Coordinator |
| 4. Mr. Virachith Douangchanh | DHUP | Member |
| 5. Mr. Khampet Phongratsasy | VUDAA | Member |

The JICA Study Team is composed of the following experts:

| | |
|--------------------------|---|
| 1. Mr. Kunihiko SAWANO | Team Leader/Implementing Organization and System (from April to July 10, 2007) |
| 1. Mr. Tatsuyuki SAKURAI | Team Leader/Implementing Organization and System (from July 11, 2007) |
| 2. Mr. Iwane MIZUNO | Urban Development/Land Use Plan |
| 3. Dr. Shingo GOSE | Deputy Team Leader/Transport Plan/Transport Facility Plan |
| 4. Mr. Keiichi MURAKAMI | Road Development Plan |

| | |
|---------------------------|--|
| 5. Mr. Hidekatsu FUJIWARA | Road Design/Cost Estimate |
| 6. Mr. Toshinori TODA | Deputy Team Leader/Public Transport Plan |
| 7. Mr. Ryuichi UENO | Traffic Survey/Transport Demand Forecast |
| 8. Mr. Yasuo NABESHIMA | Traffic Management Plan |
| 9. Mr. Hiroo TAKEDA | Economic and Financial Analysis |
| 10. Mr. Yuji HATAKEYAMA | Environmental and Social Considerations |

The organization of the Study is shown in Figure 1.3-1.

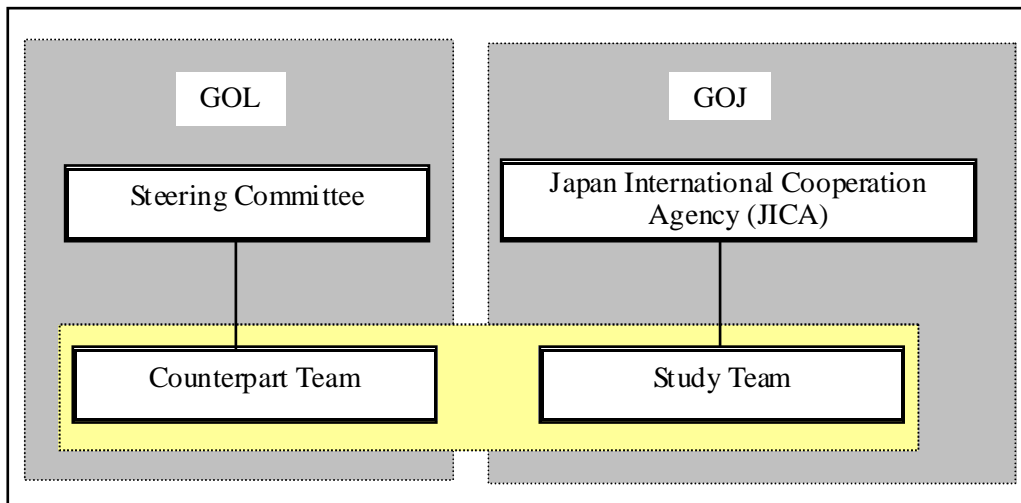


Figure 1.3-1 Organization Chart

1.4 STUDY FRAMEWORK

Technology transfer was pursued throughout the implementation of the Study through the hands-on, on-the-job training on the day-to-day works to the above listed Counterpart Team members. In addition, following workshops were held at the time of the presentation of the various reports to the Steering Committee.

The study flow of the whole work is illustrated schematically in Table 1.4-1, scheduled in the following stages:

- First Stage of Study in Japan : 0.2 month (April 2007)
- First Stage of Study in Lao PDR : 7.3 months (April 2007 to November 2007)
- Second Stage of Study in Japan : 0.5 month (December 2007)
- Second Stage of Study in Lao PDR : 3.0 months (December 2007 to March 2008)
- Third Stage of Study in Lao PDR : 2.5 months (May 2008 to July 2008)
- Third Stage of Study in Japan : 0.2 month (July 2008)

Work items in each stage are as follows:

- **First Stage of Study in Japan**
 - (1) Pre-Study in Japan
- **First Stage of Study in Lao PDR**
 - (2) Presentation and Discussion of Inception Report
 - (3) Establishment of Study Organization
 - (4) Analysis of Current Transport Conditions and Identification of Transport Problems and Issues
 - (5) Preparation, Presentation and Discussion of Progress Report
 - (6) Formulation of Urban Development Scenario
 - (7) Transport Demand Forecast
- **Second Stage of Study in Japan**
 - (8) Preparation of Interim Report

- **Second Stage of Study in Lao PDR**
 - (9) Presentation and Discussion of Interim Report
 - (10) Formulation of Urban Transport Master Plan
 - (11) Formulation of Implementation Plan and Short-Term Action Plan
- **Third Stage of Study in Lao PDR**
 - (12) Pre-Feasibility Study of Selected Projects
 - (13) Conclusion and Recommendations
 - (14) Preparation, Presentation and Discussion of Draft Final Report
- **Third Stage of Study in Japan**
 - (15) Preparation and Submission of Final Report

In the course of the Study, the following workshops and stakeholder meetings was held:

- First Workshop : 10 August 2007
- First Stakeholder Meeting : 15 August 2007
- Second Workshop : 15 January 2008
- Third Workshop : 13 March 2008
- Fourth Workshop : 10 July 2008
- Second Stakeholder Meeting : 16 July 2008

PART II

PRESENT SITUATION

CHAPTER 2

PROFILE OF THE STUDY AREA

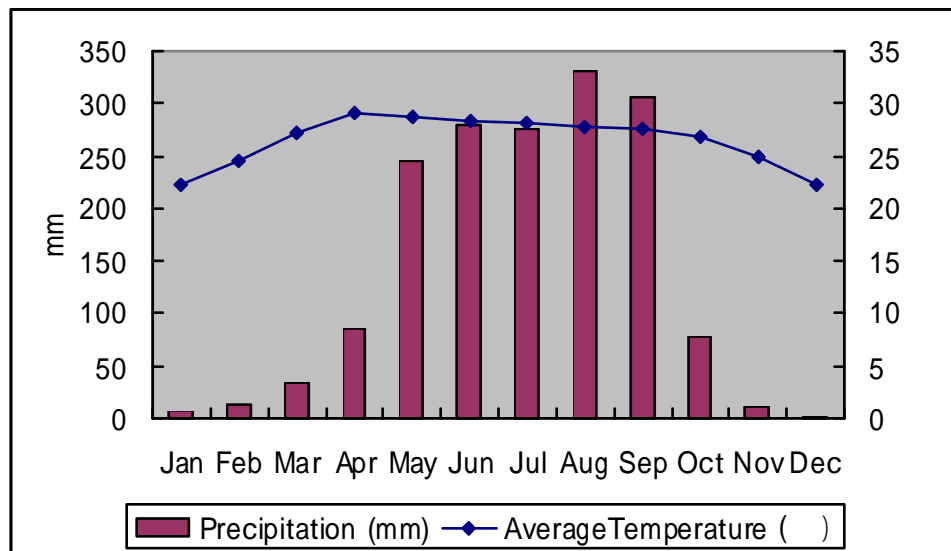
CHAPTER 2 PROFILE OF THE STUDY AREA

2.1 PHYSICAL PROFILE

The Lao People's Democratic Republic (Lao PDR or Laos) is a landlocked country bordered in the north by China and Myanmar, in the east by Vietnam, in the south by Cambodia, and in the west by Thailand. The capital city of Lao PDR is Vientiane located on a plain just northeast of the Mekong River, which is the major economic centre of Laos. The area of the whole nation is 236,800 km².

2.1.1 Meteorology

Vientiane is located in the southwest part of Lao PDR. The climate of the city is categorized as tropical monsoon characterized by two seasons, the dry and rainy seasons. In the dry season, usually from November until March, the average temperature is 24.2 °C, and rain rarely falls. In the rainy season, usually from April until October, the average temperature is 28.0 °C and more than 90 % of the annual precipitation falls in this season. The average annual precipitation is 1670 mm (Figure 2.1-1).



Source: Department of Meteorology and Hydrology, Ministry of Agriculture and Forestry, 2006

Figure 2.1-1 Meteorology in Vientiane

2.1.2 Topography

The entire land area of Lao PDR is 236,800 km², of which 80 % of the area is mountainous and 20 %, plain area extending along the Mekong River and its tributaries. The cultivated land area is 9,860 km², or 4 % of the entire land area. The ratio of paddy fields to the total cultivated land

area is 75 %. The northern area of the country is mountainous with an average elevation of 1,000 to 1,500 m above sea level, and the central and southern mountainous areas have an average elevation of 600 to 1,000 m above sea level.

Vientiane Capital City is situated on an alluvial plain extending along the left bank of Mekong River east to west. The administrative area of Vientiane is about 3,920 km² and the ground elevation ranges from 160 m to 170 m above sea level. The area designated for urbanization extends along the left bank of Mekong River and occupies an area of 210 km². The urban area of Vientiane is an old city area with a dense population, and is located between the Mekong River and a hinterland of swamps and ponds.

2.1.3 Geology

The geological features of the capital city area are talus, terrace, and alluvial deposits from the Mesozoic Cretaceous Period. Alluvial deposits are mostly unconsolidated clay, transported by the Mekong River flooding. The urban area is covered with alluvial soil, but the area further from the river is mostly covered with laterite.

2.1.4 Hydrography

Around 80% of the entire land area lies within the Mekong Basin. The remaining 20% drains through Vietnam directly to the South China Sea. Besides the major tributaries of the Mekong, there are hundreds of small streams, most of which are torrential during the rainy season and have a gentle or no flow during the dry season. Table 2.1-1 shows Water Level and Discharge of the Mekong in Vientiane (1960-2001).

Table 2.1-1 Water Level and Discharge of the Mekong in Vientiane (1960-2001)

| | Water Level | Discharge |
|----------------|--|--|
| Annual maximum | 6.67 m - 12.71 m (10.68 m in average) | 7,500 m ³ /s- 22,900 m ³ /s (16,000 m ³ /s in average) |
| Annual minimum | 0.28 m - 0.93 m (0.43 m in average) | 598 m ³ /s-1,220 m ³ /s (1,000 m ³ /s in average) |

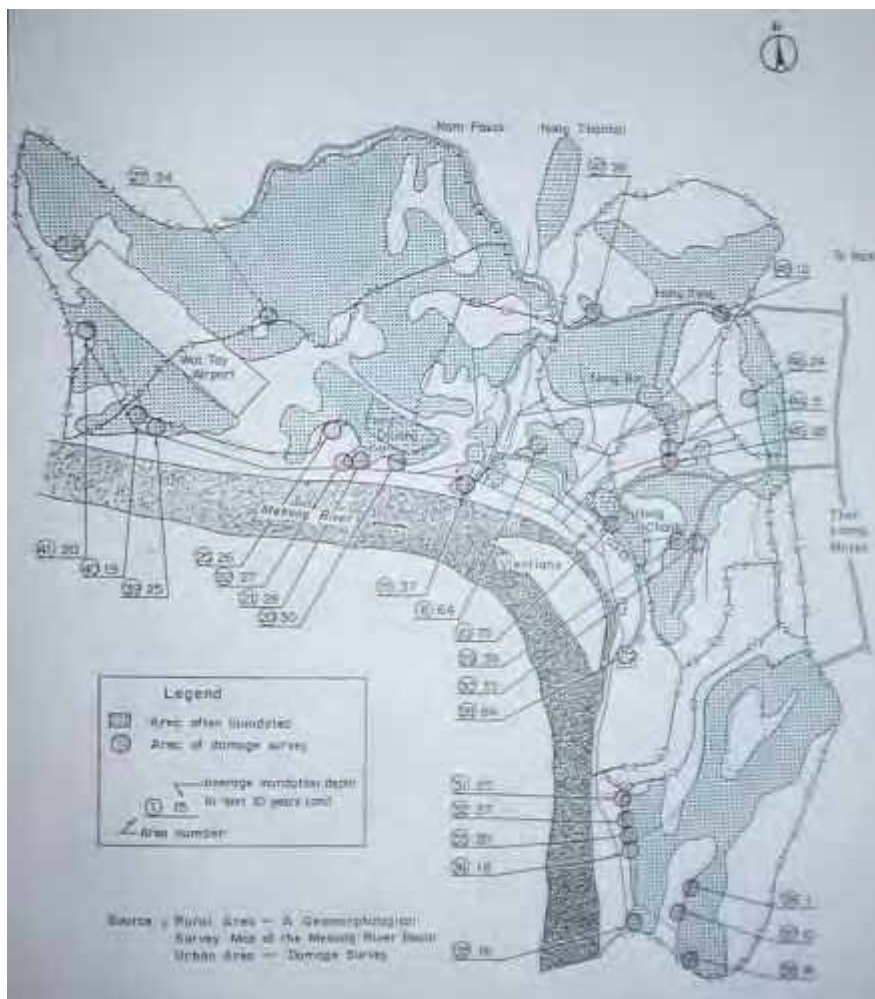
Source: Study on Mekong Riverbank Protection around Vientiane Municipality, JICA, 2004

The urban area of Vientiane is located between the Mekong River and a hinterland of swamps and ponds. The wastewater from individual households in Vientiane is discharged into open drains along the roads and into the natural wetlands in and around the city. Vientiane capital city (as the largest city) contains almost 1,500 km² of permanent and seasonal water bodies, floodplains, swamps and marshes. The wetland areas supply a wide range of economically valuable goods and services, including fishery products, farming and natural resource collection activities, and flood attenuation, maintenance of water quality and supplies, and treatment of domestic, agricultural and industrial wastes.

Thatluang wastewater management project built a system of stabilization ponds at Thatluang Marsh designed to serve an estimated population of 44,590 for 2005 with BOD5 discharge of 45g/capita/day assuming 50% of the pollutant load would reach the treatment plant.

According to the Feasibility Study on Improvement of Drainage System in Vientiane (March 1999, JICA);

Inundation occurs frequently in the Study area. A heavy storm of about 10 year return period occurred on May 14, 1998 with the rainfall of 162 mm. It brought an extensive inundation in the Study area. According to the results of the inundation survey conducted by the study team, the average depth is estimated to be about 60cm all over the survey area. The inundation areas to be caused by a 10-year storm are estimated on the basis of Geomorphological Survey Map of the Mekong basin and the field surveys which were conducted during the Study. The inundation area is assumed to be 2,288 ha for the 10-year inundation as shown in Figure 2.1-2.



Source: Feasibility Study on Improvement of Drainage System in Vientiane (March 1999, JICA)

Figure 2.1-2 Estimated Inundation Area in Vientiane for 10 year storm

2.2 SOCIO-ECONOMIC CONDITION

2.2.1 Demography

(1) Total Population

The population censuses have been undertaken by GOL three (3) times; 1985, 1995 and 2005. Population changes from 1995 to 2005 in Lao PDR, Vientiane and the Study Area are shown in Table 2.2-1.

The national population increased from 4,575,000 in 1995 to 5,622,000 in 2005 at an annual average rate of 2.08%. Population growth of Vientiane was from 524,000 to 692,000 at a rate of 2.81% during the same intercensal period of ten years.

Within Vientiane, the Study Area's population is 422,426 in 2005 accounting for 60% of the whole Capital. The annual average population growth rate during the ten-year period was 2.46%, 0.35 percent lower than the Capital average. On the other hand, the Outer Zones registered a growth rate of 3.40%, which means the recent population growth in Vientiane is occurring outside the Study Area.

Table 2.2-1 Population Changes from 1995 to 2005 in Lao PDR, Vientiane and Study Area

| Administrative Unit | Population | | Annual Ave. Growth Rate |
|---------------------|------------|-----------|-------------------------|
| | 1995 | 2005 | 1995-05 (%) |
| Lao PDR | 4,574,849 | 5,621,982 | 2.08 |
| Vientiane | 524,107 | 691,721 | 2.81 |
| Study Area | 331,401 | 422,426 | 2.46 |
| Outer Zones | 192,706 | 269,295 | 3.40 |

Source: NSC

(2) Natural Increase and Migration

In the absence of significant migration in and out of the country, intercensal population increase becomes the same as the natural increase, or the difference between births and deaths during the period. According to the National Statistics Center (NSC), the numbers of births and deaths during the past ten (10) years are estimated at 1,775,000 and 590,000, respectively. The difference of 1,185,000 can be considered as the natural increase during the period, at an annual average rate of 2.3%. The natural increase of 1,185,000 is 138,000 larger than the intercensal national population difference of 1,047,000. The difference between these two figures (1,047,000-1,185,000=-138,000) could be net-migration (exited) from Laos during the ten years (see Table 2.2-2).

Table 2.2-2 Natural Population Increase and Net Migration of Lao PDR, 1995-2005

| Census Year | Census Population | Intercensal Increase | | Estimated Number of Births, Deaths and Natural Increase during Intercensal Period | | | Estimated Net Migration ('000) |
|-------------|-------------------|------------------------|------------------------|---|---------------|-------------------------|--------------------------------|
| | | Absolute Number ('000) | Annual Growth Rate (%) | Births ('000) | Deaths ('000) | Natural Increase ('000) | |
| 1985 | 3,584,000 | | | | | | |
| 1995 | 4,575,000 | 991 | 2.47 | | | | |
| 2005 | 5,622,000 | 1,047 | 2.08 | 1,775 | 590 | 1,185 | -138 |

Source: NSC

External migration is recorded if people have moved in (back) from other countries about 7,000 persons enumerated in the 2005 census were staying in foreign countries at the time of the 1995 Census. The majority (about 75%) were Lao citizens who had moved back to Laos during the intercensal period. The Vietnamese constituted the other main group (about 16%). However, people who have emigrated were not enumerated. NSC estimated external net-migration for the intercensal period using the 1995 and 2005 censuses as well as current estimates of fertility and mortality. The estimated net-migration was approximately -15,000 net-migrants per year during the intercensal period. Net-migration for males and females is of the same magnitude, about 7,500 persons per year.

Table 2.2-3 shows the estimated total fertility rate (TFR) and crude death rate (CDR) by province for 2005. TFR means the number of births a woman gives during her reproductive age, 15-49 years of age. The national average TFR is estimated at 4.5 for 2005. But there are considerable differences between provinces. Vientiane is close to the level of reproduction (generally TFR of 2.1 is considered as at the level of reproduction) whereas Huaphanh and Xaysomboon SR have TFR levels of 6.4.

The average CDR, number of deaths per 1,000 persons, for the country is estimated at 9.8. For CDR by province, the lowest 6.2 is in Vientiane and the highest 14.9 in Oudomxay. As observed above, Vientiane is demographically characterized with the smallest births as well as the smallest deaths.

Table 2.2-3 Total Fertility Rate and Crude death Rate by Province; 2005

| Province | TFR | CDR |
|--------------------|------------|------------|
| Vientiane | 2.3 | 6.2 |
| Phongsaly | 5.1 | 12.6 |
| Luangnamtha | 4.8 | 13.3 |
| Oudomxay | 5.8 | 14.9 |
| Bokeo | 4.7 | 11.2 |
| Luangprabang | 5.3 | 11.3 |
| Huaphanh | 6.4 | 10.1 |
| Xayabury | 4.2 | 7.8 |
| Xiengkhuang | 5.9 | 10.0 |
| Vientiane Province | 4.4 | 7.7 |
| Borikhamxay | 5.2 | 9.2 |
| Khammuane | 5.0 | 11.0 |
| Savannakhet | 4.4 | 9.4 |
| Saravan | 5.5 | 11.0 |
| Sekong | 5.9 | 14.4 |
| Champasack | 4.2 | 9.0 |
| Attapeu | 5.2 | 14.4 |
| Xaysomboon SR | 6.4 | 9.9 |
| Lao PDR | 4.5 | 9.8 |

Source: NSC

Internal migration between provinces during the period of 1995-2005 is shown in Table 2.2-4. According to the table, Vientiane has taken the overwhelming part of the migration. Positive flows are also recorded for Borikhamxay, Vientiane Province, Luangnamtha, Bokeo, Sekong and Xaysomboon SR. The majority of the provinces have experienced negative net migration. Between the two censuses 72,800 people moved to Vientiane; about 54% from the northern provinces, 29% from Central Laos and 17% from the South. From Vientiane, 14,500 moved mostly to the central and southern parts of the country.

Table 2.2-4 Intercensal Migration between Provinces, 1995-2005

| Province | Moved from | Moved to | Net Movement |
|--------------------|----------------|----------------|---------------|
| Vientiane | 14,511 | 72,789 | 58,278 |
| Phongsaly | 11,655 | 715 | -10,940 |
| Luangnamtha | 3,444 | 6,347 | 2,903 |
| Oudomxay | 7,584 | 6,812 | -772 |
| Bokeo | 2,856 | 5,512 | 2,656 |
| Luangprabang | 26,584 | 9,228 | -17,356 |
| Huaphanh | 19,602 | 1,635 | -17,967 |
| Xayabury | 9,566 | 5,127 | -4,439 |
| Xiengkhuang | 20,040 | 3,898 | -16,142 |
| Vientiane Province | 19,837 | 25,550 | 5,713 |
| Borikhamxay | 6,762 | 12,771 | 6,009 |
| Khammuane | 5,837 | 5,052 | -785 |
| Savannakhet | 9,469 | 5,548 | -3,921 |
| Saravan | 4,441 | 4,322 | -119 |
| Sekong | 1,425 | 2,783 | 1,358 |
| Champasack | 11,773 | 7,423 | -4,350 |
| Attapeu | 2,031 | 1,230 | -801 |
| Xaysomboon SR | 4,034 | 4,709 | 675 |
| Lao PDR | 181,451 | 181,451 | |

Source: NSC

(3) Population in the Study Area by Traffic Zone

The Study Area includes the whole areas of Districts of Chanthabouly and Sisathanak, and inner parts of Districts of Sikhottabong, Xaysettha, Hatxayfong and Xaythny. A district is divided into villages. The Study Area has 234 villages, including one new village created during the intercensal period 1995-2005. Considering the size, district/village boundaries as well as the present land use and road network, the Study Area was divided into 36 Traffic Zones (henceforth referred to as Zone).

