

**Data Collection Survey on  
Regional Development in Luang Prabang,  
Lao P.D.R**

**Final Report**

**November 2016**

**Japan International Cooperation Agency (JICA)**

**International Development Center of Japan Inc.**

**Nippon Koei Co., LTD.**

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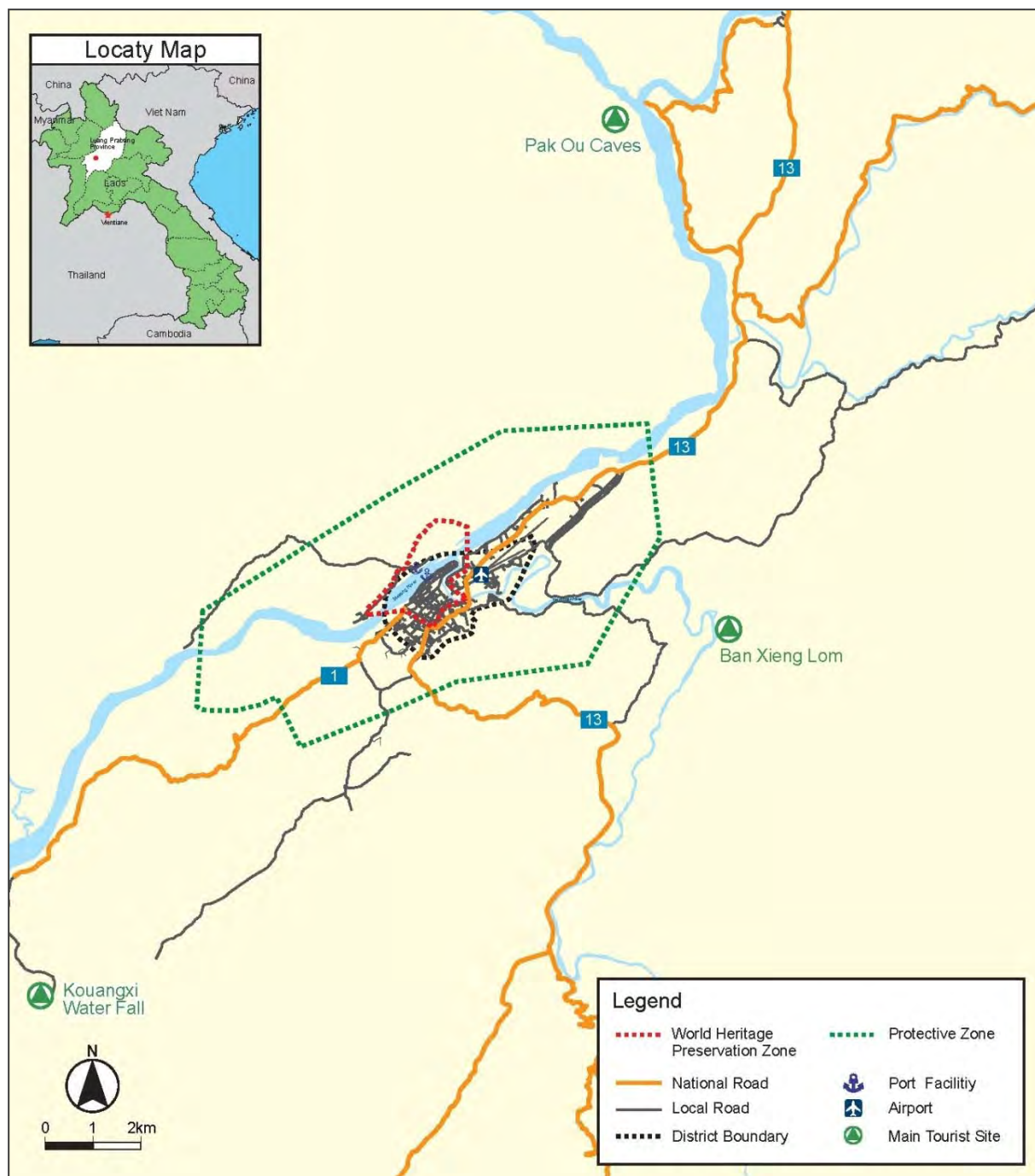
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Source: JICA Survey Team

### Location Map: UNESCO World Heritage Area and Its Surroundings



Source: JICA Survey Team

**Location Map: Luang Prabang Tourist Zone**





Source: JICA Survey Team

**Location Map: Luang Prabang Province**



### Abbreviation

ADB	Asian Development Bank
AEC	ASEAN Economic Community
AFD	Agence française de Développement
CBT	Community-Based Tourism
DICT	Department of Information, Culture and Tansport
DONRE	Department of Natural Resource and Environment
DPI	Department of Planning and Investment
DPL	World Heritage Office
DPWT	Department of Public Works and Transport
EIA	Environmental Impact Assessment
EDL	Electricite Du Laos
ESMMP	Environmental and Social Monitoring and Management Plan
EV	Electric Vehicle
F&B	Food and Beverage
FAM Tour	Familiarization Tour
FIT	Free Individual Tour (Foreign Independent Tour)
GDP	Gross Domestic Product
GIZ	Gesellschaft fur Internationale Zusammenarbeit
GMS	The Greater Mekong Sub-region
GNP	Gross National Product
HIA	Heritage Impact Assessment
HPP	Hydro Power Plant
IEE	Initial Environmental Examination
JICA	Japan International Cooperation Agency
LAK	Laos Kip
LDC	Least Development Country
LPWSE	Luang Prabang Water Supply State Enterprise
LUTA	Luang Prabang Travel Agents Association
LWU	Laos Wonen's Union
MICT	Ministry of Information, Culture and Tourism
MOF	Ministry of Finance
MOIC	Ministry of Industry and Commerce
MONRE	Ministry of Natural Resource and Environment
MPI	Ministry of Planning and Investment
MPWT	Ministry of of Public Works and Transport
NEDA	Neighbouring Countries Economic Development Cooperation Agency
NGO	Non Governmental Organization
NSEDP	National Socio-Economic Development Plan
ODA	Official Development Assistance
ODOP	One District One Product
PPP	Public-Private Partnership
PSMV	Plan de Sauvegarde et de Mise en Valeur
RSEDP	Luang Prabang Regional Socioeconomic Development Plan
SWOT	Strengths, Weaknesses, Opportunities, and Threats
UDAA	Urban Development Administration Authority
UNESCO	United Nations Educational, Scientific and Cultural Organization
USD	US Dollar
VFM	Value for Money
WTP	Water Treatment Plant

## **Chapter 1 Introduction**

### **1.1 Background**

In Lao People's Democratic Republic (Lao PDR), tourism is currently the second main national industry after mineral resource development.

The National Socioeconomic Development Plan (NSED) and Luang Prabang Regional Socioeconomic Development Plan (RSED) state that as one of the national main economic engines, the income from the tourism sector should be more than USD 760 million by 2020 and that the sector should be more developed to achieve the target figure.

Being one of the most populated agglomerations in Northern Laos as well as the principal tourism destination in Lao PDR, Luang Prabang District is attracting more and more international tourists with a total number of 445,000 visitors in 2015, which was the largest in the destination's history. At the same time, while Lao PDR still has a large economic disparity between urban and regional area, Luang Prabang District is expected to spread the economic effects to surrounding area in northern region by implementing regional development through promotion of tourism industry, and even 8<sup>th</sup> Five Year NSED also describes to concentrate on tourism development with a focus on Luang Prabang district. However, there are lots of challenges such as infrastructure for solid waste, water supply, wastewater, and access roads to destinations; improvement in visitors' comfort; regional development; and local people's life quality.

In this context, the Japan International Cooperation Agency (JICA) conducted the "Data Collection Survey on Tourism Development in Luang Prabang (2015-2016)" in order to clarify the vision, concept, priority infrastructure development, and necessary human resources for tourism development. Presently, it is essential to share the basic orientation of Luang Prabang's sustainable regional development based on the tourism sector among different stakeholders, such as administrations, private business circles, and local communities, and promote the proposed priority infrastructure development projects with a view to implement them sooner.

### **1.2 Outline**

#### **1.2.1 Objectives**

The objectives of the present survey are as follows.

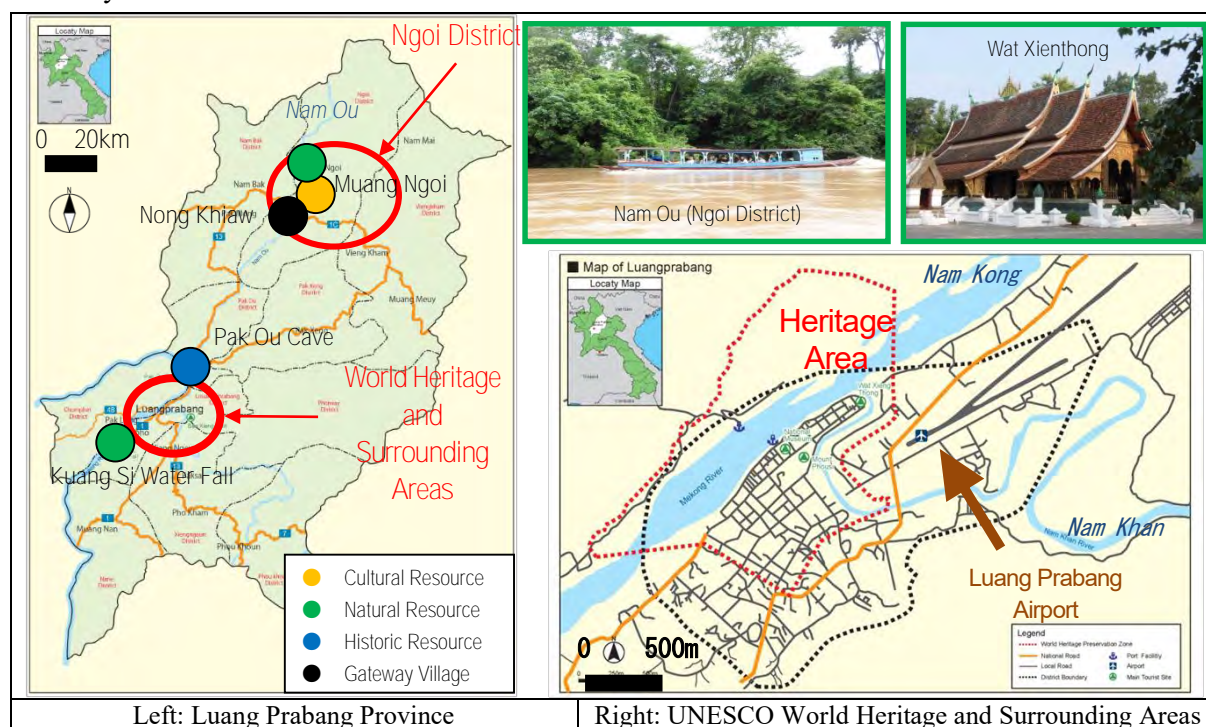
- (1) To collect information about human resource development and infrastructure development needs in order to identify priority projects to be implemented for tourism-based regional development in Luang Prabang Province
- (2) To analyze information necessary for enhancing common understanding of Luang Prabang Province's regional development vision and concept among provincial authorities, local private sector, local communities, and the central government

#### **1.2.2 Survey Period**

The survey period is: from April 28, 2016 to November 30, 2016.

### 1.2.3 Survey Area

The survey area is United Nations Educational, Scientific and Cultural Organization (UNESCO) world heritage area. The surrounding important areas in terms of regional development are shown in Figure 1.2.1. In other words, the “survey area” refers to what is called “Luang Prabang”, which usually covers the World Heritage Area and surrounding areas, within 30 km, including Kuang Si Waterfalls and Pak Ou Cave. Other tourism destinations such as Muang Ngoi shall be surveyed separately when necessity arises.



Source: JICA Survey Team

**Figure 1.2.1 Survey Area**

### 1.3 Seminars/ Workshops

During the survey period, three seminars and four workshops were held in order to enhance the communication between the stakeholders in Luang Prabang Province and Vientiane Capital.

The summaries of the seminars and workshops are shown in Table 1.3.1 and Table 1.3.2, respectively and the details are shown in the appendix (Table 1.1–1.7).

**Table 1.3.1 Summary of Seminars**

No.	Date	Venue	Number of Participants	Main Participants	Main Topics
1	Friday, May 20	Luang Prabang Province	18	Local Authorities/ Private Associations	Inception Report
2	Tuesday, May 31	Vientiane Capital	23	Central Authorities/ Private Associations/ Private Tour Companies/ International Donors	Inception Report
3	Tuesday, October 4	Luang Prabang Province	43	Central and Local Authorities/ Private Associations/ Private Tour Companies/ University/ Vocational School/ Village Leaders	Reporting of the survey results, Presentation by Japanese experts and Q/A

Source: JICA Survey Team

**Table 1.3.2 Summary of Workshops**

No.	Date	Venue	Number of Participants	Main Participants	Main Topics
1	Thursday, May 26	Luang Prabang Province	44	Local Authorities/ Private Associations/ Private Tour Companies/ University/ Vocational School/ Village Leaders	Discussion among stakeholders on how to proceed with the survey
2	Wednesday, June 22	Luang Prabang Province	39	Local Authorities/ Private Associations/ Private Tour Companies/ University/ Vocational School/ Village Leaders	Discussion among stakeholders about the concept of Luang Prabang tourism
3	Friday, July 15	Vientiane Capital	35	Central Authorities/ Local Authorities/ Private Associations/ Private Tour Companies/ International Donors	Discussion among stakeholders about the concept of Luang Prabang tourism
4	Thursday, August 4	Luang Prabang Province	33	Local Authorities/ Private Associations/ Private Tour Companies/ University/ Vocational School/ Village Leaders	Signing ceremony between Luang Prabang District and Takayama City, Reporting of the survey progress and discussion among stakeholders about the coordination between the public and private sectors

Source: JICA Survey Team



(1) 5/20(Fri) Seminar in Luang Prabang

(2) 5/31(Tue) Seminar in Vientiane

(3) 10/4(Tue) Seminar in Luang Prabang

Source: JICA Survey Team

**Figure 1.3.1 State of the Seminars**



(1) 5/26(Thu) Workshop in Luang Prabang Province  
Discussion by a group from DICT, DPL and Vocational School

(2) 6/22(Wed) Workshop in Luang Prabang Province  
Presentation by a group of village leaders

(3) 7/15(Fri) Workshop in Vientiane Capital  
Speech by the Vice Governor of Luang Prabang Province

(4) 8/3(Wed) Workshop in Luang Prabang Province  
Discussion by a group of local authorities

Source: JICA Survey Team

**Figure 1.3.2 State of the Workshops**

## 1.4 Experts' Study Committee

In this survey, a study committee composed of three experts from the Japanese local government and universities was established in order to consider the directions of sustainable regional development in Luang Prabang Province. The JICA Survey Team has attended to the meetings with the committee twice in Japan and to the meetings with related agencies in Luang Prabang when the experts visited Luang Prabang Province. Opinions of the experts shared in those meetings especially about fire prevention, local benefits, and local involvement to tourism policy are followed in consideration of tourism-based regional development in this survey. Table 1.4.1 shows the summary of activities of the experts' study committee.

Furthermore, the experts made a presentation to the national and local authorities, private companies, and local communities in Seminar No. 3 in Luang Prabang Province on October 4<sup>th</sup>. The experts presented their ideas on the future Luang Prabang regional development by introducing some advanced cases in Japan and their knowledge. The presentation materials in the seminar are attached in Appendix 1-8.

**Table 1.4.1 Summary of the Experts' Study Committee**

No.	Experts	Speciality	Schedule of Visiting Luang Prabang
1	Professor of the Department of Policy Management, Keio University,	Social marketing, local management, local creation	May 26 – May 27, 2016 October 4 – October 6, 2016
2	Director of the Department of Branding and Overseas Strategies, Takayama City	Promotion of local branding policy, tourism promotion	May 27 – May 29, 2016 October 3 – October 6, 2016
3	Special Appointed Professor of the Department of Urban Engineering, Tokyo University	Regional design, town development utilizing historical resources	June 21 – June 24, 2016 October 3 – October 4, 2016
Meeting		Date	Discussion
Experts' Committee Meeting No. 1		16:00~18:00, May 12, 2016	<ul style="list-style-type: none"> <li>• Explanation of the survey outline</li> <li>• Presentation from each expert, sharing opinions, Q&amp;A</li> <li>• Sharing ideas about subjects in Luang Prabang</li> </ul>
Experts' Committee Meeting No. 2		10:00~12:00, July 27, 2016	<ul style="list-style-type: none"> <li>• Explanation of the survey progress</li> <li>• Experts' impression of the site visit</li> <li>• Sharing opinions</li> <li>• Confirmation of subjects for the next survey</li> </ul>

Source: JICA Survey Team





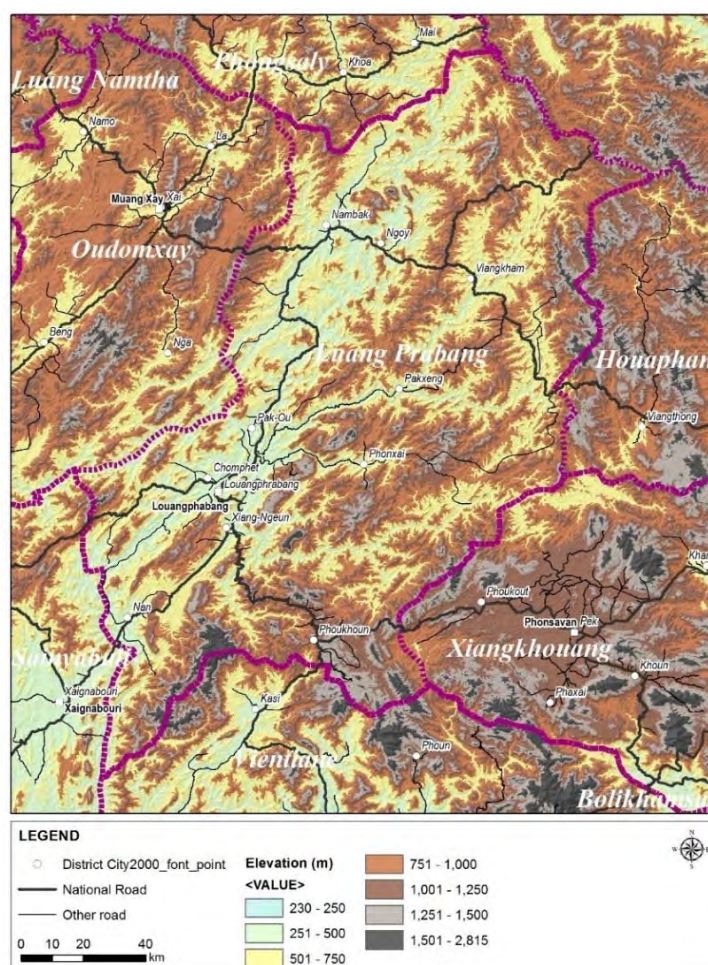
## (2) Topography

The northern part of Lao PDR is covered with a mountainous area. Most of the mountains formed a line in the north-east to south-west direction, and flat land exists in a limited space between the mountains. Luang Prabang Province is also surrounded by mountains; and flat land is situated near the Mekong River and Khan River (Figure 2.1.2). In accordance with the ratio of land area and elevation, the land area with elevation lower than 300 m exists only at 0.25% of the total area, and even the area lower than 500 m exists only at about 7% of the total. Therefore, there is a limitation for expanding the paddy field and farm yard since most part of the land is not low and not gently sloping.

**Table 2.1.1 Area in Different Elevation**

Elevation Range	Area (km <sup>2</sup> )	Percentage
230m-300m	42,234	0.259%
301-500	1,192,306	7.304%
501-750	3,996,416	24.481%
751-1000	5,125,448	31.397%
1001-1250	3,669,506	22.479%
1251-1500	1,743,258	10.679%
1501-2249m	555,310	3.402%
Total	16,324,477	100.000%

Source: JICA Survey Team created based on GIS data



Source: JICA Survey Team

**Figure 2.1.2 Topography in Luang Prabang Province**

## 2.1.2 Population and Economy

### (1) Transition of Population

Luang Prabang Province consists of 12 districts. Luang Prabang District is the center of the province, and its urban area had been prospered once as the capital of Lanexang Kingdom that has made it registered to the world heritage.

As of 2015, the population of Luang Prabang Province is about 430,000. The number of population in 2005 was about 400,000, which means that there was an increase of about 30,000 people in the recent ten years with a growth rate of about 0.6%/year. Comparing population in the urban area and rural area with or without paved road, the urban area of Luang Prabang Province is about 32%, which shows gradual urbanization compared with the towns in the northern region or average of the country. Meanwhile, population rate in the rural area that has no paved road is almost the same as that of the average in the northern region. This means that the development in rural areas is not much proceeded although the northern region is in the middle of urbanization.

**Table 2.1.2 Population in the Northern Region of Lao PDR and Luang Prabang Province**

		Poverty Headcount (%)				Change (%)
		2005	(%)	2015	(%)	2015/2005
Pongsaly	Urban	20,854	12.6%	34,100	19.2%	1.64
	Rural w Rd.	48,066	29.0%	105,900	59.5%	2.20
	Rural wo Rd.	97,027	58.5%	38,000	21.3%	0.39
	Total	165,947	100.0%	178,000	100.0%	1.07
Luangnamtha	Urban	31,734	21.8%	47,600	27.1%	1.50
	Rural w Rd.	81,379	56.0%	111,500	63.4%	1.37
	Rural wo Rd.	32,197	22.2%	16,700	9.5%	0.52
	Total	145,310	100.0%	175,800	100.0%	1.21
Oudomxay	Urban	40,409	15.2%	74,000	24.1%	1.83
	Rural w Rd.	121,375	45.8%	187,000	60.8%	1.54
	Rural wo Rd.	103,395	39.0%	46,600	15.1%	0.45
	Total	265,179	100.0%	307,600	100.0%	1.16
Bokeo	Urban	19,915	13.7%	58,900	32.8%	2.96
	Rural w Rd.	78,228	53.9%	110,200	61.5%	1.41
	Rural wo Rd.	47,120	32.4%	10,200	5.7%	0.22
	Total	145,263	100.0%	179,300	100.0%	1.23
Luang Prabang	Urban	76,665	18.8%	139,700	32.3%	1.82
	Rural w Rd.	202,479	49.7%	238,600	55.2%	1.18
	Rural wo Rd.	127,895	31.4%	53,600	12.4%	0.42
	Total	407,039	100.0%	431,900	100.0%	1.06
Huaphanh	Urban	33,022	8.9%	152,200	31.8%	4.61
	Rural w Rd.	143,335	38.6%	226,800	47.4%	1.58
	Rural wo Rd.	194,581	52.5%	99,400	20.8%	0.51
	Total	370,938	100.0%	478,400	100.0%	1.29
Xayabury	Urban	76,984	22.7%	152,200	39.9%	1.98
	Rural w Rd.	227,534	67.2%	226,800	59.5%	1.00
	Rural wo Rd.	34,151	10.1%	2,400	0.6%	0.07
	Total	338,669	100.0%	381,400	100.0%	1.13
North Region	Urban	299,583	16.3%	658,700	30.9%	2.20
	Rural w Rd.	902,396	49.1%	1,206,800	56.6%	1.34
	Rural wo Rd.	636,366	34.6%	266,900	12.5%	0.42
	Total	1,838,345	100.0%	2,132,400	100.0%	1.16
Whole nation	Urban	1,522,137	27.1%	2,137,800	32.9%	1.40
	Rural w Rd.	2,895,179	51.6%	3,841,700	59.2%	1.33
	Rural wo Rd.	1,198,069	21.3%	512,800	7.9%	0.43
	Total	5,615,385	100.0%	6,492,300	100.0%	1.16

Note: Rural w Rd. means “Rural with road, Rural wo Rd. means “Rural without road”.

Source: Lao Population and Housing Census, 2015



As shown in Table 2.1.3, the population of the whole province in 2015 was about 430,000 and about 90,000 people are situated in Luang Prabang District, which means that 21% of the population in the whole province is concentrated in Luang Prabang District. Related to this, population density of Luang Prabang District is 105 people/km<sup>2</sup> which is much higher than the other districts, of about 20 people/km<sup>2</sup> on the average.

Population growth rate in the whole Luang Prabang Province in the past five years is 0.6%. Since the average population growth rate in the country is 1.4%, Luang Prabang Province shows social reduction compared with the average of Lao PDR. On the other hand, population growth in Luang Prabang District is 1.96%, which shows social increase compared with that of the whole country. According to the interview survey result, a trend is suggested that people outside of Luang Prabang District especially the young generations tend to seek for employment in the urban area of Luang Prabang District.

**Table 2.1.3 Population of Luang Prabang Province by District**

	District	Villages	Area (Km2)	Population			Family	Perons in Family	Poplation Density (person/km2)
				Female	Male	Total			
1	Luang Prabang	114	857	46,800	43,600	90,400	16,500	5.5	105.5
2	Xiengngeun	49	1,629	17,000	16,400	33,400	6,600	5.1	20.5
3	Nan	51	1,363	14,100	14,100	28,200	5,900	4.8	20.7
4	Pak Ou	51	862	13,100	12,700	25,800	5,300	4.9	29.9
5	Nambak	81	1,757	34,600	34,600	69,200	13,200	5.2	39.4
6	Mouangngoi	77	2,057	15,000	14,700	29,700	5,900	5.0	14.4
7	Paksaeng	54	1,482	11,100	11,100	22,200	4,300	5.2	15.0
8	PhoneXai	60	2,353	16,300	16,300	32,600	6,100	5.3	13.9
9	Chomphet	69	1,432	15,200	14,900	30,100	5,800	5.2	21.0
10	Viengkham	69	2,553	14,300	14,200	28,500	5,200	5.5	11.2
11	Phoukhoun	38	1,141	11,700	11,500	23,200	4,100	5.7	20.3
12	Phonethong	40	1,751	9,600	9,400	19,000	3,300	5.8	10.9
Total		753	19,237	218,800	213,500	432,300	82,200	5.3	22.5

Source: Department of Planning and Investment (DPI), Luang Prabang Province

The estimation of future population forecast based on past demographics is shown in Table 2.1.4. This is estimated based on the population growth rate of 1.1%, which is mentioned in the 8th Five-Year RSED. In 2025, the total number of population is predicted to be about 480,000 in the whole province and 114,000 in Luang Prabang District.

**Table 2.1.4 Demographic Data of Luang Prabang Province (Current and Future)**

District (Muang)		Population 2010	Population 2015	Growth Rate (per year)	Population (Projection)	
					2020	2025
1	Luang Prabang	82,056	90,400	1.96%	101,800	114,400
2	Xiengngeun	33,674	33,400	-0.16%	33,900	34,300
3	Nan	28,758	28,200	-0.39%	28,300	28,300
4	Pak Ou	26,678	25,800	-0.67%	25,500	25,200
5	Nambak	65,455	69,200	1.12%	74,800	80,600
6	Mouangngoi	30,271	29,700	-0.38%	29,800	29,800
7	Paksaeng	22,682	22,200	-0.43%	22,200	22,200
8	PhoneXai	31,967	32,600	0.39%	34,000	35,400
9	Chomphet	29,206	30,100	0.60%	31,700	33,300
10	Viengkham	28,902	28,500	-0.28%	28,700	28,900
11	Phoukhoun	21,415	23,200	1.61%	25,700	28,400
12	Phonethong	18,204	19,000	0.86%	20,300	21,600
Total		419,268	432,300	0.61%	456,700	482,400

Note: Population prediction is estimated based on the population growth rate of the whole province described in Luang Prabang 8th Socioeconomic Development Plan and the past population trend of each district.

Source: JICA Survey Team made based on data from Luang Prabang Province

## (2) Poverty

Poverty in Lao PDR is gradually reducing. Poverty rate in Lao PDR has decreased from 33.5% in 2003 to 23.2% in 2013. However, the degree of life improvement is different in each region. Comparing between the urban area and rural area, poverty rate in urban area is lower than that of rural area; and its growth for life improvement from 2003 to 2013 is also faster. This tendency is apparently especially in the northern region. Although the poverty rate has improved at 21.7 points from 2003 to 2013 in urban area, only 9.2 points of improvement could be seen in the rural area. Considering there is an economic growth of 6~7% per year in Lao PDR, the effect of poverty reduction as an achievement of economic growth firstly appeared in the urban area rather than rural area.

**Table 2.1.5 Trend of Poverty Reduction in Lao PDR**

		Poverty Headcount (%)			Change (point)	
		2003	2008	2013	2003-2008	2008-2013
Vientiane	Urban	15.6	15.3	5.9	-0.3	-9.4
	Rural	20.2	13.2	7.5	-7.0	-5.7
North Region	Urban	30.6	14.6	8.9	-16.0	-5.7
	Rural	39.1	36.5	29.9	-2.6	-6.6
Central Region	Urban	20.1	22.2	12.8	2.1	-9.4
	Rural	39.0	33.5	26.9	-5.5	-6.6
Southern Region	Urban	12.8	11.3	16.1	-1.5	4.8
	Rural	35.5	25.5	32.2	-10.0	6.7
Whole Nation	Urban	19.7	17.4	10.0	-2.3	-7.4
	Rural	37.6	31.7	28.6	-5.9	-3.1
	Total	33.5	27.6	23.2	-5.9	-4.4

Source: Poverty Profile in Lao PDR, World Bank, 2014

The condition of poverty rate for each province is shown in Table 2.1.6. Poverty rate of the whole northern region is reduced to 12.1 points, from 37.9% in 2003 to 25.8% in 2013. Poverty rates of Phongsaly Province, Luangnamtha Province, and Huaphanh Province have shown great improvement while Bokeo Province became worst.

Within this circumstance, poverty rate in Luang Prabang Province was reduced from 39.5% in 2003 to 25.5% in 2013, which is almost an average degree of improvement in the northern region. However, the speed of improvement has slow down after 2008. It can be suggested that the linkage between urban economy and agricultural economy is not fully matured. Growth of urban economy still cannot lead agricultural economy well which makes socioeconomic development in rural area not well proceeded. As a result of this, regional disparities between urban area and rural area still have not been filled up.

**Table 2.1.6 Condition of Poverty in Norther Region of Lao PDR and Luang Prabang Province**

	Poverty Headcount (%)			Change (point)	
	2003	2008	2013	2003-2008	2008-2013
Pongsaly	50.8	46.0	12.3	-4.8	-33.7
Luangnamtha	22.8	30.5	16.1	7.7	-14.4
Oudomxay	45.1	33.7	30.1	-11.4	-3.6
Bokeo	21.1	32.6	44.4	11.5	11.8
Luang Prabang	39.5	27.2	25.5	-12.3	-1.7
Huaphanh	51.5	50.5	39.2	-1.0	-11.3
Xayabury	25.0	15.7	15.4	-9.3	-0.3
North Region	37.9	32.5	25.8	-5.4	-6.7
Whole Country	33.5	27.6	23.2	-5.9	-4.4

Source: Poverty Profile in Lao PDR, World Bank, 2014

### 2.1.3 Economic Condition

#### (1) Outline of the Macroeconomy and Industrial Structure

Lao PDR has been showing economic growth after the year of 2000. Economic growth rate is 7~8% of improvement per year which is a high transition compared to the other ASEAN countries. This has been lead especially by mining development and investment of hydroelectric power and those growth is expected to continue. As a result of this, the gross domestic product (GDP)/ capita has largely grown to USD 1,970 until 2015.

Overviewing the economic condition of Luang Prabang Province, GDP per person in the whole province is about USD 1,530 which is lower than that of average in Lao PDR (about USD 1,725).

Regarding industrial structure, the percentage of GDP in the agriculture sector was at 44.0% in 2011 and was decreased to 34.3%. The industrial sector grew from 20.0% to 23.0%, and service sector also grew from 37.0% to 43.6%. There is no big difference compared to the average of Lao PDR (Agriculture: 23.7%, Industry: 29.1%, Service: 44.2%).

**Table 2.1.7 Transition of Industry Structure in Luang Prabang Province**

		2010-11	2011-12	2012-13	20130-14	2014-15
GDP (bil.Kip)		398.6	434.1	474.1	513.0	556.6
GDP/Capita (USD)		1,141	1,235	1,342	1,455	1,532
GDP sector (%)	Agriculture	41	39	36.7	35	33.4
	Industry	20	21	21.5	22.3	23
	Service	39	40	41.8	42.7	43.6

Note: Values of GDP and GDP/Capita are referred from 8th RSEDP

Source: Luang Prabang Province 8<sup>th</sup> RSEDP

**Table 2.1.8 Composition Ratio of GDP in the Whole Nation and in Luang Prabang Province**

	Whole Nation		Luang Prabang	
	2010/11	2014/15	2010/11	2014/15
Agriculture	27.9%	23.7%	28.8%	23.2%
Industry	26.9%	29.1%	28.0%	32.4%
Service	46.2%	44.2%	43.2%	44.4%

Source: Luang Prabang Province 8<sup>th</sup> RSEDP, Statistics1975—2015 (Lao Statistics Bureau, 2016)

Working population in Luang Prabang province in 2015 is 260,000 people. 186,000 people which is about 75% of all employees are belong to agriculture sector. Number of working population in industry sector is difficult to estimate because there are so many small and family-run subsistence industries. According to Department of Commerce and Industry (DOCI), the working population is about 20 thousand people<sup>1</sup>. Furthermore, about 48,5000 people are belong to service sector.

## (2) Agriculture

Agriculture is the main industry in Luang Prabang Province, which covers about 1/3 of the total GDP and about 75% of workers belong to this sector. For the crop acreage, rice has the largest area with about 40,000 ha, job's tear, vegetables, fruits, and cassava come next. Most of the yeilds are from the northern region and its agricultural productivity is lower than that of the average in the whole nation. Since the soil condition in the northern region and topography is not much different from the other areas, it can be expected that there is still room for improvement in agricultural technology.

Rice, vegetables, and fruits are the main agricultural products and these are basically consumed inside Luang Prabang Province. However, consumption of rice is higher than the production which results to insufficient rice to feed its population, therefore, requiring Luang Prabang to import from other provinces. According to the Department of Agriculture and Forestry (DOAF) in Luang Prabang Province, about 100,000 tons of rice was produced in 2015 and 50,000 tons of rice was imported from other provinces.

Commercial crops such as cassava, corn, sesame, and tear's job are mostly imported from China, Thailand, and Vietnam. Especially, for tear's job, due to the global trend in consumption of healthy food, its production is rapidly increasing and is mostly exported to China. Furthermore, recently, cultivation of coffee and tea leaves are also increasing but these are still not exported outside the country. These products are mainly for consumption inside Luang Prabang Province, especially inside the urban area of Luang Prabang District for tourism.

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<sup>1</sup> According to 8<sup>th</sup> RSEDP, number of employees for industry sector is 5,300 people.

**Table 2.1.9 Crop Acreage and Crop Yields for each Agricultural Products in the Province**

	Luang Prabang			Northern Region			Northern Region		
	Planted Area (ha)	Production (ton)	Yield (ton/ha)	Planted Area (ha)	Production (ton)	Yield (ton/ha)	Planted Area (ha)	Production (ton)	Yield (ton/ha)
Rice	39,806	102,096	2.6	202,310	700,817	3.5	984,932	4,102,000	4.2
Maize	10,345	51,250	5.0	173,685	919,625	5.3	223,210	1,234,065	5.5
Sweet Corn	2,895	28,935	10.0	10,155	101,670	10.0	30,815	282,185	9.2
Soybean	445	515	1.2	6,610	10,050	1.5	11,880	18,675	1.6
Muangbean	355	430	1.2	810	1,145	1.4	3,000	4,775	1.6
Peanut	1,135	1,770	1.6	9,515	20,125	2.1	20,880	62,010	3.0
Black & Red bean	90	90	1.0	1,215	1,585	1.3	2,335	3,060	1.3
Starchy Roots	4,795	95,745	20.0	26,645	705,208	26.5	101,885	2,767,190	27.2
Cassava	3,840	82,420	21.5	19,695	598,263	30.4	75,465	2,382,478	31.6
Sweet Potatoes	70	860	12.3	1,470	15,270	10.4	7,470	152,680	20.4
Potatoes	0	0	0.0	0	0	0.0	1,030	33,465	32.5
Yam Bean	10	85	8.5	345	3,655	10.6	1,025	11,040	10.8
Taro	875	12,380	14.1	5,135	88,020	17.1	16,895	187,527	11.1
Coffee	1,320	2,655	2.0	4,710	4,860	1.0	93,385	135,925	1.5
Tea	785	1,180	1.5	4,545	5,860	1.3	5,140	6,295	1.2
Sesame	4,550	5,210	1.1	13,065	16,180	1.2	13,595	16,770	1.2
Cardamom	0	0	0.0	7,555	1,675	0.2	15,715	3,765	0.2
Job's Tear	12,515	33,730	2.7	62,470	186,900	3.0	78,725	270,225	3.4
Tabacco	1,045	10,955	10.5	2,305	23,535	10.2	6,360	63,040	9.9
Cotton	65	85	1.3	610	615	1.0	1,980	1,910	1.0
Sugar Cane	400	12,120	30.3	7,065	346,230	49.0	36,130	201,865	5.6
Vegetables	12,120	101,471	8.4	50,785	375,220	7.4	179,690	1,683,405	9.4
Leafy Stem Vegetables	4,445	29,690	6.7	25,175	158,550	6.3	101,865	1,100,115	10.8
Root, Bulb and Tuberous	3,080	25,108	8.2	10,055	59,493	5.9	22,830	176,653	7.7
Fruitbearing and Leguminous	4,595	46,673	10.2	15,555	157,177	10.1	54,995	406,637	7.4
Fruit	6,105	119,410	19.6	28,000	764,205	27.3	81,765	1,361,065	16.6
Fruit Tree	1,985	34,575	17.4	6,290	67,655	10.8	36,180	272,015	7.5
Banana	1,940	43,970	22.7	14,945	553,315	37.0	27,710	787,000	28.4
Pineapple	760	14,350	18.9	1,385	23,905	17.3	3,425	57,095	16.7
Papaya	415	5,630	13.6	550	7,365	13.4	2,270	27,960	12.3
Watermelon	465	12,925	27.8	3,975	102,800	25.9	10,380	196,165	18.9
Lemon	415	4,155	10.0	610	5,180	8.5	670	5,585	8.3
Cantaloupe and Other Melons	215	3,805	17.7	245	3,985	16.3	1,130	17,005	15.0

Source: Agricultural Statistics, Department of Planning and Cooperation, MOAF, 2015

Although organic farming and plantation of foreign vegetables has started in Luang Prabang Province through the support coming from European Union (EU), the market for tourists is limited and the spread of its diffusion is slow at this moment<sup>2</sup>.

Meanwhile, the characteristics of stock raising in Luang Prabang Province are not so much different from the other provinces, which is the same as the other places in the northern region, production of fish is very low. This is an issue also for the whole Lao PDR, and the supply amount could not cover the consumption amount in Luang Prabang Province. Therefore, consumption is dependent on the supply from Thailand or other provinces.

**Table 2.1.10 Stock Raising in Luang Prabang**

	Luang Prabang		North Region		Whole Nation	
	Head (Tousand head)	Head/person (head/person)	Head (Tousand head)	Head/person (head/person)	Head (Tousand head)	Head/person (head/person)
Baffalo	56	0.13	278	0.13	1,165	0.18
Cattle	87	0.20	465	0.22	1,828	0.28
Pig	232	0.54	1,132	0.53	3,258	0.50
Goat and Sheep	84	0.19	218	0.10	533	0.08
Poultry	2,466	5.71	9,956	4.67	34,422	5.30
Capture Fish	2,154	4.99	10,827	5.08	62,635	9.65
Culture Fish	4,124	9.55	13,803	6.47	95,965	14.78

Note: Captured fish and cultured fish are for meat production volume (Ton).

Source: Agricultural Statistics, Department of Planning and Cooperation, MOAF, 2015

<sup>2</sup> According to interview with the Department of Agriculture and Forestry (DOAF), Luang Prabang Province

### (3) Industry and Service

According to the Economic Census II held in 2015, there are about 9,200 companies in Luang Prabang Province. Around 1,947 companies belong to the industry sector and 7,103 companies belong to the service sector. Eighty-seven percent are small companies, which employ less than five workers and there are only seven companies, which employ more than 100 workers (Table 2.1.12).

Table 2.1.11 shows a breakdown of the industrial sector. Manufacturing industry, which has the largest number of companies (1,875 companies), is relatively spread to each district in the province. The second largest industry is the construction industry, which have 43 companies and the most of them are concentrated inside Luang Prabang District.

For large-scaled factories, there are three cement factories, two roof tile factories, and one plastic factory in the province, but these are not as large as in the national scale.

The most distinguished characteristic of these industries in Luang Prabang Province is the manufacturing of gold products, silver products, woodwork products, and textiles. These are the products manufactured by small-scaled family industries. Most of the products are sold as souvenirs of Luang Prabang Province and partially, for example, woodwork products are now being exported to other provinces in Lao PDR and a part of foreign countries.

Luang Prabang Province is trying to improve the qualities of handicraft products and raise awareness through the strategy of One District One Product (ODOP). So far, three products (scarf in Nambark District, handmade paper in Xangkong Village, and lacquerware products in Pongkham Village) are registered to ODOP products. There are other 12 handicraft products which are planned to be registered or become candidates. However, this movement can be seen only in Luang Prabang District and Nambark District. Therefore, the future tasks are to: extent the strategy more widely to other districts, expand the handicraft market, and improve the technologies.

**Table 2.1.11 Number of Offices in Luang Prabang Province by Sectors**

Sector		Luang Prabang District	% in Province	Luang Prabang Province
Agriculture	Agriculture, Forestry and Fishery	34	19.5%	174
Industry	Mining	7	36.8%	19
	Manufacturing	294	15.7%	1,875
	Electricity and Gas	3	75.0%	4
	Water Supply, Drainage and Solid Disposal	3	50.0%	6
	Construction	33	76.7%	43
Service	Commerce, and Car and Bike Repairs	2,176	43.8%	4,973
	Transport and Warehouse	157	25.8%	608
	Tourism, Hotel and Restaurants	617	60.6%	1,018
	Information and Communications	13	52.0%	25
	Finance and Insurance	11	28.9%	38
	Real Estate	11	34.4%	32
	Engineering, Technical and Science Service	6	85.7%	7
	Service	65	67.0%	97
	Defense and Social Welfare	1	100.0%	1
	Education	16	88.9%	18
	Health and Social Activity	11	73.3%	15
	Arts	16	38.1%	42
	Other Services	152	66.4%	229
No information		1	50.0%	2
Total		3,627	39.3%	9,226

Source: Lao Economic Census II, LSB, 2015

**Table 2.1.12 Number of Offices in Luang Prabang Province by Scales**

	Number of Business Establishments	%
Less than 5 persons	7,999	86.7%
5 to 9 persons	864	9.4%
10 to 99 persons	356	3.9%
Mor than 100 persons	7	0.1%
Total	9,226	100.0%

Source: Lao Economic Census II, LSB, 2015

Meanwhile, there are 4,973 companies engaged in commercial and vehicles/motorbikes maintenance, which has the largest share, out of the total number of 7,103 companies in the service sector (see Table 2.1.11). Most of these companies are small-scaled business owned and managed by families. The second highest in number of companies is the tourism, hotel and restaurant businesses (1,018 companies<sup>3</sup>) in Luang Prabang Province. Since Luang Prabang Province is one of the representative tourism sites, which has about 450,000 tourists from foreign countries in 2015, demand for tourism, hotels, and restaurant businesses is high and those businesses are the characteristic services in the province. Tourism, hotels, and restaurants businesses in Luang Prabang Province are essential industries in employment and tax revenue. Sixty percent of those business companies are concentrated in the middle of the urban area of Luang Prabang District, which contains the World Heritage Area.

#### (4) Underground Resources and Energy Development

Luang Prabang Province is known as the site for underground resources such as gold, silver, iron, lead, mercury and coal, thus, the development of underground resources is gradually proceeded. There are five steps involve in the concession of underground resource development in Lao PDR which are: 1) Implementation of the project, 2) Feasibility study (FS), 3) Exploration, 4) Survey, and 5) Joint survey. As of October 2015, concessions are given to 22 underground development projects in total. Two projects are under implementation, two projects are under FS stage, five projects are under exploration stage, ten projects are under survey stage, and three projects are under joint survey stage. The projects that are under the implementation stage are: gold exploitation by a Chinese company and Barite exploitation by an American company (Table 2.1.13 and Figure 2.1.3).

Although Luang Prabang Province has a potential for underground resource development and some of the projects are already under exploration and survey stages, there are no promising projects to be implemented in short period due to the decline of underground resource prices in recent years.

**Table 2.1.13 Status of Concession for Underground Resource Development in Luang Prabang Province**

ID No.	Country	Status	Type of Mineral	Area (ha)
72 (red)	China	Mining	Au (Gold)	600
76 (red)	America	Mining	Barite	160
1 (orange)	Vietnam	F/S	Sb (Antimony)	900
1 (orange)	Vietnam	F/S	Sb (Antimony)	100
1 (light green)	Laos	Prospecting	Coal	26,600

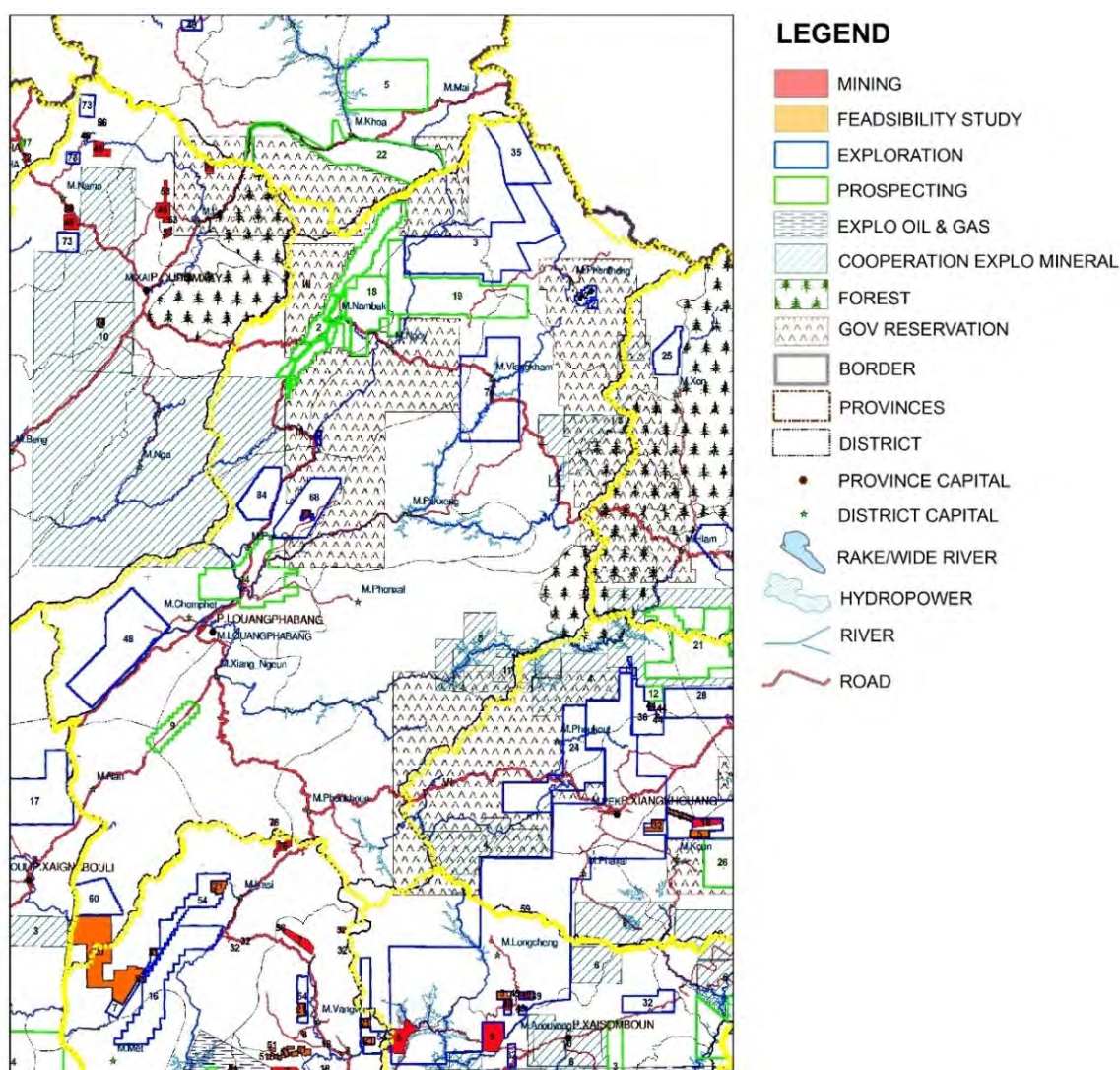
<sup>3</sup> According to statistics of DICT in Luang Prabang Province, the total number of hotels and restaurants was 731 in 2013. This data does not correspond with the data in Lao Economic Census II. The reason for this inconsistency is unknown.



ID No.	Country	Status	Type of Mineral	Area (ha)
2 (light green)	China	Prospecting	Coal	6,800
14 (light green)	China	Prospecting	Fe (iron)	26,700
18 (light green)	Laos	Prospecting	Fe (iron)	19,000
19 (light green)	Laos	Prospecting	Fe (iron)	404,800
2 (blue)	Vietnam	Exploration	Sb (Antimony)	171
3 (blue)	Vietnam	Exploration	Sb (Antimony)	500
3 (blue)	Laos	Exploration	Sb (Antimony)	47,370
35 (blue)	Laos	Exploration	Sb (Antimony)	16,580
47 (blue)	Laos	Exploration	Sb (Antimony)	300
48 (blue)	Laos	Exploration	Cu (Copper)	500
60 (blue)	Laos	Exploration	Cu(Copper) etc.	10,000
68 (blue)	China	Exploration	Au (Gold)	12,550
70 (blue)	Laos	Exploration	Au (Gold)	40,805
84 (blue)	China	Exploration	Cu (Copper)	10,936
5 (dark green)	Laos	Cooperation Exportation	minerals	30,000
7 (dark green)	Laos-China	Cooperation Exportation	minerals	422,300
11 (dark green)	Laos	Cooperation Exportation	minerals	296,64

Note: As of October, 2015

Source: Department of Geology and Minerals, Ministry of Energy and Mining (MOEM)



Source: JICA Survey Team created based on processed DOM data

**Figure 2.1.3 Condition of Underground Resource Development in Luang Prabang Province**



On the other hand, Luang Prabang Province has a large potential for hydroelectric power generation by utilizing streams flowing into the Mekong River. Two hydroelectric stations are under operation, i.e., Namgum 5 and Nam Khan 2. While three hydroelectric stations, namely, Mekong Xayaboury Dam (1,285 MW), Nam Ou Dam (120 MW), and Nam Khan 3 (60 MW) are under construction. Among all projects, Mekong Xayaboury Dam is the largest hydroelectric dam station in Lao PDR.

Moreover, currently, 23 sites for the construction of hydroelectric stations (3,592.4 MW in total) are under FS stage (eight dams are permitted by the province and 15 dams are permitted by the nation). Among these projects, nine hydroelectric stations (733.2 MW) are planned to be constructed until 2020 in accordance with the 8<sup>th</sup> RSEDP.

#### **2.1.4 Tourism Sector in Luang Prabang' s Economy**

Luang Prabang District has an urban function as public service center of the northern region of Laos, and as economic and administration of Luang Prabang Province. Luang Prabang District is also the center of economic activities in the northern region of Laos with agriculture, agro-processing, industry, and natural resources like hydraulic power generation. Especially, tourism sector is a prime economic sector in Luang Prabang Province, which occupies 43.6% of the provincial GDP and 33.5% of employment in the province.

Through these activities, the tourism sector largely contributes to the tax revenue of Luang Prabang Province. Total tax revenue of the province is about LAK 220 billion (in 2015) and half of which comes from the tax revenue of tourism-related industries such as hotels and guest houses and fees of tourism facilities and temples.

#### **2.1.5 Summary of the Social and Economic Issues in Luang Prabang Province**

According to the present condition of the social economy in Luang Prabang Province, the following subjects could be suggested for the next regional development in the province:

- Luang Prabang District is surrounded by mountainous area and has limited flat land to be used;
- Population is concentrated in Luang Prabang District and urbanization is in the process. On the other hand, delay in rural development such as assess road development can be confirmed;
- Effects of poverty reduction as a result of economic development seems that it firstly appeared in urban area and lately in the rural area. Currently, pace of poverty reduction in Luang Prabang Province is getting slow;
- Productivity of agriculture is low. Also, there is not so much space for expansion of farm land;
- Although potential underground resources are confirmed, there are only two ongoing projects and development in short period could not be expected due to decline of prices at the national level;
- Hydroelectric generation has a good potential and some of the projects are already at the construction stage. Concession revenue could be expected but it cannot be said that this becomes a leading industry for regional economy in terms of making large economic ripple effects and employment;
- There is no remarkable industry in Luang Prabang Province. Although small-scaled

manufactured products are emphasized as ODOP, it is limited only in two districts (Luang Prabang District and Nambark District). In the future, it is required to expand ODOP to other districts and to improve production technology.

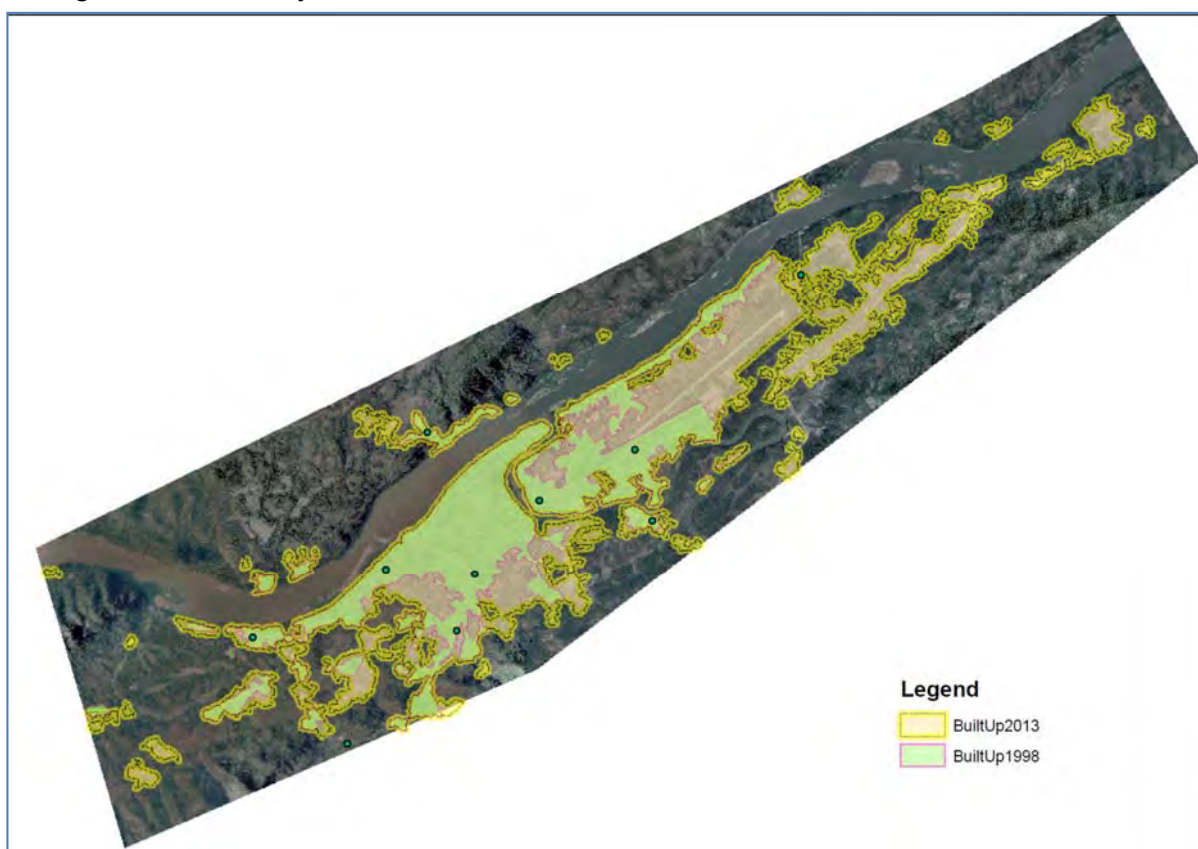
- Commercial service especially tourism industry is concentrated to Luang Prabang District.

## 2.2 Condition of Urbanization

As described above, the population and economy in Luang Prabang District are growing as the center of northern region in Lao PDR and of Luang Prabang Province. At the same time, the urban area of Luang Prabang District is also being expanded. Figure 2.2.1 shows the trend of urbanization in the recent 15 years (1998 ~ 2013) in the world heritage and the surrounding areas.

Luang Prabang in 1998 had urban areas only at the center (the Heritage Area) and south side of the airport. Later on, urbanization has been proceeded towards both in the north and south direction, and in 2013, the north area of the airport was urbanized and the south area is under process. This trend has been revealed because flat land is spread towards the north and south direction widely.

Size of the urban area was 860 ha in 1998 and it has enlarged to 1,870 ha until 2013 which is 2.2 times larger than that of 15 years before.



Source: JICA Survey Team

**Figure 2.2.1 Urbanization Trend of World Heritage and Surrounding Areas during the Recent 15 Years (from 1998 to 2013)**

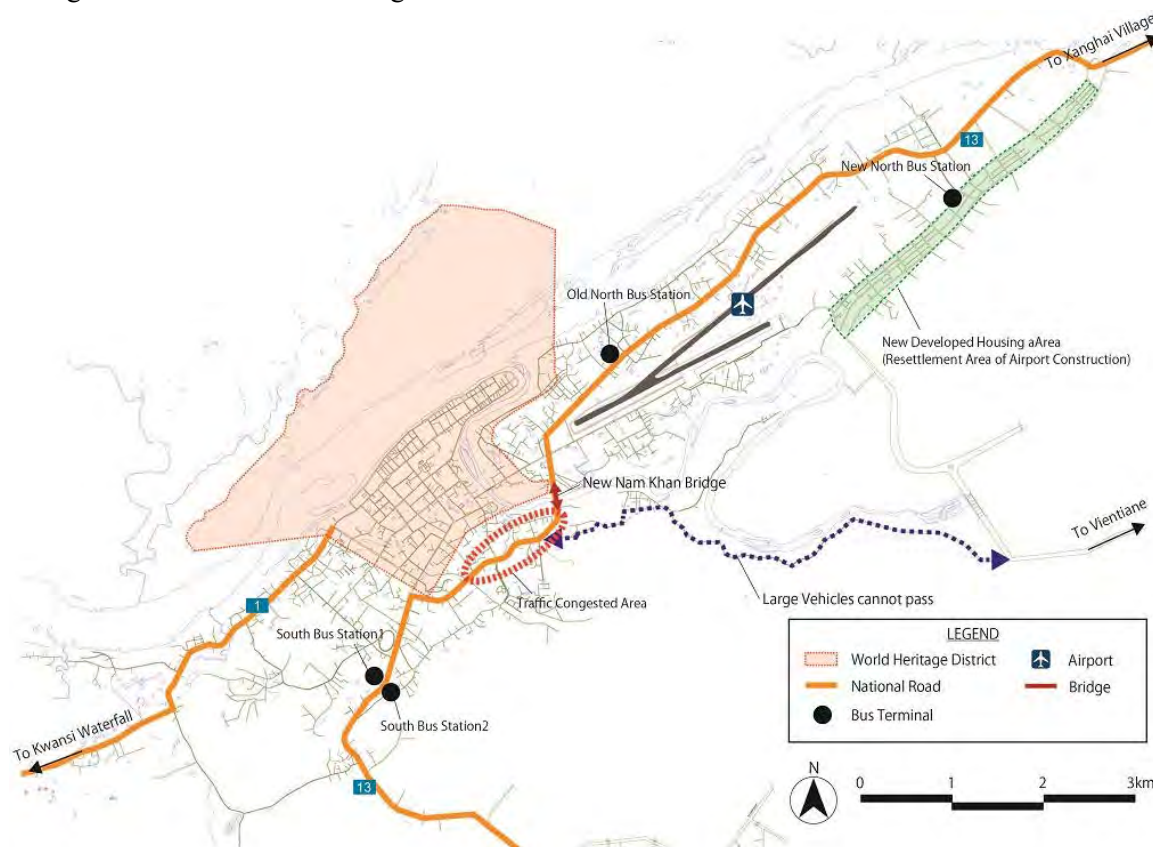
## 2.3 Present Condition of Infrastructure

### 2.3.1 Urban Transportation (Airport, Bus Terminal and Port)

#### (1) Current Condition of Road Transportation

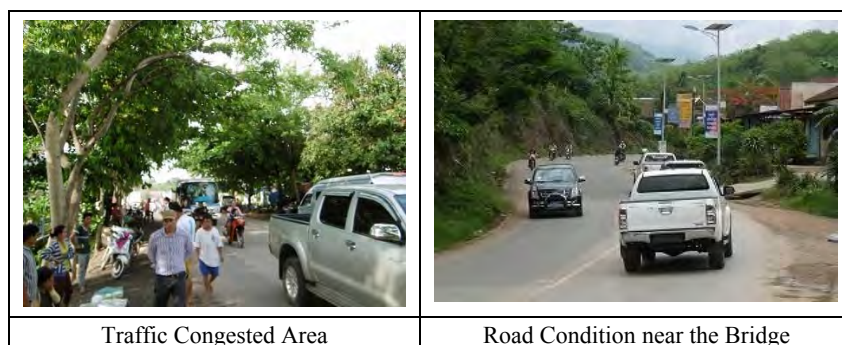
The traffic condition and locations of main traffic facilities are shown in the Figure 2.3.1.

Although traffic congestion has not been a serious matter in Luang Prabang, traffic concentration can be seen in the southwest part of the new Nam Khan Bridge where many roads cross and market opens along the road especially during morning and evening rush hours. This is because: 1) there is only one bridge which connects the western side (World Heritage District side) and eastern side (international airport side) of the Khan River, 2) the population at the new residential district (area for resettled villagers when the airport was constructed) located northeast of the international airport is growing, and 3) there is no bypass road connecting this area to the World Heritage Area so that commuters must pass through the new Nam Khan Bridge.



Source: JICA Survey team

**Figure 2.3.1 Current Road Condition and Location of Main Traffic Facilities**



Source: JICA Survey team

**Figure 2.3.2 Current Road Condition**

## (2) Parking Space in the Heritage Area

Inside the World Heritage Area, large concentrated parking spaces for general vehicles do not exist. For this reason, parking on the street cannot be restrained. This decreases the road transportation capacity and disturbs the scenery of the Heritage Area. This problem appears prominently along the side of the Mekong and Nam Khan rivers where the road is narrow but is important in enjoying the view. The World Heritage Office (DPL) has recognized the necessity to solve this problem.

Currently, there are two types of parking spaces along the Mekong River, namely, a) spaces on the street only kept by white lines (implemented by the Department of Public Works and Transport (DPWT)), and b) part of the sidewalk where spaces are kept (pilot project by DPL). However, as a result of type a), more vehicles were encouraged to park on the street that has made the situation worse. In addition, most residents and tourists in Lao wish to park their vehicles just beside houses or shops in order to have door-to-door access. Since parking spaces type b) are developed only at three locations at this moment, these do not take root in people's lifestyle and tourism. Furthermore, the sidewalk itself is not beautified enough; and together with the congestion of carparking on the street, the beauty of the riverside view as a potential tourism resource in Luang Prabang is spoiled.



