

Vientiane Capital, LAO People's Democratic Republic

City Information

Population: Data in 2013, total area of Vientiane contained 876,838 population and 767,092 for urban area. Population of Vientiane is accounted for 12% of the national population

Area (km²): 3,920 km²

Geography: Vientiane City comprises 9 districts including Chanthabouly, Sikhottabong, Xaisethha, and Sisattanak which could be considered as the metropolitans. Other 5 urbanized include Naxaythong, Xaithany, Hatxayfong, Pakngum, and Sengthong (Nolintha, 2011)

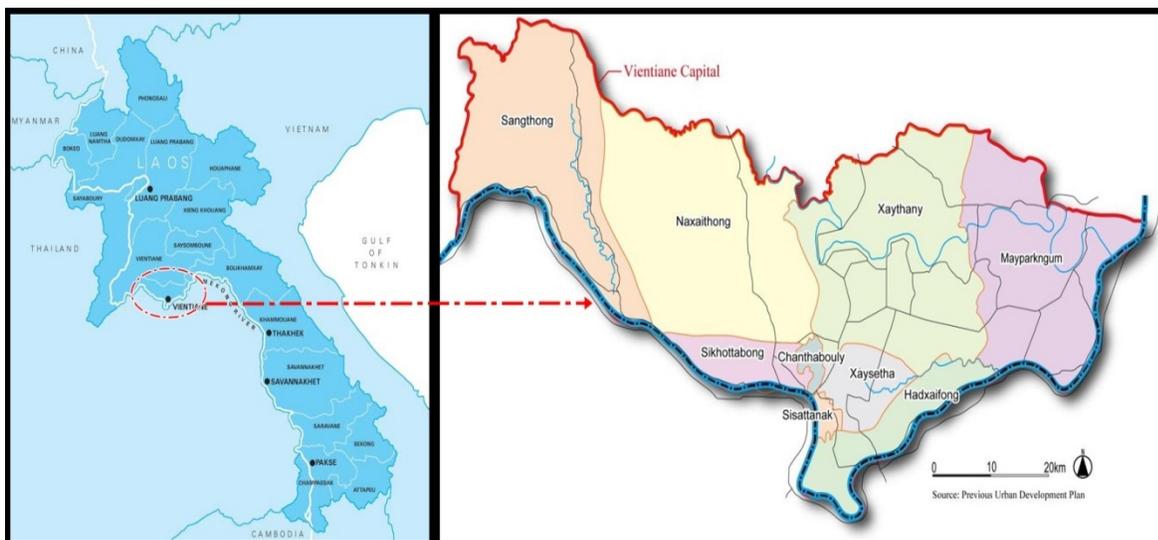


Photo source: Presentation by Department of Housing and Urban Planning, Ministry of Public Works and Transport, 2015