The Study Area covers 38,190 ha, occupying 9.7% of Vientiane (392,000 ha). The average population density of the Study Area is 11.1 persons/ha in 2005. Zones with higher population densities are Zone 202 (Sikhottabong 2) of 113.9 persons/ha, Zone 102 (Chanthabouly 2) of 89.2 persons/ha, Zone 101 (Chanthabouly 1) of 74.4 persons/ha, Zone 201 (Sikhottabong 1) of 64.0 persons/ha, Zone 303 (Xaysettha 3) of 62.7 persons/ha, Zone 103 (Chanthabouly 3) of 61.4 persons/ha and Zone 401 (Sisathanak 1) of 60.8 persons/ha. Populations of these zones have decreased or if increased the volumes have been very small. These Zones are located within the central part of the Capital forming the core of the old town.

Zone 403 (Sisathanak 3) has a low population density, but population has decreased drastically from 8,051 in 1995 to 4,657 in 2005, to a population density of 25 persons/ha.

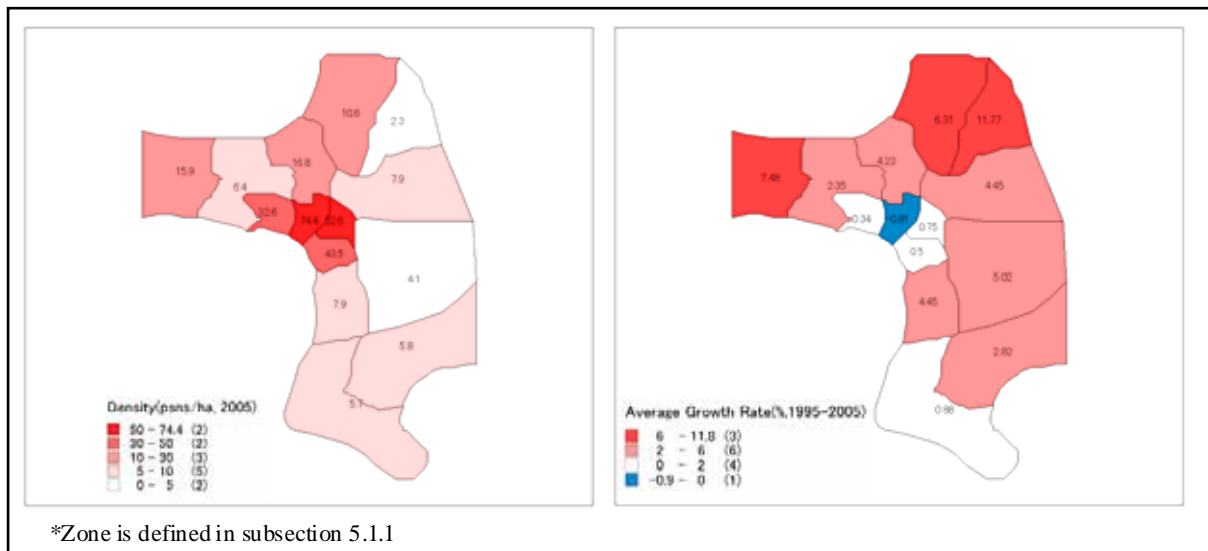


Figure 2.2-1 Population density (2005) and Growth rate (1995-2005) by medium zoning

Table 2.2-5 Area and Population Increase in the Study Area by Zone, 1995-2005

| No. | Traffic Zone | | Area (ha) | Population | | Average Growth Rate (%) | Density (psns/ha) |
|-------------------------|--------------|---------------|-----------------|----------------|----------------|-------------------------|-------------------|
| | Code | Name | | 1995 | 2005 | 1995-2005 | 2005 |
| 1 | 101 | Chanthabouly1 | 96.7 | 7,779 | 7,190 | -0.78 | 74.4 |
| 2 | 102 | Chanthabouly2 | 125.5 | 12,610 | 11,189 | -1.19 | 89.2 |
| 3 | 103 | Chanthabouly3 | 143.0 | 9,160 | 8,776 | -0.43 | 61.4 |
| 4 | 104 | Chanthabouly4 | 242.4 | 11,100 | 11,409 | 0.27 | 47.1 |
| 5 | 105 | Chanthabouly5 | 278.1 | 7,355 | 10,384 | 3.51 | 37.3 |
| 6 | 106 | Chanthabouly6 | 353.0 | 5,765 | 8,460 | 3.91 | 24.0 |
| 7 | 107 | Chanthabouly7 | 1,608.6 | 5,086 | 11,450 | 8.45 | 7.1 |
| 8 | 201 | Sikhottabong1 | 134.3 | 10,289 | 8,600 | -1.78 | 64.0 |
| 9 | 202 | Sikhottabong2 | 101.9 | 11,101 | 11,604 | 0.44 | 113.9 |
| 10 | 203 | Sikhottabong3 | 668.8 | 7,122 | 9,264 | 2.66 | 13.9 |
| 11 | 204 | Sikhottabong4 | 742.6 | 12,004 | 13,535 | 1.21 | 18.2 |
| 12 | 205 | Sikhottabong5 | 2,389.8 | 4,275 | 6,575 | 4.40 | 2.8 |
| 13 | 206 | Sikhottabong6 | 471.3 | 7,375 | 12,194 | 5.16 | 25.9 |
| 14 | 207 | Sikhottabong7 | 658.5 | 7,671 | 13,232 | 5.60 | 20.1 |
| 15 | 208 | Sikhottabong8 | 1,871.6 | 12,203 | 22,199 | 6.17 | 11.9 |
| 16 | 301 | Xaysettha1 | 310.0 | 17,318 | 18,182 | 0.49 | 58.7 |
| 17 | 302 | Xaysettha2 | 294.9 | 11,881 | 12,789 | 0.74 | 43.4 |
| 28 | 303 | Xaysettha3 | 83.9 | 4,509 | 5,262 | 1.56 | 62.7 |
| 19 | 304 | Xaysettha4 | 943.2 | 8,929 | 11,948 | 2.96 | 12.7 |
| 20 | 305 | Xaysettha5 | 3,041.2 | 12,798 | 19,444 | 4.27 | 6.4 |
| 21 | 306 | Xaysettha6 | 5,390.8 | 14,554 | 21,860 | 4.15 | 4.1 |
| 22 | 401 | Sisattanak1 | 118.9 | 7,274 | 7,230 | -0.06 | 60.8 |
| 23 | 402 | Sisattanak2 | 102.4 | 2,422 | 2,584 | 0.65 | 25.2 |
| 24 | 403 | Sisattanak3 | 185.2 | 8,051 | 4,657 | -5.33 | 25.1 |
| 25 | 404 | Sisattanak4 | 226.3 | 9,521 | 11,117 | 1.56 | 49.1 |
| 26 | 405 | Sisattanak5 | 192.7 | 6,894 | 10,295 | 4.09 | 53.4 |
| 27 | 406 | Sisattanak6 | 496.0 | 9,683 | 13,138 | 3.10 | 26.5 |
| 28 | 407 | Sisattanak7 | 514.1 | 10,406 | 12,119 | 1.54 | 23.6 |
| 29 | 408 | Sisattanak8 | 1,052.6 | 3,927 | 7,546 | 6.75 | 7.2 |
| 30 | 501 | Hatxayfong1 | 2,149.8 | 11,229 | 12,854 | 1.36 | 6.0 |
| 31 | 502 | Hatxayfong2 | 2,792.1 | 14,553 | 15,197 | 0.43 | 5.4 |
| 32 | 503 | Hatxayfong3 | 1,284.9 | 15,493 | 20,125 | 2.65 | 15.7 |
| 33 | 504 | Hatxayfong4 | 3,208.1 | 4,902 | 6,030 | 2.09 | 1.9 |
| 34 | 601 | Xaythny1 | 860.1 | 11,184 | 18,997 | 5.44 | 22.1 |
| 35 | 602 | Xaythny2 | 2,808.9 | 12,585 | 19,781 | 4.63 | 7.0 |
| 36 | 603 | Xaythny3 | 2,248.0 | 2,393 | 5,210 | 8.09 | 2.3 |
| Study Area Total | | | 38,190.2 | 331,401 | 422,426 | 2.46 | 11.1 |

2.2.2 Economy

(1) GDP Growth during Past 10 Years

Table 2.2-6 shows GDP by industrial origin at current prices and GDP per Capita in US Dollars from 1995 to 2005. GDP per Capita for each year during the period from 2000 to 2004 is a result of the Study Team's estimation using a revised mid-year population based on the 1995 and 2005 Censuses. For 2005, GDP is estimated at 30.6 trillion Kip by NSC, and GDP per

Capita at US\$511. The industrial structure of GDP is 44.4% for agriculture, 29.2% for industry and 25.5% for services (see Table 2.2-7). The Lao PDR has shown a steady and significant economic growth. During the years of Asian Crisis between 1998 and 1999, inflation in the Lao PDR proceeded extraordinarily. Annual average consumer price index (CPI, Dec. 1995=100) of 130.6 in 1997 increased to 248.2 in 1998 (inflation rate, 90.1%) and to 566.9 in 1999 (inflation rate, 128.4%). GDP per Capita fell from US\$379 in 1995 to US\$341 in 2000 due to the exchange rate fall of Kip to US Dollar. Even during this crisis, the country achieved 4.0% growth in 1998 and 7.3% in 1999 (see Table 2.2-8).

As shown in Table 2.2-8, the annual average growth rate was 6.2% during the 10-year period from 1995 to 2005. The growth rate for the first half (1995-2000) was 6.2%, and for the latter half 6.3%. These show that the Lao PDR has achieved a steady and sustainable high economic growth of 6.2% on annual average during the past 10-year period.

Table 2.2-6 GDP by Industrial Origin at Current Prices (Million Kip)

| | 1995 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005e |
|--------------------------------------|--------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Agriculture | 767,565.4 | 7,127,371.5 | 7,974,628.9 | 9,173,516.9 | 10,828,834.0 | 12,377,758.8 | 13,593,364.1 |
| Crops | 365,492.1 | 4,232,556.8 | 4,750,181.8 | 5,438,938.5 | 6,279,520.7 | 7,216,385.5 | 7,928,850.4 |
| Livestock & Fishery | 302,776.1 | 2,468,219.7 | 2,727,134.7 | 3,156,295.6 | 3,824,109.9 | 4,350,089.1 | 4,747,131.7 |
| Forestry | 99,297.2 | 426,594.9 | 497,312.4 | 578,282.8 | 725,203.3 | 811,284.2 | 917,382.0 |
| Industry | 265,331.2 | 3,105,552.8 | 3,687,385.2 | 4,491,819.1 | 5,782,549.3 | 7,189,992.5 | 8,937,072.3 |
| Mining & Quarrying | 2,911.2 | 67,032.9 | 73,149.7 | 89,113.9 | 378,237.8 | 396,740.3 | 941,226.4 |
| Manufacturing | 196,661.2 | 2,305,847.7 | 2,786,837.5 | 3,483,139.5 | 4,276,549.9 | 5,372,876.0 | 6,279,497.4 |
| Construction | 46,847.2 | 309,341.1 | 376,984.5 | 389,779.0 | 508,363.2 | 700,037.2 | 895,608.1 |
| Electricity, Gas & Water | 18,911.6 | 423,331.1 | 450,413.5 | 529,786.7 | 619,398.4 | 720,339.1 | 821,750.3 |
| Services | 362,219.7 | 3,329,789.3 | 3,898,930.1 | 4,553,566.7 | 5,688,824.9 | 6,785,099.0 | 7,800,206.6 |
| Transportation, Post & Communication | 73,807.5 | 794,023.5 | 829,723.7 | 1,114,963.7 | 1,408,138.8 | 1,703,279.9 | 1,912,611.0 |
| Wholesale & Retail Trade | 116,798.2 | 1,283,970.1 | 1,506,869.1 | 1,791,973.5 | 2,291,722.2 | 2,763,900.2 | 3,179,847.8 |
| Banking | 20,335.4 | 105,170.0 | 127,836.1 | 75,979.0 | 100,051.3 | 83,971.8 | 109,925.0 |
| Ownership & Dwellings | 48,031.7 | 406,230.1 | 448,938.0 | 509,083.9 | 602,680.7 | 682,469.8 | 749,674.0 |
| Public Administration | 68,000.0 | 392,690.0 | 517,136.5 | 643,262.8 | 822,118.8 | 957,228.1 | 1,082,575.1 |
| Nonprofit Institution | 11,934.8 | 12,212.6 | 11,038.7 | 12,270.1 | 13,558.6 | 14,555.6 | 15,478.1 |
| Hotel & Restaurant | 21,048.3 | 309,027.3 | 329,287.8 | 374,123.3 | 410,499.2 | 528,336.4 | 690,773.2 |
| Other Services | 2,263.9 | 26,465.6 | 28,100.3 | 31,910.5 | 40,055.4 | 51,357.1 | 59,322.4 |
| Import Duties | 35,244.3 | 106,771.8 | 140,865.0 | 182,075.4 | 211,207.5 | 237,281.0 | 269,239.1 |
| GDP at Current Market Prices | 1,430,360.7 | 13,669,485.4 | 15,701,809.2 | 18,400,978.1 | 22,511,415.7 | 26,590,131.3 | 30,599,882.2 |
| GDP per Capita (US\$) | 379 | 341 | 340 | 344 | 392 | 450 | 511 |

Source: NSC and Study Team

Table 2.2-7 Share of GDP by Industrial Origin at Current Prices (%)

| | 1995 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|--------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Agriculture | 53.7 | 52.1 | 50.8 | 49.9 | 48.1 | 46.6 | 44.4 |
| Crops | 25.6 | 31.0 | 30.3 | 29.6 | 27.9 | 27.1 | 25.9 |
| Livestock & Fishery | 21.2 | 18.1 | 17.4 | 17.2 | 17.0 | 16.4 | 15.5 |
| Forestry | 6.9 | 3.1 | 3.2 | 3.1 | 3.2 | 3.1 | 3.0 |
| Industry | 18.5 | 22.7 | 23.5 | 24.4 | 25.7 | 27.0 | 29.2 |
| Mining & Quarrying | 0.2 | 0.5 | 0.5 | 0.5 | 1.7 | 1.5 | 3.1 |
| Manufacturing | 13.7 | 16.9 | 17.7 | 18.9 | 19.0 | 20.2 | 20.5 |
| Construction | 3.3 | 2.3 | 2.4 | 2.1 | 2.3 | 2.6 | 2.9 |
| Electricity, Gas & Water | 1.3 | 3.1 | 2.9 | 2.9 | 2.6 | 2.7 | 2.7 |
| Services | 25.3 | 24.4 | 24.8 | 24.7 | 25.3 | 25.5 | 25.5 |
| Transportation, Post & Communication | 5.2 | 5.8 | 5.3 | 6.1 | 6.3 | 6.4 | 6.3 |
| Wholesale & Retail Trade | 8.2 | 9.4 | 9.6 | 9.7 | 10.2 | 10.4 | 10.4 |
| Banking | 1.4 | 0.8 | 0.8 | 0.4 | 0.4 | 0.3 | 0.4 |
| Ownership & Dwellings | 3.4 | 3.0 | 2.9 | 2.8 | 2.7 | 2.6 | 2.4 |
| Public Administration | 4.8 | 2.9 | 3.3 | 3.5 | 3.7 | 3.6 | 3.5 |
| Nonprofit Institution | 0.8 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| Hotel & Restaurant | 1.5 | 2.3 | 2.1 | 2.0 | 1.6 | 2.0 | 2.3 |
| Other Services | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| Import Duties | 2.5 | 0.8 | 0.9 | 1.0 | 0.9 | 0.9 | 0.9 |
| GDP at Current Market Prices | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

Source: NSC

Table 2.2-8 Growth Rates of Gross Value Added, 1995-2005

| | 1995/96 | 1996/97 | 1997/98 | 1998/99 | 1999/00 | 2000/01 | 2001/02 | 2002/03 | 2003/04 | 2004/05 | 1995/00 | 2000/05 | 1995/05 |
|--------------------------------------|-------------|--------------|--------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|-------------|-------------|
| Agriculture | 2.8 | 7.0 | 3.1 | 8.2 | 4.9 | 3.8 | 4.0 | 2.2 | 3.5 | 2.5 | 5.2 | 3.2 | 4.2 |
| Crops | 2.9 | 14.0 | 6.4 | 13.5 | 13.2 | 4.1 | 3.5 | -0.04 | 4.0 | 2.5 | 9.9 | 2.8 | 6.3 |
| Livestock & Fishery | 2.8 | 2.4 | 2.5 | 2.3 | 2.3 | 2.5 | 4.6 | 4.9 | 3.0 | 1.8 | 2.5 | 3.4 | 2.9 |
| Forestry | 2.0 | -4.9 | -9.8 | 2.3 | -33.6 | 8.1 | 5.1 | 8.6 | 1.3 | 5.7 | -9.9 | 5.7 | -2.4 |
| Industry | 17.3 | 8.1 | 9.2 | 8.0 | 8.5 | 10.1 | 10.1 | 11.5 | 12.5 | 16.0 | 10.2 | 12.0 | 11.1 |
| Mining & Quarrying | 61.2 | 28.6 | 13.8 | 33.5 | 1.3 | 1.2 | 10.1 | 267.5 | -5.1 | 121.6 | 26.5 | 53.7 | 39.4 |
| Manufacturing | 18.1 | 9.3 | 9.6 | 7.1 | 7.2 | 12.1 | 13.0 | 6.3 | 13.7 | 9.1 | 10.2 | 10.8 | 10.5 |
| Construction | 12.3 | 5.0 | -14.1 | -0.6 | -9.2 | 13.0 | -6.5 | 12.9 | 24.6 | 19.4 | -1.8 | 12.2 | 5.0 |
| Electricity, Gas & Water | 15.0 | -1.9 | 62.7 | 21.6 | 39.0 | -1.3 | 6.3 | 1.2 | 5.3 | 6.4 | 25.4 | 3.5 | 13.9 |
| Services | 8.5 | 7.5 | 5.5 | 6.7 | 4.9 | 5.7 | 5.7 | 7.2 | 7.5 | 6.7 | 6.6 | 6.6 | 6.6 |
| Transportation, Post & Communication | 10.1 | 10.3 | 6.5 | 5.8 | 9.0 | 8.6 | 8.4 | 9.3 | 9.5 | 4.8 | 8.3 | 8.1 | 8.2 |
| Wholesale & Retail Trade | 11.2 | 10.8 | 9.8 | 7.2 | 5.0 | 8.9 | 7.5 | 10.7 | 9.2 | 7.3 | 8.8 | 8.7 | 8.7 |
| Banking | -2.7 | 9.0 | 2.0 | 3.0 | -35.7 | 12.7 | -46.3 | 14.0 | -24.0 | 22.2 | -6.4 | -8.6 | -7.5 |
| Ownership & Dwellings | 6.2 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 3.2 | 2.5 | 2.8 |
| Public Administration | 0.4 | 1.1 | 4.2 | 6.7 | 7.1 | 1.6 | 15.0 | 3.4 | 1.0 | 1.0 | 3.9 | 4.3 | 4.1 |
| Nonprofit Institution | 7.9 | -1.2 | -20.3 | -4.8 | 7.5 | -12.5 | 4.2 | 7.0 | 7.4 | 3.3 | -2.8 | 1.6 | -0.6 |
| Hotel & Restaurant | 21.3 | 9.6 | 8.0 | 21.6 | 16.5 | -1.2 | 2.7 | -5.0 | 16.5 | 22.2 | 15.3 | 6.5 | 10.8 |
| Other Services | 11.8 | 3.2 | 2.0 | 19.6 | 27.5 | -1.5 | 2.6 | 8.7 | 16.1 | 7.1 | 13.0 | 4.6 | 8.7 |
| Import Duties | 2.9 | -10.5 | -45.2 | -38.8 | 20.5 | 15.8 | 12.6 | 8.9 | 14.5 | 11.1 | -18.0 | 12.7 | -3.9 |
| GDP | 6.9 | 6.9 | 4.0 | 7.3 | 5.8 | 5.8 | 5.9 | 5.8 | 6.9 | 7.3 | 6.2 | 6.3 | 6.2 |

Source: NSC

(2) Gross Regional Domestic Product (GRDP) of Vientiane

GRDP in the respective provinces is not available. In the report of "Enterprise Baseline Survey, 2006" presented a GRDP of Vientiane in 2004. According to the report, GRDP of Vientiane was US\$708.4 million, of which agriculture sector 20.9%, industry sector 52.9%, and service sector 22.1%. The GDP growth was 10.8%, about 1.8% points higher than in the previous year. The GVA growth rates were 5.1% for agriculture sector, 10.6% for industry sector and 25% for service sector. The characteristic of GVA growth in Vientiane is characterized by the very high growth of the service sector of 25%, compared to the national average of 7.5%.

2.2.3 Social Condition

(1) Least Developed Country

The Lao PDR is listed as one of the Least Developed Countries (LDCs) by the United Nations Conference on Trade and Development (UNCTAD). Since 1971, the United Nations (UN) has denominated "LDCs" a category of States that are deemed highly disadvantaged in their development processes, and facing more than other countries the risk of failing to come out of poverty.

Three (3) UN Conferences on the LDCs have been held in 1981, 1990 and 2001 under the leadership of the UNCTAD. The third conference (Brussels, May 2001) agreed on the Program of Action for the LDCs for the Decade 2001-2010. The list of LDCs is to be periodically (every three years) reviewed on the basis of established criteria. At the 2003 review of the list, the following three (3) criteria were used by the UN:

- **Low income**, in the light of a three-year average estimate of GNI per capita (under \$750 for cases of addition to the list, above \$900 for cases of graduation);
- **Weak human assets**, as measured through a composite Human Assets Index; and
- **Economic vulnerability**, as measured through a composite Economic Vulnerability Index.