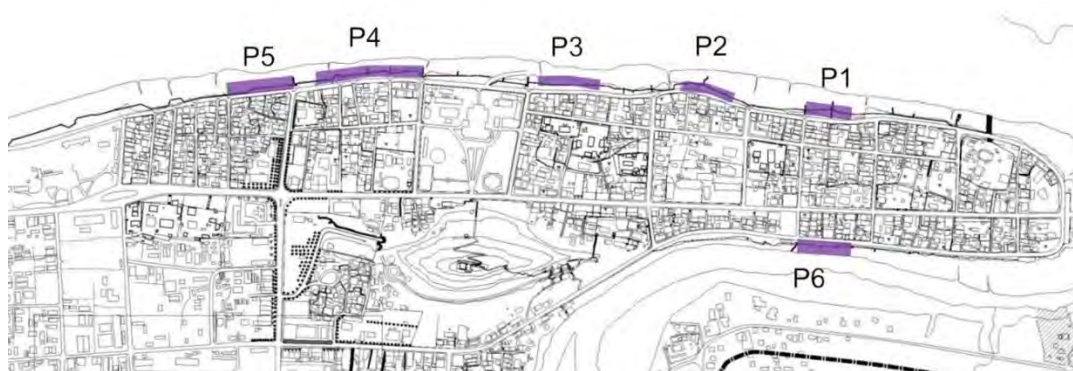
Source: JICA Survey Team

**Figure 2.3.3 Condition of the Parking Spaces beside Mekong River**

With respect to the above situation, DPL planned the unit development of parking spaces at six locations beside the Khan River and the Mekong River with the pedestrian space along these rivers in 2015 as shown in Figure 2.3.4. According to DPL, this plan follows UNESCO's guidelines. At the same time of this development, DPL considers the removal or replacement of some temporary shops and deteriorated road pavement which obstruct the beauty of the scenery.

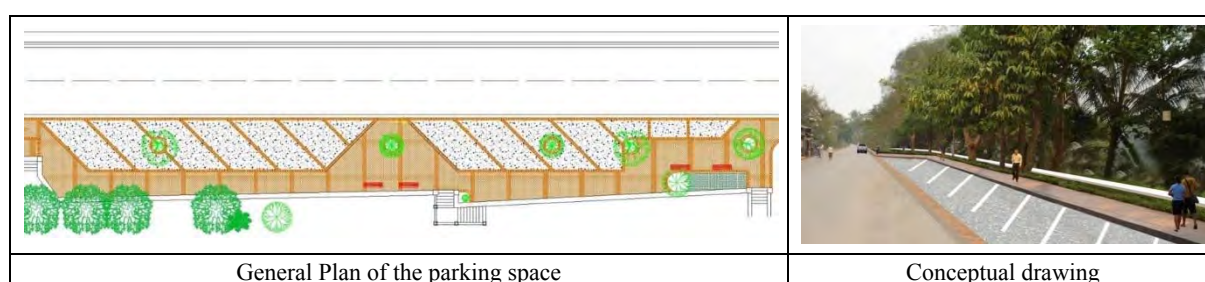
However, the project still has not been implemented due to the lack of the government budget. Therefore, assistance from foreign donors is expected.





Source: DPL

**Figure 2.3.4 Location Map of New Paking Space Development**



Source: DPL

**Figure 2.3.5 Image of Parking Space and Pedestrian Space**

Parking space development at other locations is still not yet planned. Although the number of vehicles increases significantly during big events such as boat race (September or October) and New Year (April), temporary parking spaces using vacant spaces in the town were never prepared. During this period, most tourists and residents park their vehicles on the street in the center of the town such as at Phouvao Street, and the increase of parked vehicles elicits complaints from the nearby residents. As countermeasure to this problem, DPWT considers to provide parking spaces at the outer areas of the town and make tourists use rental vehicles inside the town in order to control the number of vehicles.

### (3) Long Distance Bus Terminal

Two long distance bus terminals are located in the north and another two terminals in the south sides of Luang Prabang, and all are operated by the private sector under a concession agreement with DPWT. The summary of the bus terminals and their locations are shown in Table 2.3.1 and Figure 2.3.1 respectively.

**Table 2.3.1 Summary of Long Distance Bus Terminal**

Direction	Name of Bus terminal		Destination		Fee	Number of users
North	①	Kiew Lot Sai Nuan Bus terminal (northern bus terminal)	A) Domestic	• Huay Xai	LAK 120,000	About 80 persons/day
				• Luang Nam Tha	LAK 90,000	
				• Nong Kiaow	LAK 40,000	
				• Phongsaly	LAK 130,000	
				• Sam Neua	LAK 140,000	
				• Oudomxay	LAK 55,000	

Direction	Name of Bus terminal		Destination	Fee	Number of users
	②	Sok Paserth Bus Terminal	A) Domestic <ul style="list-style-type: none"> <li>• Bokeo</li> <li>• Luang Namtha</li> <li>• Huanphan</li> <li>• Oudomxay</li> <li>• Phongsaly</li> </ul>	LAK 120,000 LAK 100,000 LAK 140,000 LAK 60,000 LAK 130,000	No data
South	③	Naluang Bus Terminal	A) Domestic <ul style="list-style-type: none"> <li>• Vang Vieng</li> <li>• Vientiane</li> <li>• Xieng Khuang</li> <li>• Phonsavan</li> <li>• Sayabouly</li> </ul>	LAK 105,000 LAK 110,000 LAK 95,000 LAK 95,000 LAK 60,000	About 100 persons/day
	④	Bus Terminal International	A) Domestic <ul style="list-style-type: none"> <li>• Vientiane</li> <li>• Xieng Khuang</li> <li>• Luang Nhamtha</li> <li>• Bokeo</li> </ul>	LAK 155,000 LAK 105,000 LAK 110,000 LAK 110,000	About 20~30 persons/day (during low season)
			B) International <ul style="list-style-type: none"> <li>• Thailand (Chiangmai, Loei, Nan, *Phitsanulok (*in preparation))</li> <li>• Vietnam (Vinh, Hanoi, Hue, Dien Bien Phu, *Sapa (*in preparation))</li> <li>• China (Boten, Jinghong, Kunming)</li> </ul>	LAK 265,000 (to Chiang Mai) LAK 350,000 (to Hanoi) LAK 420,000 (to Kunming)	About 40~50 persons/day (during high season)

Source: JICA Survey Team based on interview to each bus terminal

There was only one bus terminal in the north side of Luang Prabang until early 2016, named Kiew Lot Sai Nuan Bus Terminal. Because this facility has become deteriorated, a new bus terminal called Sok Paserth Bus Terminal was built in March 2016. In the future, all northern bus transportation routes are considered to be integrated in this new bus terminal. However, because many residents and tourists are not aware of this station and its location, users of this station are very limited. So far, only five travel routes are in operation.

Expecting future increase of users of Sok Paserth Bus Terminal, the area for 450 shops and some guest houses has been prepared within a 5 ha site. In addition to this, since large-sized vehicles are prohibited to enter into the World Heritage Area, Sok Paserth Bus Terminal provides pick-up service by electric vehicle (EV) bus (imported from Thailand) from the station to the inner town.




Source: JICA Survey Team

**Figure 2.3.6 Long Distance Bus Terminals**

#### (4) Ferry Terminal

Figure 2.3.1 shows the location of the existing ferry terminal and Table 2.3.2 shows its service status. Two types of ferries (slow and speed) travel to four destinations each and all depart from the terminal at 8:30 in the morning. There is no ferry which directly travels outside the country; but instead, there is a route going to a hub port which finally travels to Thailand. While expansion of the port is not considered, a plan for developing a new port called Kok Jong Harbour located 10 km north from the existing terminal is considered and discussed in the province.

**Table 2.3.2 Outline of Ferry Transportation Service**

Boat Type	Destination	Tariff		Present Situation
		Lao	Foreigner	
Slow Boat	Pak Beng	LAK 70,000	LAK 105,000	
	Tha Souang	LAK 62,000	LAK 92,000	
	Khok Aik	LAK 50,000	LAK 75,000	
	Hat Terk	LAK 40,000	LAK 60,000	
Speed Boat	Houei Xay	LAK 260,000	LAK 310,000	
	Pak Kob	LAK 220,000	LAK 260,000	
	Pak beng	LAK 135,000	LAK 185,000	
	Tha Souang	LAK 115,000	LAK 155,000	

Source: Prepared by the JICA Survey Team based on Interview

#### (5) Condition of Passenger Use for each Transportation System

Table 2.3.3 and Table 2.3.4 show the number of users and status of use for each month at Luang Prabang International Airport, bus terminals, and the ferry port. For airplane and ferry, the number of passengers, especially for foreigners, fluctuates notably between the high season (November to February) and low season (May to July). For bus, the seasonal fluctuation is not as large as that for airplane and ferry for both Lao people and foreigners. It will be effective to promote the use of airplane and ferry at the same time of promoting the Luang Prabang tourism itself during the low season.

**Table 2.3.3 Number of Immigrants from Luang Prabang Airport, Bus Terminals and Ferry Port**

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Airport	Lao	3,094	3,183	3,006	2,931	2,435	2,951	1,928	3,018	2,710	2,551	2,907	3,079	33,793
	Foreigner	26,271	26,611	22,341	13,286	9,264	10,328	9,974	15,207	11,772	12,607	19,863	22,918	200,442
Sub-Total		29,365	29,794	25,347	16,217	11,699	13,279	11,902	18,225	14,482	15,158	22,770	25,997	234,235
Bus Terminal	Lao (Domestic)	7,079	5,132	4,712	4,379	4,513	3,577	3,979	4,525	4,211	3,559	3,359	4,229	53,254
	Foreigner (Domestic)	12,304	12,429	12,685	10,944	10,385	10,282	10,338	11,101	11,208	11,717	11,847	12,439	137,679
	Foreigner (International)	3,100	3,480	3,560	3,240	3,105	3,063	2,961	2,924	5,508	5,445	5,515	5,675	47,576
Sub-Total		22,483	21,041	20,957	18,563	18,003	16,922	17,278	18,550	20,927	20,721	20,721	22,343	238,509
Ferry Terminal	Lao	2,743	3,012	2,868	2,745	1,885	1,760	1,856	1,978	1,508	2,020	2,762	2,390	27,527
	Foreigner	2,834	2,957	2,669	2,379	1,584	670	1,384	1,532	1,302	1,931	2,626	2,282	24,150
Sub-Total		5,577	5,969	5,537	5,124	3,469	2,430	3,240	3,510	2,810	3,951	5,388	4,672	51,677
Total		57,425	56,804	51,841	39,904	33,171	32,831	32,420	40,285	38,219	39,830	48,879	53,012	524,421

Source: Created by JICA Survey Team based on Information from MONRE

**Table 2.3.4 Number of Passengers Who Used Luang Prabang Airport in 2015**

2015	Domestic Flight				Total	No. of Service		International Flight				Total	No. of Service	
	IN		OUT			IN	OUT	IN		OUT			IN	OUT
	Lao	Foreigner	Lao	Foreigner				Lao	Foreigner	Lao	Foreigner			
JAN	2,764	7,980	3,258	7,810	21,812	153	153	330	18,291	332	19,089	38,042	330	330
FEB	2,838	8,695	3,165	7,806	22,504	168	168	345	17,916	222	18,322	36,805	335	335
MAR	2,757	7,472	3,286	8,010	21,525	168	168	249	14,869	411	17,243	32,772	306	306
APR	2,666	4,347	3,290	4,237	14,540	119	119	265	8,939	347	11,013	20,564	247	247
MAY	2,149	3,131	2,471	3,184	10,935	108	108	286	6,133	401	7,649	14,469	198	198
JUN	2,432	3,296	2,831	3,274	11,833	104	104	519	7,032	406	8,391	16,348	197	197
JUL	1,409	2,942	1,901	3,374	9,626	121	118	519	7,032	404	8,385	16,340	229	229
AUG	2,641	5,022	2,839	5,508	16,010	118	115	377	10,185	513	11,957	23,032	231	231
SEP	2,354	3,823	2,387	4,673	13,237	112	106	356	7,949	376	9,801	18,482	207	207
OCT	2,330	4,274	2,415	4,182	13,201	115	110	221	8,333	330	8,938	17,822	206	206
NOV	2,652	5,666	2,659	5,573	16,550	147	141	255	14,197	259	14,169	28,880	307	307
DEC	2,753	6,899	2,870	6,378	18,900	147	144	326	16,019	386	18,360	35,091	336	336
Total	29,745	63,547	33,372	64,009	190,673	1,580	1,554	4,048	136,895	4,387	153,317	298,647	3,129	3,129

Source: Created by JICA Survey Team based on Information from MONRE

## 2.3.2 Road and Bridge

### (1) Condition of Access Road to Major Tourism Spots

In order to encourage tourists, which are mostly concentrated in the World Heritage District, to visit more areas in Luang Prabang, access road development to each tourism spot will be significant. So far, most parts of the access road from Xang Hai Village to Pak Ou Cave and the access road from Kok Ngio Village to the entrance of Tad Sae Waterfalls are unpaved which makes transportation difficult especially during the rainy season. Although some parts are paved, the road is too steep and the width is narrow, so that the access road is a serious obstacle in inviting more tourists. The access road towards Kuang Si Waterfalls is paved with asphalt concrete for the whole 24 km length. However, parts of the pavement are damaged and deteriorated conspicuously and the five existing small and narrow bridges have a limit of 15 t which makes it difficult for heavy loaded vehicles for tourism or construction work to pass through. Since the abovementioned tourism spots are important tourism resources for Luang Prabang, improvement of the access roads needs to be prioritized.

Nevertheless, the access road to Pak Ou Caves and Tad Sae Waterfalls is surrounded by steep valleys and slopes, so extensive earthworks might be necessary. The access road to Kuang Si Waterfalls is lined with houses and shops for more than 10 km length. For expansion of the road, setback or resettlement for many houses will be necessary. Therefore, this project needs to consider these long-term challenges.



Source: JICA Survey Team

**Figure 2.3.7 Condition of Access Road to Major Tourism Spots**



## (2) Support from Other Donors

The access road improvement between Xang Hai Village and Pak Ou Caves is being implemented with the support of the Asian Development Bank (ADB), and it is scheduled to be completed in December 2019. Because the project is related to the tourism sector, the executive organ of the project is the Ministry of Information, Culture, and Tourism (MICT). On the other hand, the actual implementation organ is DPWT since it is a road development project, meaning cooperation between those two sectors is necessary to be formulated. However, the project is now delayed because there is a difficulty in clarifying each sector's roles.

Figure 2.3.8 shows the location of the National Road 4B Improvement Project supported by the Neighbouring Countries Economic Development Cooperation Agency (NEDA) which has started in 2015. However, the budget for the continuing road which circumvents the World Heritage District (shown in green dotted line) is not secured. In addition to this, there is a plan to construct a bridge near the existing ferry port which connects Chompet District and Luang Prabang District, but the project has been suspended for a long time at the conceptual stage.



Source: JICA Survey Team

**Figure 2.3.8 Location of National Road 4B and its Connecting Road**

## (3) Priority Project of DPWT

The road masterplan in Luang Prabang District has not been established yet by DPWT. According to the result of the interview, the following priority projects were considered by DPWT:

### 1) Village Access Road Development at the North Side of the International Airport Including Xang Khong Village

This project is regarded by DPWT as a highly urgent project. In the beginning, this has been planned to be implemented using the budget from the Lao national government so DPWT requested the Ministry of Public Works and Transport (MPWT) to approve the USD 6 million budget. However, availability of the budget from the national government became uncertain (as of May 2016). Therefore, DPWT has

shifted its attention to have the support of international donors to develop the access road.

## 2) Rehabilitation of Phou Vao Street

Although this is a priority project, DPWT is considering to implement the project with support from foreign agencies due to the lack of budget from the national government. Phou Vao Street is considered as one of the most important roads for future tourism in Luang Prabang. However, damage to the pavement is not so serious so far, and the road width is wide enough for two lanes for each side. More detailed information about the concept and the improvement plan are necessary to be confirmed with DPWT.

## 3) New Road from the Southern Part of the Airport to Nasangveuy Village (Planned Site of New Governmental District)

There are plans of relocating provincial government offices and constructing new Lao-Vietnam cultural center in the southern part of the town. At the same time, DPWT plans to develop access road to this new district which connects from the south of the international airport crossing the Khan River to Nasangveuy Village. This district, where government offices will be relocated, is assumed to be developed as a new urban area in the future. Also, the north-south train of Lao is expected to be developed in this area. As a long-term project, a prudent survey will be necessary for this road project.

## 4) Rehabilitation of National Road N13 from Phonesay Village to Kok Ngio Village

DPWT considers to expand the width of national road N13 to about 18 m for a length of 13 km. Because there is no budget from the national government or the Urban Development Administration Authority (UDAA), DPWT expects loans from international donors to implement the project.

## 5) Sidewalk Improvement in the Town

In order to make tourists walk inside the town more, sidewalk improvement to 1.5 m width is considered as one of the priority projects by DPWT. According to the director general of DPWT, the national government recognizes the importance of the project so it is expected to be approved even if it is a loan project.

## 6) Reconstruction of the Nam Khan Old Bridge

There are two bridges (new and old) which connect the eastern side (airport) and western side (World Heritage Area) of the Khan River. The old bridge has become so deteriorated and only two-wheeled vehicles are able to pass through it. When traffic volume increases in the future, the new bridge is expected to be a traffic bottleneck for urban transportation in Luang Prabang. For this reason, DPWT and DPL have a plan to rehabilitate the old bridge to enable four-wheeled vehicles to pass through and to disperse the concentration of the traffic volume. However, careful coordination will be necessary for the implementation due to the following reasons: 1) the old bridge is located inside the World Heritage Area and its change of appearance is strictly prohibited, and 2) a traffic census has never been done in Luang Prabang so the effect on the transportation inside the Heritage Area is still not confirmed.

## 7) Slope Stabilization of the Khan River Behind Mt. Phousi

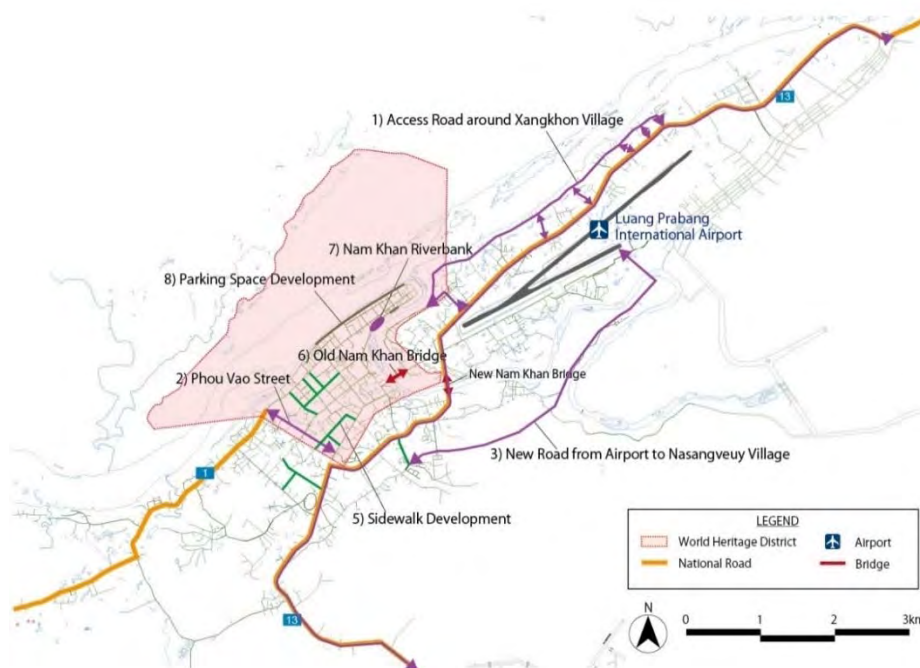
Landslide at a part of the bank of the Khan River behind Mt. Phousi is needed to be repaired. Because the location is inside the World Heritage District, careful coordination with the World Heritage Office is necessary.

## 8) Parking Space Development Along the Nam Khan and Mekong Riverside

DPWT and DPL prioritize the development of parking space and pedestrian space along the riverside in order to solve problems about the increase of parking on the street. Due to the lack of budget, it is considered to be implemented through the assistance of foreign donors.

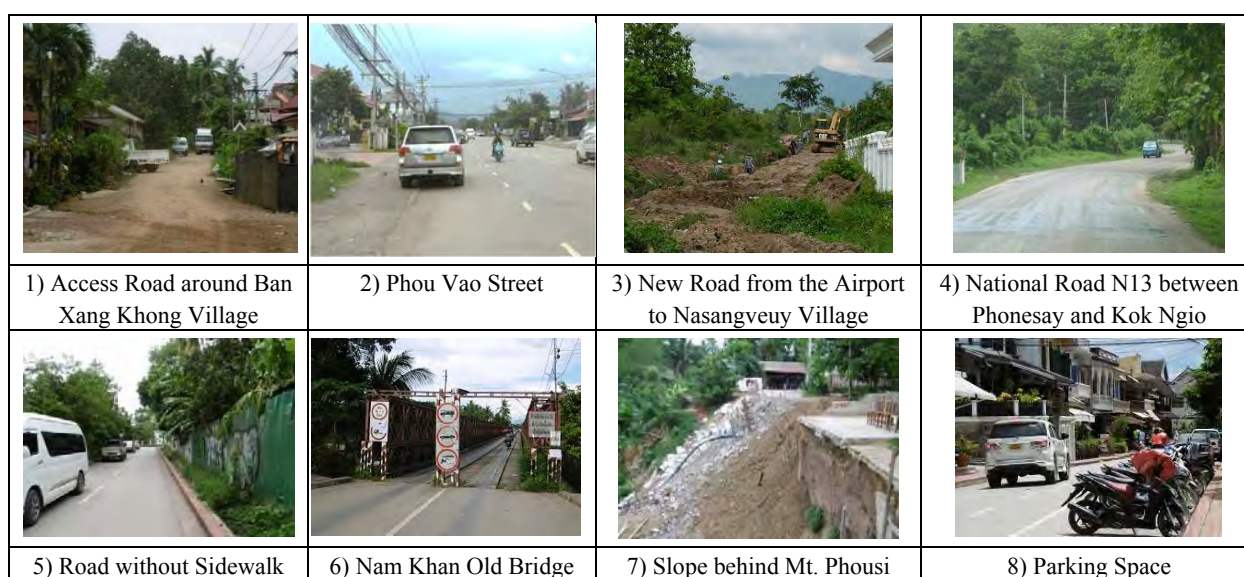
## 9) Others

Luang Prabang Province and DPWT are considering to develop the existing international airport as a transportation hub in Laos and use it as a “stopover point”. At this moment, it is suspended at the conceptual stage and the detailed plan still does not exist.



Source: JICA Survey Team

**Figure 2.3.9 Location Map of DPWT Priority Projects**



Source: JICA Survey Team

**Figure 2.3.10 Present Condition of DPWT Priority Project Sites**

### 2.3.3 Water Supply

#### (1) Present Condition of Water Supply System

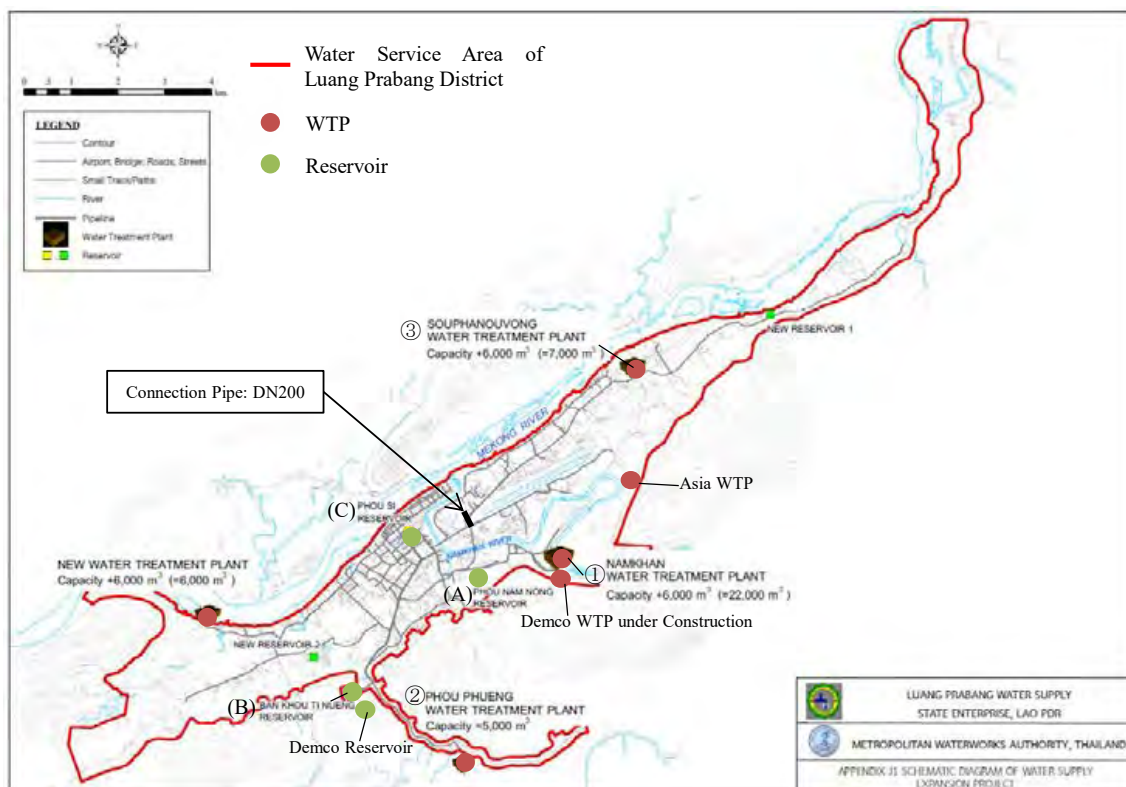
As of 2015, the population of Luang Prabang District was about 90,400 and the population served is about 62,457. The coverage ratio is about 70%. The current non-revenue water (NRW) rate is 23-25%, which is greater than the goal of 20%. The Luang Prabang Water Supply State Enterprise (LPWSE) manages the three existing water treatment plants (WTPs), four reservoirs, and the distribution network in Luang Prabang District as shown in Table 2.3.5.

**Table 2.3.5 Existing Water Supply System**

1) WTPs		2) Reservoirs	
Nam Khan	12,000 m <sup>3</sup> /day capacity Source: Khan River <u>Issues:</u> Actual production is less than 10,000 m <sup>3</sup> /day since flocculation and sedimentation tanks were not constructed. The system loss is very high at 19% (should be less than 10%).	Phounanong	1,000 m <sup>3</sup> capacity (Quadrangle type, Height: 5 m), Construction Year: 2010 <u>Issues:</u> Expansion is required but the space is limited
Phouphueng	9,000 m <sup>3</sup> /day capacity Source: Spring <u>Issues:</u> Water production and quality are indicative of seasonal fluctuations.	Kuanteenieng	1,570 m <sup>3</sup> capacity (Quadrangle type, Height: 5 m) Construction Year: 2002 <u>Issues:</u> Expansion of the reservoir is required but there is no space.
Souphanouvong	1,000 m <sup>3</sup> /day capacity Source: Mekong River <u>Issues:</u> The system loss is very high at 25% (should be less than 10%). The O&M cost is high and efficiencies are low. It is required to supply water from Nam Khan WTP.	Phouisy	1,400 m <sup>3</sup> capacity (Circular type, Height: 5 m) Construction Year: 1969 <u>Issues:</u> Expansion of the reservoir is required but there is no space.
		Souphanouvong	1,000 m <sup>3</sup> Construction Year: 2007
3) Distribution: The total length is about 71 km consisting of pipes with DN40 to DN350.			

Source: LPWSE

The existing/future water supply system is presented in Figure 2.3.11.

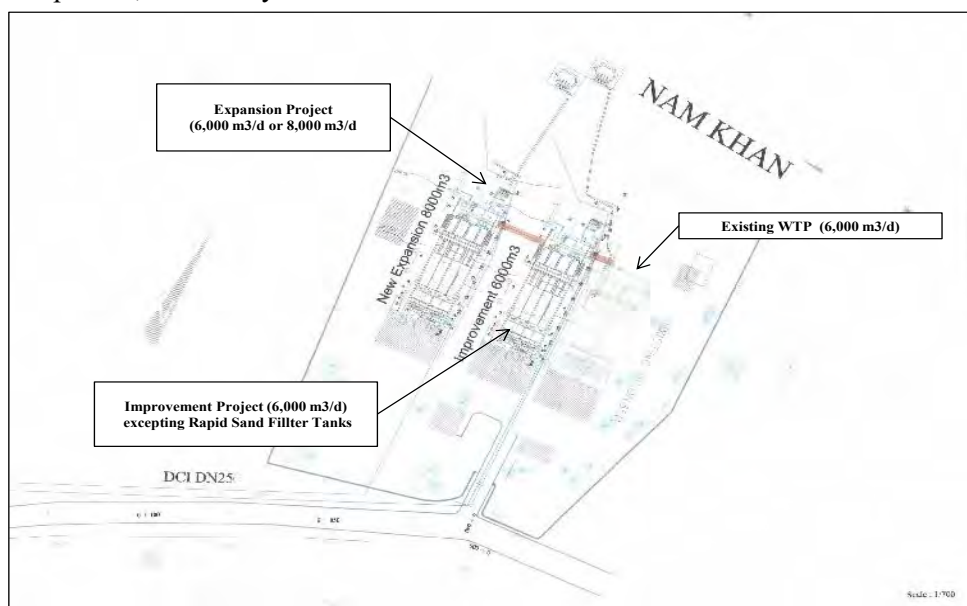


Source: LPWSE

**Figure 2.3.11 Existing and Future Water Supply System**

## (2) Present Condition of Nam Khan Water Treatment Plant

The existing and future layout plan of NamKhan WTP is shown in Figure 2.3.12. Although the design capacity of the existing purification plant is 6,000 m<sup>3</sup>/day, the intake pumps and rapid sand filters were expanded up to 12,000 m<sup>3</sup>/day in 2011.



Source: LPWSE

**Figure 2.3.12 Existing and Future Layout Plan of NamKhan WTP**



The existing status of the NamKhan WTP is summarized in Table 2.3.6.

**Table 2.3.6 Present Status of the NamKhan WTP**

Item	Initial Development (2001)	Existing (2011)
Intake pumps	3 units (submersible pump) 2 units (Siemens); Diameter: 150 mm Head: 22 m, Power: 23.5 kW, Q: 125 m <sup>3</sup> /h 1 unit (China); Diameter: 150 mm Head: 36 m, Power: 45 kW, Q: 450 m <sup>3</sup> /h	Replacement of 5 units (submersible pump) (GRUNDFOS); Diameter: 150 mm Head: 36 m, Power: 17 kW, Q: 295 m <sup>3</sup> /h
Raw water transmission pipeline	DCI DN300 mm= 140 m	DCI DN300 mm= 140 m
Water purification plant	6,000 m <sup>3</sup> /d	Added 6,000 m <sup>3</sup> /d, Total: 12,000 m <sup>3</sup> /d without flocculation and sedimentation tanks
Dosing station	1 dosing house Chlorine: - Before treatment: 0.1 mg/L - After treatment: 0.5-1 mg/L Alum: - Dry season: 10 mg/L - Rainy season: 50 mg/L In case of high turbidity, polymer is used. - Normally 0.5-1 mg/L due to turbidity	1 dosing house Chlorine: - Before treatment: 0.1 mg/L - After treatment: 0.5-1 mg/L Alum: - Dry season: 10 mg/L - Rainy season: 50 mg/L In case of high turbidity, polymer is used. - Normally 0.5-1 mg/L due to turbidity
Clear water tank	Tank capacity: 375 m <sup>3</sup> /d	- ditto-
Booster pumps, operation, and pumping station	3 units in total - 1 unit (Siemens); Diameter: 150 mm Head: 49 m, Power: 25.3 kW, Q: 120 m <sup>3</sup> /h - 2 units back wash pump from clear water tank 2 units (Siemens); Diameter: 150 mm Head: 10 m, Power: 7.5 kW, Q: 165 m <sup>3</sup> /h	3 units added, 6 units in total - 4 units clear water tank Pumps: 1 unit (Kubota); Diameter: 150 mm Head: 67 m, Power: 110 kW, Q: 450 m <sup>3</sup> /h - 2 units (China); Diameter: 150 mm (A). Head: 49 m, Power: 90 kW, Q: 390 m <sup>3</sup> /h (B). Head: 49 m, Power: 75 kW, Q: 330 m <sup>3</sup> /h
Transmission pipeline	DCI DN200 mm, L: 4,391 m	DCI DN 350 mm, L: 1,791 m replaced DCI DN200 mm, L: 2,600 m
Phousi Reservoir	1,000 m <sup>3</sup>	
Phounanong Reservoir		1,400 m <sup>3</sup>

Source: LPWSE

The operation record of NamKhan WTP is presented in Table 2.3.7. The annual water production is 4 million m<sup>3</sup> and the daily water production is 10,960 m<sup>3</sup>/d. The capacity of Nam Khan WTP was increased by 12,000 m<sup>3</sup>/d without facilities for flocculation and sedimentation in 2011. It is assumed that Nam Khan WTP is forced to operate over the design capacity. The 19% system loss of Nam Khan WTP indicates that improving the Nam Khan WTP is required urgently.



**Table 2.3.7 NamKhan WTP Operation Record in 2015**

ເດືອນ Month	ນໍ້າດູດຂຶ້ນ/pumping			ນໍ້າສົ່ງອອກ/Distribution			ນໍ້າເສຍ Water Loss	
	ນໍ້າດູດຂຶ້ນ Water Abstraction	ຊົ່ວໂມງແລ່ນໄປມ Pump running	ສະເລ່ຍ Average	ນໍ້າສົ່ງອອກ Water Distribution	ຊົ່ວໂມງແລ່ນໄປມ Pump running	ສະເລ່ຍ Average	Water Loss	Water Loss
	(m3)	(hour)	(m3/hour)	(m3)	(hour)	(m3/hour)	(m3)	(%)
1	2	3	4	5	6	7	8	9
1	330,560	1,251	264	267,967	2,015	133	62,593	18.94%
2	326,122	1,346	242	264,494	1,994	133	61,628	18.90%
3	344,023	1,490	231	273,420	1,638	167	70,603	20.52%
4	359,568	1,834	196	295,292	1,877	157	64,276	17.88%
5	375,754	2,171	173	314,342	2,177	144	61,412	16.34%
6	359,106	2,148	167	295,665	2,064	143	63,441	17.67%
7	376,236	2,142	176	308,825	2,158	143	67,411	17.92%
8	311,814	1,644	190	249,663	1,586	157	62,151	19.93%
9	286,860	1,306	220	226,809	1,401	162	60,051	20.93%
10	319,286	1,256	254	261,590	1,736	151	57,696	18.07%
11	318,188	1,249	255	259,814	1,874	139	58,374	18.35%
12	329,200	1,316	250	266,225	2,036	131	62,975	19.13%
Total	4,036,717	19,153	211	3,284,106	22,556	146	752,611	19%

Source: LPWSE

Nam Khan WTP has been drawing raw water from the Khan River. The annual raw water quality in 2015 was recorded as shown in Appendix Table 2.1. Turbidity is high from July to November.

### (3) Demarcations of Water Service Area in Luang Prabang District

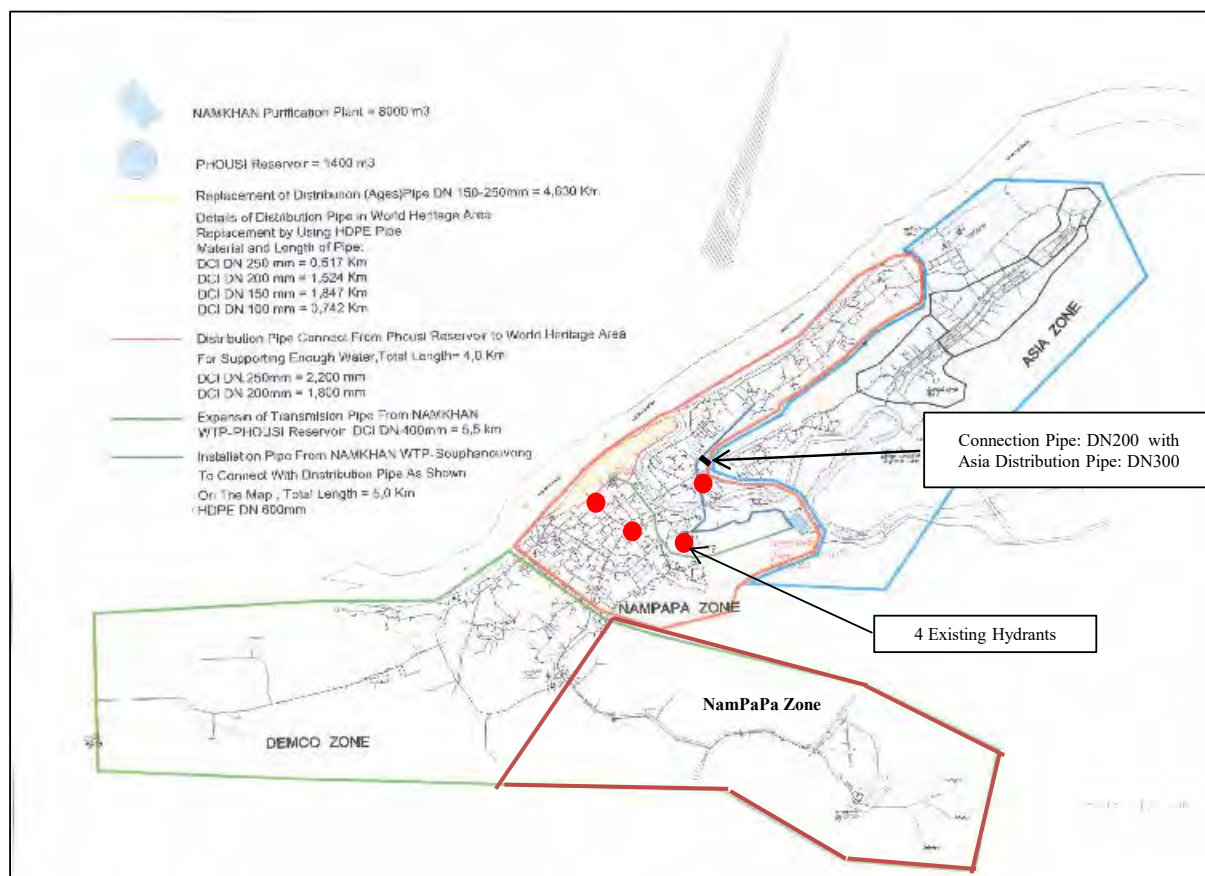
In 2016, the area of Luang Prabang District was divided into three zones, namely: LPWSE, the Thailand-owned Asia Nampapa Luang Prabang Company (Asia), and Demco De Lao Company (Demco), based on the agreement as shown in Table 2.3.8 and Figure 2.3.13. The concession period is 30 years. LPWSE buys the treated water at LAK 2,019/m<sup>3</sup>, since it is prohibited for private sector to collect a water fee directly from residents. LPWSE collects water fee from residents at LAK 2,500/m<sup>3</sup>.

**Table 2.3.8 Demarcations of Water Service Area**

Item	LPWSE (Existing)	Asia (Existing)	Demco (Future Plan)
Responsibility Zone*1	Central (Central Luang Prabang covered by Nam Khan and Phoupueng WTPs)	Northeast (from Khan River bank to Pakseuang and NR13)	Southwest (Kuateenieng Reservoir to Naxang Village, technical college, and Namdong Bridge)
Service Area (km <sup>2</sup> )	39 villages 13,264 km <sup>2</sup>	10 villages 19,963 km <sup>2</sup>	15 villages 32,164 km <sup>2</sup>
Served Population	32,259	12,151	18,047
Number of Subscribers	7,560	1,865	
Water Production Capacity (m <sup>3</sup> /d)	Dry season: 13,800 Rainy season: 20,700	6,000	9,000 in total 4,000 at Initial Stage
Length of Distribution (m) Total Length	37,852	25,191	14,214

Note \*1: Proposal on water supply responsibility zone demarcation, No 2809/ LPWSE, 12 July 2016

Source: LPWSE

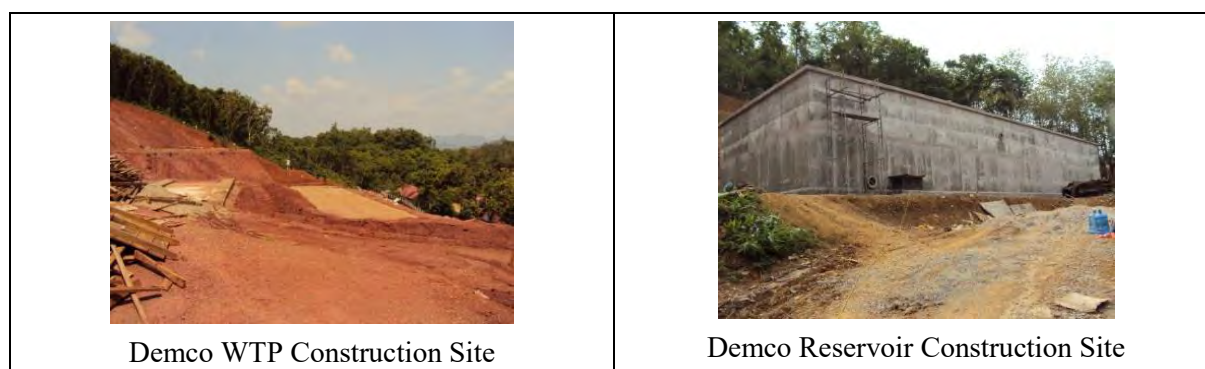


Source: LPWSE

**Figure 2.3.13 Demarcation Map of Water Service Area**

Demco water supply project is under construction. The outline of the project is as follows:

- 1) Implementation Schedule: To be completed by May 2017  
(It seems impossible to complete the project on time based from the results of the site reconnaissance at WTP, reservoir, and distribution main.)
- 2) Capacity of Demco WTP: 4,000 m<sup>3</sup>/d at the initial stage (9,000 m<sup>3</sup>/d at final stage)
- 3) Capacity of Demco Reservoir: 1,500 m<sup>3</sup>
- 4) Service Area: Southwest of Luang Prabang City



Source: JICA Survey Team

**Figure 2.3.14 Construction Sites of WTP and Reservoir**

#### (4) Water Demand Projection

The population and number of tourists are projected by the JICA Survey Team based on the recent data of population and tourist number. The forecasted population and number of tourists are summarized in Table 2.3.9.

**Table 2.3.9 Population and Tourist Projections**

Year	Population (persons)	Number of Tourist (persons/year)	
		Domestic	International
2015	90,400	161,712	445,872
2020	101,800	212,000	700,000
2025	114,400	293,100	800,000

Source: JICA Survey Team

The water demand projection is conducted based on the above projections and unit water consumptions adopted by the Master Plan for Water Supply System of Luang Prabang 2013 (hereinafter referred to as M/P) as shown in Table 2.3.10.

**Table 2.3.10 Water Demand Projection**

(Unit: M3/D)

Year	Domestic Use	Commercial & Industrial (C&I) Use			Public Use	Leakage (20%)	Average Day Demand	Max. Day Demand
		Tourist Use	C&I Use	Sub Total				
2015	18,080	144	3,469	3,613	231	5,481	27,406	30,146
2020	20,360	221	4,893	5,114	332	6,451	32,257	35,483
2025	22,880	259	6,184	6,443	476	7,450	37,250	40,975

Source: JICA Survey Team & Master Plan for Water Supply System of Luang Prabang (2013)

According to the M/P, the following water requirements are recommended to meet the maximum daily demand at each target year:

- By 2015: 27,000 m<sup>3</sup>/d from the Water Supply Improvement Project (Nam Khan WTP, Phouphuang WTP, and Asia WTP) excluding Souphanouvong WTP with a capacity of 1,000 m<sup>3</sup>/d due to the lack of the facility's reliability.
- By 2020: 33,000 m<sup>3</sup>/d under the Water Supply Expansion Project 1 (Souphanouvong WTP)
- By 2025: 39,000 m<sup>3</sup>/d under the Water Supply Expansion Project 2 (New WTP at the southwest zone)
- By 2030: 45,000 m<sup>3</sup>/d under the Water Supply Expansion Project 3 (NamKhan WTP)

Water demand projection for the three zones of LPWSE, Asia, and Demco is not conducted in the M/P. The JICA Survey Team tentatively projects the water demand at each zone as presented in Table 2.3.11.

**Table 2.3.11 Water Demand Projection for the Three Zones**

(Unit: m<sup>3</sup>/d)

Year	LPWSE	Asia	Demco	Remark
2015	15,570	5,865	8,711	<ul style="list-style-type: none"> <li>The present capacity of LPWSE is 22,000.</li> <li>The capacity of Asia WTP is 6,000 m<sup>3</sup>/d.</li> <li>Water shortage in Luang Prabang World Heritage Area is about 2,146 m<sup>3</sup>/d, since Demco WTP with a capacity of 4,000 m<sup>3</sup>/d is under construction.</li> <li>The project for improvement and expansion of Nam Khan WTP is required to meet the present and/or future water demand in Luang Prabang.</li> </ul>
2020	18,327	6,903	10,253	<ul style="list-style-type: none"> <li>The capacity of LPWSE will be 28,000 m<sup>3</sup>/d in case Nam Khan WTP expansion project with a capacity of 6,000 m<sup>3</sup>/d is implemented.</li> <li>The capacity of Asia WTP is 6,000 m<sup>3</sup>/d.</li> <li>The capacity of Demco is 4,000 m<sup>3</sup>/d.</li> <li>The surplus water production of LPWSE is about 9,673 m<sup>3</sup>/d after the completion of the expansion project of WTP with a capacity of 6,000 m<sup>3</sup>/d.</li> <li>Water shortage in Asia Zone is about 903 m<sup>3</sup>/d.</li> <li>Water shortage in Demco Zone is about 6,253 m<sup>3</sup>/d.</li> <li>LPWSE shall assist to supply water to Asia and Demco zones.</li> <li>The project for the expansion of Nam Khan WTP shall be implemented by 2020 in order to cope with the water shortage in Asia and Demco zones.</li> </ul>
2025	21,163	7,972	11,840	<ul style="list-style-type: none"> <li>The capacity of LPWSE will be 34,000 m<sup>3</sup>/d in case the expansion project with a capacity of 6,000 m<sup>3</sup>/d is implemented.</li> <li>The capacity of Asia WTP is 6,000 m<sup>3</sup>/d.</li> <li>The capacity of Demco WTP will be 9,000 m<sup>3</sup>/d in total.</li> <li>Water shortage in Asia Zone is about 1,972 m<sup>3</sup>/d.</li> <li>Water shortage in Demco Zone is about 2,840 m<sup>3</sup>/d.</li> <li>The new WTP construction project and/or Souphanouvong WTP expansion project shall be implemented by 2025 to secure the stable and safe water supply in Luang Prabang.</li> </ul>

Source: LPWSE and JICA Survey Team

Although the existing production capacity is theoretically at 28,000 m<sup>3</sup>/d including Asia WTP, the improvement and expansion of Nam Khan WTP are urgently required to meet not only the present water demand but also the future demand since Phouphueng WTP is affected by seasonal fluctuation and the efficiency of Souphanouvong WTP with high O&M cost is very low. It is required to supply water from Nam Khan WTP to Asia and Demco zones since the implementation schedule of Demco WTP project with a capacity of 9,000 m<sup>3</sup>/d is unknown.

The population served will increase from 62,457 to 101,800 in 2020. Residents and tourists will have stable and safe water supply in case the Nam Khan WTP expansion project with a capacity of 6,000 m<sup>3</sup>/d is implemented. Leakage in the distribution shall be improved with saved water of 1,470 m<sup>3</sup>/d, and the system loss at Nam Khan shall be decreased from 25% to 10% (saved water: 2,700 m<sup>3</sup>/d) after completion of the improvement project.

The water demand for tourists is projected by the JICA Survey Team as shown in Table 2.3.12 in order to consider the contribution of the water supply projects to tourism development.

**Table 2.3.12 Water Demand Projection of Tourists**

Year	Domestic Tourist		International Tourist		Total	
	Persons/year	Demand (m³/d)	Persons/year		Persons/year	Demand (m³/d)
2015	161,712	22	445,872	2015	161,712	22
2020	212,000	29	700,000	2020	212,000	29
2025	293,100	40	800,000	2025	293,100	40

Source: JICA Survey Team & Master Plan for Water Supply System of Luang Prabang

Water consumption rate at each category is estimated as presented in Table 2.3.13. Water supply improvement and expansion projects are supposed to contribute a water consumption rate with 16% to the tourism industry after completion of the projects.

**Table 2.3.13 Water Consumption Rate at Each Category**

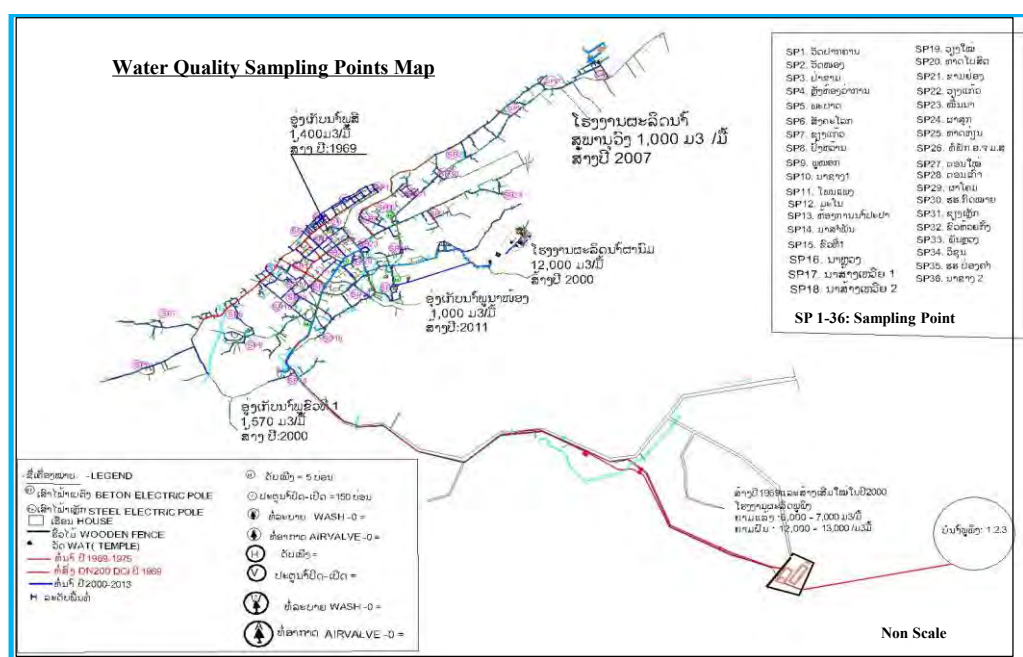
Year	Domestic Use	Commercial and Industrial (C&I) Use			Public Use	Leakage	Total
		Tourist Use	C&I Use	Subtotal			
2015	65.97%	0.53%	12.66%	13.18%	0.84%	20%	100.00%
2020	63.12%	0.68%	15.17%	15.85%	1.03%	20%	100.00%
2025	61.42%	0.70%	16.60%	17.30%	1.28%	20%	100.00%

Source: JICA Survey Team and Master Plan for Water Supply System of Luang Prabang

Water supply improvement and expansion projects are supposed to contribute a water consumption rate with 16% to the tourism industry after completion of the projects in 2020.

## (5) Water Quality

LPWSE regularly conducts water quality sampling on the water distribution system as shown in Figure 2.3.15.



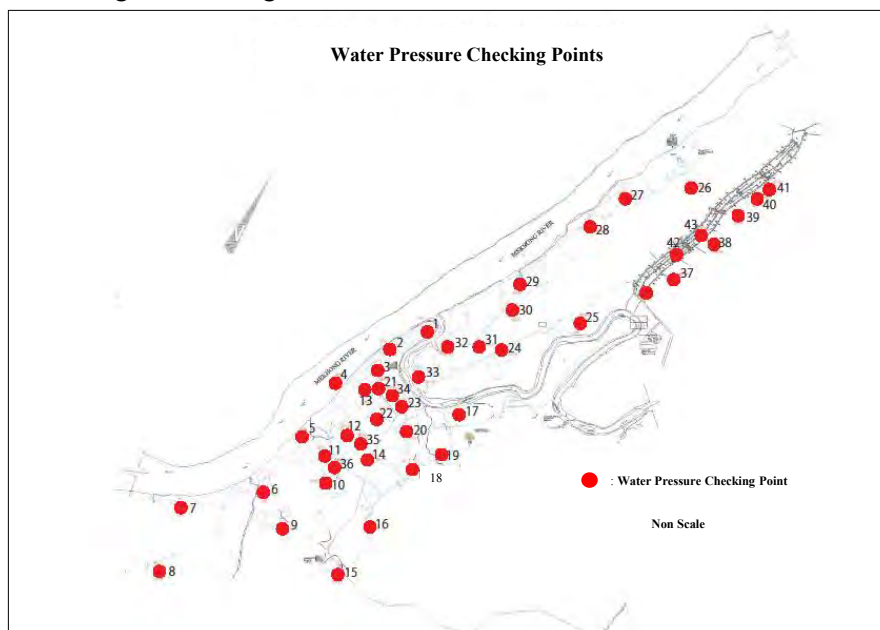
Source: LPWSE

**Figure 2.3.15 Water Quality Checking Points**

Results of the water quality test on the distribution system in 2015 are summarized in the Appendix Table 2.2. The water quality on the distribution mains generally satisfies the drinking water quality standard. Residual chlorine on the distribution mains is lower in the low water pressure zone of the Phousi and Souphanouvong reservoirs.

#### (6) Water Pressure

The water pressure of distribution mains has been also checked by LPWSE as shown in Figure 2.3.16. The annual records of water pressure are presented in the Appendix Table 2.3. The water pressure on the distribution mains has a tendency to be low in the Phousi Reservoir and Souphanouvong Reservoir distribution zones along the Mekong River.

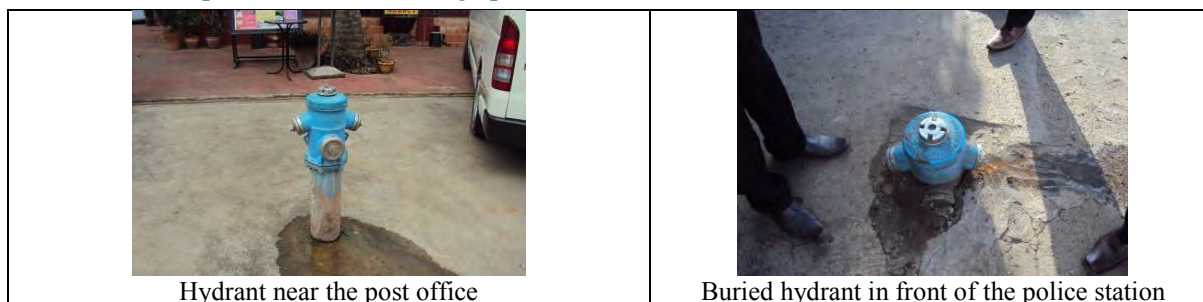


Source: LPWSE

**Figure 2.3.16 Water Pressure Checking Points**

#### (7) Fire Hydrants

There are only four units of hydrant in Luang Prabang District as shown in Figure 2.3.17. The installation and maintenance of hydrants shall be conducted by LPSWE, while the operation will be conducted by the fire station. In case fire spreads in the world heritage preservation zone, it will be arrested due to the proper arrangement of hydrant installation by the project. Decoration of hydrant to meet the landscape of the world heritage preservation zone shall be considered.



Source: JICA Survey Team

**Figure 2.3.17 Existing Fire Hydrants**



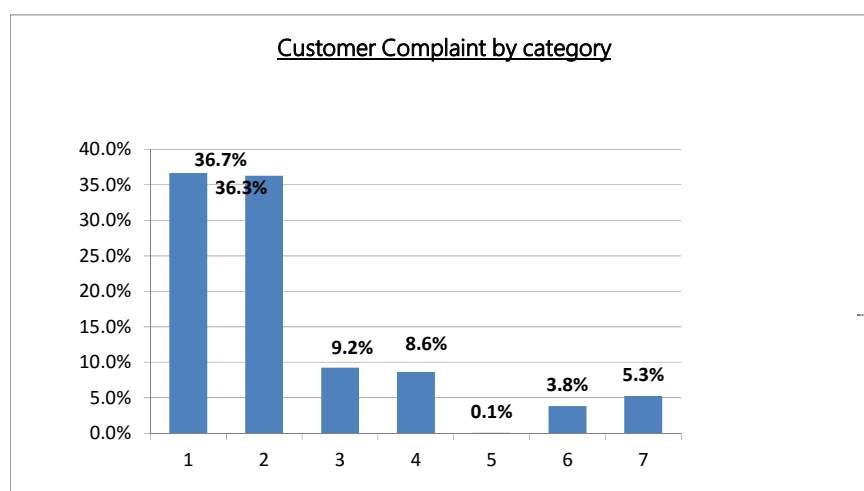
## (8) Customer Complaint Record

Customer complaint record (January-August 2015) in LPWSE is presented in Table 2.3.14 and Figure 2.3.18. It shows that meter malfunction and leakage accidents are more than 70%. The ratio of repair works period within two days is about 40% and almost all works are completed within a week.

**Table 2.3.14 Customer Complaint Record (January-August 2015)**

Category	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Total
1 Meter and billing	44	60	85	87	57	54	99	58	544
2 Pipe	102	106	74	70	43	43	57	43	538
3 Valve	14	14	21	18	18	18	16	18	137
4 Pressure	8	2	9	12	25	25	22	25	128
5 Quality	-	1	-	-	-	-	-	-	1
6 Service	-	7	17	15	6	6	-	6	57
7 Others	16	15	13	7	9	9	-	9	78
Total	184	205	219	209	158	155	194	159	1,483

Source: LPWSE



Source: LPWSE

**Figure 2.3.18 Customer Complaint by Category (January-August 2015)**

## (9) Proposals of Projects and Programs

In the consideration of the abovementioned water supply conditions, the following projects/programs are recommended:

### 1) Dispatch of Experts and/or Volunteers

Regarding the management of water supply system, the dispatch of experts and/or volunteers is requested by LPWSE.

### 2) Nam Khan WTP Improvement Project: for Grant Aid Project

- Construction of mixing chamber and sedimentation tanks
- Construction of clear water tank: 375 m<sup>3</sup>
- Four replacement pumps and three additional pumps

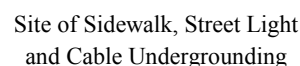
- Transmission pipeline DCIP DN250 L: 2.6 km from Nam Khan WTP to Phounanong Reservoir
- 3) Water Distribution System Improvement Project: for Grant Aid Project
- Replacement of DN100-DN250 L: 8.63 km for leakage prevention
  - Installation of DN600 L: 5 km between Nam Khan WTP and Souphanouvong Reservoir to supply treated water to the northeast service area instead of the inefficient Souphanouvong WTP
- 4) Fire Hydrants Installation Project: for Grant Aid Project
- 5) Nam Khan WTP and Water Supply System Expansion Project: for Grant Aid Project
- Installation of intake pumps and raw water conveyance
  - Construction of Nam Khan WTP: 6,000 m<sup>3</sup>/d
  - Transmission pipeline DCIP DN400 L: 5.5 km from Nam Khan WTP to Phousi Reservoir
- 6) Phou Phueng WTP Improvement Project
- The project shall be reconsidered from the viewpoint of reliability of water source.
- Installation of softening equipment to remove calcium carbonate (CaCO<sub>3</sub>) from the raw spring water
- 7) Souphanouvong WTP Expansion Project
- Expansion of WTP capacity to 6,000 m<sup>3</sup>/d
  - Construction of water conveyance facilities from raw Mekong River water
- 8) Southern District New WTP Construction and Water Supply System Expansion Project
- The project is a long-term project since the land use plan is not yet concrete.
- Southern District New WTP Construction Project: 6,000 m<sup>3</sup>/d
  - Expansion of water supply system

## **2.3.4 Drainage and Sewerage**

### **(1) Present Condition of Drainage and Sewerage System**

In Luang Prabang District, the combined sewer system is adopted for the management of drainage and sewerage. Stormwater flows normally through the natural topographic features, such as streams, channels along roads, and wetlands, for stormwater buffering. However, the drainage facilities are aged, damaged, and clogged due to waste dumping. In the suburbs and rural areas, most of the streets have no drainage channels for stormwater collection. Consequently, some places, even the World Heritage Area, are suffering inundation due to insufficient flow capacity of the drainage system. There is no sewerage system in Luang Prabang at present. Most of the houses have their own septic tanks. The domestic wastewater is not properly treated and is discharged at several points into rivers, streams, and wetlands.

The Master Plan for Drainage and Sewerage System of Luang Prabang (hereinafter referred to as M/P for drainage and sewerage) was formulated in 2013. The project site is inside Zone I-B which is a high priority area for improving stormwater drainage system according to the M/P for drainage and sewerage as shown in Figure 2.3.20. The project is identified as an urgent project by the M/P for drainage and sewerage. This project will improve ponds and the ponds will function as natural wastewater treatment.



**Figure 2.3.19 Present Condition of Drainage, Side Ditch and Street Light**

to use these roads for their sightseeing.



**Figure 2.3.20 Zone I-B Priority Projects**



Source: JICA Survey Team

**Figure 2.3.21 Zone I-B Priority Projects**

## (2) Priority Projects of UDAA

Based on the M/P for drainage and sewerage, the required projects are as follows:

### 1) Dispatch of Experts and/or Volunteers

Regarding the management of water supply system, the dispatch of experts and/or volunteers is requested by UDAA.

### 2) Drainage and Sewerage Development in the World Heritage Area (Zone I-A)

The following projects are proposed by UDAA:

- Thirty-three ponds conservation: to be conducted by Agence Française de Développement (AFD),
- Separate sewer plan: long-term project due to the required careful study,
- Community-based combined septic tank plan: the pilot project is conducted by AFD,
- Sidewalk and side ditch improvement: for grant aid project, and
- Facilitation of street light and underground cable: for grant aid project.

### 3) Drainage and Sewerage Development in the World Heritage Area (Zone I-B)

The following projects are proposed by UDAA:

- Drainage improvement along Manolom Village office to Department of Finance: for grant aid project,
- Settled sewerage system: careful study is required,
- Ninety-nine ponds conservation: careful study is required,
- Lagoon wastewater treatment: careful study is required, and
- Separate sewer plan: long-term project due to the required careful study.

### 4) Flood Protection

According to DPWT, the lower areas along the tributaries were inundated in 2008 due to the backwater from the Mekong River and the Khan River. The DPWT proposes to construct a gate preventing backwater to the tributary at six locations.

## 2.3.5 Solid Waste Management

### (1) Present Condition of Solid Waste Management

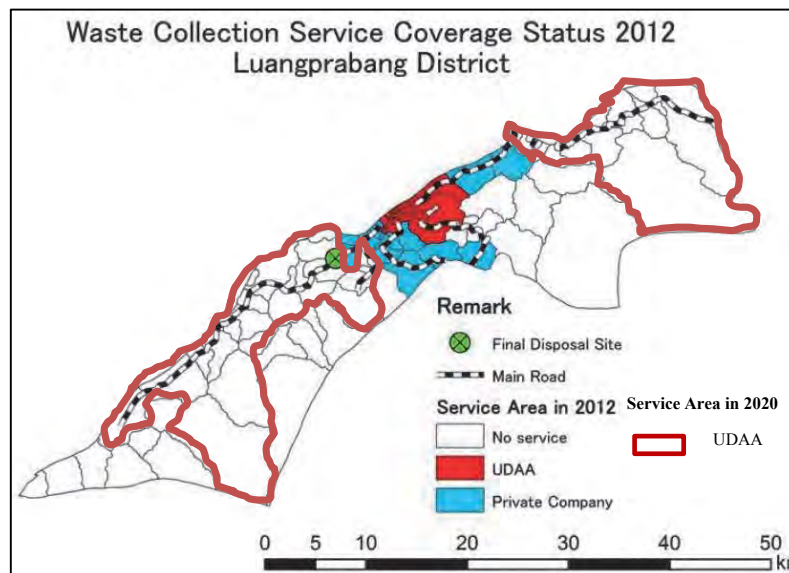
Based on the existing situation of the disposal site in Lak Paed Village built in 1996, its capacity is limited to serve the solid waste generated. Solid waste generation and served population are projected by the Laos Pilot Program for Narrowing the Development Gap Towards ASEAN Integration, 2010-2015 as shown in Table 2.3.15. Figure 2.3.22 shows the UDAA's garbage collection area in 2013 and 2020.