Figure 1: Map of Vientiane City

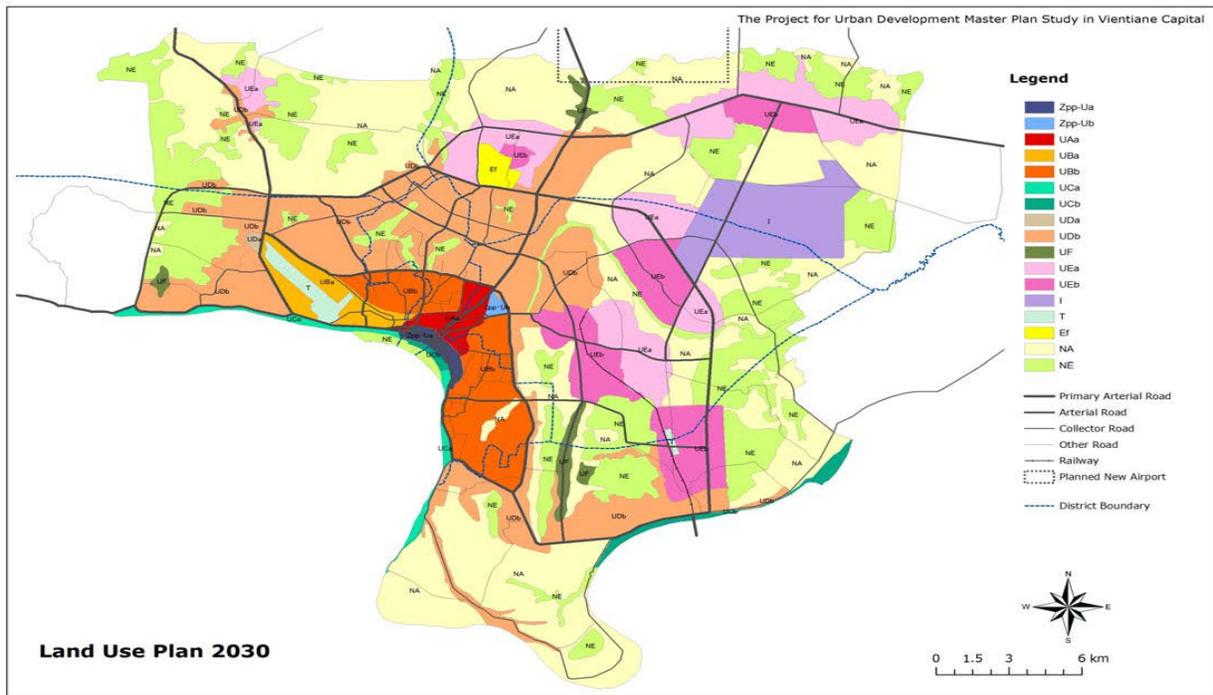


Photo source: Presentation of the Department of Housing and Urban Planning, Ministry of Public Works and Transport at workshop, 2015

Figure 2: Land Use Plan 2030

Climate: A tropical wet and dry climate with a distinct monsoon season and a dry season. The annual monsoon cycles that affect the mainland of Southeast Asia produce two seasons in Lao PDR in general and in Vientiane in particular: the rainy season starts from May to October while the dry season from November to April. The temperature in Vientiane ranges from a low of 12 degree Celsius during the coolest months from December to February to a high of 38 degree Celsius during the hottest months from March to May. The relative humidity is in general 75 to 80% during the rainy season and 65 to 70% in other period. The average annual rainfall is around 1,700mm of which about 86% occurs during May through September.

Main Economic Activities: The major economy of Vientiane is composed of agricultural, industrial and service sectors which is about 15% of the country's GDP. The other activities are forestry, mining & quarrying, electricity, gas & water, manufacturing, construction, Industrial Parks (PTI & JICA, 2011).

City website: No official city website. The other useful websites contain city information are

<http://www.visit-mekong.com/laos/vientiane/>

http://www.tourismloas.org/show.php?Cont_ID=20

Country Information

Population: 6,771,000 (2014)

Area (km²): 236,800 km²

Economy and GNI/Capita

Lower-middle-income economies (\$1,046 to \$4,125)

\$1,450 GNI/Capita

Main Economic Activities

Agriculture (23.5% of GDP), Industry including mining and quarrying, electricity power plant (33.2%), Service sector (37.4%) including tourism, and net taxes on products and import duties (5.9%)

(source: <http://data.worldbank.org/country/lao-pdr>)

Government Agencies responsible for guidance on waste legislation

- Department of Pollution Control, Ministry of natural Resources and Environment
- Department of Housing and Urban Planning, Ministry of Public Works and Transport
- Department of Hygiene and Diseases prevention, Ministry of Public Health
- Department of Industry, Ministry of Industry and Commerce
- Department of Agriculture, Ministry of Agriculture and Forestry
- Department of Mine, Ministry of Energy and Mine
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MSW Sector Overview: City Level

City Information

Classification of MSW

There is no official definition of municipal waste in Lao PDR. (Borongan and Okumura, 2010). The food waste, paper, textile, plastics, wood/bamboo, leather/rubber, metals, glass/ceramics are the composition in both residential and commercial waste which are classified as municipal solid waste while the healthcare waste from hospitals, clinics, and health stations are classified as healthcare waste.

- For residential area is from single family to multiple family
- Commercial area includes stores, restaurants, markets, office building, hotels, motel, print shops service, stations auto repair shops, etc.

There is no segregation program in place for both residential and commercial area.

Health care waste is handled and processed separately from other solid wastes. WHO's category was set to nine categories but Vientiane uses only 3 categories to identify healthcare waste: Infectious waste, Sharp waste, and general waste reference to the requirements for handling the garbage in hospital issued by Ministry of health and WHO (MOH, 2004).

MSW Generation

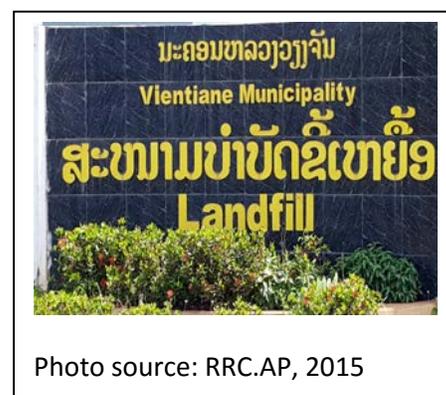


Photo source: RRC.AP, 2015

The per capita waste generation for Vientiane Capital City is 237.25 Kg per year while the total waste generation is 181,992.577 tons per year (767,092 peoples x 237.25 kg) or about 500 tons per day.

