

**Ministry of Public Works and Transport
Lao People's Democratic Republic**

**OUTLINE DESIGN STUDY REPORT
ON
THE PROJECT FOR IMPROVEMENT OF
TRANSPORTATION CAPACITY OF
PUBLIC BUS
IN
VIENTIANE CAPITAL**

February 2011

**JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)**

KATAHIRA & ENGINEERS INTERNATIONAL

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Summary

1. Country Outline

Lao People's Democratic Republic (hereinafter referred to as "LAO PDR") has the area of 23,700 km², which is as equal as Honshu Island, the main Island of Japan. In 2009, the population of LAO PDR was 6,130,000, while the Vientiane Capital had 795,000 habitants, 12.3% of the total population, and having its area of 3,920km², population density was 192 habitants/km².

In FY 2008/9, the Gross Domestic Product (GDP) was 5,633 million US\$, which was increased by 7.1% comparing to that in FY 2007/8, and the GDP per capita was 924 US\$¹. Although Lao enjoys high economic growth rates with more than 7% per year recently, the social and economic development has been hindered by geographically land-locked conditions and historically influences of past long civil war, thereby remaining one of the Least Developed Country (LDC).

The Vientiane Capital is the capital of LAO PDR and the center of both administrative and socio-economic activities, and it plays the strategic role of transport hub for connecting neighboring countries in the Great Mekong Sub-regions (GMS). The city urban structure extends to the northern east direction, having a Central Business District (CBD) in the old town; commercial and light industrial zones locate along trunk roads in the suburban; and residential areas spread without population cores. The city road network forms grid patterns in the CBD and radial and circumferential patterns in the suburban.

2. Project Background, Preparation and Outline

The Vientiane Capital rapidly progresses in urbanization with increase in population and economic activities. The urbanization also results in motorization, thereby increasing private transportation by passenger cars and motorcycles and hence traffic congestion in urban area. There are large and chronicle traffic congestion in morning and evening peak hours that may cause serious problems in the very near future. The registered number of the passenger cars increases by annual averaged rates of 7%, thereby four times of the number of the passenger cares and 3.3 times of the motor cycles comparing to ones in 2000. Traffic accidents have decreased at approximately 1,800 cases recently; while fatality numbers reached at 203 in 2005 from 119 in 2009. To solve the traffic congestion and reduce traffic accidents, it is required to increase the share of public transportation by enhancing the transportation capacity of the public bus.

Major public transportation of Vientiane Capital is the public buses operated by Vientiane Capital State Bus Enterprise (VCSBE). VCSBE is a state owned company established under Vientiane Capital.

¹ Ministry of Planning and Investment, National Socio-Economic Development Plan 2009-2010, 2009

VCSBE provides the bus services of urban routes as well as inter-cities and international routes. There are eight routes in urban area, together with 18 routes in inter-city and international bus services. VSCBE has been using the bus fleets granted by Japanese government since 1988. In 2010, the number of all registered vehicles in VCSBE is 127 including 5 vehicles for management and maintenance; there are 122 buses that can be used for the public transportation. However, the survey found that 77 buses were operational, 26 buses under repair and 19 buses already disposed. In 2008, VCSBE allocated 56 buses whereas there were only 42 buses in operation on the urban routes in the project target area. In 2010, the allocated number of buses was 49 whereas there were only 36 buses in operation.

VSCBE operates the buses, most of which have been provided by the past Japan grant aid, by repair and maintenance. These small and big buses exceed the running distance of 400,000 km and 1,200,000 km, respectively, thereby seriously damaging engine parts, worsening transport safety and reducing operation rate. The buses that exceeded significantly their service life should cause traffic accidents in operation. The reduction of bus operation rate is a substantial negative factor against smooth and reliable bus services, hence reducing the number of bus users year by year. For the bus passengers' safety and smooth transportation, bus replacement is urgently required. However, it is obvious that VSCBE has not sufficient management and financial capacity to procure new buses by itself without external assistance.

In addition, the students in the Dongdok campus of National University of Laos (hereinafter referred to as "NUOL") are main bus users on the route between Dongdok and the Central Bus Station. Many students shift their commuter modes from public bus to motor cycle due to frequent delays and sudden cancellations against the time schedule by bus failures. Increase of the motor cycle users results in traffic congestion and serious traffic accidents including fatalities near the gate of the campus. To solve these problems, a shuttle bus service project on the above route was proposed as a priority project in "the Study of Master Plan on Comprehensive Urban Transport in Vientiane in Laos PDR (hereinafter referred to as "Master Plan") that the Japan International Cooperation Agency (hereinafter referred to as "JICA") conducted in 2008.

Based on the above shuttle bus service project, a grant aid of the "Project for Improvement of Transportation Capacity of Public Bus in Vientiane Capital" (hereinafter referred to as "Project") was requested by the Government of LPDR (hereinafter referred to as "GOL") to the Government of Japan (hereinafter referred to as "GOJ"). The similar request was made in 2008. As GOJ provided several grant aids for bus procurement to VCSBE in the past, a project identification mission was dispatched to conduct a "Basic Data Collection and Confirmation Survey" for the Project in order to confirm the VCSBE maintenance capacity.

Following confirmation of VCSBE maintenance capacity by the identification mission, GOJ decided to conduct a Preparatory Survey of the Project (hereinafter referred to as "the Survey"). JICA

dispatched a survey team in Laos to conduct discussions with relevant authorities and site surveys in the project area between July 27 and August 25, 2010. In Japan, the survey team prepared an outline design based on the site survey results and data collected in Laos and compiled a draft outline design report. JICA dispatched again the survey team in Laos to discuss and confirm contents of the draft report with Laos side from December 5 to 12, 2010, and completed this report. In addition, JICA intends to assist in implementing a Technical Cooperation for “the Project to Enhance the Operation of VCSBE” (hereinafter referred to as “TCP”) in order to enhance “self-reliance” through improvement of planning and marketing skills and development of financial capacity. Thus the Survey included preparation of this TCP based on new bus procurement and its operation.

3. Results of the Survey and Contents of the Project

The Survey conducted investigation of the present VCSBE bus services, the present route plan and the present bus operation plan, reconfirmed the necessity of the grant aid, examined the most appropriate project contents and sizes under the framework of the grant aid, and prepared an outline design, taking the concepts of the Master Plan into consideration. The Survey also conducted the detailed analysis on the VCSBE management system, in particular, financial conditions for achieving the above tasks.

The project overall goal is to increase in the number of public bus users by promoting modal shift from the private to the public transportation and thereby decreasing traffic congestion together with reducing of traffic accidents. The project purpose is to ensure safe bus operation and to prevent bus accident in operation by replacing the VCSBE owned heavily out-dated buses operated in urban routes.

To achieve this project purpose, the Project is to replace the out-dated and damaged buses for safe bus operation. These buses are selected in such a way that the life ages exceed 12 to 24 years after manufacturing, of which their main parts and engines are damaged and worn out. The Project plans to replace the existing buses used in the urban routes by procuring new buses. The optimal number of replacement is calculated based on recovering the present bus operation in the urban routes and its operation plan. A list of equipment to be procured is as follows.

| Name | Specification | Quantity |
|-----------------------|---|----------|
| Bus | 42 seats, 2 doors, air-conditioned | 42 units |
| Maintenance equipment | Hand and electric tools, test equipment | Lump-sum |

As MPWT and VCSBE strongly requested for the procurement of the buses made by Japanese manufacturers, this design policy mainly considered the procurement of buses made by Japanese manufactures. However, Japanese bus companies do not manufacture the left hand drive buses for overseas. Thus, the design policy established the manufacturing method that the body building

companies in Thai or other neighboring countries may build the body on the chassis and engine provided by Japanese manufacturers.

4. The Project Implementation Schedule and Initial Cost Estimation

In accordance with the Japan Grant Aid scheme, the project implementation schedule is planned for totally 13.5 months. The detailed design is scheduled for the period of 4.0-months and equipment delivery for 9.5 months. The project cost will be determined before concluding the Exchange of Note (E/N) for the Project.

5. Project Evaluation

(1) Project Validity

- i. Project beneficiary population will be 795,000 which accounts for 12.3% of total population of the country. Most of the bus users are the poor. Monthly income of 40% of the sampled bus users ranges between 6,000 and 10,000 yen equivalent; monthly income of 45% between 10,000 yen and 20,000 yen equivalent. In total, monthly income of 98% of bus users is below 40,000 yen equivalent.
- ii. By profession, 20% of bus users are women (house holders); 21% of students; and 6% of the aged more than 60-year old. Thus, the project may well ensure the right of mobility for “the transport poor”, thereby accommodating the policies of human security, Basic Human Needs, and education and Human Resource Development.
- iii. The recipient country has the capacity for operation and maintenance of the new buses through VCSBE revenues, its staffs and its technical skills. The project may needs only conventional technology and may not need excessively high technology.
- iv. The project will contribute to the objectives of the on-going 6th and the next 7th National Socio-Economic Development Plans.
- v. Provision of new buses by the Project will contribute to improvement of VCSBE financial conditions. The profits is expected to be used for smooth operation and maintenance of the buses.
- vi. For “Environmentally Sustainable Transport”, the project is expected to promote the modal shift from the private cars and motorcycles to the public buses, thereby reducing air pollution and CO₂ emission.
- vii. MPWT and VCSBE have experiences in receiving several grant aids of bus procurement. Thus it is easy to proceed in implementation of the Project under the Japan Grant aid scheme.
- viii. VCSBE has been operating the Japan manufactured buses approximately for 20 years. They have appreciated the high quality and cost performance of the Japan made buses comparing to the buses manufactured in other countries. As they is familiar with operation and maintenance of Japan made bus, they request the buses manufactured in Japan.

(2) Project Effectiveness and Efficiency

a. Quantitative Evaluation

| Indicator | Present Value (2001) | Planned Value(2015) |
|-------------------------|----------------------|---------------------|
| Operation Frequency | 177 | 211 |
| Transportation Capacity | 196,000 pax km/day | 331,000 pax km/day |

Note: pax. passenger

b. Qualitative Evaluation

- To reduce the number of failure of the public bus in Vientiane Capital
- To reduce the number of traffic accidents of the public bus in Vientiane Capital
- To mitigate traffic congestion on public bus routes in Vientiane Capital
- To improve safety of public bus transportation in Vientiane Capital
- To maintain public bus services in Vientiane Capital

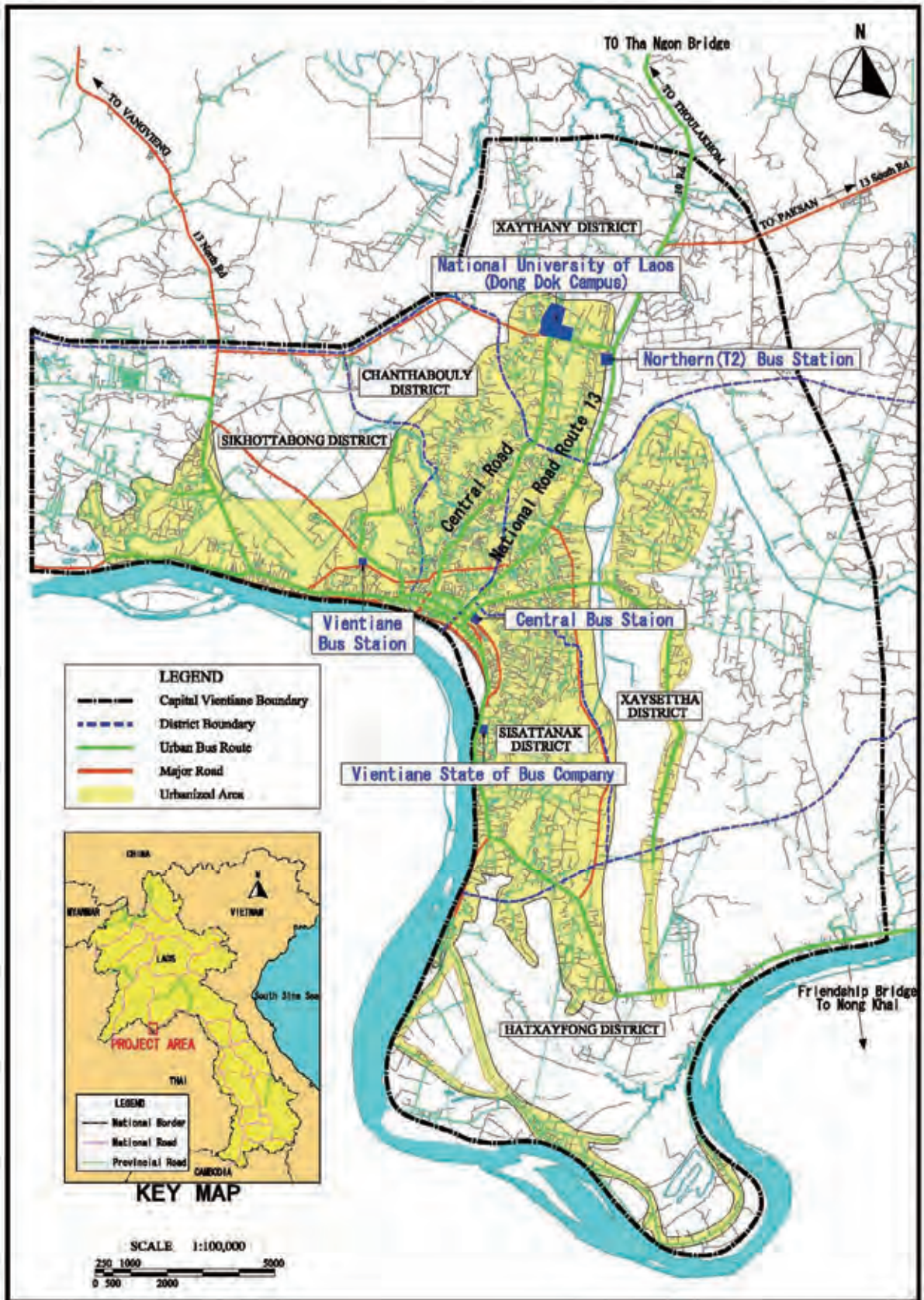
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ABBREVIATIONS

| | |
|-------|--|
| ADB | Asian Development Bank |
| B/A | Banking Arrangements |
| BHN | Basic Human Needs |
| BRT | Bus Rapid Transit |
| BS | Balance Sheet |
| CBS | Central Bus Station |
| CS | Cash Flow Statement |
| DOT | Department of Transport of MPWT |
| DPWT | Department of Public Works and Transport of VC |
| EIA | Environmental Impact Assessment |
| E/N | Exchange of Notes |
| F/S | Feasibility Study |
| G/A | Grant Agreement |
| GOJ | Government of Japan |
| GOL | Government of Lao |
| GDP | Gross Domestic Product |
| GNI | Gross National Income |
| GPS | Global Positioning System |
| JICA | Japan International Cooperation Agency |
| LPDR | Lao People's Democratic Republic |
| M/D | Minutes of Discussions |
| MOPI | Ministry of Planning and Investment |
| MPWT | Ministry of Public Works and Transport |
| ODA | Official Development Assistance |
| PDM | Project Design Matrix |
| PPP | Public Private Partnership |
| PL | Profit and Loss Statement |
| SIDA | Swedish International Development Cooperation Agency |
| SOE | State Owned Enterprise |
| T/N | Tender Notice |
| V/C | Verification of Contract |
| VAT | Value Added Tax |
| VCSBE | Vientiane Capital State Bus Enterprise |
| VOC | Vehicle Operating Cost |
| VUDAA | Vientiane Urban Development and Administration Authority |
| WB | World Bank |

CHAPTER 1 BACKGORUND OF THE PORJECT

1-1 Background of the Request and Its Summary

Lao People's Democratic Republic (hereinafter referred to as "LAO PDR") has the area of 23,700 km², which is as equal as Honshu Island, the main Island of Japan. In 2009, the population of LAO PDR was 6,130,000, while the Vientiane Capital had 795,000 habitants, 12.3% of the total population, and having its area of 3,920km², population density was 192 habitants/km². In FY 2008/9, the Gross Domestic Product (GDP) was 5,633 million US\$, which was increased by 7.1% comparing to that in FY 2007/8, and the GDP per capita was 924 US\$².