**Table 2.3.15 Solid Waste Generation**

Description	2013		2020	
	UDAA	Private	UDAA	Private
Solid Waste Generation (t/d)	20.6	16.0	54.4	21.2
Total (t/d)	36.6		75.6	
Served Population (persons)	33,362	11,940	48,319	15,900
Total (persons)	45,302		64,219	
Served Ratio	56%		68%	

Source: UDAA

The solid waste generation in Luang Prabang district was estimated at 36.6 tons/day (UDAA: 20.6 tons/day and private enterprise: 16 tons/day) in 2013 and 75.6 tons/day (UDAA: 54.4 tons/day and private enterprise: 21.2 tons/day) in 2020.



Source: UDAA

**Figure 2.3.22 Waste Collection Area**

### (2) Present Condition of Waste Disposal Sites

The amount of garbage collected in 2015 was reported to be more than 70 tons/day. Thus, the provincial authority agreed and decided to select a new disposal site to be located 19 km from Ban Xanghai Village, Pak Ou District, Luang Prabang Province as shown in Figure 2.3.23. The site is covered by forest and timber crop. The access to the site is a rough road with a distance of 1 km from Pak Seng



Road. The project is stipulated to be one of the highest priority projects by the 8<sup>th</sup> National Social Economic Development Plan. Additional expansion of the existing disposal site is conducted by UDAA at present.



Source : UDAA

**Figure 2.3.23 Location of Waste Disposal Sites**

### (3) Waste Collection and Disposal Fee

The waste collection and disposal fees of UDAA in 2015 are presented in the Appendix Table 2.5.

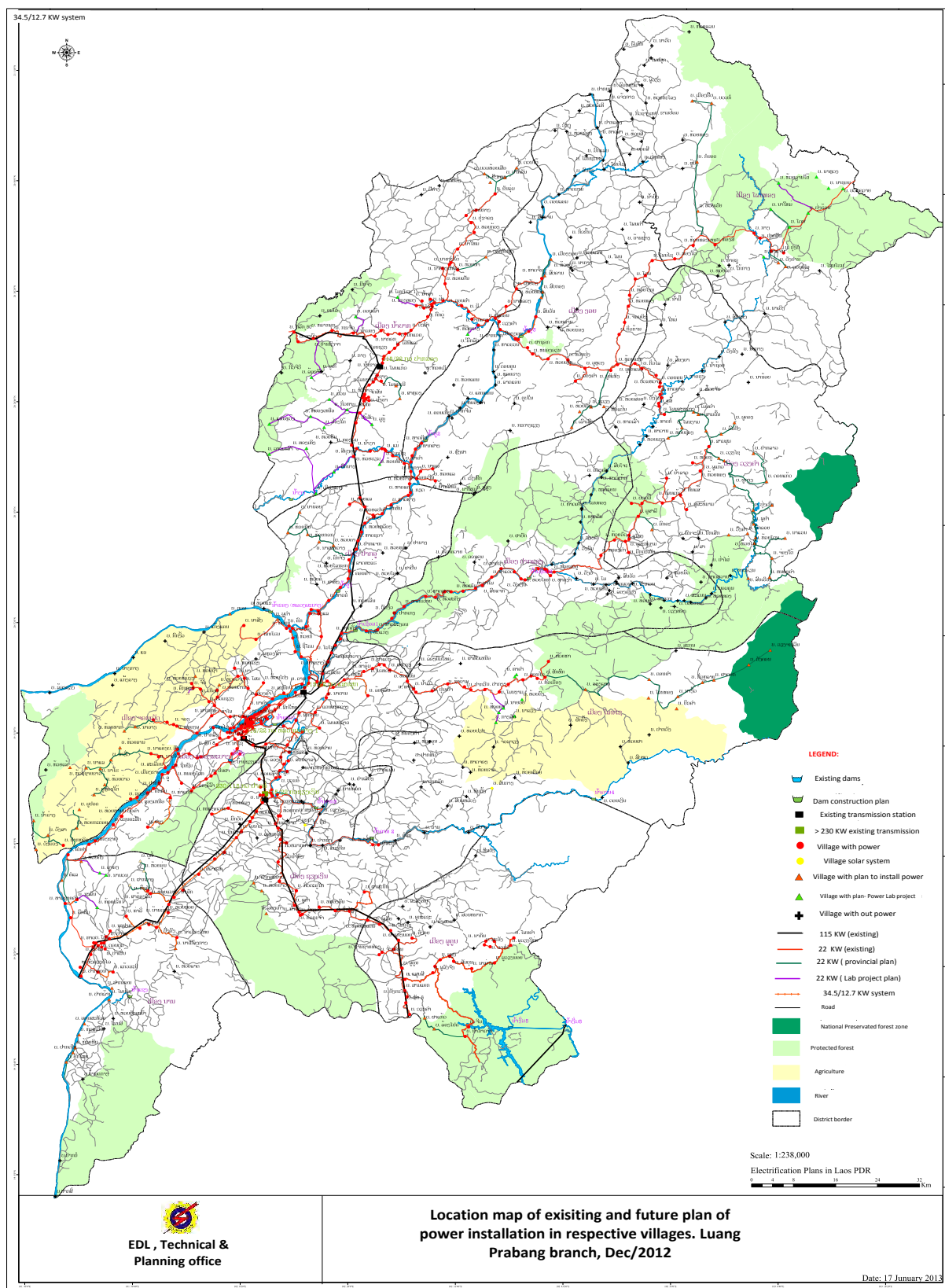
## **2.3.6 Power Supply and Hydro Power Plant**

### (1) Present Condition of Power Supply

Electricite Du Laos (EDL) is responsible for the power supply in Luang Prabang Province. Future, ongoing, and existing facilities (power plants, power transmission line, substations, and distribution line) are indicated in the power supply network map in Luang Prabang Province as shown in Figure 2.3.24. The power supply system is summarized below;

- EDL executed the underground cable project together with AFD.
- Transformers in the World Heritage Area are covered by houses with traditional roof.
- EDL intends to conduct the following underground cable projects:
  - Road along the side of the Khan River,
  - Road along the side of the Mekong River, and
  - Phou Vao Road.
- There are four substations, namely: (i) Kua Tee Neung in Luang Prabang District, (ii) Xieng Ngeun District, (iii) Namthuom (Nam Bak District), and (iv) Houay Saen (Pakseuang).
- Kua Tee 1 Substation with 230/115 kV supplies power to Luang Prabang protection area.





Source: EDL

**Figure 2.3.24 Power Supply System in Luang Prabang Province**

## (2) Hydropower Plant

Current conditions of Hydropower plant (HPP) of Khan river are summarized below:

- Nam Khan Dam 2 HPP operated in February 2016 and Nam Khan Dam 3 HPP operated in April 2016
- Power production of Nam Khan Dam 3 HPP: 60 MW
- Power production of Nam Khan Dam 2 HPP: 130 MW
- Nampapa installed the waterway at Nam Khan Dam 3 for supplying water to its WTP in the future.
- Nam Khan Dam 1 HPP under study

Ou river also has an existing HPP and future plan for HPP as summarized below:

- Nam Ou River Dam 1 and 3 HPP are under study.
- Power production of Nam Ou River Dam 2 HPP: 130 MW
- Nam Ou River Dam 2 HPP started operation in February 2016.



Source: JICA Survey Team

**Figure 2.3.25 Facilities of EDL**

The Ban Mout Hydrological Station is about 9.2 km downstream of Nam Khan Dam 3 HPP, which has kept observation data of water level and flow since 1960. The drainage area of Ban Mout Hydrological Station is 7,321 km<sup>2</sup>, and the catchment area of the estuary of the Khan River is 7,620 km<sup>2</sup>. The statistics of the daily variation amplitude of water level in Ban Mout Hydrological Station from 1960 to 2004 are presented in Table 2.3.16.

**Table 2.3.16 Daily Variation of Ban Mout Hydrological Station**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max (m)	0.17	0.21	0.30	0.93	1.43	3.12	10.02	7.31	3.77	1.24	1.12	0.60
Average (m)	0.05	0.07	0.10	0.19	0.38	0.79	1.59	1.98	1.09	0.43	0.22	0.11

Source: Supplementary Report of Feasibility Study for Nam Khan 3 Hydropower Project, EDL, Oct. 2012 (Nam Khan 3 HPP F/S)

Variation amplitude of water level of Khan River is relatively small during the dry season from November to May. The daily maximum variation amplitude of water level is 1.43 m during the 44 years and the mean value of variation amplitude of water level is less than 0.5 m. The flow on the Khan River is relatively stable during the dry season. Because of the rainy season from June to October, the flood on the Khan River basin, mainly caused by stormwater, will lead to comparatively large variation amplitude of water level.

**Table 2.3.17 Annual and Monthly Perennial Average Inflow of the Nam Khan 3 HPP After Nam Khan 2 HPP Regulates and Compensates for Runoff of Nam Khan 3 HPP (unit: m<sup>3</sup>/s)**

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
1960	31.02	51.66	286.87	206.40	76.94	46.90	36.37	34.93	34.38	33.63	33.89	38.18					
1961	84.63	102.71	131.59	348.43	168.60	71.90	42.54	38.47	40.72	39.50	38.19	46.96					
1962	88.62	144.38	240.49	156.01	95.34	55.33	40.70	36.50	34.41	37.37	34.02	47.92					
1963	69.15	599.08	412.79	407.95	149.26	107.55	71.52	54.26	51.22	51.49	48.35	82.17					
1964	53.32	187.51	292.32	283.92	152.13	87.31	64.73	52.13	54.22	50.42	48.35	73.74					
1965	98.19	256.80	216.09	191.86	107.56	76.07	59.01	46.36	38.32	37.36	42.16	77.91					
1966	67.18	161.82	376.34	285.85	99.81	70.74	53.88	42.54	42.73	44.94	44.79	57.66					
1967	53.29	95.51	188.86	313.95	112.40	57.46	41.38	36.19	36.89	40.49	43.00	56.99					
1968	46.20	43.82	156.14	112.48	55.33	40.21	35.15	34.42	33.50	33.44	34.44	30.55					
1969	48.83	185.55	261.07	146.32	82.56	59.11	36.24	34.91	34.56	33.19	35.21	77.89					
1970	145.58	212.55	265.50	328.49	109.50	56.78	41.38	35.33	34.27	33.76	34.02	46.54					
1971	45.35	248.75	407.95	157.94	74.61	46.12	38.28	34.72	33.18	32.42	34.42	34.76					
1972	34.15	78.84	475.65	241.28	178.29	79.65	46.80	35.52	35.06	37.67	33.54	43.00					
1973	36.67	122.27	352.60	540.70	177.32	90.31	57.56	48.35	45.02	44.26	48.87	88.48					
1974	69.12	187.56	312.58	206.40	176.36	86.57	43.80	40.70	35.24	38.00	35.17	43.70					
1975	51.48	126.43	223.10	388.72	177.05	70.94	52.92	39.24	41.11	42.43	36.73	48.11					
1976	43.34	90.01	286.55	148.36	108.53	59.79	39.24	35.97	34.72	34.42	37.27	44.25					
1977	34.79	62.19	72.15	164.79	76.75	42.25	34.92	35.20	34.24	33.05	33.00	49.64					
1978	43.83	99.64	328.34	202.31	142.44	70.83	44.28	36.39	34.40	33.52	33.45	62.96					
1979	78.81	87.60	198.05	165.70	61.53	40.02	38.66	33.47	32.44	32.43	33.41	29.77					
1980	45.85	95.62	156.32	148.42	94.57	49.22	36.32	38.47	33.61	33.99	33.32	54.79					
1981	99.16	258.13	287.79	245.16	175.42	68.60	41.47	35.68	37.18	37.03	33.66	41.70					
1982	45.50	116.75	432.98	287.79	244.19	51.00	43.99	36.29	39.88	50.08	38.71	57.59					

Source: Nam Khan 3 HPP F/S

Nam Khan 3 HPP will discharge process water flow varying from 27 m<sup>3</sup>/s during the dry season to 547 m<sup>3</sup>/s during the rainy season as shown in Variation amplitude of water level of Khan River is relatively small during the dry season from November to May. The daily maximum variation amplitude of water level is 1.43 m during the 44 years and the mean value of variation amplitude of water level is less than 0.5 m. The flow on the Khan River is relatively stable during the dry season. Because of the rainy season from June to October, the flood on the Khan River basin, mainly caused by stormwater, will lead to comparatively large variation amplitude of water level.

On the average, Nam Khan 3 HPP will perennially discharge process water flow of more than 35 m<sup>3</sup>/s. EDL promises to daily discharge water for river maintenance flow, LPWSE's required demand, and flow for environmental consideration. The following daily discharge flows from Nam Khan 3 HPP are agreed between Nam Khan 3 HPP and LPWSE based on the decision paper on daily discharge water for river maintenance flow No. 2826/ LPWSE, 12 July 2016.

- Minimum discharge: 15 m<sup>3</sup>/s (1,296,000 m<sup>3</sup>/d)
- Discharge during generator running: 44 m<sup>3</sup>/s (3,802,000 m<sup>3</sup>/d)

## 2.3.7 Fire Prevention

### (1) Present Condition of Fire Prevention in Luang Prabang Province

The Fire Department under Luang Prabang Province maintains the following existing equipment: seven units of large fire engine with a capacity of 10,000 m<sup>3</sup>, three units of medium fire engine with a capacity of 6,000 m<sup>3</sup>, and two units of small fire engine with a capacity of 3,000 m<sup>3</sup>. The Fire Department requests to provide eight units of large fire engine (10,000 m<sup>3</sup>) and one unit of fire engine with ladder in order to adequately control a fire in Luang Prabang. Another fire station is located at the airport. At this moment, there are only 4 fire hydrants in the World Heritage Area and water for fire fighting is pulled directly from pumping cars.



Figure 2.3.26 Fire Station

It is obligated for a household to set up at least a 5-kg extinguisher. Hotels and restaurants are obligated to provide extinguishers and sprinklers in their own building. The sprinkler system is not

adopted in Luang Prabang at present. The number of extinguishers depends on the floor area for each building, and five to ten units of extinguisher are set up at hotels/restaurants on average. The extinguisher shall be purchased from the Fire Department. Firefighting facilities shall be inspected every three months. It is regulated for a building to keep a setback of 3 m to 10 m from the road.

A community-based fire brigade is organized in the world heritage preservation zone. There are 18 firefighting and rescue groups in 126 villages in Luang Prabang. The group consists of a fire station, a police station, and seven villages. Each village appoints four to five volunteers for the fire brigade. Two units of extinguisher are donated to each group. One-day training for firefighting and rescue shall be conducted once a year.

## (2) Past Fire Incidents

Fire incidents in the last five years in Luang Prabang Province are reported in the Appendix Table 2.6. It is reported that there were no big damages and losses from the incidents and the average losses are at LAK 5 million (USD 700)/case. There are neither records nor location of fire incidents. According to memories of the Fire Department personnel, the number of fire incidents in the World Heritage Area is one in 2011, two in 2012, one in 2013, one in 2014 and two (house and hotel) in 2015.

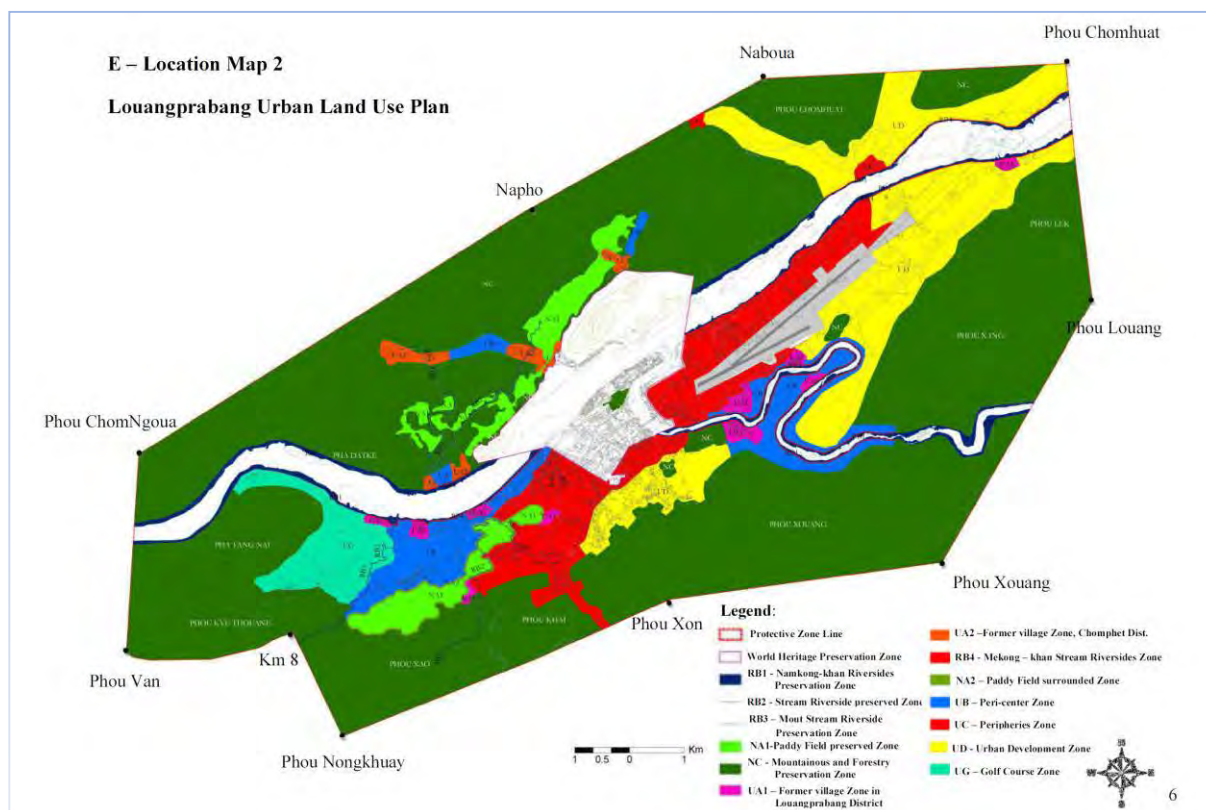
## 2.4 Preservation of the World Heritage Area

### 2.4.1 City Planning

In Lao PDR, there is an institution of city planning that regulates zoning and development of infrastructure. The plan was established by MPWT, and it covers the area which includes the central urban area of Luang Prabang District. Figure 2.4.1 is the latest land use plan established in 2012. It has the following characteristics:

- The central part (white part) of the city planning area which equals to the World Heritage Area totally follows the alignment mentioned in Plan de Sauvegarde et de Mise en Valeur (PSMV).
- The area along the Mekong River and Khan River is designated as natural conservation area.
- Zoning around the World Heritage Area accepts low density development. It is designated as an area to prioritize environmental preservation.
- Future urban development area (yellow part) is planned to be situated in the south of the World Heritage Area and north of the airport.





Source: “Regulation on Louangprabang Urban Planning (2012)”

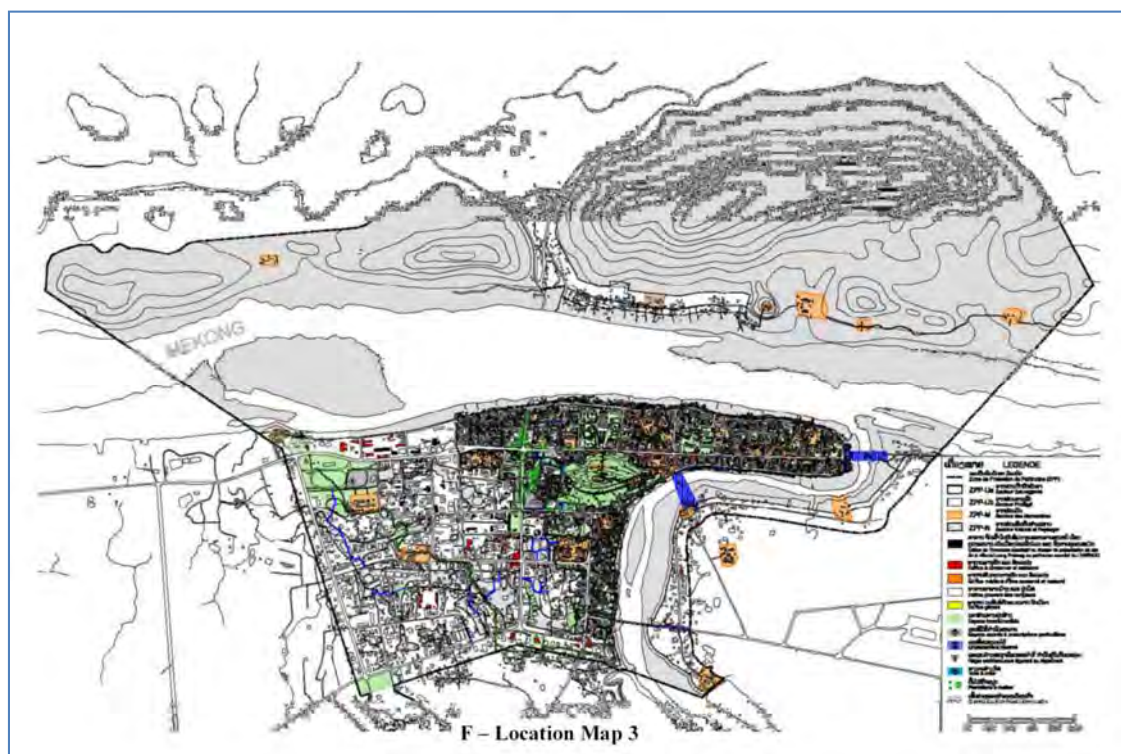
**Figure 2.4.1 Land Use Plan of Buffer Zone**

## 2.4.2 Plan for the Heritage Area and the Regulation for Development

According to the UNESCO official website, the “Town of Luang Prabang” has an area of 820 hectares between Mekong and Khan Rivers, including a part of the other side of Mekong. This cultural heritage, with a 600-year history, is an ancient imperial capital with fusion of traditional architecture and Lao urban structures built by the European colonial authorities in the 19th and 20th centuries. Its unique, remarkably well-preserved townscape illustrates a key stage in the blending of these two distinct cultural traditions. The World Heritage Office says that there are 610 registered buildings inside the Heritage Area.

The PSMV, which was elaborated in 2001 on French initiative, has been the legal basis of all regulations on land use, architectural restrictions, and building rehabilitation in the Heritage Area. PSMV is now being revised, considering the latest circumstances, to be finalized by the end of 2017.

The outline and restrictions by zone prescribed in PSMV are shown in Table 2.4.1.



Source: “Regulation on Luang Prabang Urban Planning (2012)”

**Figure 2.4.2 Land Use Plan of World Heritage Area**

**Table 2.4.1 Outline and Restrictions by Zone Prescribed in PSMV**

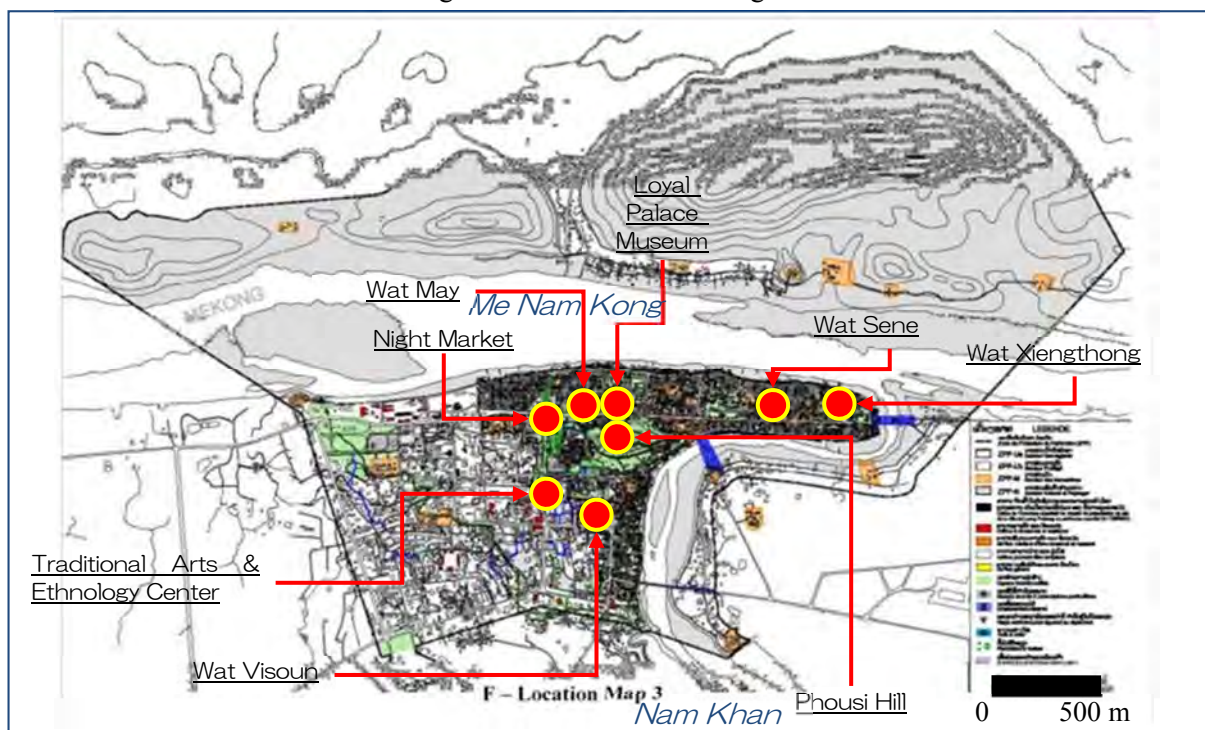
Outline	ZPP-Ua	ZPP-Ub	ZPP-N
<b>1. Situation</b>	<ul style="list-style-type: none"> <li>Peninsula between Nam Khan and Mekong.</li> <li>Phousi Hill is not included.</li> </ul>	<ul style="list-style-type: none"> <li>To the south of ZPP-Ua</li> <li>Right banks of Nam Khan and Mekong</li> </ul>	<ul style="list-style-type: none"> <li>Divided into four zones: natural forest zone, wetlands, river banks, and Phousi Hill.</li> </ul>
<b>2. Character</b>	<ul style="list-style-type: none"> <li>Mainly residential area with some equipment, commerce, and service activities along the main roads and secondary roads.</li> <li>Activities directly linked to tourism present some risks to change the nature of buildings' heritage value.</li> </ul>	<ul style="list-style-type: none"> <li>Mainly residential area with some equipment, commerce, and service activities along the main roads and secondary roads.</li> </ul>	<ul style="list-style-type: none"> <li>This zone constitutes a principal component of site inscription to the list of world heritage.</li> </ul>
<b>3. Particular Attention regarding New Constructions, etc.</b>	<ul style="list-style-type: none"> <li>Respect for adequacy of architectural type and detail of decoration</li> <li>Materials and colors used both in restoration work as well as in new construction</li> <li>Positioning of vegetation with reference to fences and land lots, maintenance, or reconstruction of vegetal frames</li> </ul>	<ul style="list-style-type: none"> <li>Respect for adequacy of architectural type and detail of decoration</li> <li>Materials and colors used both in restoration work as well as in new construction</li> <li>Positioning of vegetation with reference to fences and land lots, maintenance, or reconstruction of vegetal frames</li> </ul>	<ul style="list-style-type: none"> <li>Guarantee the current natural characteristics and integrity by preserving vegetal cover and management of wastewater discharge</li> </ul>



Outline	ZPP-Ua	ZPP-Ub	ZPP-N
<b>4. Rehabilitation</b>	<ul style="list-style-type: none"> <li>Respect regulations so that urban landscape will not be damaged.</li> </ul>	<ul style="list-style-type: none"> <li>Act with flexibility according to circumstances.</li> <li>Permit the relocation of a building.</li> <li>Prohibit leaving traces of destruction.</li> </ul>	<ul style="list-style-type: none"> <li>Prohibit any reconstruction or restoration that might damage the urban landscape.</li> <li>Prohibit destruction of buildings.</li> </ul>
<b>5. Road System</b>	<ul style="list-style-type: none"> <li>Prohibit enlargement of existing carriage ways.</li> <li>Prohibit enlargement of sidewalks.</li> </ul>	<ul style="list-style-type: none"> <li>Limit enlargement of existing carriage ways to 50% at maximum.</li> <li>Prohibit enlargement of sidewalks.</li> </ul>	<ul style="list-style-type: none"> <li>Prohibit enlargement of existing carriage ways.</li> <li>Prohibit enlargement of sidewalks.</li> </ul>
<b>6. Nature</b>	<ul style="list-style-type: none"> <li>Prohibit cutting down existing trees.</li> </ul>	<ul style="list-style-type: none"> <li>Prohibit cutting down existing trees.</li> </ul>	<ul style="list-style-type: none"> <li>Prohibit cutting down existing trees.</li> </ul>
<b>7. Drainage</b>	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>Pay special attention to drainage so that the wetlands pollution will be alleviated.</li> </ul>	<ul style="list-style-type: none"> <li>Pay attention to drainage so as not to give negative impacts on the functions in the zone.</li> </ul>
<b>8. Construction (Maximum Height)</b>	<ul style="list-style-type: none"> <li>No construction can exceed more than one floor above the ground.</li> </ul>	<ul style="list-style-type: none"> <li>No construction can exceed more than one floor above the ground.</li> </ul>	<ul style="list-style-type: none"> <li>Number of floors authorized: one floor on open stilts.</li> </ul>

Source: "PSMV: Heritage Preservation and Development Master Plan"

Main tourism resources in the Heritage Area are as shown in Figure 2.4.3.



Source: JICA Survey Team

**Figure 2.4.3 Main Tourism Resources in Heritage Area**

## Chapter 3 Review of NSED and RSED

### 3.1 8th Five-year National Socio-economic Development Plan (NSED)

#### 3.1.1 Outline

In Lao PDR, the National Socio-economic Development Plan has been formulated as a criteria of economic and social development plan for the recent five years. The latest national socio-economic development plan covers the plan from 2016 to 2020 called as the “8<sup>th</sup> Five-Year National Socio-economic Development Plan (NSED)”.

NSED firstly indicates a long-term vision until year 2030. Lao PDR for 2030 aims to be innovative, green (environmentally considered), sustainable and economically developed as an upper class semi-developed country. In response to this, Lao PDR aims to grow out from the least developed countries (LDC) until 2020, which is the targeted period of the NSED with the following five policies:

- Continuous economic development and poverty reduction under the stable macro-economy;
- Inclusive and sustainable development harmonizing with economic development, culture, and environmental preservation;
- Strengthening of human resources;
- Politically stable, peace, social order, cooperation, democracy, and keeping social equity; and
- Expansion of international cooperation.

Based on the policies above, the 8<sup>th</sup> NSED mentions the following outputs in order to achieve the targeted three goals. These foci on economic development with sustainability, inclusiveness and balances between each region by advancement of domestic companies’ competitiveness descending from international cooperation and regional integration.

**Table 3.1.1 Goals and Outputs Based on the Policies of the 8<sup>th</sup> NSED**

Goals	Outputs
Goal 1: Sustainability and inclusive economic growth	Output 1: Sustainable and inclusive economic growth Output 2: Stability of macro-economy Output 3: Integrated development plan and budgetary provision Output 4: Balanced development in the rural area and regions Output 5: Capacity development of public/private workers Output 6: Enhancement of domestic/international competitiveness for local companies Output 7: International cooperation and regional integration
Goal 2: Capacity development, poverty reduction, retaining cultures, political stability, peace, social equity, and ensuring transparency	Output 1: Poverty reduction and improvement for quality of life Output 2: Food security and reduction of undernourishment Output 3: Access for high quality education Output 4: Access for high quality medical care and preventive medicine Output 5: Substantiality of social welfare Output 6: Retention of traditions and cultures Output 7: Political stability, discipline, fairness, and transparency
Goal 3: Natural resources and environmental preservation by principles of green growth and sustainability	Output 1: Environment preservation and management for sustainable supporting resources Output 2: Natural hazards and preparation for risk reduction Output 3: Mitigation for unstable agricultural production

Source: 8<sup>th</sup> Five Year National Socioeconomic Development Plan (2016-2020)

Targets for the above goals and outputs are shown in Table 3.1.2.

**Table 3.1.2 Summary of NSEDP VIII (2016-2020)**

Item	Target
Annual GDP Growth per Capita	7.5% or more
GDP per Capita	USD 1,810 (2021)
Inflation Rate	Appropriate Rate (6%), Stable Exchange Rate
Public Investment Program (PIP) 5 Years	Development Fund: 232,000 LAK in Billion Public Investment: 24-28% (Government Fund: 9-11%, ODA: 15-17%, Private Fund: 55-57%, Bank Credit: 17-19%)
Overseas Investment	NA
Trade Balance (5 Years)	NA
Fiscal Balance	Revenue: 23-25% of GDP Expenditure: 26-30% of GDP Financial Deficit: 3-5% of GDP
Social Indices	Poverty Rate: 15% or less Primary Education Enrollment Rate: 99% Secondary Education Enrollment Rate: 85%, Literacy Rate: 99% and 95% (15-24 and 15 and more) Infant Mortality: 30/1,000 Mortality of Children under the Age of Five: 45/1,000 Pregnant and Parturient Women Mortality: 200/100,000 Unemployment Rate: 2% or Less
Regional Development (Northern Area)	Tourism Development • Luang Prabang Tourism Zone Development: Green Tourism, History, Culture, and Tradition Tourism • GMS Integrated Tourism Road Network

Source: Five Year National Socioeconomic Development Plan VIII (2016-2020)

Furthermore, the 8<sup>th</sup> NSEDP indicates not only the overall policies mentioned above but also the six points in development policies for each region as shown below.

- Develop characteristically by utilizing features of the area and situated regional resources;
- Develop the area, which has the highest potential in each region and spread the ripple effects to the surrounding areas;
- Enhancement of coordination between each region and linkage with international market;
- Economic development that encourages workers to branch out from agriculture sector to industry and service sectors by inventing regional handicraft products;
- Develop regional leading industries; and
- Infrastructure development for enhancement of regional partnerships and international coordination.

For Luang Prabang Province, the policies emphasize tourism zone development as the center of northern region tourism, promotion of tourism for nature/history/culture/tradition, and integration with the Greater Mekong Subregion (GMS).

### **3.2 8<sup>th</sup> Five-year Luang Prabang Social-Economic Development Plan (RSEDP)**

#### **3.2.1 Outline**

Based on the 8<sup>th</sup> NSEDP, Luang Prabang Province formulated the 8<sup>th</sup> Five-Year Luang Prabang Regional Socioeconomic Development Plan (RSEDP) in 2016. This RSEDP has been created with the same structure of the 8<sup>th</sup> NSEDP.

As same as the 8<sup>th</sup> NSEDP, Luang Prabang Province indicates a long-term vision until year of 2030. The vision for 2030 of Luang Prabang Province is “heritage preservation together with high quality tourism center, culture and education center, clean, organic agriculture center, and high quality of life”. The 8<sup>th</sup> RSEDP corresponds to the first five years of the period. It indicates to proceed with tourism based, powerful and stable economic growth, and aims to reduce poverty with an economic growth of 9% per year on the average.

In order to achieve the target, the following ten basic policies are indicated based on consistency with environment preservation and social development, peace and order society, and international relationship and cooperation:

- Improvement of safety in the province;
- Economic development, social development and poverty reduction by converting the bases of economic structure to tourism and service industry, hydroelectric power generation, and clean organic farming;
- Preservation of the world heritage, high quality tourism site with unique culture and traditions, and promotion of tourism industry;
- Formulating hydroelectric generation hubs;
- Spreading clean organic farming and supplying sufficient food;
- Environmental preservation and sustainable use and optimization of natural resources;
- Promotion of service industries such as transportation, investment, financial technology, vocational training center, and medical care;
- Agricultural development and poverty reduction;
- Improvement of administrative ability of public authority; and
- Promotion of domestic and international investments.

The first basic policy is to construct stable and democratic society through political stability of Luang Prabang Province, peace, social order and fairness, and securing transparency. The following topics are taken up as focal tasks: 1) prevention of unfairness, 2) defense and security, 3) trial, 4) science and technology development, 5) youth development, 6) women development, 7) legislation, 8) justice, and 9) enhancement of administration for development. In the topic 2) defense and security, implementation of fire prevention in Luang Prabang World Heritage Area is picked up (8<sup>th</sup> RSEDP p. 84, Implementation of fire prevention in Luang Prabang World Heritage Site).

### **3.2.2 Tourism Sector in Five-Year Regional Socioeconomic Development Plan**

In the 8<sup>th</sup> RSEDP, Luang Prabang Province is designated to be the representative of international tourism destination in the country. In the 8<sup>th</sup> RSEDP, the following targets for tourism sector are set:

#### **Targets**

Foreign Tourist Arrivals: 700,000 people (in 2020)

Average Length of Stay: 5 days

Tourism Income: USD 350 million

The 8<sup>th</sup> RSEDP sets 9%/year of economic development target of Luang Prabang Province, which

expects that the tourism sector will lead in order to achieve the target.

To realize this high numerical target, the 8<sup>th</sup> RSEDP points out the following four tourism development policies:

- Improve high quality tourism destination to meet international standards.
- Conserve traditional events/festivals, culture, nature, and history.
- Develop new tourism products to increase job opportunity.
- Develop new tourism destination.

Based on these policies, the 8<sup>th</sup> RSEDP then points out the following concrete tourism development targets which should be implemented up to 2020:

- Develop 15 new tourism products where communities can participate in.
- Improve service standard of hotels and guesthouses.
- Construct 2-3 large hotels and attract domestic investment.
- Have 263 tourism destinations in the whole province with 35 new tourism destinations.
- Have 80 hotels and 308 guesthouses in the whole province.

Meanwhile, the 8<sup>th</sup> RSEDP emphasizes the following four targets to conserve cultural heritage which is positioned as one of the development policies mentioned above:

- Continue conservation and rehabilitation of heritages with establishing fund for heritage consideration.
- Implement public relations activities to raise awareness of stakeholders, investors, and tourists to reduce negative influence on world heritage.
- Have brainstorming meeting to discuss conservation of world heritage.
- Try local events, festivals, and food habit to be intangible cultural heritage<sup>4</sup>.

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<sup>4</sup> Currently, actual action has not been made yet.

## **Chapter 4 Basic Directions of Tourism-based Regional Development in Luang Prabang Province**

### **4.1 Basic Direction of Regional Development in Luang Prabang Province**

#### **4.1.1 Goal of Regional Development**

Lao PDR has gradually increased its GDP per capita and mitigated poverty in accordance with continuous economic growth since the year 2000. The Government of Laos targets to graduate from the LDC through changing its economic structure to be more sustainable and alleviate poverty. Along this basic principle, Luang Prabang Province also develops the 8<sup>th</sup> RESDP to realize sustainable socio-economic growth and poverty alleviation with 9% of annual growth rate up to 2020. To achieve this, the regional development should target the following three goals:

- Sustainable economic growth
- Poverty alleviation
- Sustainability of environment and keep a unique culture

#### **4.1.2 Potential and Constraints of Regional Development**

It is, first of all, necessary to clearly grasp the potentials and constraints of regional development of Luang Prabang.

##### **(1) Strength on Regional Development**

Tourism and accumulation of tourism businesses are the core of economic activities in Luang Prabang. It is the strength of Luang Prabang to proceed with its regional development. Its mountainous topography ranging from 300 m to 2,300 m in altitude gives Luang Prabang Province landscape with much variety. Furthermore, it provides potential land to cultivate various crops, which supposed to be a strength. On the other hand, Luang Prabang Province is endowed with water and natural resources.

Currently, Luang Prabang International Airport is expanded to be an international airport and truck roads connecting Luang Prabang Province with neighboring countries, which is one of its strengths. Existence of higher education institutes such as universities and technical colleges is a strong point of Luang Prabang from supplying sufficient, young, and fresh workers as well as existence of young generation in the town.

- Growth of tourism and accumulation of tourism businesses
- Potential to cultivate various crops depending on various conditions and height
- Endowment of natural and water resources
- Good access to neighboring countries via international airport and truck roads
- Existing national university and technical college

##### **(2) Weakness on Regional Development**

Luang Prabang Province has a mountainous topography with limited plain area, which is a weakness in urban development and agricultural development especially paddy production. Luang Prabang



Province is located at the inner area of Lao PDR, therefore, it is far from large consumer markets like Bangkok, Hanoi, Ho Chi Minh City, and Kunming, as well as from border areas. Accordingly, development models like Vientiane, Savannakhet, and Pakse utilize location as border area to invite foreign investment and industrial relocation from Thailand. Although Luang Prabang District has large accumulation of tourism businesses and very small accumulation of other economic activities and skilled workers, it is hard to expand the other economic activities based on the existing accumulation. The market size of Luang Prabang Province is smaller due to limited population (43,000 people in 2015) and limited centrality of urban areas. Insufficient access between urban and rural areas is one of the constraints for further rural development.

- Limited plain area with mountains
- Far from large consumer markets
- Far from borders
- Lower agricultural productivity
- Little industrial accumulation
- Few populations
- Small urban accumulation
- Insufficient urban to rural accessibility
- Less number of experts and skilled workers

### (3) Opportunity on Regional Development

Development opportunity of Luang Prabang Province is the start of ASEAN Economic Community (AEC), which expects to realize free movement of people, goods, and money in the region. Luang Prabang Province has advantage in connectivity with surrounding countries. If Luang Prabang Province is wisely utilizing such as advantage of movement of goods and peoples, it would be a development potential.

### (4) Threat on Regional Development

Threat against development in Luang Prabang Province is the deterioration of tourism sector, which is the leading economic sector at the moment. The deterioration of tourism leads to the loss of core economic activities. The regional economic disparities in income, employment opportunity, and living standard negatively affect to accelerate out-migration and lower centrality and urban economic activities.

- Deterioration of tourism
- Deterioration of nature and environment
- Regional economic disparities
- Out-migration of young generations

**Table 4.1.1 SWOT Analysis of Luang Prabang Province from Regional Development of Point of View**

<b>Strength (S)</b>	<b>Weakness (W)</b>
<ul style="list-style-type: none"> <li>• Growth of tourism and accumulation of tourism businesses</li> <li>• Potential to cultivate various crops depending on various conditions and height</li> <li>• Endowment of natural and water resources</li> <li>• Good access to neighboring countries via international airport and truck roads</li> <li>• Existing national university and technical college</li> </ul>	<ul style="list-style-type: none"> <li>• Limited plain area with mountains</li> <li>• Far from large consumer markets</li> <li>• Far from borders</li> <li>• Lower agricultural productivity</li> <li>• Little industrial accumulation</li> <li>• Few populations</li> <li>• Small urban accumulation</li> <li>• Insufficient urban to rural accessibility</li> <li>• Less number of experts and skilled workers</li> </ul>
<b>Opportunity (O)</b>	<b>Threat (T)</b>
<ul style="list-style-type: none"> <li>• Free access of goods peoples and money under AEC</li> </ul>	<ul style="list-style-type: none"> <li>• Deterioration of tourism</li> <li>• Deterioration of nature and environment</li> <li>• Regional economic disparities</li> <li>• Out-migration of young generations</li> </ul>

Source: JICA Survey Team

### 4.1.3 Regional Development Strategies

#### (1) Regional Development Scenario

Considering the results of SWOT analysis mentioned above, economic development with self-sustaining mechanism should be taken into account for regional development of Luang Prabang. For this purpose, the following four principles should be given careful attention:

- Encouragement of agricultural diversification and local industry
- Foster the driving force of economy
- Growth pole and network with periphery
- Sustainability

It is indispensable and important for Luang Prabang to improve the income level in the rural area in order to mitigate poverty and regional disparities. For this purpose, agriculture, which is relatively lower in land productivity compared with the province at present, should change and be more diversified and consider higher value products to increase farmers' income, and encourage local industries in the rural areas.

As a first stage of these attempts, incubation function of tourism sector should be strengthened to use tourism market as an initial market of new agricultural products and handicrafts as a test to improve their quality. On the other hand, Luang Prabang District should be developed as an economic, education, and medical-care center of the region; and network with surrounding districts and provinces should be strengthened. It works to expand area of agricultural diversification and higher valued agriculture products, and local industries in Luang Prabang Province. This network also works to expand potential tourism market too. Environmental sustainability must be taken into account to keep sustainable growth through urban environmental conservation with infrastructure provision and natural and heritage conservation. At the same time, higher education to supply qualified and new workers is also important to continue further growth.

## (2) Regional Development Strategies

To realize the abovementioned development scenario, the following development strategies should be taken into account:

Regional Development Strategy 1:	Advancing agricultural diversification and high valued agriculture products
Regional Development Strategy 2:	Fostering local industries
Regional Development Strategy 3:	Strengthening Luang Prabang District as a growth center and network with surrounding districts and provinces
Regional Development Strategy 4:	Improving regional center function with more and high quality higher education and medical-care facility.
Regional Development Strategy 5:	Growing tourism sector to perform as economic driving force of the province
Regional Development Strategy 6:	Rising sustainability of Luang Prabang through environmental and heritage conservation

### 1) Regional Development Strategy 1: Advancing agricultural diversification and high valued agriculture products

Agricultural products should be diversified by taking advantage of Luang Prabang varied topography. Commercial crops like coffee, job's tear, and tea, which target the international market, should be cultivated at the mountainous and intermediate areas to increase agricultural income through diversification. Cultivation technologies are matured and market channels are fixed with long history. Luang Prabang Province should promote contract farming system since farmers have no experience and accumulated skills. These areas have a potential to produce livestock, beans, and fruits, which can target tourism market in Luang Prabang as well the markets in surrounding provinces. Particularly, livestock should be expanded since there is a shortage of supply in Luang Prabang Province.

In the intermediate area in/near to Luang Prabang District, higher valued (organic) vegetables and fruits should be cultivated to proceed agricultural diversification and increase agricultural income. As their initial market, tourism market in Luang Prabang District should be focused to get a secure market. Then, new markets should be exploited after stabilizing the volume and quality of products under sufficient production techniques.

Lastly, at the area along the Mekong River, it is necessary to improve rice production by promoting higher yield rice seeds, which aims to stabilize food supply in Luang Prabang and increase agricultural income of farmers in the area.

**Table 4.1.2 Agricultural Diversification by Zone**

Zone	Area	Direction	Example of Crops
Zone 1	Mountainous Area	Expand commercial crops targeting international markets and tourism market in Luang Prabang	Coffee, vegetables, fruits, tea, etc.
Zone 2	Intermediate Area	Diversify crops to stabilize and increase income	Livestock, beans, fruits, job's tear
Zone 3	Intermediate Area in/near Luang Prabang District	Cultivate higher valued vegetables and fruits by securing the market through linkage with tourism Expand cultivation after stabilizing the volume and quality of products under sufficient production techniques	(Organic) vegetables, fruits
Zone 4	Along the Mekong River	Promote more higher yield rice variety to increase rice production for sound supply of rice and increase of income	Rice, fishes

Source: JICA Survey Team

## 2) Regional Development Strategy 2: Fostering local industries

Local industry like traditional handicrafts, wood products, food processing using local products should be the core of manufacturing and be promoted more. To improve the quality and marketability of those products, it is important to use the tourism market in Luang Prabang. Antenna shop is an idea to: a) test the quality of products and gather reflections of foreign tourists and b) to adopt quality improvement and product development and renewal in order to meet their needs and preference and improve name recognition.

## 3) Regional Development Strategy 3: Strengthening Luang Prabang District as growth center and network with surrounding districts and provinces

The urban area in Luang Prabang District should be strengthened as a growth pole of Luang Prabang Province by providing necessary infrastructure.

Access between the urban area of Luang Prabang District and rural areas should be accelerated to improve. Accessibility of local roads and national roads should be developed to alleviate poverty by expanding the villages with access to agricultural areas. In addition, connectivity with Thailand will be also improved to rise the potential of logistics business and tourism by activating movement of goods and peoples.

## 4) Regional Development Strategy 4: Improving regional center function with more and high quality of higher education and medical-care facilities

To supply more capable and fresh workers in the tourism sector, it is important to expand the capacity of Suphanuvong University and Luang Prabang Technical College to meet the increased demand. It contributes to increase the population of young generations in Luang Prabang too. On the other hand, regionally-top hospital, which is capable to provide the highest level of medical treatment in the northern region should be established. It is not only for improving the medical care system of the northern region but also improving the safety of foreign tourists. This development can also expect to attract more peoples from other districts and surrounding provinces to go to Luang Prabang District. Centrality of Luang Prabang District should rise with higher education and medical care to activate urban economy.

**5) Regional Development Strategy 5: Growing tourism sector to perform as economic driving force of the province**

Tourism should be more developed as the leading industry to contribute in the economic growth of Luang Prabang Province. Incubation function of tourism should be more focused and strengthened to foster agriculture and local industry as mentioned in the regional development strategies 1 and 2. Linking with the improvement of accessibility of rural areas under the regional development strategy 3, village tourism should be promoted by expanding tour circulation for further improvement of income opportunity in the rural areas.

**6) Regional Development Strategy 6: Rising sustainability of Luang Prabang through environmental and heritage conservation**

It is indispensable to sustain tourism in Luang Prabang to lead other economic activities for longer time. In this regard, conservation of heritage and urban environment is indispensable to avoid deterioration of tourism value of Luang Prabang Province.

## **4.2 Objectives and Roles of Tourism Development in Regional Development Context**

### **4.2.1 Importance of Tourism Development in Luang Prabang Province**

The tourism sector is an important economic sector in Luang Prabang Province and Luang Prabang District. The 8<sup>th</sup> Luang Prabang Socio-economic Development Plan (RSEDP) (2016-2020) highlights tourism development as economic development targets and emphasizes the following four development directions:

- Improve as a high quality tourism destination to meet the international standard;
- Conserve traditional events/festivals, culture, nature, and history;
- Develop new tourism products to increase job opportunity; and
- Develop new tourism destination.

Meanwhile, the World Heritage Area is the largest sales point of tourism in Luang Prabang. Tourism in Luang Prabang cannot be considered without the Heritage Area. Furthermore, the Heritage Area is a symbol of old capital of Lanxan Dynasty and “pride” of citizens of Luang Prabang. Accordingly, the 8<sup>th</sup> RSEDP emphasizes conservation of the Heritage Area as an important policy of the province with the following four policies as target of heritage conservation:

- Continue the conservation and rehabilitation of heritages by establishing fund for heritage consideration.
- Implement public relations activities to raise awareness of stakeholders, investors, and tourists to reduce negative influence on world heritage.
- Have brainstorming meeting to discuss the conservation of world heritage.
- Try local events, festivals, and food habit as intangible cultural heritage.<sup>5</sup>

### **4.2.2 Objectives of Tourism Development at Luang Prabang Province**

Taking into account of tourism development policies in the Luang Prabang 8<sup>th</sup> RSEDP in addition to

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<sup>5</sup> Currently, actual action has not been made yet.

the regional development aspects discussed above, the following 3 point are being substantial objectives of tourism development in Luang Prabang Province:

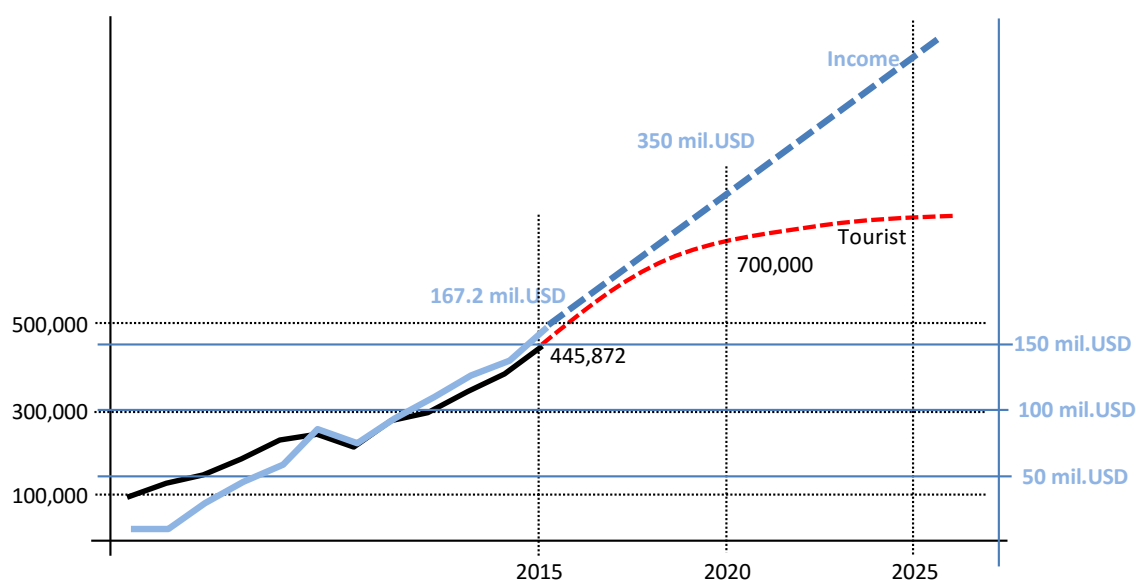
#### Objectives of Tourism Development in Luang Prabang Province

- Increase tourism income by increase of tourists to contribute to local economy in Luang Prabang Province
- Lead regional development by performing as “incubation” function for encouraging agriculture and rural development, and local industrial development
- Conserve “Living Heritage” and environment to strengthen sustainability of tourism in Luang Prabang

### 4.3 Targets and Constraints

#### 4.3.1 Basic Development Direction of Tourism in Mid-/Long-term Period

Tourism is a major economic activity in Luang Prabang. The growth of tourism business is an indispensable factor for future sustainable economic growth of Luang Prabang. Accordingly, tourism development is highlighted in the past five-year plan, which mainly targets increase in number of foreign tourists and tourism income. However, continuous increase in number of tourists may enlarge potential risks regarding deterioration of landscape and urban environment, decrease of residents, which leads to deterioration of value of tourism aspects of the Heritage Area. To continue economic development based on tourism as a leading industry, it is indispensable for Luang Prabang to develop tourism based on sound conservation of the Heritage Area. In a mid/long-term period, tourism development targets should be paid more attention on tourism income rather than increase in number of tourists.



Source: JICA Survey Team

**Figure 4.3.1 Target of Tourists in Mid- and Long-term Period (image)**



### 4.3.2 Development Framework in Short Term

Table 4.3.1 shows future target of tourists and population in Luang Prabang along with the recognition mentioned above.

Foreign tourists will increase to 700,000 persons in 2020 (target year of 8<sup>th</sup> RSEDP) and 800,000 persons in 2025 from 446,000 persons in 2015. Meanwhile, domestic tourists will increase to 211,000 people in 2020, 293,000 people in 2025 from 162,000 people in 2015.

On the other hand, population in Luang Prabang District will increase to 102,000 people in 2020, 114,000 people in 2025 from 90,200 people in 2015.

**Table 4.3.1 Future Population and Tourists in Luang Prabang**

		(person)		
		2015 (Base Year)	2020	2025
Population (Luang Prabang District)		90,400	101,800	114,400
Tourist	Foreigner	445,872	700,000	800,000
	Lao	161,712	212,000	293,100
	Total	607,584	912,000	1,093,100

Note: Future population is estimated based on 1.1% of annual population increase rate in the 8<sup>th</sup> RSEDP considering actual population change in the past ten years.

Foreign tourists in 2020 follows the 8<sup>th</sup> RSEDP, and foreign tourists in 2025 estimates by the JICA Survey Team based on it.

Domestic tourist is estimated based on the trend of past domestic tourists.

Source: JICA Survey Team

### 4.3.3 Future Constraints against Tourism Development

Based on the targets of future tourist arrival above, several factors to be considered against future tourism development are taken into account such as accessibility, accommodation, infrastructure, employment in the tourism sector, and heritage conservation.

#### (1) Accessibility

Approximately 50% of tourists used air transport to/from Luang Prabang. Luang Prabang Airport was expanded in 2014 with 2,900 m of runway. At present, the average number of flight of Luang Prabang Airport is more or less than ten flights per day, so there is still much remaining capacity to increase flights to meet tourism demand in short and medium terms.

#### (2) Accommodation (Hotel and Guesthouse)

Hotel occupancy rate is currently over 80% in high season. If the tourists increase in accordance with the targets, there is a risk of shortage in room supply against tourism demand in high season in the short term. Accordingly, the 8<sup>th</sup> SEDP pays attention on developing new tourism SEZ to increase hotel rooms. Likewise, it may be necessary to take certain action to accelerate more private investment for hotels.

#### (3) Infrastructure

Considering urban utility and infrastructure such as power supply, water supply, sewerage and drainage, and waste disposal in Luang Prabang, power supply may not be a constraint for tourism development in the future because Luang Prabang Province has still large space of remaining capacity against power demand. Regarding water supply, water supply master plan was formulated in 2013, but

there are no ongoing projects in the master plan except for two public-private partnership (PPP) water supply projects. Since two of the PPP water supply projects cover only the northern and southern suburban areas of Luang Prabang District, there is a great risk for shortage of water supply at the central area of Luang Prabang in the near future. Regarding sewerage, Luang Prabang District does not have any sewerage treatment facility so there is a high risk that the urban environment is going to deteriorate in view of the increase environmental burden due to increased population and tourists in Luang Prabang District. This is the reason why UDAA Luang Prabang requests AFD of a new project to introduce septic tanks and separate simplified sewerage treatment facilities. Regarding waste disposal, JICA carries out expansion of disposal site by providing waste collection vehicles. However, the capacity of the disposal site is nearly full, so that there is an urgent need to develop new disposal sites.

Finally, urban transport and traffic is not in a critical issue yet, but there is certain traffic congested areas recently occurring due to increase in traffic volume. Particularly, the bridge across the Khan River becomes congested in the morning and evening rush hours as there is a concentration of traffic between the Heritage Area and eastern part of the town (area near the airport). This traffic congestion on the bridge starts to disturb tourism activity at present. In the World Heritage Area, there is no car parking space nor car space in each house, which causes people to park in the streets. In accordance with increase in number of cars in the future, there is a large risk of increase street parking, which may largely disturb the smooth traffic in the Heritage Area.

Urban infrastructure, especially water supply, sewerage, and garbage disposal, are at risk to be obstacles against urban development and tourism development. Parking problem in the Heritage Area will also be a critical issue for the Heritage Area in the future.

#### (4) Employment in Tourism Sector

Employment volume in the tourism sector in Luang Prabang Province currently estimates at 13,000 to 14,000 persons. Depending on the future increase in number of tourists, the tourism sector and related businesses will increase resulting to high demand of employment. Currently, fresh graduates of the Souphanongvong University and Luang Prabang Technical College are engaged in the tourism sector. Both schools are now in full student capacity. To sufficiently satisfy the required number of employment in the tourism sector, it will be necessary to expand the capacity of these higher education institutions. In addition, the capacity of existing employees should be properly developed through capacity expansion and quality improvement of the Lao National Institute of Tourism and Hospitality (LANITH) and DICT training scheme.

#### (5) Conservation of the Heritage Area

Increase in number of tourists affects the development in the Heritage Area because it expands more business chances for tourism businesses like guesthouses, restaurants, souvenir shops, and travel agents. It is necessary to release such development pressure to avoid negative influences on “living heritage” such as deterioration of landscape and environment, decrease of residents, and disordered reconstruction/renovation of buildings in the Heritage Area. Accordingly, it is necessary to introduce more measurements to control/manage the Heritage Area like review of land use in the Heritage Area, development of environmental infrastructure, and strengthening of building reconstruction. It is also important to guide new hotels and guesthouses to locate at the suburban area.

## 4.4 Current Tourism

### 4.4.1 Tourist Arrivals

#### (1) Recent trend of Tourist Arrivals

Tourists in Luang Prabang Province tend to increase in recent years. Although there is a small decline in 2012, foreign tourists basically increased and reached approximately 446,000 in 2015, and Lao tourists reached approximately 161,000 on the same year (see Table 4.4.1).

**Table 4.4.1 Tourist Arrivals (2011-2015)**

	2011	2012	2013	2014	2015
Lao	137,253	116,642	125,354	152,328	161,712
Foreigner	274,506	294,213	342,557	378,999	445,872
Total	411,759	410,855	467,911	531,327	607,584

Source: DICT Louang Prabang

#### (2) Monthly Tourist Arrivals

When does these 446,000 tourists (in 2015) arrive in Luang Prabang? The statistics of DICT in Luang Prabang shows slight monthly fluctuation in terms of tourist arrivals; however, almost all hotels and travel agents clearly mention monthly fluctuation, particularly in high and low seasons. Tourists concentrate in certain months in the high seasons. In fact, hotels usually set different rates for low and high seasons, which indirectly prove big fluctuation of tourists between high and low seasons.

The high season of tourism in Luang Prabang Province is from October to February which comprises approximately 70% of the total tourist's arrivals. While August and April have relatively more tourists than any other months in the low season, due to the availability of long vacations in other Asian countries. In addition, June and July are considered not suitable for tourism due to heavy rains.

**Table 4.4.2 Monthly Fluctuation of Tourist Arrivals (estimate)**

	Period	Concentration Rate	Monthly Concentration Rate
High Season	October-February, 5 months	70%	14.0 %
Low Season *1	March-September, 7 months	30%	4.0 % (6.0% in April and August)

\*1: Recently, the low season is called as "green season" for promotional purposes to emphasize the beauty of new leaves and green scenery in the rainy season (low season).

Source: JICA Survey Team

#### (3) Accommodations and Rooms

Accommodation (hotel and guesthouse) tends to increase in Luang Prabang of which, 335 accommodations in 2011 increases to 403 accommodations in 2015. There are 76 hotels with 1,944 rooms while there are 327 guesthouses in Luang Prabang with 2,627 rooms. Luang Prabang Province has more guesthouses.

**Table 4.4.3 Hotels and Guesthouses (2011-2015)**

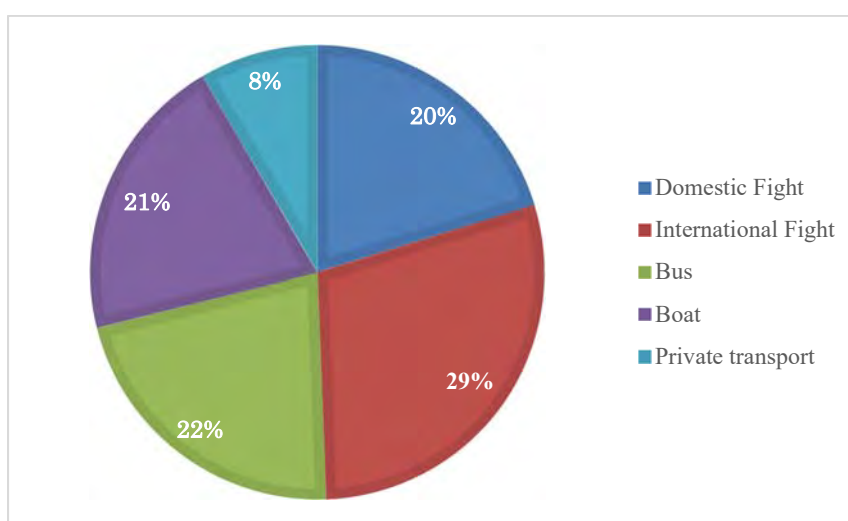
	2011	2012	2013	2014	2015
Hotel	54	57	60	72	76 (1,944 rooms)
Guest House	281	308	320	325	327 (2,627 rooms)
Total	335	365	380	395	403 (4,571 rooms)

Source: DICT Luang Prabang

Looking at tourist arrivals and capacity of accommodation in 2015, yearly average occupancy rate of accommodation in Luang Prabang Province is at 44.5%. In the high season, tourist arrival was at 81.3% in February and 15.6% in July<sup>6</sup>. The accommodation in Luang Prabang Province has losses in the low season, then offsets it with profits in the high season.