At present after the 2006 review, three (3) LDCs are listed for the Southeast Asia (Cambodia, Lao PDR and Myanmar). Table 2.2-9 shows the statistical profiles of these countries.

Table 2.2-9 Comparative Data of LDCs in Southeast Asia

| | Unit | Year | Lao PDR | Cambodia | Myanmar |
|---|----------------------|-----------|---------|----------|---------|
| GNI per capita | US\$ | 2004 | 390 | 320 | - |
| Life expectancy at birth Male/Female | Year | 2003 | 58/60 | 50/59 | 56/63 |
| under 5 mortality rate | per 1000 live births | 2003 | 91 | 140 | 107 |
| Population undernourished | % | 2000-2002 | 22 | 33 | 6 |
| Population using improved drinking water sources, Urban/Rural | % | 2002 | 66/38 | 58/29 | 95/74 |
| Population with access to electricity | % | 2000 | 18 | 10 | 5 |
| External debt | \$m | 2003 | 2,846.2 | 3,139.2 | 7,318.4 |
| As % of GNI | % | | 136.6 | 77.3 | - |
| Debt service ratio | % | | 9.2 | 1.0 | 4.3 |

Source: UNCTAD

Compared to the income criteria of US\$750 per capita, these countries are at the very low levels. For improved drinking water sources, Myanmar enjoys a better condition than the Lao PDR and Cambodia for urban and rural communities. Population undernourished is also only 6% the total population. However, the percentage of population with access to electricity is very low as well as Cambodia and the Lao PDR.

(2) Poverty in Lao PDR

Social condition relating to poverty in the Lao PDR is multidimensional. It is more than a problem of inadequate income. It includes a lack of access to basic social and essential economic services and life choices, including opportunities to participate in economic, social and political processes. Also, different groups such as men and women, rural and urban dwellers, ethnic and cultural groups, may experience poverty in different ways. Inequality in the ownership of land, the distribution of wealth and income, access to economic and social goods and services as well as remunerative jobs, participation in social and political processes, and other life choices, contribute to poverty.

Quantitative data on the incidence of expenditure, consumption or income poverty (henceforth referred to as income poverty) in the Lao PDR are compiled through the Lao Expenditure and Consumption Survey (LECS) conducted in 1992/93, 1997/98 and 2002/03. The incidence of income poverty has declined from 46.0% in 1992/93, 39.1% in 1997/98 to 33.5% in 2002/03. This declining trend would enable the country to achieve the MDG target of reducing the proportion of people below the poverty line by half by 2015 (as compared to that in 1990).

There are many methods of poverty measurement and analysis, as one of the quantitative measures, the poverty line methodology was developed through joint efforts by the NSC, SIDA, ADB and the World Bank. LECS I (1992/93), LECS II (1997/98) and LECS III (2002/03) have provided data for analysis. There are two (2) poverty lines: (1) the food poverty line expressing

a lack of food security and (2) an overall poverty line for lacking the combination of food and non-food necessities. The head count index shows the percentage rate of the population with consumption of food and non-food essentials lower than the poverty line. For the Lao PDR in 1997/98, the overall poverty line was 15,218 Kip per person per month; for urban and rural people the poverty line was 19,270 Kip and 14,407 Kip per person per month, respectively.

(3) Poverty in Vientiane

Vientiane is far wealthier than the national average of the Lao PDR. As shown in Table 2.2-10, per capita real consumption of Vientiane was 59,577 Kip in 1997/98, which is 1.8 times of the national average. And the percentage of poor people was 12.2%, one thirds of the whole country (38.6%).

Table 2.2-10 Comparison of Vientiane with Lao PDR, Consumption and Poor

| | Vientiane (A) | Lao PDR (B) | Ratio of Vientiane (A/B) |
|-----------------------------------|------------------|----------------|-----------------------------|
| Per Capita Real Consumption (Kip) | | | |
| 1992/93 | 34,676 | 24,595 | 1.41 |
| 1997/98 | 59,577 | 32,848 | 1.81 |
| Percentage of Poor | | | |
| 1992/93 | 24.4 | 45.0 | 0.54 |
| 1997/98 | 12.2 | 38.6 | 0.32 |

Source: "National Growth and Poverty Eradication Strategy (NGPES)", January 2004

The NSC/ADB Study on poverty at the household, village and district levels established following criteria:

Household level: Households considered as poor are households with an income of less than 85,000 Kip (100,000 Kip for urban and 82,000 Kip for rural) per person per month at 2001 prices. This sum allows the purchase of about 16 kilograms of milled rice per person per month; the balance is insufficient to cover other necessities, such as clothing, shelter, schooling and medical costs.

Village level: Villages considered as poor villages are:

- Villages where 51% or more of the total households are poor.
- Villages without schools or schools in nearby and accessible villages.
- Villages without dispensaries, traditional medical practitioners or villages requiring over 6 hours of travel to reach a hospital.
- Villages without safe water supply.
- Villages without access to roads (at least trails accessible by cart during the dry season).

District (consist of villages) level: Poor districts are:

- Districts where 51% or more of the villages are poor.

- Districts where 40% or more of the villages do not have local or nearby schools.
- Districts where 40% or more of the villages do not have a dispensary or pharmacy.
- Districts where 60% or more of the villages without an access road.
- Districts where 40% or more of the villages do not have safe water.

On the basis of these criteria, 160,592 households, 4,126 villages and 72 districts have been identified as poor in the whole country.

In Vientiane, only Sangthong District was identified as poor. In Sangthong District, the total number of households is 4,317, of which 191 households (4.4% of the total) are poor. 179 households are lacking for rice, 55 households for shelter and 15 households insufficient to cover the cost of children schooling. As for the village level, there are 37 villages in the district, of which 27 villages (73% of the total) are poor. All of them do not have safe water supply. Sangthong District is not included in the Study Area.

As described above, Vientiane and the Study Area are rich among the Lao PDR. However, there are urban poor problems in Vientiane. The Participatory Poverty Assessment (PPA) undertaken by the Vientiane Urban Development and Administration Authority (VUDAA) found particularly vulnerable groups and individuals whose conditions contributed to, and were often a cause of their poverty.

2.2.4 Land Use

(1) Outline of Present Land Use

An outline of the present land use can be seen in Figure 2.2-2. This map is based on the aerial photograph taken in 1998 and land use information was revised in 2006. According to the figure, urbanized area is limited within the central part of the Study Area, and agricultural area and marshes are extended in the suburban areas.

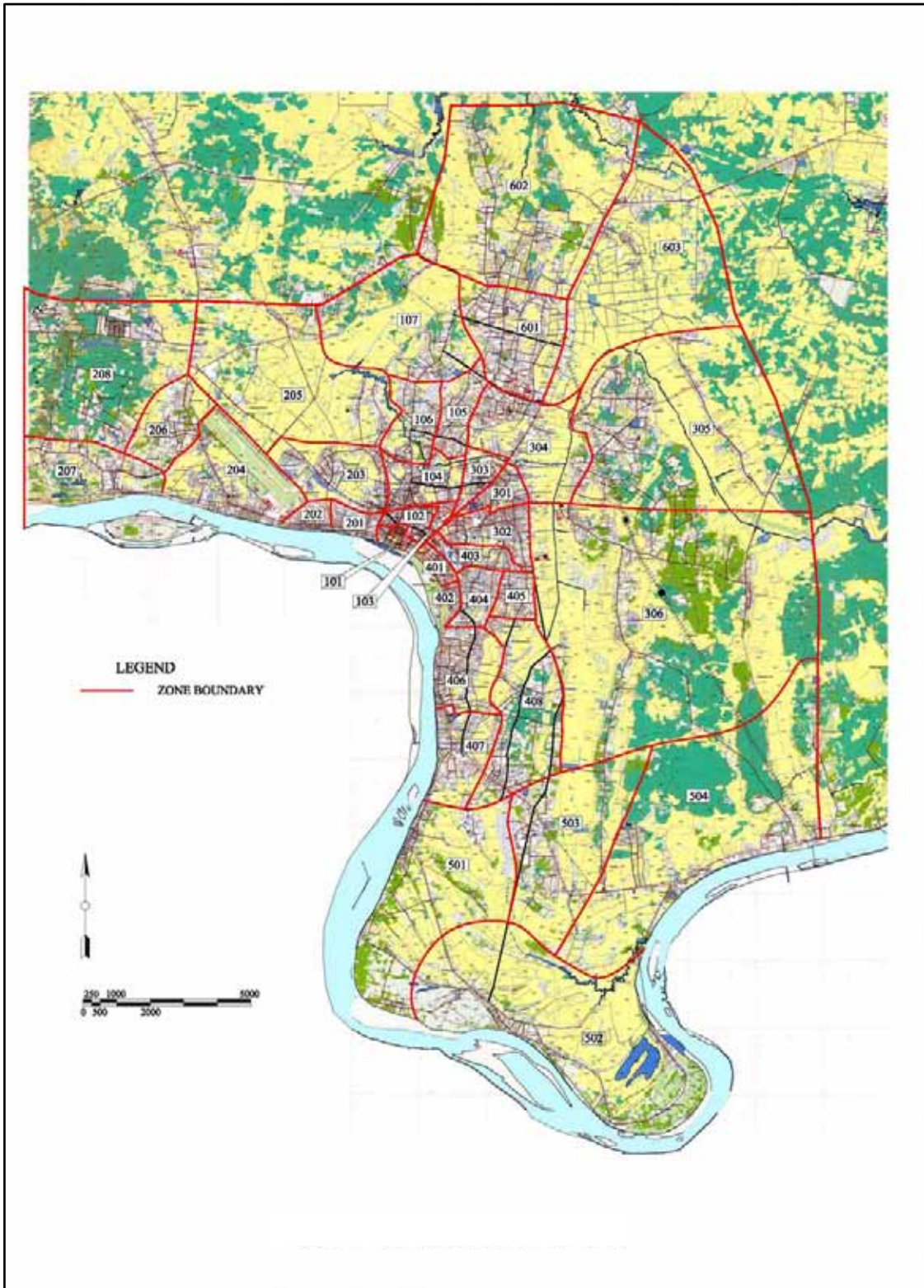


Figure 2.2-2 Outline of Present Land-use

(2) Present Use Zoning

VUDAA has prepared a land use regulation zoning map, of which target year is 2010. In this map, the use zoning is divided into 17 categories. These categories reflect the present land use. The categories of urban land controlled are classified into the following 14 use zones:

- Old Urban Heritage Conservation Zone (ZPP-Ua)
- Historical Heritage Conservation Zone (ZPP-Ub)
- Administrative and Commercial Center Zone (UAa)
- New Center Zone (UAb)
- Peri-Urban Center Zone (UB)
- Mekong River Bank Zone (UC)
- Peri-Urban Zone (UD)
- Urban Expansion Zone (UE)
- Rice Field Village Zone (UF)
- Industrial Zone (I)
- Transportation Zone (T)
- Services Zone (E)
- Agricultural Rice Field Zone (NA)
- Conservation Zone (NE)

Detailed explanations on these items are given in Appendix 2-1.

Figure 2.2-3 shows the present land use zoning map. It covers 20,950 ha, occupying about 55% of the Study Area total, 38,190.2 ha. In other words, 45% of the Study Area is not yet regulated by the use zoning. Table 2.2-11 shows the result of calculation of areas by use zoning category. In suburban Zones, wide areas remain without regulation, especially Zones 208 and 502 are totally out of regulation.

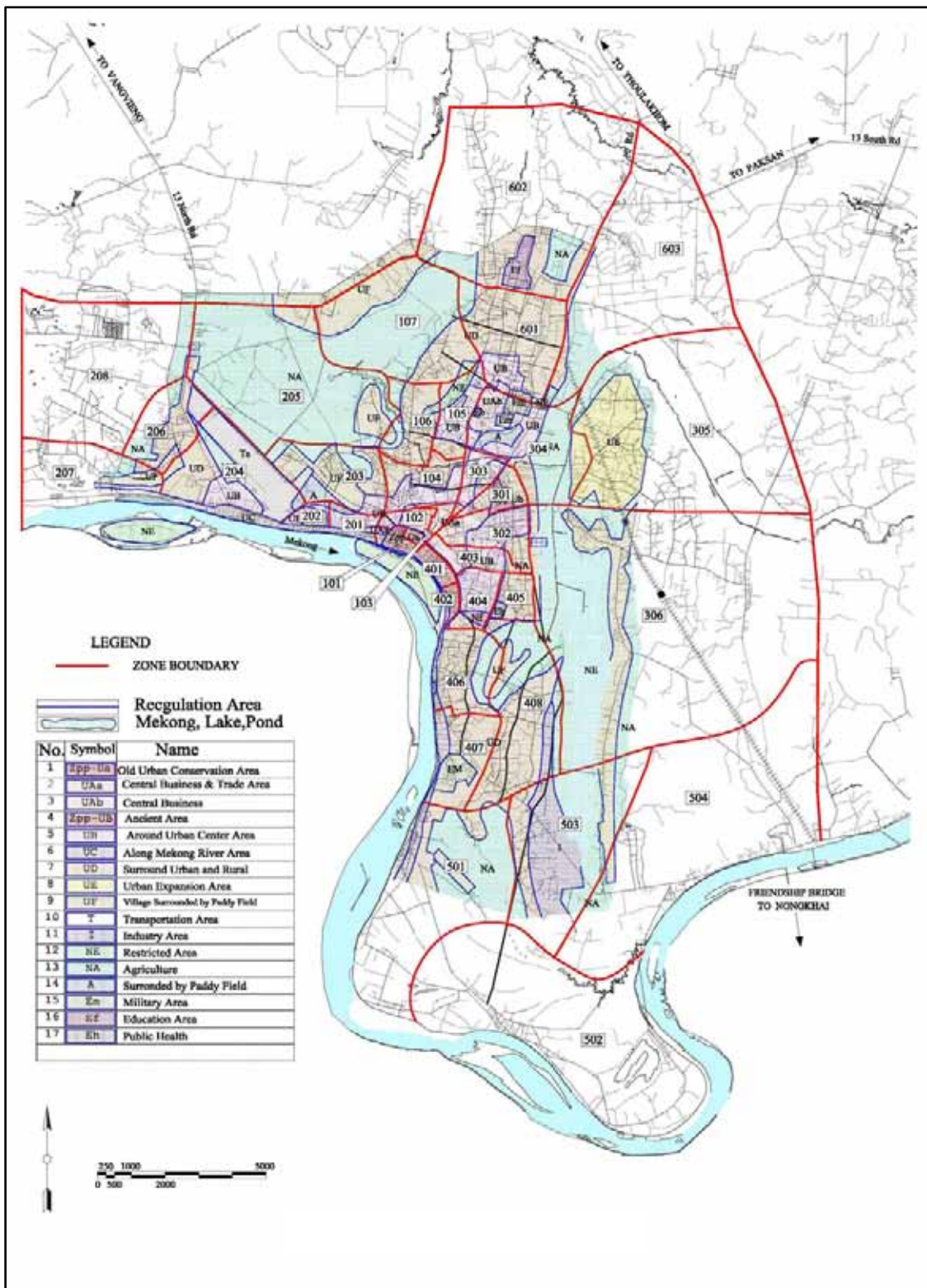


Figure 2.2-3 Present Land-use Zoning

Table 2.2-11 Area by Use Zoning Category (ha)

| ZONE | Zpp Ua | UAa | UAb | Zpp Ub | UB | UC | UD | UE | UF | T | I | NE | NA | A | Em | Ef | Eh | Total | No regulation | S.A. Total |
|-------|-----------|-------|-------|-----------|---------|-------|---------|-------|---------|-------|-------|---------|---------|------|-------|-------|------|----------|------------------|------------|
| 101 | 64.2 | 8.9 | - | - | - | 23.7 | - | - | - | - | - | - | - | - | - | - | - | 96.7 | - | 96.7 |
| 102 | 26.9 | 67.3 | 31.3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 125.5 | - | 125.5 |
| 103 | - | 51.2 | - | - | 91.8 | - | - | - | - | - | - | - | - | - | - | - | - | 143.0 | - | 143.0 |
| 104 | - | - | - | - | 71.7 | - | 170.7 | - | - | - | - | - | - | - | - | - | - | 242.4 | - | 242.4 |
| 105 | - | - | 40.5 | - | 131.5 | - | 47.4 | - | - | - | - | 58.6 | - | - | - | - | - | 278.1 | - | 278.1 |
| 106 | - | - | - | - | 8.6 | - | 246.3 | - | 18.6 | - | - | 61.6 | 17.8 | - | - | - | - | 353.0 | - | 353.0 |
| 107 | - | - | - | - | - | - | 221.4 | - | 439.5 | - | - | 13.0 | 934.6 | - | - | - | - | 1,608.6 | - | 1,608.6 |
| 201 | - | 6.4 | - | - | 74.6 | 43.7 | - | - | - | - | - | - | - | 9.6 | - | - | - | 134.3 | - | 134.3 |
| 202 | - | - | - | - | 21.4 | 36.7 | - | - | - | - | - | 32.8 | - | 11.1 | - | - | - | 101.9 | - | 101.9 |
| 203 | - | - | - | - | 47.3 | - | 84.7 | - | 346.4 | 14.8 | - | - | 147.2 | 28.4 | - | - | - | 668.8 | - | 668.8 |
| 204 | - | - | - | - | - | 92.2 | 196.6 | - | 27.1 | 338.9 | - | - | 87.8 | - | - | - | - | 742.6 | - | 742.6 |
| 205 | - | - | - | - | - | - | 19.1 | - | 271.4 | 3.9 | - | - | 2,095.4 | - | - | - | - | 2,389.8 | - | 2,289.8 |
| 206 | - | - | - | - | - | - | 172.9 | - | 32.3 | 32.4 | - | - | 233.6 | - | - | - | - | 471.3 | - | 471.3 |
| 207 | - | - | - | - | - | - | 39.5 | - | 91.6 | - | - | - | - | - | - | - | - | 131.2 | 527.3 | 658.5 |
| 208 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1,871.6 | 1,871.6 |
| 301 | - | 146.7 | - | 50.0 | 56.8 | - | 56.6 | - | - | - | - | - | - | - | - | - | - | 310.0 | - | 310.0 |
| 302 | - | 45.1 | - | - | 168.9 | - | - | - | - | - | - | - | 81.0 | - | - | - | - | 294.9 | - | 294.9 |
| 303 | - | - | - | - | 77.6 | - | 6.3 | - | - | - | - | - | - | - | - | - | - | 83.9 | - | 83.9 |
| 304 | - | - | 100.9 | - | 140.0 | - | 66.6 | 97.2 | - | - | - | 29.3 | 388.6 | 29.8 | 84.2 | - | 6.8 | 943.2 | - | 943.2 |
| 305 | - | - | - | - | - | - | - | 758.8 | - | - | - | - | 279.0 | - | - | - | - | 1,037.8 | 2,003.4 | 3,041.2 |
| 306 | - | - | - | - | - | - | 79.4 | - | - | - | - | 613.6 | 1,193.7 | - | - | - | - | 1,886.7 | 3,504.1 | 5,390.8 |
| 401 | 44.8 | - | - | - | - | - | - | - | - | - | - | 74.1 | - | - | - | - | - | 118.9 | - | 118.9 |
| 402 | 44.1 | - | - | - | - | - | - | - | - | - | - | 58.3 | - | - | - | - | - | 102.4 | - | 102.4 |
| 403 | - | 73.5 | - | - | 89.4 | - | - | - | - | - | - | - | 22.3 | - | - | - | - | 185.2 | - | 185.2 |
| 404 | - | - | - | - | 162.5 | - | 29.4 | - | - | - | - | - | - | - | - | 34.5 | - | 226.3 | - | 226.3 |
| 405 | - | - | - | - | - | - | - | - | - | - | - | - | 162.5 | - | - | - | 30.2 | 192.7 | - | 192.7 |
| 406 | - | - | - | - | - | 28.0 | 309.0 | - | 58.2 | - | - | - | 100.9 | - | - | - | - | 496.0 | - | 496.0 |
| 407 | - | - | - | - | - | 74.8 | 299.0 | - | - | - | - | - | - | - | 140.3 | - | - | 514.1 | - | 514.1 |
| 408 | - | - | - | - | - | - | 572.4 | - | 98.1 | - | 29.8 | - | 352.2 | - | - | - | - | 1,052.6 | - | 1,052.6 |
| 501 | - | - | - | - | - | 81.0 | 172.7 | - | 66.1 | - | - | - | 1,830.0 | - | - | - | - | 2,149.8 | - | 2,149.8 |
| 502 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 2,792.1 | 2,792.1 |
| 503 | - | - | - | - | - | - | 183.2 | - | 163.2 | - | 190.2 | 446.6 | 301.7 | - | - | - | - | 1,284.9 | - | 1,284.9 |
| 504 | - | - | - | - | - | - | - | - | 33.4 | - | - | - | 61.1 | - | - | - | - | 94.5 | 3,113.5 | 3,208.1 |
| 601 | - | - | 10.3 | - | 121.1 | - | 641.9 | - | - | - | - | 5.3 | 60.9 | - | 20.5 | - | - | 860.1 | - | 860.1 |
| 602 | - | - | - | - | - | - | 909.4 | - | - | - | - | - | 162.4 | - | - | 128.5 | - | 1,200.4 | 1,608.5 | 2,808.9 |
| 603 | - | - | - | - | - | - | 72.4 | - | - | - | - | 13.8 | 342.2 | - | - | - | - | 428.4 | 1,819.7 | 2,248.0 |
| Total | 180.0 | 399.0 | 183.0 | 50.0 | 1,263.0 | 380.0 | 4,597.0 | 856.0 | 1,646.0 | 390.0 | 220.0 | 1,407.0 | 8,855.0 | 79.0 | 245.0 | 163.0 | 37.0 | 20,950.0 | 17,240.2 | 38,190.2 |

For each category, regulation items include: a) Prohibited and Permitted Activities, b) Condition of Plot for Building Construction, and c) Defined Density.