The total amount of population in Vientiane Capital is likely to increase to 800,000 in 2015 but waste collection service in the service area is superficially estimated to cover around 400,000 of population. Vientiane Capital is one of middle income city where generate solid waste about 0.7kg/person/year and the major factors affecting amounts of MSW are population, standard of living, social energy resources structure, people's diet habits (VUDAA, 2014).

The prediction of waste generation can be estimated using the formula presented by Point sources of pollution: local effect and its control - Vol. I - Amounts and Composition of Municipal Solid Wastes (Guangyu, 2013).

$$G_T = G_R M \times 10^{-3} \times 365$$

Where : G_T : Generation of MSW of the city (ton/y)

G_R : MSW Generation Coefficient(kg/person / d)

M : Population in the city.

Providing accurate GR is the basic prerequisite for exact calculation of MSW Generation.

- $G_T = 0.7 \text{kg} \times 800,000 \times 10^{-3} \times 365 \text{d} = 202,200 \text{tonnes/year}$
- $0.7 \text{kg} \times 10^{-3} \times 365 \text{d} = 255.5 \text{kg/person/year}$

Collection Coverage and Type

The coverage of the waste collection service in Vientiane Capital is slowly developed including 8 districts. The proportion of population with service area is 349,643. On the other hand, the total out of service area is larger than in the service area with 381,475. Despite the existence of landfills in Vientiane, collection services are limited to accessible areas and profitable target groups such as markets and medium and high-income households. The Average collection ratio for urban households in service area is 47.8 percent which is formally collected and disposal by stakeholders. However, waste collection services cannot cover many areas due to lack of financial resources. (source: LPPE newsletter VOL.2, issued by Japanese expert team for LPPE, February 2012)

The collection coverage now is about 60% and types of waste collected and disposed of are household wastes, healthcare wastes, nonhazardous industrial wastes and sludge from septic tanks (MPWT, 2015). The segregation of waste at source does not take place and no separation bins are provided for household or on street. The waste is segregated during the collection or after at the landfill site.

Waste Composition

The composition of Vientiane waste is as follows: food waste = 16.9%, paper = 2.8%, textile = 1.6%, plastics = 6.1%, wood/bamboo = 38.2%, leather/rubber = 3.7%, metals = 9.3%, glass/ceramic = 1.1% and other waste = 20.3%.

Waste composition is influenced by factors such as culture, economic development, climate, and energy sources. Lao PDR is one of low income countries, where is the highest proportion of organic

waste from garbage such as food scraps, yard (leaves, grass, brush) waste; wood; and paper and textile such as paper scraps, cardboard, newspapers, boxes (Phonkeo, 2010).

In the municipal solid waste stream, waste is broadly classified into organic and inorganic. In this study, waste composition is categorized as organic, paper, textile, plastic, wood, leather, metal, glass, and others from main sources such as resident, shop, market, office, hospital, and sweep. Moreover, these nine categories of waste composition are usually sufficient for general solid waste planning purposes (Phonkeo, 2010).

Physical composition in Vientiane Capital

Composite	Resident %	Shop %	Market %	Office %	Hospital %	Sweep %
Garbage(organic)	16.9	43.3	61.7	5.9	47.1	0.0
Paper	2.8	20	7.3	32.2	13.3	3.7
Textile	1.6	0.3	0.5	0.0	6.2	0.0
Plastic	6.1	7.9	4.3	4.3	9.4	8.3
Wood	38.2	8.8	13.2	13.2	36	55.9
Leather	1.1	0.3	0.3	0.3	1.2	0
Metal	3.7	5.9	5.9	1.9	2.6	0.8
Glass	9.3	6.7	6.7	1.9	5	0
Other	20.3	7.2	7.2	9.1	7.9	31.5

(source: http://www.iges.or.jp/en/archive/wmr/pdf/activity100728/5_Lao_Day1_Session2.pdf)

Waste Management Practice

There is no biological treatment or formal recycling yet; the rate of recycling is estimated at 10% of solid waste generated, type of materials reused are glass bottles which were used many times for soft drinks and beer, plastic bottles (20 liters) used for pure drinking water; type of materials recycled are plastic, glass, paper, rubber, cardboard, metals, etc.