#### 4.4.2 Transport Mode

Luang Prabang Province mainly has five inter-city transport modes: 1) international air flight, 2) domestic air flight, 3) bus, 4) boat, and 5) private car. Figure 4.4.1 shows the percentage of transport mode users in 2015. This figure indicates that international air flight has the largest portion in transport mode, accounting for 29%, followed by boat, bus, and domestic air flight. The boat transport is mainly being used by Thai tourists from the upper Mekong River like Bokeo, while private car is mainly being used by Chinese tourists from Yunnan.



Source: DICT Luang Prabang

**Figure 4.4.1 Transport Mode In/Out of Luang Prabang Province (2015)**

#### 4.4.3 Characteristics of Tourists

Tourists in Luang Prabang Province can be conventionally divided into three categories: 1) backpacker (BP), 2) group tourists (GT), and 3) foreign individual tourists (FIT) to investigate characteristics of tourists in Luang Prabang Province.

<sup>6</sup> It is assumed that average length of stay (ALS) is 2 days with 1.2 persons in one room.

### (1) Type of Tourists (Estimate)

There has been no certain study to clarify the types of tourists of Luang Prabang Province in the past, so the JICA Survey Team conducted interviews to several private organizations like hotel associations, travel agents' associations, and individual companies. As for the results, the following percentages are assumed based on the interviews:

- Backpacker (BP): 55%
- Group Tourists (GT): 20%
- Foreign Individual Tourists (FIT): 25%

In general, there is a pattern of tourism destination growth where backpackers exploit the tourism destination, then group tourists and FITs increase in tourism destination, where the backpackers are then reduced. Applying this growth pattern, Luang Prabang Province still has much portion of BP, rather than GT and FIT, so Luang Prabang Province seems to be a developing tourism destination with so much potential.

### (2) Length of Stay and Pattern of Activities in Luang Prabang

The average length of stay (ALS) of tourist in Luang Prabang Province is three days. According to the interview survey to travel agents, as well as analysis on tour brochures and websites, most of the tourists follow a similar pattern of travel itinerary: mobilization and walk in the Heritage Area on the first day, suburban tour like waterfalls, caves, etc., in day 2, and then walk at the Heritage Area or suburban tour, and mobilization. Thai tourists spend more time visiting Buddhist temples.

Day 1: Mobilization and Heritage Area

Day 2: Suburban Tour

Day 3: Heritage Area/Suburban Tour, and Mobilization

This tendency can be adopted to the backpackers and FITs, too, so that any type of tourists usually stays for three days in Luang Prabang Province. This may be due to limited variety of tourism resources of Luang Prabang, as Luang Prabang Province has less tourism resources where tourists can stay longer like beach resorts and mountain resorts.

### (3) Tourism Expenditure

According to the statistics of DICT in Luang Prabang Province, average expenditure of tourist in Luang Prabang Province is USD 75/day, which includes costs of accommodation, transport, food and beverages, and souvenir<sup>7</sup>. Thus, the total tourist expenditure is USD 67 million/year (446,000 tourists spend USD 75 in 3 days).

## 4.5 Tourism Industry

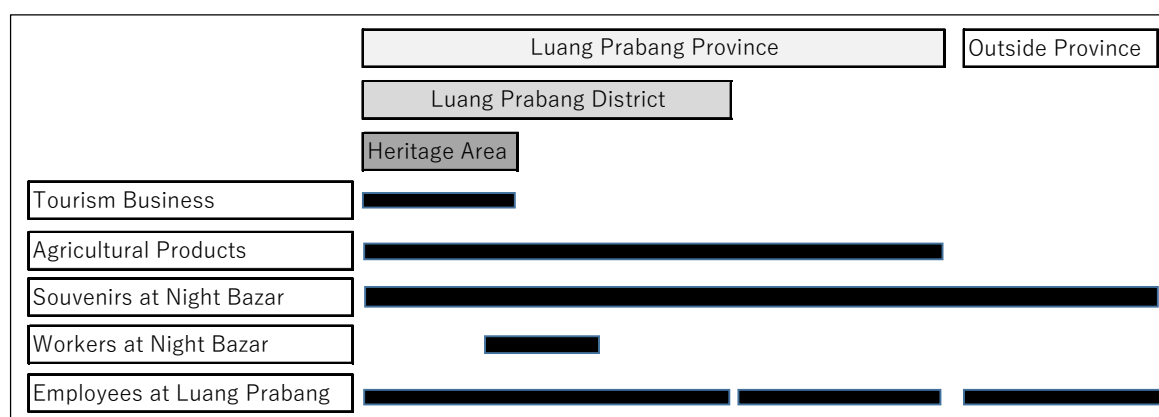
### 4.5.1 Tourism Sector and its Contributions

Tourism is a leading industry in Luang Prabang Province and has large ripple effects to other industries such as agriculture wholesale and retail trade, construction, agriculture, and livestock (refer to Chapter 2.4). Most of tourism business and its industries are situated in the central urban area, namely,

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<sup>7</sup> This amount includes a cost paid outside of Luang Prabang like hotel cost of group tour, etc.

Luang Prabang World Heritage Area, and most company workers of those business live inside Luang Prabang urban area. According to the interview, about 50% of people working in Luang Prabang urban area have their hometown in Luang Prabang District, 30% are inside Luang Prabang Province and the other 20% have their hometowns in other provinces. Workers who came from outside of Luang Prabang District mostly got high education inside Luang Prabang District and can directly find employment in the district. Meanwhile, agricultural products, which are being served at hotels and restaurants in Luang Prabang District are mostly produced inside the province. People working at night bazaar come inside Luang Prabang urban area or its surrounding area. The goods at night bazaar are being imported outside Luang Prabang Province or produced inside the province. Most of the products in Luang Prabang District are homemade except for woodwork products.



Source: JICA Survey Team based on the interview

**Figure 4.5.1 Geographical Expanse of Tourism-related Industries**

#### 4.5.2 Businesses Relevant to Tourism

Luang Prabang Province has tourism and many tourism-related business as shown in Table 4.5.1. Major business in tourism like hotels, guesthouses, restaurants, and travel agents increase in Luang Prabang in accordance with the increase of tourists.

It results in increase in number of employment as well. In 2015 approximately 13,500 people engaged in business relevant to tourism was almost 21% of the total non-farming employment (130,000 employments<sup>8</sup>) in Luang Prabang Province.

**Table 4.5.1 Tourism-related Businesses in Luang Prabang Province**

(Establishment)

	2011	2012	2013	2014	2015
Hotel	54	57	60	72	76
Guest House	281	308	320	325	327
Restaurant	282	282	283	283	286
Travel Agents	54	58	68	74	76
Total	671	705	730	754	765

Source: DICT, Luang Prabang

<sup>8</sup> According to an interview with the Department of Social and Labor, Luang Prabang Province has approximately 10,000 government staff, 30,000 ~ 40,000 military personnel. But data on the number of employment are not disclosed.



### **4.5.3 Night Bazaar**

Night bazaar is being held at Sisavangvong Street in Luang Prabang urban area, which is one of the major tourism resource of Luang Prabang District. The night bazaar was established in December 2012, and it starts at 16:30 until 22:30 for six hours. To open shops, permission from the governor of Luang Prabang Province for use of road is necessary.

The sponsor of the night bazaar has an administration office in Chumkong Village and Pakham Village and operates the night bazaar. Villages give goodwills to merchants and collect fees from them where the amount fee differs based on the extent of the area of a shop. The position of each shop changes once in every three months to be fair to other shop owners. Other than deciding the positions of the merchants' business area, the villages collect fees for electricity, water supply, cleaning, and garbage collection from merchants. For Chumkong Village, UDAA takes over garbage collection with a charge of about LAK 4.5 million, and for Pakham Village, it is consigned to private enterprise with a charge of LAK 9 million.

Night bazaar has 310 shops inside Pakham Village area and 370 shops inside Chumkong Village area. About 70% of merchants are Hmong people coming from neighboring villages and the rest of the merchants are Lao people. Most of the merchants are from the village outside of Luang Prabang urban area, which is why almost none of the people from the two local villages work in the bazaar. Merchants of the night bazaar basically work for agriculture or producing goods during day time and do business in the bazar in the night.

Merchants sell both self-produced goods and purchased goods from outside. Luang Prabang Province provided guidelines in dealing with goods produced inside the province only, but actually, it is almost out of control because products of other places can be imported and be sold in the bazaar.

Income from night bazaar is LAK 30 million/month in Chumkong Village and LAK 60 million/month in Pakham Village (this is the total amount of morning and night bazaar. The income from night bazaar is LAK 40 million/month only). From this income, LAK 24 million is paid to district government as tax, and the rest of the income is used for operation of the night bazaar, management of villages, salary for village staff, and donation for Luang Prabang Festival.

### **4.5.4 Rural Tourism**

There are some CBT villages in Luang Prabang, Pak Ou and Chmphet districts. Typical villages are shown in Table 4.5.2. Among them, Xang Hai Village has most tourist arrivals. Xang Hai Village is a small village with approximately 640 people in 2015. Most of the males in the village commute to work in Luang Prabang District, and tourism activities in the village are mainly done by women. About ten households are engaged in traditional alcohol-making. Alcohol-making and textile are the tourism products in the village. Approximately, 200 tourists per day visit the village, especially the number of tourists increases to approximately 500 persons in high season. The village has no restroom and restaurant facilities, so most of the tourists visiting the village stay in a very short-time on their way to Pak Ou Cave. Accordingly, there are spaces for improvements to extend more time to stay such as improvement of souvenir and attraction centers.

Chan Village (Chomphet District) is famous for unglazed clay pots. Xiengmen Village (Chomphet District) welcomes foreign students but only for limited purposes. Both villages have no toilets for the tourists. While Xiengmen Village, which is located just the opposite side of the Mekong River, has an

artery community road developed by AFD in 2005, Chan Village has no good access roads from the jetty to the river. Generally, the villages are not ready to welcome foreign group tourists in terms of comfort stay.

**Table 4.5.2 Typical Examples of Village Tourism in Luang Prabang Province**

Village Name	Location	Major Activities and Products
Xangkhong	Nearby Luang Prabang Airport (Luang Prabang District)	Walking in the village Experience of paper making Souvenir: Paper and paper craft
Xang Hai	Nearby Pak Ou Cave (Pak Ou District)	Walking in the village Experience of Alcohol making, textile Souvenir : Alcohol, textile
Xiangmen	Opposite side of Luang Prabang along the Mekong River (Chomphet District)	Walking in the village, home-stay (it is not target to ordinal tourists. Only for 3-4 weeks stay for study tour with special attendant/guide) Souvenir: none
Chan	Opposite side of Luang Prabang along the Mekong River (Chomphet District)	Trekking Souvenir: pottery
Longlao	Nearby Quancy Waterfalls (Luang Prabang District)	Trekking, home-stay Souvenir: Bamboo craft, textile
Xiangmouak	Nearby Quancy Waterfalls (Luang Prabang District)	Trekking, home-stay Souvenir: Bamboo craft, textile
Pongwan	On the way to Quancy Waterfalls (Luang Prabang District)	Trekking, home-stay Souvenir: Bamboo craft, textile

Source: JICA Survey Team

#### 4.5.5 ODOP (One District One Product)

ODOP is an institution adopted by the Ministry of Industry and Commerce (MOIC), which follows Japanese ODOP as a model, and the movement of ODOP is being spread widely to each province. Regarding Luang Prabang Province, scarf in Nam Bak District, hand-made paper in Xang Khong Village of Luang Prabang District, and lacquered handicraft in Phone Kam Village of Luang Prabang District are certified as ODOP. In addition, textiles in Phanom Village of Luang Prabang District and woodwork in Sangkalok Village of Luang Prabang District are going to be certified as ODOP as well. Furthermore, products in the other ten villages have become candidates of ODOP.

Especially, Switzerland has implemented project for quality improvement project of textiles in Phanom Village. This project was done until September 2016 in two phases for technical education of textile artisans in Phanom Village, establishment of handicraft association, and making system for certifying authentic Phanom textiles. However, although this certification system and its logo became widespread, recently, textiles with low quality and imitated logo came into the market which affected the trust and confidence of consumers.

**Table 4.5.3 ODOP in Luang Prabang Province**

	District/ Village	Product
Certified to ODOP	Nam Bak District Luang Prabang District Xang Khong Village Luang Prabang District Phone Kam Village	Scarf Handmade paper Lacquered handicraft
Planned to be Certified to ODOP	Luang Prabang District Phanom Village Luang Prabang District Sangkalok Village	Textile Woodwork
Candidates of ODOP	Chomphet District Chane Nua Village Viengkham District Kyulainua Village Viengkham District Sop Huang Village Luang Prabang District Nounsavat Village Luang Prabang District Donmai Village Luang Prabang District That Luang Village Luang Prabang District Mano Village Luang Prabang District Houay Phai Village Luang Prabang District Mano Village Luang Prabang District Had Hien Village	Pottery Banboo product Alchol Fried dough cooky Fried banana Silver product Hot sweet sauce Dried pork meat, cow skin Embroidery Banana product

Source: DOIC, Luang Prabang Province

ODOP at present has the following problems: 1) system is still undeveloped for improving quality of products (other than Phanom Village supported by Switzerland) and 2) packaging and promotion are weak and degree of recognition is low. Unfortunately, measures for solving those problems are still not being implemented. Also, households which produce ODOP products are very limited which make the products not of premium quality compared with ODOP in Japan.

#### **4.5.6 Employment in Tourism Sector**

As mentioned above, the number of employed workers for the tourism sector in Luang Prabang Province is about 13,000~14,000 as expected. According to the interview surveys with Luang Prabang Travel Agents Association and Luang Prabang Hotel Association and private companies, approximately 80% of employees in the tourism sector come from Luang Prabang Province. Their academic background are mainly secondary school and vocational school and college. Few students that graduated from Suphanuvong University work in the tourism sector.

Looking at the recruits of the tourism sector, about 70% of new staff are persons who have experience in the tourism business in the past, and the remaining 30% are inexperienced persons. Most of the companies in the tourism sector in Luang Prabang train new staff by doing on-the-job training (OJT). Even though, Luang Prabang District has LANITH, few companies enroll trainees to LANITH's training course due to its training fee.

However, there are some persons (but not many) attend training courses in LANITH to step-up their careers.

#### **4.6 Tourism-related Human Resource Development**

##### **4.6.1 Tourism Related Education and Training Agencies**

As an organization in-charge of human resource development in the tourism sector, Luang Prabang District has Suphanuvong University, Luang Prabang Technical and Vocational College, and LANITH.

##### **(1) Suphanuvong University**

Suphanuvong University is one of four national universities in Laos, which was established in 2003.

As a national university, Suphanuvong University has six faculties such as 1) Faculty of Education, 2) Faculty of Agriculture and Forestry, 3) Faculty of Architecture, 4) Faculty of Engineering, 5) Faculty of Foreign Language, and 6) Faculty of Economy and Tourism with 3,400 students in total and 380 teaching staff.

The Faculty of Economy and Tourism has seven departments such as 1) economy, 2) management, 3) information technology, 4) international business management, 5) finance, 6) tourism management, and 7) hotel management. The faculty started with two departments of economy and finance in 2003, and gradually expand its departments. The Department of Tourism Management started in 2007, then changed the name of the faculty to the Faculty of Economy and Tourism in 2007. The Department of Hotel Management started in 2014. Currently, there are 900 students in the faculty. Among the departments, the Department of Economy has the highest applications because the department seems to provide the best education to be government officers.

Fifteen teaching staff take care of both Department of Tourism Management and Department of Hotel Management. Five staff are permanent staff and ten staff are temporary staffs who do not live in Luang Prabang. There is no clear policy to educate management class workers of the tourism sector in both the Department of Tourism Management and Department of Hotel Management. The curriculum of both departments are mainly lecture classes so there are only few practical experiment classes. It may be due to limited facilities, budget, as well as still insufficient accumulated experiences in academic services in tourism. The number of graduates from the Department of Tourism Management was 49 students in 2015 and 33 students in 2016. Meanwhile, the Department of Hotel Management has no graduated student yet.

The students of the Faculty of Economy and Tourism came from the eight northern provinces. About 40 to 60% of students come from Luang Prabang Province. Most of the students go back to their own provinces to be recruited and deployed to other places, so few students stay in Luang Prabang or go to work in Vientiane after graduation. Similar to other faculties, most of the students in this faculty also want to be government officers. Tourism businesses seem to be profitable among private businesses because tourism is a major economic sector while other economic sectors are not so well developed in the northern region. As a result, about 80% of students from the faculty get jobs in the tourism sector through experience of internship. A student is required to work for at least two months in a certain company before graduating from internship. Most of the students are recruited during the internship.

## (2) LANITH (Lao National Institute of Tourism and Hospitality)

LANITH is a training institute under the Department of Vocational Training, Ministry of Education and Sports, which was established and financed by Luxemburg government. LANITH has facilities in Vientiane and Luang Prabang. LANITH project started in 2008 with their trainer's training. The LANITH project selected 18 staff from the Department of Vocational Education to second them to hotel management training and restaurant operation training in Singapore and Luxemburg for two years. In 2011, after the facility of LANITH was constructed in Luang Prabang, training course started. After two years, training course in Vientiane started in 2013. Project cost of LANITH is USD 25 million. The Lao government provides land for the LANITH project, and the other cost are being shouldered by Luxemburg government. LANITH project was completed in June 2016.

LANITH has two training courses: one is a two-year diploma course and a short-term industrial

training course. The two-year diploma course is for high school graduate students, while the short-term industrial training course is for business persons. LANITH Luang Prabang engages in industrial training course only, while LANITH Vientiane engages in both diploma and industrial training courses. LANITH recently carries out regional tourism training courses in Xiang Khoang, Khammouane, Changpasak, Savannakhet, Bolikhamsai, and Vang Vieng as a pilot project. LANITH gets training fee from trainees, which is the only income of LANITH. This training fee can cover only 15 to 20% of total expenditure of LANITH at the moment.

LANITH covers four fields of tourism training such as 1) food production, 2) food and beverage (F&B) service, 3) housekeeping, 4) administration (front office in ASEAN standard). The remaining “travel agent” and “tour operation” in ASEAN standard are not covered in LANITH. LANITH has both English and Lao courses in teaching. Currently, the English course has students from the Philippines, Cambodia, and India.

LANITH emphasizes 1) knowledge, 2) skill, and 3) attitude. Especially, “attitude” because it is a weak point of Lao, so LANITH pays attention to teach students the “attitude” of hospitality.

LANITH Luang Prabang offers 40 modules (courses) in industrial training. The trainees can select a module he/she likes to learn. LANITH gives small booklet, namely, “Passport to Success” to all trainees with his/her ID number. After completion of one module, LANITH gives stamp on the “Passport to Success”. LANITH gives “Bronze” certificate with five lecture modules and four practice modules, “Silver” certificate which adds two more lecture modules and one practice module, “Gold” certificate with one more lecture module and two practice module. This certificate and the “passport” will increase the hiring chances of the applicants.

LANITH project was completed in June 2016. Completion means the end of financial support from Luxemburg government. LANITH is required to stand alone and sustain it self financially. To realize it, LANITH decides to divide LANITH Luang Prabang and LANITH Vientiane as different financial entities in order for each one to be a self-sustained organization. LANITH Luang Prabang gives highest priority in increasing the number of trainees. For this purpose, LANITH Luang Prabang considers to 1) increase the courses and 2) increase the number of trainees under cooperation with international and bilateral donors. For example, LANITH organizes special training courses with the Asian Development Bank (ADB), Gesellschaft fur Internationale Zusammenarbeit (GIZ) and Swiss, and plans to have guide training with DICT.

LANITH also tries to apply new projects to Luxemburg, which aims to provide basic training for local people to cooperate with them in tourism.

#### (1) Luang Prabang Technical College

Luang Prabang Technical College is a three-year technical college established in December 2015 based on the vocational school established in 1980. At present, it consists of six courses which are: 1) technical course (car repairment, welding), 2) electricity course (electricity and appliance repairment), 3) construction and furniture course, 4) hotel management and tourism course (cooking, tourism management), 5) administration (computer and accounting), and 6) general education course. The college has 150 teachers and 2,089 students (as of June 2016). The courses are divided into three levels: Level 1 (three years) for graduates of junior high school, Level 2 (two years) for graduates of high school, and level 3 (one year) for students who graduated Level 2. The most popular one is the electricity course.

Hotel management and tourism course is fairly popular, and many female students tend to choose this course.

Fifty percent of students come from Luang Prabang Province and another 50% comes from outside of the province. Many students go back to their hometown after graduation, but only graduates of hotel management and tourism course tend to stay in Luang Prabang Province; however, their hometown has no tourism industry.

Hotel management and tourism course was established in 2007 and has four teachers and 38 students. There are three majors in this course which are food production, F&B service, and housekeeping. This course can provide general education subject and about 60 special subjects such as guidance, F&B, management, and marketing. The method of teaching of the hotel management and tourism course is practical education and students have opportunities for both classroom learning and practical training. The practical training is supported by LANITH regarding facilities, staff dispatch, sharing of expenses, etc.

The students experience internship for two months of their final year. Internship is held in venues such as three-star hotels or higher, restaurants, and travel companies, and the most of the students eventually enter places where they trained for their internship within two months.

Current issues of the course are lack of capacity of facilities, lack of teachers for foreign languages, and lack of training of teachers.

#### **4.6.2 Training for Tourism Businesses**

LANITH provides tourism training to business persons with training fee. The other organizations have no regular training course except for guide training by DICT.

##### **(1) Training at LANITH**

LANITH Luang Prabang started the training (short-term industrial training) course in 2011 and has approximately 2,000 trainees after 2011. Among the four fields of the training course, food production and housekeeping are the most popular as they gather more trainees. Training course of LANITH Luang Prabang are usually being done during May and August, which is low season of tourism in Luang Prabang. One training course consists of three to five days of lessons and accepts 8 to 12 trainees. Around 80 to 85% of trainers are seconded from tourism companies like hotels, and the remaining are voluntarily and individually participated. The cost of the training course is more or less USD 50 (but cost of food production course depends on material cost.)

The trainers of the training course are staff of LANITH. There are no trainers employed from outside LANITH so far. The staff of LANITH takes care of both lecture and experiment in the course, and were trained abroad under the LANITH project. The staff of LANITH have training courses in both Luang Prabang and Vientiane.

##### **(2) Workshops and Trainings**

Workshops and seminars are frequently being held in Luang Prabang Province for capacity development of government agencies and trainings for private tourism-related persons. The following



list shows examples of workshops and training programs for private tourism held in 2015~2016<sup>9</sup>.

- Tourism destination management and leadership training
- Host service, F&B, and capacity development for housekeeping
- Provision of safe food in hotels and restaurants
- Human resource development for hotels following ASEAN tourism standards
- Preservation of orange varieties
- Tourism planning, management, development, and design training
- Tourism service, development and management (participation of ordinary people)
- Housekeeping, cooking, and guide training for ordinary people
- Participation to tourism development and awareness to ordinary people

Meanwhile, training programs for workers of Luang Prabang Province are prosperous and provide opportunities both inside and outside of the country. The following list shows workshops and trainings outside of the country held in 2015~2016 that workers in DICT attended. The country name where the program is held and number of DICT attendants are shown inside the brackets.

- Sustainable tourism (Malaysia, 1 person)
- Tourism marketing (Singapore, 2 persons)
- Small project assistance (Thailand, 5 persons)
- Improvement of tourism quality in five countries of ASEAN (Thailand, 1 person)
- China and ASEAN Trade No. 3 (China, 3 persons)
- Invitation of tourism related executive staff (Japan, 1 person)<sup>10</sup>
- China and ASEAN export goods (China, 1 person)
- Tourism site management (China, 2 persons)
- Tourism development and international cooperation (China, 2 persons)
- Tourism quality improvement and homestay (Thailand, 1 person)

#### **4.7 ASEAN Tourism Standard**

The ten Association of ASEAN member countries, namely: Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Viet Nam considered the standardization of tourism services essential for helping ASEAN to be a quality single destination. One measure in the roadmap for integration of tourism sector to realize the ASEAN Economic Community is the establishment of the ASEAN Tourism Standards.

The six ASEAN Tourism Standards agreed upon by the ASEAN National Tourism Organizations are shown in Table 4.7.1.

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<sup>9</sup> Information on sponsors and cooperation agencies for each workshop and training could not be collected in this survey

<sup>10</sup> Invitation program implemented in the JICA survey last year

**Table 4.7.1 ASEAN Tourism Standards Criteria**

	Standards	Criteria	Major Criteria
1.	Green Hotel	Green Hotel is a hotel which is environmentally-friendly and adopts energy conservation measures.	1.1 Environmental policy and actions for hotel operation 1.2 Use of green products 1.3 Collaboration with community and local organizations 1.4 Human resource development 1.5 Solid waste management 1.6 Energy efficiency 1.7 Water efficiency 1.8 Air quality management 1.9 Noise pollution control 1.10 Wastewater treatment and management 1.11 Toxic and chemical substance disposal management
2.	Food and Beverage Services	Local food and beverage service is a form of service where traditional and typical food and beverages are produced and/or sold by local people in food stalls, local restaurants, or other similar outlets.	2.1 Design and construction of food premises 2.2 Facilities 2.3 Food and utensils storage 2.4 Food processing 2.5 Food disposal 2.6 Health and hygiene of food handlers 2.7 Cleanliness 2.8 Maintenance 2.9 Quality level
3.	Public Restroom	Public restroom is a room or booth shared by all people for urination and defecation consisting of at least a bowl fitted with or without a seat and connected to a waste pipe and a flushing apparatus.	3.1 Design and environmental management system 3.2 Amenities and facilities 3.3 Cleanliness 3.4 Safety
4.	Home Stay	Home stay is an alternative form of family furnished accommodation generally located in a house, providing guests opportunities to experience family/community lifestyle as well as tourist attractions.	4.1 Accommodation 4.2 Food and beverage 4.3 Safety and security 4.4 Activities offered to visitors as part of homestay program 4.5 Environmental conditions 4.6 Local benefits 4.7 Marketing and promotion
5.	Ecotourism	Ecotourism is responsible travel to destinations with ecological diversity that involves in activities, environmental and cultural conservation measures, and community participation providing benefits for the local people and the country.	5.1 Ecotourism potential 5.2 Accessibility 5.3 Tourism activities 5.4 Environmental management 5.4 Site management 5.6 Safety and security 5.7 Interpretation and educational program
6.	Tourism Heritage	Tourism heritage is an outstanding cultural or heritage area of a country that is protected, conserved, and managed in a sustainable manner provided with easy access and support facilities for the enjoyment of visiting tourists. * Cultural heritage refers to outstanding monuments and groups of buildings in a country that have authentic, historical, archaeological, scientific, anthropological and ethnic value. * Natural heritage refers to outstanding physical, biological, and geological formations including its habitat and species that may be threatened and endangered.	6.1 Uniqueness and characteristics of heritage 6.2 Site protection and conservation 6.3 Tourism and site management 6.4 Environmental management 6.5 Accessibility 6.6 Support facilities

Source: ASEAN Tourism Standards

At this moment, there is no case that the ASEAN Tourism Standard is substantially applied in Luang Prabang Province.

#### **4.8 Community Participation in Tourism**

Residents and local communities in Luang Prabang District take part in community activities. For example, cleaning of the town and waste bank by cooperation of residents. Night bazaar is one of the community activities of the tourism sector. As described above, Chumkong Village and Pakham Village operate that night bazaar that has become a huge source of income for villagers.

Meanwhile, tourism sites such as a village brewing alcohol (Xnag Hai Village), a village of silk textiles (Phanom Village) and a village of handmade paper (Xang Khong Village) exist around Luang Prabang District through the ages. These could be regarded as pioneers of community-based tourism (CBT), which means that communities participate in tourism. However, participation in tourism is not being participated by the whole village and it is limited only to certain households. At this moment, the activities are not spread to other villagers.

#### **4.9 Impacts of Tourism into Local Society**

The JICA Survey Team organizes brainstorming discussion with community representatives to share merit and demerits of past tourism development in Luang Prabang Province.

##### **4.9.1 Positive Aspects**

For positive impacts of tourism development at the national level, increase in foreign currency, job opportunity, and regional development are pointed out. The tourism sector is one of most important foreign currency earners same as power development and natural resources in Laos. Looking at Luang Prabang, the tourism sector has large positive impacts to the local economy of Luang Prabang as well, particularly in the following aspects:

- Increase in job opportunities;
- Increase of income and income opportunity;
- Incentive and motivation to maintain heritage and traditional cultural assets; and
- Improvement of transport and logistics.

##### **(1) Increase in Employment Opportunities**

Employment in the tourism sector occupies approximately one-third (1/3) of the total employment in Luang Prabang. Many graduating students of Suphanuvong University get jobs in tourism and other related businesses. In accordance with the increase in number of tourists, job opportunity increases recently.

##### **(2) Increase of Income and Income Opportunities**

Increase of employment in the tourism sector in Luang Prabang contributes to the increase in income, which many local community representatives pointed out.

Furthermore, business opportunity increases and varies in accordance with the increase in number of

tourists, so there is chance to start a new business-related tourism depending on the uniqueness of the business idea and model.

### (3) Incentives/Motivation to Maintain Heritage and Local Cultural Assets

Residents are well aware of the importance of the Heritage Area as a key tourism resource. Since tourism brings economic benefits to Luang Prabang, tourism is an incentive/motivation to maintain the Heritage Area.

### (4) Improvement of Transport and Logistics

Recently, many transport infrastructures were developed in Luang Prabang such as improvement of NR13, A4 of Asian Highway (between Loei of Thailand and Luang Prabang) by Thai assistance, and improvement of Luang Prabang International Airport (by Chinese assistance), which realized drastic advancement of inter-city transport of Luang Prabang. These transport developments were done for regional development of Luang Prabang, but tourism development may have a positive influence to realize those developments. These transport projects improve the logistics of Luang Prabang, which improve the convenience of residents and realize new business opportunities like “convenience stores”.

## **4.9.2 Negative Aspects**

### (1) Impoliteness to Religion and Local Customs of Foreign Tourists

Few foreign tourists, especially backpackers, have little knowledge on tradition, culture, custom, and different religions of Luang Prabang resulting in performing impolite attitudes like touching and taking photo in prohibited places. Local residents were disappointed and confused because of these impolite attitudes.

### (2) Deterioration of Public Morals of Local People

Local residents sometimes face unacceptable fashion and behavior of foreign tourists. For example, overexposed body parts, public display of affection, etc. These foreign behaviors seem to have negative impacts to young generations because young people imitate them.

### (3) Decrease of Residents, Traditional Landscape, and Atmosphere in the Heritage Area

Population in the Heritage Area decreases. Since it is difficult to re-construct/renovate existing buildings in the Heritage Area, residents who moved outside the Heritage Area to live in a bigger/more comfortable new house have increased. This is due to high house rentals expected based on high potential of tourism business in the Heritage Area as the number of tourists increases. In fact, hotels, guesthouses, travel agents, restaurants, and souvenir shops have increased in number in the Heritage Area. Reflecting on these incidents, there are comments that Luang Prabang World Heritage Area is losing its traditional landscape and atmosphere.

### (4) Deterioration of Urban Environment due to Increase of Garbage and Wastewater from Hotels and Restaurants

Increase in hotels and guesthouses depending on the increase in number of tourists causes deterioration of the urban environment in Luang Prabang, particularly the increase in garbage and

wastewater. (However, most sources of effluents are from local residents.)

#### 4.10 Economic Effect of Luang Prabang Tourism

Table 4.10.1 shows the values of the ripple effect of the tourism sector in Luang Prabang which is estimated based on an inverse matrix table from the interindustry relations table in Lao PDR. According to this analysis, the following features of economic effect of the tourism sector can be suggested:

- According to statistic data from the DICT, the income of the tourism sector in 2015 was about USD 167.2 million. The total induced amount is about USD 222 million, and if the tourism sector is subtracted, it becomes about USD 55 million. Therefore, tourism income can affect about 32.6% (55/167.2) of tourism income to other sectors (However, this ripple effect is the total amount of unspecified timing, not of the year 2015).
- The sectors, which received high ripple effect from the tourism sector are: i) wholesale and retail trade, ii) construction, and iii) agriculture and livestock

**Table 4.10.1 Ripple Effect of Tourism Sector in Luang Prabang**

	<b>Inverse Matrix Coefficient of Tourism Sector (I-A)<sup>-1</sup></b>	<b>Induced Production Value (USD in Million)</b>
Agriculture and livestock	0.0415	6.9388
Forestry and logging	0.0088	1.47136
Mining and quarrying	0.0109	1.82248
Food and beverages manufacturing	0.0112	1.87264
All other manufacturing	0.0144	2.40768
Electricity and water supply	0.0156	2.60832
Construction	0.0539	9.01208
Transport and communications	0.0122	2.03984
Wholesale and retail trade	0.1076	17.99072
Banking, finance, and insurance	0.0197	3.29384
Real estate and business services	0.0078	1.30416
Public administration	0.013	2.1736
Personal, community, and social services	0.0095	1.5884
Tourism	1.0041	167.88552
<b>Total</b>		<b>222.40944</b>

Source: An Economic Analysis of Lao PDR Tourism Industry, Bhoj Raj Khanal, Lincoln University, 2011

## **Chapter 5 Tourism Development Strategies and Priority Project Packages**

### **5.1 SWOT Analysis**

SWOT analysis is done to clarify factors to be considered for tourism development based on the analysis of characteristics of current tourists, future framework, and constraints anticipated in the future, in order to delineate strategy to achieve tourism goal/vision of Luang Prabang Province.

#### **5.1.1 “Strength (S)” of Tourism in Luang Prabang**

Lao PDR seems to be the “old but kind of new tourism destination” because Lao PDR gradually opens the country recently compared with the neighboring countries like Thailand and Vietnam. In Lao PDR, Luang Prabang District is a unique tourism destination of “living heritage” combining the unique landscape of a 1,200 year history as an old capital, nature, and peoples’ life (slow life), and the well-known tourism destination which is the World Heritage Area. Local people are proud of the heritage of Luang Prabang, so the local peoples are willing to cooperate with the World Heritage Office. Accordingly, Luang Prabang World Heritage Area is relatively well conserved. Furthermore, stakeholders like people from public offices, businesses, and communities are aware of the importance of heritage conservation. This would be an important strength for further tourism development. Good security, safety, and hospitality of local peoples are additional attraction for tourists.

- Highly recognized as the world heritage;
- “Living heritage” with landscape as an old capital, nature, and peoples’ life (slow life);
- Good security;
- Hospitality of local people;
- Positive cooperation of local people to conservation work of the World Heritage Office;
- Awareness on the importance of tourism by public officers, businesses, and communities.

#### **5.1.2 “Weakness (W)” of Tourism in Luang Prabang**

On the other hand, tourism in Luang Prabang Province has some weaknesses. Firstly, Luang Prabang Province has limited tourism products. The landscape and slow life of the Heritage Area is the only tourist attraction of Luang Prabang, and there are not much tourism products to attract tourists. These limitations would result to short length of stay in Luang Prabang. Large fluctuation of tourist between high and low seasons is a large business risk for tourism businesses in Luang Prabang. For example, the big fluctuation of tourists largely affects business model of hotel management of which, profits in the high season offsets the losses in the low season. In addition, prices in Luang Prabang are relatively higher due to its location. It affects the cost of hotel, food, and transport, resulting in high overall tourism cost.

- Limited tourism products/attractions
- Shorter length of stay
- Shortage of accommodations in high season



- Higher tourism cost

### **5.1.3 “Opportunity (O)” of Tourism in Luang Prabang**

As external factor of tourism in Luang Prabang, the impact of the ASEAN Economic Cooperation (AEC) is considered as a positive factor for further tourism development. AEC will positively contribute to support Laos by improving circumstances to attract more tourists from ASEAN countries. Particularly, Thailand and Viet Nam, which are Buddhist countries with more demand for Buddhism temple tourism. In response to tourism demand of China and Singapore, expansion of Luang Prabang Airport and improvement of arterial roads may positively function to increase tourists. However, there is much space to improve and vary the use of the Heritage Area, villages, and nature of Luang Prabang.

- Better circumstances to respond more to the tourism market in ASEAN under AEC
- Improved transport infrastructure to meet future tourism demand
- Abundant potential tourism resources with potentials (for example, buildings in the Heritage Area and villages, etc.)

### **5.1.4 “Threat (T)” of Tourism in Luang Prabang**

On the other hand, competition among tourism destinations in surrounding countries will be a future threat of tourism development in Luang Prabang. Especially, Ankor Wat and Preah Vihear in Cambodia (both are world heritage), Bagan in Myanmar, Hoi An in Viet Nam (world heritage) are competitive tourism destinations, which have similar characteristics. Accordingly, strategic promotion and cost competitiveness are keys to compete with them.

“Living heritage”, the largest tourism resources in Luang Prabang, may be largely affected from urbanization and increase of tourists. Some infrastructure will be inadequate in accordance with the increase of population and tourists, which may harm the environment of Luang Prabang as well as be an obstacle for further tourism development. On the other hand, development of more accommodation will be required in Luang Prabang, which may require some actions to encourage private investment, meanwhile, to properly guide hotel developments to avoid negative impacts on landscape and environment.

Lastly, local people either public officers and private peoples are aware of the importance of tourism in Luang Prabang; however, they also recognize the negative aspects of tourism. It is important for tourism development in Luang Prabang to increase local benefits and decrease negative impacts. Otherwise, it may be a future risk of tourism development.

- Relatively low competitiveness among tourism destinations in surrounding countries
- Shortage of infrastructure and deterioration of urban environment
- Insufficient promotion and guide of private investment
- Increase of negative aspects of tourism with less local benefits from tourism

Table 5.1.1 shows the summary of the results of SWOT analysis.

**Table 5.1.1 SWOT Analysis on Tourism in Luang Prabang**

<b>Positive Factor</b>	<b>Negative Factor</b>
<p><b><u>Strength</u></b></p> <ul style="list-style-type: none"> <li>• Highly recognized as world heritage</li> <li>• "Living heritage" with landscape as an old capital, nature, and peoples' life (slow life)</li> <li>• Good security</li> <li>• Hospitality of local people</li> <li>• Positive cooperation of local people to conservation work of the World Heritage Office</li> <li>• Awareness on the importance of tourism by people from public offices, businesses, and communities.</li> </ul>	<p><b><u>Weakness</u></b></p> <ul style="list-style-type: none"> <li>• Limited tourism products/attractions</li> <li>• Shorter length of stay</li> <li>• Shortage of accommodations in high season</li> <li>• Higher tourism cost</li> </ul>
<p><b><u>Opportunity</u></b></p> <ul style="list-style-type: none"> <li>• Better circumstances to respond more to the tourism market in ASEAN under AEC</li> <li>• Improved transport infrastructure to meet future tourism demand</li> <li>• Abundant potential tourism resources with potentials (for example, buildings in the Heritage Area, and villages, etc.)</li> </ul>	<p><b><u>Threat</u></b></p> <ul style="list-style-type: none"> <li>• Relatively low competitiveness among tourism destinations in surrounding countries</li> <li>• Shortage of infrastructure and deterioration of urban environment</li> <li>• Insufficient Promotion and guide of private investment</li> <li>• Increase of negative aspects of tourism with less local benefits from tourism</li> </ul>

Source: JICA Survey Team

## **5.2 Basic Direction of Tourism Development Strategies**

### **5.2.1 Principles**

Luang Prabang Province is the main tourism destination in Lao PDR. Accordingly, Luang Prabang Province is required to lead Lao tourism as top tourism destination in Lao PDR. Luang Prabang Province is also required to increase tourism income and job opportunities by diversifying tourist attractions including community-based tourism (CBT) which experiences nature, farming, cottage industry, and rural life as a major and leading economic sector in Luang Prabang Province. To achieve these, further tourism development is necessary to be done including the utilization of “Strength” and “Opportunity” and minimizing “Weakness” and “Threat”, which are clarified through the SWOT Analysis in the above section. Along this recognition, the following implications from the SWOT analysis may be important for delineating tourism development strategies:

- Strength of tourism in Luang Prabang Province is the “living heritage” registered as world heritage. It is indispensable for Luang Prabang to conserve it with careful use.
- Increase of tourists and urbanization in the Luang Prabang World Heritage Area will be a threat to tourism in the medium term. It is necessary to take certain action to avoid negative influence on the Heritage Area and urban environment.
- Tourism cost of Luang Prabang Province is relatively higher among competitive tourism destinations in the surrounding countries. It is a weakness/disadvantage for further tourism development of Luang Prabang Province. Efforts were made to reduce tourism cost (where DICT has started to have dialogues with private companies concerned), and improve value for money

(VFM) for more satisfaction of tourists. It may be a short way to get higher reputation of Luang Prabang Province as tourism destination and lead future branding and promotion strategy.

- To increase tourism income with participation of more local businesses in tourism, it is necessary to extend the average length of stay in Luang Prabang Province. For this purpose, new tourist attractions like CBT in surrounding villages should be developed and promoted to diversify these tourist attractions in Luang Prabang Province.
- The seasonal fluctuation of tourists largely affects tourism cost and hotel management, which seems to be considered a risk of future private investment in tourism in Luang Prabang Province. Luang Prabang Province should concentrate in promotional activities in the areas and countries which have growing tourism market and pay more efforts on promotion for off-season (green season).
- To increase participation of local people in the tourism businesses in Luang Prabang Province, it is necessary to extend the length of stay of tourists in Luang Prabang Province with new tourist attractions.
- The local community and people will be important key stakeholders for further consideration and tourism development in Luang Prabang Province. It is accordingly necessary to pay more efforts to increase local benefits and participation from/to tourism in Luang Prabang Province.

### 5.2.2 Tourism Development Strategies in Luang Prabang

The future vision of Luang Prabang as a tourism destination is having a town with well conserved “living heritage” combining nature, villages, and slow-life, which are well-managed with the participation of local people for sustainability.

To realize this vision, it is necessary to 1) ensure sustainability of tourism base and use of tourism resources, 2) improve the value as tourism destination under public-business-community partnership, and 3) diversify variety as tourism destination.

Based on the considerations above, the following five strategies are taken into account to realize the vision:

Strategy 1: Consolidation of Tourism Base and Circumstances

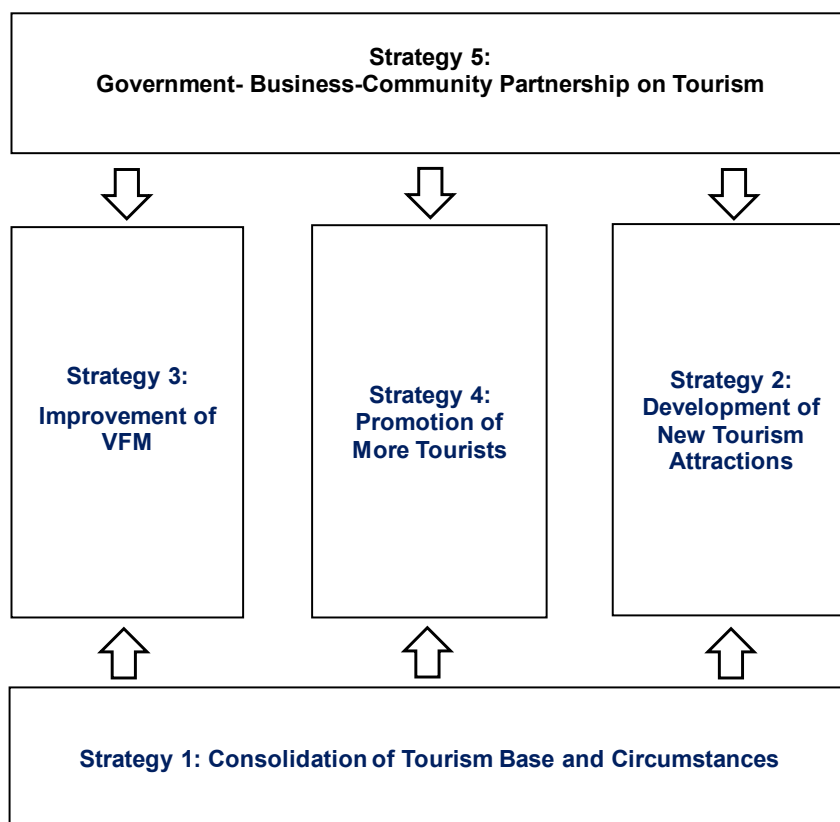
Strategy 2: Development of New Tourism Attractions

Strategy 3: Improvement of VFM

Strategy 4: Promotion of More Tourists

Strategy 5: Government-Business-Community Partnership in Tourism

Figure 5.2.1 shows relation among five strategies proposed.



Source: JICA Survey Team

**Figure 5.2.1 Relation among Five Strategies Proposed**

### **5.3 Formation of Project Packages along with Tourism Development Strategies**

#### **5.3.1 Strategy 1: Consolidation of Tourism Base and Circumstances**

Urban infrastructure should be developed to tackle increasing number of tourists and urbanization in order that Luang Prabang will continuously sustain as a tourism destination. Particularly, tourism resources and conservation of “living heritage” should be the priority as well as urban infrastructure development. In this regard, the following three programs should be implemented with high priority:

- Security and safety improvement
- Environment improvement
- Urban infrastructure development

#### **5.3.2 Strategy 2: Development of New Tourism Attractions**

In order to increase the benefits of tourism development in regional economy, it is necessary to extend the length of stay of tourists. For this purpose, it is important to diversify tourism activities in Luang Prabang.

Luang Prabang World Heritage Area has history and hidden stories. Instruments to provide that information as well as supporting facilities like IT, explanation board, street furniture, and rest facilities to improve convenience and comfort in the Heritage Area, may contribute to the rise of value of the Heritage Area even more. New tourism products utilizing cultural assets like events, festivals, rural life

in villages, and nature should be developed to expand variety of tourist attractions in Luang Prabang. For this purpose, the following programs should be taken into account:

- Improvement of heritage value
- Use of cultural assets
- Development of new attractions
- Networking of tourist attractions

### **5.3.3 Strategy 3: Improvement of VFM**

To attract more tourists by improving competitiveness of Luang Prabang among other tourism destinations in surrounding countries, it is important to rise its reputation as a tourism destination through improving VFM of tourism in Luang Prabang. For this purpose, it is necessary to improve service quality as well as reduction of tourism cost. Also, rise of value added attraction as tourism destination under strategy 2, choice of behaviors for tourists should be expanded by strengthening provision of information on Luang Prabang. For this purpose, the following programs should be taken into account:

- Service improvement
- Strengthening of information provision

### **5.3.4 Strategy 4: Promotion of More Tourists**

To achieve 700,000 tourists in 2020, receiving capacity as well as adequate promotion should be carried out. For tourism promotion, it is necessary to pay more attention on increasing the number of tourists in low season considering current capacity of accommodation and hotel management. Considering cost and profits, it is necessary to focus on the countries with growing tourism market, the countries with long vacations in low season like Japan and Korea (long holidays and summer break), Thailand and Vietnam (Buddhist new years and school break), and Europe (long summer vacation). On the other hand, increasing the capacity of accommodation is also indispensable as well as reduction of tourism cost which starts with a dialogue between public and private sector.

Meanwhile, efforts to restrain negative impacts to local community should be seriously be addressed to keep cooperation and acceptance of tourism of local residents. For this purpose, the following programs should be taken into account:

- Target-oriented promotion
- Increase of tourist attraction
- Reduction of tourism cost
- Restraint of negative impacts from tourism

### **5.3.5 Strategy 5: Government- Business-Community Partnership in Tourism**

To keep its sustainability as a tourism destination, it is indispensable to ask for the participation of all stakeholders involved in tourism and related activities. For this purpose, it is necessary to raise awareness on tourism of all stakeholders as well as capacity development regarding tourism

management. For the public sector, tourism management including planning and implementation capacity are important, while capacity development to encourage local people to participate in tourism businesses, business supports, and recruitment supports should be taken into account. Along with this, the following programs should be taken into account:

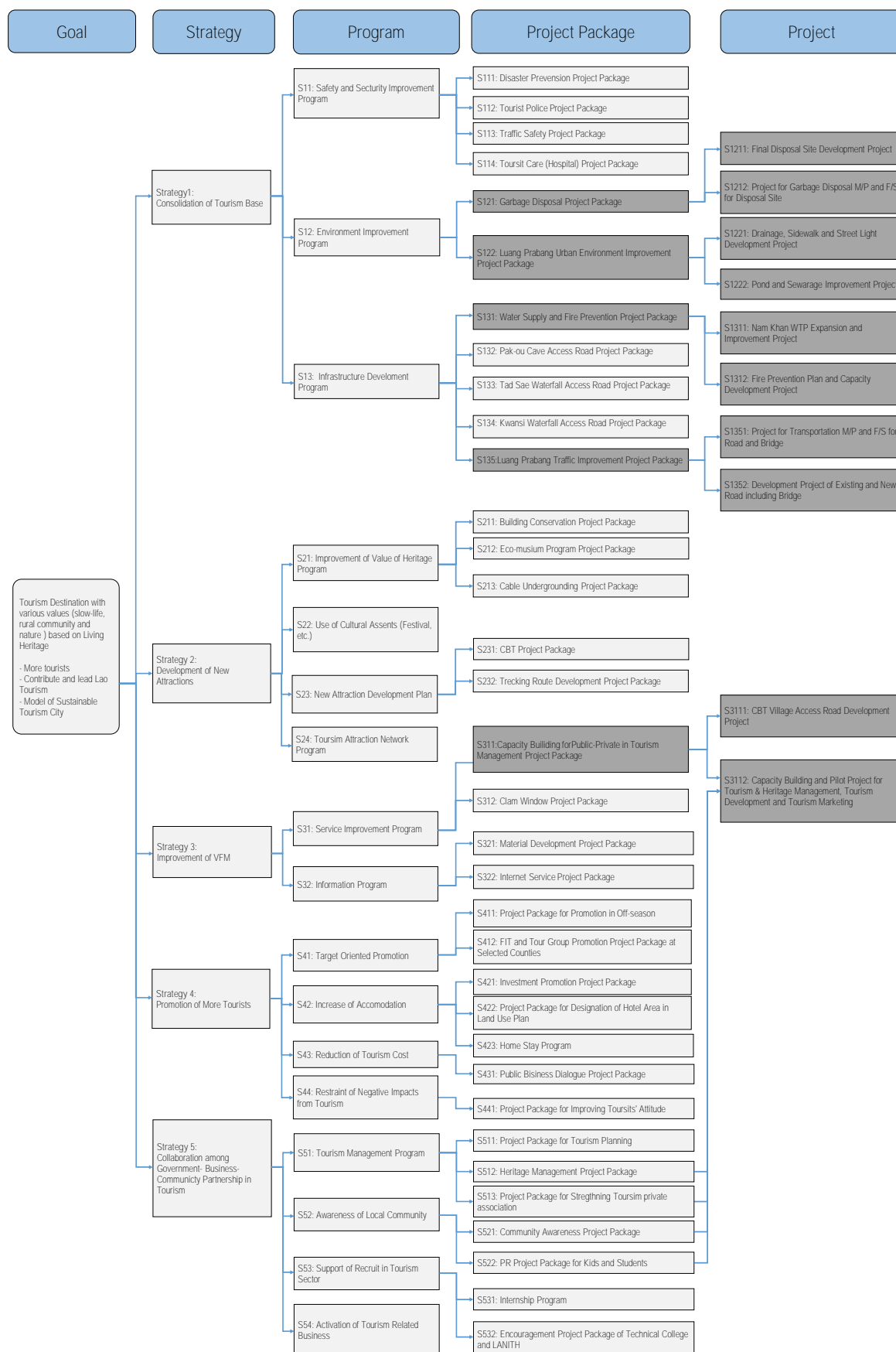
- Improvement of tourism management
- Enhancement of awareness on tourism by local people
- Support of recruitment in the tourism sector
- Activation of tourism related business associations

### **5.3.6 Project Packages to implement Proposed Tourism Development Strategies**

Program and project packages are proposed along with the proposed tourism development strategies as shown in Figure 5.3.1.



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**Final Report**



Source: JICA Survey Team

**Figure 5.3.1 Project Packages along the Proposed Tourism Development Strategies**

## **5.4 Priority Project (as short listed projects)**

### **5.4.1 Short-term Tourism Development Target**

Considering the tourism development strategy, conservation of the Heritage Area is a vital issue as well as tourism bases should be consolidated and strengthened as first priority. On the other hand, collaboration scheme of public, private, and communities should be enhanced as well as participation of all stakeholders in tourism development. Based on the improvement of both hardware and software aspects of tourism, tourist attractions should have more variety and should be added with higher value.

- Conservation of the Heritage Area
- Consolidation of tourism base
- Enhancement of collaboration
- More variety of tourist attractions

### **5.4.2 Selection of Priority Project Packages**

To tackle short-term target of tourism development in Luang Prabang, the JICA Survey Team pays attention on the following six criteria:

- Consistency with 8<sup>th</sup> NSEDP and RSEDP
- Urgency
- Size of the project
- Exercise on collaboration among relevant public agencies
- Exercise on public-business-community partnership
- Benefits of residents (local community)

The JICA Survey Team selects five project packages to be implemented with higher priority based on the six criteria as mentioned above. Table 5.4.1 shows the project packages and results of assessment based on the above six criteria.

**Table 5.4.1 Proposed Project Packages and Their Assessment**

	Consistency with 8 <sup>th</sup> SEDP	Urgency	Size of the Project	Exercise on collaboration among relevant public agencies	Exercise on public-business-community partnership	Benefits of residents (local community)	Related Tourism Strategy
S121 Solid Waste Sanitary Landfill Development Project Package	○	○	○			○	Strategy 1: Consolidation of Tourism Base and Circumstances
S122 Luang Prabang Urban Environment Improvement Project Package	○		○			○	Strategy 1: Consolidation of Tourism Base and Circumstances
S131 Project Package for Water Supply System Improvement including Expansion for Namkhan WTP and Fire Prevention in the World Heritage Preservation Zone	○	○	○	○		○	Strategy 1: Consolidation of Tourism Base and Circumstances
S135 Luang Prabang Transportation Improvement Project Package	○		○			○	Strategy 1: Consolidation of Tourism Base and Circumstances
S311 Public-Business-Community Collaboration-based Tourism Management Improvement Project Package	○		○	○	○	○	Strategy 1: Consolidation of Tourism Base and Circumstances Strategy 3: Improvement of VFM Strategy 5: Government-Business-Community Partnership in Tourism

Note: ○ applicable

Source: JICA Survey Team

Table 5.4.2 shows each project package.

**Table 5.4.2 Priority Project Package**

No.	Package	Objective/Outline	Grant Aid	Technical Cooperation	Loan	Cost (USD)	Remarks
1	S121 Solid Waste Sanitary Landfill Development Project Package	Upgrading of solid waste disposal capacity in Luang Prabang.	S1211 Construction of new solid waste disposal site Implementation agency: UDAA	—	—	2,248,479	• Formulation of land use plan of the existing disposal site
		Establishing waste disposal management plan to improve the urban environment and public health of Luang Prabang	—	S1212 • Projection of solid waste generation • Solid waste collection system improvement plan • Field survey at the new solid waste disposal site, Sanghai Village, Pak Ou District • EIA • Sanitary landfill planning • Enforcement of capacity building of solid waste management Related agency: UDAA	—	2,250,225 (7 months)	—
2	S122 Luang Prabang Urban Environment Improvement Project Package	Improve livelihood of citizen to be healthy, and reduce risk of flooding, and to have better environment.	S1221 • Construct drainage system along the main Manolom Village Office to the Department of Finance • Improvement of sidewalks (1.5 m width) and side ditches in 13 roads • Facilitation of street light and underground cable installation in 16 roads Implementation agency : UDAA Related agency: World Heritage Office	—	—	6,962,811	• Coordination with AFD and the Heritage Office • Coordination with EDL and the Department of Telecommunication
		Improving living and water environments	—	S1222 • Field survey for 99 ponds inside the World	—	9,00,900 (1 years)	• Coordination with AFD and

No.	Package	Objective/Outline	Grant Aid	Technical Cooperation	Loan	Cost (USD)	Remarks
		(wetland and drainage system) of the World Heritage District and create a relaxation place.		Heritage District • Selection of the priority pond to be preserved Related agency: UDAA			the Heritage Office
3	S131 Project Package for Water Supply System Improvement including Expansion for Namkhan WTP and Fire Prevention in the World Heritage Preservation Zone	Securing a stable and safe water supply in the World Heritage Area and to increase benefit for related industries including the tourism sector.	S1311 • Improvement of Nam Khan WTP (6,000 m <sup>3</sup> /d) • Improvement in the distribution system: DN100-DN600 L:13.6 km • Expansion of Nam Khan WTP (6,000 m <sup>3</sup> /d) • Installation of hydrants with decoration cover: 39 units Implementation agency : NAMPAPA Related agency : DPWT	—	—	14,737,000	• Advices of the World Heritage Office are required to set up fire hydrants
		Establish disaster prevention plan, strengthen organization and coordination between government agencies and local communities	—	S1312 • Selection of fire prevention buildings (more than 100 buildings) • Implementation of pilot project (construction of fire water tank and equipment) • Enforcement of capacity building of fire brigade at a community level Related agency: DPL, LPWSE and Fire Station	—	1,800,180 (3 years)	• Coordination with the Heritage Office and fire station
4	S135 Luang Prabang Transportation Improvement Project Package	It aims 1) to improve the condition of transportation in Luang Prabang by making traffic concentration spread in wider area, 2) to secure safety and	—	S1351 • Implementation of traffic census • Traffic demand forecasting and formulate a short term action plan • Urban transportation masterplan • Implementation of a feasibility study Related agency: DPWT	—	2,160,216 (1.5 years/ 60MM)	• Traffic census has never been implemented by DPWT in Luang Prabang before

No.	Package	Objective/Outline	Grant Aid	Technical Cooperation	Loan	Cost (USD)	Remarks
		convenience of transportation for tourists and local communities, and 3) to increase benefit to related regional industries					
		Strategy 1: Consolidation of Tourism Base and Circumstances		—	S1352 • Road improvement from Kok Ngio Village (10 km) • Road improvement to Phonesay Village (13 km) • Renewing of old Nam Khan Bridge (165 m) • New road between airport to Nasanveuy Village (4.6 km) Implementation agency: DPWT Related agency: World Heritage Office	70,430,211	• Relocation of shops inside the right of way • Preservation of the appearance of the bridge • Coordination with the heritage office
5	S311 Public-Business-Community Collaboration based Tourism Management Improvement Project Package	Improving road pavement to prevent the surface to become muddy in the rainy season and improving living environment for local communities by securing	S3111 • Access road improvement in villages such as Xieng Lek Village and Xangkhong Village including developing sideditch, sidewalk, and street light Implementation agency: DPWT	—	—	4,500,500	• Road expansion is not necessary



No.	Package	Objective/Outline	Grant Aid	Technical Cooperation	Loan	Cost (USD)	Remarks
		conveniences of transportation	Related agency: DICT, UDAA				
		It is indispensable to establish a public-private partnership-based implementation unit for regional development and conduct capacity building for local authorities concerned. If the proposed project is realized, it could be possible to improve the balance between preservation (of nature, history, culture and traditional resources) and tourism development, and promote sustainable regional development in Luang Prabang Province.	—	<p>S3112</p> <ol style="list-style-type: none"> <li>1) Establishment of a management body comprising of local communities, private sector and local authorities <ul style="list-style-type: none"> <li>• Establishment of a committee composed of direct and indirect stakeholders.</li> <li>• Establishment of working groups.</li> </ul> </li> <li>2) Establishment of the fund mechanism for sustainable maintenance of historical buildings in the World Heritage Area <ul style="list-style-type: none"> <li>• Review and analyze the existing concessional arrangements between the local authority and collect information about laws and regulations on tourism revenue</li> <li>• Propose sustainable fund raising mechanism</li> <li>• Conduct a proposed mechanism and system as a pilot project</li> <li>• Review and analyze conducted pilot project and amend the proposal</li> </ul> </li> <li>3) Elaboration of the maintenance manual and action plan for sustainable preservation <ul style="list-style-type: none"> <li>• Review and analyze Luang Prabang urban planning, maintenance manuals and regulations</li> <li>• Propose necessary measures and action plans for heritage management and preservation</li> <li>• Conduct a pilot project under the participation of local authority, private sector and local communities</li> <li>• Review the pilot project and establish revised maintenance manual and action plan for sustainable heritage preservation</li> </ul> </li> <li>4) Development of the new tourist attraction including hospitality and marketing in the rural</li> </ol>	—	4,500,500 (JPY 500,000,000) (5 years)	

No.	Package	Objective/Outline	Grant Aid	Technical Cooperation	Loan	Cost (USD)	Remarks
				<p>district</p> <ul style="list-style-type: none"> <li>• Baseline survey and training on statistics</li> <li>• Pilot project in the rural community and conduct the project</li> <li>• Elaboration of a marketing plan for the rural district tourism promotion</li> <li>• Hospitality training for the rural district communities</li> </ul> <p>5) Improvement of handicraft quality and agricultural product</p> <ul style="list-style-type: none"> <li>• Baseline survey and training on statistics</li> <li>• Pilot project in the rural community and conduct the project</li> <li>• Elaboration of a marketing plan for the rural district tourism promotion</li> </ul> <p>6) Raising the awareness for heritage preservation among local communities and tourists</p> <ul style="list-style-type: none"> <li>• Review the current cultural assets</li> <li>• Preparation of a guidebook with the local communities</li> <li>• Preparation of contents and train facilitators</li> <li>• Enhancement of public awareness through study meetings with local communities</li> </ul> <p>7) Improvement of Lao side's planning skills for sustainable regional development</p> <ul style="list-style-type: none"> <li>• Checking up of the most important key challenges in tourism sector during the 9th RSED</li> <li>• Preliminarily draft the 9th RSED</li> </ul> <p>Responsible agency : DICT, DPL Related agency: DPWT, UDAA, LUTA and Local Communities</p>			

Source: JICA Survey Team

## Chapter 6 Consideration of the Priority Projects

### 6.1 Solid Waste Sanitary Land Fill Development Project Package (S121)

#### 6.1.1 Grant Aid

The Project Profile for Solid Waste Sanitary Land Fill Development (S1211) is presented in Table 6.1.1. This is proposed as a candidate of grant aid assistance due to the size of the project which is below JPY 2 billion.