The regulation items for the Ancient Town Protection Area (ZPP-Ua), the most strictly controlled zone are summarized in Appendix 2-2. It is noted that provision of car parking for office, bank, and restaurants is stipulated.

2.2.5 Land Price

The Department of Land makes public land prices on 23 Feb 2007 of 125 points, of which 94 points are located in the urban Districts and 31 points in the suburban Districts. Urban Districts are Chanthabouly, Sikhottabong, Xaysettha and Sisathanak. Suburban Districts are Hatxayfong, Xaythny and Naxaythong. A valuation point is composed of several numbers of blocs. Accordingly, Land prices of a valuation point generally include the price along main roads, the price along secondary roads, the price along feeder roads and the price along earth roads.

Land prices on 11 Aug 2003 are also valued for urban Districts

Table 2.2-12 shows 32 valuation points in the urban Districts with land prices of 2,000,000 kip/m² and over, comparing 2007 and 2003. The highest price is 3,500,000 kip/m² of blocks along main road of C5 in Chanthbouli District. The second highest prices are 2,700,000 kip/m² of 7 points all in Chanthabouly District.

These land prices are for the determination of land tax and compensation for expropriation. The average ratio of 2007 prices to 2003 prices is 2.7. Market prices for transaction of lands are said to be 2-3 times the official prices

According to Table 2.2-13, the highest price in the suburban Districts is 600,000 kip/m² of G1 in Hatxayfong District. The second and third highest are 500,000 kip/m² of E1 and 400,000 kip/m² of E3. Comparing to the urban Districts, the land prices are still very low in the suburban Districts. These low prices attract recent urban development to the suburban Districts.

Table 2.2-12 Land Prices in the Urban Districts (2,000,000 kip/m² and Over)

| Valuation Point | District | 2007 | | | | | Ratio of 2007 to 2003 |
|-----------------|--------------|-----------|----------------|-------------|------------|---------------------|-----------------------|
| | | Main Road | Secondary Road | Feeder Road | Earth Road | Main/Secondary Road | |
| C5 | Chanthabouly | 3,500,000 | 3,000,000 | | | 1,733,400 | 2.02 |
| C1 | Chanthabouly | 2,700,000 | 2,000,000 | 700,000 | 500,000 | 1,412,400 | 1.91 |
| C2 | Chanthabouly | 2,700,000 | 2,000,000 | 700,000 | 500,000 | 1,412,400 | 1.91 |
| C3 | Chanthabouly | 2,700,000 | 2,000,000 | 700,000 | 500,000 | 1,412,400 | 1.91 |
| C4 | Chanthabouly | 2,700,000 | 2,000,000 | 700,000 | 500,000 | 1,412,400 | 1.91 |
| C7 | Chanthabouly | 2,700,000 | 1,000,000 | 500,000 | 200,000 | 1,091,400 | 2.47 |
| C10 | Chanthabouly | 2,700,000 | 800,000 | 200,000 | 100,000 | 706,200 | 3.82 |
| C16 | Chanthabouly | 2,700,000 | 1,500,000 | 500,000 | 200,000 | 1,412,400 | 1.91 |
| A2 | Sisathanak | 2,520,000 | 800,000 | 640,000 | 266,000 | 898,800 | 2.80 |
| A3 | Sisathanak | | 2,520,000 | 560,000 | 266,000 | 898,800 | 2.80 |
| A3-1 | Sisathanak | 2,520,000 | 2,520,000 | 1,890,000 | | 898,800 | 2.80 |
| A4 | Sisathanak | 2,520,000 | 800,000 | 400,000 | 133,000 | 898,800 | 2.80 |
| B24 | Xaysetha | | 2,520,000 | 400,000 | 180,000 | 609,900 | 4.13 |
| C15 | Chanthabouly | | 2,500,000 | 1,320,000 | | 802,500 | 3.12 |
| C17 | Chanthabouly | | 2,500,000 | 2,500,000 | | 1,091,400 | 2.29 |
| D12 | Sikhottabong | 2,520,000 | 700,000 | 300,000 | 200,000 | 1,123,500 | 2.23 |
| B6 | Xaysetha | 2,200,000 | 800,000 | 250,000 | 150,000 | 898,800 | 2.45 |
| B7 | Xaysetha | 2,200,000 | 1,800,000 | 1,500,000 | | 898,800 | 2.45 |
| A10 | Sisathanak | 2,000,000 | 800,000 | 400,000 | 133,000 | 802,500 | 2.49 |
| A11 | Sisathanak | 2,000,000 | 800,000 | 400,000 | 133,000 | 1,027,200 | 1.95 |
| A13 | Sisathanak | 2,000,000 | 650,000 | 320,000 | 133,000 | 609,900 | 3.28 |
| A14 | Sisathanak | 2,000,000 | 430,000 | 160,000 | 130,000 | 513,600 | 3.89 |
| A16 | Sisathanak | 2,000,000 | 430,000 | 160,000 | 44,000 | 428,000 | 4.67 |
| A17 | Sisathanak | 2,000,000 | 430,000 | 160,000 | 44,000 | 342,400 | 5.84 |
| A18 | Sisathanak | 2,000,000 | 430,000 | 160,000 | 44,000 | 342,400 | 5.84 |
| B1 | Xaysetha | 2,000,000 | 1,200,000 | 400,000 | 150,000 | 706,200 | 2.83 |
| B2 | Xaysetha | 2,000,000 | 1,200,000 | 400,000 | 150,000 | 706,200 | 2.83 |
| B3 | Xaysetha | 2,000,000 | 500,000 | 250,000 | 150,000 | 513,600 | 3.89 |
| B4 | Xaysetha | 2,000,000 | 1,200,000 | 200,000 | 80,000 | 513,600 | 3.89 |
| B5 | Xaysetha | 2,000,000 | 800,000 | 250,000 | 150,000 | 513,600 | 3.89 |
| B13 | Xaysetha | 2,000,000 | 800,000 | 250,000 | 150,000 | | |
| D13 | Sikhottabong | 2,000,000 | 1,200,000 | 300,000 | 100,000 | | |

Source: Department of Land

Table 2.2-13 Land Prices in the Suburban Districts (50,000 kip/m² and Over)

(kip/m²)

| Valuation Point | District | Main Road | Secondary Road | Feeder Road | Earth Road |
|-----------------|------------|-----------|----------------|-------------|------------|
| G1 | Hatxayfong | 600,000 | 350,000 | 60,000 | 10,000 |
| E1 | Xaythny | 500,000 | 250,000 | 80,000 | 20,000 |
| E3 | Xaythny | 400,000 | | 30,000 | 10,000 |
| G2 | Hatxayfong | 350,000 | 200,000 | 20,000 | 10,000 |
| G7 | Hatxayfong | 250,000 | 25,000 | 15,000 | 5,000 |
| G3 | Hatxayfong | | 200,000 | 60,000 | 10,000 |
| F1 | Naxaythong | 170,000 | 25,000 | 10,000 | 2,000 |
| G8 | Hthsayfong | 170,000 | | 20,000 | 5,000 |
| E4 | Xaythny | 150,000 | 15,000 | 10,000 | 6,000 |
| E2 | Xaythny | | 150,000 | 20,000 | 7,000 |
| E11 | Xaythny | 100,000 | 40,000 | 10,000 | 5,000 |
| G4 | Hatxayfong | | 100,000 | 20,000 | 7,000 |
| F3 | Naxaythong | 90,000 | 25,000 | 7,000 | 500 |
| E5 | Xaythny | 70,000 | | 10,000 | 6,000 |
| G% | Hatxayfong | | 60,000 | 20,000 | 7,000 |
| E6 | Xaythny | 50,000 | 10,000 | 7,000 | 3,000 |
| E12 | Xaythny | 50,000 | | 10,000 | 1,500 |
| F4 | Naxaythong | 50,000 | 12,000 | 3,000 | 700 |

Note: Land price on 23 Feb 2007

Source: Department of Land

CHAPTER 3

DEVELOPMENT PLANS, STUDIES AND PROJECTS

CHAPTER 3 DEVELOPMENT PLANS, STUDIES AND PROJECTS

3.1 DEVELOPMENT PLANS

3.1.1 National Socio –Economic Development Plan (2006-2010)

(1) General

The present National Socio-Economic Development Plan (NEDP, 2006-2010) is the Sixth Five-Year National Socio Economic Development Plan (Plan), following the Fifth Plan which covered the period of 2001 to 2005. The Sixth Plan provided an assessment of the implementation of the Fifth Plan and an overall development strategy for 2006 to 2010. The assessment of the Fifth Plan included its achievements, constraints and limitations, and lessons learned from implementation. The development of the Sixth Plan was prepared based on (i) the long-term strategy of socio economic development to the year 2020; (ii) the strategy on industrialization and modernization; (iii) the national growth and poverty eradication; (v) various sectors, thematic areas and sub-sector strategies and plans; (iv) analysis of the international and domestic contexts of the development of the Lao PDR.

(2) Overall Development Strategy

For overall development strategy, the 7th Party Congress set out the Ten-Year Socio-Economic Development Strategy (2001-2010) (The Strategy) for the country, which included improving and building the economic infrastructure to ensure fast and sustainable economic growth, with emphasis on agricultural production, eliminating forest fires and deforestation. The country's human resources are to be developed step-by-step both in quality and quantity to cater to the emerging needs and make the country a regional centre for exchange of goods and services. The Strategy encouraged a socialist-oriented industrialization and modernization with infrastructure development to prepare the nation for graduation from the Least Development Country (LDC) status by 2020 and to achieve improved well-being for all the Lao people. The objectives set out in the Strategy support the achievement of the Millennium Development Goals (MDG) and the implementation of the Brussels Program of Action for Least Developed Countries (2001-2010).

The Sixth Plan covering the five-year period 2006-2010 plays a crucial role in implementing the socio-economic development policies and guidelines set out by the 7th Party Congress. It is the vehicle for facilitating the implementation of the second half of the Socio-Economic Development Strategy (2001-2010) approved by the Congress. Thus, the Sixth Plan will institutionalize and concretize the directives and tasks that will be carried out further during the five-year period 2006-2010, on order that the overall targets outlined in the Ten-Year Strategy (2001-2010) shall be achieved.

(3) Development Directions

The development directions set in the Sixth Plan are to achieve the highest outcomes and make general changes along the following lines.

- (i) To turn from under-development to fast and stable development policy, producing high value-added goods both in quantity and quality step-by-step in order to meet domestic market demand and increase exports;
- (ii) To increase competitiveness and utilize comparative advantages to implement effectively international economic commitments in the frameworks of ASEAN and other bilateral and multilateral commitments, including the WTO;
- (iii) To strengthen links between economic development and social development, and protect natural resources and the environment. Social problems should be solved first, with attention paid to such issues as the reduction of poverty, unemployment and social evils, and keep the social and political situation stable; and
- (iv) To accelerate the building of a comprehensive socio-oriented economy with socialist orientation to form the basis for industrialization and modernization.

(4) Overall Goals of the Plan

The 7th Party Congress identified the general goals of the Socio-Economic Development Strategy for the ten-year period 2001-2010 as follows (Original is Lao, counterpart translated):

“Improve and establish the basis for the economy to progress strongly in firm steps, especially to strongly develop the agriculture sector, entirely eliminate the slash and burn cultivation practices; complete the tasks in solving the problem of poverty of people; create the foundation for industry and prepare the quality and quantity of human resources to be ready for industrial development and gradually turn to industrialization; develop our country to become the central point of transit of the region in the future”

The overall goals of the Sixth Plan are to maintain all targets and views that have been set in the ten-year Strategy (2001-2010). Therefore, the goals for the Sixth Plan are as follows:

“Accelerate economic growth and improve the people’s quality of life, restructuring the economy and employment in building a market economy, based on the country’s rich resources and international integration. Further build the market economy with a socialist orientation. Continue to enlarge develop effective external economic relations. Create breakthrough changes in education and training in terms of quality and quantity, utilizing the advances in science and technology, protecting the environment, and taking human, scientific and technological players as vehicles for development. Develop culture and society in synchrony with economic growth. Continue poverty reduction, creating jobs, and eliminating social evils.

Continue strengthening the socio-economic infrastructure as fundamentals for development in the Sixth five-year Plan and for the next (Seventh) five-year plan. Maintain political stability and social security, protecting sovereignty, territorial integrity and national security”

(5) Tasks and Guidelines

The tasks and guidelines are as follows.

- (i) To increase economic growth to an average of 7.5-8% per annum.
- (ii) To ensure the balance in economic development in parallel with social development and protection of the environment;
- (iii) To encourage economic development in various sectors by paying attention to the state economy as the leading sector;
- (iv) To promote and develop small and medium enterprises (SMEs) to expand rapidly;
- (v) To ensure the maintenance of existing infrastructure and establish additional infrastructure;
- (vi) To continue to broaden economic opportunities and upgrade the level of external economic relations;
- (vii) To continue to improve and strengthen the financial and monetary sectors by increasing the capacity of the national financial administration bodies;
- (viii) To continue with progress on new changes to create comprehensive development approaches in the areas of education and capacity building;
- (ix) To enhance the public administration activities with strong steps; and
- (x) To strengthen the areas of national defense, public security, social and political aspects and broaden foreign relations.

(6) Plan Targets and Tasks

Macro-economic Projection (2004 to 2010) and The Six Plan Targets including Fifth Plan Targets and Achievements are summarized in Table 3.1-1 and Table 3.1-2, respectively.

Table 3.1-1 Macroeconomic Projections (2004/05-2009/10)

| No | Indicator | Unit | 2004/5 | 2005/6 | 2006/7 | 2007/8 | 2008/9 | 2009/10 |
|----|----------------------------|-------|--------|--------|--------|--------|--------|---------|
| 1 | Total Population | 1,000 | 5,610 | 5,722 | 5,833 | 5,944 | 6,056 | 6,168 |
| | Growth Rate of Population | % | 2.0 | 2.0 | 1.9 | 1.9 | 1.9 | 1.9 |
| 2 | GDP at current price (kip) | bill. | 28,682 | 33,109 | 37,916 | 45,410 | 53,746 | 59,936 |
| | GDP at USD | mill. | 2,753 | 3,184 | 3,612 | 4,054 | 4,556 | 5,097 |
| 3 | Total GDP Growth Rate | % | 7.2 | 7.5 | 7.2 | 7.5 | 7.8 | 8.2 |
| | - Agriculture | % | 3.5 | 3.0 | 3.3 | 3.3 | 3.3 | 3.3 |
| | - Industry | % | 13.0 | 15.7 | 12.7 | 13.0 | 13.3 | 14.0 |
| | - Services | % | 8.0 | 6.2 | 7.5 | 7.6 | 7.6 | 7.6 |
| 4 | Sector share of GDP | % | 100 | 100 | 100 | 100 | 100 | 100 |
| | - Agriculture | % | 45.4 | 43.5 | 41.3 | 39.6 | 37.8 | 36.0 |
| | - Industry | % | 28.2 | 30.5 | 31.4 | 33.0 | 34.6 | 36.4 |
| | - Services | % | 26.4 | 26.0 | 27.3 | 27.4 | 27.6 | 27.6 |
| 5 | GDP per capita (kip) | mill. | 5.11 | 5.79 | 6.50 | 7.64 | 8.88 | 9.72 |
| | GDP per capita (USD) | USD | 491 | 556 | 619 | 682 | 752 | 823 |
| | Total Investment (PIP+PI) | bill. | 8,457 | 10,284 | 12,000 | 14,387 | 16,847 | 20,422 |
| | Public Investment Program | bill. | 2,750 | 3,649 | 3,353 | 4,121 | 5,251 | 7,216 |
| | Private Investment | bill. | 5,070 | 6,635 | 8,647 | 10,266 | 11,596 | 13,206 |

Table 3.1-2 Sixth Plan Targets and Fifth Plan Targets and Achievements

| No. | Item | Sixth Plan (2006-2010) | Fifth Plan (2001-2005) | |
|-------------------------------------|--|-------------------------------|---------------------------|--|
| | | Target | Target | Achievement |
| Economic Target | | | | |
| 1 | GDP growth | 7.5-8.0% | 7-7.5% | 6.24% |
| 2 | - Agriculture & Forestry sector | 3-3.4% | 4-5.0% | 3.4% |
| 3 | - Industrial sector | 13-14% | 10-11% | 11.3% |
| 4 | - Services sector | 7.5-8% | 8-9% | 6.7% |
| Sector Shares in GDP (2005) | | | | |
| 5 | - Agriculture & Forestry sector | 36.0% | 47.0% | 45.4% |
| 6 | - Industrial sector | 36.4% | 26.0% | 28.2% |
| 7 | - Services sector | 27.6% | 27.0% | 26.4% |
| 8 | Export growth | 18.1% | 8.6% | 7.0% |
| | Import growth | 8.8% | 8.6% | 4.9% |
| 9 | Trade deficits as % of GDP | 5% | 6% | 9.4% |
| 10 | Inflation rate | 6-6.5% | <10% | 9.6% |
| 11 | Exchange rate | - | Stabilized | Kip appreciated by 7% per year against US dollar |
| 12 | Budget revenue as % of GDP | 14.8% | 18% | 13.6% (Ave.) 14.6% (2005) |
| 13 | Budget deficit as % of GDP(2005) | 6.07% (Ave.) 5.8% (2010) | 6% | 7.4% (exl. Arrears) 7.8% (2005) |
| 14 | Total investment as % of GDP | 32% (Ave.) | - | 27.8% (Ave.) 29% (2005) |
| 15 | Public investment as % of GDP (2005) | 10.0% | 12-14% | 12.3% |
| 16 | Private (domestic & foreign) investment as % of GDP (2005) | 22.0% (Ave.) | - | 15.5% (Ave.) |
| 17 | Total GDP (2005) | - | - | US\$2.8 billion |
| 18 | GDP per-capita | US\$700-750 | US\$500-550 | US\$491 |
| 19 | New jobs created each year | 130,000 | 100,000 | - |
| 20 | Provide vocational training and skill development | - | 350,000 | 100,000 |
| 21 | Total employed by 2010 | 3,366,000 | - | - |
| | Sector shares of employed | (2010) | | (2005) |
| | - Agriculture & Forestry sector | 73.9% | | 76.6% |
| | - Industrial sector | 9.3% | | 7.7% |
| | - Services sector | 16.9% | | 15.6% |
| 22 | Total population (2005) | 6.17 million | 5.9 million | 5.61 million |
| 23 | Population growth rate | 1.91 % (Ave.) 1.85% (2010) | - | 2.0% (Ave.) 2.0% (2005) |
| Millennium Development Goals | | | | |
| 24 | Total fertility rate | 3.9 in 2010 | - | 4.5 in 2005 |
| 25 | Proportion of poor households (2005) | <15% of total households | 150,050 (20-25%) | 137,500 (28.7% of total) |
| 26 | Malnutrition among children under five (2005) | <30% | 30% | - |
| 27 | Primary school enrolment of 6-10 year old (2005) | 90.6% | 86% | 84.2% |
| 28 | Lower secondary school enrolment | - | 52% | 54.8% |
| 29 | Upper secondary school enrolment (2005) | - | 24% | 34.4% |
| 30 | Higher education and universities enrollments (2005) | - | 410 per 100,000 | - |
| 31 | Literacy among people 15 to 40 year old (2005) | - | 85% | - |
| 32 | Life expectancy at birth (2005) | 63.5 years | 61 years | 61 years |
| 33 | Infant mortality under one (2005) | 55 per 1000 | 60 | 70 |
| 34 | Child mortality under five (2005) | 75 per 1000 | 98 | 98 |
| 35 | Maternal mortality | 300 per 100,000 | 350 | 405 |
| 37 | Access to clean water | 70% of rural communities | - | - |
| 38 | Forest cover | More than 50% | - | - |

(7) Tasks and Balancing Investment

In order to ensure the economic growth of 7.5-8%, a total investment of 73.9 thousand billion Kips is required (incremental capital-output ratio: ICOR equal to 4.2) to support the Sixth Plan. This is equivalent to about 32% of GDP, and investment will increase to 19.3 % per year. The sources of investment will include about 23.1 thousand billion Kip from the Government budget accounting for 31.25% of the total investment in the society and equivalent to 10.0% of GDP. The investment from the private sector, both domestic and external, will cover the remaining 50.8 thousand billion Kip accounting 68.75% of total investment or approximately 22.0% of GDP.

In next five years, it is expected that the ODA will be about USD 357 million per year on average; Foreign Direct Investment (FDI) of USD 600 million each year. The mobilization of domestic saving is expected to reach at 51.3%, and the remaining fund of 48.7% will be directly invested by the local people. The Government will take special financial measures will be as follows.

- (i) To sell some assets (projects) or privatize some state enterprises;
- (ii) To utilize private investments in such forms as build, own, operate and transfer (BOOT) and build, operate and transfer (BOT) as well as other forms;
- (iii) To issue government bonds to invest in large-scale projects in an effective manner;
- (iv) To receive assistance and soft from international sources; and
- (v) To intensively convert lands and properties into capital.

Table 3.1-3 shows the Sixth Plan by public and private investment shares.