Open dumping and burning are the most predominant commonly practices for waste disposal in Vientiane of with municipal waste. Because of lacking of waste management practice, high pollutants are increased to nearby aquifers, water bodies, and communities. Waste is regularly burned which is significant health impacts on local residents and people.

Recyclable Waste Material (RWM) has been completely promoted to reduce amount of solid waste. For RWM management comprises with waste banks, mobile traders dealers, export companies and recycling factories. Waste banks are common projects run by Village Environmental Unit (VEU) where are community and school levels to serve household RWM. RWM management have been participated by mobile traders who survey and buy RWM from many sources than waste banks. Finally, recycle waste were brought by dealers and then transferred to recycling factories.

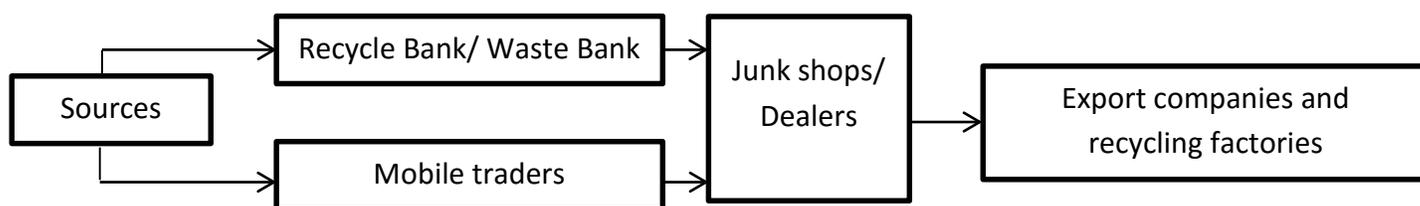


Figure 1: Recyclable Waste Material Management structure in Vientiane

Formal Waste Sector

Types of ownership and management are publically owned and operated, apart from that there are 8 private companies dealing mainly with waste collection; the landfill is operated by a public unit under the Vientiane Urban Development and Administration Authority (VUDAA); there are no composting plant and energy recovery yet; recycling is done by private companies and the types of recyclable wastes which are collected to be exported for treatment or further recycling abroad are plastics, broken glasses, papers, cardboards, and metals.

Currently, there are 8 companies and one public enterprise have transported solid waste from cities to the KM32 dumping site which including 8 Districts except Sangthong District (VUDAA, 2014).

Formal waste of ownership and management e.g. publically owned and operated, PPP to dumping site KM32 is shown as below:

No	Solid waste service company	Transport/Time	Tons
1	Vientiane Solid Waste Collection Public Enterprise	11,414	55,291
2	Vientiane Solid Waste Service Company	1,991	40,433
3	Cleaning and Transporting company	1,329	9,726
4	Lao-Kabase Limited Company	611	6,995
5	Chanthabuly Cleaning Limited Company	1,241	2,600
6	Private Enterprise Service Xaisettha District	247	9,691
7	Naxaithong Transport Solid Waste Service Company	293	1,375
8	Hadxayfong SKD Cleaning Service Company	1,323	8,778
9	Daoxay Transport Solid Waste Service Company	75	213
10	Including Entrepreneurs	7,110	40,433
11	Solid waste routes	1,167	3,613
12	Infectious waste (Hospitals)	201	133
13	Landfill type		133
14	Waste Incinerator		10
15	Others	967	1,005
Total		27,969	179,281

(Source: Annual Report of VUDDA KM32 landfill site in 2014)

Informal Waste Sector

The informal sector makes up a large part of the solid waste sector, while the public sector plays an important role in macro management of municipal solid wastes.

Participation of local is provided for informal waste sector. Households are motivated by waste banks and mobile traders to classify the type of waste actively for selling and donating such as papers, glasses, plastics, and metals. However, informal waste sector is only the small participation part, it should be systematically cooperated by public, NGOs, and private sector.

Financing of MSW

To finance waste services, the household fee model is used. The cost is not a significant burden to the city budget, because each company is collecting the fees from its customer directly by itself.

According to MSW in Vientiane capital, there are mainly two stakeholders of collection the solid waste such as public and private sectors. Normally, for the household fees is charged 24,000-30,000kip/month, for office is charged 30,000- 50,000 kip/month, for market is charged 150,000 kip/container, and foreign resident is charged 100,000 kip/container or 40,000kip/month (VUDAA, 2014).