**Table 6.1.1 Project Profile for Solid Waste Sanitary Land Fill Development (S1211)**

1. Basic Information																																						
(1)	Country	Lao People's Democratic Republic																																				
(2)	Project Site/ Target Area	Sanghai village, Pak Ou district, Luang Prabang province as shown in Figure 6.1.1.																																				
(3)	Sector	Solid Waste Management																																				
(4)	Project Name	Solid Waste Sanitary Landfill Development Project (Grant Aid)																																				
(5)	Project Summary	Upgrading of solid waste disposal capacity in Luang Prabang																																				
2. Background and Necessity																																						
(1)	Background (current state, necessity of immediate action & the needs)	<p>Based on the existing situation of the disposal site in Lakpaed village, its built in 1996 with 20 years of age, its capacities are limited to serve the solid waste generated. Solid waste generation and served population are projected by Laos Pilot Program for narrowing the Development Gap towards ASEAN Integration, 2010-2015 below;</p> <p style="text-align: center;"><b>Table 6.1.2 Solid Waste Generation</b></p> <table><tr><th rowspan="2">Description</th><th colspan="2">2013</th><th colspan="2">2020</th></tr><tr><th>UDAA</th><th>Private</th><th>UDAA</th><th>Private</th></tr><tr><td>Solid Waste Generation (t/d)</td><td>20.6</td><td>16.0</td><td>54.4</td><td>21.2</td></tr><tr><td>Total (t/d)</td><td colspan="2">36.6</td><td colspan="2">75.6</td></tr><tr><td>Served Population (persons)</td><td>33,362</td><td>11,940</td><td>48,319</td><td>15,900</td></tr><tr><td>Total (persons)</td><td colspan="2">45,302</td><td colspan="2">64,219</td></tr><tr><td>Served Ratio</td><td colspan="2">56%</td><td colspan="2">68%</td></tr></table> <p>Source: UDAA</p> <p>Thus, the provincial authority agreed and decided to select a new disposal site to be located 19 km far from the city in Ban Xanghai village, Pak Ou district, Luang Prabang province as shown in Figure 6.1.1. The site is a forest and timber crop. An access to the site is a rough road with a distance of 1 km from Pak Seng Road.</p> <p>The project is stipulated to be one of the highest priory projects by the 8th National Social Economic Development Plan. Moreover, Japanese assistance policy for Lao PDR indicates the “assistance in the fields of environmental management, water treatment plants, and urban planning that contributes to building an environmentally harmonious and comfortable society”, which strongly relates to Lao PDR’s policy regarding development of solid waste management system in Luang Prabang Province.</p>			Description	2013		2020		UDAA	Private	UDAA	Private	Solid Waste Generation (t/d)	20.6	16.0	54.4	21.2	Total (t/d)	36.6		75.6		Served Population (persons)	33,362	11,940	48,319	15,900	Total (persons)	45,302		64,219		Served Ratio	56%		68%	
Description	2013		2020																																			
	UDAA	Private	UDAA	Private																																		
Solid Waste Generation (t/d)	20.6	16.0	54.4	21.2																																		
Total (t/d)	36.6		75.6																																			
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Total (persons)	45,302		64,219																																			
Served Ratio	56%		68%																																			
(2)	Japan Cooperation in Infra Sector/ Luang Prabang Province	Related JICA Projects: Laos Pilot Program for narrowing the Development Gap towards ASEAN Integration, 2010-2015																																				
(3)	Other donors’ Cooperation	None																																				
3. Project Outline																																						

(1) Project Outline							
① Purpose of project	Upgrading of solid waste disposal capacity in Luang Prabang.						
② Project Description	<p>Main components of project are;</p> <ol style="list-style-type: none"> <li>1. Total Area: 52 ha</li> <li>2. Building construction for SWM</li> <li>3. Solid waste management with Sanitary Land Fill Method</li> <li>4. Leachate and night soil treatment plant</li> <li>5. Internal Road</li> <li>6. Truck Scale</li> <li>7. Workshop</li> <li>8. Road access to disposal site: 1 km</li> <li>9. Fencing</li> <li>10. Water supply with borehole development</li> <li>11. Drainage</li> <li>12. Combined septic tank</li> <li>13. Electricity installation</li> </ol>						
③ Related JICA Project	Non						
(2) Project Cost	LAK: 17,932,787,000 (JPY: 250,000,000) as of May 2016 as shown in Table 6.1.4						
(3) Presumed Project Period	About 1 year from 2017 to 2018 (see Figure 6.1.2)						
(4) Responsible and Executing Agencies (see attached organization chart for each agencies)	<p>Responsible Organization: UDAA, Luang Prabang Province</p> <p>Executing/implementing Agency: UDAA</p> <p>O&amp;M Agency: UDAA (solid waste management section).</p>						
(5) Account Statement of Executing / Implementation Agencies	<p>Budget (Revenue and Expenditure) in 2015 (See Table 6.1.3)</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">Revenue (LAK)</td><td style="text-align: right;">1,958,753,700</td></tr> <tr> <td>Expenditure (LAK)</td><td style="text-align: right;">1,872,087,100</td></tr> <tr> <td>Balance (LAK)</td><td style="text-align: right;">86,666,600</td></tr> </table>	Revenue (LAK)	1,958,753,700	Expenditure (LAK)	1,872,087,100	Balance (LAK)	86,666,600
Revenue (LAK)	1,958,753,700						
Expenditure (LAK)	1,872,087,100						
Balance (LAK)	86,666,600						
(6) Environmental and Social Consideration	<p>Positive Impact: Living/ tourist environment is improved.</p> <p>Negative Impact:</p> <ul style="list-style-type: none"> <li>- During the construction, noise, traffic jam and air pollution will be occurred temporarily around the project site.</li> <li>- After operation of the disposal site, it is concerned to be bad smell and outbreak of flies/mosquitos in the project area.</li> </ul> <p>JICA Classification of Category: B-category</p>						
(7) Cross Sectional Regards	<ol style="list-style-type: none"> <li>1) Request to other Donors: <u>Yes</u> or No</li> <li>2) submit project proposal to Government for funding</li> <li>3) Submit project proposal to INGO for grant funding</li> <li>4) Technical assistant : type project <u>short</u> and long term project included expert/volunteer/<u>accept trainee</u></li> </ol> <p>List of Related Projects/Plans: The 8<sup>th</sup> National Social Economic Development Plan</p>						
(8) Classification of Gender (Contents of Activity/Reason of Classification)	Not applicable.						
(9) Presumed Contract Manner (competitive bid, nominated contract)	Refer to rules and regulation of Ministry of Finance, Laos and/or JICA Japan's Grant Aid						

(10) Issues for Project Formulation	Land acquisition is not conducted (Land owners are the villagers in the project area). Solid waste collection system shall be improved at the same time of project implementation.
(11) Other Special Issues/Notes	- EIA is required. - M/P and F/S is required in order to introduction of Sanitary Land Fill Method. - Both existing and newly planned disposal sites are outside of the world heritage zone. Therefore, the project does not correspond to the items in PSMV.
<b>4. Project Effectiveness</b>	
(1) Quantitative Effectiveness	<ul style="list-style-type: none"> <li>Served population is increased from 45,300 in 2013 to 64,200 in 2020,</li> <li>Served ration is improved to be about 70% from 56% in 2013,</li> <li>To help the health improvement of 94,000 residents in Luang Prabang District in 2020.</li> </ul>
(2) Internal Ration of Return	<ul style="list-style-type: none"> <li>Not examined</li> </ul>
(3) Qualitative Effectiveness	<ul style="list-style-type: none"> <li>To improve the living environment in Lunag Prabang District,</li> <li>To improve the tourist environment in Luang Prabang District such as reduction of odor and improvement of beauty</li> </ul>

Source: JICA Survey Team



Source: UDAA

**Figure 6.1.1 Location of Projects**

SCOPE OF WORK	2017	2018	2019
EN			
Basic Design Study			
Tender Procedure (Bidding) for Construction Work			
Implementation of Project (1year)			
Soft Component (capacity building, Educational Campaign)			

Source: JICA Survey Team

**Figure 6.1.2 Project Implementation Schedule**

**Table 6.1.3 Budget (Revenue and Expenditure)**

N:	Description	Income	Expenditure	Balance
<b>I</b>	<b>Income from public district</b>	287,147,700		
1	Grand Total 2014	1,830,500		
2	Income 2015	285,317,200		
	Expenditure		246,687,100	
	Balance			40,460,600
<b>II</b>	<b>Income of infra Division</b>			
1	Income from Vehicle	311,037,000		
	Expenditure		299,918,000	
	Balance			11,119,900
<b>III</b>	<b>Income of condition control Division</b>	1,210,569,000		
1	Grand total of 2014	11,810,000		
2	Income of a year	1,198,759,000		
	Expenditure		1,175,482,000	
	Balance			35,087,000
<b>IV</b>	<b>Income for a year</b>	150,000,000		
<b>V</b>	<b>Expenditure a year</b>		150,000,000	
<b>VI</b>	<b>Balance</b>			0
	Balance	1,958,753,700	1,872,087,100	86,666,600

Source: UDAA

**Table 6.1.4 Cost Estimates of Project**

No	Description	Project Cost (LAK)	Remark
1.	Building construction	2,493,787,000	
2.	Solid waste management	2,290,000,000	
3.	Road access to disposal site 1 km	10,699,000,000	
4.	Fencing	1,280,000,000	
5.	Electricity installation	<b>1,170,000,000</b>	
	Total	<b>17,932,787,000</b>	

Source: UDAA

## 6.1.2 Technical Cooperation

It is recommended that the master plan (M/P) and feasibility study (F/S) shall be conducted before the implementation of the new solid waste disposal site in order to introduce the sanitary landfill method and improvement of SWM in Luang Prabang. The outline of technical cooperation project is shown below.

- 1) Project period: 7 months (3 months for M/P study and 4 months for F/S)
- 2) Project cost: about JPY: 250,000,000
- 3) Scope of work;
  - Projection of solid waste generation
  - Solid waste collection system improvement plan
  - Field survey at the new solid waste disposal site, Sanghai village, Pak Ou district,
  - EIA
  - Sanitary land fill planning
  - Enforcement of capacity building of SWM

## 6.2 Luang Prabang Urban Environment Improvement Project Package (S122)

### 6.2.1 Grant Aid

Project profile for sidewalk, side ditch, and street light improvement in Luang Prabang District is shown in Table 6.2.1. Although it consists of several projects in multi-sector, sizes of each project and the whole project are small. From this reason, it is proposed as a candidate of a program grant aid assistance.

**Table 6.2.1 Project Summary: Sidewalk, Side Ditch, Street Light, and Parking Space Improvement Project in Luang Prabang Urban Area (S1221)**

1. Basic Information	
(1) Country	Lao People's Democratic Republic
(2) Project Site/ Target Area	Urban area of Luang Prabang District (See Figure 6.2.1 to Figure 6.2.5)
(3) Sector	Sidewalk, Drainage, Street Light and Parking Space Improvement
(4) Project Name	Sidewalk, Side Ditch, Street Light and Parking Space Improvement in Luang Prabang Urban Area (S1221)
(5) Project Summary	Project for drainage system improvement, sidewalk and drain ditch improvement (13 locations), streetlight development (16 locations) and parking space development (6 locations)
2. Background and Necessity	
(1) Background (current state, necessity of immediate action & the needs)	<p>Luang Prabang Province has beautiful nature and rich culture which makes it a tourist destination. Luang Prabang District was accepted as the world heritage site with more than one million of both domestic and international tourists every year. However, there are roads without sidewalk and side ditch. Additionally, the existing sidewalks and side ditches are aged and damaged.</p> <p>The Master Plan for Drainage and Sewerage System of Luang Prabang (M/P) was formulated in 2013. The project site belongs to Zone I-B with high priority area for improving storm water drainage system according to M/P as shown in Figure 6.2.1. The project was identified as an urgent project by M/P. This project contributes to the improvement of ponds where they function as natural wastewater treatment.</p> <p>Moreover, there are many roads without streetlights and a lot of overhead cables along the roads. The roads without streetlights restrict the residents and/or tourists to walk around the world preservation zone at night. The overhead cables impair the landscape of the zone. Related to this, increase of parking area on the road especially along the Mekong and Khan Rivers has recently become an obstruction on the landscape. Also, UNESCO advises to secure the parking space at the riverside area, and the heritage office of Luang Prabang considers this solution as an emergency project.</p> <p>The Sidewalk, Side Ditch Street Light and Parking Space Improvement Project is required not only to enhance the convenience of daily life and sightseeing but also to secure traffic safety for residents and tourists and improve the living environment itself.</p> <p>In order to preserve and improve the environmental condition of the urban area as the world heritage area, comprehensive urban infrastructure development is required. Also, since sidewalk, side ditch and street light are all regarded to the construction on the sidewalk area, construction period is able to be shortened by implementing at the same time which might reduce the effect to the world heritage area during the construction work.</p> <p>The 8<sup>th</sup> NSEDP indicates “environment preservation and reduction of natural</p>

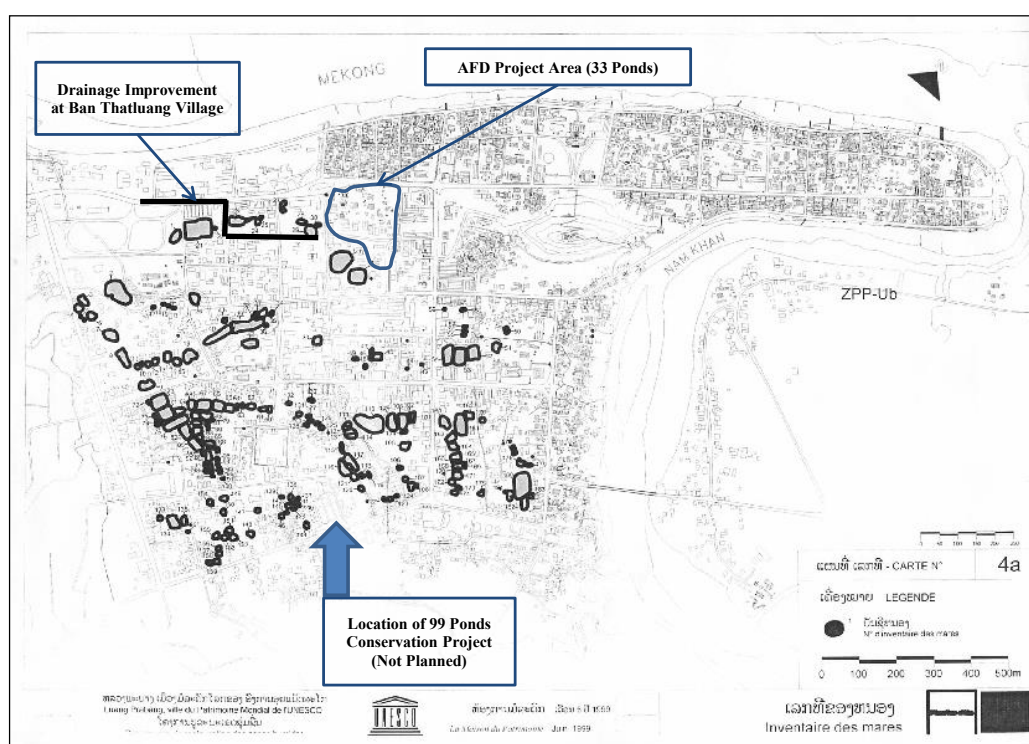


	hazard risks” as an output. At the same time, in Japanese assistance policy to Lao PDR, “(1) Development of Economic and Social Infrastructure” also describes that the “assistance in the fields of environmental management, water treatment plants, and urban planning that contributes to building an environmentally harmonious and comfortable society” is necessary. Therefore, policies of both countries are matched.
(2) Japan Cooperation in Infra Sector/ Luang Prabang Province	Non
(3) Other donors’ Cooperation	<ul style="list-style-type: none"> <li>• AfD: PADUL Phase 1 (2009-2012), Phase 2 (2012-2017) * Infrastructure improvement mainly in world heritage and surrounding areas (alleys, laying cables underground, registered buildings maintenance work, etc.)</li> <li>• AfD: The Master Plan for Drainage and Sewerage System of Luang Prabang, Preservation Project of 33 Ponds</li> </ul>
<b>3. Project Outline</b>	
(1) Project Outline	
① Purpose of the Project	To improve the drainage system, walkability of roads for residents, and tourists and landscape of the town.
② Project Description	<p>(1) Improvement of Drainage System</p> <ol style="list-style-type: none"> <li>1. Construct a drainage system along the main Manolom Village Office to the Department of Finance</li> <li>2. Improve ponds along the road</li> </ol> <p>(2) Sidewalk and Side Ditch Improvement</p> <ol style="list-style-type: none"> <li>1. Improvement of sidewalks and side ditches at 13 roads</li> <li>2. Total length of sidewalks: about 4 km</li> <li>3. Total length of side ditches: about 4 km</li> </ol> <p>(3) Street Light Installation</p> <ol style="list-style-type: none"> <li>1. Facilitation of street light and underground cable at 16 roads</li> <li>2. Total number of street lights: 924</li> <li>3. Total length of underground cable: about 30 km</li> <li>4. Restoration of side walks</li> </ol> <p>(4) Parking Space and Pedestrian Path Development</p> <ol style="list-style-type: none"> <li>1. Development of parking spaces beside Mekong and the Khan River at six locations</li> <li>2. Removal of existing parking space and sidewalk</li> <li>3. Development of pedestrian path</li> </ol>
③ Related JICA Project	Non
(2) Project Cost	<p>(1) Improvement of Drainage System Direct Construction Cost: USD 76,360</p> <p>(2) Sidewalk and Side Ditch Improvement Direct Construction Cost: USD 2,285,193</p> <p>(3) Street Light Installation Direct Construction Cost: USD 4,143,128</p> <p>(4) Parking Space and Pedestrian Path Development Direct Construction Cost: USD 458, 130</p> <p>Total: USD6,962,811</p>
(3) Presumed Project Period	3 years (See Figure 6.2.6 to Figure 6.2.9)
(4) Responsible and Executing Agencies	Responsible Organization: UDAA, Luang Prabang

(see attached organization chart for each agencies)	Executing/implementing Agency: UDAA O&M Agency: UDAA and respective villagers surrounding.
(5) Account Statement of Executing / Implementation Agencies	Budget (Revenue and Expenditure) in 2015 Revenue (LAK) 1,958,753,700 Expenditure (LAK) 1,872,087,100 Balance (LAK) 86,666,600
(6) Environmental and Social Consideration	JICA Classification of Category: <input type="checkbox"/> A <input checked="" type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> FI Positive Impact: <ul style="list-style-type: none"> <li>- To improve the walkability in Luang Prabang Town for residents and tourists.</li> <li>- To improve the livelihood of citizens for them to be healthy, and reduce the risk of flooding in order to have a better environment.</li> <li>- To increase the profitability of the whole related industry.</li> </ul> Negative Impact: <ul style="list-style-type: none"> <li>- During the construction, noise, traffic jam, and air pollution will occur temporarily around the project site.</li> </ul>
(7) Cross Sectional Regards	1) Request to other donors: <u>Yes</u> or No 2) Submit project proposal to government for funding 3) Submit project proposal to INGO for grant funding 4) Technical assistant: Short- and <u>long-term</u> projects including <u>experts/volunteers</u> and <u>accept trainees in the project</u>  Receive volunteers, new technical skills, upgrade knowledge of staffs and gain skills from experts of this project <ul style="list-style-type: none"> <li>• List of Related Projects/Plans: ADB Greater Mekong Subregion Tourism Infrastructure for Inclusive Growth Project 2014-2019</li> </ul>
(8) Classification of Gender (Contents of Activity/Reason of Classification)	Non
(9) Presumed Contract Manner (competitive bid, nominated contract)	Refer to rules and regulation of Ministry of Finance, Laos and/or JICA Japan's Grant Aid
(10) Issues for Project Formulation	Consultation with concerned departments is required. Technical design, technical officers, equipment, engineer and other concerned departments
(11) Other Special Issues/Notes	<ul style="list-style-type: none"> <li>• This multisectoral project is under responsibility of UDAA.</li> <li>• For overall improvement of urban environment in the world heritage area, implementation of multisectoral project rather than individual project is expected to be more effective. By shortening the construction period, negative impact to the heritage will be reduced.</li> <li>• Zonings of PSMV and remarks for each development project are as follows: (1) Improvement of Drainage System: ZPP-N (Natural and landscape zone)  <ul style="list-style-type: none"> <li>• Development project must not affect any negative impacts to natural zone and its function. Also, expansion of road width and cutting trees are prohibited.</li> </ul> </li> <li>(2) Sidewalk and Side Ditch Improvement: ZPP-Ua (Preservation zone) and ZPP-Ub (Protected zone)  <ul style="list-style-type: none"> <li>• For constructing new road inside ZPP-Ub, technical considerations suggesting its necessity is required. Width expansion of the existing sidewalk is prohibited. Also, new road construction in ZPP-Ua is not allowed, but side ditch can be constructed.</li> </ul> </li> <li>(3) Street Light Installation: ZPP-Ub (Protected zone) or outside of the zoning  <ul style="list-style-type: none"> <li>• Because of Zpp-Ub, width expansion of the existing sidewalk is not allowed.</li> </ul> </li> </ul>

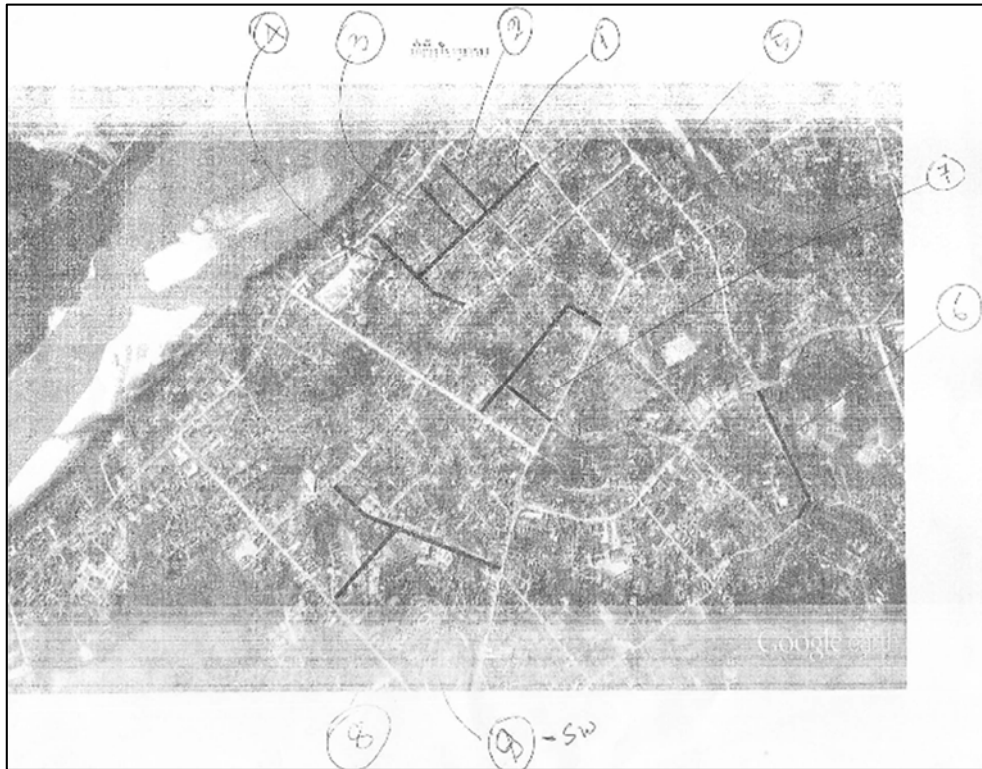
	Also, light installation with strong fluorescence on the wall of buildings is prohibited. It is desirable not to make fluorescent lamp to be disclosed.
	(4) Parking Space and Pedestrian Path Development: Zpp-Ua (Preservation zone)
	<ul style="list-style-type: none"> <li>Parking at the space not for vehicle parking is generally prohibited, so expansion of parking space which is not in the plan cannot be accepted. Trees are not allowed to be cut, and it is necessary to take notice of balance of scenery regarding position of plantation and buildings.</li> </ul>
<b>4. Project Effectiveness</b>	
(1) Quantitative Effectiveness	Beneficiary: Residents 102,000 people; Tourists 912,000 people (in 2020)
(2) Internal Rate of Return	Not examined
(3) Qualitative Effectiveness	<ul style="list-style-type: none"> <li>Mitigation of damages by flood and inundation in Thatluang Village and its surrounding area.</li> <li>Pond improvement beside the road from Manolom Village Office to DPI.</li> <li>To improve the natural and social environment in the world heritage district.</li> <li>To improve the traffic safety for residents and tourists.</li> <li>To enhance the convenience of daily life and sightseeing.</li> <li>To contribute to the living environment improvement through side ditch development.</li> <li>Reduction of vehicles park on the road and improvement of the riverside scenery</li> </ul>

Source: JICA Survey Team



Source: UDAA

**Figure 6.2.1 Location of Drainage Improvement Project**



Source: UDAA

**Figure 6.2.2 Location of Sidewalk and Side Ditch Improvement Project**



Source: UDAA



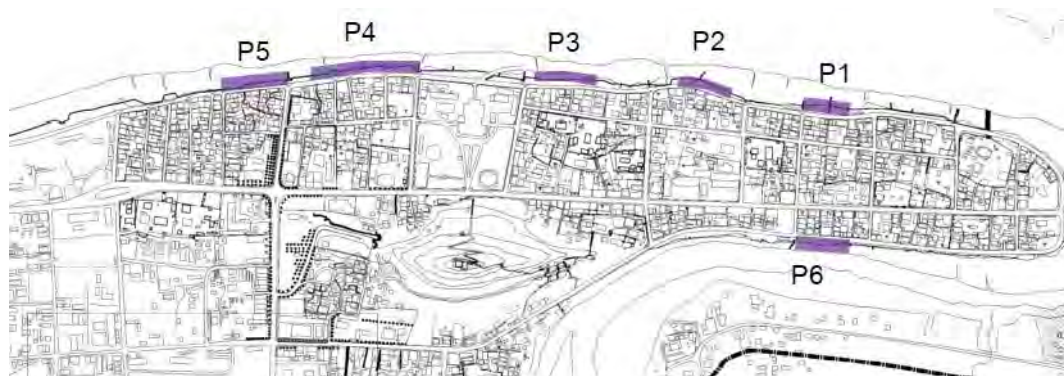
**Figure 6.2.3 Location of Street Light Project (2015-2016)**



Source: UDAA



**Figure 6.2.4 Location of Street Light Project (2016-2017)**



Source: Heritage Office

**Figure 6.2.5 Location of Parking Space Development**

SCOPE OF WORK	2017	2018	2019
EN			
Basic Design Study			
Tender Procedure (Bidding) for Construction Work			
Implementation of Project (1year)			
Soft Component (capacity building, Educational Campaign)			

Source: JICA Survey Team

**Figure 6.2.6 Implementation Schedule of Drainage Improvement Project**

SCOPE OF WORK	2017	2018	2019	2020
EN				
Basic Design Study				
Tender Procedure (Bidding) for Construction Work				
Implementation of Project Phase I ( 1.5 year)				
Implementation of Project Phase II ( 1.5 year)				
Soft Component (capacity building)				

Source: JICA Survey Team

**Figure 6.2.7 Implementation Schedule of Sidewalk and Side Ditch Improvement Project**

SCOPE OF WORK	2017	2018	2019	2020
EN				
Basic Design Study				
Tender Procedure (Bidding) for Construction Work				
Implementation of Project Phase I ( 1.5 year)				
Implementation of Project Phase II ( 1.5 year)				
Soft Component (capacity building)				

Source: JICA Survey Team

**Figure 6.2.8 Implementation Schedule of Street Light Project**

SCOPE OF WORK	2017	2018	2019
EN			
Basic Design Study			
Tender Procedure (Bidding) for Construction Work			
Implementation of Project (1year)			
Soft Component (capacity building, Educational Campaign)			

Source: JICA Survey Team

**Figure 6.2.9 Implementation Schedule of Parking Space Development**



**Table 6.2.2 Project Implementation Cost for Drainage Improvement**

						USD 1: LAK 8,000
No	Description	Unit	Qty	Price/Unit	Total in LAK	Total in USD
<b>I</b>	<b>Ground Work</b>	<b>m</b>				
1	Bush clearance along the track	m <sup>3</sup>	295	30,000	8,850,000	1,106
2	Digging and leveling	m <sup>3</sup>	651	165,000	107,415,000	13,427
3	Refilling sand and compaction	m <sup>3</sup>	120	180,000	21,600,000	2,700
4	Leveling the canal (both side)	m <sup>2</sup>	354	35,000	12,390,000	1,549
						<b>18,782</b>
<b>II.</b>	<b>Concrete Work</b>					
1	Concrete foundation	m <sup>3</sup>	52	1,250,000	65,000,000	8,125
<b>III.</b>	<b>Construction and Smoothing</b>					
1	Mason rock	m <sup>3</sup>	298	750,000	223,500,000	27,938
2	Curving rock	m <sup>3</sup>	225	765,000	172,125,000	21,516
	Total					<b>49,453</b>
	Total (i)+(ii)+(iii)					<b>76,360</b>

Source: UDA

**Table 6.2.3 Project Implementation Cost for Sidewalk and Side Ditch Improvement**

No	Road name			Length (m)	width(m)	Year plan	Amount (LAK)
	I	2015-2016					5,660,600,000
		Start point	End point				
1	Visannalath	Visan 3 junction	Kak ngua 4 junction	689	2.0	2015 -2016	1,189,000,000
2	Setha+Kingsalat	Post office 4 junction	Kak ngua 4 junction	368	1.6	2015 -2016	2,492,600,000
3	Dupalath singkong	Kak ngua 4 junction	Kai talaeng 3 junction	346	1.8	2015 -2016	1,979,000,000
	II	2016-2017					5,655,000,000
4	Samsenthai+Noladeth	Dala market 4 junction	Sithan school 3 junction	680	1.5	2016-2017	3,209,000,000
5	Mahaoupalath boukhang	Souvanapham hotel 3 junction (N)	Nampapa 4 junction	278	1.5	2016-2017	674,000,000
6	Dupalath bouakham	Souvanapham hotel 3 junction (S)	Noladeth Rd	274	1.5	2016-2017	686,000,000
7	Nalasing+Manalam	Thatlang square 3 junction, north}	Mana temple { 3 junction, south}	460	1.5	15-17	1,086,000,000
	III.	2016-2017					6,910,000,000
8	UXO office	Kaisone Rd	Souphanouvong Rd	640	1.5	17-18	1,667,000,000
9	Meun Loukthao	Friendship road { 4 junction}	Teacher training college gate	450	1.5	17-18	1,325,000,000
10	DPI	Souphanouvong Rd	Back of Pangkham school { 4 j	220	1.5	17-18	577,000,000
11	Vansana hotel { short cut route}	ETL company	Duck blood shop { Mr. Thang}	680	1.8	17-18	2,196,000,000
12	Samfied BBQ	Phonphapheng village { junction no 2803}	Friendship road Lao Thai	337	1.8	17-18	1,145,000,000
	Total						18,225,600,000

Source: UDA

**Table 6.2.4 Project Implementation Cost for Street Light Installation**

DEVELOPMENT PLAN ON INFRASTRUCTURE AND ROAD LIGHT INSTALLATION 2015-2017							
	Road	Length (m)	Qty	Type of pole	Year plan	Amount (LAK)	
	2015-2016					19,988,200,000	
	Start point	End point					
1	Kaisone monument	Namdong bridge	195.6	56	Steel pole 10 m	2015 -2016	1,750,900,000
2	Vocational school   three junction	provincial hospital	113.0	23	Steel pole 10 m	2016 -2016	732,000,000
3	Nasangvery stadtrum   three junction	Phanon village	167.9	55	Steel pole 10 m	2017 -2016	1,624,600,000
4	Four junction south   airport	Souphanouvong university	604.2	189	Steel pole 10 m	2018 -2016	5,737,000,000
5	Naviengkham four junction   Market	Training teacher college	459	15	Steel pole 10 m	2019 -2016	5,180,000,000
6	Phouao four junction	Nalung stadium	850	26	Steel pole 10 m	2020 -2016	838,500,000
7	Nasamphan three junction	Friendship road   four junction	115.2	36	Steel pole 10 m	2021 -2016	1,110,700,000
8	Nalung stadium   in front	Nalung temple	459	15	Steel pole 10 m	2022 -2016	479,700,000
9	Training teacher college	Kuatee neung three junction	2670	84	Steel pole 10 m	2023 -2016	2,534,800,000
	2016-2017					13,055,400,000	
1	Nalung stadium   three junction	Kuateeneuang electricity station	1521	48	Steel pole 10 m	2016-2017	1,472,900,000
2	Phanluang school   in front  three junction	Nalung temple   three junction	637	20	Steel pole 10 m	2016-2018	614,000,000
3	Meuang Nga   four junction	Houaykang bridge	121.3	38	Steel pole 10 m	2016-2019	1,152,200,000
4	Namdong bridge	Poung vanh village	3200	100	Steel pole 10 m	2016-2020	3,118,600,000
5	Pak houaykang bridge	Done mai village	532.7	167	Steel pole 10 m	2016-2021	5,180,000,000
6	former medical school   new road	Lao- Thai friendship road	684	28	Steel pole 10 m	2016-2022	856,400,000
7	Nasamphan   new road	ETL telecom com pany	692	22	Steel pole 10 m	2016-2023	661,300,000
	Total					33,043,600,000	

Source: UDA

**Table 6.2.5 Project Implementation Cost for Parking Space Development**

No.	Description	Unit	Qty	Price/unit	Total (LKP)
<b>I</b>	<b>Clearance Work</b>				<b>87,788,000</b>
1	Clearance of Concrete	M3	120	1,580,000	33,020,000
2	Clearance of Brick Pavement	M3	139	1,320,000	29,287,500
3	Clearance of Brick Wall	M3	95	1,448,000	23,430,500
4	Cutting Trees	Ls	6	500,000	1,500,000
5	Replacement of Plantation	Ls	23	70,000	550,000
<b>II</b>	<b>Ground Work</b>		-	-	<b>141,309,800</b>
1	Excavation for Sidewalk	M3	773	352,000	45,667,800
2	Excavation for Parking Lot	M3	632	352,000	37,169,000
3	Excavation for Curb Stones	M3	248	352,000	14,746,000
4	Sand Filling	M3	279	512,000	25,111,000
5	Plantation	M3	233	480,000	18,616,000
<b>III</b>	<b>Concrete Work</b>		-	-	<b>1,806,754,100</b>
1	Parking Lot	M3	119	5,040,000	98,298,000
2	Side Walk Type1	M3	132	7,200,000	158,364,000
3	Side Walk Type2	M3	248	7,200,000	297,000,000
4	Parking Lot (Reinforced Concrete)	M3	280	10,720,000	498,624,000
<b>IV</b>	<b>Construction Work</b>				<b>1,617,978,100</b>
<b>Total (I+II+III+IV)</b>					<b>3,653,830,000</b>

Source: Heritage Office

## 6.2.2 Technical Cooperation

It is important to improve living and water environments (wetland and drainage system) of the world heritage area and to create a place of relief. For realization of this, it is recommended to implement a field survey for 99 ponds preservation in the world heritage area as a technical cooperation assistance as follows:

- 1) Project period: About 12 months
- 2) Project Cost: about JPY 100 million
- 3) Scope of work:
  - Field survey of 99 ponds inside the world heritage area (see Figure 6.2.1)
  - Selection of the priority ponds to be preserved

## 6.3 Project Package for Water Supply System Improvement including Expansion for Nam Khan WTP and Fire Prevention in World Heritage Preservation Zone (S131)

### 6.3.1 Grant Aid

Profile of the Water Supply System Improvement including Expansion Project for Nam Khan WTP and Fire Prevention in World Heritage Preservation Zone is presented in Table 6.3.1. This is proposed as a conaditate of grant aid assistance due to the size of the project which is below JPY 2 billion.

**Table 6.3.1 Project Summary: Water Supply System Improvement including Expansion Project for Namkhan WTP and Fire Prevention in World Heritage Preservation Zone (S1311)**

1. Basic Information																									
(1) Country	Lao People's Democratic Republic																								
(2) Project Site/ Target Area	Luang Prabang World Heritage Preservation Zone																								
(3) Sector	Water Supply and Fire Prevention in World Heritage																								
(4) Project Name	Water Supply System Improvement including Expansion Project for Namkhan WTP and Fire Prevention in World Heritage Preservation Zone (Grant Aid)																								
(5) Project Summary	Improvement and Expansion of NamKhan WTP and Distribution System																								
2. Background and Necessity																									
(1) Background (Current State, Necessity of Immediate Action and Needs)	<p>As of 2015, the population of Luang Prabang District was about 90,400, and the population served was about 62,457. The coverage ratio was 70%. The current leakage rate is 23-25%, which is greater than the goal of 20%. The Luang Prabang Water Supply State Enterprise (LPWSE) manages the three existing water treatment plants (WTPs), four reservoirs, and distribution network in Luang Prabang District below.</p> <p style="text-align: center;"><b>Table 6.3.2 Status of the Existing Facilities</b></p> <table><tr><th colspan="2">1) WTPs</th><th colspan="2">2) Reservoirs</th></tr><tr><td>NamKhan</td><td>12,000 m<sup>3</sup>/d Capacity Source: Khan River <u>Issues:</u> Actual product is to be less than 10,000m<sup>3</sup>/d since Flocculation &amp; Sedimentation Tanks are not constructed. System loss is very high with 19% (System loss should be less than 10%).</td><td>Phounanong</td><td>1,000 m<sup>3</sup> capacity (Quadrate type, Height: 5m), Construction Year: 2010 <u>Issues:</u> Expansion required but the space limited <u>Issues:</u> Expansion of reservoir is required but there is no space.</td></tr><tr><td>Phoupueng</td><td>9,000 m<sup>3</sup>/d Capacity Source: Spring <u>Issues:</u> Water product and quality are indicative of seasonal fluctuations.</td><td>Kuateenieng</td><td>1,570 m<sup>3</sup> capacity (Quadrate type, Height: 5m) Construction Year: 2002</td></tr><tr><td>Souphanouvong</td><td>1,000 m<sup>3</sup>/d capacity Source: Mekong River <u>Issues:</u> System loss is very high with 25% (System loss should be less than 10%). O&amp;M cost is high and efficiencies are low. It is required to supply water from NamKhan WTP.</td><td>Phouisy</td><td>1,400 m<sup>3</sup> capacity (Circular type, Height: 5m) Construction Year: 1969 <u>Issues:</u> Expansion of reservoir is required but there is no space.</td></tr><tr><td></td><td></td><td>Souphanouvong</td><td>1000 m<sup>3</sup>, Construction Year: 2007</td></tr><tr><td colspan="4">3) Distribution: Total length is about 71km consisting of pipes with DN40 to DN350.</td></tr></table> <p>The existing water supply system is presented in Figure 6.3.1. The existing and future layout plan of Nam Khan WTP is also shown in Figure 6.3.2.</p> <p>In 2016, the area of Luang Prabang District is divided into three zones, i.e., LPWSE, the Thailand-owned Asia Nampapa Luang Prabang Company (Asia), and Demco De Lao Company (Demco) as shown below and in Figure 6.3.3.</p>	1) WTPs		2) Reservoirs		NamKhan	12,000 m <sup>3</sup> /d Capacity Source: Khan River <u>Issues:</u> Actual product is to be less than 10,000m <sup>3</sup> /d since Flocculation & Sedimentation Tanks are not constructed. System loss is very high with 19% (System loss should be less than 10%).	Phounanong	1,000 m <sup>3</sup> capacity (Quadrate type, Height: 5m), Construction Year: 2010 <u>Issues:</u> Expansion required but the space limited <u>Issues:</u> Expansion of reservoir is required but there is no space.	Phoupueng	9,000 m <sup>3</sup> /d Capacity Source: Spring <u>Issues:</u> Water product and quality are indicative of seasonal fluctuations.	Kuateenieng	1,570 m <sup>3</sup> capacity (Quadrate type, Height: 5m) Construction Year: 2002	Souphanouvong	1,000 m <sup>3</sup> /d capacity Source: Mekong River <u>Issues:</u> System loss is very high with 25% (System loss should be less than 10%). O&M cost is high and efficiencies are low. It is required to supply water from NamKhan WTP.	Phouisy	1,400 m <sup>3</sup> capacity (Circular type, Height: 5m) Construction Year: 1969 <u>Issues:</u> Expansion of reservoir is required but there is no space.			Souphanouvong	1000 m <sup>3</sup> , Construction Year: 2007	3) Distribution: Total length is about 71km consisting of pipes with DN40 to DN350.			
1) WTPs		2) Reservoirs																							
NamKhan	12,000 m <sup>3</sup> /d Capacity Source: Khan River <u>Issues:</u> Actual product is to be less than 10,000m <sup>3</sup> /d since Flocculation & Sedimentation Tanks are not constructed. System loss is very high with 19% (System loss should be less than 10%).	Phounanong	1,000 m <sup>3</sup> capacity (Quadrate type, Height: 5m), Construction Year: 2010 <u>Issues:</u> Expansion required but the space limited <u>Issues:</u> Expansion of reservoir is required but there is no space.																						
Phoupueng	9,000 m <sup>3</sup> /d Capacity Source: Spring <u>Issues:</u> Water product and quality are indicative of seasonal fluctuations.	Kuateenieng	1,570 m <sup>3</sup> capacity (Quadrate type, Height: 5m) Construction Year: 2002																						
Souphanouvong	1,000 m <sup>3</sup> /d capacity Source: Mekong River <u>Issues:</u> System loss is very high with 25% (System loss should be less than 10%). O&M cost is high and efficiencies are low. It is required to supply water from NamKhan WTP.	Phouisy	1,400 m <sup>3</sup> capacity (Circular type, Height: 5m) Construction Year: 1969 <u>Issues:</u> Expansion of reservoir is required but there is no space.																						
		Souphanouvong	1000 m <sup>3</sup> , Construction Year: 2007																						
3) Distribution: Total length is about 71km consisting of pipes with DN40 to DN350.																									



**Table 6.3.3 Demarcations of Water Service Area**

Item	LPWSE (Existing)	Asia (Existing)	Demco ( Future Plan )
Responsible Zone*1	Central (Central Luang Prabang covered by Namkhan & Phueng WTPs)	Northeast (from Khan River Bank to Pakseuang and NR13)	Southwest (Kuateeneuang reservoir to Naxang village, Technical college & Namdong bridge)
Service Area ( Km <sup>2</sup> )	39 Villages 13,264 Km <sup>2</sup>	10 Villages 19,963 Km <sup>2</sup>	15 Villages 32,164 Km <sup>2</sup>
Served Population	32,259	12,151	18,047
Number of Subscribers	7,560	1,865	
Water Production Capacity (m <sup>3</sup> /day)	Drying Season: 13,800 Raining Season: 20,700	6,000	9,000 in total 4,000 at Innicial Stage
Length of Distribution (m) Total Length	37,852	25,191	14,214

Note \*1: Proposal on water supply responsible zone demarcation, No 2809/ LPWSE, 12 July 2016

The water demand projection is conducted based on the recent data of population, tourist number and data of the Master Plan for Water Supply System of Luang Prabang (2013) as presented below.

**Table 6.3.4 Water Demand Projection**

(Unit: CMD)

Year	Domestic Use	Commercial & Industrial (C&I) Use			Public Use	Leakage (20%)	Average Day Demand	Max. Day Demand
		Tourist Use	C&I Use	Sub Total				
2015	18,080	144	3,469	3,613	231	5,481	27,406	30,146
2020	20,360	221	4,893	5,114	332	6,451	32,257	35,483
2025	22,880	259	6,184	6,443	476	7,450	37,250	40,975

Source: JICA Survey Team & Master Plan for Water Supply System of Luang Prabang (2013)

Although the existing product capacity is theoretically to be at 28,000 m<sup>3</sup>/d including Asia WTP, improvement and expansion of Nam Khan WTP are urgently required to meet not only the present water demand but also the future demand since Phoupueng WTP is affected by seasonal fluctuation and Demco project is supposed to be delayed.

Population served will increase from 62,457 to 101,800 in 2020. Residents and tourists will be supplied with water for stability and safety in case of implementation of the Nam Khan WTP expansion project with a capacity of 6,000 CMD as shown in Figure 6.3.4. This project aims to supply stable and safe water to the world heritage preservation zone and CBT along the National Road 13. Leakage in the distribution shall be improved with a saved water of 1,470 m<sup>3</sup>/d and the system loss at Nam Khan shall be decremented from 25% to 10% (saved water: 2,700 m<sup>3</sup>/d) after completion of the improvement project.

It is agreed between EDL and LPWSE that the minimum daily discharge flow from Nam Khan 3 HPP is to be at 15 m<sup>3</sup>/s (1,296,000 m<sup>3</sup>/d). Therefore, LPWSE intends to conduct the Nam Khan WTP expansion project priority to the new WTP construction at the southwest zone and Souphanouvong WTP Expansion Project.

Water consumption rate at each category is estimated as presented below.

**Table 6.3.5 Water Consumption at Each Category**

Year	Domestic Use	Commercial & Industrial (C&I) Use			Public Use	Leakge	Total
		Tourist Use	C&I Use	Sub Total			
2015	65.97%	0.53%	12.66%	13.18%	0.84%	20%	100.00%
2020	63.12%	0.68%	15.17%	15.85%	1.03%	20%	100.00%
2025	61.42%	0.70%	16.60%	17.30%	1.28%	20%	100.00%

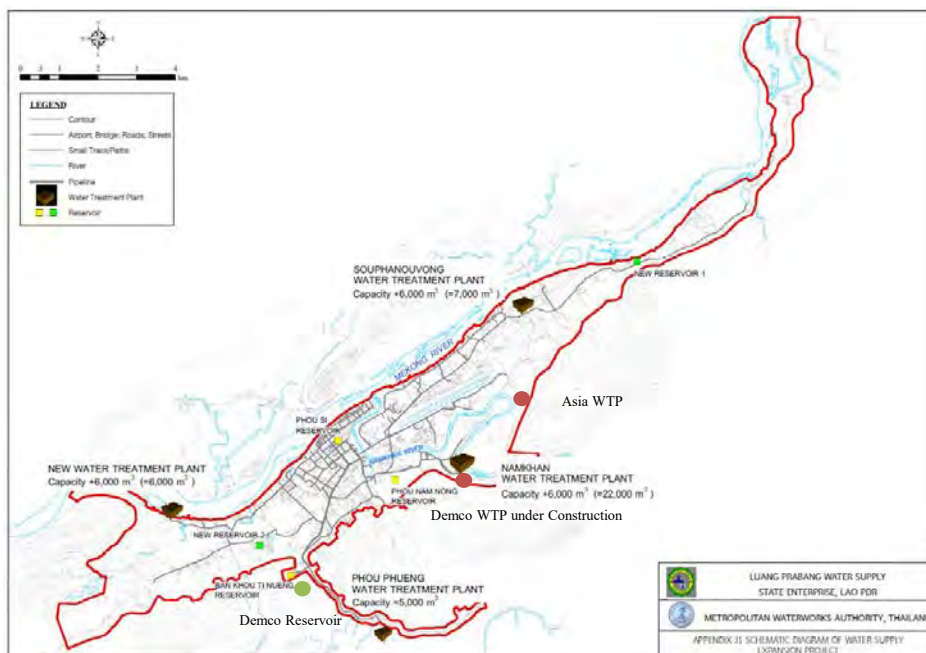
Source: JICA Survey Team & Master Plan for Water Supply System of Luang Prabang

Water supply improvement and expansion projects are supposed to contribute to the water consumption rate at 16% to the tourism industry after the completion of the projects.

	<p>There are four units of fire hydrant in the world heritage preservation zone at present. Proper arrangement of hydrant installation by the project would arrest the spread of the fire in case it occurs in the world heritage preservation zone. It notes that the arrangement of hydrant shall consider the landscape of the world heritage preservation zone.</p> <p>The 8<sup>th</sup> NSEDP indicates that Luang Prabang Province is to be developed as a representative of international tourism destination in Lao PDR. In order to achieve wholesome development of tourism industry in the province, development of water supply and sewerage system is one of the most significant factor. In addition to this, Japanese assistance policy indicates water treatment plant development as an example of economical and social infrastructure development.</p>						
(2) Japan Cooperation in Infra Sector/ Luang Prabang Province	<ul style="list-style-type: none"> <li>Related JICA Projects: Long term dispatch of an expert</li> </ul>						
(3) Other donors' Cooperation	None						
<b>3. Project Outline</b>							
(1) Project Outline							
① Objective	To secure stable and safe water supply and protect against fire incidents in World Heritage Area.						
② Project Description	<p>Main components of the project are:</p> <ol style="list-style-type: none"> <li>Improvement in Nam Khan WTP <ul style="list-style-type: none"> <li>Construction of Mixing Chamber and Sedimentation Tanks</li> <li>Construction of Clear Water Tank: 375 m<sup>3</sup></li> <li>Four Replacement Pumps and Three Additional Pumps</li> <li>Transmission Pipeline DCIP DN250 L: 2.6 km Nam Khan WTP-Phounanong Reservoir</li> </ul> </li> <li>Improvement in the distribution system: DN100-DN600 L:13.6 km</li> <li>Expansion of Nam Khan WTP <ul style="list-style-type: none"> <li>Construction of Water Treatment Plant: 6,000 CMD</li> <li>Construction of Intake Pumping Station</li> <li>Transmission Pipeline DCIP DN400 L: 5.5 km Nam Khan WTP-Phousi Reservoir</li> </ul> </li> <li>Installation of hydrants: 39 units</li> </ol>						
③ Related JICA Project	Non						
(2) Project Cost	USD: 14,837,000 (JPY: 1,648,400,000) as of May 2016 as shown in Table 6.3.6						
(3) Presumed Project Period	About 2 years from 2017 to 2019 (see Figure 6.3.5)						
(4) Responsible and Executing Agencies (see attached organization chart for each agencies)	<p>Responsible Organization: Ministry of Public Works and Transportation.</p> <p>Executing: DPWT of Luang Prabang</p> <p>Implementing Agency: LPWSE</p> <p>O&amp;M Agency: Management Unit of LPWSE</p>						
(5) Account Statement of Executing / Implementation Agencies	<p>Budget (Revenue and Expenditure) in 2015</p> <table> <tr> <td>Revenue (LAK)</td> <td>20,190,339,847</td> </tr> <tr> <td>Expenditure (LAK)</td> <td>16,978,375,740</td> </tr> <tr> <td>Balance (LAK)</td> <td>3,211,964,107</td> </tr> </table>	Revenue (LAK)	20,190,339,847	Expenditure (LAK)	16,978,375,740	Balance (LAK)	3,211,964,107
Revenue (LAK)	20,190,339,847						
Expenditure (LAK)	16,978,375,740						
Balance (LAK)	3,211,964,107						
(6) Environmental and Social Consideration	Positive Impact: Living/tourist environment is improved.						

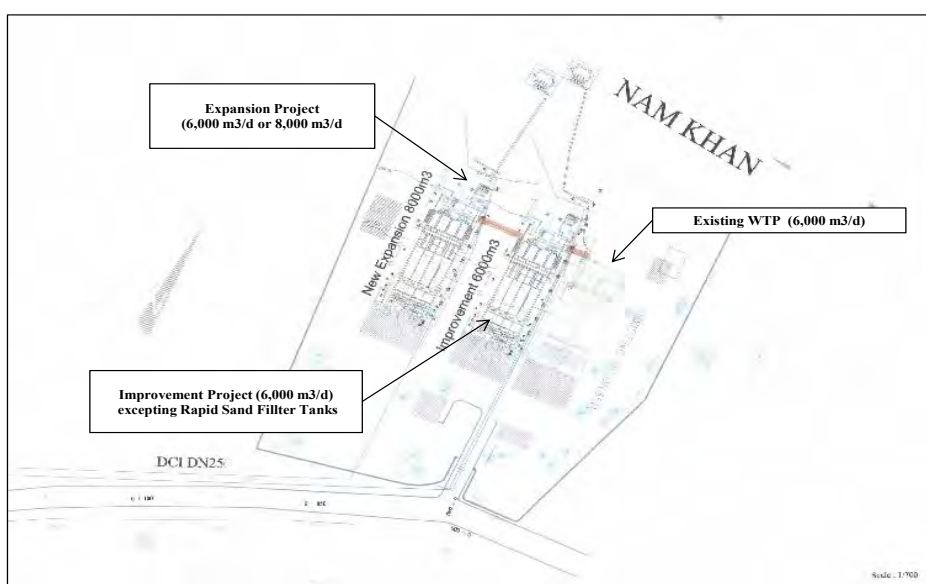
	<p>Positive Impact: Supply clear and safe water, this is one of the most essential elements to good health and a key component in determining the quality of human life, and support in increasing income both for public and private sector in tourism and other sector.</p> <p>Negative Impact:</p> <ul style="list-style-type: none"> <li>During the construction, noise, traffic jam, and air pollution will occur temporarily around the project site.</li> <li>After operation of the disposal site, stench and outbreak of flies/mosquitos are concerns in the project area.</li> </ul> <p>JICA Classification of Category: B-category</p>
(7) Cross Sectional Regards	<ol style="list-style-type: none"> <li>Request to other donors: <u>Yes</u> or No</li> <li>Submit project proposal to government for funding</li> <li>Submit project proposal to INGO for grant funding</li> <li>Technical assistant: <u>Short-</u> and long-term projects including experts/volunteers; <u>accept trainees in the project</u></li> <li>List of Related Projects/Plans: The 8<sup>th</sup> National Social Economic Development Plan, Master Plan for Water Supply System of Luang Prabang, TICA</li> </ol>
(8) Classification of Gender (Contents of Activity/Reason of Classification)	Not applicable.
(9) Presumed Contract Manner (competitive bid, nominated contract)	Refer to the rules and regulation of the Ministry of Finance, Laos, and/or JICA Japan's Grant Aid
(10) Issues for Project Formulation	<p>Not so much but the following issues are identified:</p> <ul style="list-style-type: none"> <li>Implementation organization is not established adequately. Therefore, soft component service below is required for assistance of the above mentioned issues.</li> <li>Assistance for activities of fire brigade (18 groups) and for strengthened planning</li> </ul>
(11) Other Special Issues/Notes	<ul style="list-style-type: none"> <li>The survey is required to find the location of buried facilities and select points for installation of hydrants at the basic design study.</li> <li>Improvement of distribution pipes will take place in ZPP-Ua and ZPP-Ub indicated in PSMV. Inside ZPP-Ua, pipe installation work is prohibited to disturb the existing drainage system and those pipes must not be exposed from the ground.</li> </ul>
<b>4. Project Effectiveness</b>	
(1) Quantitative Effectiveness	<ul style="list-style-type: none"> <li>Population served increases from 62,457 to 101,800 in 2020.</li> <li>Leakage in the distribution shall be improved with a saved water of 1,470 m<sup>3</sup>/d.</li> <li>System loss at Nam Khan shall be decremented from 25% to 10% (saved water: 2,700 m<sup>3</sup>/d).</li> <li>To contribute water consumption rate at 16% to the tourism industry in 2020.</li> </ul>
(2) Internal Return Ratio	<ul style="list-style-type: none"> <li>Not examined</li> </ul>
(3) Qualitative Effectiveness	<ul style="list-style-type: none"> <li>To arrest the spread of fire due to proper arrangement of hydrant installation.</li> <li>To supply stable and safe water to the world heritage preservation zone and CBT.</li> <li>The expansion project of Nam Khan WTP shall be implemented by 2020 in order to cope with water shortage in Asia Zone and Demco Zone.</li> </ul>

Source: JICA Survey Team



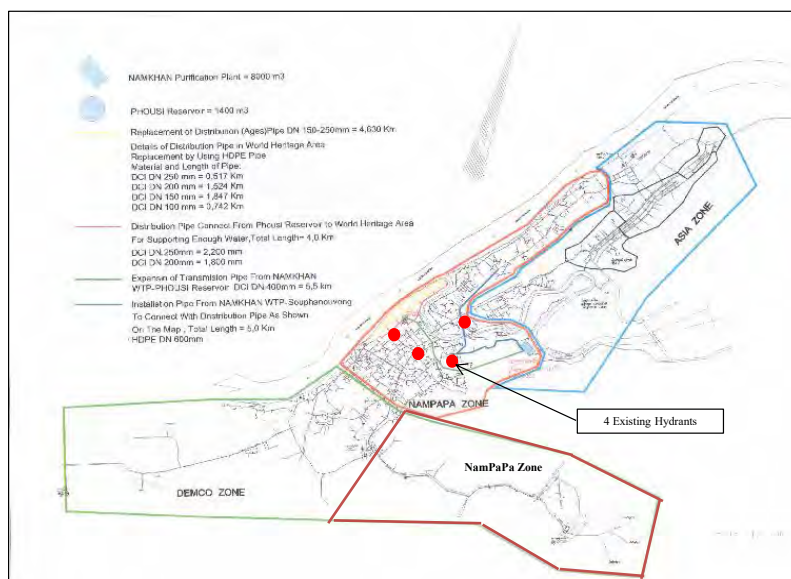
Source: LPWSE

**Figure 6.3.1 Location of WTPs and Reservoirs**



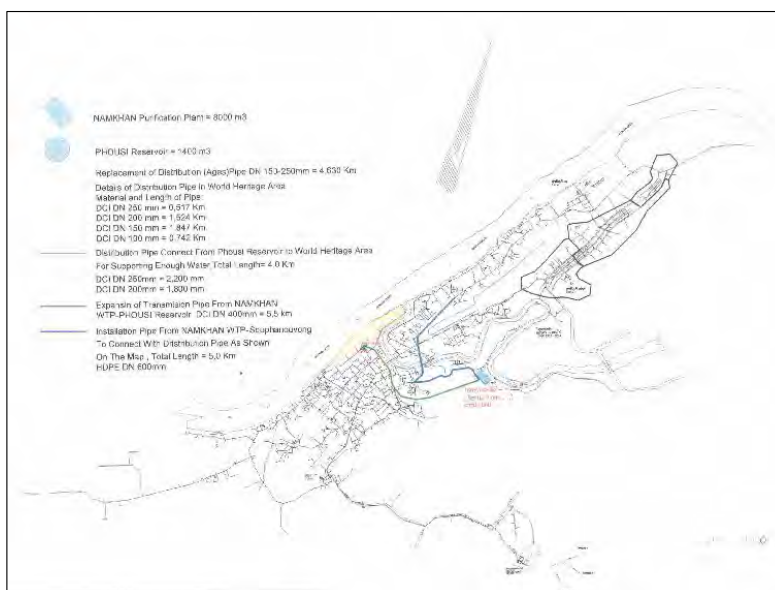
Source: LPWSE

**Figure 6.3.2 Location Map of Namkhan WTP Improvement and Expansion Projects**



Source: LPWSE

**Figure 6.3.3 Demarcation Map of Water Service Area**



Source: LPWSE

**Figure 6.3.4 Location Map of Improvement and Expansion Pipeline Project**

SCOPE OF WORK	2017	2018	2019	2020
EN				
Basic Design Study Stage I (3 Months)				
Basic Design Study Stage II (1 Month)				
Tender Procedure (Bidding) for Construction Work				
Implementation of NamKhan WTP ( 1 year)				
Implementation of Distribution ( 1.5 year)				
Installation of Hydrants				
Expansion of NamKhan WTP ( 1 year)				
Soft Component (capacity building)				

Source: JICA Survey Team, LPWSE

**Figure 6.3.5 Implementation Schedule**

**Table 6.3.6 Project Implementation Cost**

No.	Item	Unit	Unit Price (USD)	Q'ty	USD	JPY
<b>Scheme 1</b>	<b>Water Supply Improvement Project</b>				<b>7,231,241.00</b>	<b>803,383,644</b>
1.1	Improvement of Namkhan WTP: 6,000 CMD	L.S.			3,500,000.00	388,846,500
	a) Construction of Flocculation & Sedimentation Tanks	L.S.			2,000,000.00	222,198,000
	b) Booster Pumping Station	L.S.			590,000.00	65,548,410
	- Replacement Pumps: Q:240m <sup>3</sup> /h, D:150mm, H:50m, P:380Vx45kW, 4 units					
	for Phousi Reservoir					
	- Additional Pumps: Q:155.9m <sup>3</sup> /h, D:150mm, H:49m, P:380Vx30kW, 3 units					
	c) Transmission Pipeline DCIP DN250 L: 2.6km from NamKhan WTP	m	350	2,600	910,000.00	101,100,090
	to Phounanong Reservoir					
1.2	Improvement of Distribution System in World Heritage Preservation Zone				3,731,241.00	414,537,144
	a) HDEP DN600 L:5km between Namkhan and Souphanouvong	m	315	5,000	1,575,000.00	174,980,925
	b) Replacement of Distribution from Phousi Reservoir-World Heritage Area				1,310,000.00	145,539,690
	- DCIP DN 250: 2,200m	m	350	2,200	770,000.00	85,546,230
	- DCIP DN 200: 1,800m	m	300	1,800	540,000.00	59,993,460
	c) Replacement of Distribution Aged Pipes in World Heritage Area				826,241.00	91,794,549
	- DCIP DN 250: 517m	m	350	517	180,950.00	20,103,364
	- HDEP DN 200: 1,524m	m	199	1,524	303,276.00	33,693,660
	- HDEP DN 150: 1,847m	m	145	1,847	267,815.00	29,753,979
	- DCIP DN 100: 742m	m	100	742	74,200.00	8,243,546
	d) Installation of flow-regulating valve in the joint section of the LPB Stadium	place	20,000	1	20,000.00	2,221,980
<b>Scheme 2</b>	<b>Water Supply Expansion Project</b>				<b>7,366,014.72</b>	<b>818,356,869</b>
2.1	Intake Pumps & Raw Water Conveyance				271,014.72	30,109,464
	a) Intake Pumps Q:125m <sup>3</sup> /h, D:150mm, H:22m, P:380Vx17kW, 4 units	Unit	20,000	4	80,000.00	8,887,920
	b) Raw Water Conveyance: DCI DN300 L:140m	m	400	140	56,000.00	6,221,544
	c) Intake Tower	L.S.			135,014.72	15,000,000
2.2	Construction of Namkhan WTP: 6,000 CMD				4,620,000.00	513,277,380
	a) Construction of Water Treatment Plant: 6,000 CMD	L.S.			4,000,000.00	444,396,000
	b) Booster Pumps Q:155.9m <sup>3</sup> /h, D:150mm, H:49m, P:380Vx30kW, 3 units	Unit	40,000	3	120,000.00	13,331,880
	c) Dosing Station, Clean Water Tank: 375m <sup>3</sup> , Back Wash Tank: 100m <sup>3</sup>	L.S.			500,000.00	55,549,500
2.3	Transmission Pipeline DCIP DN400 L: 5.5km NamKhan WTP-Phousi Reservoir	m	450	5,500	2,475,000.00	274,970,025
<b>Scheme 3</b>	<b>Installation of Fire Fighting Facilities</b>				<b>140,000.00</b>	<b>15,553,860</b>
3.1	Installation of Hydrants with Traditional Roof Cover: 39 units	L.S.			140,000.00	15,553,860
<b>Total</b>					<b>14,737,255.72</b>	<b>1,637,294,373</b>

Exchange Rate: USD 1 = JPY 111.099 as of May 2016

Source: JICA Survey Team and LPWSE

**Table 6.3.7 NamKhan WTP Production Record 2015**

<div style="display: flex; justify-content: space-between; align-items: center;"> <span>NAMKHAN</span> <span>ໂຫລາຍງານການຜະລິດນໍ້າ ປະຈຳ 12 ເດືອນ ປີ 2015</span> </div>								
ວັນທີ Day/Month	ນໍ້າດູດຂຶ້ນ			ນໍ້າສົ່ງອອກ			ນໍ້າເສຍ	
	ນໍ້າດູດຂຶ້ນ Water Abstraction (m <sup>3</sup> )	ຊົ່ວໂມງແລ່ນໄປມ Pump running (ຊົ່ວໂມງ)	ສະເລັຍ Average (m <sup>3</sup> /ຊົ່ວໂມງ)	ນໍ້າສົ່ງອອກ Water Distribution (m <sup>3</sup> )	ຊົ່ວໂມງແລ່ນໄປມ Pump running (ຊົ່ວໂມງ)	ສະເລັຍ Average (m <sup>3</sup> /ຊົ່ວໂມງ)	Water Loss (m <sup>3</sup> )	Water Loss (%)
1	2	3	4	5	6	7	8	9
1	308,535	1,153	268	250,314	1,917	131	58,221	19%
2	330,560	1,251	264	267,967	2,015	133	62,593	19%
3	326,122	1,346	242	264,494	1,994	133	61,628	19%
4	344,023	1,490	231	273,420	1,638	167	70,603	21%
5	359,568	1,834	196	295,292	1,877	157	64,276	18%
6	375,754	2,171	173	314,342	2,177	144	61,412	16%
7	359,106	2,148	167	295,665	2,064	143	63,441	18%
8	376,236	2,142	176	308,825	2,158	143	67,411	18%
9	311,814	1,644	190	249,663	1,586	157	62,151	20%
10	286,860	1,306	220	226,809	1,401	162	60,051	21%
11	319,286	1,256	254	261,590	1,736	151	57,696	18%
12	318,188	1,249	255	259,814	1,874	139	58,374	18%
Total	4,016,052	18,990	211	3,268,195	22,437	146	747,857	19%

Source: LPWSE



**Table 6.3.8 Summary of Repair and Replacement Works in Distribution 2015**

ສະຫຼຸບ ວຽກ ພັດທະນາ ພື້ນຖານ ແລະ ປ່ຽນແທນ ປະຈຳ ປີ 2015								
Summary Repair and replacement of water meters								
ເລກ No.	ປ່ຽນແທນ replacement (ຫວຍ)	ສ້າງ/ປັບປຸງ maintenance/ (ຫວຍ)	ສ້າງ/ປັບປຸງ leakage (ຫວຍ)	ປ່ຽນແທນ replacement (ຫວຍ)	ປ່ຽນແທນ replacement (ຫວຍ)	ປ່ຽນແທນ replacement (ຫວຍ)	ປ່ຽນແທນ replacement (ຫວຍ)	ອື່ນໆ Others (ຫວຍ)
1	2	3	4	5	6	7	8	9
1	10	-	52	-	-	-	-	-
2	8	-	64	2	-	-	-	-
3	15	-	33	-	-	-	-	-
4	12	22	60	12	-	-	-	-
5	29	-	-	-	-	-	-	3
6	14	-	89	-	-	-	-	6
7	39	-	35	-	-	-	-	8
8	28	14	35	-	-	15	-	13
9	12	-	47	-	-	-	-	4
10	-	-	39	-	-	-	-	9
11	-	-	51	-	-	-	-	-
12	-	-	56	-	-	-	-	3
Total	167	36	561	14	-	15	-	46

Source: LPWSE

### 6.3.2 Technical Cooperation

Fire prevention of buildings aimed at preservation will be conducted under JICA technical cooperation project. Outline of technical cooperation project is below;

- 1) Project period: 3 years
- 2) Project cost: about JPY: 200,000,000
- 3) Responsible and Executing Agencies: Heritage Office, LPWSE and Fire Department
- 4) Scope of work;
  - Identify buildings that needs fire prevention (more than 100 buildings),
  - Implementation of pilot project (Construction of fire water tank and equipments),
  - Enforcement of capacity building of fire brigade at a community level.