Table 3.1-3 Sixth Plan for Investment Shares

| Item | Amount (Billion Kip: BK) | Public/ Private Share | As % of GDP | | |
|----------------------|-----------------------------|-----------------------------|-------------------|-------|-------|
| | | | 5-Year Average | 2005 | 2010 |
| Total investment | BK 73,900 | 100% | 32.0% | 29.0% | 34.3% |
| Public investment | | 31.25% | 10.0% | - | - |
| Government budget | BK 23,100 | - | - | - | - |
| (Included ODA share) | USD 1,785 million | - | - | - | - |
| Private investment | BK 50,800 | 68.75% | 22.0% | - | - |
| (Included FDI share) | USD 3,000 million | - | - | - | - |

Note: 1USD=10.532Kips

Source: 6th NEDP (Oct 2006) Committee for Planning and Investment, Vientiane, p64

(8) Investment by Sector

Table 3.1-4 shows the Sixth Plan resource allocation by sector.

Table 3.1-4 Sixth Plan Resource Allocation by Sector

| Item | Investment (billion Kips) | % |
|-------------------------------------|------------------------------|--------|
| Total | 73,900 | 100.0 |
| Agriculture | 11,800 | 16.0 |
| Industry | 31,000 | 42.0 |
| Services | 31,060 | 42.0 |
| - Transport, post and construction | (19,200) | (26.0) |
| - Education and HRD | (2,590) | (3.5) |
| - Health | (2,220) | (3.0) |
| - Science, technology & environment | (1,480) | (2.0) |
| - Culture, information & sports | (1,110) | (1.5) |
| Remaining sectors | (4,430) | (6.0) |

Source: 6th NEDP (Oct 2006) Committee for Planning and Investment, Vientiane

3.1.2 Transport Sector Development Plan

In the Sixth Plan, the following Sectorial Development plans are set out for transport sector development plan.

(1) Infrastructure Development Goals and Overall Strategy

Goal

The long-term goal is to provide the necessary infrastructure to sustain a modern nation state, where people in all parts of the country could easily communicate and participate in development activities in the country and interact with the people and markets outside the country.

Overall Strategy

The main objectives for infrastructure development in the Sixth Plan period (2006-2010) is to continue to maintain, improve, and develop the socio-economic infrastructure with focus on such area as inland, international, river and air transport, telecommunications, schools and health centers, to create favorable conditions for development. The basic demand for urban infrastructure will be met, paying attention to waste water treatment and environmental sanitation to improve and protect the environment, in the service of social and economic development, national defense and security. New infrastructure will be allocated for some areas and actions to mitigate hunger (rice scarcity) and poverty, with emphasis on maintaining the existing infrastructure to facilitate socio-economic development.

(2) Transport Sub-Sector Strategies

The summary of the strategy for transport sub-sector is as follows:

Inland Transport

- Connect Lao PDR with other countries in the Mekong Sub-region, especially Thai and Cambodia.
- Strengthen highways and bridges between Vientiane and other cities.
- Develop major roads and roads connecting economic centers, remote areas, and roads for national defense and security.
- Increase paved roads.
- Provide access to currently inaccessible villages.
- Secure accessibility for both dry and wet season.
- Continue the effort to increase domestic fund for road maintenance.

Air Transport

- Upgrade important airports.
- Particularly, airports of Pakse, Savannaket and Luang Prabang are upgraded to sub-regional airport to ensure air transportation between Lao PDR and other Mekong Sub-Region countries.
- Strengthen Wattay International Airport in Vientiane.
- Strengthen training of Lao aviation staff.

Waterways

- Study the international waterway transportation system on Mekong River.

Railway Transportation

- Construct/complete about 3.5 km section of railway between the Friendship Bridge and The Na Leng.
- Continue construction of 14 km section of railway from the Friendship Bridge to Ban Kham Sa Vat.

Urban Development

- Develop Land Fund through various forms of resources.

Target

The targets concerning urban transport sub-sectors are as follows.

- To construct roads with a total length of 2,300-2,400km comprising 1,500-1,600km of asphalt-paved roads, and 750-800km of paved roads. In addition, pave with asphalt all roads connecting Vientiane with the provinces;
- To construct national roads to link provinces with Vientiane, and link national roads to neighboring countries;
- To Improve services at Wattay International Airport to meet the requirement of 1-1.5

million passenger per year;

- To construct and arrange for successful river transportation during the Sixth Plan period (2006-2010);
- To construct and arrange for successful river transportation during the Sixth Plan period;
- To develop and construct a railway system; and
- To develop sports infrastructures.

3.1.3 Regional and Urban Development Plan

(1) Regional and Urban Development

In the Sixth Plan, the Regional and Urban Development Plans are set out as follows.

“To allocate and develop the four leading cities to be socio-economic development centers of the regions namely: Namtha (Luang Namtha) in the Northern region, the capital of Vientiane, Khaanthabouly (Savannakhet) in the Central region, and Pakse (Champasak) in the Southern region, which will take the leading role for economic expansion and be in the front line for industrialization and modernization. Encourage the development of industry and services to cities, besides taking their roles as the centers for political, economic, cultural-science and technological affairs, should also take the intermediating role to ensure coordination within and between the areas.”

3.1.4 Sixth Five Years Social Economic Development Plan (2006 -2010) of Vientiane¹

The Vientiane Mayor’s Office prepared the Sixth Five Years Social Economic Development Plan (2006 -2010) of Vientiane (the Plan) following the National 6th Plan. The Plan described Evaluation of the Implementation of Social Economic Development Plan for the 5th Five-Year (2001-2005) in Part I and the Vientiane Social-Economic Development Plan for 6th Five-Year (2006 – 2010) in Part II.

Part I: Evaluation of the Implementation of Social Economic Development Plan for the 5th Five Years (2001-2005)

(1) Economy of Vientiane

The economy of Vientiane continuously expanded with proper rhyme in the five years with total GRDP of 6.405 billion Kips in 2005, which was 9.8% increased compared to the 4th Five -Year Plan (1996 -2000).

¹ As of July 2007, Committee for Planning and Investment of Vientiane reviewed the draft of this document.

Table 3.1-5 GRDP in Vientiane in 2005

| Sector | Million Kips* | GRDP Share | Increased Rate |
|---------------------------|---------------|------------|----------------|
| Agriculture and Forestry | 1,409 | 22% | 7.4% |
| Industry and construction | 3,203 | 50 % | 10.8% |
| Services | 1,537 | 24 % | 12.5 % |
| Import duties | 256 | 4 % | 9.5 % |
| Total | 6,405 | 100% | 9.8% |

Note: Amount was estimated by GRDP shares

An average income per capita for the 5th Plan(2001-2005) was \$ 953.72 which was \$107.72 higher than the one in the 4th Five-Year Plan(1996 - 2000), and in 2003/4 the income per capita raised at \$1,075 which was higher than the target by \$75.

(2) Infrastructure Development

In the past years, Vientiane improved, upgraded and constructed the roads to be better trafficable, by concentrating the construction, rehabilitation of asphalted roads, earth roads, and feeder roads in the districts, road linking between district and rural area, inner and outer ring roads. Presently, throughout Vientiane has asphalted roads of 422.5 km, which was increased by 76.85 km or 22.3 % to the 5th Plan. The bridges also were constructed and repaired; a Bung That Luang bridge and the several bailey bridges at Xaysettha District, Mayparkngum District and Sangthong District. The protection banks were constructed against river erosion at six places; Phan Manh, Hat Dok Keo, Khoy Len Man, Muang Va, Nong Heo and Vang Pho.

Table 3.1-6 Transport Infrastructure Development (2001 to 2005)

| Description | Unit | 1996 - 2000 | Implement 5 years | | | | |
|-------------------------|----------|-----------------|-------------------|-----------------|-----------------|-----------------|-----------------|
| | | | 2000/1 | 2001/2 | 2002/3 | 2003/4 | 2004/5 |
| Road | | | | | | | |
| Concrete road | Km | - | - | - | - | 10.50 | 10.50 |
| Asphalt road | Km | 345.56 | 388.99 | 388.99 | 389.63 | 407.50 | 422.50 |
| Gravel road | Km | 915.56 | 1,213.24 | 1,213.24 | 1,193.39 | 1,180.20 | 1,198.50 |
| By administrative Class | | | | | | | |
| National road | Km | 243.60 | 243.60 | 243.60 | 243.60 | 247.60 | 247.60 |
| Provincial road | Km | 270.00 | 399.68 | 399.68 | 399.68 | 234.70 | 226.70 |
| Urban road | Km | | 328.74 | 328.74 | 329.98 | 563.70 | 540.70 |
| District road | Km | 896.17 | 516.31 | 516.31 | 497.81 | 438.10 | 411.50 |
| Rural road | Km | | 560.90 | 560.90 | 560.90 | 432.50 | 509.20 |
| Bridge Length: | m | 1,415.00 | 1,855.27 | 1,855.27 | 1,853.77 | 1,908.85 | 2,013.47 |
| Concrete bridge | m | 167.40 | 167.40 | 167.40 | 167.40 | 213.30 | 213.30 |
| Bailey Bridge | m | 761.60 | 1,206.87 | 1,260.87 | 1,206.87 | 1,216.05 | 1,255.67 |
| Mix bridge | m | 254.00 | 254.00 | 254.00 | 254.00 | 254.00 | 254.00 |
| Steel bridge | m | 206.00 | 212.00 | 212.00 | 220.00 | 220.00 | 220.00 |
| Wooden bridge | m | 24.00 | 15.00 | 15.00 | 5.50 | 5.50 | 70.50 |

(3) Transportation of Vientiane

Table 3.1-7 shows the Summary of Transportation in Vientiane and Table 3.1-8 for the Statistic Data on Transport Services: 1996-2000 and 2001-2005 in Vientiane.

Table 3.1-7 Summary of Transportation in Vientiane

| Category | Land | Water | Total |
|-------------------------|---------------|-----------|---------------|
| Goods (ton) | 1,159,443 | 25,629 | 1,185,072 |
| Passenger(person) | 71,793,988 | 109,761 | 71,903,749 |
| Goods (ton x km) | 65,675,875 | 445,370 | 66,121,245 |
| Passenger(persons x km) | 2,187,207,600 | 2,931,608 | 2,190,139,208 |

Table 3.1-8 Statistic Data on Transport Services: 1996-2000 and 2001-2005 in Vientiane

| No | Description | Unit | 1996 - 2000 | Implement 5 years | | | | | Total |
|------------|-------------------------------------|----------------------|----------------------|--------------------|--------------------|--------------------|--------------------|--------------------|----------------------|
| | | | | 2000/1 | 2001/2 | 2002/3 | 2003/4 | 2004/5 | |
| A | B | C | D | E | F | G | H | I | J |
| I | <u>Good transport</u> | <u>ton</u> | 833,708 | 206,023 | 229,444 | 236,276 | 247,984 | 265,345 | 1,185,072 |
| | road transport | ton | 814,699 | 201,686 | 224,367 | 231,098 | 242,653 | 259,639 | 1,159,443 |
| | water transport | ton | 19,009 | 4,337 | 5,077 | 5,178 | 5,331 | 5,706 | 25,629 |
| II | <u>Passenger transport</u> | <u>person</u> | 46,735,349 | 11,658,782 | 13,870,394 | 14,286,293 | 15,427,683 | 16,660,597 | 71,903,749 |
| | road transport | person | 46,601,792 | 11,635,674 | 13,849,263 | 14,264,740 | 15,405,918 | 16,638,393 | 71,793,988 |
| | water transport | person | 133,557 | 23,108 | 21,131 | 21,553 | 21,765 | 22,204 | 109,761 |
| III | <u>Good circulation</u> | <u>Tonxkm</u> | 97,054,317 | 14,394,718 | 12,119,143 | 12,481,835 | 13,104,130 | 14,021,419 | 66,121,245 |
| | road transport | tonxkm | 92,092,002 | 14,319,001 | 12,031,020 | 12,391,950 | 13,011,548 | 13,922,356 | 65,675,875 |
| | water transport | tonxkm | 4,962,315 | 75,717 | 88,123 | 89,885 | 92,582 | 99,063 | 445,370 |
| IV | <u>Passenger circulation</u> | <u>pxkm</u> | 3,789,206,466 | 603,487,601 | 365,301,629 | 376,254,801 | 406,313,218 | 438,781,959 | 2,190,139,208 |
| | road transport | pxkm | 3,786,037,336 | 602,965,990 | 364,713,967 | 375,655,386 | 405,707,815 | 438,164,442 | 2,187,207,600 |
| | water transport | pxkm | 3,169,130 | 521,611 | 587,662 | 599,415 | 605,403 | 617,517 | 2,931,608 |

Source: Sixth Five Year Social Economic Development Plan (2006-2010) of Vientiane

(4) Town Administration and Development

Vientiane attempted to develop towns particularly to construct the feeder roads, improve and construct drainages, public gardens, sanitary and decoration of the towns, as results; improved and constructed 17 roads with total length of 15,217m, constructed and improved drainages three lines with length of 1,973 m.

Vientiane moved a congested community at Nong Chan to live in Nong Teng for total of 650 families, and mediated 28 cases for the families that were impacted from road and drainage construction projects with compensated 18 cases of total value of 103 million Kips. Vientiane concentrated on services and implemented regularly public works; grass cutting at the edge of roads and in the garden, cleaning surface of the roads, wrapping the main roads of 10.90 million m², dust absorbed, solid waste treatment, and absorbed waste water of 1,758.034m³, and trees and decorative flowers plantation of 32,595 trees.

Transport services were improved and better expanded; construction of Northern Bus Station and Southern Bus Station, the construction of weighbridges and its equipment at four points such as Chengsavang village, Nong Da village, Khok Sivily village and Dong Phosy village.

To maintain, clean and develop the towns, Vientiane maintained and reconstructed the public green spaces; public gardens at Simouang intersection, Jet Water, Chao Pha Ngum, Don Nun, Victory Gate, That Luang, trees and flower plantation along the main routes in order to make Vientiane a new face, be more clean and beautiful as it is.

(5) Finance and Budget

Table 3.1-9 shows Revenues & Expenditures of Vientiane in 1996 - 2000 and 2001 - 2005.

Table 3.1-9 Revenues & Expenditures of Vientiane (1996 - 2000 and 2001 - 2005)

| Description | 1996 -2000 | Implement 5 years | | | | | Total |
|--|---------------|-------------------|------------|------------|------------|------------|--------------|
| | | 2000/1 | 2001/2 | 2002/3 | 2003/4 | 2004/5 | |
| Total revenues | 626 | 399 | 409 | 502 | 667 | 862 | 2784 |
| Income from Taxation | 349 | 244 | 147 | 175 | 178 | 257 | 948 |
| Income from Custom duties | 242 | 127 | 240 | 305 | 456 | 574 | 1,703 |
| Income from Land use and Houses | 8 | 4 | 4 | 5 | 7 | 7 | 27 |
| Income from State Assets | 27 | 24 | 17 | 1 | 27 | 24 | 107 |
| Total expenditures | 166 | 153 | 275 | 268 | 270 | 114 | 1,225 |
| Salary, bonus | 42 | 18 | 98 | 110 | 117 | 71 | 541 |
| Administrative expenses | 12 | 7 | 19 | 15 | 31 | 14 | 99 |
| Expenditures for promotion | 26 | 9 | 27 | 27 | 40 | 8 | 116 |
| Reserve fund, emergency expenses, others | | 9 | 1 | 9 | 1 | 1 | 20 |
| Expenditures for state investment | 86 | 110 | 130 | 105 | 81 | 22 | 450 |

Source: Sixth Five Year Social Economic Development Plan (2006-2010) of Vientiane

(6) Investment and Cooperation

In the past five years, Vientiane approved funds for socio- economic development of total 1,590 projects valued 977 billion Kips; domestic funds of 442 billion Kips and foreign funds of 535 billion Kips, increased by 4.5 times comparing the 4th Five-Year Plan (217 Billion Kips). These amounts reached at approximately 67 % of the planned target. The Central Government funded 11 projects valued 645 million Kips and additional 90 projects valued of 21 billion Kips for using in the maintenance of roads, improved public garden and electricity grids, and social welfare.

(7) Public Investment

Table 3.1-10 shows public investment by domestic and foreign of Vientiane in 1996 - 2000 and in 2001-2005. Table 3.1-11 also shows domestic and foreign finance of Vientiane (2001 - 2005)

Table 3.1-10 Public Investment of Vientiane (1996 - 2000 and 2001 - 2005)

| Fund Category | Unit | 1996 -2000 | Implement 5 years | | | | | Total |
|------------------------------------|----------|----------------|-------------------|----------------|----------------|----------------|----------------|------------------|
| | | | 2000/1 | 2001/2 | 2002/3 | 2003/4 | 2004/5 | |
| Total | Mil. Kip | 200,873 | 157,839 | 159,585 | 151,680 | 232,444 | 310,484 | 1,012,033 |
| Domestic | Mil. Kip | 90,838 | 110,534 | 130,000 | 110,000 | 69,500 | 22,000 | 442,034 |
| Foreign | Mil. Kip | 110,035 | 47,305 | 29,585 | 41,680 | 162,944 | 288,484 | 569,999 |
| 1. Agriculture and Forestry | | | | | | | | |
| No. project | No. | 276 | 115 | 185 | 151 | 94 | 2 | 547 |
| - Domestic | Mil. Kip | 50,084 | 83,825 | 55,968 | 68,985 | 26,507 | 525 | 235,809 |
| - Foreign | Mil. Kip | 0 | 2,543 | 1,069 | 4,900 | 4,910 | 8,234 | 21,656 |
| 2. Industry and Handicraft | | | | | | | | |
| No. project | No. | 32 | 14 | 18 | 12 | 24 | 0 | 68 |
| - Domestic | Mil. Kip | 3,852 | 2,710 | 3,200 | 1,405 | 3,493 | 0 | 10,807 |
| - Foreign fund | Mil. Kip | 153 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3. VUDAA | | | | | | | | |
| No. project | No. | 87 | 21 | 69 | 11 | 28 | 23 | 152 |
| - Domestic | Mil. Kip | 4,832 | 6,308 | 11,029 | 6,902 | 10,989 | 18,924 | 54,151 |
| - Foreign | Mil. Kip | 34,212 | 5,857 | 13,427 | 20,507 | 138,509 | 214,169 | 395,469 |
| 4. CTPC | | | | | | | | |
| No. project | No. | 424 | 32 | 178 | 35 | 66 | 8 | 319 |
| - Domestic | Mil. Kip | 17,799 | 3,529 | 20,202 | 13,716 | 10,908 | 520 | 48,875 |
| - Foreign | Mil. Kip | 20,241 | 4,000 | 13,790 | 7,610 | 12,625 | 56,474 | 97,837 |
| 5. Trade | | | | | | | | |
| No. project | No. | 0 | 0 | 7 | 2 | 4 | 0 | 13 |
| - Domestic | Mil. Kip | 0 | 0 | 770 | 235 | 600 | 0 | 1,604 |
| - Foreign | Mil. Kip | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6. Education and Sports | | | | | | | | |
| No. project | No. | 67 | 24 | 40 | 31 | 36 | 5 | 136 |
| - Domestic | Mil. Kip | 5,679 | 2,896 | 8,814 | 6,095 | 5,249 | 1,046 | 24,099 |
| - Foreign | Mil. Kip | 3,919 | 515 | 1,100 | 8,198 | 1,900 | 3,057 | 12,872 |
| 7. Health | | | | | | | | |
| No. project | No. | 25 | 8 | 18 | 11 | 13 | 1 | 51 |
| - Domestic | Mil. Kip | 2,070 | 550 | 1,442 | 984 | 737 | 285 | 3,998 |
| - Foreign | Mil. Kip | 51,510 | 30,690 | 0 | 0 | 0 | 1,000 | 31,690 |
| 8. Information/Culture | | | | | | | | |
| No. project | No. | 17 | 1 | 9 | 4 | 10 | 0 | 24 |
| - Domestic | Mil. Kip | 513 | 100 | 1,369 | 1,028 | 630 | 0 | 3,127 |
| - Foreign | Mil. Kip | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9. Labor | | | | | | | | |
| No. project | No. | 20 | 1 | 10 | 6 | 5 | 0 | 22 |
| - Domestic | Mil. Kip | 829 | 158 | 1,491 | 847 | 480 | 0 | 2,976 |
| - Foreign | Mil. Kip | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10. Other Sectors | | | | | | | | |
| No. project | No. | 75 | 36 | 114 | 46 | 96 | 4 | 296 |
| - Domestic | Mil. Kip | 5,352 | 10,458 | 27,084 | 9,804 | 9,907 | 700 | 57,953 |
| - Foreign | Mil. Kip | 0 | 3,700 | 200 | 466 | 5,000 | 5,550 | 14,446 |

Table 3.1-11 Finance Arrangement of Vientiane (2001 - 2005)

Unite: Million US\$

| Description | 1996-2000 | Implement 5 years | | | | | Total | Percentage |
|----------------------------------|-----------|-------------------|--------|--------|--------|--------|-------|------------|
| | | 2000/1 | 2001/2 | 2002/3 | 2003/4 | 2004/5 | | |
| Loan and Grant Aid | 40 | 3 | 35 | 104 | 5 | 7 | 154 | 8.2% |
| - Grant aid | 16 | 1 | 9 | 37 | 2 | 2 | 51 | 2.7% |
| - Loan | 24 | 2 | 26 | 67 | 2 | 6 | 103 | 5.5% |
| Domestic and Foreign Investments | 549 | 211 | 1,186 | 112 | 112 | 105 | 1,725 | 91.8% |
| - Foreign fund | 549 | 208 | 895 | 92 | 103 | 99 | 1,396 | 74.3% |
| - Domestic private fund | - | 3 | 291 | 20 | 9 | 6 | 329 | 17.5% |
| Total | 589 | 214 | 1,221 | 216 | 117 | 112 | 1,879 | 100.0% |

Part II: Vientiane Social- Economic Development Plan for the 6th Five-Year (2006 - 2010)

(1) General

Following the Resolution of the 8th Party Congress, Resolution of the Fourth Party Congress of Vientiane, and the 6th National Five-Year Social-Economic Development Plan (2006 – 2010), a Vientiane Social- Economic Development Plan for the 6th Five-Year (2006 - 2010) was prepared with the Vision 2020 of Vientiane, the objectives, common targets and targets in each field in order to facilitate in the implementation of the sectors and districts.