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VSCBE operates the buses, most of which have been provided by the past Japan grant aid, by repair and maintenance. These small and big buses exceed the running distance of 400,000 km and 1,200,000 km, respectively, thereby seriously damaging engine parts, worsening its transport safety and reducing its operation rate. The buses that exceed significantly their service life should cause traffic accidents in operation. The reduction of bus operation rate is a substantial negative factor against smooth and

² Ministry of Planning and Investment, National Socio-Economic Development Plan 2009-2010, 2009

reliable bus services, hence reducing the number of bus users year by year. For the bus passengers' safety and smooth transportation, bus replacement is urgently required. However, it is obvious that VSCBE has not sufficient management and financial capacity to procure new buses by itself without external assistance.

In addition, the students in the Dongdok campus of National University of Laos (hereinafter referred to as "NUOL") are the major bus users on the route between Dongdok and the Central Bus Station. Many students have shifted their commuter modes from public bus to motor cycle due to frequent delays and sudden cancellations against the time schedule by bus failures. Increase of the motor cycle users results in traffic congestion and serious traffic accidents including fatalities near the gate of the campus. To solve these problems, a shuttle bus service project on the above route was proposed as a priority project in "the Study of Master Plan on Comprehensive Urban Transport in Vientiane in Laos PDR (hereinafter referred to as "Master Plan") that the Japan International Cooperation Agency (hereinafter referred to as "JICA") conducted in 2008.

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Following confirmation of a certain VCSBE maintenance capacity by the identification mission, GOJ decided to conduct a Preparatory Survey of the Project (hereinafter referred to as "the Survey"). JICA dispatched a survey team in Laos to conduct discussions with relevant authorities and site surveys in the project area between July 27 and August 25, 2010. In Japan, the survey team prepared an outline design based on the site survey results and data collected in Laos and compiled a draft outline design report. JICA dispatched again the survey team in Laos to discuss and confirm contents of the draft report with Laos side from December 5 to 12, 2010, and completed this report.

1-2 Natural Conditions

Vientiane Capital is located along the left bank of the Mekong River, approximately 1,600km from the estuary. The land is plain having an elevation of 160m to 180m above the sea level. There are many ponds and wet lands in the city urban area. Laos has two distinguished seasons, dry and rain, which are affected by monsoons. In Vientiane, the rainy seasons ranges from May to September and the dray season from November to March. The averaged temperature is around 20°C to 30 °C through the year.

1-3 Environmental and Social Consideration

The Project aims at supply of buses for public transportation, thus the category is “B” in the Environmental and Social Consideration of JICA guidelines.

In Laos, there is no regulation or control of diesel gas emission. The Project reviewed the standards applied in Japan, USA and EU where the gas emission control has been established. The Project examined to apply a diesel engine with EURO 1~4 equivalent, taking fuel quality and maintenance level of Laos into consideration.

CHAPTER 2 CONTENTS OF THE PROJECT

2-1 Basic Concept of the Project

(1) National Plan and Project Purpose

The Government of LPDR (hereinafter referred to as “GOL”) has prepared “the 7th National Socio-Economic Development Plan 2010 to 2015”, which is the upper national plan. The plan aims to achieve 8% of GDP annual growth, 1,700US\$ GDP per capita in 2015. In this context, MPWT follows objectives of the 6th Development Plan to improve urban environment by promoting “Environmentally Sustainable Transport: EST” policy. GOL and MPWT consider the “Master Plan of Comprehensive Urban Transport in Vientiane, Capital in Laos (hereinafter referred to “Master Plan”)” that JICA studied in 2007-2008, which aims to prevent urban transport problems such as traffic congestion and traffic accidents in Vientiane, as an overall plan of Urban and Public transport sector for the medium and long terms. The Master Plan consist of three basic policies; Public Transport Improvement together with Road Network Development and Traffic Management and Control.

The Master Plan proposed implementation of “public transport improvement” with 350 buses in 2025 in order to strengthen the urban public transport capacity in Vientiane. It will promote modal shifts from motorcycle to bus; between 2007 and 2025, the motorcycle traffic from 60% to 24%, while the bus traffic from 4% to 40%. As a result, Vientiane Capita will achieve the project goal that ensure “an efficient public bus service by increasing bus users and promoting public transport from the private and reducing traffic congestion and traffic accidents”. Under the Master Plan goal, the Project aims to replace out-dated buses used for urban routes by VCSBE and improve the level of public bus service, and enhance public bus transportation capacity.

(2) Project Outline

To achieve at improvement of transportation capacity of public bus, the Project aims to replace the old buses currently operated for urban routes and owned by Vientiane Capital State Bus Enterprise (VCSBE). Thus, the Project expects to increase the public bus transport capacity from 2.1 million to 5.2 million passengers per year, and to improve the operation ratio of buses from 75% to 86%. Thus, the Project components will be procurement of 42 large size buses and repair equipment for bus maintenance.

2-2 Outline Design of the Japanese Assistance

2-2-1 Design Policy

(1) Basic Policy

The Japanese assistance of the Project aims to assist GOL in promoting the implementation of the Master Plan with the goal of improvement of safety public transportation and EST. A basic policy of outline design is as followed, in order to prepare a procurement plan of 42 buses used for public transportation in the urban area by replacing the old buses of VCSBE taking the GOL request, site survey and analysis in Japan into consideration.

(2) Policy on Natural Conditions

The natural conditions in the target region are as follows:

- Temperature: 15°C~35°C
- Altitude: 160~180m
- Rainfall: approx.1500mm/year
- Rainy Season: May~Sep.

There is no need to pay special attention on temperature and altitude. However, humidity in the rainy season is high and drainage condition of roads is bad. Therefore, attention should be paid on the antirust and anticorrosion on the roof and outer panel of the buses. The moisture often mixes with the fuel. Thus, the design policy considered installation of water separator.

(3) Policy on Management and Maintenance

VCSBE has the maintenance division for bus vehicle management and maintenance. There are 72 technical staffs who have maintained more than 20 year-operating buses by their repair and overhaul skills. When new buses are procured under this Project, this division will be able to perform maintenance and management of the newly procured buses. As for the initial operation and maintenance training, this design policy considered that the manufacture's engineers who would be familiar with the procured equipment would be assigned.

(4) Policy Concerning the Procurement of Maintenance Equipment

Most of the existing maintenance equipment was procured by Japanese Grant Aid in 1988. As equipment and tools have been broken, galling and malfunction by frequent usage, the proper maintenance and repair is hardly carried out. The use of unsuitable tools possibly damaged the parts. In particular, a torque wrenches is indispensable to fasten each bolt with the regulation torque. Thus, this design policy considered carrying out the adequate and efficient maintenance for the buses with selection and procurement of minimum tools and equipment out of all the shortfalls maintenance equipment.

(5) Policy on Grade of Equipment

The basic specifications of bus to be procured were determined by references to the specifications of the existing bus. New specifications were added for improving insufficient functions of the present bus. This design policy considered the moisture countermeasure for protection against the natural conditions, and passenger's convenience and comfort.

(6) Policy on Procurement of the Spare Parts

It is possible to procure the consumable parts or high demand parts such as filter, brake shoe, and suspension at the large vehicle parts shops in the local market. Thus, about the procurement of spare parts and engine parts which are difficult to procure in the local market were mainly considered. A scope of procurement is the parts for the periodical maintenance for running distance of 30,000km and cost for the spare parts is limited to 5-10% of FOB bus price.

(7) Matters/Issues Concerning Procurement Methods and Work Schedule

VCSBE appreciated the performance and quality of the buses made by Japanese manufactures under grant aid more than the buses manufactured in other third country including Laos. Thus, MPWT and VCSBE strongly requested for procurement of the buses made by Japanese manufactures. Therefore, this design policy mainly considered the procurement of buses made by Japanese manufactures.

Four vehicle manufacturing companies, namely Hino, Mitsubishi Fuso, Isuzu and Nissan UD Trucks are the big size bus manufacturers in Japan. Then bus body build companies assemble a bus body with its interior on the chassis with engine that the above vehicle manufacturing companies made. At present in Japan all of these buses are made for domestic use only; no body building companies can make the left hand drive buses for overseas. For bus body building, there are not manufacturers in Laos that Japanese bus maker can order and request because they have not enough technical capability and production capacity.

There are companies, which have enough capability in Thailand and Vietnam. However, only Thai manufacturers can correspond to all Japanese manufacturers. This design policy considered the body building in Thailand because the transportations and procurements of parts from Thailand are especially easy. Thus, this design policy considered that the chassis and engine would be made by Japanese manufactures and transported to Thailand. After completing the body building there, buses will be transported to Laos. This design policy also considered to procure the maintenance equipment from the Japanese manufacturers as requested by Lao side.

2-2-2 Basic Plan

2-2-2-1 Operation and Route Plan

(1) Basic Policy

An operation and route plan is formulated to improve of the level of service of the public bus in the VC urban areas. Its basic policy of is to maintain the present bus operation route and schedule and to improve its service.

Figure 1 shows the present bus routes operated by VCSBE in VC urban areas. In August 2010, there were eight routes with the number of total operations of 211 trips per day scheduled under service. VCSBE had 103 serviceable buses in total³. For the urban routes, they allocated 49 buses, but only 36 were serviceable and 13 buses under repair. Thus the operation rate is very low, at some 75%.

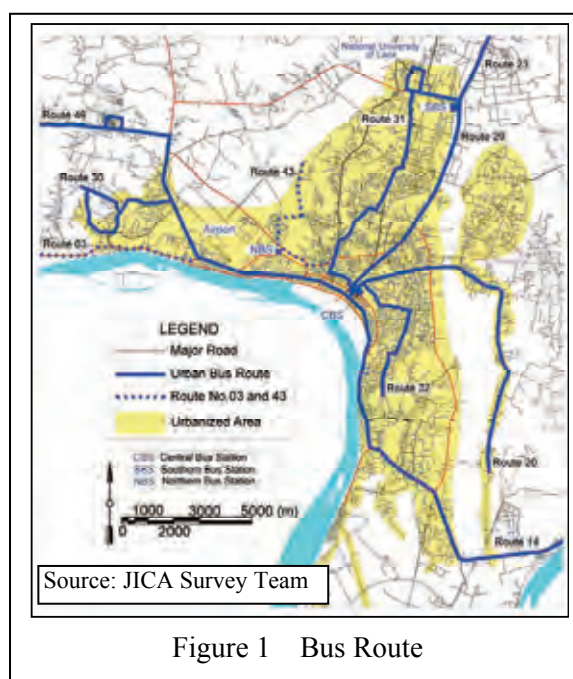


Figure 1 Bus Route

Table 1 shows the numbers of buses and operations by operation plan.

Table 1 Numbers of Buses and Operations by Operation Plan

| Route No. | Route Name | Number of buses operated (buses) | Number of operation (trips/day) |
|---------------------------|--------------|----------------------------------|---------------------------------|
| 14 | Thadeua | 10 | 45 |
| 31 | Phontong | 6 | 38 |
| 23 | Thangone | 6 | 31 |
| 20 | Dongkhamxang | 2 | 12 |
| 49 | Nongteng | 2 | 10 |
| 32 | Donepamay | 3 | 28 |
| 30 | Thongpong | 4 | 23 |
| 29 | Dongdok | 3 | 24 |
| Total | | 36 | 211 |
| Number of buses allocated | | 49 | Operation ratio=75% |

Source: VSCBE

³ VCSBE had 212 buses; 77 serviceable, 26 under repair, and 19 for disposal.

(2) Bus Replacement Plan

Daily and periodical maintenance should be necessary for a new bus after running each constant distance. The operation rate of the new bus is estimated at approximately 86% according to VCSBE maintenance practices and its accident records. To keep the present services with 36 buses, the number of required buses is estimated with the operation rate of 86% as follows.

$$36 \text{ buses} \div 86\% = 42 \text{ buses}$$

Thus, the Survey examined an operation and financial plan base on procurement of 42 new buses for replacement of the old buses to maintain the present bus service.

(3) Operation Plan

Table 2 shows the operation plan based on the replacement plan of 42 buses.

Table 2 Operation plan

| Route No. | Route name | Trip distance (km) (Round) | Round trip time (hours) | Number of buses operated | Number of operations | | Headway in morning peak hour (minutes) |
|-----------|---------------------------|----------------------------|-------------------------|--------------------------|----------------------|-------------------------|--|
| | | | | | Trips/day /direction | Trips/3hours /direction | |
| 14 | Thadeua | 29(58) | 2 | 10 | 45 | 12 | 15 |
| 31 | Phontong | 13(26) | 1.3 | 6 | 38 | 12 | 15 |
| 23 | Thangone | 26(52) | 2 | 6 | 31 | 7 | 26 |
| 20 | Dongkhamxang | 14(28) | 1 | 2 | 12 | 3 | 60 |
| 49 | Nongteng | 15(30) | 2 | 2 | 10 | 4 | 45 |
| 32 | Donepamay | 7(14) | 0.4 | 3 | 28 | 10 | 18 |
| 30 | Thongpong | 12(24) | 2 | 4 | 23 | 6 | 30 |
| 29 | Dongdok | 12(24) | 1 | 3 | 24 | 5 | 36 |
| | Total | 128(256) | | 36 | 211 | 59 | |
| | Number of buses allocated | | | 42 | Operation ratio=86% | | |

Source: JICA Study Team

Note: The number of operations in 3 hours per direction means the number of buses departing from the central bus station during 3 hours from 6:00 to 8:59.

(4) Bus Transport Capacity and Demand Forecast

Table 3 shows comparison of bus transport capacity of before and after replacement. The Project will replace the present minibuses to the large sized bus, thereby increasing transport capacity of urban bus service by 1.7 times.

Table 3 Comparison of Bus Transport Capacity of Before and After Replacement

| Route No. | Route name | Number of operation Trips/day /direction | Before Minibus (Seating capacity: 25) | | | After Large size bus (Seating capacity: 45) | | |
|--|--------------|---|---|---------------------|------------------------|---|---------------------|------------------------|
| | | | Transport Capacity | Passenger-kilometer | Cross-sectional volume | Transport Capacity | Passenger-kilometer | Cross-sectional volume |
| | | | (Passengers /day) | (Passenger-km/day) | (PPHPD) | (Passengers/day) | (Passenger-km/day) | (PPHPD) |
| 14 | Thadeua | 45 | 2,250 | 65,250 | 100 | 4,050 | 117,450 | 180 |
| 31 | Phontong | 38 | 1,900 | 24,700 | 100 | 3,420 | 44,460 | 180 |
| 23 | Thangone | 31 | 1,550 | 40,300 | 60 | 2,790 | 72,540 | 110 |
| 20 | Dongkhamxang | 12 | 600 | 8,400 | 30 | 1,080 | 15,120 | 50 |
| 49 | Nongteng | 10 | 500 | 7,500 | 30 | 900 | 13,500 | 60 |
| 32 | Donepamay | 28 | 1,400 | 9,800 | 80 | 2,520 | 17,640 | 150 |
| 30 | Thongpong | 23 | 1,150 | 13,800 | 50 | 2,070 | 24,840 | 90 |
| 29 | Dongdok | 24 | 2,160 | 25,920 | 80 | 2,160 | 25,920 | 80 |
| Total | | 211 | 11,510 | 195,670 | 530 | 18,990 | 331,470 | 900 |
| Comparison of transport capacity (After/Before)= | | | | | | 165% | 169% | 170% |

Source: JICA Study Team

Note 1: Transport capacity is calculated by the following formula.

Transport Capacity = Seating capacity x Number of operations x 2 (Round trip)

Note 2: Passenger kilometer is multiplying “Bus vehicle kilometer” by “Seating capacity”.

Note 3: Cross-sectional volume means a traffic volume of “Passengers per hour per direction (PPHPD)” and is multiplying “The number of operations in morning 1 hour” by “Seating capacity”.

2-2-2-2 Operation and Financial Plan

(1) Profit-Loss Statement by Routes with New Buses

Table 4 shows profit-loss statement by routes in the urban area after granting new buses to VCSBE.