## 6.4 Luang Prabang Transportation Improvement Project Package (S135)

### 6.4.1 Technical Cooperation

For the improvement of transportation in the town of Luang Prabang, urban transportation M/P and F/S are recommended to be conducted before the implementation of road and bridge development project. The outline of the project is shown below.

- 1) Project period: 18 months
- 2) Project cost: about JPY 240,000,000
- 3) Responsible and Executing Agencies: DPWT
- 4) Scope of work;
  - Implementation of a traffic census
  - Traffic demand forecasting and formulation of the short term action plan
  - Urban transportation masterplan
  - Implementation of a feasibility study



- a) Preliminary design, construction plan
- b) Operation and management plan
- c) Preliminary cost estimation
- d) Environment and social consideration
- e) Economical and financial analysis
- f) Project implementation plan
- Holding seminars and workshops

#### 6.4.2 Loan Assistance

The profile of Transportation Improvement Project for National Road N13, Old Nam Khan Bridge and New Road from the International Airport to Nasanveuy Village is presented in Table 6.4.1. Because the size of the project is over JPY 2 billion, it is proposed as a candidate of loan assistance.

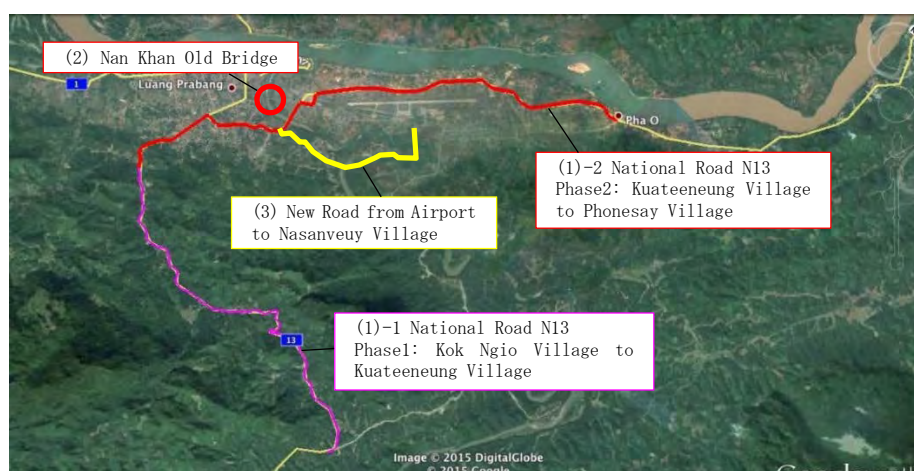
**Table 6.4.1 Project Summary: Luang Prabang Transport Improvement Project (S1352)**

<b>1. Basic Information</b>	
(1) Country	Lao People's Democratic Republic
(2) Project Site/ Target Area	Luang Prabang Province
(3) Sector	Road
(4) Project Name	Luang Prabang Traffic Access Improvement Project (S1352)
(5) Project Outline	The project aims to improve conditions of traffic access around the world heritage district by Improving existing national road, renewing the old bridge and constructing new bypass road.
<b>2. Background and Necessity</b>	
(1) Background (Current State, Necessity of Immediate Action and Needs)	<p>Luang Prabang Province is stated as international tourism center in Lao PDR in the 8<sup>th</sup> National Socio-economic Development (2016-2020). In order to increase tourism income, more opportunities in selecting tourism spots is important, and development of infrastructure as a foundation of tourism transportation becomes a key of this policy. Moreover, improvement of transportation condition is important for villagers as well to reduce the negative effect due to increase in number of tourists.</p> <p>National Road N13 is a core of Luang Prabang transportation, but some parts do not have enough width to assure safety especially at night though heavy vehicles are not allowed to pass through the road between Kok Ngio Village and Kuateeneung Village. Moreover, the new residential area is now developing at the north-east side of the airport where the number of vehicles is predicted to increase in the future. Because this area is along the way for tourism destinations such as Pak Ou Cave, the increase in number of vehicles will affect the traffic congestion and convenience of transportation for both villagers and tourists.</p> <p>In order to solve traffic problems and make better transportation conditions, it is important to develop or improve not only the National Road N13, but also a new bypass road to spread the traffic concentration more widely in Luang Prabang. The most critical issue of present transportation condition is the bridge of the Khan River. So far, four-wheel vehicles can pass through the new bridge only, and old bridge is passable only to motorbikes. DPWT and the Heritage Office are willing to utilize the old bridge also for four-wheel</p>

	<p>vehicles.</p> <p>Furthermore, the new residential area which is under development at the north-east side of the airport has poor accessibility to Luang Prabang town central area. If the new road is being constructed from the airport to the center of the town, it would function as a bypass road of the National Road N13 and would be able to separate the traffic concentration to the national road.</p> <p>DPWT of Luang Prabang Province considers the projects above as priority as mentioned in RSEDP. However, project implementation is unclear due to lack of budget. In Japanese assistance policy for Lao PDR, strengthening of ASEAN connectivity including development of infrastructure such as roads, bridges are indicated as a priority topic. The policies of both countries are matched since this project is expected to contribute to improvement of transportation network of Luang Prabang district which a center of the northern region of Lao PDR.</p>
(2) Japan Cooperation in Road Sector/ Luang Prabang Province	Non
(3) Other donors' Cooperation	Asian Development Bank (ADB): Tourism Infrastructure Project Phase 1 (2002-2011), Phase 2 (2009-2013), and Phase 3: This includes a component of road rehabilitation between Xang Hai Village and Pak Ou Cave, but does not include any other road site near the World Heritage District.
<b>3. Summary of the Project</b>	
(1) Summary of the Project	
① Objective	To resolve a bottleneck of transportation network in the world heritage area and its surroundings and to improve transportation efficiency and safety for both residents and tourists
② Project Description	<p>(1) Improvement of the National Road N13</p> <p>Phase 1: Kok Ngio Village to Kuateeneung Village 10 km distance, 9 m width (1.5 lanes for a side)</p> <p>Phase 2: Kuateeneung Village to Phonesay Village 13 km distance, 16 m width (1.5 lanes for a side + sidewalk and street light)</p> <p>(2) Renewing the Old Nam Khan Bridge 165 m distance, 10 m width (including 1 m width sidewalk for both side)</p> <p>(3) New Road Construction between Luang Prabang International Airport to Nasanveuy Village 4.6 km distance, 18 m width (including sidewalk, side ditch and street light), New bridge construction for 165 m distance</p>
③ Related JICA Project	None
(2) Total Cost/ Draft Estimation of Cooperation Amount	<p>(1) Improvement of the National Road N13 USD 49,116,336 (JPY 5,456,775,785)</p> <p>(2) Renewing the Old Nam Khan Bridge USD 5,158,836 (JPY 573,141,492)</p> <p>(3) New Road Construction between Luang Prabang International Airport to Nasanveuy Village USD 16,155,040 (JPY 1,794,808,737)</p> <p>Total of (1)-(3): USD 70,430,211 (JPY 7,824,726,014)</p> <p>(According to JICA Account Rate in May 2016)</p>
(3) Project Implementation Schedule	<p>(1) Improvement of the National Road N13</p> <p>1. Preparation: 3 months</p> <p>2. Survey and Design: 3 months</p>

	<p>3. Procurement and Bidding Procedure: 3 months</p> <p>4. Construction: 24 months</p> <p>Total: 33 months</p> <p>(2) Renewing Old Nam Khan Bridge</p> <p>1. Preparation: 4 months</p> <p>2. Survey and Design: 10 months</p> <p>3. Procurement and Bidding Procedure: 4 months</p> <p>4. Construction: 18 months</p> <p>Total: 36 months</p> <p>(3) New Road Construction between Luang Prabang International Airport to Nasanveuy Village</p> <p>1. Preparation: 6 months</p> <p>2. Survey and Design: 3 months</p> <p>3. Procurement and Bidding Procedure: 3 months</p> <p>4. Construction: 24 months</p>
(4) Project Implementation Unit	<pre> graph TD     DPWT[DPWT Luang Prabang] --&gt; RMS[Road management section]     RMS --&gt; OPWT[OPWT]     RMS --&gt; MC[Monitor construction]     OPWT --&gt; M[Maintenance] </pre> <p>Road Management Section of Department of Public Works and Transport (DPWT) is in charge of construction management. Office of Public Works and Transport is in charge of O&amp;M.</p>
(5) Environment and Social Consideration	<p>JICA Classification of Category: <input checked="" type="checkbox"/>A <input type="checkbox"/>B <input type="checkbox"/>C <input type="checkbox"/>FI</p> <p>Positive Impact:</p> <ul style="list-style-type: none"> <li>• Living environment and tourism environment about traffic safety and transportation conveniences will improve</li> <li>• Negative Impact:</li> <li>• Partially relocation and replacement of shops that extends inside the right of way will be necessary</li> <li>• During the construction, noise, traffic jam and air pollution will be occurred temporarily around the project site.</li> </ul>
(6) Cross Sectional Regards	<p>Request to other Donors: Yes or <u>No</u></p> <p>It is applied to the government of Lao PDR, but not budgeted.</p>
(7) Classification of Gender (Contents of Activity/Reason of Classification)	Not applicable
(8) Presumed Contract Manner (competitive bid, nominated contract)	Refer to rules and regulation of Ministry of Finance, Laos and/or JICA Japan's Grant Aid
(9) Issues for Project Formulation	<ul style="list-style-type: none"> <li>• Consultation with DPL, UNESCO and other concerned departments is required.</li> <li>• Technical design, technical officers, equipment, engineer and other concerned departments</li> </ul>
(10) Other Special Issues/Notes	<ul style="list-style-type: none"> <li>• Nam Khan old bridge is located inside ZPP-Ua indicated in PSMV. In this area, any reconstruction work must use the original materials and the same colors as that of the existing one.</li> <li>• The other road development site is outside of PSMV zonings.</li> </ul>
<b>4. Project Effectiveness</b>	

(1)	Quantitative Effectiveness	
①	Indicator for Operation and Effectiveness	<ul style="list-style-type: none"> <li>By opening of Old Nam Khan Bridge, time for accessing between the world heritage area and the international airport will be shortened from 21 minutes to 13 minutes.</li> <li>Effects of easing traffic congestion are not analysed since traffic census has never been held in Luang Prabang District</li> </ul>
②	Internal Rate of Return	Not analysed
(2)	Qualitative Effectiveness	<ul style="list-style-type: none"> <li>Improvement of travellers' accessibility, safety, and comfort.</li> <li>Improvement of villagers' transportation and its safety.</li> <li>Improvement of physical distribution between Vientiane and Luang Prabang.</li> <li>Increase of tourists is expected.</li> </ul>



### Figure 6.4.1 Project Location







No	Description	Expected implementation time			
		3 months	3 months	3 months	24 months
1	Proposal submission				
2	Survey/design				
3	Procurement-bidding, approval				
4	Contract sign/implementation				

**Figure 6.4.2 Project Implementation Schedule for Natioal Road N13 Expansion Project**

No	Description	Project duration 36 months			
		09 months	09 months	09 months	09 months
1	Project implementation				
2	Submission project proposal				
3	Survey & Design				
4	Procurement and approval				
5	Contract sign & implementation				

Source: DPWT

**Figure 6.4.3 Project Implementation Schedule for Renewing Nam Khan Old Bridge**

No	Description	Project duration 36 months		
		12 months	12 months	12 months
1	Expected project duration			
2	Submission project proposal			
3	Survey & design			
4	Procurement, bidding, approval			
5	Contract sign & implementation			

Legend  Implemented by governt of Lao  
 Design and construction

Source: DPWT

**Figure 6.4.4 Project Implementation Schedule for the Development of New Road from the Airport to Nasanveuy Village**

**Table 6.4.2 Project Cost Estimation**

No	Description	Cost (LAK)	Cost (USD)
<b>(1) Expansion and Improvement of National Road N13</b>			
I	Construction Work	343,160,954,871	43,026,779
II	Bridge Construction	37,400,000,000	4,689,349
1	Concrete bridge, L= 22 m	4,400,000,000	551,688
2	concrete bridge, L= 165 m	33,000,000,000	4,137,661
<b>Total Project Cost ( I + II )</b>		380,560,954,871	47,716,128
-	Survey and design 1 km=LAK 12,480,000	287,040,000	35,990
-	Survey and design bridge 2 places 1 m/LAK 3,560,000	605,200,000	75,882
-	Project management 0.7%	2,663,926,684	334,013
-	Advisory 2%	7,611,219,097	954,323
<b>Subtotal (1)</b>		<b>391,728,340,653</b>	<b>49,116,336</b>
<b>(2) Nam Khan Old Bridge Construction</b>			
1	Concrete bridge construction (cost of bill 500) L= 165 m	39,6000,000,000	49,651,932
2	Survey and design bridge, report writing, environment inspection/assessment 1.2%	475,200,000	59,582
3	Project operation 0.7%	277,200,000	34,756
4	Advisory 2%	792,000,000	99,304
<b>Subtotal (2)</b>		<b>41,144,400,000</b>	<b>5,158,836</b>
<b>(3) International Airport – Nasangveuy Village New Road</b>			
I	Construction Work	91,588,713,050	11,483,729
II	New bridge construction L= 165 m	33,000,000,000	4,137,661
<b>Total Project Cost ( I + II )</b>		124,588,713,050	15,621,390
-	Survey and design 1 km = LAK 12,480,000	287,040,000	35,990
-	Survey and design bridge 2 units= 1 m/ LAK 3, 500, 000	605,200,000	75,882
-	Project operation 0.7%	872,120,991	109,350
-	Advisory 2%	2,491,774,261	312,428
<b>Subtotal (3)</b>		<b>128,844,848,302</b>	<b>16,155,040</b>
<b>Total (1)-(3) (Construction and other administrative cost)</b>		<b>561,717,588,955</b>	<b>70,430,211</b>

Source: DPWT

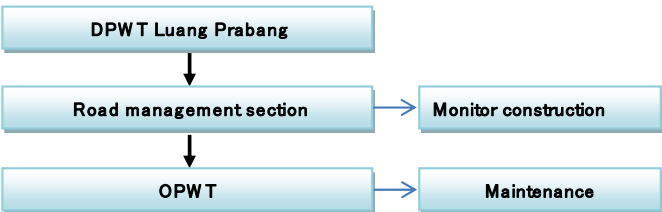
## 6.5 Public-Business-Community Collaboration based Tourism Management Improvement Project Package (S311)

### 6.5.1 Grant Aid

The profile of Access Road Improvement Project at the community-based tourism (CBT) village area is presented in Table 6.5.1. This is proposed as a candidate of grant aid assistance due to the size of the project.

**Table 6.5.1 Project Summary: Access Road Improvement Project at the CBT Village (S3111)**

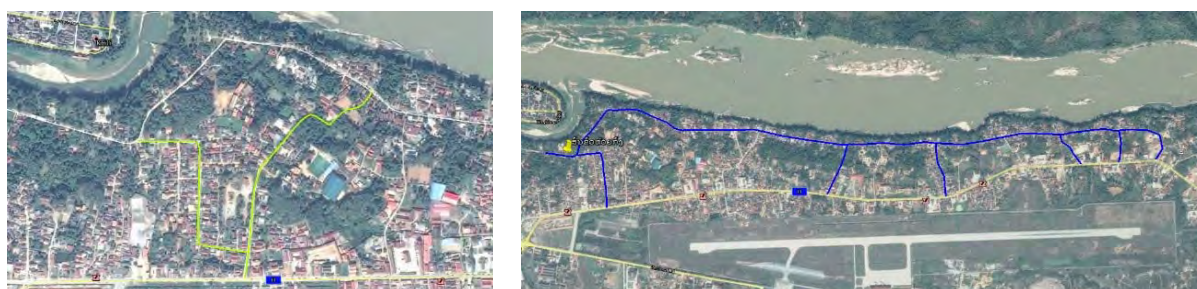
1. Basic Information		
(1)	Country	Lao People's Democratic Republic
(2)	Project Site/ Target Area	Luang Prabang Province
(3)	Sector	Road
(4)	Project Name	Access Road Improvement Project at the CBT Village (S3111)
(5)	Project Outline	Access road improvement at the villages of CBT (including Xang Khong Village) and tourism infrastructure development such as toilet, street furniture, etc.
2. Background and Necessity		
(1)	Background (current state, necessity of immediate action & the needs)	<p>Luang Prabang Province is stated as an international tourism center in Laos in the 8<sup>th</sup> National Socio-Economic Development Plan (2016-2020). In order to achieve the target of increasing the number of tourists and income, creation of new tourism destinations is considered to be an important issue. At the same time, promoting local communities to involve more in tourism, to increase their income and preserve the existing environment and heritage are necessary to be considered in making tourism more sustainable.</p> <p>Recently, villages located at the north side of the airport along the Mekong River attract tourists' attention as a place of CBT. On the other hand, most part of the road inside the villages is unpaved. In the rainy season, roads become muddy, which makes the condition of transportation for both vehicles and pedestrians horrible. In addition to this, tourism infrastructure such as toilet are still not well developed in those villages. While the number of tourists is growing, people from local communities continue to blame the manners and behavior of the tourist on the unclean environment due to lack of these tourism infrastructure such as toilets.</p> <p>This project would be very important to solve these kind of problems and to promote CBT tourism in Luang Prabang district. Furthermore, the project may contribute to reduce disparities between urban and rural area with wholesome improvement of tourism industry. Both NSEDP and Japanese assistance policy also indicate about disparity reduction as a priority issue.</p>
(2)	Japan Cooperation in Road Sector/ Luang Prabang Province	Non
(3)	Other donors' Cooperation	Asian Development Bank (ADB): Tourism infrastructure Project Phase 1 (2002-2011), Phase 2 (2009-2013), and Phase 3: This includes a component of road rehabilitation between Xang Hai Village and Pak Ou Cave, but not include any other road site around the World Heritage District.
3. Summary of the Project		
(1)	Summary of the Project	

① Objective	To improve living environment of villages in Luang Prabang district and to improve tourism accessibility by developing road and related infrastructure inside village area.
② Project Description	<p>(1) Access road improvement at the unpaved area (Asphalt concrete pavement, sidewalk, side ditch, total distance: 8.27km)</p> <ol style="list-style-type: none"> <li>1. National Road N13 to Xangkhong Village</li> <li>2. National Road N13 to Donhkao Village</li> <li>3. National Road N13 to Suan Village</li> <li>4. National Road N13 to Khokwa Village (1)</li> <li>5. National Road N13 to Khokwa Village (2)</li> <li>6. National Road N13 to Donhmai Village</li> <li>7. National Road N13 to Xienglek Village</li> <li>8. Houaykang Bridge to Suan Village</li> </ol> <p>(2) Street light installation to villages above</p>
③ Related JICA Project	Non
(2) Total Cost/ Draft Estimation of Cooperation Amount	USD 6,184,582 (JPY 687,100,907) (According to JICA Account Rate in May, 2016)
(3) Project Implementation Schedule	<ol style="list-style-type: none"> <li>1. Preparation: 3 months</li> <li>2. Survey and Design: 3 months</li> <li>3. Procurement and Bidding Procedure: 3 months</li> <li>4. Construction: 24 months</li> </ol> <p>Total: 33 months</p>
(4) Project Implementation Unit	 <p>Road Management Section of the Department of Public Works and Transport (DPWT) is in-charge of construction management. Office of Public Works and Transport is in charge of O&amp;M. Related Agency: Department of Information, Culture and Tourism (DICT)</p>
(5) Environment and Social Consideration	<p>JICA Classification of Category: <input type="checkbox"/>A <input checked="" type="checkbox"/>B <input type="checkbox"/>C <input type="checkbox"/>FI</p> <p>Positive Impact:</p> <ul style="list-style-type: none"> <li>● Living environment and tourism environment about traffic safety and transportation conveniences will improve</li> <li>● Income by increase oftourists will be distributed to local communities</li> </ul> <p>Negative Impact:</p> <ul style="list-style-type: none"> <li>● During the construction, noise, traffic jam and air pollution will be occurred temporarily around the project site.</li> </ul>
(6) Cross Sectional Regards	Planning of detailed CBT program and promotion by Tourism sector
(7) Classification of Gender (Contents of Activity/Reason of Classification)	Gender Integrated Project: It is necessary to promote local communities including women who produce handicraft to get involve more in tourism and make a system wherein benefits will be equally shared among each villager.
(8) Presumed Contract Manner (competitive bid, nominated contract)	Refer to rules and regulation of Ministry of Finance, Laos and/or JICA Japan's Grant Aid
(9) Issues for Project Formulation	<p>Consultation with concerned departments is required.</p> <p>Technical design, technical officers, equipment, engineer and other concerned</p>



	departments
(10) Other Special Issues/Notes	The site is outside of the world heritage zone. Therefore, the project does not correspond to the items in PSMV.
<b>4. Project Effectiveness</b>	
(1) Quantitative Effectiveness	Not analysed
(2) Internal Rate of Return	Not analysed
(3) Qualitative Effectiveness	<ul style="list-style-type: none"> <li>- Improvement of travellers' accessibility, safety and comfort</li> <li>- Vitalization of local communities</li> <li>- Improvement of living environment</li> </ul>

Source: JICA Survey team



Source: DPWT

**Figure 6.5.1 Location of the Project**

No	Description	Expected project duration			
		3 months	3 months	3 months	24 months
1	Submission project proposal				
2	Survey & design				
3	Procurement, bidding and approval				
4	Contract & implementation				

Source: DPWT

**Figure 6.5.2 Project Implementation Schedule**

**Table 6.5.2 Project Cost Estimation**

No	Description	Cost (LAK)	Cost (USD)
1	Ground work ( Cost of bill 200)	16,655,085,000	2,088,276
2	Leveling, side walk ( Cost of bill 300)	4,708,082,000	590,317
3	Concrete work and drainage ( Cost of bill 400)	17,292,680,000	2,168,220
4	Street light and street furniture	7,972,701,997	999,647
5	Others work/decoration ( Cost of bill 900)	1,144,500,000	143,502
	Total Cost (Cost of bill 100-900 )	39,800,347,000	4,990,313
	Survey and design bridge, report writing, environment inspection/assessment 1.2%	477,604,164	59,884
	Project operation 0.7%	278,602,429	34,932
	Advisory 2%	796,006,940	99,806
	Total Project Cost	49,325,262,530	6,184,582

Source: DPWT, JICA Survey Team

## 6.5.2 Technical Cooperation

The profile of World Heritage Luang Prabang Regional Development Project is presented in Table 6.5.3.

**Table 6.5.3 Project Summary: Project for Capacity Enhancement for Sustainable World Heritage Management and Preservation in Luang Prabang (S3112)**

<b>1. Basic Information</b>	
(1) Country	Lao People's Democratic Republic
(2) Project Site/ Target Area	Luang Prabang Province
(3) Project Name	Project for Capacity Enhancement for Sustainable World Heritage Management and Preservation in Luang Prabang (Technical Cooperation Project)
(4) Total Cost/ Draft Estimation of Cooperation Amount	500 million JPY
(5) Project Implementation Schedule	2017-2022 (Five Years)
(6) Project Implementation Unit/ Operation & Management Unit	<p><u>Main Counterpart Organizations</u></p> <ul style="list-style-type: none"> <li>• Department of Information, Culture, and Tourism (DICT),</li> <li>• World Heritage Office in Luang Prabang (Département du Patrimoine Mondial de Luang Prabang: DPL)</li> </ul> <p><u>Other Related Organizations</u></p> <ul style="list-style-type: none"> <li>• Department of Public Works and Transport (DPWT)</li> <li>• Urban Development Administration Authority (UDAA)</li> <li>• Luang Prabang Travel Agents Association (LUTA) and other public sector associations concerned</li> <li>• Local Communities</li> </ul>
<b>2. Background and Necessity</b>	
(1) Actuality and Challenges of Tourism Sector in Luang Prabang Province/ Significance of the Present Project	<ul style="list-style-type: none"> <li>• Luang Prabang Province is an economic and public transport center of Northern Laos. Especially, tourism, which accounts for 43.6% of the provincial GDP, is one of the most important economic activities in the province. About 33.5% of the provincial population is engaged in tourism related business.</li> <li>• The number of foreign tourists totaled to 445,000 in 2015, which is the largest number in history.</li> <li>• The 8<sup>th</sup> National Socio-economic Development Plan (2016-2020) says it is important to enhance nature, history, culture, and traditional resource-based tourism promotion in Luang Prabang Province making the best use of its actual status as main tourism center in Northern Laos. It is also clearly stated in the same document that Luang Prabang Province should be developed as the primary international tourism destination in Lao PDR.</li> <li>• The 8th Socio-economic Development Plan of Luang Prabang Province (2016-2020) (8th RSEDP) will be finalized focusing on the following five points as economic development targets: <ul style="list-style-type: none"> <li>- Tourism development</li> <li>- Development of water resources and clean agriculture</li> <li>- Migration of the poor and rural development</li> <li>- Consideration of cultural heritages and assets</li> <li>- Improvement in the quality of higher education</li> </ul> </li> </ul> <p>In addition, the conservation of cultural heritages and assets is taken into consideration as one of the targets. The 8th RSEDP sets targets for foreign tourists as follows:</p> <ul style="list-style-type: none"> <li>- Foreign Tourist Arrivals: 700,000 persons (in 2020)</li> </ul>

	<ul style="list-style-type: none"> <li>- Average Length of Stay: Five days</li> <li>- Tourism Income: USD 350 million</li> <li>• Tourism in Luang Prabang District has large positive impacts on local economy, particularly with the following aspects: <ul style="list-style-type: none"> <li>- Increase in job opportunity,</li> <li>- Increase in income and income opportunity,</li> <li>- Incentive and motivation to maintain heritage and traditional cultural assets, and</li> <li>- Improvement in transport and logistics.</li> </ul> </li> <li>• However, on the other hand, local communities have encountered the following negative impacts mainly due to increase in the number of tourists: <ul style="list-style-type: none"> <li>- Impoliteness on religion and local customs of foreign tourists,</li> <li>- Deterioration of public morals of local peoples,</li> <li>- Decrease of residents, traditional landscape and atmosphere in the heritage area, and</li> <li>- Deterioration of urban environment due to increase of garbage and waste water from hotels and restaurants.</li> </ul> </li> <li>• The World Heritage is a foundation of all tourism-related industries and the most attractive destination for the tourists. To continue to enjoy the positive aspects of tourism in Luang Prabang not only by the local communities but also for the whole province, it is needed to alleviate the negative impacts by strengthening the management of World Heritage Area. Preservation and sustainable utilization and dispersion of the tourists to the surrounding areas through introduction of various measures as well as involving related stakeholders and formulating the public-private partnership are important in order for the tourists not to concentrate in the World Heritage Area. At the same time, in order to solve the issues mentioned, the capacity of related organizations also has to be enhanced. In this context, the technical cooperation project for the Capacity Enhancement for the Sustainable World Heritage Management and Preservation is requested to the Government of Japan.</li> </ul>
(2) Japan Cooperation in Tourism Sector/ Luang Prabang Province	<ul style="list-style-type: none"> <li>• Introduction of urban area circular electric vehicles, which contributes to the improvement in tourism transport and alleviation of environmental negative impacts in the World Heritage and its surrounding areas.</li> <li>• Technical cooperation for NAMPAPA water management improvement, which contributes to sustainability and improvement in water supply in the World Heritage and its surrounding areas.</li> <li>• Donation of more than ten waste collection vehicles, which contributes to keeping public sanitation at an appropriate level.</li> </ul>
(3) Other donors' Cooperation	<ul style="list-style-type: none"> <li>• Agence française de Développement (AfD): PADUL Phase 1 (2009-2012), Phase 2 (2012-2017) * Infrastructure improvement mainly in the World Heritage and its surrounding areas (alleys, laying cables underground, registered buildings maintenance work, etc.)</li> <li>• Asian Development Bank (ADB): Tourism Infrastructure Project Phase 1 (2002-2011), Phase 2 (2009-2013), and Phase 3 (2014-2019) * Road, water supply, tourism human resources, etc.</li> </ul>

Source: JICA Survey Team

Project Name: Project for Capacity Enhancement for Sustainable World Heritage Management and Preservation in Luang Prabang

(1) Overall Goal

To enhance the attractiveness of Luang Prabang World Heritage and its surrounding areas.

[Objective Verification Indicators]

- The number of tourists increases by 50% compared with the initial timing of the present project.
- The income of the pilot projects' tourism destinations increases by 30% compared with the baseline.

(2) Project Purpose

To establish sustainable maintenance system for the World Heritage Area and its surrounding areas.

[Objective Verification Indicators]

- A substantial maintenance system for the World Heritage Area and its surrounding areas is established.
- The maintenance system is clearly described in any of the official outputs of the present project.

Output 1: To establish a management body comprising local communities, private sector, and local authorities.

1-1 Call for stakeholders directly or indirectly related to Luang Prabang World Heritage Management and Preservation and establish a committee.

1-2 Establish working groups (WG) which shall be composed of stakeholders depending on the nature of challenges for the world heritage centered regional development.

[Objective Verification Indicators]

- A substantial working group exists.

Output 2: To establish the fund mechanism for sustainable maintenance of historical buildings in the World Heritage Area

2-1 Review and analyze the existing concessional arrangements between the local authority and collect information about laws and regulations on tourism revenue.

2-2 Propose sustainable fund raising mechanism including establishment of a secretariat, elaboration of clauses, auditing and its distribution system.

2-3 Conduct a proposed mechanism and system as a pilot project.

2-4 Review and analyze conducted pilot project and amend the proposal.

[Objective Verification Indicators]

- The established fund mechanism exists.
- A document of the revised sustainable fund raising mechanism exists.

Output 3: To elaborate the maintenance manual and action plan for sustainable preservation.

3-1 Review and analyze Luang Prabang urban planning, maintenance manuals and regulations in reference to the heritage management and preservation.

3-2 Propose necessary measures and action plans for heritage management and preservation, including fire prevention, pedestrian space improvements, transportation management or

	river bank protection.
3-3	Conduct a pilot project (e.g., preparation of fire prevention plan along with operation manual, fire drill and training, sidewalk improvement, traffic regulation) under the participation of local authority, private sector and local communities.
3-4	Review the pilot project and establish revised maintenance manual and action plan for sustainable heritage preservation.
	[Objective Verification Indicators]
	- Revised maintenance manual and action plan for sustainable heritage preservation are elaborated.
Output 4:	To develop the new tourist attraction including hospitality and marketing in the rural district of Luang Prabang Province.
4-1	Conduct a baseline survey and training on statistics to identify tourism resources and destinations in the rural district of Luang Prabang.
4-2	Set up a pilot project in the rural community and conduct the project.
4-3	Elaborate a marketing plan for the rural district tourism promotion.
4-4	Conduct a hospitality training for the rural district communities.
	[Objective Verification Indicators]
	- More than one tourism destination in the rural district is identified.
	- A marketing plan for the rural district tourism promotion is elaborated.
	- At least 60% of the community trainees successfully pass a hospitality comprehension test.
Output 5:	To improve quality of handicraft and/or agricultural product.
5-1	Conduct a baseline survey and training on statistics to identify handicrafts in the rural district of Luang Prabang.
5-2	Set up a pilot project in the rural community and conduct the project.
5-3	Elaborate a marketing plan for the rural district handicraft promotion.
	[Objective Verification Indicators]
	- More than one handicraft and/or agricultural product is improved.
	- A marketing plan for the rural district handicraft promotion is elaborated.
Output 6:	To raise the awareness for heritage preservation among local communities and tourists
6-1	Review the current cultural assets in Luang Prabang.
6-2	Prepare a guidebook with the local communities.
6-3	Prepare contents and train facilitators.
6-4	Enhance public awareness through study meetings with local communities.
	[Objective Verification Indicators]
	- A guidebook is prepared.
	- At least five facilitators are trained.
Output 7:	To improve Lao side's planning skills for sustainable regional development in Luang Prabang.

7-1 Check up the most important key challenges in tourism sector during the 9th Socio-economic Development Plan of Luang Prabang Province (2021-2025) (9th RSEDP) through Outputs 1-6.

7-2 Preliminarily draft the 9th RSEDP.

[Objective Verification Indicators]

- A draft RSEDP is elaborated in view of contributing to the regional plan for 2021-2025.

[Input from Japan]

- 1 Japanese Project Manager
- 5 Japanese Experts
- 5 Japanese Professors and Public Officials
- 1 Japanese JICA Volunteer
- 1 Lao Manager
- 1 Lao Technical Expert
- 4 Technical Instructors/ Facilitators
- 1 Lao Office Secretary

Budget: JPY 500,000,000

## Chapter 7 Environment and Social Consideration

### 7.1 Environmental and Social Consideration

#### 7.1.1 Legislative System

The major environmental and social laws in Lao PDR are shown in Table 7.1.1.

**Table 7.1.1 Major Environmental Laws in Lao PDR**

Category	Title	Enacted Year
Generals on environment	Environment Protection Law	1999
	Environmental Protection Law (Revised Version, 29/NA)	2012
	Forestry Law	2008
	Law on Aquatic Life and Wild Animal	2008
Environmental standards	Industrial Waste Discharge Regulation	1994
	Regulation on Monitoring and Control of Wastewater Discharge	1998
	Decision on the Management of Quality Standards for Drinking and Household Water Supply	2005
	Provision on Discharge of Domestic Sewerage and Wastewater from Industrial Factories	2005
	Forestry Law	2007
Environmental impact assessment	Regulation on Environmental Assessment in the Lao PDR	2002
	Decree on Environmental Impact Assessment (112/PM)	2010
	Environmental Impact Assessment Guidelines	2012
Land management (Protection areas, land acquisition and compensation)	Regulation on Management of Protected Areas and Animals	2003
	Land Law	2003 Amended in 2008
	Decree on the Compensation and Resettlement of the Development Project	2005
	Regulations for Implementing Decree on Compensation and Resettlement of People Affected by Development Projects	2006
	Technical Guidelines on Compensation and Resettlement in Development Projects	2005
Ethnic minority	The National Constitution, Chapter 2 Social Economic Institution, Decree 22	2003
Cultural and natural heritage	The National Constitution, Chapter 2 Social Economic Institution, Decree 23	2003
	Cultural and Natural Heritage Protection	2005, amended in 2013

Source: JICA Survey Team

#### 7.1.2 Procedure for Environmental Permit

##### (1) Projects with Environmental Impact Assessment (EIA) / Initial Environmental Examination (IEE)

The implementation procedure for EIA/ IEE in Lao PDR is determined by the EIA Law (No. 112/PM, 16 February 2010, refer to Table 7.1.1). Development projects which are subjects of examination are divided into the following large categories:

**Table 7.1.2 Categories for Environmental Impact Assessment**

Category 1	IEE is required for investment/development projects which affect the surrounding natural or social environment, and the effect is judged to be insignificant.
Category 2	EIA is required for investment/development projects whose effect to the surrounding natural or social environment is judged to be significant.

Source: EIA Law in Lao PDR



Basically, all projects in Category 2 are required to implement EIA and all in Category 1 are required to implement IEE. These are obligated in order to acquire an environmental compliance certificate (ECC).

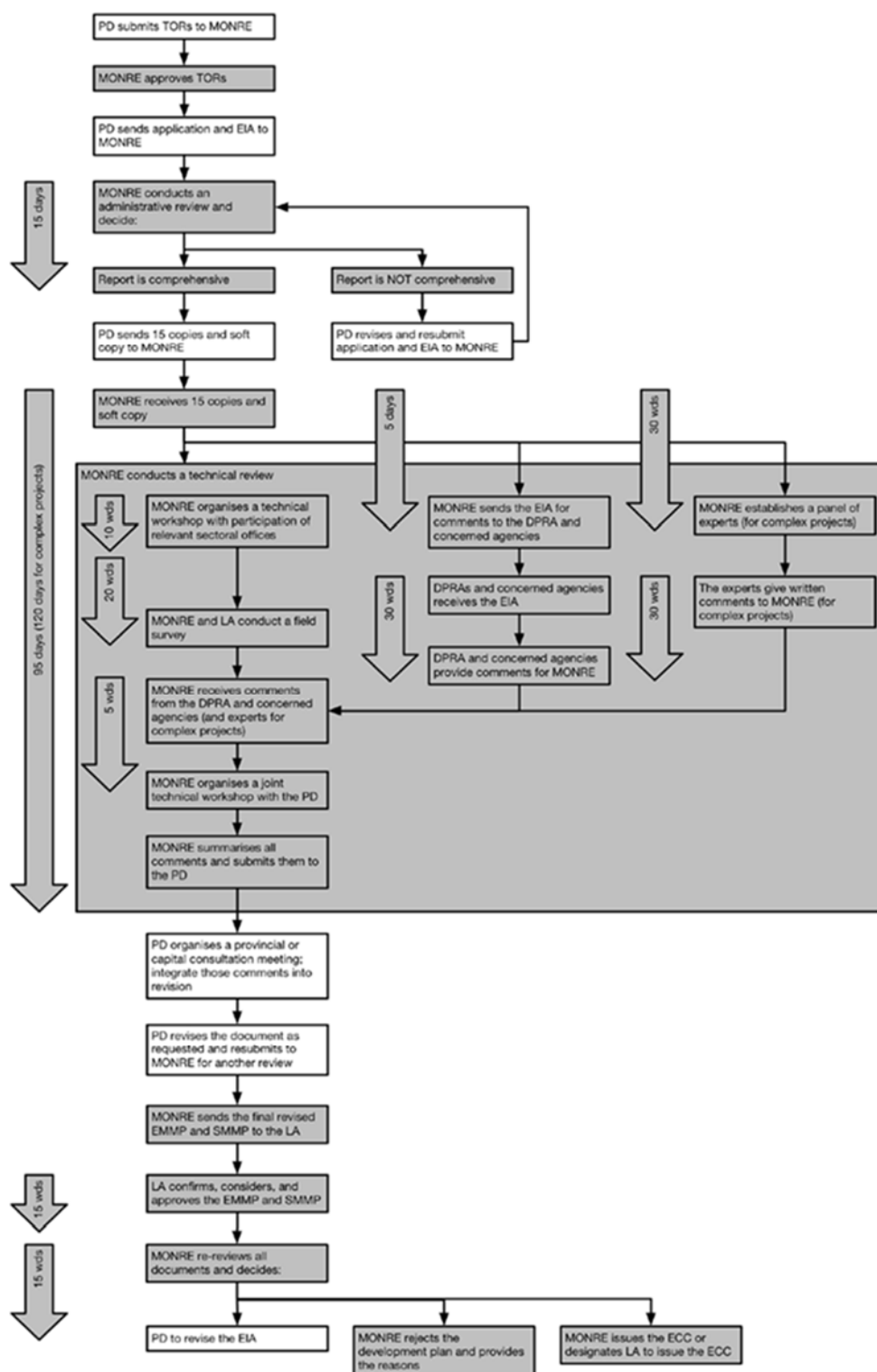
## (2) Procedure of EIA/IEE Implementation

The implementation procedure for EIA in Lao PDR is shown in Figure 7.1.1. The four main steps for EIA are (a) screening and scoping, (b) EIA report preparation, (c) examination of the report and decision for issue of ECC, and (d) project monitoring. As stated above, it is obligated to implement (i) IEE (Category 1) or (ii) EIA (Category 2) for all development projects in order to acquire an ECC.

In the project screening stage, the project implementation entity must submit an application for investment and development to the Ministry of Natural Resource and Environment (MONRE) (Decree 112/PM (Article 6)). The project implementation entity is required to refer to the list of projects which need to implement EIA beforehand and to consider and record the significance of potential negative impacts due to the project implementation. Based on this information, MONRE will judge the necessity to consider IEE or EIA.

In the project scoping stage, scoping report and terms of reference (TOR) for the EIA survey are necessary to be established as described in the law (Decree 112/PM (Article 11)). Procedures for establishing scoping report and TOR are mentioned in the same law (Article 3). After submission of the scoping report and TOR, MONRE will evaluate the contents; and only when they are approved by MONRE can the project implementation entity formally undertake the EIA survey.

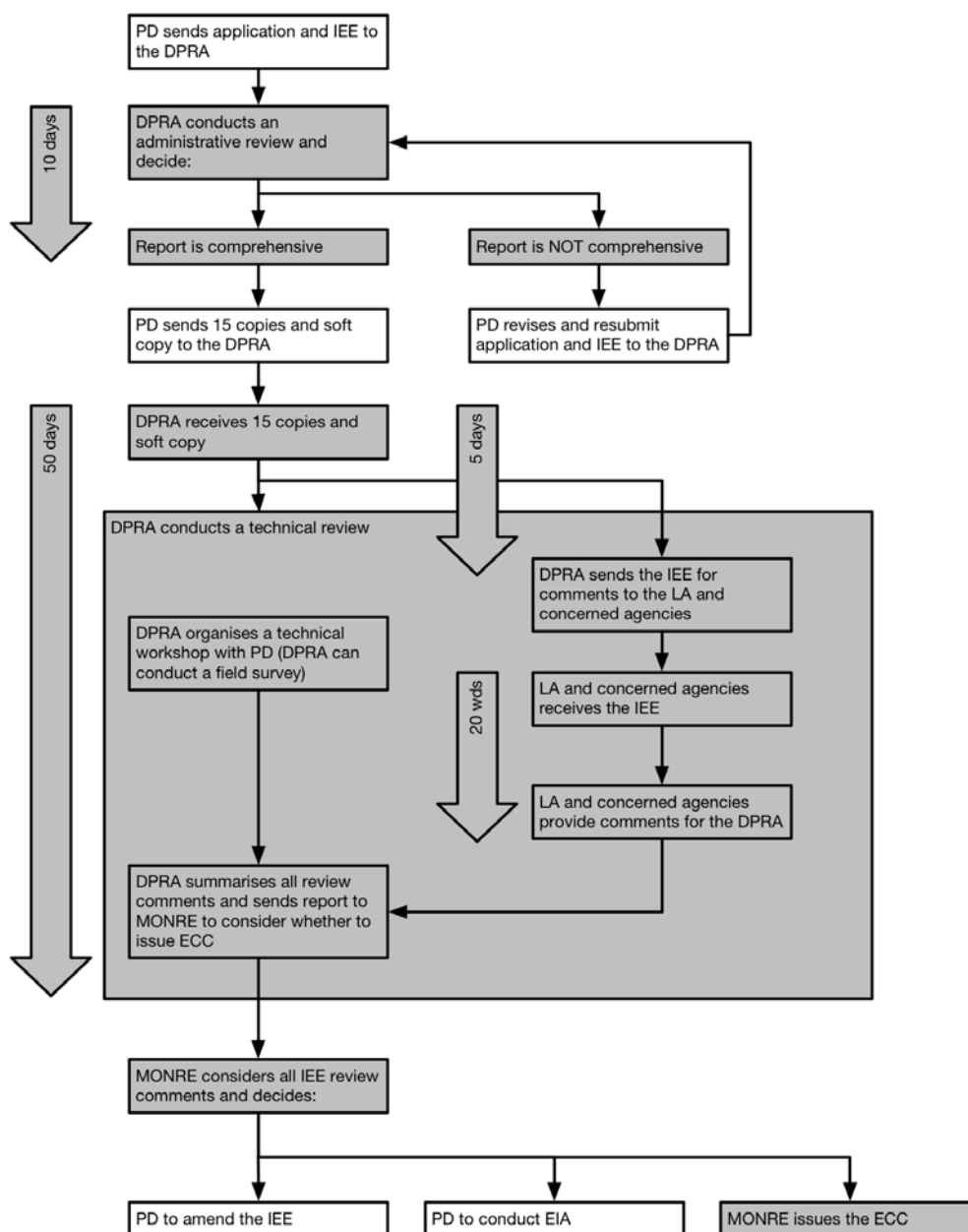
MONRE will evaluate the contents of the submitted EIA report, environmental and social monitoring management plan (ESMMP), and development plan. If the evaluation result is judged to be unsatisfactory, MONRE may ask for revision or additional consideration to the project implementation entity. Through these procedures, the EIA report, ESMMP, and development plan are to be finalized. After MONRE accepts all these procedures, the ECC issuance could finally be started. Moreover, consultation with the government agencies and the affected residents in the surrounding site is required while the EIA survey is conducted.



Note: PD: project implementation entity, ECC: environmental compliance certificate, LA: local authority, wd: working day, DPRA: project implementation monitoring authority  
Source: MONRE

**Figure 7.1.1 Implementation Procedure of EIA in Lao PDR**

Implementation procedure of IEE in Lao PDR is shown in Figure 7.1.2.



Note: PD: project implementation entity, ECC: environmental compliance certificate, LA: local authority, wd: working day, DPRA: project implementation monitoring authority  
Source: MONRE

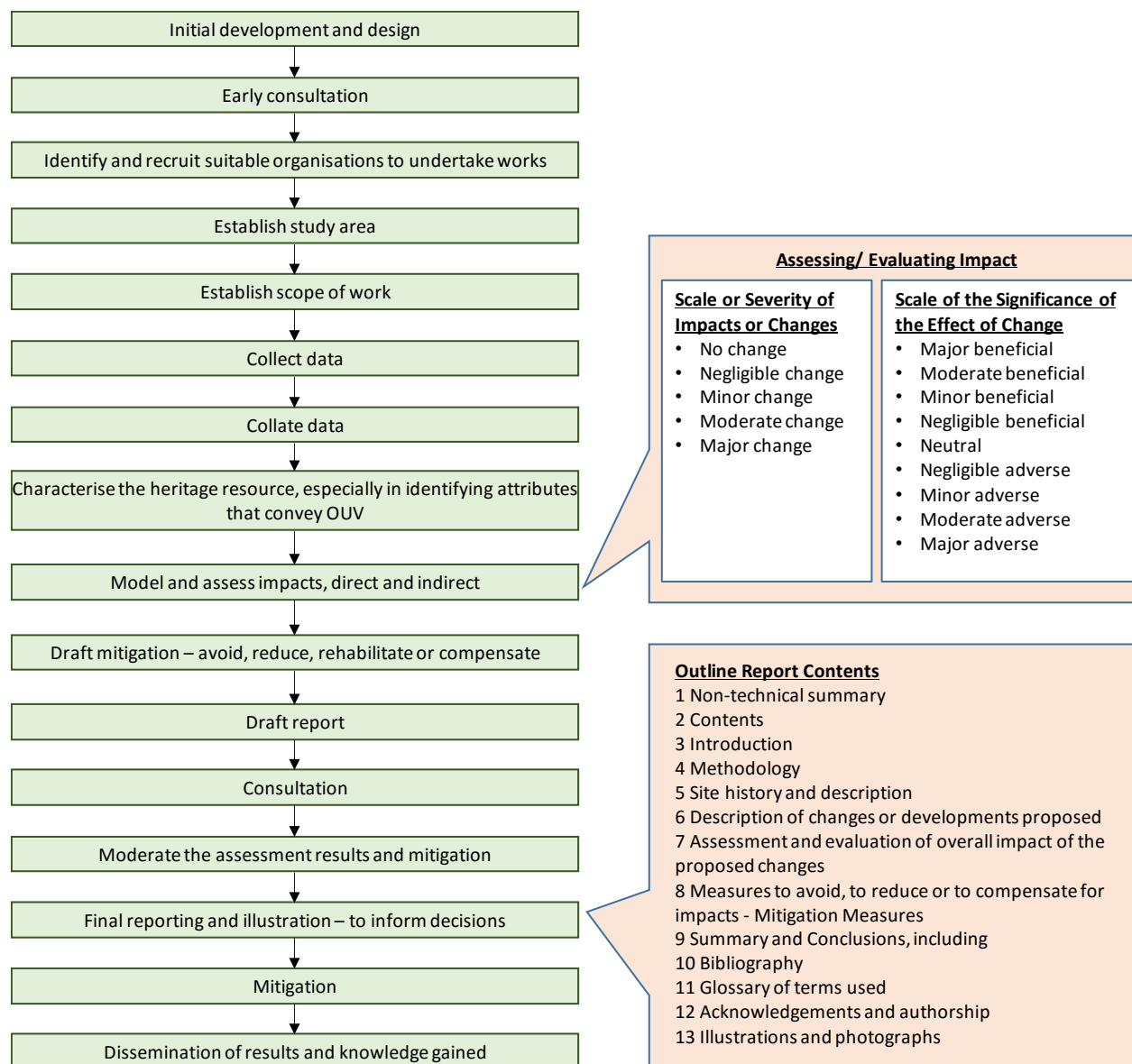
**Figure 7.1.2 Implementation Procedure of IEE in Lao PDR**

### 7.1.3 Heritage Impact Assessment (HIA)

Impact assessment on the heritage is required for projects in the heritage site and its surrounding areas. Projects for which HIA are required depends on the type of the project. For the project that is located in the heritage site, it is expected that the project will have an impact on landscape; while the projects that may have indirect impact to heritage are expected to conduct HIA. At the same time, information should be shared with the International Council on Monuments and Sites (ICOMOS) and necessary procedure for heritage consideration has to be discussed.

In order to assess impacts effectively to the “Outstanding Universal Value” (OUV) that the world heritage has and to indicate the methods of HIA to satisfy conditions of the world heritage, ICOMOS published HIA implementation guideline (Guidance on Heritage Impact Assessments for Cultural World Heritage Properties) in January 2011.

HIA implementation procedure is shown in Figure 7.1.3.



Source: JICA Survey Team created based on ICOMOS Guidance on Heritage Impact Assessments for Cultural World Heritage Properties

**Figure 7.1.3 Implementation Procedure of HIA**

HIA should be conducted at the early stage of the project due to following two points:

- By identifying negative impacts at the early stage, these can be considered and informed in the development design and planning process in a pro-active rather than reactive manner.
- To avoid postponement of the project and unnecessary costs.

So far, HIA has never been implemented for development projects in Luang Prabang World Heritage Area and its surrounding areas. Permission for development or construction of buildings are proceeded by the World Heritage Office, when the site is inside the World Heritage Area and by DPWT or other related government authorities when the site is outside of the World Heritage Area. If the size of the project is large, the World Heritage Office also takes part in the procedure. However, conditions of procedures regarding permission for development projects and necessity of implementing HIA are not specifically stated by the national government. In Luang Prabang Province, PSMV is used as a standard for permitting development projects. According to these circumstances, in order to proceed any development projects inside the World Heritage Area in the future, coordination with UNESCO and the Law on Cultural and Natural Heritage Protection (stated in 2005, amended in 2013) should be taken into account sufficiently.

#### 7.1.4 Resettlement Action Plan (RAP)

When resettlement is expected in the development project, it is important to formulate appropriate resettlement and compensation plan at the early stage of the project by having discussion with the related government authorities. In Lao PDR, MONRE is the main supervisory government agencies for land acquisition and RAP in development projects.

In Lao PDR, when resettlement is needed for land acquisition of large-scaled development projects conducted by government authorities, related ministries must have immediate discussion with MONRE (or Department of Natural Resource and Environment (DONRE)). After explaining the outline of the project including boundary of the site, the ministries must get approvals on the implementation procedures for compensation survey of land acquisition and for seminar to related residents. After the items above are approved, MONRE (or DONRE) will set the boundary of the whole planned site including land acquired area, cut-off-date, explanatory seminar to residents, and so on. Incidentally, survey for estimation of compensation fee is carried out by MONRE (or DONRE).

The laws related to land acquisition and resettlement process in development projects are shown in Table 7.1.3.

**Table 7.1.3 Laws Related to Land Acquisition and Resettlement Process in Development Projects**

	Law	Outline
1	National Constitution (2003)	Generally, land is a property of the country. Based on the related laws, it is stated that the nation guarantees the use, transfer, inheritance, etc., of the land. Article 16 states that the nation protects and promotes the property rights in Lao PDR, and Article 17 states that property rights and inheritance related to owning, use, usufruct, transfer, etc., of properties by individuals and organization are protected.
2	Land Law (2003)	It is stated that the nation is constitutionally responsible for land owning organization, accessibility, use, management, and conservation. General items regarding compensation are stated in Articles 68-72. Article 70 states that appropriate compensation is necessary in case of taking down farm fields or buildings for constructing road. Also, this law states that 5% of the land within all of the areas must be secured for each town or village in order to respond to the case that alternative land is required within land acquisition for implementation of public works.
3	Road Law (1999)	The Road Law states that MPWT is responsible for site management which is necessary for domestic transportation activities. Road width is defined as the width of space including lanes, shoulders, drainage facilities, slopes, etc., (Article 17). In this space, construction works and activities without permission from MPWT are totally prohibited (Article 21).

	Law	Outline
4	Forestry Law (2007)	In the Forestry Law, area for forestry is prohibited to change its land use for the other purpose such as construction of transmission cables. However, if it is for a public use, it is necessary to get a permission from related agencies. Moreover, permission can be acquired for the activities only for self-consumption which are continued for long time traditionally or conventionally such as hunting activities and collecting forest product or non forest product.
5	Prime minister's ordinance regarding resettlement and compensation for affected people in development projects (Decree 192/2005)	In accordance with the prime minister's ordinance in 2005 and 2010, a technical guideline regarding policies and procedures about land acquisition, compensation, and resettlement in development projects (including public works) has been published.
6	New prime minister's ordinance after change of supervisory ministry (WREA to MONRE) regarding resettlement and compensation (12 March 2010)	
7	Prime minister's ordinance regarding implementation, Decree 101/PM, 20 April (2005)	Article 25 states land acquisition of private land must be done such as for the following purposes: 1) construction of public facilities, 2) national defense, 3) national security, 4) national development for special purposes, and 5) access for irrigation water way, transmission cable, water pipes. Article 24 related to suspension of land use right (land law Article 62) states that in case of government or bureau of land management proceeds land acquisition as a main supervisory authority, they need to announce to the land owner about the land acquisition at least six months before implementation.
8	Prime minister's ordinance regarding implementation of the Land Law (03 June 2008)	This defines more in detail such as about nationally-owned land, common land, land use and its rights. Article 28 states that consumption for land provision in development project is implemented case by case. Through discussion with concerned parties, optimum plans for compensation must be considered for agreement. The examples of compensation are payment of cash, provision of alternative land, etc.
9	Mining Law (1997)	Article 47 states that mining companies need to promote activities and prepare budget such as for; 1) resettlement and livelihood recovery regarding mine development, 2) recovery of damage to land or farm products in mine activities, 3) land leasing, 4) environment protection, and 5) improvement of amenities in mine development area. Also, these kind of funds must be included in the project budget in advance.
10	Investment Promotion Law (2009)	This law states the policies, regulations, and procedures inside Lao PDR about promotion and management for domestic and foreign investments. This also includes the article about lease and concession of land for the investment.
11	Prime minister's ordinance regarding lease concession of the state owned land (2009)	This law states the land concession to be divided into two groups, i.e., government and commercial; and the necessary condition about permissions for concession of nationally-owned land. Also, when the subjected area of leasing or concession overlaps to the private land, cadastral maps or topography maps must be created after topographic survey is handled, and the contract document must be prepared through having sufficient discussion between leasing companies or implementation entities and land owners.

Source: Research and Creation of Environmental and Social Consideration Profile in Laos, 2013

The necessary procedures for land acquisition and resettlement in development projects are shown below:

**1. Planning stage**

- Organize expected social impacts and subjects in project implementation
- Reviewing and screening using existing data
- Determination of scope for gathering necessary information and the contents for detail impact assessment
- TORs of related data collection survey plan for resettlement plan, monitoring and evaluation

**2. Pre-feasibility study**

- Appropriate selection of design options
- Objectives of the project, verification and improvement of the scope
- Related technical consideration, economical analysis, implementation of preliminary design
- Detail evaluation of expected resettlement impacts, identification of stakeholders including project affected people (PAPs)
- Consideration of plan for alternative design and selection of optimum plan for minimization or avoidance of negative impacts

### 3. Feasibility study and detail design

- a. Determination of project site boundary (it has a possibility to be modified after Pre-FS finishes)
- b. Feasibility study and technical consideration, parallelly, implementation of social survey if necessary
- c. Following consideration is necessary if resettlement cannot be avoided:
  - Detail population demographic survey, social economic survey
  - Preparation of PAPs inventory (use for preparation of effective resettlement plan)
  - If PAPs are consisted of some ethnic groups, data collection on minority ethnic group is necessary
  - Implementation of stakeholder meeting during resettlement preparation. Based on detail consideration and results of site survey, related reports such as RPs and minority ethnic group development promotion plan and social evaluation report are needed to be prepared
- d. Generally, in parallel to technical consideration and preparation of bidding document, certification for project implementation (ex. investment certificate and implementation certificate) will be issued at the same time of completion of the feasibility study

### 4. Construction implementation

- a. Initiation of construction work
- b. As a general rule, resettlement must be completed before construction starts. But, depending on the condition, there is a case that the construction can be started partially in the range of no interference even the resettlement is not completed.
  - Land acquisition/ transfer of land rights
  - Payment of compensation fee
  - Resettlement of affected people (APs)

### 5. Monitoring

### 6. Evaluation

### 7. Post-adjustment or modification

## **7.1.5 Community Involvement**

In the EIA Law of Lao PDR, community involvement is regarded as a process of gathering comprehensive comments about the development project. The information collected in this process must be described in the IEE or EIA report and ESMMP. The “involvement” may have the same meaning as attendance to stakeholder meetings.

The EIA Law of Lao PDR, Article 7, mentions that the affected residents and stakeholders related to the investment/development project have the following rights and duties:

#### **Rights:**

- 1) To receive explanations about information, benefits from the project implementation, and impacts to surrounding nature and society related to the investment/development project.
- 2) To receive information about IEE or EIA report including method for reducing or avoiding negative impacts on nature and society, ESMMP, and the progress report on implementation of environment management plan (e.g., implementation condition of environmental mitigation measures) during construction and in-service period.
- 3) To attend to consultation assemblies for promotion of understanding about the submitted IEE or EIA report and ESMMP.
- 4) To attend the discussion meetings about compensations for the development project implementation, life security by resettlement, livelihood recovery, and mitigation.
- 5) To attend the discussion meetings on ESMMP implementation conditions such as about environmental and social preservation activities during construction and in-service period.
- 6) To submit document for proposals to the local government about natural and social environment problems caused by the project implementation. If the solution is not provided, the document can be submitted directly to MONRE.

#### **Duties:**

- 1) To provide reliable information about natural and social environment condition in the site which is a basis for preparing IEE or EIA report and ESMMP.

Source: EIA law in Lao PDR

In the EIA Law of Lao PDR, Article 8, it is defined that MONRE, local authorities, and the project implementation entity are responsible for ensuring participation of the affected communities during the survey period of IEE or EIA.

- 1) The local authorities and the project implementation entity shall share information which is collected from the prepared IEE or EIA report and explain the potential negative impacts on nature and society predicted to be caused by the project implementation. Then, opinions from communities shall be gathered.
- 2) For preparing the IEE report, measures for reducing or avoiding natural and social environment impacts are necessary to be covered. Also, for preparation of the EIA report and ESMMP, MONRE, local authorities, and the project implementation entity shall hold explanatory sessions at the provincial, district, town, and village levels, and shall explain these reports. The main objective of the session is to guarantee the affected residents and all stakeholders opportunities of involvement; and to share, discuss, and be well-informed about the comments given on the first edition to draft the final edition of the report.
- 3) The project implementation entity must notify and explain to the affected residents and related stakeholders in advance the activities which may affect the natural and social environment (e.g., large-scale earthworks, rock drilling, transportation of harmful chemicals, and large water pumping from water resources). At the same time, the project implementation entity shall secure the access of the affected residents and related stakeholders to general information about the development project.

Source: EIA Law in Lao PDR

### 7.1.6 Information Disclosure

In the EIA Law in Lao PDR, the information to be disclosed is categorized into two groups, namely, (i) general information and (ii) confidential information. The policy of general information disclosure is described as follows:

- 1) MONRE, in cooperation with related government agencies and project implementation entity, has the responsibility for information management regarding natural and social environment issues related to the development project. Also, MONRE is responsible for promoting the related information access to stakeholders and the affected residents.
- 2) The project implementation entity has the responsibility to manage information about environmental mitigation and implementation of ESMMP, and to promote information access to the affected residents. In case of a Category 2 project, the project implementation entity must establish an information center in the development site or in the neighboring town.
- 3) The information to be disclosed must be written in Lao and English, and the following information must be included:
  - (a) IEE or EIA report and ESMMP (except for confidential information defined in the EIA Law of Lao PDR, Article 32);
  - (b) Report on the implementation of environmental management measure and ESMMP;
  - (c) Monitoring report about implementation of ESMMP prepared by MONRE or local authorities after ECC is acquired;
  - (d) Detailed information about penalties and disciplinary actions to the project implementation entity imposed by MONRE, local authorities, or related government agencies; and
  - (e) The expenditure breakdown on actions for social and environmental consideration in the development project.

Source: EIA Law in Lao PDR

The policy of confidential information disclosure is described as follows:

- 1) MONRE has the right to designate confidential information related to the national security. The designated information must be mentioned in the IEE report, EIA document, and ESMMP.
- 2) Based on the requested documents from the project implementation entity, MONRE can designate specific information to be confidential or can restrict to mention the information in the IEE report, EIA document, and ESMMP. The following information may be designated:
  - (a) Information related to individual and privacies,
  - (b) Information on properties, and
  - (c) Information on permit about commercial activities.
- 3) In case the project implementation entity does not wish to disclose information corresponding to the EIA Law of Lao PDR, Article 32(2), inspection for handling information can be requested to MONRE. MONRE will inspect within 25 working days after the request and the inspection results will be reported to the project implementation entity.
- 4) In case the subject information is judged as confidential, the information shall be closed for four years. If the project implementation entity is willing to extend the period for closing, application for extension must be submitted within 60 working days before the closing period. If the submission is not done within the period, the information shall not be regarded as confidential.

Source: EIA Law in Lao PDR



### 7.1.7 Environmental Consulting Company in Lao PDR

There are no registered companies in Luang Prabang Province which are able to implement an IEE/EIA. Therefore, even if the project is implemented in Luang Prabang, registered companies from Vientiane Capital need to undertake the IEE/EIA. According to the DONRE, IEE has previously been implemented for 11 times in Luang Prabang and the examination fee is about LAK 3,500,000 (about USD 438) for each IEE. In addition, the examination fee for EIA implemented by MONRE is about LAK 37,000,000 (USD 4,625).