(2) Objectives and Targets for 2006 – 2010

The objectives and targets related to the Study are described as follows.

Common objectives

1. To build up Vientiane to become the central for politic, economy and culture of the country, to be a city for businesses and services.
2. To actively ensure the political stability and national security, increase and strengthen comprehensively the development of Vientiane by considering economic development as central focus point.
3. To continue to promote multi-sectors economy to be strongly expanded in accordance with the target for step up toward socialist, emphasizing the economic development in parallel with social development, and sustainable protection of environment, social - economic development.
4. To change the economic structure in progressive way by strongly promoting industrial production and services which adhere with the advanced agricultural production with the new technology.

Common Targets

Common targets is to expand the economy continuously in 5 years at the rate of not less than 9 % per annum, average per capita income of not less than \$1,300 per person per year, Gross Regional Domestic Products (GRDP) obtained by 11,130 billion Kips.

Table 3.1-12 Sectorial Economic Target

| Sector | Amount (billion Kips) | GRDP Share | Rate Increased |
|-------------------------|-----------------------|------------|----------------|
| Agriculture-forestry | 1,892 | 17.0 % | 7.79 % |
| Industrial/Construction | 6,144 | 55.2 % | 12.51 % |
| Service | 3,094 | 27.8 % | 11.28 % |
| Total | 11,130 | 100.0% | - |

(3) Population and Labor Force

Vientiane is located in the central part of the country and it has a total land area of 3,920 km², covering 1.7 %. The population is 695,473 including 51% females, with nine districts and 499 villages. The population density is 177 persons/km².

Table 3.1-13 Target Population and Labor Force Structure

| Description | Population | Shares |
|---------------------------------|------------|--------|
| Total in 2010 | 838,000 | 100% |
| Population in 15 to 60 year old | 493,765 | 59 % |
| Actual labor force | 434,513 | 88 % |
| Working labor force (2%) | 425,819 | 86 % |
| Sector Share | | |
| -Agriculture - forestry | 234,203 | 55 % |
| -Industry/Construction | 85,160 | 20 % |
| - Services | 106,456 | 25 % |

(4) Land use Development plan

The following projects are proposed to complete land use adjustment for land use development plan:

1. Data collection as basis for land use planning and development
2. Management and inspection on the use of land in nine districts
3. Survey on the identification of the boundary areas in the ponds and lakes
4. Land use adjustment, classification of land type for the management and use
5. Land adjustment for the residents and production
6. Survey-design for the development plan at village level

(5) Communication, Transport, Post and Construction and Urban Management and Development

Development Objectives

The development objectives are planned to build Vientiane to be green and beautiful, to have convenient basic infrastructures, to have modern system in the urban management and administration, to create Vientiane inhabitants voluntarily urban sanitary protection and strictly respect the road traffic rules and regulations.

Targets for the focus Projects

To achieve the development objectives, the following project are proposed.

1. Community awareness on the urban protection and development.
2. Introduction of road traffic regulations for teaching in primary and upper secondary schools.
3. Expansion of road T2 and P in total of 18 roads having a total length of 64.5 km.
4. Road construction project No. 1 from Xikhay to Thadeua.
5. Road maintenance of 7 points in the urban for total length of 237km.
6. Asphalt pavement of two outside urban ring roads for the length of 30km.
7. Mekong river bank protection and development.
8. Railway construction with length of 3.5 km.
9. Improvement of urban transportation.
10. Road construction from Dong Phosy to Km21 (Road No.13 South).
11. Construction of truck station in Nasai Thong or Xay Thani District.
12. Construction of public parking lots in the urban.
13. Upgrading of the feeder roads in the urban.
14. Construction of drainages in the urban (Hongseung) with construction of bridge across Hongseung.
15. Improvement and construction of rural roads such as road from Koay village - So Village - Vang Ma, in Xang Thong district, road along Ngum river bank to Duoang Budy village , survey, design and construct road from Champa village - Tat Mun - Houei Deua.
16. Construction of public gardens in That Luang Temple (former Sethathirat Hospital), public garden in km6, Nong Tha area, public garden in surrounding That Luang, Hong Thong public garden linking with the construction of the night market, Nong Chan public garden and new urban extension areas.
17. Improvement of road traffic signals and signs along the routes.
18. Management of solid wastes, sanitary, and urban decoration.
19. Construction of Dong Mak Khai water supply, with each day volume of 20,000m³.
20. Construction of Nong Tha comprehensive public gardens.
21. Expansion of Kao Liao water supply to have volume of 40,000m³.
22. Expansion of water supply intakes with the length of 150km with grant aid by AFD.

23. Expansion of Chi Nai Mo water supply to have volume of 8,000m³.
24. Tree plantation along the road No. 13 North-South and road No. 10.

(6) Finance and Budget

It is estimated to exploit income into budget for Vientiane to attain about 16 - 18 % of GDP in each year or about 1,780 billion Kips to 2,003 billion Kips or income increase by 25-30 % per annum; of which Vientiane have to collect about 9 - 10 % of GDP and the central attain about 7 - 8 % of GDP, and reserve funds within Vientiane at basic level. Vientiane will attempt to strictly manage the expenditures, absolutely not impose the debts and strictly implement the Budget Law.

(7) Mobilization of Foreign Fund and Cooperation:

Fund Mobilization from abroad

- Mobilization of grant aid and loans from friendship countries: attempt to mobilize grant aid and low interest (ODA) to attain about 40 % of total grant aid and loan for across the country.
- Mobilize foreign direct investment (FDI) not less than 80 % of total value foreign investment in Lao PDR.

3.1.5 Transportation Development Plan in Year 2010 and Vision in Year 2020 in Vientiane

The Transportation Development Plan in Year 2010 and Vision in Year 2020 was formulated by Road-River Transport Management Office, DCTPC on 25 June 2004. The main projects are summarized below.

1. City Public Transportation Improvement Project including Public Bus Services and Bus Stations Improvement.
2. Electric Bus Services Project
Three routes are proposed having total length of 46km
 - Tala Sao and Friendship Bridge: 23km
 - Tala Sao and Don Noun Intersection: 12km
 - Tala Sao and Nong Teng Area: 11km
3. Provincial & International Public Transportation Station Construction in Suburban areas
 - 1) Construction of New Bus Terminal
 - Sikhottabong District
 - Xaythany District
 - 2) International Standard Public Transportation Improvement Project

4. Provincial & International Truck Terminal Project
 - 1) Construction of New Truck Terminal
 - Xaythany District
 - Hatxayfong District
 - Maxaythong District
 - 2) Truck Transportation Standardization & Improvement Project.
5. City Public Parking Construction Project
6. Truck Weigh Station Construction Project
 - Nongda Village: RN11, Km5+400, Sikhottabong
 - Chengsavang Village point: RN13N, Km30, Naxathog
 - Khoksivilay Village point: R13S, Km21, Xaythany
 - Dongphosy Village point; RN1, Km24, Hatxayfong

3.1.6 Urban Development Plan of Vientiane

An official development plan of Vientiane is under the study by GOL. The detailed discussions are made in chapter13.

3.2 EXISTING STUDIES ON URBAN TRANSPORT IN VIENTIANE

The Relevant Studies on urban transport in Vientiane are summarized by the study components. The detailed contents for the major study will be reviewed in the relevant chapter.

3.2.1 National Development Plan

| Project /Study Title | Implement. Agency | Finance Source | Scope of Project | Study Year | Remarks |
|--|---------------------------------------|----------------|---|------------|----------------------------|
| N1. Vientiane Urban Infrastructure and Services, TA No. 3333-LAO, Final Report, Poverty in Vientiane, A Participatory Poverty Assessment | MCTPC/VUDAA | ADB | Study for preparation of implementing program for financial preparation | Jan. 2001 | Socio/ economic Conditions |
| N2. National Socio – Economic development Plan, 2006-2010 | Committee for Planning and Investment | GOL | Five-year plan | 2005 | National Plan |
| N3. ADB Country Strategy and Program, 2007-2011 | | ADB | ADB aid strategy and program | 2006 | National Plan |

3.2.2 Land Use and City Planning

| Project /Study Title | Implement. Agency | Finance Source | Scope of Project | Study Year | Remarks |
|--|---|-------------------------------|--|------------|------------------------------|
| L1. Vientiane, Projet de Ville, Projet de municipalité, DESS Urbanism et Aménagement | | Institut Français D'urbanisme | Vientiane urban development study (French only) | Sep. 2000 | Urban Development |
| L2 Vientiane Urban Infrastructure and Services, TA No. 3333-LAO | VUDAA | ADB | Study for preparation of implementing program for financial preparation | Jan. 2001 | Land Use |
| L3 Central Regional Water Supply & Urban Development Project | Department of Housing & Urban Planning, MCTPC | ADB | National Urban Sector Strategy and Investment Plan, Volume 2, Final Report | March 2005 | Urban Development Governance |

3.2.3 Road Network

| Project /Study Title | Implement. Agency | Finance Source | Scope of Project | Study Year | Remarks |
|--|-------------------|----------------|---|------------|------------|
| R1 Vientiane Urban Infrastructure and Services, TA No. 3333-LAO, (Road & Drainage Inventory) | VUDAA | ADB | Study for preparation of implementing program for financial preparation | Jan. 2001 | Local Road |
| R2. Vientiane Urban Infrastructures and Services Project | VUDAA | ADB | ADB Loan No. 1834 (SF) and AFD Grand, Quarterly Progress Report No.20 | Dec. 2006 | Road |

3.2.4 Transport Plan

| Project /Study Title | Implement Agency | Finance Source | Scope of Project | Study Year | Remarks |
|--|--|---------------------|--|------------|-----------------------------------|
| PT1. Civil Aviation Master Plan, 2003 to 2013 | MCTPC | ADB | New airport plan | 2003 | Transport |
| PT2. Vientiane, Urban Development Management Ownership, Asia Urbs Lao 001 Project | Vientiane | EU, Paris, Brussels | | | |
| PT3. Transportation Development Plan and Vision Year 2020 in Vientiane | DCTPS, Vientiane Mayor Office | GOL | Presentation of transport plan (originally Los) | June 2004 | Transport Plan |
| PT4. Elaboration du Plan Strategique de Déplacements Urbaines de Vientiane | VUDAA | EU | Master plan of urban transport in city center (French only) | June 2005 | Transport Plan |
| PT5. Institutional and regulatory Framework for Road Transport Services in Lao PDR, Descriptive & Diagnostic Analysis of Road Transport in Lao PDR | ADB | ADB | | Dec. 2005 | |
| PT6. Advisory Services on Upgrading Capability of the Transport Fleet | United Nations Economic and Social Commission for Asia and the Pacific | UN | Study on transport industry | Jan. 2006 | Transport |
| PT7. Vientiane Sustainable Transport Initiative | MCTPC | GEF, WB | Implementation program for preparation of finance from GEF, WB | May 2006 | Public Transport (BRTS), NMT, TDM |
| PT8. Study on Integration Distribution Center in Savanakheth and Vientiane | MCTPC | Japan (JETRO) | Logistic study | March 2007 | Transport |

Note: JETRO: Japan External Trade Organization

3.2.5 Transport and Facilities

| Project /Study Title | Implement. Agency | Finance Source | Scope of Project | Study Year | Remarks |
|---|------------------------------|----------------|---|------------|--|
| TF1. Study on Integrated Distribution Center in Savannakhet and Vientiane | MCTPC | Japan (JETRO) | Logistic center/ truck terminal construction | March 2007 | Truck terminals |
| TF2 Nongkhai to Vientiane Railway Project | MCTPC/ Lao Railway Authority | KRTC | Construction of 12.25km railway and three stations (Ban Thanaleng, Somsanga, Vientiane) | July 2002 | The first 3.5km financed by NEDA* Thailand 30% Grant/ 70% loan |

Note: KRTC: Korean Railway Technical Cooperation. NEDA*: Neighboring Countries Economic Development Cooperation Agency, Thailand.

3.2.6 Institutional Structure and Legislation

| Project /Study Title | Implement Agency | Finance Source | Scope of Project | Study Year | Remarks |
|--|---|----------------|--|------------|------------------------------|
| IL1. Organization of the Government of Lao PRD | Prime Minister' Office | UNDP, SDC | Government organization, administration laws | 2000 | Governance |
| IL2. Institutional Capacity Building RMP 2, 2005-2006 | - | GOL | Training program | 2004 | Governance |
| IL3. Central Regional Water Supply & Urban Development Project | Department of Housing & Urban Planning, MCTPC | ADB | National Urban Sector Strategy and Investment Plan, Volume 2, Final Report | March 2005 | Urban Development Governance |
| IL4. Institutional and Regulatory Framework for Road Transport Services in Lao PDR | | ADB | Descriptive & diagnostic analysis of road transport in LAO PDR | Dec. 2005 | Governance |

3.3 MAJOR PROJECTS FOR URBAN TRANSPORT IN VIENTIANE

3.3.1 On-going Projects

The on-going projects are summarized in Table 3.3-1.

Table 3.3-1 Summary on Grant Aid, Grant, Funding and Loans of Vientiane in 2004-2005

| No. | Project Name | Agency | Fund Source | Project Cost (US\$) | |
|-----|---|--------|---------------|---------------------|------------------|
| | | | | Grant Aid | Loan |
| 01 | Road No.13 North Maintenance Project | DCTPC | WB | - | 20,000 |
| 02 | Road No.10 North Maintenance Project | | WB | - | 260,000 |
| 03 | Road Maintenance No.11 North Project | | WB | - | 350,000 |
| 04 | Street Light Installation and Lane Line Road No. 13 South and Road No. 13 North | | WB | - | 230,000 |
| 05 | Highway Road Maintenance around Urban and Rural Road | | SIDA | 134,000 | - |
| 06 | Waste Water Drainage & Manhole (ThongkhankhamDongpalan,Nongchan Village) | | DANIDA | 549,392 | - |
| 07 | Bank Protection Project(Kaoliew-Thintan) | | Belgium | 30,000 | - |
| 08 | District CTPC Office Construction (9 District) | | WB | - | 108,000 |
| 09 | Bridge Maintenance Road No.11 | | WB | - | 17,000 |
| 10 | Bridge Maintenance National Road and Provincial Road | | WB | - | 174,491 |
| 11 | Road Maintenance (Kha msavard-Donkhamsang) | | WB | - | 350,000 |
| 12 | Bridge Maintenance Community Provincial Road | | WB | - | 150,000 |
| | | | Total | 713,392 | 2,459,491 |
| 01 | Road Construction and Drainage Project | VUDAA | ADB | - | 1,049,201 |
| 02 | Road Construction and Drainage Community Area Project | | ADB | - | 17,114 |
| | | | Total | - | 1,066,315 |
| 01 | Solid Waste Management Project | DoE | JFPR | 53,778 | - |
| | | | Total | 53,778 | - |
| 01 | Promotion or for Official ,Traffic Light Management and Road Safety | VWU | FRANCE | 263,935 | - |
| 02 | Vientiane Urban Infrastructure And Services Project | | ADB | - | 2,927,160 |
| 03 | AFD Project | | FRANCE | 828,289 | |
| 04 | Community Solid Waste Improvement Project | | JFPR | 550,189 | |
| | | | Total: | 1,642,413 | 2,927,160 |

Note: VWU: Vientiane Women's Union

SIDA: Swedish International Development Agency

DANIDA: Danish International Development Agency

JFPR: Japan Fund for Poverty Reduction

Source: Vientiane, Foreign Relationship Office

3.3.2 Planned Projects

The major planned projects which have received finance are summarized in Table 3.3-2.

Table 3.3-2 Planned Projects for Urban Transport in Vientiane

| Project | Project Cost | Finance Source | Start Year |
|--|-------------------|-----------------|--------------------|
| 1.Railway Extension Project: Friendship Bridge-Thanaleng Station (approximately 3.5km) | 197 million Bath | Thailand | August 2007 |
| 2.Environmentally Sustainable Transport in Laos (Policy Study) | 55,000 US\$ | UNCRD | June-December 2007 |
| 3.Vientiane Sustainable Transport Initiative | 25.6 million US\$ | GEF | NA |
| 4.New Town Development (under Study) | NA | China (Private) | August 2007 |
| 5.Urban Bus Services in Vientiane Urban | NA | China (Private) | July 2007 |

The details of major projects are summarized below. The projects of new town development and urban bus services in Vientiane Urban are still under negotiation.

1. Railway Extension Project: Friendship Bridge- Thanaleng Station

Objectives: The project has been promoted by commencing construction of Friendship Bridge (1.2km) crossing the Mekong River in 1991. While this bridge crossing Thailand to Lao PRD was being constructed for the purpose of road, the necessity of railway crossing the bridge was appeared. The design of bridge is modified to cater for train operation with a single track running centrally along the upper deck of the bridge. The route is designed to link from Bangkok-Nongkhai line of State Railway of Thailand (SRT) to Vientiane, the capital of Lao PDR. SRT planned to construct the railway from Nongkhai to the middle of Friendship Bridge and improved Nongkhai station catering for new facilities for passengers and freights at the same time. SRT completed Bangkok-Nongkhai railway in 1999 but the Government of Lao PDR suspended railway of Nongkhai- Friendship Bridge due to economic difficulties. The GOL carried out the feasibility study for railway from Nongkhai to Friendship Bridge in 1995 and completed the design for railway from Friendship Bridge to Ban Thanaleng.

Project Concept: The project study was carried out in 2002 for a total length of 12.45km. The construction of the first stretch of 3.5km was already started by land acquisition and embankment including box culverts construction in 2007. Neighboring Countries Economic Development Cooperation Agency , Thailand (NEDA Thailand) financed 197 million Baht with 30% of grant aid and 70% of loan. The extension of remaining 9km is under further study by Agence Française de Développement (AFD).

Total plan of the railway network is shown in Figure 3.3-1. In Vientiane, there will be six

stations on South Line to Thakek and Vietnam border and three stations on North Line to Luangphaban and Chinese border. Most important stations is Vientiane Station.

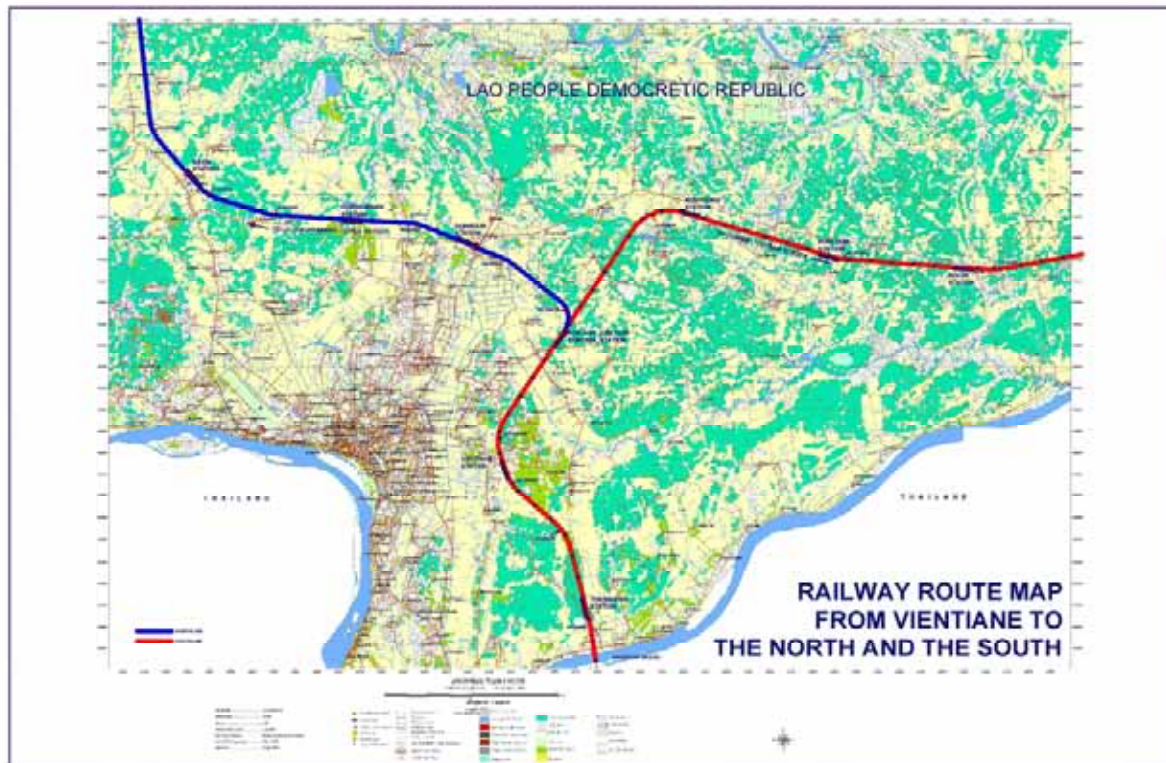


Figure 3.3-1 Railway Route Map in Vientiane

2. National Environmentally Sustainable Transport (EST) Strategies and Capacity Building for Socio-economic Concerns in Lao PDR

Objectives: The overall objective of this project is to integrate the perception of environmentally sustainable transport in the overall planning process through the identification of issues, strategic challenges, and required measures in Asian countries with the collaboration of the Ministry of Environment, the Ministry of Transport, other line Ministries/agencies, relevant national/international organizations, resource institutions, and NGOs. In order to contribute to the achievement of the Johannesburg Plan of Implementation (JOPI), the detail objectives include:

- a) Promote environmentally sustainable transport (EST) through a range of activities such as catalyzing local/national level actions to promote appropriate set of policy instruments and measures;
- b) Establish a decentralized network of EST knowledge bases at national and regional level to meet the information needs of the developing countries in the region;
- c) Formulate national Strategy and Action Plan on EST for selected countries involving all key stakeholders at national level and addressing short-term, medium-term, and

long-term actions/measures.