Table 4 Profit-Loss Statement by Route (With New Buses)

| Rt No | Route | Bus Allocation | Distance (km) (Round) | Bus · km | No. of Passengers (Year) | Revenue (000Kip) | Fare (kip) | Bus Operation Cost (000Kip) | Profit- Loss (000Kip) |
|--|--------------|----------------|-----------------------|------------------|--------------------------|-------------------|------------|-----------------------------|-----------------------|
| Vientiane Capital Bus Routes(after Granting Buses) | | | | | | | | | |
| 14 | Thadue | 10 | 29(58) | 952,650 | 1,108,688 | 5,543,438 | 5000 | 5,672,820 | -129,382 |
| 31 | Phontong | 6 | 13(26) | 360,620 | 936,225 | 1,872,450 | 2000 | 2,147,412 | -274,962 |
| 23 | Thagnon | 6 | 26(52) | 588,380 | 763,763 | 3,818,813 | 5000 | 3,503,672 | 315,140 |
| 20 | Dongkhamxang | 2 | 14(28) | 122,640 | 295,650 | 1,182,600 | 4000 | 730,294 | 452,306 |
| 49 | Nongteng | 2 | 15(30) | 109,500 | 246,375 | 985,500 | 4000 | 652,048 | 333,452 |
| 32 | Donphamay | 3 | 7(14) | 143,080 | 689,850 | 1,379,700 | 2000 | 852,010 | 527,690 |
| 30 | Thongphong | 4 | 12(24) | 201,480 | 566,663 | 2,266,650 | 4000 | 1,199,769 | 1,066,881 |
| 29 | Dongdok | 3 | 12(24) | 210,240 | 591,300 | 1,182,600 | 2000 | 1,251,933 | -69,333 |
| Total | | 36 | 128(256) | 2,688,590 | 5,198,513 | 18,231,750 | - | 16,009,957 | 2,221,793 |

Source : Estimated by JICA Study Team

Note: Loading capacity is assumed at 75%.

(2) Comparison of Profit and Loss before and after New Buses for Urban Bus Service

Table 5 shows the comparative profit-loss analysis between before and after granting the new bus fleets. The number of total annual passengers is expected to increase from 2.1 million to 5.2 million and the annual fare revenue to increase from 8.1 billion Kip to 18.2 billion Kip after granting the new bus fleets. The profit amount or the rate to the total revenue, which was loss of 26 million Kip or negative 0.3 % in the case of before-granting, will be improved at 2.2 billion Kip or positive 12.2 %, respectively.

Table 5 Profit-Loss Statement before and after Granting Bus Fleets (Urban Bus Route)

| Item | | Unit | Profit-Loss before Granting Bus Fleet | Profit-Loss after Granting Bus Fleet | Balance before and after Granting Bus Fleet | |
|------|------------------------------|----------------------|---------------------------------------|--------------------------------------|---|------------|
| A | Bus Transport Condition | | | | | |
| | 1 | Operation Trips | No. | 59,032 | 77,015 | 17,983 |
| | 2 | Annual Passengers | Person | 2,097,799 | 5,198,513 | 3,100,714 |
| | 3 | Bus Veh. • Km | Km | 2,285,805 | 2,688,590 | 402,785 |
| | 4 | Passenger • Km | Pax • Km | 42,767,600 | 120,986,550 | 78,218,950 |
| B | Revenue | | '000 Kip | 8,089,581 | 18,231,750 | 10,142,170 |
| C | Expenditure | | | 8,115,657 | 16,009,957 | 7,894,300 |
| | 1 | Personal Expenses | '000 Kip | 1,156,495 | 1,639,788 | 483,293 |
| | 2 | Oil & Lubricant Cost | '000 Kip | 252,113 | 357,528 | 105,414 |
| | 3 | Fuel Cost | '000 Kip | 3,282,222 | 4,650,547 | 1,368,326 |
| | 4 | Spare parts Cost | '000 Kip | 1,479,255 | 2,096,779 | 617,524 |
| | 5 | Tire Cost | '000 Kip | 417,455 | 591,399 | 173,944 |
| | 6 | Administration Cost | '000 Kip | 215,951 | 306,452 | 90,501 |
| | 7 | Others | '000 Kip | 682,812 | 967,744 | 284,932 |
| | 8 | Welfare Cost | '000 Kip | 48,150 | 67,204 | 19,055 |
| | 9 | Depreciation Cost | '000 Kip | 581,204 | 2,666,258 | 2,085,054 |
| D | Profit-Loss | | '000 Kip | -26,076 | 2,221,793 | 2,247,869 |
| E | No. of Bus Fleet (Operation) | | No. | 49 (36) | 42 (36) | -7(0) |
| F | Rate of Profit / Revenue | | % | -0.3% | 12.2% | 12.5% |

Source: Estimated by the JICA Study Team

Note: Depreciation period is assumed at 15 years.

(3) Profit-Loss Statement of VCSBE after New Buses for VCSBE

Table 6 shows the profit-loss statement of all routes operated by VCSBE after granting the new buses.

Table 6 Profit-Loss Statement Before and After Granting Buses to VCSBE (All Routes)

| Items | | Unit | Profit-Loss before Granting Buses | Profit-Loss after Granting Buses | |
|-------|------------------------------|-------------------|-----------------------------------|----------------------------------|-------------|
| A | Condition of Bus Transport | | | | |
| | 1 | No. of Trips | Trip | 105,239 | 123,222 |
| | 2 | No. Passengers | Person | 3,682,846 | 6,783,560 |
| | 3 | Bus • Km | Km | 6,947,053 | 7,349,838 |
| | 4 | Passenger Km | Person • Km | 161,746,153 | 239,965,103 |
| B | Revenue | | 000Kip | 29,937,258 | 40,690,053 |
| C | Expenditure | | 000Kip | 27,822,099 | 35,716,399 |
| | 1 | Salary | 000Kip | 3,964,697 | 4,447,990 |
| | 2 | Lubricant Cost | 000Kip | 864,295 | 969,710 |
| | 3 | Fuel Cost | 000Kip | 11,252,114 | 12,620,440 |
| | 4 | Spare part Cost | 000Kip | 5,071,181 | 5,688,705 |
| | 5 | Tie Cost | 000Kip | 1,431,120 | 1,605,064 |
| | 6 | Overhead Cost | 000Kip | 740,324 | 830,825 |
| | 7 | Other Cost | 000Kip | 2,340,817 | 2,625,749 |
| | 8 | Welfare Cost | 000Kip | 165,067 | 184,122 |
| | 9 | Depreciation Cost | 000Kip | 1,992,482 | 4,077,537 |
| D | Profit-Loss | | 000Kip | 2,115,160 | 4,973,654 |
| E | Number of Buses | | Number | 127 | 120 |
| F | Profit Rate to Total Revenue | | % | 7.1% | 12.2% |

Source: Estimated by JICA Study Team

Before granting the buses to VCSBE, the profit of the VCSBE was 2.1 billion Kip with the profit rate of 7.1 % based on the VCSBE 2009 profit-loss statement. After granting the buses, the profit will be increased to 4.9 billion Kip with the profit rate of 12.2 %.

2-2-2-3 Equipment Plan

(1) Overall Plan

Table 7 shows the current conditions of buses allocated to the urban routes. 49 buses are allocated out of the 103 buses that VCSBE owns at present. As 13 buses among 49 buses are under periodical inspection or repairing, the operation rate is less than 75%.

Table 7 Current Conditions of Buses for the Urban Routes

| | No. of buses to be allocated in the urban routes | |
|------------|--|-------|
| | Upper : No. of maintenance Lower : No. of operation | Total |
| MITSUBISHI | 9 14 | 23 |
| HYUNDAI | 1 2 | 3 |
| NISSAN | 3 20 | 23 |
| Total | 13 36 | 49 |

Source: VCSBE data compiled by JICA Study

The travel distance of these buses exceeded 400,000km for small bus and 1.2 million km for large bus. These buses received the engine overhaul several times. Intense damages and wear-out of all parts of the engine occurred. Therefore, the frequency of engine repairing increased more than once a month and it caused the decrease in the operation rate of the buses.

In addition, there were many unpaved roads on the bus routes, in particular, in the community roads. The oscillation of bus body and infiltration of muddy water with the running on the punishing road caused fatigues and corrosion of metals of steering rod, axle parts and chassis. , ruptures of metal parts occurred with high frequency at many times per month. These damages had been repaired by the welding and stiffening plates. But, soon after repairing, the close sections of repairing were ruptured within a short period, because the degradations were generated on all parts of the bus. These damages may usually happen on operation: by the rupture of steering rod, the wheel control becomes impossible; and by the rupture of axle parts or chassis, the bus body might inclines suddenly and becomes impossible to run. Thus these conditions of buses may cause very dangerous accidents.

Table 8 shows the condition and its evaluation of the buses dispatched in the urban area.

Table 8 The Condition and Evaluation of Buses to be replaced in the Urban Area

| Total No | No. | Maker | Procur. year | Running Distance (Km) | Running ○ × | Present Condition/Actual Repairing | Evaluation |
|----------|-----|---------|--------------|-----------------------|-------------------|--|------------|
| 1 | 1 | MMC | 1988 | 602,880 | ○ | Steering rod change, Engine malfunction, Door repairing | Disposal |
| 2 | 2 | | | 711,360 | × | Under repairing Front spring, Brake | Disposal |
| 3 | 3 | | | 428,597 | × | Under repairing from Jul.2010 | Disposal |
| 4 | 4 | | | 702,909 | ○ | Reinforce shassis, Engine overhaul, Seat Change | Disposal |
| 5 | 5 | | | 795,940 | ○ | Reinforce shassis, Engine change, Steering rod change | Disposal |
| 6 | 6 | | | 601,920 | × | Cluch disk change, Engine overhaul | Disposal |
| 7 | 7 | | | 599,580 | ○ | Engine change/overhaul, Suspention change | Disposal |
| 8 | 8 | | | 859,908 | ○ | Steering rod change, Door repairing, Side window change | Disposal |
| 9 | 9 | | | 609,414 | ○ | Reinforce shassis, Engine overhaul | Disposal |
| 10 | 10 | | | 776,541 | ○ | Engine change, Axle overhaul, Floor plate change | Disposal |
| 11 | 11 | | | 607,074 | ○ | Suspention change, Reinforce floor plate | Disposal |
| 12 | 12 | | | 605,789 | × | Under overhaul | Disposal |
| 13 | 13 | | | 434,309 | × | Under repairing from Dec.2009 | Disposal |
| 14 | 14 | | | 599,346 | ○ | Engine change, Door repairing, Reinforce roof plate | Disposal |
| 15 | 15 | | | 601,581 | × | Under repairing from Mar.2010 | Disposal |
| 16 | 16 | | | 422,949 | × | Under repairing from Jun.2010 | Disposal |
| 17 | 17 | | | 418,753 | ○ | Suspention change, Front window change, Door repairing | Disposal |
| 18 | 18 | | | 410,072 | ○ | Engine malfunction, Reinforce shassis, Axle parts change | Disposal |
| 19 | 19 | | | 454,629 | × | Under repairing from Jul.2010 | Disposal |
| 20 | 20 | | | 469,536 | ○ | Engine, change, Axle oarts change, Reinforce roof plate | Disposal |
| 21 | 21 | | | 656,640 | × | Engine overhaul, Alternator Repairing | Disposal |
| 22 | 22 | | | 430,580 | ○ | Engine malfunction, Steering rod change, Door repairing | Disposal |
| 23 | 23 | | | 303,860 | ○ | Engine malfunction, Steering rod change, Door repairing | Disposal |
| 24 | 1 | Hyunday | 2000 | 1,292,075 | × | Engine overhaul, Suspention change, Seat change | Disposal |
| 25 | 2 | | | 1,019,132 | ○ | Reinforce shassis, Engine change/malfunction, Door repairing | Disposal |
| 26 | 3 | | | 1,184,075 | ○ | Reinforce shassis, Engine change, Reinforce floor plate | Disposal |
| 27 | 1 | Nissan | 2000 | 502,650 | ○ | Engine malfunction, Suspention change, Axle parts change | Disposal |
| 28 | 2 | | | 525,013 | ○ | Engine malfunction, Seat change, Side window change | Disposal |
| 29 | 3 | | | 530,371 | ○ | Engine change, Reinforce roof plate/door, Seat change | Disposal |
| 30 | 4 | | | 537,402 | ○ | Reinforce shassis, Engine change, Suspention change | Disposal |
| 31 | 5 | | | 479,490 | ○ | Engine overhaul, Reinforce floor plate, Change side window | Disposal |
| 32 | 6 | | | 539,872 | × | Engine overhaul, Steering rod change | Disposal |
| 33 | 7 | | | 506,220 | ○ | Reinforce shassis, Suspention change, Door repairing | Disposal |
| 34 | 8 | | | 502,304 | ○ | Engine malfunction, Front window change, Roof raparing | Disposal |
| 35 | 9 | | | 471,108 | ○ | Axle parts overhaul, Door repairing, Floor repairing | Disposal |
| 36 | 10 | | | 499,293 | ○ | Engine change/overhaul, Steering rod change | Disposal |
| 37 | 11 | | | 502,897 | ○ | Reinforce shassis, Engine change, Door repairing | Disposal |
| 38 | 12 | | | 501,741 | ○ | Engine overhaul, Suspention change, Reinforce floor plate | Disposal |
| 39 | 13 | | | 466,229 | ○ | Engine malfunction, Steering rod change | Disposal |
| 40 | 14 | | | 504,446 | ○ | Engine overhaul/change, Roof repairing, Door repairing | Disposal |
| 41 | 15 | | | 471,752 | ○ | Reinforce shassis, Engine overhaul | Disposal |
| 42 | 16 | | | 508,491 | × | Starter motor repairing, Axle repairing, Engine change | Disposal |
| 43 | 17 | | | 496,236 | ○ | Engine repairing/overhaul, Suspention change | Disposal |
| 44 | 18 | | | 498,210 | ○ | Engine overhaul, Steering rod change | Disposal |
| 45 | 19 | | | 474,945 | ○ | Engine change/malfunction, Door repairing, Floor plate repairing | Disposal |
| 46 | 20 | | | 509,422 | × | Engine and body overhaul | Disposal |
| 47 | 21 | | | 447,552 | ○ | Engine overhaul, Steering rod change, Door repairing | Disposal |
| 48 | 22 | | | 482,739 | ○ | Reinforce shassis, Engine change, Suspention change | Disposal |
| 49 | 23 | | | 470,487 | ○ | Engine overhaul, Axle parts overhaul | Disposal |

Source: VCSBE data compiled by JICA Study

Hence the travel distances of all the 49 buses allocated to the urban routes exceeded 400,000km, and each part of the buses is intensely aging. These are evaluated as appropriate for disposal because passenger travel may be seriously unsafe and it may hinder to manage reliable public bus service. Therefore, this Survey examined the replacement of all the buses allocated in the urban routes under this Project.

(2) Equipment Plan

1) Basic Specifications

According to the route and operation plan, 45 seats are necessary in each bus. The specifications of a bus are shown in Table 9.

Table 9 Equipment Specifications

| Item | Specifications |
|----------------------------|--|
| 1. General | |
| (1) No. of Seat | : 42-47seats |
| (2) Driving Position | : Left-hand drive |
| 2. Engine | |
| (1) Type | : Water Cooled Diesel |
| (2) No. of Cylinder | : 6 |
| (3) Emission Control | : Euro 1-4 equivalent |
| 3. Chassis Part | |
| (1) Chassis Frame | : Ladder type |
| (2) Engine Location | : Rear position of chassis |
| (3) Transmission | : Forward 5 or 6 speed and 1 reverse |
| 4. Tire | : Radial Tire |
| 5. Body Part | : Skeleton Construction |
| 6. Door | |
| (1) Position | : Front side and Rear (Center) side |
| (2) Type | : Inward opening type (Front / Rear) or Slide opening type (Rear) |
| 7. Emergency Exit | : 1No. Emergency exit on rear side |
| 8. Windows | |
| (1) Windshield | : 1 or 2 Nos. fixed type with center pillar |
| (2) Side Window | : Sliding type (both way slide) |
| (3) Rear Window | : 1 No. fixed type |
| (4) Glass | : All heat-absorbing tempered safety glass |
| (5) Destination Sign Board | : Electrical Destination Screen |
| 9. Floor | : Non-slip type |
| 10. Seat | : Comfortable seat Priority seats at front side |
| 11. Air Conditioner | : Equipped |
| 12. Ventilation | : Equipped |
| 13. Painting | |
| (1) Exterior Color | : VCSBE's color scheme |
| (2) Interior Color | : Manufacturer's standard |

2) Specification and Quantity of Necessary Maintenance Equipment

As a result of the survey of maintenance equipment, shortage and damages of equipment and tools in the VCSBE workshop were found. The Survey selected the necessary maintenance equipment and tools that VCSBE may not procure in the local markets and by which they improve their maintenance

efficiency. Thus the maintenance and repair period for all the buses including newly procured buses should be substantially reduced. Table 10 shows the necessary maintenance equipment, which may not need the installation works.