Table 7.1.4 and Table 7.1.5 show the lists of both domestic and international companies registered in Vientiane Capital which are able to undertake IEE and EIA. Among the registered 38 domestic companies, 37 companies are able to implement both IEE and EIA, and one company is able to implement IEE only.

**Table 7.1.4 List of Registered Companies in Vientiane Which Can Undertake IEE/EIA (Domestic)**

No.	Company name	Type
1	National Consulting Group Co., Ltd	IEE and EIA
2	Sor Sor Nor Consulting Co., Ltd	IEE and EIA
3	LAO-ASIE Consults Group	IEE and EIA
4	Expertec Co., Ltd	IEE and EIA
5	SSAFE Consult Co., Ltd	IEE and EIA
6	MEK Consultants Co., Ltd	IEE and EIA
7	Environment Consultants Lao Co., Ltd	IEE and EIA
8	Green Energy Sole Co., Ltd	IEE and EIA
9	Lao Environment Impact Assessment Consultant Co., Ltd	IEE and EIA
10	Lao Consulting Company limited	IEE and EIA
11	Inno Green Engineering Company Limited	IEE and EIA
12	Green Gold Consulting Sole Co., Ltd	IEE and EIA
13	ACE Consultancy Co., Ltd	IEE and EIA
14	SEED Consultancy Co., Ltd	IEE and EIA
15	ASA Power Engineering Sole CO., Ltd	IEE and EIA
16	Go Green Group Co., Ltd	IEE and EIA
17	Lao CDM SOLE CO.,LTD	IEE and EIA
18	PK ARCHITECT AND ROAD SURVEY SOLE CO.,LTD	IEE and EIA
19	L-Environment Engineering Connsultant (LEEC) Co.,Ltd	IEE and EIA
20	Buusiness Consulting for Development	IEE
21	ESL SOLE CO., LTD	IEE and EIA
22	LAO IDEA DEE SOLE CO., LTD	IEE and EIA
23	Chaleunshup-Environmental Consultant Sole Co., LTD	IEE and EIA
24	Consultants of Environmental Integrated and Sustainable Co, Ltd	IEE and EIA
25	SES Consulting Co., Ltd	IEE and EIA
26	Consultant of Environment and sustainable Co.,Ltd	IEE and EIA
27	Engineer Constructions and Engineering Co.,Ltd	IEE and EIA
28	Environment Consultants Lao Co., Ltd	IEE and EIA
29	Consultants of Environmental Engineering Co.,Ltd	IEE and EIA
30	LEM Consulting Co.,Ltd	IEE and EIA
31	Green Enveronment Co.,Ltd	IEE and EIA
32	Connected Co.,Ltd	IEE and EIA
33	Associate Co.,Ltd	IEE and EIA
34	NAPHA Co.,Ltd	IEE and EIA
35	Chalern Associate Co.,Ltd	IEE and EIA

No.	Company name	Type
36	EIA Consulting Co., Ltd	IEE and EIA
37	Green Power Pro Consulton Co., Ltd	IEE and EIA
38	Enterprise of Water Engineering and Environmental Co.,Ltd	IEE and EIA

Source: Prepared by the JICA Survey Team based on the information from MONRE

**Table 7.1.5 List of Registered Companies to Vientiane which can Undertake IEE/EIA (International)**

No.	Company name	Type
1	Nro Consults Engineering and Management Consultants	IEE and EIA
2	TEAM Consulting Engineering and Management Co., Ltd	IEE and EIA
3	SONGDA CONSULTING JOINT STOCK COMPANY	IEE and EIA
4	Hatfield Consultants Mekong Co., Ltd	IEE and EIA
5	TEAM LAO Co., Ltd	IEE and EIA
6	H & T Co., Ltd	IEE and EIA
7	Quang Trung Investment Lao Co., Ltd	IEE and EIA
8	Earth System Co.,Ltd	IEE and EIA
9	Chna Oriental Environment Protection Co.,Ltd	IEE and EIA

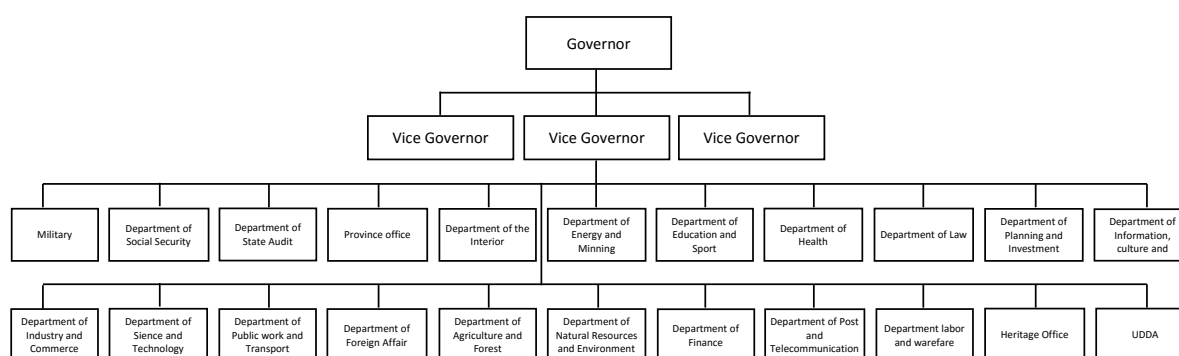
Source: Prepared by the JICA Survey Team based on the information from MONRE

## Chapter 8 Administration and Finance for the Tourism-based Regional Development

### 8.1 Administration and Finance of Luang Prabang Province

#### 8.1.1 Organizational Structure of Luang Prabang Province

Luang Prabang Province has 22 departments under the governor and 3 vice-governors. The secretariat of the governor and vice governors belongs to Luang Prabang Province. Each department belongs to the province and also is a local agency of the national government at the same time. For example, the DPWT belongs under Luang Prabang Province and also is a local agency of MPWT. The budget of each department is allocated from Luang Prabang Province.



Source: Department of Planning and Investment (DPI), Luang Prabang Province

**Figure 8.1.1 Organization of Luang Prabang Province**

#### 8.1.2 Budget of Luang Prabang Province

The budget of Luang Prabang Province shows an increasing tendency when compared among years 2013-14, 2014-15, and 2015-16. The total budget in 2015 was LAK 619 billion, wherein 72% of it was the remuneration and allowance. The amount of expenditure was LAK 60.6 billion (USD 8.3 million), which is about 11% of the total.

**Table 8.1.1 Budget of Luang Prabang Province**

	2013-14		2014-15		2015-16	
	Budget	%	Budget	%	Budget	%
Remuneration, allowance etc.	423,510,840,000	78.4%	434,222,690,000	77.3%	448,374,000,000	72.4%
Purchase, facility development	69,340,950,000	12.8%	74,935,520,000	13.3%	86,389,000,000	13.9%
Investment and direct expense	33,235,920,000	6.1%	37,513,000,000	6.7%	66,619,540,000	10.8%
Others	14,413,210,000	2.7%	15,404,000,000	2.7%	18,139,000,000	2.9%
Total	540,500,920,000	100.0%	562,075,210,000	100.0%	619,521,540,000	100.0%

Source: Department of Finance (DOF), Luang Prabang Province

### 8.2 Administration of Luang Prabang Province

Among the 22 departments in Luang Prabang, eight departments are related to regional development as shown in Table 8.2.1. Luang Prabang Province is the decision making body where the governor, vice governors, and other administration members are involved. The district government is under the

province. The Department of Planning and Investment (DPI) is in-charge of making the plan of the province and managing investment matters. DPWT and UDAA take part in the infrastructure sector. The Department of Agriculture and Forestry (DOAF), Department of Commerce and Industry (DOCI), Department of Energy and Mining (DOEM), and DICT are related to economic matters. The Department of Environment (DOE) and World Heritage Office are also related to regional development. Table 8.2.1 below shows the organizations and those jurisdiction works.

**Table 8.2.1 Departments in Luang Prabang Province Related to Regional Development**

Organization	Jurisdiction Works
Luang Prabang Province	Decision making of the province
Department of Planning and Investment (DPI)	Formulation of RSEDP Permission of investment
Department of Public Works and Transport (DPWT)	Planning, construction and management of infrastructure (road, bridge, water supply and sewerage) Management of logistic operators, city planning Architectural administration
Urban Development Administration Authority (UDAA)	Cleaning inside the urban area Solid waste disposal management
Department of Agriculture and Forestry (DOAF)	Agriculture and forestry planning, project implementation
Department of Commerce and Industry (DOCI)	Industry and commercial policy Project implementation Management of traders
Department of Information, Culture and Tourism (DICT)	Tourism planning Tourism development Management of tourism agencies
Department of Energy and Mining (DOEM)	Authorization of underground resource development and energy (water resource) development
Department of Environment (DOE)	Environmental administration IEE/EIA (Outside of the Heritage Area)
World Heritage Office (DPL)	Management of the World Heritage Area Preservation and development

Source: JICA Survey Team

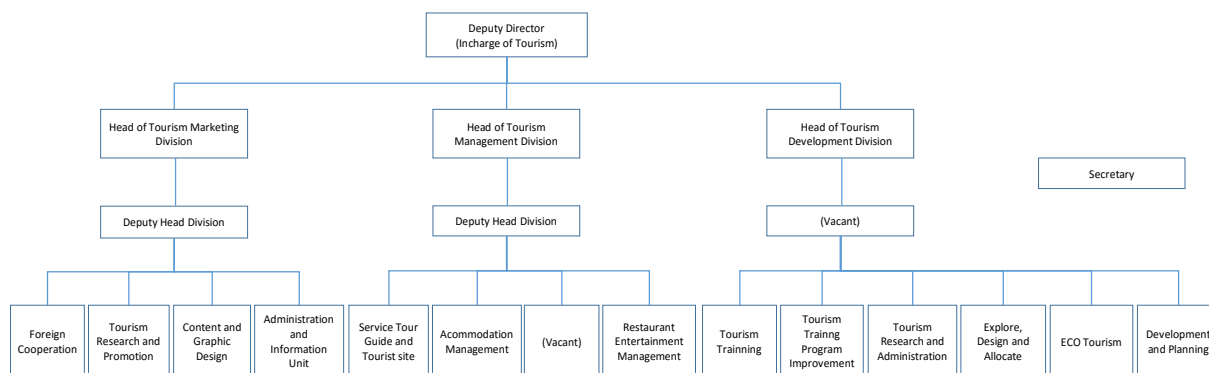
## 8.3 Tourism Administration

### 8.3.1 Tourism Administration

DICT is responsible for tourism administration in Luang Prabang. DICT has 2 bureaus such as 1) Tourism Bureau and 2) Information and Culture Bureau. Each bureau is independently work in own filed.

Tourism Bureau has 3 divisions such as 1) Tourism Marketing Division, 2) Tourism Management Division, and 3) Tourism Development Division under Deputy Director of DICT. Total number of staff is 25 persons<sup>11</sup>.

<sup>11</sup> As of October 2016.



Source: DICT, Luang Prabang province

**Figure 8.3.1 Organization of Tourism Bureau of DICT, Luang Prabang**

DICT (hereinafter referred the tourism bureau of DICT as “DICT”) as tourism administration engages in several tasks such as 1) tourism development planning, 2) tourism survey (Foreign Tourism Interview Survey) and statistics, 3) tourism promotion, 4) tourism business management, and 5) tourism destination development.

DICT formulates a tourism part of provincial 5-year plan as a major planning work, so that the DICT doesn’t formulate comprehensive and holistic tourism development plan covering overall of tourism development including marketing, promotion, destination development (infrastructure and environment), tourism facility and product development, human resource and business development and souvenir development. Although there is no such experience, DICT staffs seem to have adequate knowledge on tourism development, information of foreign tourism destinations, up-to-date issues, discussions in tourism sector through seminars, workshops organized by donors and others.

Activities in tourism marketing and promotion should be done along the analysis of tourism market and target segments based on the foreign tourist interview survey and others, however current promotion activities seem to be carried out without sufficient discussion on market analysis and target segments.

Tourism promotion is done by DICT Luang Prabang and Department of Tourism (DOT) of MICT. Private tourism business engages in promotion activities too, but public and private collaboration is not functioning well without sharing clear tourism promotion strategies, such as target markets and segments.

**Table 8.3.1 Guidebook and Panphlet created by DICT**

Guide book/ Pamphlet	Publish Date	Volume (copies)	Source of Fund
A Guide to Luang Prabang	2016	6,000	DICT budget, ADB aid
About the Temple	2016	4,000	DICT budget
Welcome to Luang Prabang The World Heritage Town	2015-16	5,000	DICT budget
Louangprabang (Timeless)	2016	2,000	JICA
Name Tag	2016	2,000	DICT budget
Post Card	2015	NA	DICT budget

Source: DICT, Luang Prabang province

Tourism business management is one of important tasks of DICT. DICT issues silence of travel agents and tourist guides. Tourist guide needs to attend training course when they expend license, of which aims to enhance capacity of tourist guides.

Tourism related infrastructure development projects including tourism destination development have been done with cooperation with donors. DICT involves in the projects as a counterpart agency of Lao side and accumulates certain skills and knowledge of project implementation.

Lastly, souvenir development is not under DICT but Department of Commerce and Industry (DOCI). Currently, DOCI provides no systematic supports on product development including technical assistance and market feed-back, so the souvenir development is mainly done with efforts of private sector.

### 8.3.2 Budget on Tourism Administration

#### (1) Provincial Budget

Budget of DICT<sup>12</sup> increases year by year during 2013/14, 2014/15 and 2015/16. The budget of remuneration and allowance occupies approximately 70% of total budget up to the year 2015/16, but the budget of investment and direct expense drastically increases in the year 2015/16, which is almost twice of the past. It accounts for to 1.96 billion Kip (about 2.46 million USD) of total budget, and 6 billion kip (about 760 thousand USD) of investment and direct expense budget. This occupies about 10% of budget of Luang Prabang Province, but is seems to be a sort of exceptional case.

**Table 8.3.2 Budget of DICT**

DICT)	(Kip)					
	2013-14		2014-15		2015-16	
	Budget	%	Budget	%	Budget	%
Remuneration, allowance etc.	6,395,816,343	83.0%	6,424,516,154	70.9%	7,536,496,752	38.3%
Purchase, facility development	900,000,000	11.7%	2,300,180,000	25.4%	3,900,000,000	19.8%
Investment and direct expense	412,931,000	5.4%	334,072,000	3.7%	6,085,417,000	30.9%
Others	0	0.0%	0	0.0%	2,163,000,000	11.0%
Total	7,708,747,343	100.0%	9,058,768,154	100.0%	19,684,913,752	100.0%

Source: Department of Finance, Luang Prabang

#### (2) Entry Tax

Entry Tax is collected from foreign tourists in Lao PDR, which targets only foreign group tourists. Travel agents who take care of the foreign group tourists are required to report to police and DICT in each province in prior to the travel schedule. In accordance to the number of travellers, travel agents are required to pay the entry tax of 2 USD/person. The entry tax goes to provincial tax office and 40% of it goes to central government, and the remaining 60% becomes provincial income. In Luang Prabang Province, the entry tax is ear-marked in the budget for the use of DICT, mainly tourism promotion. This seems to be accounted as part of “investment and direct expense” in the Table 8.3.2. If the budget is not used by the end of fiscal year, the remaining portion will be transferred to ordinal budget in the next year. The entry tax is not used for heritage conservation.

In Lao PDR, most of the travel agents are located at Vientiane which manages most of foreign group tourists in the country. Accordingly, most of the entry tax tends to be concentrated in Vientiane.

#### (3) Tax income and Entrance Fee from Tourism and related Businesses

Total tax income of Luang Prabang Province is approximately 220 billion Kip (2015), of which half of them are from tourism-related businesses like hotel and guest house, including about 500 million Kip

<sup>12</sup> Budget showing this section is total budget of DICT which is not the budget of the tourism bureau of DICT.

of entrance fees from tourism facilities and temples. Half of tax income is from tourism-related businesses, such as hotels and guest houses.

Entrance fee is currently collected at totally 9 of tourism facilities and temples, which are national museum, Phousi Mountain, Quancy waterfall, Tasse waterfall, Pak Ou cave and 4 temples such as Wat Xiengthong and Wat Visoun. The income from entrance fee is collected by district office and given to provincial tax office.

**Table 8.3.3 Entrance Fee of Tourism facilities and Temples in Luang Prabang**

Tourism Facility	Entrance Fee (Kip)	Amount (Kip)		Wat	Entrance Fee (Kip)	Amount (Kip)
National Museum	30,000	560,587,960		Wat Xiengthongthong	20,000	1,400,000,000
Quancy Waterfall	20,000			Wat Visoun	10,000	338,447,000
Tasse Waterfall	20,000			Wat Aham	10,000	69,740,000
Paku Cave	20,000			Wat Mai	10,000	
Phusi Mountain	20,000	2,335,820,000				

Note: Amount of Mt. Phousi includes amount of Wat Thamphusi (entrance of Namkham river side).

Source: Department of Taxation (DOT), Luang Prabang

#### (4) Others

Income from night bazar is another tourism-related income in Luang Prabang District. Currently, Chumkhong Village and Pakham Village currently manage night bazar, and give concession tax to Luang Prabang district. The remaining becomes the income of each village, but it is not currently used for tourism promotion or heritage conservation.

There are some tourism destinations in Japan which utilize income from parking fee for tourism promotion and heritage conservation. Luang Prabang Province recently has a plan to develop parking spaces at some roadsides in the heritage area. Pilot project has completed, but parking fee is not collected yet due to status as pilot. Management body of parking spaces is not yet decided, but it seems to be managed by villages like night bazar.

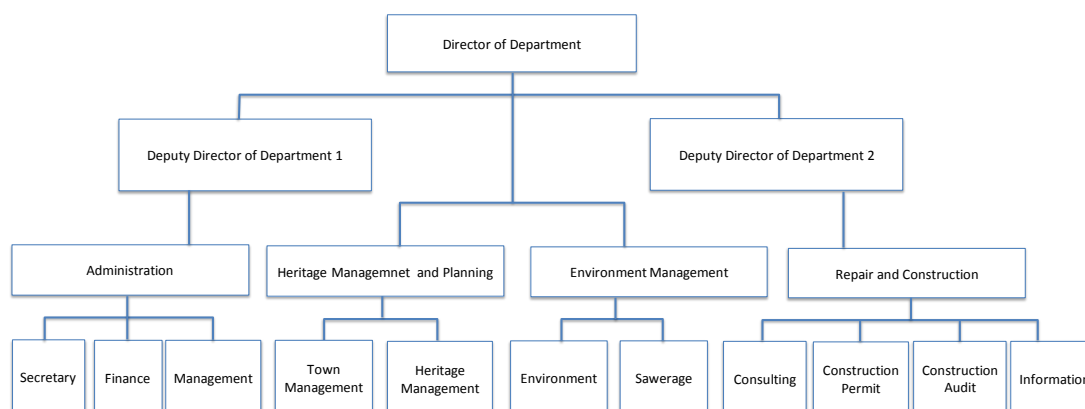
## 8.4 Heritage Preservation Administration

### 8.4.1 Heritage Preservation Administration

Luang Prabang World Heritage Office is responsible for preservation and conservation of heritage area in Luang Prabang. The World Heritage Office is positioned as an agency under MICT, and are established for Luang Prabang and Wat Phu at Champasak Province.

Although the World Heritage Office is under MICT, annual budget come from provincial budget.

The World Heritage Office in Luang Prabang Province has one director and 2 deputy directors with 4 divisions such as 1) Administration Division, 2) Heritage Management and Planning Division, 3) Environment Management and Repair and Construction Division. Total number of staffs in the office is 18 persons. Figure 8.4.1 shows organization of the World Heritage Office.



Source: World Heritage Office

**Figure 8.4.1 Organization of World Heritage Office Luang Prabang**

The world heritage office is responsible for 1) making and revising PSMV of the heritage area, 2) preservation and conservation of buildings in the heritage area based on the PSMV, 3) permission of reconstruction and renovation of building in the heritage, and 4) permission of physical development in the heritage area as heritage conservation administration.

The PSMV of the Luang Prabang World Heritage Area is developed under French technical cooperation. The PSMV designates historical buildings to be preserved and regulates renovation of buildings in the heritage area. It is a basis of permission of reconstruction and renovation in the heritage area. Recently, the world office has started to revise the PSMV, which is expected to be completed in 2017. Meanwhile, many people point out that the permission work takes longer than expectation.

The world heritage office has no holistic plan which indicates repair schedule of the buildings in the heritage area, but has carried out repair works at ad hoc basis when financial assistance from French government comes. However, French assistance recently tends to reduce, so that there is a need to find another source of fund for building preservation.

**Table 8.4.1 Support to the World Heritage Area by France**

No.	Project Name	Project Budget	Project Period
1	PAU-LP	€ 1,800,000	1999-2001
2	PASS-LP	€ 5,500,000	2002-2008
3	Hydro System	€ 60,672	2008-2009
4		€ 163,640	2008
5	PADUL-1	€ 2,000,000	2009-2014
6	PADUL-2	€ 1,500,000	2014-2017
Total		€ 9,524,312	

Source: Luang Prabang World Heritage Office

Urban plan of Luang Prabang, which covers urbanized area and vicinity area of Luang Prabang District including the heritage area, is prepared by Public Transport Institute (PTI) and finalized through public hearing process and discussion in MPWT. The PSMV is wholly adopted to the urban plan, so that there is no discrepancy between PSMV and urban plan.

Concerning the heritage conservation, it is critical that those PSMV and urban plan has not taken into account disaster prevention plan and system. At present, disaster prevention, in particular countermeasures on fire prevention and firefighting is indispensable to improve vulnerability of the heritage area.



## 8.4.2 Budget of World Heritage Office

The budget of the world heritage office is 750 million Kip (approximately 940 thousand USD) in the year 2015/16. Among them, 81% is remuneration and allowance expense. The budget for carrying out heritage conservation activities, which is the column of Investment and direct expense in the table below, is only 140 million Kip (approximately 170 thousand USD). This budget is far below to carry out any activities on heritage conservation activities with own budget. As mentioned in the previous section, the World Heritage Office carries out the activities under the French assistance, but it will further be reduced. Since the World Heritage Office does not have another financial source special fund for heritage conservation is said to be established under the 8<sup>th</sup> RSEDP, but no discussion has started at this point.

**Table 8.4.1 Budget of the World Heritage Office**

(Kip)

	2013-14		2014-15		2015-16	
	Budget	%	Budget	%	Budget	%
Remuneration, allowance etc.	72,000,000	41.9%	543,000,000	81.9%	610,000,000	81.4%
Purchase, facility development	0	0.0%	0	0.0%	0	0.0%
Investment and direct expense	100,000,000	58.1%	120,000,000	18.1%	139,070,000	18.6%
Others	0	0.0%	0	0.0%	0	0.0%
Total	172,000,000	100.0%	663,000,000	100.0%	749,070,000	100.0%

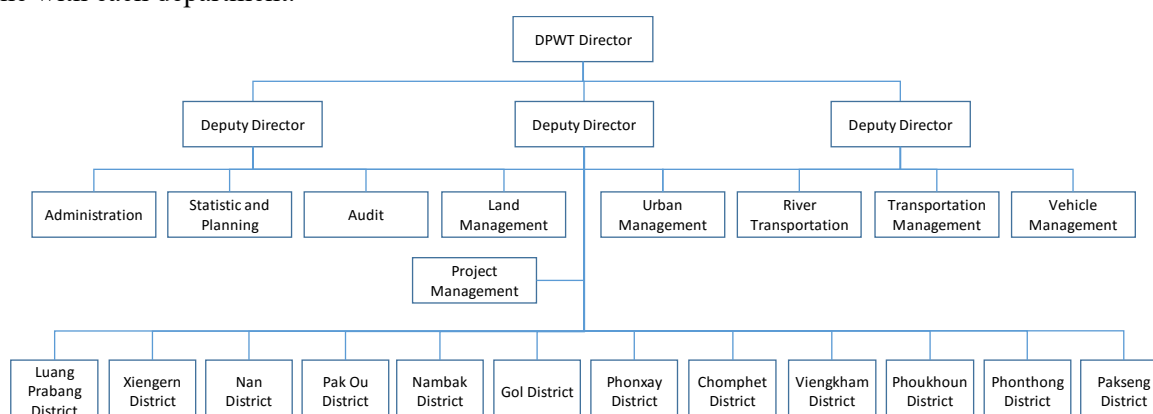
Source: Department of Finance, Luang Prabang

## 8.5 Infrastructure Sector Administration

### 8.5.1 Administration and Finance of DPWT

#### (1) Organization of DPWT

Organization chart of DPWT is shown in Figure 8.5.1. There are 8 departments and some project management units under Director General and Vice Director General. 12 district offices are in the same line with each department.



Source: DPWT

**Figure 8.5.1 Organization of DPWT**

#### (2) Finance of DPWT

Account statement of Luang Prabang Province and DPWT for past 3 years is shown in Table 8.5.1. Budget for facility investment of DPWT is 15-20% of that of Luang Prabang Province.

**Table 8.5.1 Budget for Luang Prabang Province and DPWT**

(LAK)

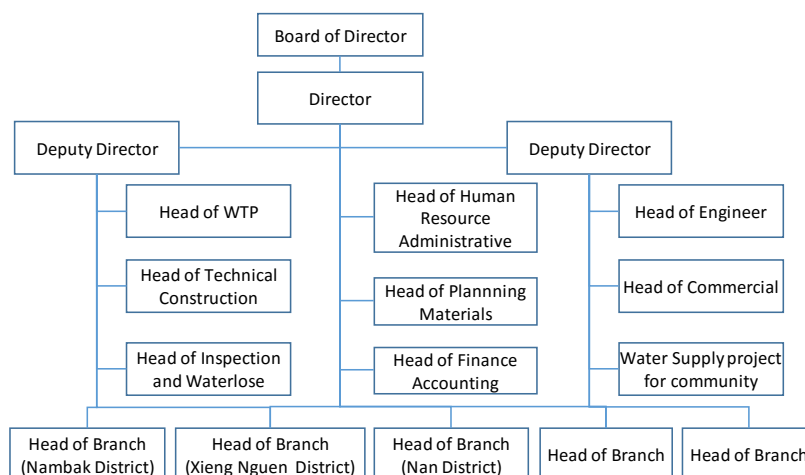
	Description	2013-14	2014-15	2015-16
Luang Prabang Province	Labor Cost & Allowance	423,510,840,000	434,222,690,000	448,374,000,000
	Expenditure	33,235,920,000	37,513,000,000	66,619,540,000
	Facility Investment	69,340,950,000	74,935,520,000	86,389,000,000
	Others	14,413,210,000	15,404,000,000	18,139,000,000
	Total	540,500,920,000	562,075,210,000	619,521,540,000
DPWT	Description	2013-14	2014-15	2015-2016
	Labor Cost & Allowance	3,425,357,813	3,652,272,710	3,629,103,430
	Expenditure	281,811,000	289,929,000	621,229,000
	Facility Investment	14,014,040,000	11,187,610,000	17,024,890,000
	Others	81,000,000	80,000,000	50,000,000
	Total	17,802,208,813	15,209,811,710	21,325,222,430

Source: DPI

## 8.5.2 Administration and Finance of LPWSE

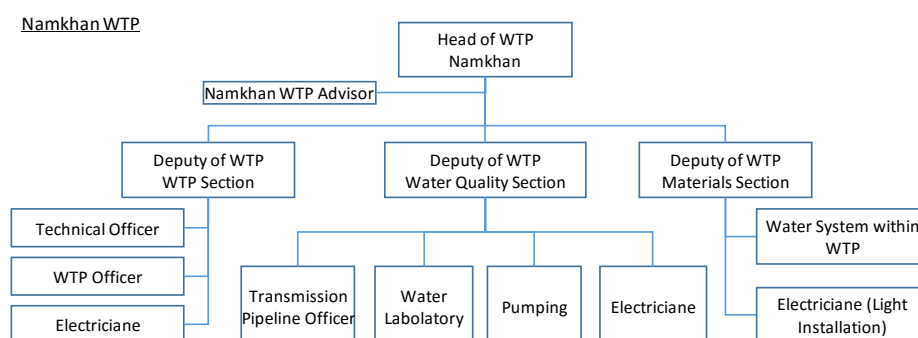
### (1) Organization of LPWSE

The organization charts of LPWSE and NamKhan WTP are presented in Figure 8.5.2 and Figure 8.5.3 respectively.



Source: LPWSE

**Figure 8.5.2 Organization of LPWSE**



Source: LPWSE

**Figure 8.5.3 Organization of NamKhan WTP**

## (2) Account Statement of LPWSE

Account statement of LPWSE in 2015 is summarized below (see the Appendix Table 2.4);

Revenue (LAK)	20,190,339,847
Expenditure (LAK)	16,978,375,740
Balance (LAK)	3,211,964,107

## 8.5.3 Administration and Finance of UDAA

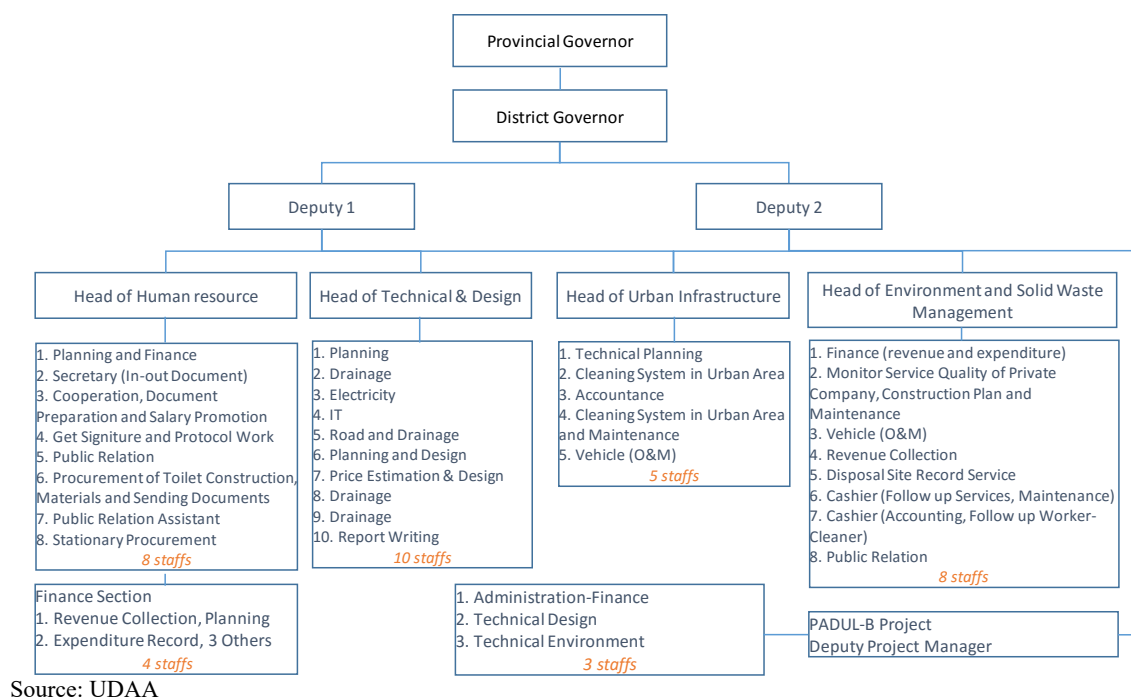
### (1) Organization Structure of UDAA

The organization chart of UDAA is shown in Figure 8.5.4.

The manpower of UDAA is 50 persons in total including 40 staffs and 10 workers as shown in Figure 8.5.4. Demarcation of works between DPWT and UDAA is;

DPWT: Construction of urban infrastructures, such as roads and revetments

UDAA: Maintenance of urban infrastructures and execution of solid waste management



**Figure 8.5.4 Organization of UDAA**

### (2) Account Statement of UDAA

Account statement of UDAA in 2015 is summarized below (see Table 8.5.2);

Revenue (LAK)	1,958,753,700
Expenditure (LAK)	1,872,087,100
Balance (LAK)	86,666,600

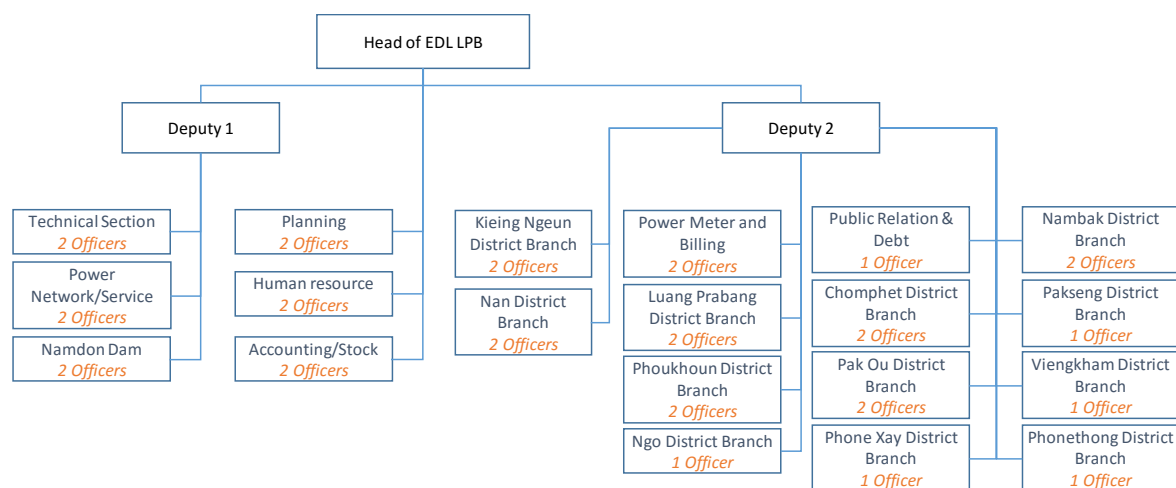
**Table 8.5.2 UDAA Budget (Revenue and Expenditure) in 2015**

N:	Description	Income	Expenditure	Balance
<b>I</b>	<b>Income from public district</b>	287,147,700		
1	Grand Total 2014	1,830,500		
2	Income 2015	285,317,200		
	Expenditure		246,687,100	
	Balance			40,460,600
<b>II</b>	<b>Income of infra Division</b>			
1	Income from Vehicle	311,037,000		
	Expenditure		299,918,000	
	Balance			11,119,900
<b>III</b>	<b>Income of condition control Division</b>	1,210,569,000		
1	Grand total of 2014	11,810,000		
2	Income of a year	1,198,759,000		
	Expenditure		1,175,482,000	
	Balance			35,087,000
<b>IV</b>	<b>Income for a year</b>	150,000,000		
<b>V</b>	<b>Expenditure a year</b>		150,000,000	
<b>VI</b>	<b>Balance</b>			0
	Balance	1,958,753,700	1,872,087,100	86,666,600

Source: UDAA

#### 8.5.4 Organization Structure of EDL (Electricite du Laos)

The organization chart of EDL is presented in Figure 8.5.5. EDL has a responsibility of power supply in Luang Prabang Province.

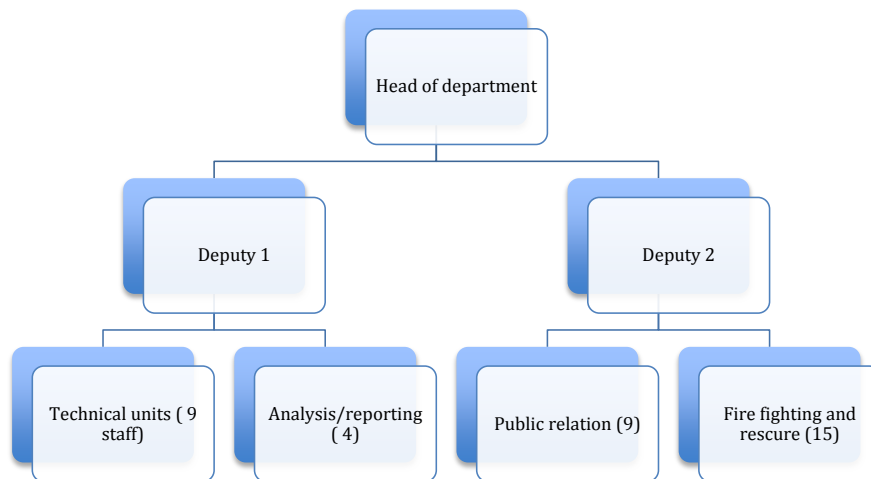


Source: EDL

**Figure 8.5.5 Organization of EDL**

#### 8.5.5 Organization of Fire Department

Organization chart of Fire Department in Luang Prabang province is shown in Figure 8.5.6



Source: Fire Department, Luang Prabang Province

**Figure 8.5.6 Organization of Fire Department**

## Chapter 9 Conclusion and Way Forward

### 9.1 Conclusion

#### 9.1.1 Basic Direction of Regional Development of Luang Prabang Province

Lao PDR has gradually risen its GDP per capita and reduced its poverty in accordance with the continuous economic growth since 2000. The Government of Laos targets to graduate from the LDC through changing economic structure to be more sustainable and alleviating poverty. Along this basic principle, Luang Prabang Province also develops the 8th RESDP to realize sustainable socioeconomic growth and poverty alleviation. To achieve the continuous socioeconomic growth, the following six regional development strategies are important:

Regional Development Strategy 1:	Advancing agricultural diversification and high valued agriculture
Regional Development Strategy 2:	Fostering local industries
Regional Development Strategy 3:	Strengthening Luang Prabang District as growth center and network with surrounding districts and surrounding provinces
Regional Development Strategy 4:	Improving regional center function with more and high quality higher education and medical-care facilities.
Regional Development Strategy 5:	Growing tourism sector to perform as economic driving force of the province
Regional Development Strategy 6:	Rising sustainability of Luang Prabang through environmental and heritage conservation

It is indispensable and important for Luang Prabang Province to improve the income level in the rural area in order to mitigate poverty and regional disparities. For this purpose, agriculture, which has relatively lower productivity, need to shift to produce more diversified and higher valued products to increase farmers' income (regional development strategy 1). At the same time, encouraging local industries in the rural areas is important to increase income in rural areas (regional development strategy 2). As a first stage of these attempts, incubation function of tourism sector should be strengthened to use tourism market as an initial market of new agricultural products and handicrafts as a test to improve their quality (regional development strategy 5). On the other hand, Luang Prabang District should be developed as an economic, educational, and medical-care center of the region; and network with surrounding districts and provinces should be strengthened (regional development strategies 3 and 4). It works to expand area of agricultural diversification and higher valued agriculture and local industries in Luang Prabang Province. This network also works to expand potential tourism market too. Environmental sustainability must be taken into account to keep sustainable growth through urban environmental conservation with infrastructure provision and natural and heritage conservation (regional development strategy 6). At the same time, higher education to supply the finest fresh graduates is also important to continue further growth (regional development strategy 4).

### **9.1.2 Roles of Tourism Sector in Regional Development in Luang Prabang Province**

Tourism is expected to keep a position to be the leading industry and perform as an “incubator” of agriculture and local industry in the context of regional development in Luang Prabang. In this regard, tourism sector is requested to expand the tourism market (by increasing the number of tourists and length of stay) and to generate more opportunities to improve and be well aware of the local agricultural products and handicrafts.

### **9.1.3 Tourism Development Strategies**

To preferably function the tourism sector against regional development like mentioned above, it is important to expand the number of tourists by controlling the negative impacts on the heritage and urban environment. However, increase in number of tourists in long term may harm the value of Luang Prabang as tourism destination through deterioration of heritage, environment, landscape and culture, and decrease of residents. It is accordingly indispensable for tourism in Luang Prabang to focus more on environment and heritage conservation. To realize this tourism development direction, the following strategies are proposed:

Strategy 1: Consolidation of Tourism Base and Circumstances

Strategy 2: Development of New Tourism Attractions

Strategy 3: Improvement of VFM

Strategy 4: Promotion of More Tourists (and Mitigation of its Impacts on the Heritage)

Strategy 5: Government- Business-Community Partnership on Tourism

To materialize the five tourism development strategies, 34 project packages are proposed. Considering 1) emergency, 2) consistency with 8<sup>th</sup> RSED, 3) size of project, 4) exercise on collaboration among relevant public agencies, 5) exercise on public-business-community partnership, and 6) benefits of residents (local community) as the criteria, the following five priority project packages are selected:

- Solid Waste Sanitary Landfill Development Project Package
- Luang Prabang Urban Environment Improvement Project Package
- Project Package for Water Supply System Improvement including Expansion for Namkhan WTP and Fire Prevention in World Heritage Preservation Zone
- Luang Prabang Transportation Improvement Project Package
- Public-Business-Community Collaboration-based Tourism Management Improvement Project Package

Among the five priority project packages, two project packages were selected as the fast track project packages such as:

- “Project Package for Water Supply System Improvement including Expansion for Namkhan WTP and Fire Prevention in World Heritage Preservation Zone” and

- “Public-Business-Community Collaboration-based Tourism Management Improvement Project Package”

These priority projects are related to the above Strategy 1: Consolidation of Tourism Base and Circumstance and Strategy 3: Improvement of VFM/Strategy 5: Government-Business-Community Partnership on Tourism. In addition to this, these projects contribute to the revitalization of tourism market by adding-value and diversification of agricultural products and handicrafts and also improvement of infrastructure for supporting sustainability of the region as described in Chapter 4. Therefore, the proposed two projects are full of promising projects for both regional development and tourism development.

For the Luang Prabang Province side, it also has the same opinion for the selection and implementation of these projects and promises for cooperation in the implementation. It is desirable to proceed with the detailed project formulation for these priority projects to be implemented.

## **9.2 Implementation of Tourism-based Regional Development**

### **9.2.1 Direction of Future Tourism Development for Sustainable Regional Development**

In this survey, tourism is regarded as a driving force of Luang Prabang regional development, and the JICA Survey Team has proposed for the expansion of tourism market and making support to agricultural products and local industries. Since the increase in number of tourists and extension of length of stay can create an opportunity for expansion of business chances of agricultural products and local industries, tourism development is an important factor even for realizing tourism development targets mentioned in the 8<sup>th</sup> RSEDP. However, it is necessary to review further tourism development direction in mid- and long-term after the 8<sup>th</sup> RSEDP, especially the target of increased number of tourists in trend basis. The increased number of tourist may bring more risk to harm sustainability as tourism destination by deteriorating urban environment and heritage in Luang Prabang District.

Accordingly, it is desirable to formulate a holistic tourism development master plan including discussion on sustainability of Luang Prabang as tourism destination, realization of focal tourist target segments, tourism promotion, tourism products development targeting these tourism segments, and encouragement of agriculture promotion. In addition, it is also indispensable for Luang Prabang to have a sustainable environment, heritage preservation and conservation, and measurements to distribute tourists to other tourism attractions, as well as to enlarge the benefits of tourism development and peoples' participation in tourism with appreciation.

### **9.2.2 Foster for Agriculture and Local Industries**

Diversification and qualitative improvement of agriculture, agricultural process and handicrafts. These will be the key for making good use of tourism market. For the future regional development, strengthening of coordination among responsible organizations of projects regarding diversification and qualitative improvement of agriculture, improvement project of local industries, and tourism development project are necessary and the related projects should be implemented in simultaneous process.

Currently, Luang Prabang Province has three ODOP products, which are of high quality products but



are not so sufficiently arranged to meet customers' preference. It is necessary to have a new mechanism to get real voices on the existing products from foreign tourists and feedback them to the process of quality improvement and new product development including technical support system.

On the other hand, for agricultural products, there are some advanced farmers who are engaged in organic vegetables and foreign vegetables farming. These vegetables are used at the restaurants and high-class hotels targeting foreign tourists. However, the limited size of the markets is an obstacle to expand the cultivation of these vegetables. Since quick expansion of these markets is not realistic, it should try to diversify more variety of products to meet various needs of the market. This may contribute to rise in the reputation of agricultural products in Luang Prabang, resulting to the expansion of different markets. As an initial trial, a system to match closed exchange of information and collaboration between farmers and restaurants/ hotels with technical supports to farmers should be considered.

### 9.2.3 Financial Mechanism for Heritage Conservation

Table 9.2.1 shows some examples of tourism income and heritage conservation in tourism destination. Major sources of income are entrance fee, parking fee, and fund. In Luang Prabang, there are similar income from entrance fee at major temples and tourism attractions. Luang Prabang also has income from night bazaar and entry tax from foreign group tourists.

**Table 9.2.1 Examples of Income for Tourism Development and Heritage Conservation**

Toursim Destination	Income Source and Method	Issues to Apply to Luang Prabang
Shirakawago (Japan)	Cars are prohibited to enter in the village. Parking fees are collected in the three gates of the parking areas. Around 30-40% of the income goes to the heritage conservation fund to be utilized in the improvement and management of the village. Certain portion of the income is used as subsidy for the renovation of individual houses in the Heritage Area.	<ul style="list-style-type: none"> <li>Currently, many residents use the parking spaces in the Heritage Area. Parking fees are collected from tourists rather than its residents, it is necessary to comprehensively consider traffic management including parking system in the Heritage Area.</li> <li>It is necessary to consider parking fee collection from on-road parking at the occasion of festivals.</li> </ul>
Iwami Ginzan (Japan)	Special fund (Iwami Ginzan Conservation Fund) is established based on the donation from public and private sectors. There is no fees collected from the tourists. A new system "Iwami Ginzan Waon (electric money)" provides 0.1% of the sales of the electric money to the fund. (Management body of the electric money donates to the fund).	<ul style="list-style-type: none"> <li>It is a potential measurement in Luang Prabang because the establishment of a fund is included in the five-year plan.</li> <li>The current World Heritage Office has insufficient capacity and knowledge/skills to manage and operate the fund. It is necessary to consider a management body (either capacity development of World Heritage Office or establishment of a new organization) and management mechanism.</li> </ul>
Hoi An (Viet Nam)	Entry fee is collected at the boundary of the Heritage Area, and 70% of them goes to Hai An Peoples' Committee. Tourists' ticket is given when they pay the entrance fee to tourist spots. Around 15% of the	<ul style="list-style-type: none"> <li>It is introduced in Luang Prabang but limited to foreign group tourists only.</li> <li>It is currently used for tourism</li> </ul>

Toursim Destination	Income Source and Method	Issues to Apply to Luang Prabang
	income from the entrance fee is distributed to the tourism spots in accordance with the number of tickets collected at each tourism spot. The remaining 15% of the income are used for management of the heriage area.	<p>promotion only under DICT.</p> <ul style="list-style-type: none"> <li>• It is necessary to expand the targets use for heritage conservation.</li> </ul>
Bagan (Myanmar)	USD 20 of the entry fee is collected from foreign tourists at the airport. The income goes to the Heritage Department for utilization of the heritage conservation	<ul style="list-style-type: none"> <li>• Same as above</li> </ul>
Ankor Wat (Cambodia)	Entry fee is collected from tourists at the gates of Ankor Wat. The entry fee is USD 20/day, USD 40/3 days and USD 70/7 days, which is sheduled to increase in 2017. The entry fee is collected and goes to AppSara Authority which is responsible for the management of the heritage area.	<ul style="list-style-type: none"> <li>• Same as above</li> </ul>

Source: JICA Survey Team

Entrance fee of tourism attractions and temples as well as taxes from night bazaar are currently important sources of income tax in Luang Prabang Province. The income tax of Luang Prabang Province is mainly collected from Luang Prabang and Paguea districts and distributed to the other whole province. In the short- and mid-term period, it may be hard to change the use of those income tax for the heritage conservation. Also, the entry tax which is currently used for tourism promotion is not sufficient to be used for the heritage conservation due to its limited amount. On these circumstances, below are the following potential measurements to secure certain income for the heritage conservation:

- Increase entry tax and establish a new scheme to use the increased portion as budget of the World Heritage Office
- Establishment of fund for heritage conservation (as described in the 8<sup>th</sup> five-year plan)
- Development of a new business in order to earn money to be owned as budget for heritage conservation.

As for the entry tax, which currently applied only to the foreign group tourists, there are possible measurements, such as 1) expanding the target of the entry tax to foreign individual tourists and 2) increasing the amount of the entry tax. If those measures are implemented, a part of the entry tax may be used for the heritage conservation. To realize this, it is necessary to revise the current relevant laws.

Establishment of a fund for heritage conservation is a potential measurement, which may gather principal funds from the public and private sectors and the profits of fund operation is used for the heritage conservation. However, the current World Heritage Office has limited capacity to manage the fund and has limited operational knowledge/skills. It is necessary to consider a new organization which will be responsible for fund operation and management.

Developing a new business to earn income of the World Heritage Office is also a possible option. Produce brochure, map, postcard, clear holder, cover of mobile phone, etc., and utilize profits for the heritage conservation. In this case, as same as the fund, the World Heritage Office has limited capacity to manage business activities, so it is necessary to introduce business skills under collaboration with private sector such as tourism association.

#### **9.2.4 Implementation of Tourism Project**

This survey proposes two of the priority project packages. In implementing these project packages, it is recommendable to delineate the project implementation plan to fully apply the experience and knowledge accumulated in Japan. In particular, peoples' appreciation, cooperation, and participation into tourism should contribute to urban development of Luang Prabang. In this regard, cooperation and friendship agreement between Luang Prabang District and Takayama City (in Japan) may have a significant meaning. The relationship of Takayama City, particularly, ways to utilize the experience and knowledge of Takayama City, should be paid special attention in the project formation. It may help in the implementation of the project packages to be more effective and efficient.

In formulating the project packages, it is very important to take into consideration a social infrastructure (such as human relationships) and ideas of sustainable heritage preservation funding structure, in addition to a hard infrastructure development and soft infrastructure (human resources and institutional development), so that it can bring about smooth collaboration among the actors of public, business, and community in tourism development in the future.

Finally, this survey has considered the direction of regional development in Luang Prabang Province, the role of tourism, and proposed priority projects in achieving the targets of development strategies in the tourism sector. In order to reduce regional disparities, it is necessary to make sure that the benefits from tourism will be widely distributed to the rural area. For further steps, comprehensive analysis on rural development (for example, rural tourism, use of agricultural products in tourism, use of local industries in tourism, etc.), is necessary to consider the detailed procedures of tourism-based regional development of Luang Prabang.

End of Report

## Appendix

### 1. Seminars and Workshops

#### 1-1 Seminar No.1 (Luang Prabang)

**Table 1.1 Details of May 20 Seminar No.1 (Luang Prabang)**

Item		Descriptions		
1	Agenda	Program	Time Scedule	In Charge of
		09:30 – 09:35	Opening Remarks	JICA Survey Team
		09:35 – 10:20	Presentation	JICA Survey Team
		10:20 – 10:35	<i>Coffe Break</i>	
		10:35 – 11:50	Discussion	Attendees
		11:50 – 11:55	Wrap up comments	JICA Survey Team
		11:55 – 12:00	Closing Remarks	JICA Survey Team
		12:00 – 12:45	<i>Lunch</i>	
2	Handouts	Presentation		
3	Discussion Summary	Attribute to	Statement Summary	
		DPL	It might be difficult to differentiate FITs from backpackers. That is, FITs do not always spend more than backpackers. Wealthy people sometimes prefer backpack style. According to the case of Angkor Vat, backpackers often use more money than FITs. Considering the importance of backpackers, we need to elaborate an adequate marketing plan.	
		DICT in Charge of Tourism	Tourism statistics should be improved as appropriate data is not available currently. Also we would like to conduct an interview survey on marketing for each of the main countries. It is necessary to correctly count the number of arrivals by ship, airplane, and bus, too.	
		NAMPAPA	Rehabilitation or expansion of Nam Khan water treatment plant and renewal of old water pipes are needed.	
		DPWT	Sangkong - Nong Sai Road needs to be rehabilitated. Also one of the main roads in the center, Phouvao Street, needs to be upgraded including undergrounding cables.	
		UDAA	As Luang Prabang District has more and more foreign visitors, the followings shall be needed: wastewater treatment (considering reuse of gray water), streetlamps, sidewalks, solid waste (70-80 tons per day), drainage, dumping site, etc.	

Source: JICA Survey Team

#### 1-2 Workshop No.1 (Luang Prabang)

**Table 1.2 Details of May 26 Workshop No.1 (Luang Prabang)**

Item		Descriptions		
1	Agenda	Program	Time Scedule	In Charge of
		09:00 – 09:05	Opening Remarks	JICA Survey Team
		09:05 – 09:10	Today's Agenda Orientation	JICA Survey Team
		09:10 – 09:40	Presentation (Keynote Presentation)	JICA Survey Team supported by Lao key attendees
		09:40 – 10:25	Group Discussion Part I	Group Members

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Item		Descriptions		
		10:25 – 10:40 10:40 – 11:25 11:25 – 12:10 12:10 – 12:15 12:15 – 13:00	– Current problems regarding Luang Prabang regional development – What is needed for Luang Prabang regional development? <i>Coffee Break</i> Group Discussion Part II – Wrap-up and Preparation for Presentation Presentation (15mn/Group by 3 Groups =45mn) Closing Remarks <i>Lunch</i>	Group Members  Group Members JICA Laos Office
2	Handouts	Presentation, Project Long List (for Infrastructure)		
3	Discussion Summary	Attribute to	Statement Summary	
	(1) Group A	All	Problems regarding Luang Prabang regional development are as follows. 1) Local people change their lifestyle or/and move out of the heritage area. 2) Foreign investors/ business persons replaces local people and do not respect local traditional culture. 3) Transport is not controlled properly. 4) Local authentic traditional products gradually disappear. 5) Local history, legend, culture, tradition are gradually disappearing. 6) Originally rich local nature is being damaged. Needs for Luang Prabang regional development are as follows. 1) Protect the heritage area from accidental fire. 2) Renovate the old colonial style buildings/ houses. 3) Enhance public awareness of local people. 4) Establish a heritage fund. 5) Promote “One Village One Product” action. 6) Provide public transport service (such as green buses for every 20 mn). 7) Enhance local people’s participation in tourism development. 8) Conduct capacity building for public and private organizations. 9) Inherit folktales, legendry, poems to young generations.	
	(2) Group B	All	Problems regarding Luang Prabang regional development are as follows. 1) Tourism resources/ attractions have very limited variation. 2) Fake, not local original products are sold recently. 3) Infrastructure is not good enough. 4) Tourism service quality is not good enough. Needs for Luang Prabang regional development are as follows. 1) Develop new tourism destinations. 2) Create tourism attractions. 3) Enhance domestic tourist promotion. 4) Cooperate with neighboring countries for international tourism route development. 5) Enhance tourism promotion (including the improvement in local food and souvenir package). 6) Prohibit fake products. Infrastructure development needs for Luang Prabang regional development are as follows. 1) Water supply: Currently water supply is not enough. The existing water treatment plant needs to be expanded. 2) Water pipes: Old water pipes need to be replaced for more water distribution. 3) Fire cisterns: A fire cistern should be installed, together with 2), at every 200 meters. 4) Public parking: Public parking lots shall be constructed. Illegal parking shall be controlled. Use of electric vehicles should be encouraged. 5) Bus stops: Bus service and bus stops shall be provided for those who visit suburb area destinations including Kuangsi Waterfall.	

Item		Descriptions	
			<p>6) Cable undergrounding: Power lines shall be underdraounded from the viewpoint of safety.</p> <p>7) Roads: Access roads to tourism destinations are not in good condition, so need to be improved.</p> <p>8) Solid waste dumping site: improvement of the existing dumping site as well as construction of a new dumping site is needed.</p> <p>9) Streetlamps: On the outskirts of world heritage area streetlamps are not sufficient, especially during the night time, so need to be installed more.</p> <p>10) EIA: EIA is not properly conducted. It is necessary to conduct EIA properly for all projects.</p>
(3) Group C	All		The problems that the villages are confronted with are as follows: Bad road conditions, inappropriate solid waste collection, bad drainage, no spece for handicraft display and sale, no appropriate accommodations or canteens for trekkers, insufficient tourism information that brings about tourist who lose his/her way.
	All		The following three points are important for sustainable tourism development. 1) Infrastructure development (road, drainage, and solid waste), 2) Cultural tourism development, and 3) Public awareness for all stakeholders with a view to preserving local culture.
	All		<p><u>Positive Aspects of Tourism Development</u></p> <ul style="list-style-type: none"> <li>• Luang Prabang shall be more and more known as world heritage to all over the world.</li> <li>• Historic buildings are preserved and rehabilitated. Some tourists and foreign tourists are very cooperative to preserve historic buildings.</li> <li>• Income shall increase.</li> <li>• Handicrafts shall be developed. Some products might be registerd for branding.</li> </ul> <p><u>Negative Aspects of Tourism Development</u></p> <ul style="list-style-type: none"> <li>• World heritage area is urbanized and modernized, which changes local people's traditional lifestyle.</li> <li>• The resistered buildings are well preserved but other ordinary structures are not subject to special preservation assistance.</li> <li>• Some people are obliged to go out of heritage are due to economic reasons. Temples and monks lose mental and financial supporters, which leads to cultural degradation.</li> <li>• Some tourists are considered to be dangerous to local people in different points.</li> </ul> <p>1) Infrastructure Improvement:</p> <ul style="list-style-type: none"> <li>• The existing roads between Khonglek/ Xangkhong/ Xienghai Villages are very bad especially during the rainy season. Vehicles can not pass.</li> <li>• Offensive odors because of bad drainage are annoying, which is not good for tourists who use local restaurants.</li> <li>• A world heritage should be clean and beautiful. But currently tourists may see a lot of rabbish scattered on the street, at Vat Phu Si or National Museum.</li> <li>• A clean toilet is needed at each of the main tourism destinations.</li> </ul> <p>2) Tourism Development based on Local Communities:</p> <ul style="list-style-type: none"> <li>• "One Village One Product" shall be promoted at all villages (Exemple: Lao alcohol at Xanghai Village). At the same time, it is important to set up a system to certify the origine and assure the quality.</li> <li>• Pakleung Village wants to develop tourism for foreigners focusing on local culture and nature including homestay and fishing together with villagers. A guileline is needed to avoid unhappy events vis-à-vis to foreign visitors.</li> <li>• Local lifestyle shall be preserved through homestay service.</li> </ul> <p>3) Public awareness for cultural preservation:</p> <ul style="list-style-type: none"> <li>• Public awareness campaigns for cultural preservation shall be conducted inviting local people. Solid waste management shall be included in the same campaign.</li> </ul>
		Presentation	

Source: JICA Survey Team

1-3 Semianr No.2 (Vientiane)

**Table 1.3 Details of May 31 Seminar No.2 (Vientiane Capital)**

Item		Descriptions		
1	Agenda	Program	Time Scedule	In Charge of
		09:30 – 09:35	Opening Remarks	JICA Laos Office
		09:35 – 10:20	Presentation	JICA Survey Team
		10:20 – 10:35	<i>Coffee Break</i>	
		10:35 – 11:50	Discussion	Attendees
		11:50 – 11:55	Wrap up comments	JICA Survey Team
		11:55 – 12:00	Closing Remarks	JICA Laos Office
		12:00 – 12:45	<i>Lunch</i>	
2	Handouts	Presentation		
3	Discussion Summary	Attribute to	Statement Summary	
		MICT	<ul style="list-style-type: none"> <li>I fully agree with the contents of Inception Report, especially with the objectives and the goal of tourism &amp; regional development. The vision, the objectives and the goal that MICT/DICT elaborated are consistent with that of today's seminar.</li> <li>All authorities in charge of tourism sector keep close contact with DPL.</li> <li>MICT, DICT and DPL are now recommending Luang Prabang as primary candidate for ASEAN Standard "Clean Tourist City". It is important to develop infrastructure to promote the idea. If Luang Prabang becomes the first Clean Tourist City in Lao PDR, infrastructure development needs to be enhanced: Cable undergrounding, road development, water supply, etc. Trees shall be planted along streets so that the town should be comfortable for those who enjoy walking.</li> <li>It is important to develop other ares than world heritage (Chomphet District and Kuangsi Waterfall, etc) to diversify tourism destinations and promote long stay tourism.</li> <li>A survey on solid waste was conducted not only for dumping site but for collection system. As a result, the fact that a cursed nuisance of offensive odors is generated because collection vehicles circulate the town during lunch time. The dumping site may be too close to the town.</li> <li>Road improvement at Xangkhong Village shall include Tha Hua Village where a river port is located.</li> <li>It is necessary to check up the availability of land prior to a decision to construct public toilets and parking lots at Xangkhong Village.</li> <li>Nowadays local people easily sell their real estate to foreigners. During our stay in Japan (February 2016) we learned that the main policy "We won't sell, rent or destroy" is very important to preserve the tradition of an old valuable structures. In this context, public awareness for local communities is strongly needed in Luang Prabang, too.</li> </ul>	
		National University of Laos	<ul style="list-style-type: none"> <li>I did understand that Luang Prabang Province has a lot of challenges regarding its regional development. If there are priority projects, I would like to be informed of the selection criteria and the selected projects.</li> </ul>	
		MPWT (Dept of Housing and Urban Planning)	<ul style="list-style-type: none"> <li>It is good that the presentation covers all important aspects of challenges. Basically I agree with the contents. Only I think we should not totally rely on outside funds. On one hand, at natonal and provincial level the five-year socioeconomic plan is prepared</li> </ul>	

Item		Descriptions	
			<p>by authorities and it is a top-down decision making. On the other hand, at district level, they have only one plan for all sectors. Without substantial actions by the end organizations like districts, local society would never change.</p> <ul style="list-style-type: none"> <li>• We should go ahead carefully with the proposed projects such as parking, railway station, etc, as there might be not small impacts on local society.</li> </ul>
	Tour Company (Japanese Private Tour Company)		<ul style="list-style-type: none"> <li>• Private sector acts based on benefit. I guess local people in world heritage area have no budget for proper rehabilitation. The nation's budget might be also very tight. Local people can not expect any subsidies from the governments for the time being.</li> <li>• Compared with Hoi Anh (Vietnam) or Takayama-Shirakawago (Japan), domestic tourists might be still very few in Luang Prabang. Foreign visitors use more money. I would like more Japanese people to visit Luang Prabang. Our company introduced the charms of Luang Prabang to Japanese people at a festival held in Japan the other day. I expect more enthusiasm from Lao governments to promote Luang Prabang in the international market.</li> <li>• If Lao governments need any assistance from private tour operators, please do not to hesitate to contact me.</li> </ul>
	ADB		<ul style="list-style-type: none"> <li>• It is important to consider a budget for maintenance when infrastructure is developed (as the developed infrastructure won't be sustainable without appropriate maintenance).</li> <li>• It is good to propose sidewalks and parking lots in Luang Prabang, judging from the experiences in Vientiane Capital.</li> </ul>
	EU		<ul style="list-style-type: none"> <li>• Today's presentation helped me clearly understand the challenges regarding Luang Prabang regional development. I also made out that the survey includes all sectors necessary for regional development. The approach seems to be good. I expect good results.</li> <li>• EU also focuses on public-private partnership. We would like JICA team to keep sharing information with a view to avoiding budget overlapping for the same components among different donors.</li> </ul>

Source: JICA Survey Team

## 1-4 Workshop No.2 (Luang Prabang)

**Table 1.4 Details of June 22 Workshop No.2 (Luang Prabang)**

Item		Descriptions	
Agenda	Program	Time Scedule	In Charge of
	09:00 – 09:05	Opening Remarks	JICA Survey Team
	09:05 – 09:45	Presentation (Keynote Presentation)	Expert from Japan Dept. of Urban Engineering, the University of Tokyo
	09:45 – 09:55	Q&A	
	09:55 – 10:25	Presentation	JICA Survey Team
	10:25 – 10:30	Orientation	JICA Survey Team
	10:30 – 10:45	<i>Coffee Break</i>	
	10:45 – 11:45	Group Discussion — How to strengthen relationship between G-B-C in tourism? — What kind of measure can be considered to increase	Group Members



Item	Descriptions		
	11:45 – 12:05 12:05 – 12:10 12:10 – 12:55	local benefit by tourism? – How to encourage local communities and surrounding district to involve more to tourism? Presentation (10mn/Group by 2 Groups =20mn) Closing Remarks <i>Lunch</i>	Group Members JICA Laos Office
Handouts	Presentation material (JICA Survey Team and a Japanese Advisor)		
Discussion Summary	Attribute to	Statement Summary	
(1) Group A (Public agencies)	All	Opinions about methods for strengthening relation ship between G-B-C in Luang Prabang tourism are as follows: (1) Establishment of tourism development committee that all stakeholders are involved (2) Implementation of pilot projects related to tourism development (3) Capacity building for government related agencies (4) Policy planning for tourism management by public-private cooperation (5) Holding tourism forums	
	All	Opinions about methods for increasing local benefit by tourism are as follows: <u>(1) Local Communities:</u> • Promotion to ordinary people for understanding about benefit from tourism and practice for the activities by each households • Production and improvement of souvenirs and acquisition of those copyright • Selection of model sites for tourism, promotion of souvenirs and tourism service in accordance with the adviced from experts, and expansion of model sites in future <u>(2) Government Agencies:</u> • Conducting survey for selecting potential tourism spots regarding history, nature and culture • Data collection related to tourism • Planning of tourism development project for various fields such as history, nature, culture, health and leisure	
	All	Opinions about method for encouraging local communities to involve more to tourism are as follows: (1) For implementation of promotion activities, following points needs to be taken into account: • Implementation of training courses to raise awareness for tourism • Raising potential as a tourism site • Introduction of home-stay program • Discovery and promotion of authentic local traditions and tourism products • Involvement of all stakeholders at the place of decision making (2) It is necessity to develop infrastructure (road, electricity, drainage and waste disposal) for revitalizing tourism activities (3) It is necessary to increase the number of skilled labors (4) It is necessary for particiopatation of private sectors to tourism, improvement of tourism quality and finding new tourism resources (5) Following actions will be necessary for environment conservation • Actions for environment conservation and improving tourists' manners • Appropriate zoning for farming area and development area • Reduction of smoke from bush and forest fire	
(2) Group B (Private agencies and village leaders)	All	Opinions about methods for strengthening relation ship between G-B-C in Luang Prabang tourism are as follows: (1) Establishing a committee which coordinates public and private sectors and promote for understanding of Luang Prabang tourism (2) Holding meetings regularly to discuss about issues to be solved and past experiences to aim sustainable tourism of Luang Prabang in future (3) Engaging advisors such as from NGO and university as coordinators	
	All	Opinions about methods for increasing local benefit by tourism are as follows: (1) Engaging local communities to find regional tourism resources and to improve its	

Item	Descriptions	
		quality (2) Adopting tourism activities that tourists can experience traditional lifestyle (ex. Agriculture and fishing) (3) Inventing and promoting products which can be a symbol of the village (4) Preservation of 12 traditional cultures and 14 customs of villages such as festivals
	All	Opinions about method for encouraging local communities to involve more to tourism are as follows: (1) Providing supports for education of skills (ex. product development and sales) in order to promote handicraft goods as tourism products (2) Providing supports for local communities to improve their hospitality and tourism services (3) Although quality of some domestic traditional products (such as blanket manufactured in Ban Ou) is high, opportunity for selling those high quality product is gradually shrinking due to entry of cheap Chinese products. Therefore, support provision is necessary in order to promote domestic products for selling and to stabilize manufacturer's income. (4) Spreading information to local communities about the social and economical plan of the province related to tourism development (5) Involving local communities for planning of development projects
	All	In order to proceed sustainable tourism development in Luang Prabang, cooperation between G-B-C is an essential factor. However, issues that are not able to be solved by only Luang Prabang, assistance from international donors such as JICA will be necessary.