- d) Increase awareness and capacity at local and regional level on various aspects of environmentally sustainable transport (vehicle emission control and Inspection and Maintenance (I/M), clean fuel, ambient air quality, public transport planning and Transportation Demand Management (TDM), Non-Motorized Transport (NMT), road safety and maintenance, traffic noise management, environmental and people friendly urban transport infrastructures, land use planning, and strengthening knowledge base, public education, health and awareness, through training, consultation and workshops; and
- e) Facilitate cooperation/partnership among the countries on the exchange of information on best practices, policy instruments, tools, technologies on various aspects of EST through Regional EST Forum.

Project Outputs: The project is expected to make the following impacts/results/outputs:

- (a) Enhanced awareness and capacity at local and national level on various aspects of environmentally sustainable transport;
- (b) Strengthening coordination and collaboration among key local/national agencies such as private sectors, business sectors, industry groups, NGOs, research institutions, Government agencies, dealing with various aspects of environmentally sustainable transport;
- (c) National Strategy-cum-Action Plan on EST for selected counties involving all key stakeholders at national level and addressing short-term and long-term targets/commitments/activities/measures; and
- (e) Establishing a knowledge base on various aspects of EST.

Project Implementation: from December 2006 to January 2008

3. Vientiane Sustainable Transport Initiative

Objectives: The Initiative will reduce transport related greenhouse gas emissions in Vientiane through mode shifts to public transport and non-motorized options; the emission reductions are estimated to be 1.05 million tons of CO₂ equivalents over a period of 20 years.

Project Components: The project encompasses three of the basic foundations for an integrated package of sustainable transport measures; (i) Delivery of a high-quality public transport system, (ii) Promotion of non-motorized options, and (iii) Incentives to curtail usage of private motorized vehicles. Specifically, this initiative supports the effects of the GOL and the Vientiane to implement the following: 1. A full Bus Rapid Transit (BRT) system; 2.

Greenway corridors and fully pedestrianized areas; 3. A viable cycle way network; 4. Demonstration of emission-free bicycle taxis (pedicabs); and 5. Transportation demand management (TDM) and land-use measures that discourage the use of private vehicles.

Project Implementation: the Project is divided into three stages; short-term (1-4 years), medium-terms (5-9 years), and long-terms (10 years and beyond). In the short-term, the following components will be undertaken.

Table 3.3-3 Project Component in Short-Term

| Public Transport | Pedestrians | Bicycles | TDM |
|------------------------------|----------------------------------|--|--------------------------|
| BRT Plan | Pedestrian plan | Cycle way plan | Vehicle restriction plan |
| Phase I corridor constructed | -Mekong riverfront -Chinatown | -demonstration of bicycle integration at public transportation station | Pilot TDM program |

CHAPTER 4

EXISTING ROAD NETWORK

CHAPTER 4 EXISTING ROAD NETWORK

4.1 ROAD CLASSIFICATION

4.1.1 Administrative Road Classification

According to the Road Law in Lao PDR, all roads in the country are classified into 6 categories. The highest category is National Road, followed by 5 categories i.e. Provincial Road, District Road, Urban Road, Rural Road and Special Road. In general, MCTPC manages only National Road and DCTPC of each province has responsibility on the Provincial, District, Urban and Rural Roads. In the center of urbanized area of Vientiane, most of Urban Roads and Rural Roads are managed by VUDAA and remaining roads are maintained by DCTPC. The roads categorized in Special Road are basically the out of their jurisdiction and they are managed by military, local community, private company and so on. However, each road has been given the identification number called Road Code and MCTPC has unitarily collected the data of all road renewed every year. The road classification in Vientiane is summarized in Table 4.1-1.

Table 4.1-1 Administrative Classification & Surface Type of Roads in Vientiane (9 District)

| Category | | Concrete | AC | BST | Gravel | Earth | Sub Total |
|-----------------|----|----------|-------|--------|----------|--------|-----------|
| National Road | km | 1.80 | 31.30 | 137.10 | 62.50 | 15.00 | 247.70 |
| Provincial Road | km | | | 47.60 | 95.20 | 3.60 | 146.40 |
| District Road | km | | | 34.70 | 353.60 | 27.20 | 415.50 |
| Urban Road | km | 7.70 | 36.00 | 138.80 | 213.80 | 109.40 | 505.70 |
| Rural Road | km | | | 5.60 | 330.80 | 160.30 | 496.70 |
| Special Road | km | 1.00 | | 2.90 | 40.60 | 9.50 | 54.00 |
| Total | | 10.50 | 67.30 | 366.70 | 1,096.50 | 325.00 | 1,866.00 |

*)AC : Asphalt Concrete, BST : Bituminous Surface Treatment

Source: Communication and Management Office, MCTPC

The Table 4.1-2 shows lengths of roads, by administrative classification and surface type, in the Study Area.

Table 4.1-2 Road Classification in the Study Area (5 Districts)

| Category | | Concrete | AC | BST | Gravel | Earth | Sub-total | Share |
|-----------------|----|----------|------|-------|--------|-------|-----------|-------|
| National Road | km | 1.8 | 25.3 | 17.5 | 18.5 | | 63.1 | 8.0 |
| Provincial Road | km | | | 24.3 | 43.3 | | 67.6 | 8.5 |
| District Road | km | | | 25.4 | 52.3 | 10.8 | 88.5 | 11.2 |
| Urban Road | km | 7.7 | 36.1 | 134.8 | 174.2 | 70.1 | 422.9 | 53.4 |
| Rural Road | km | | | 3.4 | 86.6 | 59.0 | 149.0 | 18.8 |
| Special Road | km | 0.5 | | 0.2 | 0.6 | | 1.3 | 0.1 |
| Total | | 10.0 | 61.4 | 205.6 | 375.5 | 139.9 | 792.4 | 100% |

Figure 4.1-1 shows geographical locations of roads by administrative classification.

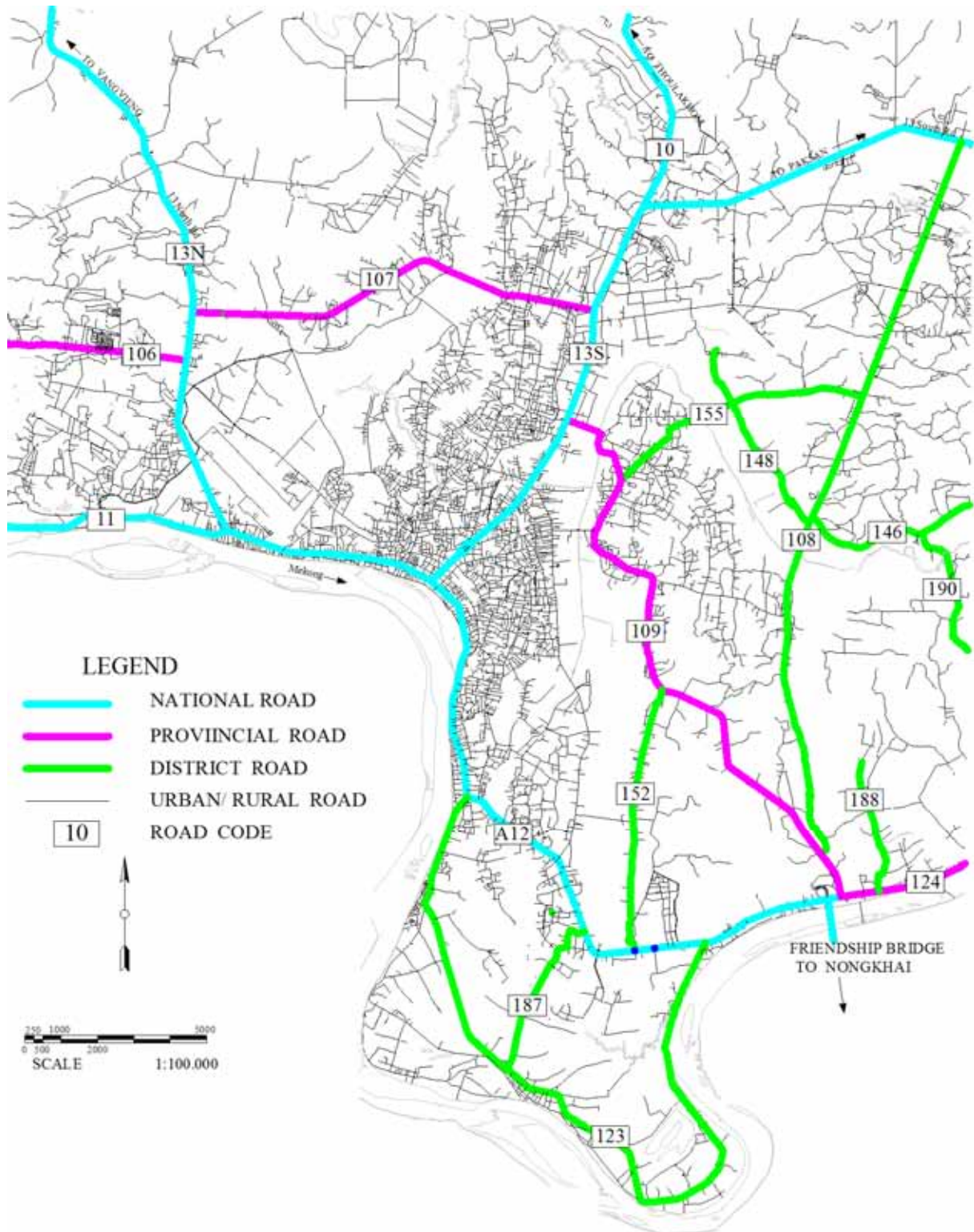


Figure 4.1-1 Administrative Road Classification in the Study Area

The share of the length of each road category in the Study Area is shown in Figure 4.1-2. It is clear that the large portion of the road network in those 5 districts is urban roads. In the fact, national, provincial and district roads of this area mainly shoulders traffic for radial direction from urban center, and inner traffic of urbanized area are catered for urban roads. In suburban area, the most of the roads including major village access, inter-village road, agricultural distributor and community roads are classified into rural road.

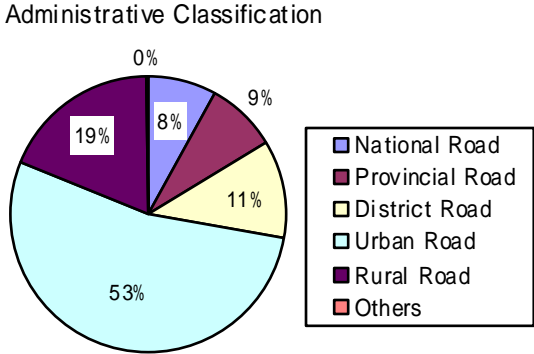


Figure 4.1-2 Share of Each Road Category in the Study Area

4.1.2 Functional Road Classification

A road network needs to be balanced from the viewpoint of functional hierarchy. Functional classification of the road network in the Study Area has not been officially established. VUDAA is considering classifying the roads in its jurisdiction into Main Road and Feeder Road but it is not completed. Figure 4.1-3 shows the functional classification of the road network in the Study Area. In this classification, Provincial Roads, Primary Roads designated in the VUDAA’s draft classification and existing multi-lane roads are classified as Arterial Roads. District Roads and roads connecting are classified as Collector Roads.

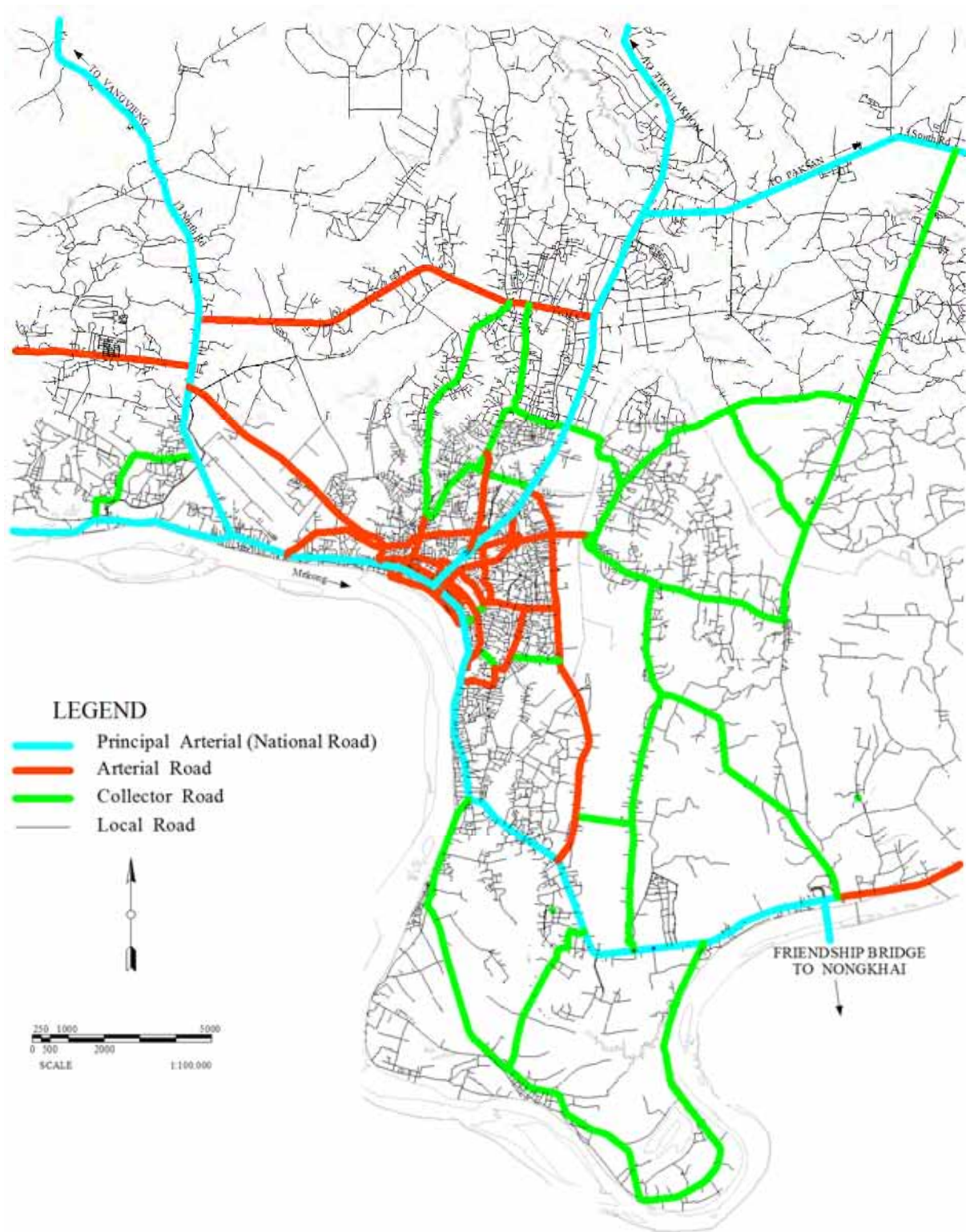


Figure 4.1-3 Proposed Functional Road Classification

4.2 EXISTING ROAD CONDITION

4.2.1 Road Inventory Survey

The Study Team carried out the inventory survey of the road network in the Study Area. The main objectives of the inventory survey are the following:

- (i) To collect data on the present condition of the existing road to be used in the traffic analysis/forecast, and
- (ii) To assess the existing road condition in the Study Area and identify the problems.

The results of the road inventory survey are presented in Appendix 4.

Only Arterial Road and Collector Road classified in the previous section were surveyed considering the objectives of the survey and time constraints. The field survey was conducted in June 2007. Luang Phabang Rd. and Thadeua Rd. were excluded from the Inventory survey because those roads were being improved.

4.2.2 Cross Section, Surface Type and Condition

(1) Cross Section

Principal Arterial & Arterial Road

Lang Xang Avenue is the symbol of Vientiane and the state. The cross section composition is quite different from the other arterials with wide median, three lanes in each direction and wide side right-most lane which is often used for temporal parking space. The cross section of Lang Xang Avenue is shown in Figure 4.2-1.

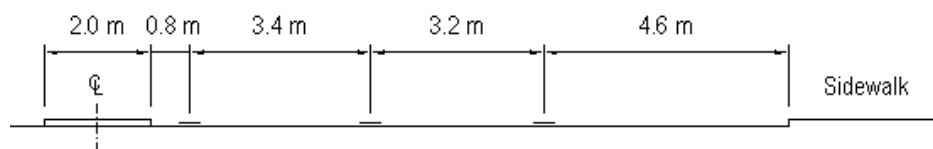


Figure 4.2-1 Cross Section of Lang Xang Avenue

In the Study Area, basically arterial road has multi-lane for the both directions. Some of the sections has narrow lane for slow speed traffic and motorcycles. In other cases, parking lane or bus bay is provided at outside of carriageway. The road marking on the bituminous surface treatment is often worn out and practically non-existent or not visible. For this reason, the width of each lane is not clear on some road sections. The sidewalk is basically provided in the urbanized area but the width is not uniform because of the availability of land and adjustment with the road side condition. In the suburban area, carriageway is set up with single lane for each direction. The typical cross section of an arterial road is illustrated in Figure 4.2-2.

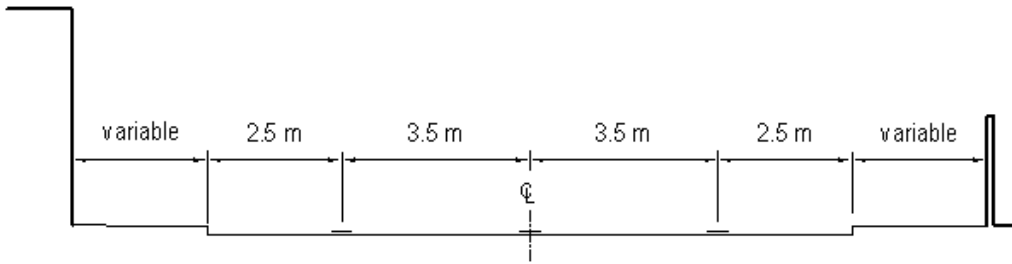


Figure 4.2-2 Typical Cross Section of Arterial Road

Collector Road

Basically all road sections of collector road are composed of single lane for each direction. Usually the mount-upped sidewalk is not provided and shoulder is utilized for pedestrian space. Side ditch is provided for the surface water if required. The typical cross section is shown in Figure 4.2-3.

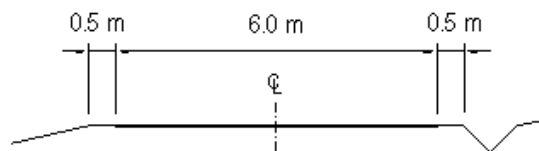


Figure 4.2-3 Typical Cross Section of Collector Road

Figure 4.2-4 shows the number of lanes of the surveyed roads.

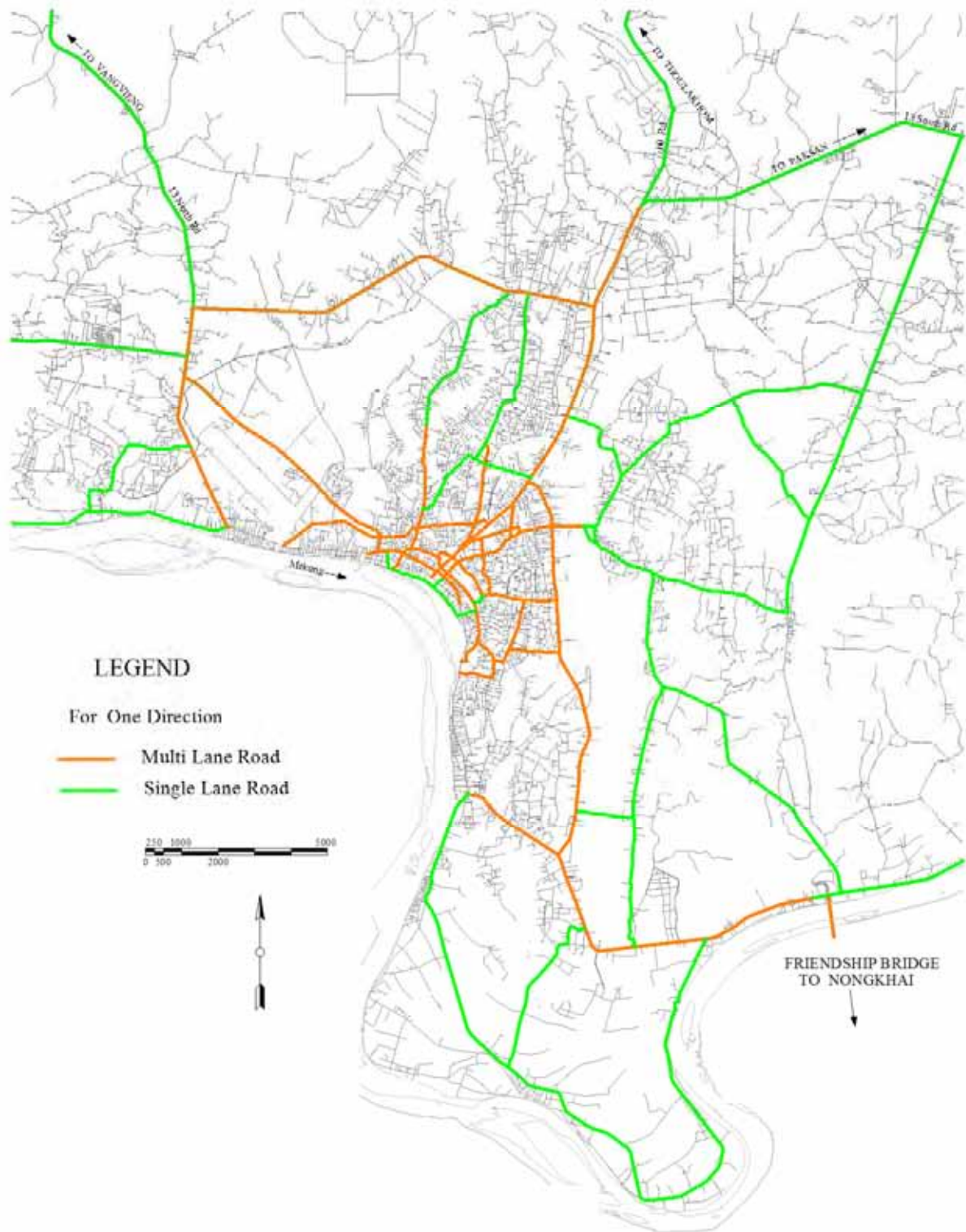


Figure 4.2-4 Number of Carriageways of Surveyed Roads

(2) Surface Type and Condition

Principal Arterial & Arterial Road

In Vientiane, bituminous surface treatment is the most common surface type even on the national roads. In suburban area, gravel surface is still common. Many Arterial Roads in the urbanized area, or in the jurisdiction of VUDAA, have recently been upgraded. These roads are paved with asphalt concrete. Cement concrete pavement is seen only on Lane Xang Avenue, Lao-Thai Road and Sokpaluang Road.