Table 10 Necessary Maintenance Equipment

| Item | Q'ty | Purpose |
|--|------|--|
| 1.Maintenance and Repair Equipment | | |
| Lifting jack Movable type Lifting capacity: 10 ton | 4 | A kind of jack. 4 jacks can jack up 2 buses to carry out the maintenance for axle |
| Transmission jack Lifting capacity: 800 kg | 1 | Specialized jack for taking out a transmission |
| Wheel dolly Applicable tire: 509 - 1,160mm dia with lift jack | 1 | Specialized tool for taking out a tire with break drum |
| Drum pump Operation: hand operated | 1 | Hand pump for pumping out the oil from a drum |
| Mechanic tool set for large vehicle Total 100 items of hand tools | 7 | General hand tool set (for renewal of existing tool sets) |
| Air Hydraulic Jack 15 ton | 3 | Garage jack by air driving |
| Service Creeper | 4 | Working board with caster |
| Differential Gear Jack | 1 | Jack for taking out differential gear |
| Brake Fluid Bleeder | 1 | Tool for outgas air from brake oil after maintenance of brake |
| Diesel Compressor Gauge Set | 1 | Pressure gauge for engine compressive pressure |
| 2.Wheel / Tire & Brake Service | | |
| Automatic tire inflator Stand type Capacity: 0.7MPa | 2 | Stand type inflator nozzle with pressure gauge and adjusting valve |
| 3.Engine & Transmission Service | | |
| Air valve lapper Air pressure: 0.6 - 0.8 Mpa | 1 | Air tool for facing up a valve of engine cylinder head |
| Engine /unit repair stand Service capacity: 1,000 kg | 2 | Engine stand for overhaul without putting on the floor |
| 4.Vehicle Washing Equipment | | |
| Hot water high pressure washer | 2 | High pressure washer with hot water |
| 5.Power Tool Group | | |
| Air impact wrench Drive: 1/2" sq. drive | 1 | Air impact wrench (small size) |
| Air impact wrench Drive: 3/4" sq. drive | 1 | Air impact wrench (middle size) |
| Air impact wrench Drive: 1"sq. drive | 1 | Air impact wrench (large size) |

| Item | Q'ty | Purpose |
|--|------|---|
| Socket for impact wrench, (1/2"sq.) 8, 10, 13, 17, 19, 21, 22, 24, 27, 30, 32mm | 1 | Socket set for small impact wrench |
| Socket for impact wrench, (3/4"sq.) 19, 22, 24, 27, 30, 32, 36, 41mm | 1 | Socket set for middle impact wrench |
| Socket for impact wrench, (1"sq.) 32, 36, 41, 46, 50mm | 1 | Socket set for large impact wrench |
| Torque Multiplier | 1 | Tool for fastening large size bolt or high torque bolt |
| Ram and Pump Set | 1 | Tool set of hydraulic pump and cylinder for plate working |
| 6.Hand Tool Group | | |
| Socket wrench set, 3/8" sq. drive Socket: 6 - 21mm, with accessories | 1 | Socket wrench for general tool |
| Socket wrench set, 1/2"sq. drive Socket: 10 - 32mm, with accessories | 1 | Socket wrench for general tool |
| Socket wrench set, 1"sq. drive Socket: 32 - 80mm, with accessories | 1 | Socket wrench for general tool |
| Lever block Capacity: 1.5 ton | 1 | Lever block for plate working and repair chassis |
| 7.Measuring Tool Group | | |
| Torque wrench (3/8"sq.) Range: 10-45 N.m Type: torque pre-set type | 1 | Torque wrench for the bolt on engine or transmission |
| Torque wrench (1/2"sq.) Range: 40-180 N.m Type: torque pre-set type | 1 | Torque wrench for the bolt on engine or transmission |
| Torque wrench (3/4"sq.) Range: 100-700 N.m Type: torque pre-set type | 1 | Torque wrench for the bolt on engine or transmission |
| Torque wrench (1"sq.) Range: 100-1,000 N.m Type: torque pre-set type | 1 | Large size torque wrench for the bolt on tie rod, hub bolt, spring U-bolt |
| Digital multi tester AC/DC ampere, AC/DC voltage resistance | 1 | Digital multi tester for electrical component |
| Combination Socket Impact | 2 | Impact wrench socket for hub bolt on the tire |
| 8.Battery Service | | |
| Quick battery charger Output: 12—24V/140A | 1 | Large capacity battery charger to be able to start engine until 140A |
| 9.Air Compressor | | |
| Air compressor Motor: 15kW Max. working pressure: 0.93MPa Receiver tank: 340 liters | 1 | Supply air to air tools in the workshop |

| Item | Q'ty | Purpose |
|---|------|--|
| 10.Fabrication, Welding and Painting | | |
| Semi Automatic Co2 Welding200A | 1 | Semi automatic Co2 welding machine for body plate and floor palate |
| Plasma Cutter | 1 | Plasma Cutter for cutting steel sheet |
| Spot Welder (Single1.8, Double 7.0mm) | 1 | Spot welding machine for body plate and floor palate |
| 11.Electric Service | | |
| Circuit Tester | 1 | Analog electric tester for electrical component |
| Clamp Tester | 1 | Current tester for electrical component |
| 12.Lifting Equipment | | |
| Sling Chain 2ton Single | 2 | Chain type lifting sling with single hook |
| Sling Chain 2ton Double Hook | 8 | Chain type lifting sling with double hook |
| Mobile Floor Crane Capacity 1ton | 2 | Floor Crane for lifting and moving of engine or heavy parts |

2-2-3 Implementation Plan

2-2-3-1 Implementation Policy

(1) Project Implementation Structure

Figure 2 shows the relationship between organizations concerned in Japan and Laos when this Project is implemented according to the framework of Japan's Grant Aid.

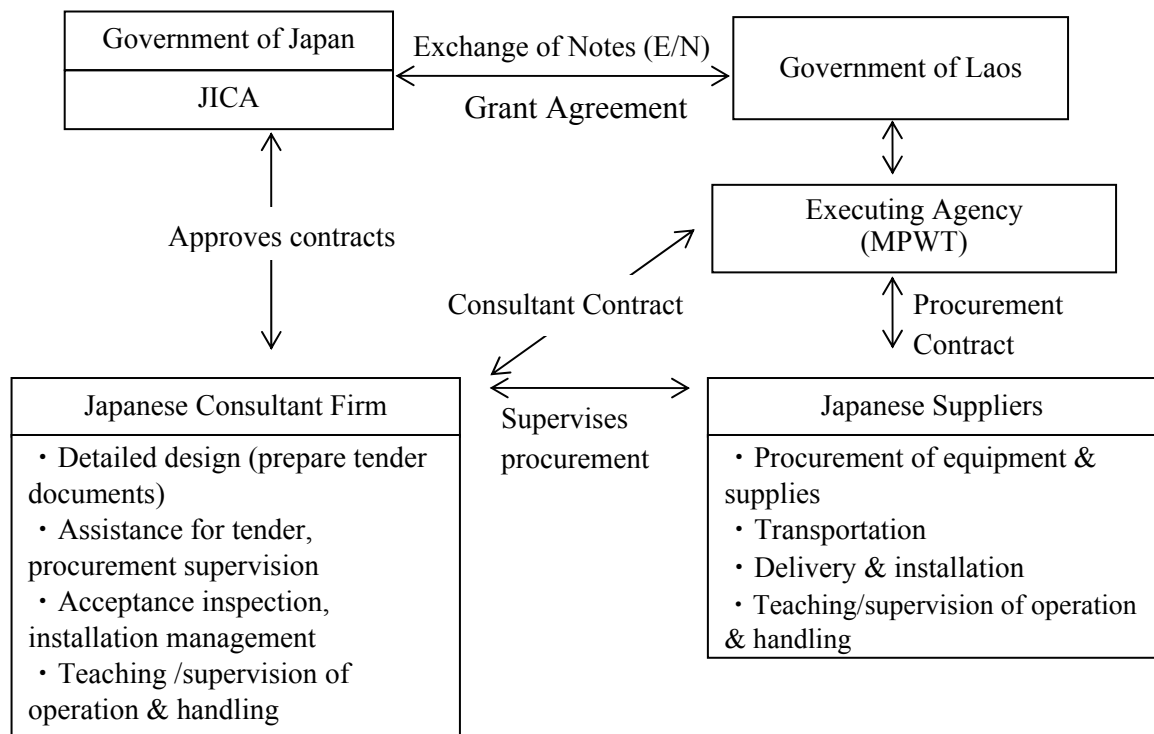


Figure 2 Relationships of Organizations to be Engaged in Project Implementation

In accordance with the Grant Aid framework of the Japanese Government, a Japanese consulting firm will take charge of detailed design and supervision of procurement process, and equipment will be procured mostly from Japanese corporations/manufacturers.

(2) Lao Side

The executing agency of this Project on the Lao side is MPWT. VSCBE is responsible for operation, maintenance and management of equipment to be procured under the executing agency. Responsible organizations on the Lao side at each implementation stage are listed in Table 11.

Table 11 Responsible Organizations on the Laos Side at Each Stage

| Implementation stage | Responsible organization |
|---|--|
| Exchange of Notes (E/N) | Ministry of Foreign Affairs (MOFA) |
| Grant Agreement (G/A) | Ministry of Plan and Investment (MOPI) |
| Procurement, delivery and installation of equipment | Ministry of Public Works and Transport (MPWT), Department of Transport (DOT) |
| Bus operation | Vientiane Capital State Bus Enterprise (VCSBE) |

(3) Consultant

After the signing of E/N and G/A, MPWT will immediately conclude a consultant contract with a Japanese consulting firm. The contracted consultant will be responsible for providing engineering services with regard to the preparation of detailed design and tender documents, assistance for the tender procedure, and supervision of procurement until the handover of equipment under this Project.

(4) Equipment Supplier

Successful bidders that meet the criteria for quality and specifications in an open competitive tender among the pre-qualified suppliers will sign a contract with MPWT with regard to the supply of equipment selected for this Project.

2-2-3-2 Implementation Conditions

The procured equipment will be seaborne from Japan and discharged at Laem Chabang Port of Thailand. The body building will be done on the chassis and engine in Thailand. Then the buses will travel inland and be delivered to workshop of VCSBE.

After the delivery of equipment to the designated places, the supplier will test run each and every equipment item to ensure that they operate properly before handing over them to MPWT. Immediately following the handover, the supplier will train VCSBE personnel how to operate, handle, inspect, and maintain the equipment.

2-2-3-3 Scope of Works

The Japanese side will bear all costs associated with equipment procurement, including the transportation cost to the delivery sites and unloading fees. The Laos side will exempt the imported equipment from customs duty and any other taxes. Table 12 shows the obligations of each side.

Table 12 Obligations of the Japanese and Laos Governments

| Contents of work | | Responsible side | | Remarks |
|---|-------------------------------------|------------------|------|--------------------------------------|
| | | Japan | Laos | |
| Procurement, delivery and installation of equipment | Procurement of equipment | ○ | | |
| | Marine transportation | ○ | | |
| | Landing procedures | ○ | | |
| | Land transportation | ○ | | |
| | Tax exemption and customs clearance | | ○ | in Laos |
| | Inland transportation | ○ | | to the designated place in Vientiane |
| City Bus Operation | Securement of parking space | | ○ | |
| | Operation and management | | ○ | |
| | Maintenance and management of buses | | ○ | |

2-2-3-4 Consultant Supervision

(1) Basic Policy

After the signing of E/N and G/A, the Japanese Consultant will conclude a consulting contract with the Government of Laos and supervise the procurement work according to the framework of Japan's Grant Aid and the scope stipulated in E/N. It is important for the Consultant to perform its duties based on thorough understanding of the background of this Project, as well as how and why the content of the basic design was determined.

(2) Procurement Supervision

The procurement supervision work consists mainly of the following:

- Discussion and confirmation with the Laos side
- Review of equipment specifications
- Preparation of tender documents
- Explanation and approval by the Laos side on the tender documents
- Assistance for the tendering (public announcement, provision of tender document, execution of

tender, evaluation of tender)

- Assistance for the contract (negotiation, witness of contract, verification of contract)
- Confirmation of the issuance of order sheets for the equipment
- Factory inspection, inspection before delivery
- Pre-shipment inspection (committed to the third party)
- Final inspection and handover
- Witness of instruction of operation and inspection/maintenance
- Preparing a project completion report

2-2-3-5 Quality Control Plan

In order to verify whether the equipment to be procured is meeting the quality standards and specifications set forth in the contract, the following inspections will be conducted at each stage of the procurement work:

- Confirmation of contents of equipment order sheets issued by the supplier
- Factory inspection before delivery
- Pre—shipment inspection
- Inspection at handover of equipment

2-2-3-6 Procurement Plan

(1) Spare Parts and Guarantees

It is possible to procure the consumable parts or high demand parts such as filter, brake shoe and suspension at the large vehicle parts shops in the city. The item and stock is very abundant. However, if there is not stock, it is possible to order to agent in Thailand. The parts can be obtained within about 3-7days. About unavailable parts, VCSBE fabricate the parts from local fabricator with similar quality as much as possible or they use non-genuine parts. However, these quantity and durability are inferior to genuine parts.

After procurement of the equipment, it is necessary that VCSBE procure the spare parts independently by themselves. However, the self-reliant equipment maintenance might not be exerted for a certain period after procurement. Thus, this procurement plan procures the spare parts for the purpose of supporting the self-reliant. This procurement plan examines the procurement of the spare parts and consumable parts for the periodical maintenance until initial running distance 30,000km.

About product assurance after procurement, it is assumed that the manufacturer guarantee for one year

is added to correspond to the initial defective or trouble, which is caused by normal using.

(2) Country of Origin

MPWT and VCSBE strongly request for the procurement of the buses made by Japanese manufacturers. Therefore, this procurement plans to procure the buses made by Japanese manufacturers.

About bus body building, there are companies that have enough capability in Thailand and Vietnam nearby Laos, and only Thailand manufacturers have corresponded to all Japanese manufacturers. In addition, because the delivery transportation and procurements of parts from Thailand are especially easy, the body building will be made in Thailand,

Thus, this plan decides that the chassis and engine to be made by Japanese manufacturers will be transported in Thailand for bus body building, and after completing the body building there, buses will be transported to Laos by inland routes. This plan also decides to procure the maintenance equipment from the Japanese manufacturers as requested by Lao side.

(3) Delivery Route

The procured equipment will be seaborne from Japan and discharged at Laem Chabang Port or Bangkok port, Thailand. The body building will be done on the chassis and engine in Thailand. Then the buses will be transported by inland route and delivered to workshop of VCSBE. This scheme is considered as the best from the standpoint of every aspect including safety, time and cost. Maintenance equipment will be transported from Laem Chabang Port to Vientiane directly.

The distance of ocean transportation from port of Japan to Laem Chabang Port is about 4,800km and the transport period including the discharge is about one month. The distance of the land transportation from Bangkok outskirts to Vientiane is about 650km and the driving time is 15hours. However, 2-4 buses that the factory inspection completed among 42 buses will be collectively shipped sequentially. Therefore, the transit period for all of them is assumed to be about half a month. The customs clearance will be also take about half a month.

Because the 42 number of buses is comparatively a large quantity, the schedule control regarding shipping timing from the body manufacturers, land transportation and the customs clearance is an important factor to flow the delivery schedule. In addition, these buses become the final finished products after the body building in Thailand, therefore, it is appropriate that Japan side bear the transportation cost up to the final destination i.e. Vientiane in Laos in a similar way as equipment transport from third country to Laos.