Source: JICA Survey Team

## 1-5 Workshop No.3 (Vientiane)

**Table 1.5 Details of July 15 Workshop No.3 (Vientiane)**

Items	Descriptions		
Agenda	Program	Time Schedule	In Charge of
	09:30—09:35	Opening Remarks	JICA Survey Team
	09:35—10:10	Presentation	JICA Survey Team
	10:10—10:20	Q&A	
	10:20—10:35	<i>Coffee Break</i>	
	10:35—11:05	Ideas on Luang Prabang Regional Development	1) Vice Governor of Luang Prabang 2) Director of Tourism Planning and Development Division, Tourism Development Dept., MICT 3) Director of DPWT, Luang Prabang
	11:05—11:50	Discussion	Attendees
	11:50—11:55	Wrap-up of Discussion	JICA Survey Team
	11:55—12:00	Closing Remarks	JICA Laos Office
	12:00—12:45	<i>Lunch</i>	
Handouts	Presentation material (JICA Survey Team)		
Discussion Summary	Attribute to	Statement Summary	
Luang Prabang Province	Vice Governor	<ul style="list-style-type: none"> <li>This JICA project follows the direction of the targets for Luang Prabang province's sustainable social economic development, and the ideas for assuring sustainability and quality of tourism development are corresponded to that of Laos side. Also, we have the same understanding about present issues, responsibility for regional development and preservation, and the future direction to be considered as JICA assistance.</li> <li>Currently, Luang Prabang province is finalizing the social economic development plan for next 5 years. I would like to make comment on items that would be related to JICA study team's proposals:</li> </ul>	

Items	Descriptions
Ministry of Information, Culture and Tourism (MICT)	<p>Director of Tourism Development Department</p> <p><u>(1) Capacity Development:</u></p> <ul style="list-style-type: none"> <li>We wish to improve education level 8 provinces in the northern Laos immediately as same level as the other ASEAN countries. This will lead to the improvement of service quality and increasing of job opportunity.</li> </ul> <p><u>(2) Infrastructure Development:</u></p> <ul style="list-style-type: none"> <li>We would like to improve following infrastructure: <ol style="list-style-type: none"> <li>Development of transportation access network to the area such as Xan khon village (famous for hand-made-paper) which does not depend on the weather</li> <li>Solving shortage of water in the world heritage area, and hopefully, improving water quality to be drinking water level (including improvement of water treatment plant)</li> <li>Appropriate disposal of solid waste</li> <li>Improvement of pedestrian space (sidewalk) and urban drainage system</li> </ol> </li> <li>Overall, ideas of JICA survey team correspond to our ideas. We wish some projects to be implemented.</li> </ul> <p><u>(3) Environmental Improvement:</u></p> <ul style="list-style-type: none"> <li>Preservation of greenery and cleanliness of the town are important for sustainable tourism development</li> <li>We overall agree to the direction of data collection and analysis by JICA survey team and today's presentation is corresponded to the national and provincial social economic development plan. Also I agree to the opinion of vice governor.</li> <li>There are 5 significant points which are (1) Infrastructure, (2) Environment, (3) Capacity development, (4) Promotion and (5) Project management</li> </ul> <p><u>(1) Priority infrastructure development:</u></p> <ul style="list-style-type: none"> <li>At the present time, condition of tourism access road is not good, that makes tourists stay in Luang Prabang only for 2 days in average. Therefore, improvement of tourism access road is a significant matter.</li> <li>Access road improvement for both world heritage area and the other spots (such as Muang Ngoi, as construed) is necessary.</li> <li>At the present time, tourists from Thailand who enter to Xang Khon village by ferry do not stay in the village. Instead, they soon move to the central area of the Luang Prabang world heritage area and stay.</li> <li>We would like to extend the average length of tourists stay by enhancing tourism facilities (parks, toilets, parking spaces, etc.).</li> </ul> <p><u>(2) Environment:</u></p> <ul style="list-style-type: none"> <li>Improvement of waste disposal and drainage system are important. At the same time, it is also important to develop comfortable pedestrian space by increasing more green and plantation in the world heritage area.</li> <li>Undergrounding of electric cable has been implemented only a part of the world heritage area. We would like to do it more to cover all of the world heritage area.</li> </ul> <p><u>(3) Capacity development:</u></p> <ul style="list-style-type: none"> <li>Regarding capacity development, "Tourism Destination Management Networking" might be important as a new concept. Since the government tourism agencies still cannot manage tourism spots appropriately, relevants such as private associations and local communities are needed to be involved.</li> <li>By improving quality of service and infrastructure, we aim to extend the average length of tourists' stay from 2 days to 5 days until 2020.</li> </ul> <p><u>(4) Promotion:</u></p> <ul style="list-style-type: none"> <li>Tourism promotion is proceeded by MICT and DICT to a certain extent but is enough. In future, it will be significant to create mechanisms for increasing tourists to come to Luang Prabang repeatedly.</li> <li>We would like to develop explanation boards for tourism resources such as temples and create tourism route map (these are relatively weaker than that of tourism spots in Japan). DICT office owns a floor for a service of tourism information center but the function is limited. The international airport should also have some space to provide tourism information as an entrance of Luang Prabang.</li> </ul>

Items		Descriptions
Department of Public Works and Transportation (DPWT)	Director General	<p><u>(5) Tourism management:</u></p> <ul style="list-style-type: none"> <li>• Expecting some of the projects are chosen to be implemented by Japan, prompt establishment of management system will be necessary. I totally agree to the idea of JICA survey team about promoting involvement of local communities and private sectors as much as possible.</li> <li>• Luang Prabang World Heritage Area is already known as one of a famous tourism site in the world. If JICA supporting project is implemented, Luang Prabang will become much more famous.</li> <li>• Progress of JICA survey team corresponds to DPWT's strategy plan in 2020. Therefore, I also agree to vice governor and MICT director of tourism development department.</li> <li>• Road development project is not included in the presented project packages. Road development for Xang Khon village is very important and the cabinet of MPWT also has the same idea. The road should be paved by asphalt including the development of sidewalk and street light. This will largely contribute to local communities to make their benefit increase.</li> <li>• ADB support for inside the world heritage area is still very limited, so that JICA's support is highly welcomed. For example, parking space development is planned to be implemented by 9 locations, but is done only 3 locations at this moment due to lack of budget. We are considering a policy to prohibit owning vehicles if individual parking space cannot be secured.</li> <li>• We are considering some road development project for wide area including development of new road. Especially, if the project for new road development which passes beside airport is implemented, many government offices will be removed beside this new road. We accept the road to be named "Japan-Laos friendship road".</li> <li>• Water supply system improvement is also significant. We would like to expand the capacity of supply from present 10 thousand tons to 18 thousand tons in future. At the same time, replacement of old pipes and installation of fire hydrants will also be necessary. This is because a house in the world heritage area which is registered to UNESCO burned down just last week.</li> </ul>
Other opinion sharing	World Heritage Office (DPL)	<ul style="list-style-type: none"> <li>• Basically, I agree to ideas of JICA survey team and relevants of Laos government.</li> <li>• However, I wish the detail contents of future (project based) assistance by JICA to be explained shortly.</li> <li>• At the present time, design of the parking space development at the rest of 6 locations which is planned by Laos side is already determined. I would like to note that the problem is only lack of budget.</li> <li>• If possible, I would like to have support on rehabilitation of the old bridge of Nam Khan.</li> </ul>

Source: JICA Survey Team

## 1-6 Workshop No.4 (Luang Prabang)

**Table 1.6 Details of August 3 Workshop No.4 (Luang Prabang)**

Item		Description		
1	Agenda	Program	Time Schedule	In Charge of
		10:15 – 10:35	Presentation	JICA Survey Team
		10:35 – 10:40	Guidance for Group Discussion	JICA Survey Team
		10:40 – 11:50	Group Discussion — Heritage Conservation and Fire Prevention	Group Members
		11:50 – 12:10	Presentation (10mn/Group by 2 Groups =30mn)	Group Members
		12:10 – 12:15	Closing Remarks	JICA Laos Office
		12:15 – 13:00	Lunch	
2	Handouts	Presentation material		
3	Discussion	Attribute to	Statement Summary	

Item		Description	
	Summary		
	(1) Group A (Public agencies)	All	<p>The main points of Group A's presentation about heritage conservation in Luang Prabang and fire prevention in Heritage Area are as follows.</p> <ol style="list-style-type: none"> <li>1) All kinds of restrictions should be strengthened for public/ private/ community/ and tourists.</li> <li>2) Basic tourism infrastructure such as sidewalks, streetlamps, parking lots, parks, etc) should be developed not only for tourists but for local communities.</li> <li>3) Fire hydrants should be installed. Local communities should be trained as good users (from the viewpoint of how to use and maintain the facilities).</li> <li>4) The most important thing is to enhance all stakeholders' awareness of Heritage Area conservation and importance of firefighting.</li> <li>5) It is important to strengthen the ownership of Heritage Area conservation and importance of firefighting as follows. <ul style="list-style-type: none"> <li>- Public: Laws and regulations, patrol against acts of vandalism and burglary</li> <li>- Private: Active participation in the process of planning and implementation, fund donation, watching the public movement</li> <li>- Community: Private: Active participation in the process of planning and implementation</li> </ul> </li> </ol>
	(2) Group B (Private agencies and village leaders)	All	<p>The main points of Group B's presentation about heritage conservation in Luang Prabang and roles of different actors in firefighting in Heritage Area are as follows.</p> <ol style="list-style-type: none"> <li>1) The public should allocate a budget for Heritage Area conservation to the community when the necessity arises.</li> <li>2) It is necessary to enhance the partnership between the public and the community so that there should be more communication between the two parties.</li> <li>3) The public should open the information on heritage conservation to anyone.</li> <li>4) The public should give the community trainings on heritage conservation.</li> <li>5) The public should assist the community in architectural rehabilitation planning and income generation activities including "visit traditional houses" attractions for tourists, so that the Heritage Area communities should be capable of conserving their houses in the long run.</li> <li>6) Fire hydrants should be installed along narrow roads in Heritage Area.</li> <li>7) The public should actively enhance the awareness of the importance of Lao culture such as traditional clothes and alms giving for local young generation.</li> <li>8) The public should take effective measures against the problem that more and more Lao old residents go out of Heritage Area because of the recent increase of foreign investments and commercial acts in the area.</li> <li>9) Creating a "village trust fund" might be effective from the viewpoint of income generation and the conservation of traditional Lao culture and Heritage Area.</li> </ol>

Source: JICA Survey Team

### 1-7 Seminar No.3 (Final, Luang Prabang)

**Table 1.7 Details of October 4 Seminar No.3 (Final, Luang Prabang)**

Item		Description		
1	Agenda	Program	Time Schedule	In Charge of
		13:30—13:35	Opening Remarks	Vice Governor of Luang Prabang
		13:35—13:50	Presentation	JICA Survey Team
		13:50—14:00	Q & A	All Attendees

Item		Description		
		14:00—15:00   15:00—15:15 15:15—15:30 15:30—16:00  16:00—16:15 16:15—16:20	Keynote Presentation 1. “Joint Program for the Sustainable Community Development <Residents & Governments>” 2. “How to Utilize Historic Townscapes as a Living Environment and as a Tourist Destination? - Some Cases in Japan” Q & A <i>Coffee Break</i> Keynote Presentation 3. “Importance of DMO (Destination Management/Marketing Organization) in Data-based Regional Management” Q & A Closing Remarks	Japanese Advisors (from Takayama City/ Tokyo Univerity)  All Attendees  Japanese Advisor (from Keio Univerity)  All Attendees JICA Laos Office
2	Handouts	Presentation material (JICA Survey Team and Japanese Adivisors)		
3	Discussion Summary	Attribute to	Statement Summary	
	(1) Road Devision, MPWT	Staff (*Ansewed by Advisors)	(Question) There are big differences between the two countries: Japan and Laos, from the viewpoint of geopolitics. Lao PDR is an inland country which is surrounded by other countries while Japan is an archipelago surrounded by waters. I am wondering what Lao PDR could learn from the Japan’s experiences. (Answer) It is not realistic to directy apply one country’s experiences to the other country without considering the differences between the two. It is essential that different experts take time to study in detail the history and the originality of Luang Prabagn Heritage Area and that the stakeholders should take the best actions based on the results of their study.	
	(2) Luang Prabang Hotel Associations	President of Association (*Ansewed by Advisors)  President of Association (*Ansewed by Advisors)	(Question) What is exactly DMO like? I need further explanation. (Answer) In a word, it is a marketing system with an active local tourism destination’s participation and involvement in promotion including optinal tours. (Question) Japanese fire brigades mentioned in Today’s presentation are paid? (Answer) Japanese fire brigades are mainly composed of local youngsters based on “Fire and Disaster Management Organization Act”. As they are volunteers with no payment. Only necessary costs are paid. For example, Uniforms for the brigades in Takayama City are paid by the authorities. Japanese brigades’ roles are not limited to firefighting only but fighting with other natural disasters or rescue activities for missing people.	
4	Conclusion	The Survey Team proposed to JICA, in their final presentation, the following two projects as the ones with maximum priority. Lao side basically accepted the two candidate projects with top priority as the final output of the present survey. Priority Project 1: Technical Cooperation Project (Project No. S3112) Priority Project 2: Grant Aid Project (Project No. S1311)		

Source: JICA Survey Team

## 1-8 Presentation Materials of Japanese Advisors on Seminar No.3 (Luang Prabang)

### (1) “Importance of DMO (Destination Management/Marketing Organization) in Data-based Regional Management”

Presentation by Professor of Keio University, Dept. of Policy Management

#### ルアンパバーン地域開発 情報収集・確認調査 セミナー

2016/10/04

(慶應義塾大学 総合政策学部)

#### JICAスタイル 1

1. コラボレーションが基盤
  - ・相手国関係者とJICAとのコラボレーションを通じて、課題設定やプロジェクトを深化させていく
  - ・技術や資金などに加えて、人と人のコラボレーションで、現場でプロジェクトをともに育てる
  - ・高い専門性・経験・意欲をもつ、日本の専門家やボランティア、JICAスタッフが日本の社会で培ってきた技術や方法を提供する
  - ・現地で一緒につくりこむことで、機能する「質の高い社会インフラ」をつくる
2. プログラム・アプローチ
  - ・個別プロジェクトを越えて、特定の開発課題に対して、援助手法を組み合わせて取り組む
  - ・コラボレーションを行うことで、様々なアプローチを組み合わせられる
3. 日本のコミュニティが培ってきたアプローチの活用
  - ・一村一品運動、生活改善アプローチ、交番制度
4. 日本の自治体や企業がパートナーに

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#### ルアンパバーンの魅力 2

1. 人が住み、コミュニティの営みで維持管理されていることで、世界遺産としての価値を維持・向上させられるものである。
  - ・人が生活しているからこそ、人を惹き付ける魅力がでるものである。
  - ・建物の維持だけでなく、「生活シーン」を維持するための仕組みづくりが必要である。
  - ・「まちなみ」「住まい方」「自然との調和」の相乗効果が出るように、総合的に政策を組み合わせる必要がある。

#### ルアンパバーンの魅力 3

2. 住みながら維持されている世界文化遺産 (Living Heritage) としての魅力があるが、そのために直面する脆弱性とリスクもある。
  - ・総合的な防災対策（特に火災対策）の必要性
    - ・地域協働での地域防災計画
    - ・消防の拠点づくり・消防団活動
    - ・防災訓練の継続的・定期的な実践
  - ・観光客の自動車に対する方針設定と収益化
    - ・駐車場利用や地域への流入に対する共同財源化（文化遺産の保全財源化）

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#### (参考) 日本の消防団活動 4

- 法律で消防署と同様に市町村に設置。
- 全国に約2200組織、86万人
- 本業を別に持つ一般の市民で構成。自治体から装備等の支給。
- 自分のまちは自分で守るという使命感と助け合いの発想。
- 消火活動・救助活動・水防活動・啓発活動などの実施。
- 日常的な教育・訓練。火災予防・広報活動。
- 地域密着、即時対応、専門の消防職員との連携
- 平常時・非常時 を問わずその地域に密着し、住民の安心と安全を守る

#### (参考) データに基づいて地域経営をする「DMO」の重要性 (Destination Management/Marketing Organization) 5

観光トレンドの変化

- ・「団体旅行」→「個人旅行」
- ・「旅行会社から送客への対応」→「地域が開発したサービスで集客」
- ・「集客イベントの準備」→「個別化したニーズへの対応」
- ・「消費価値」→「経験価値」

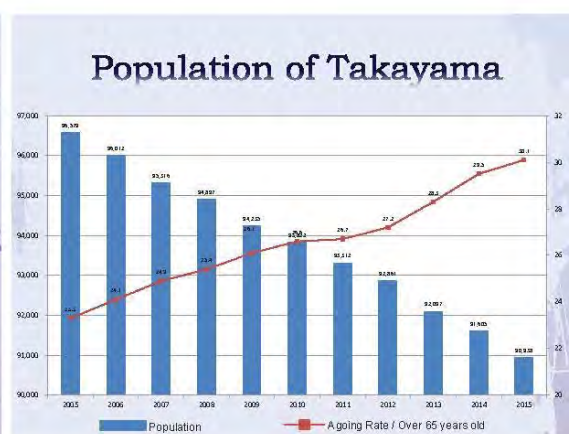
求められること

- ・戦略の整合性、独自のマーケティング・PR、品質管理の実施
- ・継続的なデータの収集と分析
- ・仮説設定、戦略策定・検証、KPI設定・PDCA
- ・専門性を持つ組織化、安定的な財源の確保
- ・積極的なノウハウ導入

出典: 総務省消防庁 <<http://www.fdma.go.jp/syohodan/about/index.html>>



- (2) “Joint Program for the Sustainable Community Development <Residents & Governments>”  
Presentation by Director of Dept. of Branding and Overseas Strategies, Takayama city.



Population decrease,  
a declining birthrate, and  
an aging population



**make it more difficult  
for the local governments**

to revitalize the local economy,  
to pursue the local activities, and to  
even maintain the local  
communities and/or society itself.

In order to solve and/or deal with the  
issues and problems that the local  
governments confront  
and to maintain the sustainable  
community development,



**it is a must**

to work and cooperate with the  
residents who know well about their  
own communities, who know what is  
necessary to improve their lives and  
who has chosen to live in there.



In order to promote the cooperation with the citizens,

↓ ① The city takes necessary measures to build the system and process so that

the citizens and private bodies can easily participate in and carry out their activities for the community development.

↓ ② The city continues to offer as much information as possible to the citizens.

↓ ③ The city reflects their voices to the city policy.

One of  
**SOLUTIONs**

↓  
Citizen's Councils for Sustainable Community Development

Twenty Councils within the city area

↓  
Disaster Prevention, Tourism Promotion  
Neighborhood Maintenance (roads, etc.)  
Children Care, Elderly Care

↑  
The City Provides  
Financial Support, Personnel Assistance  
Base and/or Place

## Key Factors

- \*Pride in their own communities
- \*Participation in community activities.
- \*Sense of self-reliance
- \*Sense of self-support / independence
- \*Cooperation among the residents

(3) “How to Utilize Historic Townscapes as a Living Environment and as a Tourist Destination? - Some Cases in Japan”

Presentation by Special Apointed Professor of Tokyo University, Dept. of Urban Engineering

歴史的町並みにおける暮らしと観光の両立  
- 日本における取り組み

## How to Utilize Historic Townscapes as a Living Environment and as a Tourist Destination ? - Some Cases in Japan

2018.10.04

Territorial Design Studies Unit, University of Tokyo

### Better Directions after many failures

- We lost so many historical townscapes for modernization or westernization since 1960s all over Japan.
- Because local residents felt that their live would be threatened, the preservation movement in Japan happened.
- As results of movement, the legal system was enacted to support the conservation of historical fabrics and the collaboration of various stakeholders.

### Better Directions after many failures

- Most important value of historical environment is to **remain as a living environment**. For that purpose, we need to realize two aspects below.
- 1. To keep the **traditional infrastructure** that has sustained the significant local life.
- 2. To establish a **new self-directive business** style including sightseeing.

### Better Directions after many failures

#### 0. Share Vision as a Living Environment

We should share the vision among stakeholders.

#### 1. Keep Traditional infrastructure

We just lost it. It means the complicated relationships to keep the local life was also lost. Facing the shrinkage now, we have a lot of trouble.

#### 2. Establish Self-directive business

Many old villages wanted to change their main industries from agriculture to tertiary one. The preservation brought an opportunity for tourism.



### 妻籠宿 Tsumago Town First trial for Historic Preservation

#### 妻籠を愛する会

“Public Interest  
Incorporated  
Foundation Association  
of Tsumago Lovers”

Residents of all  
Households  
Founded in 1968

- Tourism Boom and its Restraints
- Preservation of Living Environment





### 妻籠宿 Tsumago Town First trial for Historic Preservation



- Nakasen-do = 17C  
1 of 5 Major  
Roadway  
Governed by Edo
- Tsumago juku = Post-town
  - Commerce along the Roadway
  - Hilled Rural Area
  - Depopulation

### 妻籠宿 Tsumago Town



### 妻籠宿 Tsumago Town First trial for Historic Preservation

- Early 1960 Tourism development plan by big fund → Postponed
- 1968 Preservation plan for Kiso-Tsumago-juku  
= The first conservation project for historical town in Japan

- 1971 Residents' rule

- 1976 Selected as  
"The important  
preservation district of  
historic buildings"

Steady development of  
readiness for receiving  
Tourists



### 妻籠宿 Tsumago Town



### 妻籠宿 Tsumago Town First trial for Historic Preservation

- All shops close until 22:00
- Not accepted to serve curry rice,  
Argument about coffee shop for 15 years long
- Independent traffic restriction on Sundays and  
National holidays (1970-)
- Pedestrian walkway from 10:00 to 16:00 everyday  
(1978-)

### 妻籠宿 Tsumago Town



## Important Points for Town Development of Tsumago-juku

### 1) Sharing of Consciousness

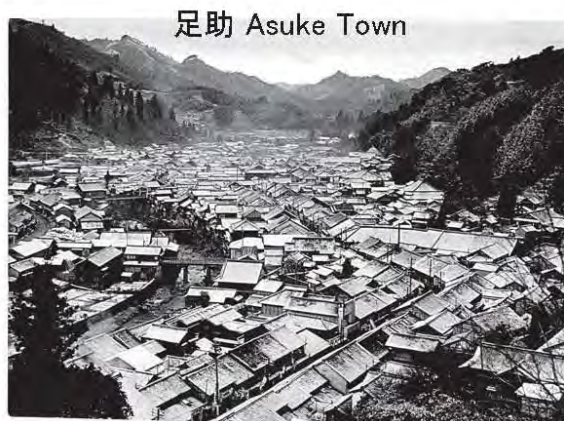
- The value exists in living environment rather than tourism
- Utilization of tourism for a measure of depopulation  
→ The organization that all residents involve and continuous discussion

### 2) Utilization of the Regulation

Zoning for Townscape preservation (1976)  
"The preservation district of historic buildings"

### 3) Contrivance by Cooperation

Common use of parking lot, Rules and Income,  
Image of the Town





■ Points Revealed by the Survey  
Living spaces in the town as  
a regional resource



■ Guidance by Sign Boards



■ Installation of Reception and Distributing Passport  
3750 copies of Maps, 701 visitors in 2 days



■ Presentation of the Rule

Rules for Visiting inside Houses

一歩まち歩きマップのルール

1. 入り口のまち歩きマップの看板を確認してから入りましょう
2. 必ず所有者の許可を得てから入ります
3. 写真撮影の際は、必ず所有者の許可を得てから撮影をお願いします
4. 持ち物の持ち出しは、必ず所有者の許可を得てから持ち出してください
5. 持ち物の持ち出しは、必ず所有者の許可を得てから持ち出してください



### Significant Points of Town Development in Asuke town

- 1) Sharing of Consciousness
  - Realization of high-quality and sustainable tourism
  - The value exists a little bit more "inside"
  - Accumulation of experiences in cooperation for town development
- 2) Utilization of the Regulation
  - "The preservation district of historic buildings"
  - Landscape regulations
- 3) Contrivance by Cooperation
  - Common use of parking lot
  - Holding events for visiting inside ordinary houses

### How to Utilize Historic Townscapes as a Living Environment and as a Tourist Destination ?

#### 0. Share Vision as a Living Environment

##### 1. Keep Traditional infrastructure

##### 2. Establish Self-directive business

Trails through collaborations among various stakeholders will show better hints towards compatible ways for living environment and tourist destination.

## 2. Precondition for Infrastructure Development in Luang Prabang

### 2-1 Water Supply

**Table 2.1 Raw Water Quality Recoard of Khan River in 2015**

			Jan.	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Max	Min	Ave	Number of test		
Other items	Temp. atomosphere	Max	20	28	30	28	37	30	27	31	31	26	24	23	37	14	25	365		
		Min	14	24	25	27	26	27	26	25	25	21	21	15						
		Ave	18	26	28	27.5	30	29	26	28	27	24	23	19						
		Number of test	31	28	31	30	31	30	31	31	30	31	30	31						
	Temp. water	Max	21	23	28	28	32	31	27	28	26	25	26	24	32	15	25	365		
		Min	15	21	25	27	28	28	24	24	25	22	24	18						
		Ave	18	22	26	27	30	29	26	27	26	24	25	21						
		Number of test	31	28	31	30	31	30	31	31	30	31	30	31						
Water quality standard																				
Microbial	E.coli		-	-	-	-	-	-	-	-	-	-	-	-	0	0	#DIV/0!	0		
Chemical	Aluminum (Al)		-	0.013	-	0.010	0.011	0.009	0.009	0.011	0.009	0.010	0.011		0.013	0.009	0.010	9		
	Chloride (Cl-)		4	5	5	5	6	5	8	6	4	4	4	3	8	3	5	45		
	Copper(Cu)		-	-	-	-	-	-	-	-	-	-	-	0.04	0.04	0.04	0.040	1		
	Fluoride (F-)		-	-	-	-	-	-	-	-	-	-	-	N.D<0.02	N.D<0.02	N.D<0.02	N.D<0.02	1		
	Iron(Fe)		-	-	-	-	-	-	-	-	-	-	-	0.31	0.31	0.31	0.310	1		
	Manganese(Mn)		-	-	-	-	-	-	-	-	-	-	-	N.D<0.1	N.D<0.1	N.D<0.1	N.D<0.1	1		
	Nitrate ion(NO3-)		0.7	0.7	0.6	0.7	0.8	0.8	0.7	0.8	0.7	0.8	0.8	0.9	0.9	0.6	0.750	45		
	Nitrite ion(NO2-)		0.006	0.005	0.005	0.003	0.006	0.005	0.005	0.005	0.005	0.005	0.006	0.006	0.006	0.003	0.005	45		
Physical	Zinc(Zn)														0.03	0.03	0.030	1		
		Max	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	365	
		Min	-	-	-	-	-	-	-	-	-	-	-	-	-					
		Ave	-	-	-	-	-	-	-	-	-	-	-	-						
	Colour	Number of test	31	28	31	30	31	30	31	31	30	31	30	31						
		Max	8.1	8.1	8.1	8.2	8.1	8.1	8.1	8.1	8.1	8.1	7.9	8.1	8.2	7.6	7.9	365		
		Min	8.0	8.0	7.7	7.7	7.7	7.6	7.7	7.6	7.7	7.7	7.7	7.7						
		Ave	8.0	8.1	7.9	7.9	8.0	8.0	8.0	7.9	7.9	7.8	7.7	7.8						
	Number of test	31	28	31	30	31	30	31	31	30	31	30	31							
	pH	Max	267	275	265	344	346	342	268	273	281	303	248	314	346	204	277	45		
		Min	248	253	261	279	315	313	239	204	229	236	225	238						
		Ave	255	263	263	311	336	332	255	294	250	253	235	274						
		Number of test	3	4	3	2	5	4	3	5	3	4	4	5						
	Conductivity	Max	68	25	47	209	65	253	560	1,125	3,201	1,265	56	255	3,201	9	170	365		
		Min	16	9	10	12	14	38	33	107	146	49	39	30						
		Ave	26	15	18	49	33	91	219	491	772	225	46	57						
		Number of test	31	28	31	30	31	30	31	31	30	31	30	31						
	Total hardness as CaCO3		76	82	75	153	139	102	137	135	130	129	114	124	153	75	116	45		
		Other items																		
		Chemical	M-alkalinity		142	144	163	145	174	176	144	123	135	127	123	137	175.5	123	144	45
			Total Dissolved Solids		117	126	122	150	159	157	130	118	118	120	112	130	159	112	130	45
			Odor		Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	365

Soueece: LPWSE

**Table 2.2 Summary of Water Quality Test on Distribution System**

Sampling Point No.	Name of Sampling Point	Sampling Number	Chlorine			Turbidity			PH			Color
			0.1-2.0 mg/l			<5 NTU			6.5 - 8.5			<5 Grade
			Min.	Ave.	Max.	Min.	Ave.	Max.	Min.	Ave.	Max.	Max.
1	Wat Pakhan	1	0.05	0.23	0.56	0.71	1.77	3.36	7.2	7.4	7.6	<2
2	Pabath Thai	5	0.02	0.21	0.48	0.66	1.52	3.52	7.3	7.4	7.7	<2
3	That bosoth	20	0.04	0.19	0.42	0.33	1.05	1.48	7.4	7.4	7.6	<2
4	Mano	12	0.02	0.21	0.73	0.21	1.36	3.52	7.2	7.5	7.8	<2
5	Naluang	16	0.04	0.40	1.30	0.46	1.14	2.14	7.3	7.4	7.6	<2
6	Poungvanh	8	0.05	0.17	0.40	0.58	1.43	2.66	7.3	7.4	7.5	<2
7	Phasouk	24	0.02	0.30	0.66	0.50	1.68	4.95	7.2	7.8	8.0	<2
8	Donekao	28	0.01	0.17	0.50	0.51	1.50	4.56	7.3	7.6	7.8	<2
9	Houay kang	32	0.05	0.24	0.45	0.36	1.61	4.93	7.3	7.5	7.8	<2
10	Wat Nong	2	0.07	0.21	0.50	0.99	1.64	3.68	7.0	7.5	7.7	<2
11	Sangkalo	6	0.10	0.33	1.00	0.40	1.05	1.42	7.2	7.4	7.6	<2
12	Phoumok	9	0.14	0.48	1.50	0.58	1.11	1.85	7.3	7.4	7.6	<2
13	Nampapa office	13	0.05	0.24	0.50	0.60	1.43	2.57	7.1	7.5	7.6	<2
14	Nasangeuy 1	17	0.08	0.26	0.56	0.27	0.98	1.98	7.0	7.5	7.6	<2
15	Khamyong	21	0.14	0.43	2.00	0.60	0.85	1.30	7.2	7.4	7.5	<2
16	Hadhein	25	0.07	0.41	0.80	0.77	1.98	4.05	7.8	7.8	8.0	<2
17	Phakhome	29	0.06	0.45	0.80	0.49	1.63	2.59	7.5	7.7	7.8	<2
18	Phanluang	33	0.10	0.28	0.85	0.29	1.46	5.00	7.4	7.6	7.8	<2
19	Office of governor	4	0.03	0.27	0.80	0.65	1.55	4.07	7.2	7.5	7.8	<2
20	Pongkham school	35	0.05	0.36	1.21	0.52	1.38	2.45	7.2	7.5	7.8	<2
21	Phonephaeng	11	0.10	0.35	0.81	0.47	1.34	2.47	7.2	7.4	7.7	<2
22	Kuatee neuang	15	0.10	0.53	1.34	0.60	1.16	2.24	7.3	7.5	7.6	<2
23	Wat mai	19	0.03	0.36	1.66	0.40	1.29	3.02	7.5	7.6	8.0	<2
24	Wat Meunna	23	0.05	0.27	0.98	0.48	1.31	2.34	7.2	7.6	7.9	<2
25	Done mai	27	0.05	0.31	0.63	0.74	1.37	2.53	7.3	7.6	8.0	<2
26	Xeinglek	31	0.10	0.57	1.66	0.48	1.83	5.51	7.6	7.9	8.2	<2
27	Naxang 2	36	0.01	0.35	0.98	0.23	0.97	1.61	7.4	7.5	7.7	<2
28	Pakham	3	0.05	0.13	0.23	0.51	1.48	2.80	7.2	7.5	7.6	<2
29	Viengkeo	22	0.05	0.14	0.28	0.48	1.54	2.48	7.3	7.5	7.7	<2
30	Naxang 1	10	0.10	0.44	1.14	0.42	1.12	2.18	7.3	7.5	7.6	<2
31	Nasamphan	14	0.10	0.47	1.18	0.37	0.97	2.70	7.2	7.5	7.8	<2
32	Nasangeuy 2	18	0.01	0.30	0.60	0.37	1.04	3.47	7.2	7.5	7.7	<2
33	xeingkeo	7	0.05	0.22	0.70	0.35	1.48	2.04	7.3	7.4	7.6	<2
34	Dormitory Souphanouvong university ( for teacher)	26	0.00	0.31	0.67	0.53	1.79	5.00	7.4	7.7	8.0	<2
35	Law school	30	0.00	0.32	0.72	0.43	1.53	5.00	7.5	7.8	8.1	<2
36	Visoun	34	0.04	0.16	0.30	0.38	1.15	3.09	7.2	7.5	7.70	<2

Source: LPWSE



**Table 2.3 Water Pressure Record on Distribution System**

No	Inspection point	Village	Diameter (mm)	Months												Average
				1	2	3	4	5	6	7	8	9	10	11	12	
1	sp 1	Pakhan temple	15	1.6	1.6	1.6	1.6	1.6	1.6	1.2	1.2	1.9	1.8	1.8	1.4	1.6
2	sp 2	Nong temple	25	2.2	2.2	2.2	2.2	2.2	2.2	2.4	2.1	1.5	1.4	1.5	1.2	1.9
3	sp 3	Pa kam village	25	1.9	1.9	1.9	1.9	1.9	1.9	1.6	2.3	2	2	2	3.1	2.0
4	sp 4	Governor office	20	2.5	2.5	2.5	2.5	2.5	2.5	2	2.2	2	2.6	2.4	2.6	2.4
5	sp 5	Pa bat village	15	2	2	2	2	2	2	1.9	2.2	2.3	2.3	2.2	2	2.1
6	sp 6	Sangkalok village	20	2	2	2	2	2	2	1.7	2.2	1.5	1.5	1.6	1.2	1.8
7	sp 7	Xeing keo village	20	0.8	0.8	0.8	0.8	0.8	0.8	1	1	1	0.8	0.8	0.7	0.8
8	sp 8	Poung vanh village	20	1	1	1	1	1	1	0.8	0.8	0.8	0.8	0.7	0.6	0.9
9	sp 9	Phou mok village	20	1.8	1.8	1.8	1.8	1.8	1.8	1.4	2.6	2.2	1.6	1.6	1.3	1.8
10	sp 10	Naxang village	20	2.5	2.5	2.5	2.5	2.5	2.5	2.2	2.6	2.2	2.2	2.1	1.4	2.3
11	sp 11	Phone phaeng village	25	2.4	2.4	2.4	2.4	2.4	2.4	2.6	2.5	2.4	2.4	2.1	2.7	2.4
12	sp 12	Mano village	20	2.5	2.5	2.5	2.5	2.5	2.5	1.5	1	1	2.8	2.6	2	2.2
13	sp 13	Water supply office	20	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2	2	2	2.2	1.8	2.1
14	sp 14	Nasamphan village	20	1.8	1.8	1.8	1.8	1.8	1.8	1.9	2	2	1.5	2	1.8	1.8
15	sp 15	Kuatee neung village	200	3.2	3.2	3.2	3.2	3.2	3.2	2.6	2.5	2.5	3.2	2.9	3.2	3.0
16	sp 16	Naluang village	15	0.5	0.5	0.5	0.5	0.5	0.5	2	0.8	0.9	1.6	0.8	0.6	0.8
17	sp 17	Nasangveuy 1	20	1.2	1.2	1.2	1.2	1.2	1.2	1.5	1.8	1.4	1.4	2	2	1.4
18	sp 18	Nasangveuy 2	20	2.4	2.4	2.4	2.4	2.4	2.4	2.2	2	2	2	2	2.1	2.2
19	sp 19	Viangmai	20	2.5	2.5	2.5	2.5	2.5	2.5	2.6	2.9	2.4	2.1	1.7	2.7	2.5
20	sp 20	That bosoth	25	2.1	2.1	2.1	2.1	2.1	2.1	1	2.3	2.3	2	1.9	1.6	2.0
21	sp 21	Kahmyong	15	2.1	2.1	2.1	2.1	2.1	2.1	1	1.2	1.1	1	1	1	1.6
22	sp 22	Veingkeo	15	2.5	2.5	2.5	2.5	2.5	2.5	1.7	2	1.8	2.2	2.3	2.6	2.3
23	sp 23	Meun na	20	2	2	2	2	2	2	2.3	2	2	2.1	1.8	2.5	2.1
24	sp 24	Phasouk	20	2.4	2.4	2.4	2.4	2.4	2.4	2.3	2.5	2.6	2.8	2.8	2.4	2.5
25	sp 25	Had hien	15	1.6	1.6	1.6	1.6	1.6	1.6	1.9	2	2.2	2	3	2.6	1.9
26	sp 26	University dormitory	20	1.7	1.7	1.7	1.7	1.7	1.7	1	1.2	1.2	2.7	2.5	2	1.7
27	sp 27	Done mai	20	1.3	1.3	1.3	1.3	1.3	1.3	1.8	1.6	1.7	1.2	1	2.7	1.5
28	sp 28	Done kao	15	1.6	1.6	1.6	1.6	1.6	1.6	1.2	1.8	1.7	2	1.7	1.5	1.6
29	sp 29	Pakome (main pipe)	150	2.1	2.1	2.1	2.1	2.1	2.1	2	1.6	2.2	2	2.7	2.4	2.1
30	sp 30	Law school	15	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.3	1.3	1	1.8	1	1.6
31	sp 31	Xieng lek	100	2	2	2	2	2	2	2	2.4	2	2.1	2	2.8	2.1
32	sp 32	Houay kang bridge	25	2.3	2.3	2.3	2.3	2.3	2.3	2.5	2.5	2.2	2.7	2.2	2	2.3
33	sp 33	Phan luang	20	2.3	2.3	2.3	2.3	2.3	2.3	2	2.4	1.5	1.6	1.5	1.4	2.0
34	sp 34	Visoun	25	2.2	2.2	2.2	2.2	2.2	2.2	2.4	2	2	2.3	2.2	2.2	2.2
35	sp 35	Pong kham school	25	1.4	1.4	1.4	1.4	1.4	1.4	1.6	1.6	1.5	1.5	1.4	1.8	1.5
36	sp 36	Naxang 1	40	2	2	2	2	2	2	2	2.2	2.2	1.5	2	1.3	1.9
37	sp 37	Phouxangkham								1.2	1.2	1.5	1	1	1	1.2
38	sp 38	Phouxangkham								1.6	1.8	1.4	1	1	1	1.3
39	sp 39	Phouxangkham								1.8	1.8	1.2	1.5	1.5	1.5	1.6
40	sp 40	Phoulekchaleun								1.2	1.2	1.4	1.9	1.9	1.9	1.6
41	sp 41	Phoulekchaleun								2	2	1	2	2	2	1.8
42	sp 42	Phoulekchaleun								1.2	1.2	1	1	1	1	1.1
43	sp 43	Phonexay								1.4	1.2	1.2	1.2	1.2	1.2	1.2

Source: LPWSE

Table 2.4 LPWSE Budget (Revenue and Expenditure) in 2015

ລ/ດ	ເນື້ອໃນ	ຫົວໜ່ວຍ	ເອກະລາດ	ເອກະລາດ
I	ການຜະລິດນໍ້າ		Water production	8,182,749
1	ໄກຈໍາຫນ່າຍ	ມຸດ	Water sell	6,114,688
2	ເປີເຊັນນໍ້າຂາຍ	%	NRW	25
II	ລາຍຮັບ	ກີບ	Total income	21,346,784,153
1	ຄ່ານໍ້າ	ກີບ	Water	19,894,472,010
2	ຄ່າເຊົາຫນໍ້	ກີບ	Meter rental	178,810,500
3	ລາຍຮັບອື່ນໆ (ໂຄງການ)	ກີບ	Other income	117,057,337
4	ຄ່າໄຟຟ້າ	ກີບ	New connection	910,051,361
5	ລາຍຮັບອື່ນໆ	ກີບ	Other income	246,392,945
III	ລວມລາຍຈ່າຍທັງໝົດ	ກີບ	Total Expenditure	17,761,899,713
A	ລາຍຈ່າຍທຳມະດາ	ກີບ	Direct Expenditure	14,582,032,390
1	ຜູ້ເສຍຫາຍ	ກີບ	Depreciation	4,420,584,901
2	ສິນຄ້າປັບປຸງ	ກີບ	Repair	204,883,896
3	ອາກຸມ	ກີບ	Alum	448,149,000
4	ປາກົດເຊື້ອ	ກີບ	Chlorine	217,107,450
5	ສານເຄມີອື່ນໆ	ກີບ	Other Chemical (Polymer,Lime,PAC)	1,113,750
6	ສິນຄ້າປັບປຸງນໍ້າຂາຍ	ກີບ	Material for leakage repair	404,525,525
7	ນໍ້າມັນເຄື່ອງຈັກການປະມິດ	ກີບ	Machinery oil	4,872,000
8	ໄຟຟ້າ	ກີບ	Electric	1,038,740,451
9	ແຮງງານເງິນເດືອນ	ກີບ	Labour	3,321,308,834
10	ລາຍຈ່າຍເອກະລາດ	ກີບ	Interest	480,160,650
11	ລາຍຈ່າຍທົດລອງນໍ້າ	ກີບ	Pay for water testing	7,296,000
12	ສິນຄ້າປັບປຸງ	ກີບ	Bad debt	-
13	ລາຍຈ່າຍສັງຄົມ	ກີບ	Pay for social welfare	127,155,930
14	ລາຍຈ່າຍຄ່າໃຊ້ຈ່າຍເອກະລາດ	ກີບ	Buy Water	3,906,134,003
B	ລາຍຈ່າຍການຄຸ້ມຄອງ	ກີບ	Overhead & Administration	2,396,343,350
ກ	ຄຸ້ມຄອງທາງກົງ	ກີບ	Direct	1,527,192,214
1	ນໍ້າມັນເຊື້ອໄຟ	ກີບ	Fuel	120,117,710
2	ເຄື່ອງໃຊ້ທຳການ	ກີບ	Office equipment	177,126,100
3	ສິນຄ້າປັບປຸງສາທາລະນະ	ກີບ	Meeting & workshop	360,261,222
4	ປັບປຸງຄວາມສະຫງວນ	ກີບ	Security	489,093,970
5	ອື່ນໆ	ກີບ	Other	256,898,212
6	ໃຊ້ຈ່າຍເດືອນ	ກີບ	Travelling for official work	117,995,000
7	ຄ່າດັດຊະນີ	ກີບ	Other material	5,700,000
ຂ	ຄຸ້ມຄອງບໍ່ກົງ	ກີບ	Indirect	869,151,136
1	ຄ່າທຳນຽມອື່ນໆ	ກີບ	Other payable	89,519,502
2	ຄ່າດັດຊະນີ	ກີບ	Training	238,914,000
3	ໂຄສະນາ,ສົ່ງຂໍ້ມູນ	ກີບ	Advertisement & New papers	153,902,000
4	ບໍລິການສັງຄົມ	ກີບ	Social	70,619,000
5	ສະໜັບສະໜູນ	ກີບ	Social & welfare for employee	99,728,184
6	ປະກັນໄພສາທາລະນະ	ກີບ	Vehicle s	4,091,000
7	ບໍາລັບສະໜັບສະໜູນ, ສະໜັບສະໜູນ	ກີບ	Bonus	53,927,000
8	ອຸດສາຫະກຳ	ກີບ	Family welfare	67,985,998
9	ບັດລາງວັນຈາກການປັບປຸງ	ກີບ	Pay for money exchange	-
10	ລາຍຈ່າຍຄ່າປັບປຸງສາທາລະນະ	ກີບ	Pay for repair customer meter	2,052,484
11	ລາຍຈ່າຍໂຄງການສະໜັບສະໜູນ	ກີບ	Pay for expansion project	88,411,968
C	ລາຍຈ່າຍທັງໝົດ	ກີບ	Total Expenditure	627,036,078
1	ອຸປະກອນທຳມະດາ	ກີບ	Other material	518,979,486
2	ນໍ້າມັນເຊື້ອໄຟ	ກີບ	Fuel	48,988,220
3	ເຄື່ອງໃຊ້ທຳການ	ກີບ	Office equipment	-
4	ວັດຖຸດິບ	ກີບ	Material	-
5	ຜູ້ເສຍຫາຍ	ກີບ	Depreciation	31,664,372
6	ແຮງງານເງິນເດືອນ	ກີບ	Salary	-
7	ອຸດສາຫະກຳ	ກີບ	Social	-
8	ສະໜັບສະໜູນ	ກີບ	Welfare	-
9	ບໍາລັບສະໜັບສະໜູນ	ກີບ	Bonus	-
10	ຄວາມສະຫງວນສາທາລະນະ	ກີບ	Labour	27,404,000
D	ລາຍຈ່າຍທັງໝົດ	ກີບ	Total Expenditure	156,487,895
1	ອຸປະກອນທຳມະດາ	ກີບ	Other material	139,038,642
2	ນໍ້າມັນເຊື້ອໄຟ	ກີບ	Fuel	6,099,080
3	ເຄື່ອງໃຊ້ທຳການ	ກີບ	Office equipment	-
4	ວັດຖຸດິບ	ກີບ	Material	-
5	ຜູ້ເສຍຫາຍ	ກີບ	Depreciation	6,772,173
6	ແຮງງານເງິນເດືອນ	ກີບ	Salary	-
7	ອຸດສາຫະກຳ	ກີບ	Social	-
8	ສະໜັບສະໜູນ	ກີບ	Welfare	-
9	ບໍາລັບສະໜັບສະໜູນ	ກີບ	Bonus	-
10	ຄວາມສະຫງວນສາທາລະນະ	ກີບ	Labour	4,578,000
IV	ກຳລັງເກັບເງິນ (ກ່ອນເກັບເງິນ)	ກີບ	Profit/Loss before Tax	3,584,884,440
V	ມອບ ສິນ ສະ	ກີບ	VAT	2,280,451,837
	ອາກອນ ມາດຕະລິມ (ນໍ້າ)	ກີບ	VAT ( Water )	1,983,946,837
	ອາກອນ ມາດຕະລິມ (ໂຄງການ)	ກີບ	VAT ( Connect )	88,246,675
	ອາກອນ ມາດຕະລິມ (ສິນຄ້າປັບປຸງ)	ກີບ	VAT ( Repair )	17,595,228
	ອາກອນ ເງິນເດືອນ	ກີບ	VAT ( Salary )	190,663,097

Source: LPWSE

## 2-2 Solid Waste Management

**Table 2.5 Waste Collection and Disposal Fees**

	Type of garbage generated from	Type of container	Fee/month (LAK)	Remark
<b>I.</b>	<b>Household</b>			
<b>1</b>	House with out business	container capacity <20 kg	20,000	
<b>2</b>	household with business	container capacity <20 kg	30,000	
<b>3</b>	food production at home-sell to out side places ( wedding service)	container capacity <20 kg	60,000	
<b>4</b>	Ceremony/festival	container capacity <20 kg	300,000	charge per time
<b>5</b>	waste materials collection unit	container capacity <20 kg	50,000	
<b>II.</b>	<b>Industry and handicraft</b>			
<b>1</b>	factory, all type of industrial business	container capacity 4m3	2,000,000	Incase the waste is harm for health, refer to existing rules and regulation
<b>2</b>	industrial waste ( all type business)	container capacity <20 kg	1,500,000	Incase the waste is harm for health, refer to existing rules and regulation
<b>III.</b>	<b>Agriculture</b>			
<b>1</b>	crops, fruit, grass,leaves, farm,market place ( not from household) small size of container	container capacity <20 kg	60,000	tree branch, should be cut in to piece for packaging
<b>2</b>	tree nurseries (wastes)	container capacity <20 kg	50,000	
<b>IV.</b>	<b>Commercials</b>	container capacity <20 kg		
	upload and down load goods	Container around 4m3 and	2,000,000	
	upload and down load goods	container capacity <20 kg	300,000	
	shoping center, ( not iron waste)	Container around 4m3	2,000,000	
	shoping center, ( not iron waste)	container capacity <20 kg	1,000,000	
<b>V.</b>	<b>Serive sector</b>			
<b>5.1</b>	<b>Hotel&amp; Resort</b>	container capacity <20 kg		
<b>1</b>	no of room from 40-60	Container around 4m3	2,000,000	
	no of room from 40-60	container capacity <20 kg	1,500,000	
<b>2</b>	no of room from 30-39	Container around 4m3	2,000,000	
	no of room from 30-39	container capacity <20 kg	1,200,000	
<b>3</b>	no of room from 20-29	container capacity <20 kg	1,000,000	
<b>4</b>	no of room from 11-19	container capacity <20 kg	800,000	
<b>5.2</b>	<b>Guesthouse</b>			
<b>1</b>	no of room from 15-25	container capacity <20 kg	500,000	
<b>2</b>	no of room from 10-14	container capacity <20 kg	300,000	
<b>3</b>	no of room<9	container capacity <20 kg	200,000	
		container capacity <20 kg		
<b>5.3</b>	<b>Restaurant/bars</b>			
<b>1</b>	no of table from 30-50	container capacity <20 kg	800,000	
<b>2</b>	no of table from 20-29	container capacity <20 kg	500,000	
<b>3</b>	no of table from 10-19	container capacity <20 kg	300,000	
<b>4</b>	no of table from 5-9	container capacity <20 kg	200,000	
<b>5</b>	park with food service/pinic place	container capacity <20 kg	400,000	
<b>5.4</b>	<b>Fitness center, sport club</b>			
<b>1</b>	fitness center, sport club	container capacity <20 kg	400,000	
<b>2</b>	Golf club	Container around 4m3	2,000,000	
<b>3</b>	Sport in house/bowling	Container around 4m3	2,000,000	
	Sport in house/bowling	container capacity <20 kg	1,200,000	

	Tye of garbage generated from	Type of container	Fee/month (LAK)	Remark
<b>VI.</b>	<b>Company/state enterprise and private business</b>			
<b>1</b>	Telecommunication, post, electricity, water supply, airline and other share holder companies	container capacity <20 kg	2,000,000	
	Telecommunication, post, electricity, water supply, airline and other share holder companies	Container around 4m3	1,200,000	
<b>2</b>	International and doemestic airport with restaurant and souvenior	Container around 4m3	2,000,000	
	International and doemestic airport with restaurant and souvenior	container capacity <20 kg	1,500,000	
<b>3</b>	Bank	container capacity <20 kg	300,000	
<b>4</b>	Bank branch	container capacity <20 kg	100,000	
<b>5</b>	Curency excahnge	container capacity <20 kg	50,000	
<b>6</b>	handicraft, souvenior, stamp and art shops	container capacity <20 kg	50,000	
<b>7</b>	Timber processing/furniture shop/sawing	container capacity <20 kg	200,000	
<b>8</b>	printing shop	container capacity <20 kg	100,000	
<b>9</b>	grass cutting shop	container capacity <20 kg	150,000	packaging with box
<b>10</b>	ice, drinking water factory, iron workshop	container capacity <20 kg	80,000	
<b>11</b>	stationery, photo copy, computer service	container capacity <20 kg	50,000	
<b>12</b>	Internet, cellphone, CD shop	container capacity <20 kg	40,000	
<b>13</b>	lottery office and its branch	container capacity <20 kg	150,000	
<b>14</b>	beauty salon	container capacity <20 kg	30,000	
<b>15</b>	wholesale, beer company, electriect equipment, construction materials, bed roomclothes	container capacity <20 kg	150,000	not included tile broken, mattress and beer case
<b>16</b>	Minimart, vehicle rental	container capacity <20 kg	120,000	
<b>17</b>	retailsale ( fruitshake...etc)	container capacity <20 kg	30,000	
<b>18</b>	big size of pharmacy and golden shop	container capacity <20 kg	70,000	
<b>19</b>	agriculture production item and down payment	container capacity <20 kg	100,000	
<b>20</b>	gift shop, small size of pharmacy, tailor and barbershop	container capacity <20 kg	50,000	
<b>21</b>	Machanic/garage/tire and tire maintenance	container capacity <20 kg	150,000	
<b>22</b>	Car washed, coloring and spare part	container capacity <20 kg	70,000	
<b>23</b>	petro station and car washed service place	container capacity <20 kg	70,000	
<b>24</b>	Modern rice milling place	container capacity <20 kg	70,000	
<b>25</b>	motorbike, spare part and motorbike washed place	container capacity <20 kg	40,000	
<b>26</b>	firewood, charcoal, milled rice and daily household supply	container capacity <20 kg	40,000	
<b>VII.</b>	<b>Service an tourism</b>			
<b>1</b>	Domestic and int'l tourist service company	container capacity <20 kg	100,000	
<b>2</b>	office at bus station	container capacity <20 kg	150,000	
<b>3</b>	Airticket agent, tour operation, boat	container capacity <20 kg	70,000	
<b>4</b>	Shops at bus station and BOULES place	container capacity <20 kg	50,000	
<b>5</b>	Office of enterprenures (sand, gravel, rock sales)	container capacity <20 kg	50,000	
<b>VIII.</b>	<b>Hospital, clinic and health service center</b>			General solod waste
<b>1</b>	Domestic and int'l hospital with no of bed from 100-150	Container around 4m3	2,000,000	
	Domestic and int'l hospital with no of bed from 100-151	container capacity <20 kg	1,500,000	
<b>2</b>	lao and int'l clinic with no of bed <99	Container around 4m3	2,000,000	
	lao and int'l clinic with no of bed <99	container capacity <20 kg	1,000,000	
<b>3</b>	Clinic Lao, int'l, health check up service	container capacity <20 kg	200,000	
<b>4</b>	hospital, clinic and all type of health services	container capacity <20 kg		Medical equipment ( 1kg=15,000 Kip)

	Tye of garbage generated from	Type of container	Fee/month (LAK)	Remark
<b>IX.</b>	<b>Special case that citizen selling products at the public space, UDAA would collect fees per night/day</b>			
1	shop with tent dimension 3 m X 6 m	container capacity <20 kg	15,000	
2	Concert, explore events.	container capacity <20 kg	500,000	
3	Sell product at the road side and street vendor	container capacity <20 kg	5,000	
4	transportation service 3m3	container capacity <20 kg	350,000	
5	Solid waste disposal	All type of vehicle		no business license, 1kg = 20,000 Kip
6	Solid waste disposal	All type of vehicle		no business license, 1kg = 60,000 Kip
<b>X.</b>	<b>Markets</b>			
	no of shop from 100-200	Container around 4m3	2,000,000	
	no of shop from 100-201	container capacity <20 kg	1,500,000	
	no of shop <99	Container around 4m3	2,000,000	
	no of shop <99	container capacity <20 kg	1,200,000	
<b>XI.</b>	<b>Educational institution, schools</b>			
1	university, vocational school	Container around 4m3	2,000,000	not included shop in the school
	university, vocational school	container capacity <20 kg	1,500,000	not included shop in the school
2	Upper secondary school	Container around 4m3	2,000,000	
	Upper secondary school	container capacity <20 kg	500,000	
3	lower secondary school	container capacity <20 kg	300,000	
4	Primary+ kindergarten	container capacity <20 kg	150,000	
5	Primary+ secondary	container capacity <20 kg	500,000	not included shop in the school
6	Kindergarten	container capacity <20 kg	100,000	
7	driving school	container capacity <20 kg	200,000	
<b>XII.</b>	<b>House for rent/Dormitory</b>			
1	apartment with no of room >50	container capacity <20 kg	500,000	
2	property with many buildings ( pay as respective building)	container capacity <20 kg	30,000	
3	Temple with revenue source	container capacity <20 kg	100,000	
4	Temple with out revenue source	container capacity <20 kg	30,000	
<b>XIII.</b>	<b>Night soil service/private company</b>			
1	turck with capacities 5m3	truck/time of service	25,000	
2	turck with capacities 4m3	truck/time of service	20,000	
3	turck with capacities 3 m3	truck/time of service	15,000	

Source: UDAA

## 2-3 Fire Prevention

**Table 2.6 Past 5 Years Fire Incidents**

Year	Description	Times/unit/cases	Total	27
2011	Fire house (cases)	15	<b>Cause of incident</b>	
	School (unit)	1	Electric shocks	10
	Shops ( unit) small damage	3	Religion workshop work place	2
	Cargo ship fire (unit)	1	Cooking gas tube leakage	2
	Bus	1	fire cooking (fire wood)	1
	Job's tear warehouse	1	fire from human purpose	1
	<b>Total</b>	<b>22</b>	garbage burning	6
	<b>Cause of incident</b>		No evidence(cause)	5
	Electric shocks (cases)	10	<b>Damages/lose</b>	
	Religion workshop work place	2	House	3
	Cooking	3	Restaurant	1
	Technical problem on engine (car)	1	Cooking gas (units)	2
	No evidence (cause)	9	Temple	1
	<b>Total damage lose (Lao Kip)</b>	<b>1,056,855,000</b>	Furniture shop	1
2012	Fire house (case)	10	Eclectic pole (electric shocks)	5
	Restaurants	1	hotel	1
	Gas tube fire	2	private company	1
	Temple	1	Zinc factory	1
	Furniture shop	1	<b>Total damage/lose</b>	<b>2,776,549,000</b>
	Eclectic pole (electric shocks)	5	2013	Incident occurred 10 cases, in Luang Prabang
	Zinc factory	1		Urban Area 9 cases, in Chomphet district 1
	private company	1		case
	Forest fire	4		house
	Hotel	1		shops
				Job's tear warehouse

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	electric shock ( pole)	2		cooking	2
	forest fire	1		petro leakage to exhausted pipe	1
	<b>Total</b>	<b>9</b>		burning garbage	11
	<b><u>Cause of incident</u></b>			No evidence (cause)	4
	Electric shocks	5		<b><u>Damage/lose</u></b>	
	cooking (fire wood)	4		House (damage all): Incident occurred 29 cases, in Luang Prabang Urban Area 22, Xeing Ngun district 1, Pak Ou 1, Nambak 1 and Chomphet 1	8
	burring garbage	1		House ( small damage)	6
	<b><u>Damages/lose</u></b>			restaurant ( damage all)	1
	Fire house ( burn all)	5		Mushroom house ( damage all)	1
	shops (small damage)	1		warehouse/stock: Damage all = 3, small damage = 1	4
	Job's tear warehouse ( small damage)	1		office ( small damage)	1
	Office ( small damage)	1		shop (small damage)	1
				asphalt production house ( damage all)	1
				guesthouse (small damage)	1
				Tuktuk/taxi ( half damage)	1
				<b><u>Total damage/lose</u></b>	<b>10,391,701,000</b>
<b>2014</b>	Incident occurred 29 cases, in Luang Prabang Urban Area 22, Xeing Ngun district 1, Pak Ou 1, Nambak 1 and Chomphet 1		<b>2015</b>	Incident occurred 31 cases, in Luang Prabang Urban Area 26, Chomphet 2, Pak Ou 2and Ngoi 1	
	house	10		House: Damage all= 6, small damage=5	11
	restaurant	1		petro station (small size of business)/small damage	1
	warehouse/stock	2		Job's tear warehouse (small damage)	2
	Guesthouse	1		Vehicle (Motorbike=1, bus 1, pick up car=1)	3
	Asphalt production house	1		Wood at the sawing factory	1
	shop	1		bank	1
	office	1		restaurant	2
	Tut tuk/taxi	1		electric meter (pole)	2
	sawing factory	1			
	<b>Total</b>	<b>19</b>			
	<b><u>Cause of incident</u></b>				
	Electric shocks	8			
	Religion workshop work place	2			
	lightening/storm	1			



Job's tear pile	1
Coconut tree	1
forest fire	2
kitchen	1
<b>Total</b>	<b>28</b>
<b><u>Incident cause</u></b>	
Electric shocks	11
Fire from human purpose	1
burring garbage	6
no evident/cause	7
cooking (fire wood)	3
lightening/storm/storm	1
Technical problem of vehicle	1
Religion workshop work place	1
<b><i>Total damage/lose</i></b>	<b><i>1,605,812,000</i></b>

Source: Fire Department, Luang Prabang Province