The conditions of the most of the newly upgraded arterial roads are still good. On the other hand, poor surface conditions are often observed on the road sections in the suburban area. Pothole, rut and raveled surface are observed on those sections. An example is seen on the section near the Friendship Bridge on Thadeua Road where the vehicle are forced to slow down and go zigzag due to heavily deteriorated surface.



Collapsed Shoulder & Raveled Edge

Collector Road

The most of the collector roads are covered with bituminous surface treatment. Each road sections have different conditions by their maintenance qualities and frequencies. In suburban area, gravel surface sections are still remaining and it is common case. After rainfall, many puddles appear on the rough surface of the gravel road. However all collector roads have sustained the service to the traffic throughout the year even on the gravel road except cases of the disaster. Figure 4.2-6 shows the surface types of the surveyed roads.

Figure 4.2-5 shows the share of surface types in the Study Area.

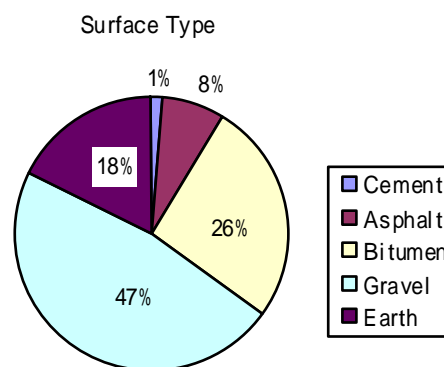


Figure 4.2-5 Share of Surface Type

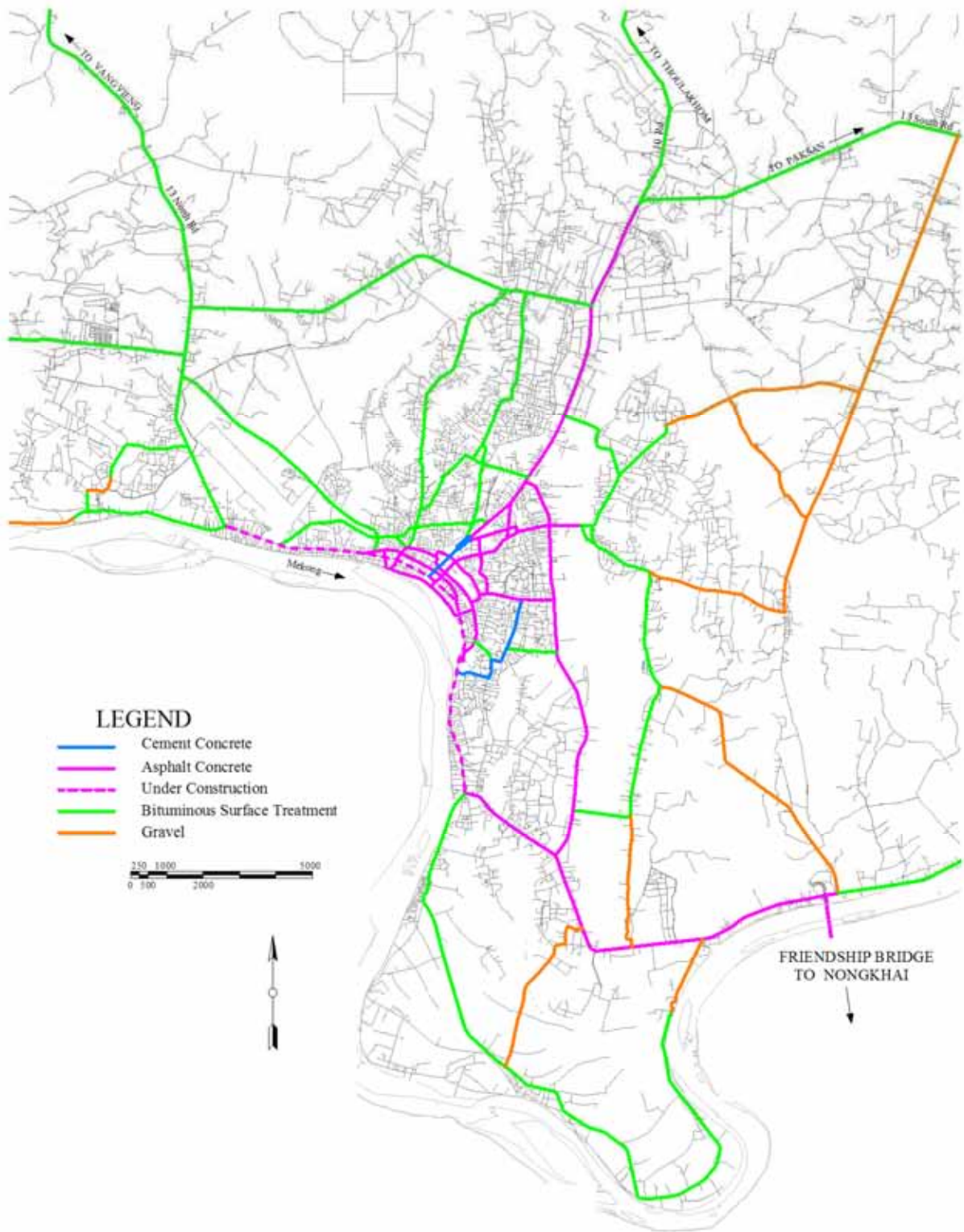


Figure 4.2-6 Surface Type of Surveyed Roads

4.3 BRIDGE CONDITION

In the Study Area, there is no major river. Instead of that, there are ponds, marshes, small streams and canals spread on the plain. Major streams are drainage canals in the center of urbanized area for the drainage of storm water. The drainage system in the urbanized area is composed of the Hong Ke System and Hong Xeng System. Both of them have several embranchments such as major streams of Hong Khouakao, Hong Kaikeo, Nam Pasak and Hong Ouayouay. In the urbanized area, the roads are crossing those major stream by culvers made of RC (reinforced concrete). The details of structures for crossing the major streams are shown in Table 4.3-1 and their locations are shown in Figure 4.3-1.

Table 4.3-1 Structures on the Major Streams

| No. | Crossing Road | Length (m) | Structure Type | Width (m) | Condition |
|---------------|-----------------------|------------|----------------------------|-----------|-----------|
| Hong Khouakao | | | | | |
| 01 | Sokpaluang Rd. | 7.9 | RC Box culvert 3-2.5mx2.0m | 11.5 | good |
| 02 | Dong Palan Rd. | 7.0 | RC Box culvert 3-2.5mx2.0m | 21.0 | good |
| Hong Ouayouay | | | | | |
| 03 | Dongpina Rd. | 7.7 | RC Box culvert 4-1.5mx1.4m | 21.5 | good |
| Hong Ke | | | | | |
| 04 | Dong Palan Rd. | 23.5 | RC Box culvert 5-3.0mx2.3m | 24.0 | good |
| 05 | Phonxay Rd. | 23.5 | RC Box culvert 6-3.5mx3.5m | 15.0 | good |
| 06 | Blvd. Kamphengmeuang | 22.5 | RC Box culvert 7-3.0mx2.4m | 20.0 | good |
| Nam Pasak | | | | | |
| 07 | Luang Phabang Rd. | 1.3 | RC Box culvert 1-1.3mx0.8m | 28.0 | good |
| 08 | Samsenthai Rd. | 3.3 | RC Box culvert 2-1.0mx1.0m | 18.0 | good |
| 09 | Asiane Rd. | 9.5 | RC Box culvert 3-1.7mx2.1m | 23.5 | good |
| 10 | Dong Palep Rd. | 9.6 | RC Box culvert 3-3.0mx2.0m | 17.0 | good |
| Hon Kaikeo | | | | | |
| 11 | Kaysonphomvihane Rd. | 8.1 | RC Box culvert 3-2.4mx1.9m | 30.5 | good |
| 12 | Sibunheuang Rd. | 7.5 | RC Box culvert 3-2.5mx2.2m | 7.0 | good |
| 13 | Nongsangthor Rd. | 9.4 | RC Box culvert 3-3.1mx2.3m | 12.0 | good |
| Hong Xeng | | | | | |
| 14 | Dong Palep Rd. | 12.9 | RC Box culvert 3-4.1mx3.0m | 13.0 | good |
| 15 | Savang Rd. | 11.6 | RC Box culvert 3-3.5mx3.5m | 15.0 | good |
| 16 | Hong Kai Keo | 15.0 | RC Box culvert 4-3.5mx3.6m | 10.0 | good |
| 17 | New Road Hong Kai Keo | 15.0 | RC Box culvert 4-3.5mx3.7m | 18.5 | good |
| 18 | Kaysonphomvihane Rd. | 14.3 | RC Box culvert 4-3.0mx3.7m | 35.0 | good |

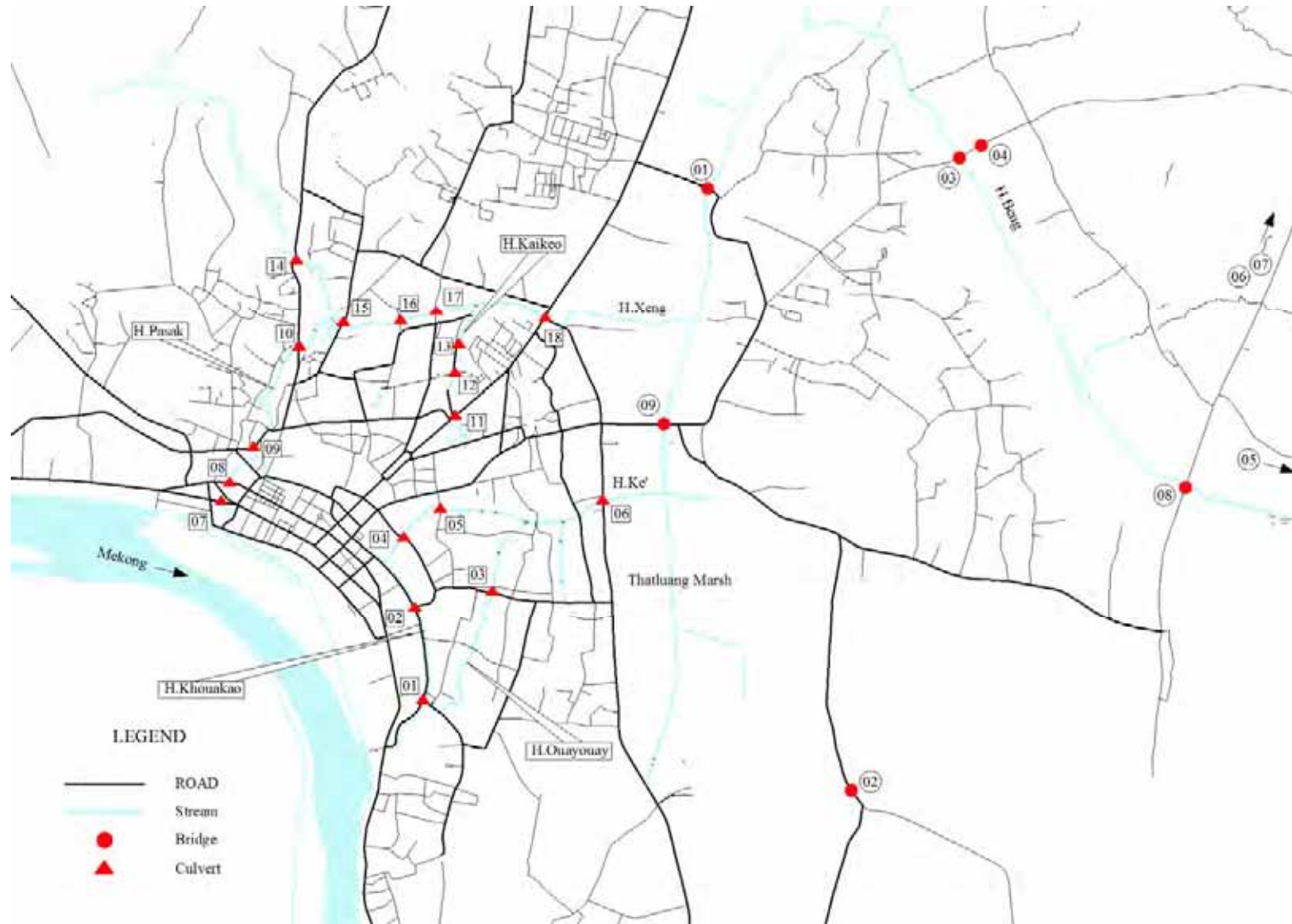


Figure 4.3-1 Locations of Bridges and Culverts

The largest stream in the Study Area is the Hong Beng starting from the That Luang Marsh and flowing down to the Makhiao River. In Study Area, 6 bridges are located on the Hong Beng line. The details of these bridges and the other bridges on the main roads crossing other stream are shown in Table 4.3-2. The locations of bridges are shown in Figure 4.3-1 on the previous page.

As seen in the table, most of the bridges are narrow (4 meter wide) Bailey type even though located on the two lane road. These bridges have wooden deck on the steel frames of deck slab supported by beams and steel members are heavily rusted in general. It means that the bridges are structurally unstable to support the heavy load of the trucks. Therefore at least the rusted deck slabs of these bridges need to be replaced urgently to secure the safe crossing for the traffic.



Typical Bailey Type Bridge

Table 4.3-2 Bridges on the Main Roads

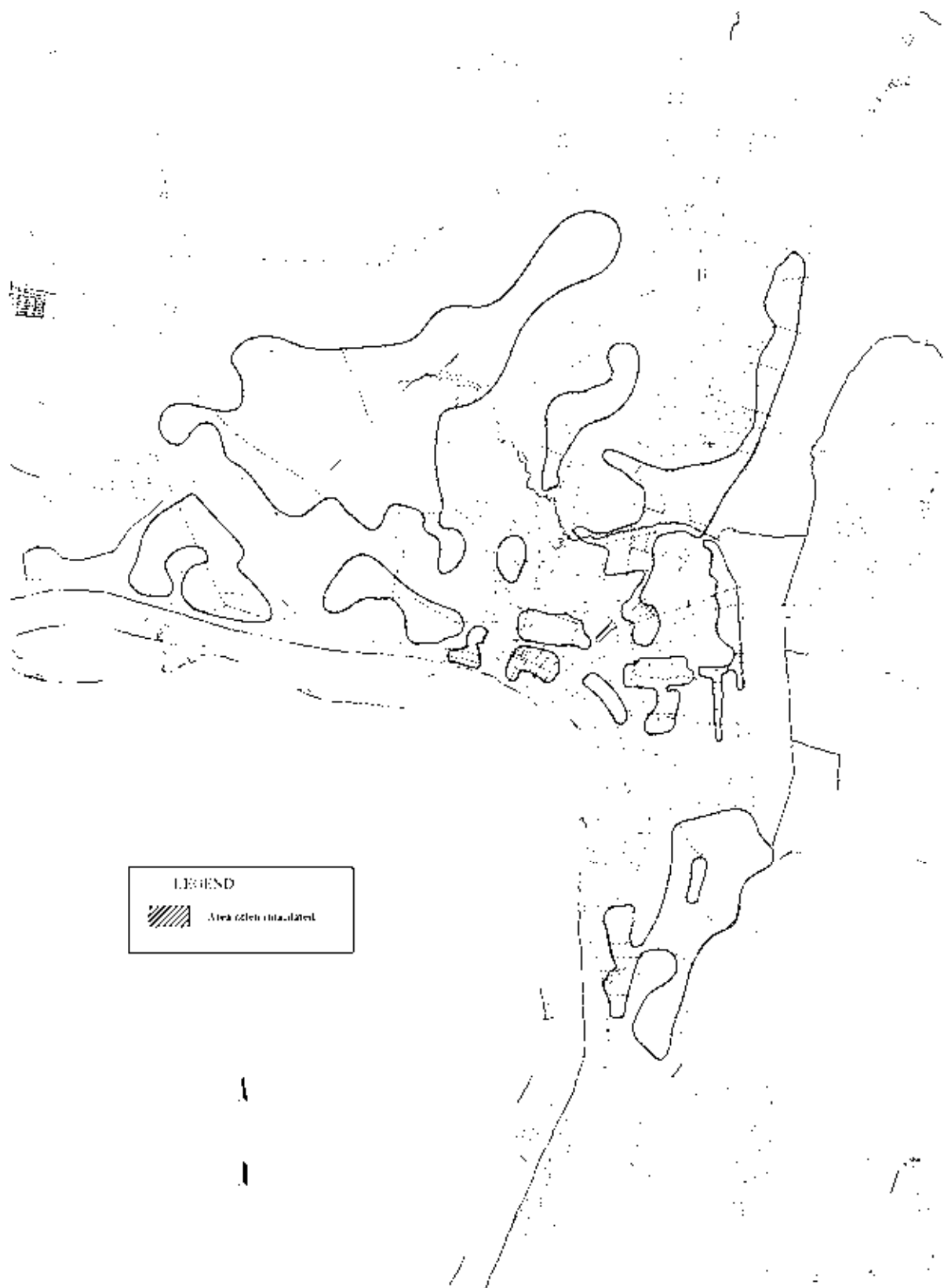
| Reference No. | District code | Road Class | Road code | Road section | Location(km) | Length (m) | Width (m) | Span | Type | Remarks |
|---------------|---------------|------------|-----------|---------------------------------|--------------|------------|-----------|------|----------------------------|--------------------------|
| 01 | 3 | 2 | 0109 | Km 6 Nong Niane - Jct. Dong | 0.92 | 30.30 | 4.00 | 1 | Bailey with wooden deck | Double panel |
| 02 | 3 | 2 | 0109 | Km 6 Nong Niane - Jct. Dong | 10.20 | 12.30 | 4.00 | 1 | Bailey with wooden deck | Placed on broken culvert |
| 03 | 3 | 3 | 0155 | Jct. SaNamMar - Jct. B. Mai | 3.28 | 22.00 | 2.90 | 3 | Steel Girder & wooden deck | Seriously unstable |
| 04 | 3 | 3 | 0155 | Jct. SaNamMar - Jct. B. Mai | 3.58 | 18.30 | 4.00 | 1 | Bailey with steel deck | |
| 05 | 3 | 3 | 0190 | Xienkoue - NongPane | 6.45 | 33.30 | 4.00 | 3 | Bailey with steel deck | Double panel |
| 06 | 6 | 3 | 0146 | Jct. 13S - Houexien - sanghouet | 1.70 | 18.30 | 4.00 | 1 | Bailey with wooden deck | |
| 07 | 6 | 3 | 0146 | Jct. 13S - Houexien - sanghouet | 2.75 | 18.30 | 4.00 | 1 | Bailey with wooden deck | |
| 08 | 3 | 3 | 0108 | Rd.13S km21 - B. Khok Sa At | 12.25 | 24.30 | 4.00 | 1 | Bailey with wooden deck | |
| 09 | 3 | 4 | 0112 | That Luang Rd. | 4.60 | 26.00 | 15.00 | 1 | 8 - PC girder with RC deck | Newly constructed |

4.4 DRAINAGE CONDITION

The existing drainage systems in the Study Area comprise of the Hong Xeng System and Hong Ke System. The Hong Xeng System drains the northern part of the Study Area; Nong Thanhai, Nam Pasak and Hong Kaikeo. The Hong Ke System drains the central part of Study Area comprising its tributaries such as Hong Thong, Hong Khouakao through Nong Chanb and Hong Ouayouay. The main channels of the both systems connect to That Luang Marsh and flow down to Houei Makhiao. Minor drainage ditches have been constructed inside the urbanized area to convey water to the main channel.

The average annual rainfall of Vientiane is around 1,600 mm, of which about 80% recorded between May and September. During rainy season, monsoonal storms bring much rainfall with high intensity. The annual maximum rainfall per day is generally 70 mm to 140 mm. The flat and low lying topography of Vientiane combined with its proximity to the Mekong river means that storm water drainage is a perennial problem. Due to insufficient capacity and poor maintenance of the existing drainage system, the Study Area suffers from frequent inundation. Submergence causes damage to the assets of road and disturbs inland transportation.

According to a JICA study (the Feasibility Study on Improvement of Drainage System in Vientiane, March 1990), inundation in the urbanized area occurs more than 5 times a year and maximum depth ranges 0.2 m to 0.5 m at the most parts. Usually the flood does not continue more than half a day. Frequent inundation area specified by the JICA study is shown in Figure 4.4-1.



*somewhat modified in the Feasibility Study on Improvement of Drainage System in Vientiane (March 1999, JICA), referring to the contour lines and based on the site observation.

Figure 4.4-1 Specified Inundation Area in Preceded Study