2-2-3-7 Operational Guidance Plan

(1) Plan for Test Run and Adjustment

At the time of arrival of the equipment, the supplier will dispatch engineers to test run and make adjustments on the procured equipment to make sure that they operate properly. This project plans the procurement of the buses and the maintenance equipment. Regarding the bus manufacturing, there are two components, one is chassis and engine manufacturing and another is body building. Therefore, this project plans the dispatch of three expert engineers to enable the implementation of the test run and adjustment about chassis, engine and body parts. Implementation plan will be carried out the test run and adjustment one by one which arrived at planned place i.e. Vientiane. Because the delivery period is assumed to be about two weeks, this project plans the dispatch of the engineers for two weeks.

(2) Plan for Guidance of Initial Operation

Guidance for initial operation aims to teach/train VCSBE personnel on how to operate the equipment and conduct daily inspections. This project plans the instruction how to use and operate that place priority on the peculiar operation and maintenance method about the procured equipment. According to the implementation schedule, the duration of initial guidance for chassis and engine (axle and engine mainly) is assumed to be 15 days and 5 days for all maintenance equipment.

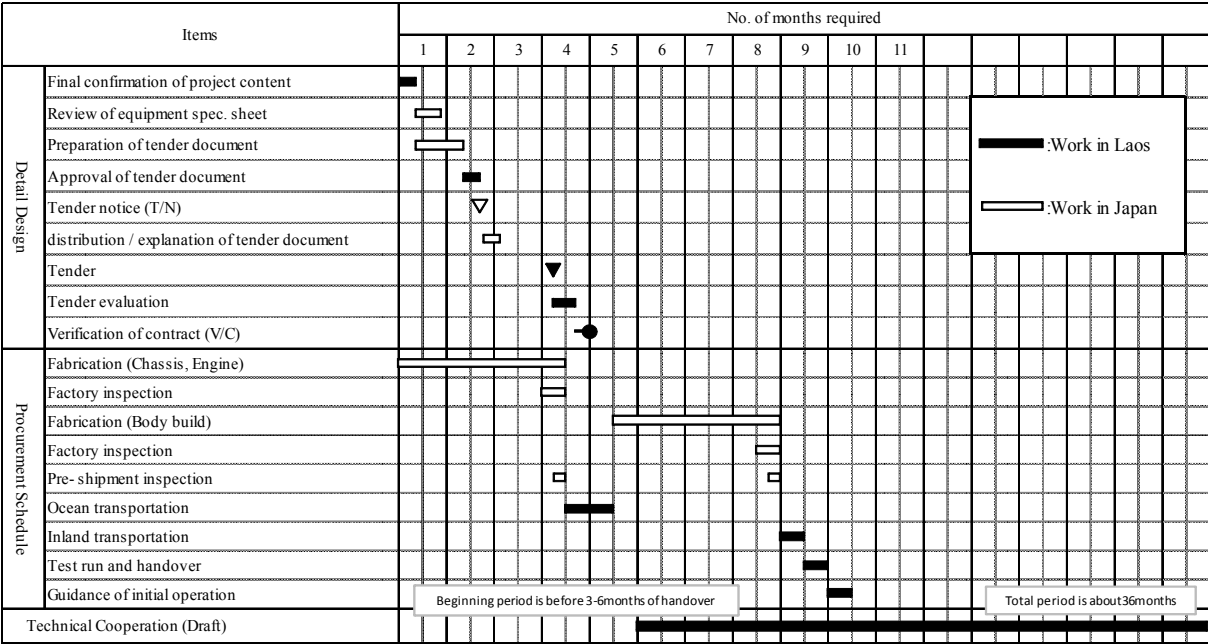
2-2-3-8 Soft Component (Technical Assistance) Plan

No soft component will be implemented in this Project. However, this project suggests for implementing a technical assistance for vehicle maintenance as the technical cooperation project, which is scheduled for the implementation.

2-2-3-9 Implementation Schedule

This Project will be implemented in accordance with the Grant Aid framework of the Japanese Government in the schedule shown in Table 13.

Table 13 Project Implementation Schedule



2-3 Obligations of Recipient Country

If this Project is implemented through Japan's Grant Aid, the Government of Laos will be responsible for the following matters:

(1) Items to be borne Concerning Procurement of Equipment

- To bear commissions to the Japanese foreign exchange bank for its banking services, based upon the Banking Arrangement (B/A).
- To provide facilities for Japanese personnel in entering and staying in Laos and visiting relevant government agencies to perform their duties under the Project.
- To exempt Japanese nationals and corporations engaged in the Project from custom duties and other internal taxes.
- Making arrangements for budgets related to custom duties concerning procurement of equipment.
- To secure the necessary personnel and obligations at the execution of the guidance for initial operation, inspection and maintenance.
- To bear all expenses, other than those covered by the Japan's Grant Aid, necessary for the Project.

(2) Matters/Items to be born Concerning after the Procurement

- Conducting the operations of city bus. And making arrangements for necessary budgets and staffs.
- Making appropriate and effective use of, and maintaining and managing equipment to be procured.

2-4 Project Operation Plan

If equipment is going to be procured through this Project, the Laos side will need to deploy sufficient personnel in time for the delivery of the equipment to the designated places so that they can learn how to operate and maintain each equipment model from the engineers dispatched from Japan at the time of operation guidance.

The necessary personnel and budget allocation is necessary to implement the public bus operation with the procured equipment. However, this project plans to replace the existing aging buses, so the operation is possible by the existing personnel i.e. drivers, mechanics, etc.

2-5 Project Cost Estimation

2-5-1 Initial Cost Estimation

(1) Cost borne by the Government of Japan

The Project will be implemented in accordance with the Japan's Grant Aid scheme and the cost will be determined before concluding the Exchange of Note (E/N) for the Project.

(2) Cost borne by the Government of Laos

| Item | Cost | |
|--------------------------------|--------|-------------|
| | US\$ | million yen |
| Banking Arrangement (B/A) fees | 10,898 | 1.0 |
| Total | 10,898 | 1.0 |

For the implementation of this Project, the Laos side will bear a total of US\$10,898.

(3) Parameters of Cost Estimation

- Time of cost estimate: July 2010
- Exchange rate: 91.76JPY/USD
0.0106JPY/Kip
- Procurement period: Implementation design and procurement of equipment will be as shown in implementation schedules.
- Others: This plan will be put into execution in accordance with the grant aid system of the Government of Japan

2-5-2 Operation and Maintenance Cost

As shown in Table 6 before, the increasing cost of operation and maintenance after providing 42 buses is estimated 35,716 million Kips (equivalent to approx. 378.6 million Yen), but VSCBE will receive increasing incomes of 40,690 million Kips (equivalent to approx. 431.3 million Yen). VSCBE will gain the profit of 4,974 million Kips (equivalent to approx. 52.7 million Yen). Thus, this profit will cover the increasing cost of operation and maintenance.

CHAPTER 3 Project Evaluation

3-1 Recommendation

(1) Pre-conditions of the Project Implementation

The pre-conditions of the project implementation is to provide finance for Banking Arrangement (B/A) of the Project by Laos side.

(2) Externality of Achievement of the Project Objective

The externality of the achievement of the project objective is that VCSBE shall continue public bus services in urban routes of the Vientiane Capital.

3-2 Project Evaluation

(1) Project Validity

- i. Project beneficiary population will be 795,000 which accounts for 12.3% of total population of the country. Most of the bus users are the poor. Monthly income of 40% of the sampled bus users ranges between 6,000 and 10,000 yen equivalent; monthly income of 45% between 10,000 yen and 20,000 yen equivalent. In total, monthly income of 98% of bus users is below 40,000 yen equivalent.
- ii. By profession, 20% of bus users are women (house holders); 21% of students; and 6% of the aged more than 60-year old. Thus, the project may well ensure the right of mobility for “the transport poor”, thereby accommodating the policies of human security, Basic Human Needs, and education and Human Resource Development.
- iii. The recipient country has the capacity for operation and maintenance of the new buses through VCSBE revenues, its staffs and its technical skills. The project may needs only conventional technology and may not need excessively high technology.
- iv. The project will contribute to the objectives of the on-going 6th and the next 7th National Development Plans.
- v. Provision of new buses by the Project will contribute to improvement of VCSBE financial conditions. The profits is expected to be used for smooth operation and maintenance of the buses.
- vi. For “Environmentally Sustainable Transport”, the project is expected to promote the modal shift from the private cars and motorcycles to the public buses, thereby reducing air pollution and CO₂ emission.
- vii. MPWT and VCSBE have experiences in receiving several grant aids of bus procurement. Thus it is easy to proceed in implementation of the Project under the Japan Grant aid scheme.
- viii. VCSBE has been operating the Japan manufactured buses approximately for 20 years. They have appreciated the high quality and cost performance of the Japan made buses comparing to the buses manufactured in other countries. As they is familiar with operation and maintenance

of Japan made bus, they request the buses manufactured in Japan.

(2) Project Effectiveness and Efficiency

a. Quantitative Evaluation

| Indicator | Present Value (2001) | Planned Value(2015) |
|-------------------------|----------------------|---------------------|
| Operation Frequency | 177 | 211 |
| Transportation Capacity | 196,000 pax km/day | 331,000 pax km/day |

Note: pax. passenger

b. Qualitative Evaluation

- To reduce the number of failure of the public bus in Vientiane Capital
- To reduce the number of traffic accidents of the public bus in Vientiane Capital
- To mitigate traffic congestion on public bus routes in Vientiane Capital
- To improve safety of public bus transportation in Vientiane Capital
- To maintain public bus services in Vientiane Capital

CHAPTER 4 Technical Cooperation Project

(1) Technical Cooperation Project

The Survey included preparation of a Technical Cooperation for “the Project to Enhance the Operation of VCSBE” (hereinafter referred to as “TCP”). The following is contents and scope of TCI prepared based on new plans of the management, route and operation of VCSBE using new buses to be expected to procure under the Project.

(2) Preliminary Results of the Scope of the Technical Cooperation

The study conducted a series of discussion with the relevant authorities as follows.

- The Lao side requested to implement TCP before arrival of new buses. The Survey considered starting of TCP three to six months before the planned bus arrival time.
- The Lao side expressed that improvement of formulating, planning and management capacity of MPWT and VC staffs should be important, because they have the authority and responsibility for review and acceptance of bus fares, subsidies, bus operation plan and corporate account. MPWT strongly demanded to add MPWT and VC staffs in the target group. The survey team and Laos side noted in the Minutes of Discussion to examine this request in Japan.
- As noted above, the original concept of the TCP was designed approval of the bus fare, management plan, bus schedule as the project externality thereby limiting the scope into only the improvement of corporate management of VCSBE. But Laos side evaluated this externality should be a key for supporting VCSBE management improvement. A draft of PDM was prepared by Laos side from this point of view.
- In particular, it was confirmed to ensure “corporate sustainability” by adding new buses or replacing through improvement of management of the corporation. It was confirmed that it should be important to promote the sustainability through TCP, because the corporate management should be substantially affected by the government and the city's public transport policy (fares, retained earnings of depreciation).
- The survey team examined to incorporate fare collection systems into the Project as the added value of the Project. But the fare system and types should be affected by the public transportation policy and be reviewed through TCP. The both parties confirmed this. As vehicle operation and recording equipment (GPS, etc.) was demanded as the efficient management tools of the bus schedules, TCP will consider this issue.

- Evaluation of this Project will require the tangible indicators for measuring the results after some two years from the new bus operation. The Survey conducted a traffic count survey, a bus boarding survey and bus user interview survey to find the present conditions of the public bus service. The results of this Survey will be examined with PDM baseline and performance indicators after review.
- The survey team discussed with the Laos side feasibility of introduction of Bus Rapid Transit (BRT) system having special bus stations and bus private lanes from the perspective of long-term public transport planning, and conducted consultation with stakeholders including other JICA study team for the ongoing survey of "Vientiane Capital Urban Development Master Plan". As MPWT considered, as the pre-conditions, the sufficient right of way on BRT routes and the significant number of BRT users, a detailed plan of population accumulation sites in the urban master plan should be finalized. This issue should matter in TCP.
- In addition, the survey team conducted in consultation with ADB for the introduction of BRT, bus private lanes and bus priority routes, parking measures, bus priority signal, etc. and a development plan was discussed. A new project for public bus transport was under preparation by ADB. The details shall be discussed in TCP.

(3) Issues and Consideration

Laos side requested to include relevant departments of VCSBE, MPWT and VC in the project counterparts, because VCSBE's corporate management and operation is under authority of MPWT and VC. MPWT and VC should support VCSBE with formulating a favorable policy and measures. Unless otherwise TCP may face the difficulties in achievement of the project purpose. Therefore, DOT of MPWT and DPWT of VC, need to develop human resources in public transport policy planning and management. These competent staffs will be also required to implement public transport preference measures with other donors such as ADB.

In addition, MPWT expected suggestion in introduction of subsidies policy to the public bus transportation. ADB has also proposed the use of funds from fuel taxes and road parking fees for financial sources. TCP will conduct consultation and review on the fare policy and the subsidy policy with the relevant authorities, donors, and all stakeholders.

In conclusion, it is appropriate that DPWT and VC will be engaged as the counterparts and the project target group together with VCSBE,

(4) Proposed Project Design Matrix (PDM)

Laos side prepared the basic plan for technical cooperation projects in the following PDM. (See appendix 6)

- Counterpart: VCSBE, DOT of MPWT, DPWT of VC
- Long-term goal: "Environment Sustainable Transport" (EST) is realized in Vientiane metropolitan area
- Overall Goal: Traffic accidents decrease and traffic congestion is mitigated in the target area.
- Project purpose: the efficient public bus service is ensured
- Results 1: Properly corporate management is improved by VCSBE
Results 2: Public bus service is improved responding to bus user requests
Results 3: Favorable public transport policy and plan is established
 - Activity 1: Improve corporate management
 - Activity 1.1: Improve financial management
 - Activity 1.2: Improve competency of human resource
 - Activity 1.3: Improve equipment O&M and relevant facilities
 - Activity 2: Improve bus services
 - Activity 3: Improve public bus policy and planning
- Input: (Japanese) experts: public transport, corporate management, route and operation, bus service, vehicle maintenance, transportation and traffic plan
(Laos) counterpart, bus garage, office
(Equipment), GPS, computers, STRADA

(5) Expected Project Effects through Technical Cooperation

| Item | Indicator Present Value | Planned Value |
|-----------------|-------------------------|-----------------|
| Annual bus user | 2,100,000 | 4,500,000 |
| Profit | Loss (-0.9%) | Profit recovery |

- To provide reliable bus services to Vientiane citizen
- To promote modal shift from motorcycle to public bus
- To reduce traffic accidents

To improve accessibility and mobility thereby activating passenger flows to promote development effects of urban development cores

Appendices

1. Member List of the Study Team
2. Study Schedule
3. List of Parties Concerned in the Recipient Country
4. Minutes of Discussion
5. Technical Note
6. References / Collection Data List

1. Member List of the Study Team

1.1 Field Survey in Laos (July 27 to 25 August, 2010)

| | Name | Job title | Affiliation |
|---|------------------------|--|---|
| 1 | Mr. Masahiko TAKIZAWA | Team Leader | Deputy Representative of Laos Office, JICA |
| 2 | Mr. Tomohiro ONO | Coordinator | Transportation and ICT Division 1 Transportation and ICT Group Economic Infrastructure Department, JICA |
| 3 | Mr. Toshinori TODA | Chief Consultant/ Public Transportation Planner | Katahira & Engineers International |
| 4 | Mr. Toshio KIMURA | Operating Planner/ Financial Analysis | Katahira & Engineers International |
| 5 | Mr. Tadaaki MURAKAMI | Route Planner/ Travel Planner | Katahira & Engineers International |
| 6 | Mr. Kiyohito KOBAYASHI | Equipment Planner | Katahira & Engineers International |
| 7 | Mr. Minoru MURATA | Procurement Planner/ Cost Estimator | Katahira & Engineers International |
| 8 | Mr. Syuichi YASHIRO | Operational Coordinator/ Public Transportation Sub-Planner | Katahira & Engineers International |

1.2 Explanation of Draft Report (December 5 to 12, 2010)

| | Name | Job title | Affiliation |
|---|------------------------|---|---|
| 1 | Mr. Masahiko TAKIZAWA | Team Leader | Deputy Representative of Laos Office, JICA |
| 2 | Mr. Tomohiro ONO | Coordinator | Transportation and ICT Division 1 Transportation and ICT Group Economic Infrastructure Department, JICA |
| 3 | Mr. Toshinori TODA | Chief Consultant/ Public Transportation Planner | Katahira & Engineers International |
| 5 | Mr. Tadaaki MURAKAMI | Route Planner/ Travel Planner | Katahira & Engineers International |
| 6 | Mr. Kiyohito KOBAYASHI | Equipment Planner | Katahira & Engineers International |

2. Study Schedule

2.1 Field Survey in Laos

| Date | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|------|--------------|---------------------|--|--|----------------------------------|-------------------|--|---|
| | Team Leader | Project Coordinator | Chief Consultant/ Public Transportation | Operating Planner/ Financial Analysis | Route Planner/ Travel Planner | Equipment Planner | Procurement Planner/ Cost Estimator | Operational Coordinator/ Public Transportation Sub-Planner |
| 1 | Mr. Takizawa | Mr. Ono | Mr. Toda | Mr. Kimura | Mr. Murakami | Mr. Kobayashi | Mr. Murata | Mr. Yashiro |
| 2 | | | Tokyo/Narita (11:00) → JL717 → (15:35) Bangkok (19:50) → TG574 → (21:00) Vientiane (*) | | | | | (*) |
| 3 | | | Meeting w/ JICA Laos, Meeting w/ MPWT (*) | | | | | (*) |
| 4 | | | Meeting w/ VCSBE (*) | | | | | (*) |
| 5 | | | Meeting w/ VCSBE (*) | | | | | (*) |
| 6 | | | Site Survey in the City (*) | | | | | (*) |
| 7 | | | Team meeting and Reporting (*) | | | | | (*) |
| 8 | | | Tokyo to Vientiane | | | | | |
| 9 | | | Meeting w/ JICA Laos, Meeting w/ MPWT, Site Survey in the City | | | | | Site Survey in the City |
| 10 | | | Meeting w/ VCSBE, Meeting w/ DPWT, Site Survey in the City | | | | | Site Survey in the City |
| 11 | | | Meeting w/ ADB, Meeting w/ MPWT | | | | | Data Compiling |
| 12 | | | Joint Meeting w/ MPWT, DPWT, VCSBE | | | | | Site Survey in the City |
| 13 | | | Signing of MD (AM) | | | | | Site Survey in the City |
| 14 | | | Report to JICA | | | | | Report to JICA |
| 15 | | | Report to EOJ/JICA | | | | | Report to EOJ |
| 16 | | | Vientiane to Tokyo | | | | | Site Survey in the City |
| 17 | | | Site Survey in the City | | | | | Site Survey in the City |
| 18 | | | Team meeting and Reporting | | | | | Site Survey in the City |
| 19 | | | Meeting w/ DPWT, Meeting w/ VCSBE | | | | | Site Survey in the City |
| 20 | | | Meeting w/ DPWT, Meeting w/ VCSBE | | | | | Site Survey in the City |
| 21 | | | Meeting w/ DPWT, Meeting w/ VCSBE | | | | | Site Survey in the City |
| 22 | | | Meeting w/ DPWT, Meeting w/ VCSBE | | | | | Site Survey in the City |
| 23 | | | Meeting w/ DPWT, Meeting w/ VCSBE | | | | | Site Survey in the City |
| 24 | | | Meeting w/ DPWT, Meeting w/ VCSBE | | | | | Site Survey in the City |
| 25 | | | Courtesy Call on Deputy Mayor | | | | | Courtesy Call on Deputy Mayor |
| 26 | | | Data Compiling | | | | | Data Compiling |
| 27 | | | Data Compiling | | | | | Data Compiling |
| 28 | | | Data Compiling | | | | | Data Compiling |
| 29 | | | Meeting w/ JICA Laos | | | | | Visit to bus body manufacturer |
| 30 | | | Vientiane (13:50) → (14:55) Bangkok (23:00) → JL718 → (*) | | | | | Vientiane → Bangkok → (*) |
| | | | → (7:10) Tokyo/Narita | | | | | |

EOJ: Embassy of Japan

MPWT: Ministry of Public Works and Transportation

DPWT: Dept. of Public Works and Transport (Vientiane State)

VCSBE: Vientiane State Bus Company

2.2 Explanation of Draft Report

| | Date | | JICA | | Consultant Team | | |
|---|--------|-----|--|---|---|-----------------------------------|-------------------|
| | | | Leader | Coordinator | Chief Consultant/ Public Transportation | Route Planner / Travel Planner | Equipment Planner |
| | | | Mr. Takizawa | Mr. Ono | Mr. Toda | Mr. Murakami | Mr. Kobayashi |
| 1 | 5-Dec | Sun | — | — | Tokyo/Narita → Bangkok → Vientiane | | |
| 2 | 6-Dec | Mon | Same as Consultant Team | — | 09:00: Meeting at JICA Laos office 10:30-16:00: Explanation & Discussion on the Outline Design/MPWT | | |
| 3 | 7-Dec | Tue | - | Tokyo/Narita → Bangkok → Vientiane | 0900-16:00 Explanation & Discussion on the Outline Design/MPWT•VCSBE | | |
| 4 | 8-Dec | Wed | 09:30 :Signing on the Minutes of Discussion/MPWT•VCSBE | | | | |
| 5 | 9-Dec | Thu | - | 09:00-16:00 Discussion on the Technical Cooperation | | | |
| 6 | 10-Dec | Fri | - | 09:00-16:00 Discussion on the Technical Cooperation | | | |
| 7 | 11-Dec | Sat | — | Vientiane → Bangkok → | | | |
| 8 | 12-Dec | Sun | — | → Tokyo/Narita | | | |

3. List of Parties Concerned in the Recipient Country

(1) Ministry of Public Works and Transport :MPWT

Mr. Sommad PHOLSENA, Minister

Mr. Viengsavath SIPHANDONE, Director General (Department of Transport)

Mr. Vilayphanh SAYAVONG, Deputy Director, (Department of Transport)

Dr. Bounta ONNAVONG, (Department of Transport)

(2) Department of Public Works and Transport of Vientiane Capital: DPWT

Mr. Chanxay VINAVONG, Deputy Director

Mr. Khambay SITTISAY, Officer

(3) Vientiane Capital State Bus Enterprise: VCSBE

Mr. Khamphoune TEMELATH, Director

Mr. Bounpone PHONGMANY, Deputy Director

Mr. Ngonbkeo, Deputy Director

Mr. Bouapha PHONGMANY, Chief of Planning and Transport Division

Mr. Bouanma, Chief of Administration Division

Mr. Bounsouk, Head of Technical Management

Mr. Somlit, Vice of Workshop Division

(4) Vientiane Government Office

Mr. Bounchanh SINTHAVONG, Vice Governor of Vientiane Capital

Mr. Vixai SAVANNA, Director Division of Planning and Investment

Mr. Khamphan MALABANDITH, Director Division of Financial Division

Ms. Syphone SOUKHAPHON, Director Division of International Cooperation

Mr. Kethkeo SIHALATH, Vice president of VUDAA

(5) World Bank :WB

Mr. Sombath SOUTHIVONG, Sr. Infrastructure Specialist

Mr. Sengxay Phousinghoa, Sr. Private Sector Development Specialist

(6) Asian Development Bank :ADB

Mr. Phomma Chanthirath, Project Implementation Officer (Infrastructure)

Mr. Stefan Ekelund, Senior Portfolio Management Specialist Deputy Country Director

Mr. Robert M. Anderson, Team Leader, Vientiane Sustainable Urban Transport Project

Mr. Sudhi Manibhandu, Transport Economist/Financial Specialist, -ditto-

(7) Bus Body Manufacturer: Thonburi Bus Body Co., LTD

Mr. Arun LEEDHANACHOKE, Factory Manager

(8) Embassy of Japan

Mr. Masaaki MIYASHITA, Ambassador of Japan

Mr. Masahiko MITSUMOTO, First Secretary

Mr. Takanori YAMAMOTO, Second Secretary

(9) JICA Expert of MPWT

Kazumitsu MURAOKA,

Planning Advisor to the Cabinet Office in Infrastructure Development

(10) JICA Laos Office

Mr. Masato TOGAWA, Chief Representative

Mr. Yoshiharu YONEYAMA, Senior Representative

Ms. Yoko HATTORI, Representative

Ms. Yuki TANAKA, Staff

(11) JICA Vientiane Urban Development Study Team

Koji YAMADA, Team Leader

Atsushi SAITO, Member

Masayuki ISHIYA, Member

4. Minutes of Discussion

4.1 Field Survey in Lao

**Minutes of Discussions
on
the Preparatory Survey
on the Project for Improvement of Transportation Capacity of Public Bus
in Vientiane Capital**

Referring to the results of Basic Survey conducted in July 2009, the Government of Japan decided to conduct a Preparatory Survey for Outline Design on the Project for Improvement of Transportation Capacity of Public Bus in Vientiane Capital (hereinafter referred to as "the Project") and entrusted the study to Japan International Cooperation Agency (hereinafter referred to as "JICA").

JICA sent to Lao People's Democratic Republic (hereinafter referred to as "Lao P.D.R.") the Preparatory Survey team for Outline Design (hereinafter referred to as "the Team") which is headed by Mr. Masahiko TAKIZAWA, Senior Representative of JICA Laos Office, and is scheduled to stay in the country from July 27 to August 25, 2010.

The Team held discussions with the concerned officials of the Government of Lao P.D.R.. In the course of the discussions, both sides have confirmed the main items described in the attached sheets. The Team will proceed to further works and prepare the Preparatory Survey Report.

Vientiane, August 6, 2010.



Mr. Masahiko TAKIZAWA
Senior Representative
JICA Laos Office
Japan



Mr. Viengsavath SIPHANDONE
Director General of Department of Transport
Ministry of Public Works and Transport
Lao People's Democratic Republic



Mr. Khaiphoune TEMERATH
Director
Vientiane Capital State Bus Enterprise
Lao People's Democratic Republic

ATTACHMENT

1. Name and Objective of the Project

Different from the original request, JICA explained that the Objective of the Project will be to procure necessary buses to substitute the existing ones from the safety point of view.

Lao side understood this matter and both sides agreed to change the name of the Project to "Project for Improvement of Transportation Capacity of Public Bus in Vientiane Capital" in accordance with the above objective.

2. Project Site

The Project site is Vientiane Capital as shown in Annex 1.

3. Responsible and Implementing Organizations

3-1. The responsible organization is Ministry of Public Works and Transport (MPWT).

3-2. The implementing organization is Vientiane Capital State Bus Enterprise (VCSBE).

Lao side informed the Team that the name of Vientiane State Bus Company had been changed to VCSBE.

3-3. The organization charts of MPWT and VCSBE are as shown in Annex 2.

4. Items Requested by the Government of Lao P.D.R.

After discussions with the Team, the items described below were requested by Lao side:

- The number and specifications of the bus and equipment with priority will be determined according to the number and condition of the buses owned by VCSBE, its route plan, etc.

JICA will assess the appropriateness of the request and will report its findings to the Government of Japan. Decision will be made by the Government of Japan.

5. Spare Parts and Workshop Equipment

Lists of main spare parts and workshop equipment will be confirmed by both sides in the "Technical Note" to be signed by the chief consultant of the Team and Lao side.

However, final draft of the list will be shown at the stage of the draft final report.

6. Japan's Grant Aid Scheme

6-1. Lao side understands Japan's Grant Aid scheme (for General Project) explained by the Team, as described in Annex 3.

6-2. Lao side will take the necessary measures, as described in Annex 4, for smooth

AP

Signature

Signature

implementation of the Project, as a condition for the Japanese Grant Aid to be implemented.

7. Schedule of the Study

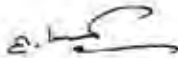
- 7-1. The consultants will proceed to further study in Laos until August 25, 2010.
- 7-2. JICA will prepare the draft final report in English and dispatch a mission to Laos in order to explain its contents around December, 2010.
- 7-3. In case that the contents of the draft final report is accepted in principle by the Government of Lao P.D.R., JICA will complete the final report in English and send it to the Government of Lao P.D.R. by February, 2011.

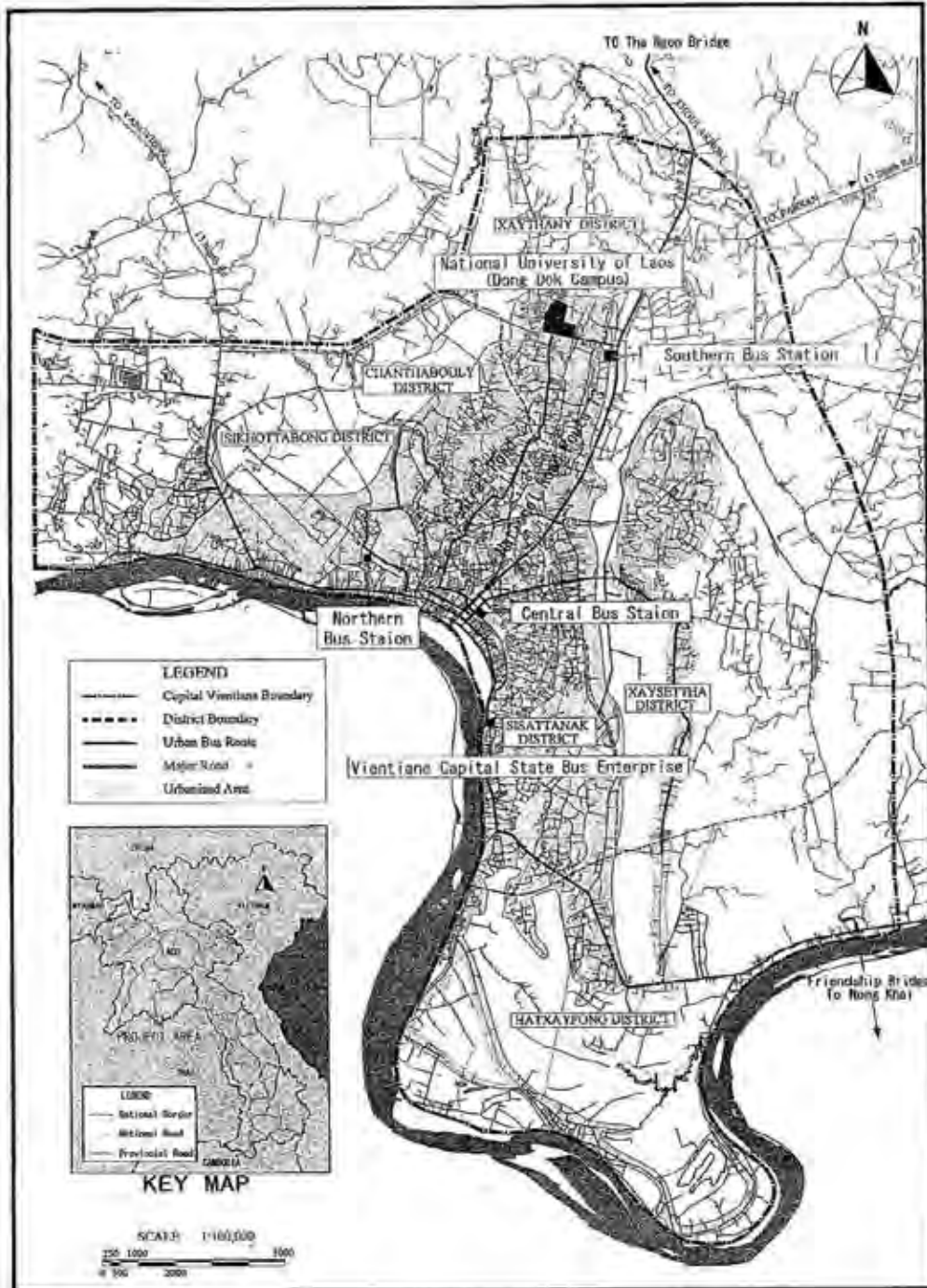
8. Other Relevant Issues

- 8-1. Lao side shall provide necessary number(s) of counterpart personnel to the Team during the period of the survey in Lao P.D.R..
- 8-2. Lao side will submit the first draft of answers to the Questionnaire, which the Team handed to the Lao side, by August 13, 2010.
- 8-3. Lao side confirmed that the following undertakings should be taken by Lao side at the Lao expenses.
 - To ensure tax exemption and custom clearance of the products at the port of disembarkation. Also the other items shown in Annex 4.
- 8-4. Lao side shall secure enough budget and personnel necessary for the operation and maintenance of the Project.
- 8-5. Lao side requested to start the Technical Cooperation Project (TCP), which has been already approved by the Government of Japan, 3 to 6 months earlier than the arrival of the buses. The team will convey this request to JICA HDQ.
- 8-6. Lao side requested that the TCP should not target VCSBE alone, but also include MPWT and Vientiane Capital to cope with the policy and plan of public bus transport system covering fare, route plan, time schedule, etc. Adding to this, Lao side requested to consider introduction of efficient bus operation, for example using GPS, common ticketing system, etc. to realize a better and sustainable bus management. The team will convey this request to JICA HDQ.

- Annex 1: Project site
- Annex 2: Organization charts of MPWT and VCSBE
- Annex 3: Japan's Grant Aid Scheme
- Annex 4: Necessary measures taken by Each Government

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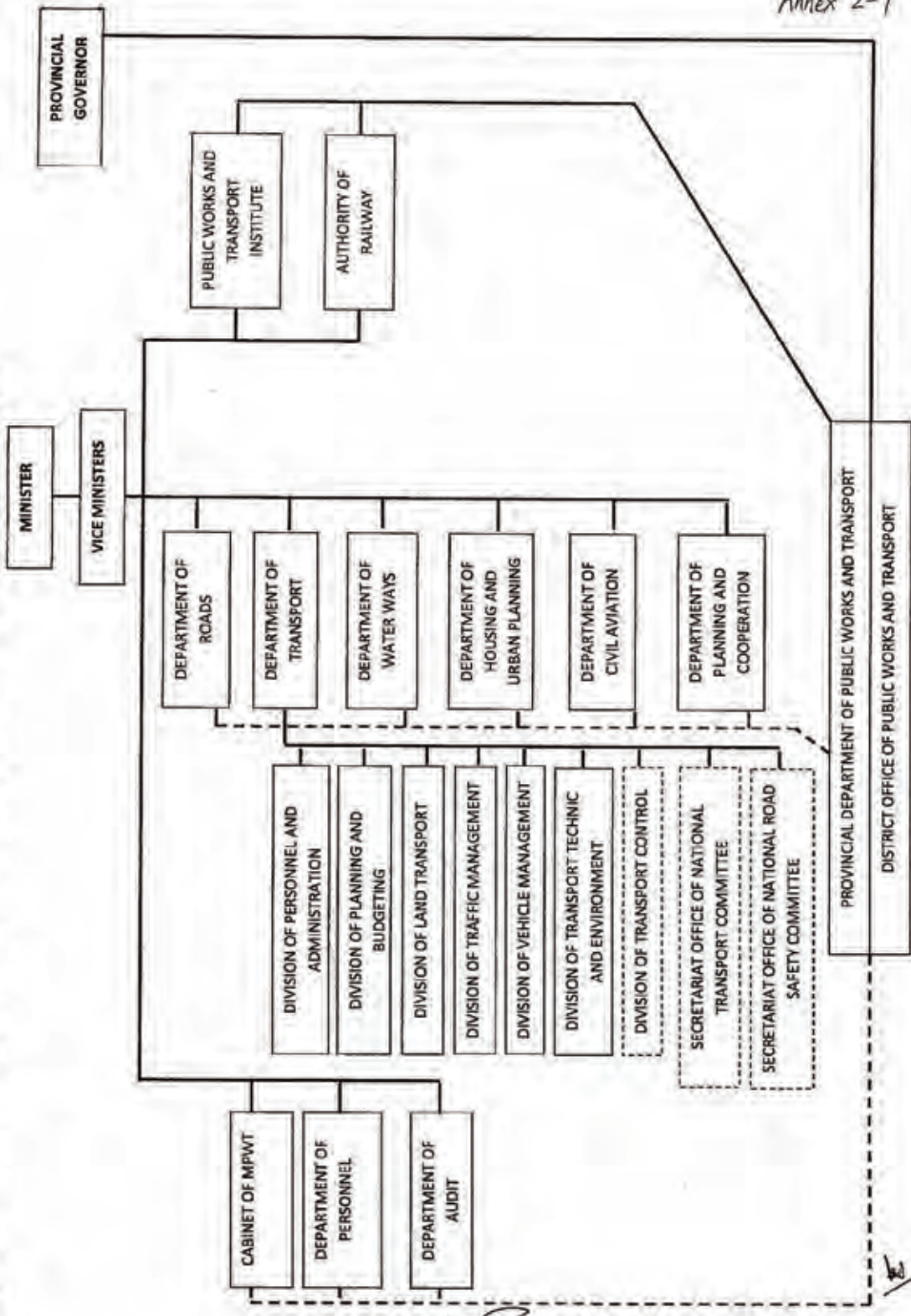


LOCATION MAP

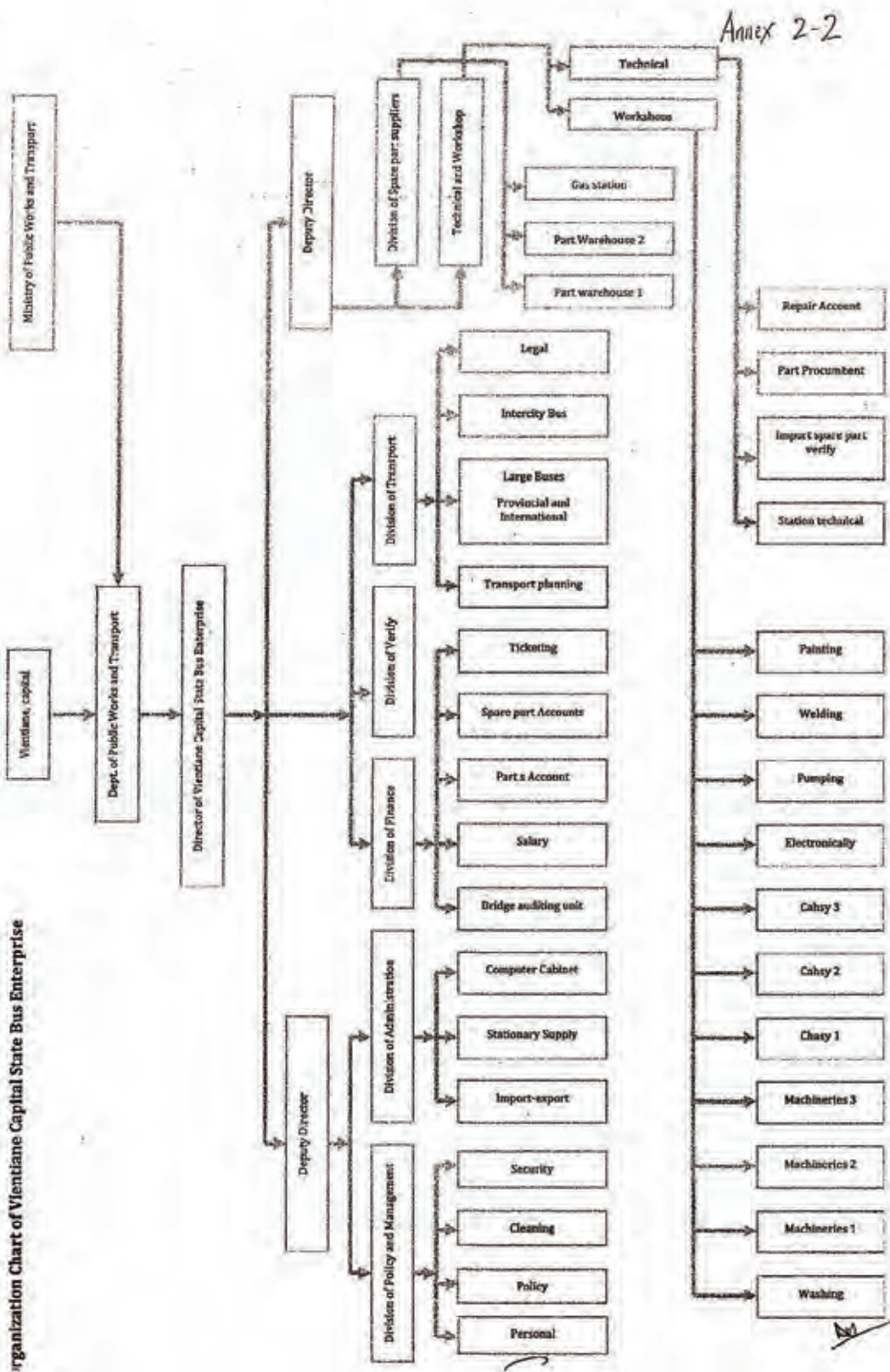
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Annex 2-1

ORGANIZATION CHART OF DEPARTMENT OF TRANSPORT, MINISTRY OF PUBLIC WORKS AND TRANSPORT



Organization Chart of Vientiane Capital State Bus Enterprise



Annex 2-2

JAPAN'S GRANT AID

The Government of Japan (hereinafter referred to as "the GOJ") is implementing the organizational reforms to improve the quality of ODA operations, and as a part of this realignment, a new JICA law was entered into effect on October 1, 2008. Based on this law and the decision of the GOJ, JICA has become the executing agency of the Grant Aid for General Projects, for Fisheries and for Cultural Cooperation, etc.

The Grant Aid is non-reimbursable fund provided to a recipient country to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for its economic and social development in accordance with the relevant laws and regulations of Japan. The Grant Aid is not supplied through the donation of materials as such.

1. Grant Aid Procedures

The Japanese Grant Aid is supplied through following procedures:

- Preparatory Survey
 - The Survey conducted by JICA
- Appraisal & Approval
 - Appraisal by the GOJ and JICA, and Approval by the Japanese Cabinet
- Authority for Determining Implementation
 - The Notes exchanged between the GOJ and a recipient country
- Grant Agreement (hereinafter referred to as "the G/A")
 - Agreement concluded between JICA and a recipient country
- Implementation
 - Implementation of the Project on the basis of the G/A

2. Preparatory Survey

(1) Contents of the Survey

The aim of the Preparatory Survey is to provide a basic document necessary for the appraisal of the Project made by the GOJ and JICA. The contents of the Survey are as follows:





- Confirmation of the background, objectives, and benefits of the Project and also institutional capacity of relevant agencies of the recipient country necessary for the implementation of the Project.
- Evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme from a technical, financial, social and economic point of view.
- Confirmation of items agreed between both parties concerning the basic concept of the Project.
- Preparation of an outline design of the Project.
- Estimation of costs of the Project.

The contents of the original request by the recipient country are not necessarily approved in their initial form as the contents of the Grant Aid project. The Outline Design of the Project is confirmed based on the guidelines of the Japan's Grant Aid scheme.

JICA requests the Government of the recipient country to take whatever measures necessary to achieve its self-reliance in the implementation of the Project. Such measures must be guaranteed even though they may fall outside of the jurisdiction of the organization of the recipient country which actually implements the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country based on the Minutes of Discussions.

(2) Selection of Consultants

For smooth implementation of the Survey, JICA employs (a) registered consulting firm(s). JICA selects (a) firm(s) based on proposals submitted by interested firms.

(3) Result of the Survey

JICA reviews the Report on the results of the Survey and recommends the GOJ to appraise the implementation of the Project after confirming the appropriateness of the Project.

3. Japan's Grant Aid Scheme

(1) The E/N and the G/A

After the Project is approved by the Cabinet of Japan, the Exchange of Notes (hereinafter referred to as "the E/N") will be signed between the GOJ and the

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Government of the recipient country to make a pledge for assistance, which is followed by the conclusion of the G/A between JICA and the Government of the recipient country to define the necessary articles to implement the Project, such as payment conditions, responsibilities of the Government of the recipient country, and procurement conditions.

(2) Selection of Consultants

In order to maintain technical consistency, the consulting firm(s) which conducted the Survey will be recommended by JICA to the recipient country to continue to work on the Project's implementation after the E/N and G/A.

(3) Eligible source country

Under the Japanese Grant Aid, in principle, Japanese products and services including transport or those of the recipient country are to be purchased. When JICA and the Government of the recipient country or its designated authority deem it necessary, the Grant Aid may be used for the purchase of the products or services of a third country. However, the prime contractors, namely, constructing and procurement firms, and the prime consulting firm are limited to "Japanese nationals".

(4) Necessity of "Verification"

The Government of the recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be verified by JICA. This "Verification" is deemed necessary to fulfill accountability to Japanese taxpayers.

(5) Major undertakings to be taken by the Government of the Recipient Country

In the implementation of the Grant Aid Project, the recipient country is required to undertake such necessary measures as Annex.

(6) "Proper Use"

The Government of the recipient country is required to maintain and use properly and effectively the facilities constructed and the equipment purchased under the Grant Aid, to assign staff necessary for this operation and maintenance and to bear all the expenses other than those covered by the Grant Aid.

(7) "Export and Re-export"

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The products purchased under the Grant Aid should not be exported or re-exported from the recipient country.

(8) Banking Arrangements (B/A)

- a) The Government of the recipient country or its designated authority should open an account under the name of the Government of the recipient country in a bank in Japan (hereinafter referred to as "the Bank"). JICA will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the Verified Contracts.
- b) The payments will be made when payment requests are presented by the Bank to JICA under an Authorization to Pay (A/P) issued by the Government of the recipient country or its designated authority.

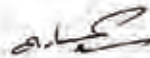
(9) Authorization to Pay (A/P)

The Government of the recipient country should bear an advising commission of an Authorization to Pay and payment commissions paid to the Bank.

(10) Social and Environmental Considerations

A recipient country must carefully consider social and environmental impacts by the Project and must comply with the environmental regulations of the recipient country and JICA socio-environmental guidelines.

(End)



Major Undertakings to be taken by Each Government

| No. | Items | To be covered by Grant Aid | To be covered by Recipient Side |
|-----|--|----------------------------|---------------------------------|
| 1 | To ensure prompt customs clearance of the products and to assist internal transportation of the products in the recipient country | | |
| | 1) Marine (Air) transportation of the Products from Japan to the recipient country | ● | |
| | 2) Tax exemption and custom clearance of the Products at the port of disembarkation | | ● |
| | 3) Internal transportation from the port of disembarkation to the project site | (●) | (●) |
| 2 | To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the purchase of the products and the services be exempted | | ● |
| 3 | To accord Japanese nationals whose services may be required in connection with the supply of the products and the services such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work | | ● |
| 4 | To ensure that [the Facilities and the products]/[the Facilities]/ [the products] be maintained and used properly and effectively for the implementation of the Project | | ● |
| 5 | To bear all the expenses, other than those covered by the Grant, necessary for the implementation of the Project | | ● |
| 6 | To bear the following commissions paid to the Japanese bank for banking services based upon the B/A | | |
| | 1) Advising commission of A/P | | ● |
| | 2) Payment commission | | ● |

(B/A : Banking Arrangement, A/P : Authorization to pay)

4.2 Explanation of Draft Report

**Minutes of Discussions
on the Preparatory Survey
on the Project for Improvement of Transportation Capacity of Public Bus
in Vientiane Capital
(Explanation on Draft Report)**

In August 2010, Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched a Preparatory Survey Team for Outline Design on the Project for Improvement of Transportation Capacity of Public Bus in Vientiane Capital (hereinafter referred to as "the Project") to Lao People's Democratic Republic (hereinafter referred to as "Lao P.D.R."), and through discussion, and field survey as well as after technical examination of the results in Japan, JICA prepared a draft final report of the survey.

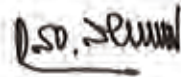
In order to explain and to consult with concerning authorities of Lao P.D.R. on the components of the draft report, JICA sent to Lao P.D.R. the Draft Explanation Team (hereinafter referred to as "the Team") which is headed by Mr. Masahiko TAKIZAWA, Senior Representative of JICA Laos Office, from December 5 to December 12, 2010.

As a result of discussion, both parties confirmed the main items described on the attached sheets hereto.

Vientiane, December 8, 2010



Mr. Masahiko TAKIZAWA
Senior Representative
JICA Laos Office
Japan



Mr. Viengsavath SIPHANDONE
Director General of Department of Transport
Ministry of Public Works and Transport
Lao P.D.R.



Mr. Khamphoune TEMERATH
Director
Vientiane Capital State Bus Enterprise
Lao P.D.R.

ATTACHMENT

1. Contents of the Draft Report

The Lao side agreed and fully accepted the contents of the draft final report explained by the Team.

2. Japans' Grant Aid Scheme

The Lao side understood the Japan's Grant Aid Scheme and the necessary measures to be taken by the Government of Lao P.D.R. as explained by the Team and described in Annex-4 of the Minutes of Discussion signed by both parties on August 6, 2010.

3. Schedule of the Survey

JICA will complete the final report in accordance with the confirmed item and send it to the Government of Lao P.D.R. by March, 2011.

4. Other Relevant Issues

4-1. Concerning above item 2, the Lao side should undertake necessary measures, such as tax exemption and customs clearance, securement of parking place, preparation of operation and maintenance of new buses, etc., before the delivery of the buses and equipment.

At the same time, banking arrangement fees, fuel and oil cost, cost for maintenance and repair should be borne by the Lao side.

4-2. The project cost estimation, as attached in Annex-1, is confidential and should never be duplicated or disclosed to any outside parties before the signing of all the contracts for the Project.

4-3. Lao side committed to take full responsibility for the management and operations of the new buses, and maintenance equipment to be supplied by the grant aid.

Annex 1: Project Cost Estimation

Annex 2: List of Equipment

Project Cost Estimation

This page is closed
due to the confidentiality.

List of Equipment

1. Quantity of bus 42 buses

2. Necessary Maintenance Equipment

| Item | Q'ty | Purpose |
|---|------|--|
| I. Maintenance and Repair Equipment | | |
| Lifting jack Movable type Lifting capacity: 10 ton | 4 | A kind of jack: 4 jacks can jack up 2 buses to carry out the maintenance for axle |
| Transmission jack Lifting capacity: 800 kg | 1 | Specialized jack for taking out a transmission |
| Wheel dolly Applicable tire: 509 - 1,160mm dia with lift jack | 1 | Specialized tool for taking out a tire with break drum |
| Drum pump Operation: hand operated | 1 | Hand pump for pumping out the oil from a drum |
| Mechanic tool set for large vehicle Total 100 items of hand tools | 7 | General hand tool set (for renewal of existing tool sets) |
| Air Hydraulic Jack 15 ton | 3 | Garage jack by air driving |
| Service Creeper | 4 | Working board with caster |
| Differential Gear Jack | 1 | Jack for taking out differential gear |
| Brake Fluid Bleeder | 1 | Tool for outgas air from brake oil after maintenance of brake |
| Diesel Compressor Gauge Set | 1 | Pressure gauge for engine compressive pressure |
| 2. Wheel / Tire & Brake Service | | |
| Automatic tire inflator Stand type Capacity: 0.7MPa | 2 | Stand type inflator nozzle with pressure gauge and adjusting valve |
| 3. Engine & Transmission Service | | |
| Air valve lifter Air pressure: 0.6 - 0.8 Mpa | 1 | Air tool for fixing up a valve of engine cylinder head |
| Engine /unit repair stand Service capacity: 1,000 kg | 2 | Engine stand for overhaul without putting on the floor |
| 4. Vehicle Washing Equipment | | |
| Hot water high pressure washer | 2 | High pressure washer with hot water |

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| Item | Q'ty | Purpose |
|--|------|---|
| 5.Power Tool Group | | |
| Air impact wrench Drive: 1/2" sq. drive | 1 | Air impact wrench (small size) |
| Air impact wrench Drive: 3/4" sq. drive | 1 | Air impact wrench (middle size) |
| Air impact wrench Drive: 1"sq. drive | 1 | Air impact wrench (large size) |
| Socket for impact wrench, (1/2"sq.) 8, 10, 13, 17, 19, 21, 22, 24, 27, 30, 32mm | 1 | Socket set for small impact wrench |
| Socket for impact wrench, (3/4"sq.) 19, 22, 24, 27, 30, 32, 36, 41mm | 1 | Socket set for middle impact wrench |
| Socket for impact wrench, (1"sq.) 32, 36, 41, 46, 50mm | 1 | Socket set for large impact wrench |
| Torque Multiplier | 1 | Tool for fastening large size bolt or high torque bolt |
| Ram and Pump Set | 1 | Tool set of hydraulic pump and cylinder for plate working |
| 6.Hand Tool Group | | |
| Socket wrench set, 3/8" sq. drive Socket: 6 - 21mm, with accessories | 1 | Socket wrench for general tool |
| Socket wrench set, 1/2"sq. drive Socket: 10 - 32mm, with accessories | 1 | Socket wrench for general tool |
| Socket wrench set, 1"sq. drive Socket: 32 - 80mm, with accessories | 1 | Socket wrench for general tool |
| Lever block Capacity: 1.5 ton | 1 | Lever block for plate working and repair chassis |
| 7.Measuring Tool Group | | |
| Torque wrench (3/8"sq.) Range: 10-45 N.m Type: torque pre-set type | 1 | Torque wrench for the bolt on engine or transmission |
| Torque wrench (1/2"sq.) Range: 40-180 N.m Type: torque pre-set type | 1 | Torque wrench for the bolt on engine or transmission |
| Torque wrench (3/4"sq.) Range: 100-700 N.m Type: torque pre-set type | 1 | Torque wrench for the bolt on engine or transmission |
| Torque wrench (1"sq.) Range: 100-1,000 N.m Type: torque pre-set type | 1 | Large size torque wrench for the bolt on tie rod, hub bolt, spring U-bolt |
| Digital multi tester AC/DC ampere, AC/DC voltage resistance | 1 | Digital multi tester for electrical component |

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| Item | Q'ty | Purpose |
|--|------|--|
| Combination Socket Impact | 2 | Impact wrench socket for hub bolt on the tire |
| 8. Battery Service | | |
| Quick battery charger Output: 12-24V/140A | 1 | Large capacity battery charger to be able to start engine until 140A |
| 9. Air Compressor | | |
| Air compressor Motor: 1.5kW Max. working pressure: 0.93MPa Receiver tank: 340 liters | 1 | Supply air to air tools in the workshop |
| 10. Fabrication, Welding and Painting | | |
| Semi Automatic Co2 Welding 200A | 1 | Semi-automatic Co2 welding machine for body plate and floor plate |
| Plasma Cutter | 1 | Plasma Cutter for cutting steel sheet |
| Spot Welder (Single 1.8, Double 7.0mm) | 1 | Spot welding machine for body plate and floor plate |
| 11. Electric Service | | |
| Circuit Tester | 1 | Analog electric tester for electrical component |
| Clamp Tester | 1 | Current tester for electrical component |
| 12. Lifting Equipment | | |
| Sling Chain 2ton Single | 2 | Chain type lifting sling with single hook |
| Sling Chain 2ton Double Hook | 8 | Chain type lifting sling with double hook |
| Mobile Floor Crane Capacity 2ton | 2 | Floor Crane for lifting and moving of engine or heavy parts |

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5. Technical Note

The Preparatory Survey on the Project for Improvement of Transportation Capacity of Public Bus in Vientiane Capital

Records of Technical Meeting

The IICA Study Team (the Team) explained the contents of Technical Notes to Vientiane Capital State Bus Enterprise (VCSBE) and Department of Transport (DoT), Ministry of Public Works and Transport (MPWT). Technical Notes will be signed by the Team and DoT of MPWT on August 24, 2010. Both parties confirmed as follows.

1. Confirmation of Technical Notes

Following the Minutes of Discussion (M/D) signed on August 6, 2010, the Team proceeded the survey in Vientiane until August 24, 2010. The Lao side arranged the counterparts and office spaces to the Team, and submitted and/or provided the answers in English to the Questionnaires with relevant documents in writing and/or during the meetings.

Following the field survey, the Team with DOT of MPWT and VCSBE discussed technical issues for preparation of an Outline Design and confirmed results in Technical Notes (see Attached Document).

The Technical Notes includes the specifications of bus requested and a list of spare parts and workshop equipment.

2. Other Schedules of the Survey after the Field Survey


The schedules of the Survey after the field survey were discussed and confirmed by both parties based on the M/D.

- (1) MPWT with VCSBE will prepare a garage and/or securing space for parking new buses, when and after both governments agree the grant aid but before bus delivery.
- (2) VCSBE will provide competent drivers and mechanics for new bus operation and maintenance, when and after both governments agree the grant aid but before bus delivery.

Vientiane, August 24, 2010

Noted by:



 **Mr. Viengsavath SIPHANDONE**
Director General
Department of Transport (DOT),
Ministry of Public Works and Transport
(MPWT), Lao PDR





Mr. Toshinori TODA
Chief Consultant
JICA Preparatory Survey Team

Technical Note



1. Lao side requested that the Technical Cooperation Project (TCP) will be started before bus delivery. In addition, Lao side requested JICA to consider providing training to not only VCSBE but also Vientiane DPWT and DOT, MPWT. The Team will convey the request to JICA in Tokyo.
2. Both parties confirmed an attached request of specification of bus, spare parts, maintenance tools and machineries (see Form I). At the explanation of draft report in December 2010, the Team will present study results based on further analysis of the request by the Government of Lao PDR.

SPECIFICATIONS

| | | |
|--|--|----------------|
| Item No. 1 | Name of Equipment : BUS (Large and Medium) | Q'ty : **units |
| Manufacturer : | | Model : |
| Main Use Intended : Public transportation in Vientiane Capital | | |
| Required Specifications | | |
| <p>1. General</p> <p>(1) No. of seat : 42-47 seats (Large), 32-37 seats (Medium)</p> <p>(2) Driving Position : Left-hand drive</p> <p>2. Engine</p> <p>(1) Type : Water Cooled Diesel</p> <p>(2) Output : ---kW or more</p> <p>(3) Displacement : ---cc or more</p> <p>(4) Cooling System : Forced circulation</p> <p>(5) Electric System : 24 Volt heavy duty batteries</p> <p>(6) No of Cylinders : 6</p> <p>(7) Emission Regulations : Euro 1-4 equivalent Manufacturer's recommendation adapted for fuel quality and technical capabilities in Lao PDR</p> <p>3. Chassis Part</p> <p>(1) Chassis Frame : Ladder type</p> <p>(2) Engine Location : Rear position of chassis</p> <p>(3) Transmission : Mechanical type manual transmission Fored 5 or 6 speed and 1 reverse</p> <p>4. Tire</p> <p>(1) Type : Radial Tire</p> <p>(2) Size : Manufacturer's recommendation</p> <p>5. Body Part</p> <p>(1) Body Construction : Skeleton Construction</p> <p>6. Door</p> <p>(1) Position : Front side and Rear side</p> <p>(2) Type : Inward opening type (Front) Slide opening type (Rear)</p> <p>7. Emergency Exit : 1pc. Emergency exit on rear side</p> <p>8. Windows</p> <p>(1) Windshield : 1 or 2 piece fixed type</p> <p>(2) Side Window : Sliding type (both way slide)</p> <p>(3) Rear Window : 1 pc. fixed type</p> <p>(4) Glass : All heat-absorbing tempered safety glass blue tinted</p> <p>(5) Destination Sign Board : Electronic Display System</p> | | |

| | |
|---|--|
| <p>9. Floor : Non-slip type Checked steel sheets or latest material available</p> <p>10. Seat (1) Passenger Seat : Comfortable seat, Front seat for disabled person and pregnant women (2) Driver Seat : Comfortable seat with 3-point seat belt (3) Padding : Urethane form for backrest and cushion (4) Upholstery : PVC sheet or Manufacturer's recommendation</p> <p>11. Air Conditioner : Equipped</p> <p>12. Ventilation : Number of ventilation should be Manufacturer's recommendation</p> <p>13. Painting (1) Exterior Color : VCSBE's color scheme (approved by MPWT) (2) Interior Color : Manufacturer's standard</p> <p>14. Other Items and Detail : These should be decided after analysis in Japan and shown in the Draft Technical Specifications on December, 2010.</p> | |
| <p>Spore Parts To supply spare parts more than 5-10% of CIP price of the equipment, and to be selected by following conditions. - Parts for periodic inspection for 30,000km running distance or 3years in standard use. Attached list of spare parts should be include in spare parts</p> | |
| <p>Project: The Project for Improvement of Transportation Capacity of Public Bus in Vientiane Capital</p> | |
| <p>Mr. Kiyohito KOBAYASHI Equipment Planner KATAHIRA & ENGINEERS INTERNATIONAL</p> <p> Date: Aug. 19. 2010</p> | <p>Mr. Khamphoune TEMERATH Director Vientiane Capital State-Bus Enterprise</p> <p> Date: 20/8/2010</p> |

SPECIFICATIONS

| | | |
|--|--|-------------|
| Item No. 2 | Name of Equipment : WORKSHOP EQUIPMENT | Q'ty : unit |
| Manufacturer : | | Model : |
| Main Use Intended : Maintenance work in the workshops | | |
| Required Specifications | | |
| <p>1. Workshop Equipment</p> <p>Refer to attached list of Maintenance and Repair Equipments</p> <p>Survey team will consider the necessity and appropriateness of above items in detail on the analysis in Japan. After that, the detail of items and Quantities will be decided. It shown in the Draft Technical Specifications on December. 2010.</p> | | |
| Project: The Project for Improvement of Transportation Capacity of Public Bus in Vientiane Capital | | |
| Mr. Kiyohito KOBAYASHI Equipment Planner KATAHIRA & ENGINEERS INTERNATIONAL | Mr. Khamphoune TEMERATH Director Vientiane Capital State Bus Enterprise | |
|  Date: Aug. 19, 2010 |  Date: 20/8/2010 | |

| | | |
|---|------------------------------------|---------------|
| Item No. 3 | Name of Equipment : SMALL SIZE BUS | Qty : **units |
| Manufacturer : | | Model : |
| Main Use Intended : Public transportation in Vientiane Capital | | |
| Required Specifications | | |
| <p>1. General</p> <p>(1)No. of seat : 25 seats</p> <p>(2)Driving Position : Left-hand drive</p> <p>2. Engine</p> <p>(1)Type : Water Cooled Diesel</p> <p>(2)Output : ---kW or more</p> <p>(3)Displacement : ---cc or more</p> <p>(4)Cooling System : Forced circulation</p> <p>(5)Electric System : 24 Volt heavy duty batteries</p> <p>(6)No of Cylinders : 4</p> <p>(7)Emission Regulations : Euro 1-4 equivalent Manufacturer's recommendation adapted for fuel quality and technical capabilities in Laos</p> <p>3. Chassis Part</p> <p>(1)Chassis Frame : Ladder type</p> <p>(2)Transmission : Mechanical type manual transmission Ford 5 speed and 1 reverse</p> <p>4. Tire</p> <p>(1)Type : Radial Tire</p> <p>(2)Size : Manufacturer's recommendation</p> <p>5. Door</p> <p>(1)No. of Door : 1 or 2pcs.</p> <p>(2)Type : Inward opening type (Front)</p> <p>6. Emergency Exit : 1pc.</p> <p>7. Windows</p> <p>(1)Windshield : 1Pc. fixed type</p> <p>(2)Side Window : Sliding type (both way slide)</p> <p>(3)Rear Window : 1 pc. fixed type</p> <p>(4)Glass : All heat-absorbing tempered safety glass blue tinted</p> <p>8. Floor : Non-slip type Checkered steel sheets or latest material available</p> <p>9. Seat</p> <p>(1)Passenger Seat : Comfortable seat, Front seat for disabled person and pregnant women</p> | | |

| | | |
|----------------------------|--|--|
| (2) Driver Seat | : Comfortable seat with 3-point seat belt | |
| (3) Padding | : Urethane form for backrest and cushion | |
| (4) Upholstery | : PVC sheet or Manufacturer's recommendation | |
| 10. Air Conditioner | : Equipped | |
| 11. Ventilation | : Number of ventilation should be Manufacturer's recommendation | |
| 12. Other Items and Detail | : These should be decided after analysis in Japan and shown in the Draft Technical Specifications on December, 2010. | |

Project:

The Project for Improvement of Transportation Capacity of Public Bus in Vientiane Capital

Mr. Kiyohito KOBAYASHI
Equipment Planner
KATAHIRA & ENGINEERS INTERNATIONAL



Date: Aug. 19, 2010

Mr. Khamphoune TEMERATH
Director
Vientiane Capital State Bus Enterprise



Date: 2018/2010