Description	Salary of employee
Manager	1200000-1,400,000 kip
Truck driver	1000000-1,200,000 kip
Collector	800000-1,000,000 kip
Waste service fees	
Household	24,000-30,000 kip/month
Office	30,000-50,000 kip/month
Market	150,000-180,000 kip/container
Foreign residents	100,000-120,000 kip/container And 40,000-60,000 kip/month

Source: VUDAA 2015

In addition, private companies make agreement with the 30,447 households in the service area for solid waste collection four times per month.

Waste Management Challenges

Areas of work to be carried out to overcome waste management challenges are legislation, capacity building, awareness raising and pilot projects.

Due to lack of human resource and financial resource, rules, and management, these government-run companies could not provide good solution for sustainable SWM.

At this time, there are currently difficult challenges of the solid waste management sector as below:

1. Inadequate legal framework and unclear institutional responsibilities.
2. Institutions envisaged to be established in accordance with law, are sometimes not established, not given the proper mandate in accordance with the law(if established), neither given a budget to enable them to function in accordance to the law. New legislation is often drafted without proper reference to other legislations.
3. A considerable amount of waste is illegally dumped into the drainage channels and rivers.
4. Collection vehicle fleet is old and subject to frequent break down.
5. The institutional and administrative structure is not well established
6. Public education system and participation programs are not established.

According to the result of current situation, the Administrative Authority office has been planned three steps for solid waste management including short-term targets, medium-term targets, and long-term targets since 2008 (Phonkeo, 2010).

Short-term targets(2008-2010)	Medium-term targets(2011-2015)	Long-term targets(2016-2020)
1. Institutional and legal reforms. Sector database. 2. Decision making models. 3. Technical and Management Guidelines for construction and O&M.	1. Institutional and legal reforms. 2. Sector database. 3. Decision making models. 4. Technical and Management Guidelines for construction and O&M.	1. Increased access among the urban poor. 2. Improved standards in selected urban areas, explore opportunities for communal and centralized treatment.

(source: http://www.iges.or.jp/en/archive/wmr/pdf/activity100728/5_Lao_Day1_Session2.pdf)

Technical Assistance

The technical assistances required to take projects forward are as follows:

- Development of the national strategy for municipal solid waste management
- Formulation of the Vientiane Capital City strategy for municipal solid waste management
- Issuance of the law on municipal solid waste management
- Draft of the regulation on municipal solid waste management
- Development of economic instrument for municipal solid waste management
- Development of methods for data collection and analysis
- Development of methods for assessing the solid waste management of town/city
- Development of methods for determining gaps in the municipal solid waste management
- Development of methods for developing action plan for municipal solid waste management together with activities, outputs and timeline
- Development of methods for making documents required for awareness raising on SLCPs and on general municipal solid waste management
- Development of methods for making spots for advertising on SLCPs
- Development of methods for municipal solid waste management to reduce SLCPs
- Determination of a potential pilot project for waste recycling
- Determination of a pilot project for waste segregation at sources

There have been some technical assistance/ cooperation with international cooperation and NGOs.

- **International:** EU, Wastewater Management; SIDA-Sweden, Strengthening Environment Management; Finland, Environment Management Support Program

Germany: GIZ

- **Regional:** Japan-JICA, Lao Pilot Program 2011-2015; Thailand, Solid Waste Management Awareness; Vietnam, Infection Waste Disposal; UNEP; Asia Development Bank (ADB); World Bank: Environment Protection Fund

In general VUDDA is still looking for MSWM on Policy and Regulatory, Technical and scientific understanding, financial, social and institutional.

Source:http://www.unep.org/ietc/Portals/136/Events/ISWM%20GPWM%20Asia%20Pacific%20Workshop/Lao_PDR_Mapping_and_Needs_Assessment.pdf

Study also showed that In considering technical assistant to developing countries, the chief technical operations involved in MSWM, the guidelines on the methods applied are based on the technically advanced nations and their regulations, which may not be amenable to the conditions in developing countries. The associated environmental and public health risks play a key role in designing the operations that can vary based on the technical, climatic and socio-economic set up of the developing countries. The MSW generated in the study countries vary accordingly. However, the most important aspects in the solid waste issues are waste minimization at source and extensive reuse, recovery and recycle of materials carried out mainly by the informal sectors.

(Source: Municipal Solid Waste Management in Asia: A Comparative Analysis C. Visvanathan and J. Trankler)

MSW Sector Overview: Country Level

General description and overview of common practice

Waste collection services in Laos are limited to geographically accessible areas, markets, and economically profitable groups, such as high-income residents (STEA & UNEP, 2006). Waste collection does not occur in many remote areas. The result has been that a number of residents still resort to burning and dumping their waste. The landfill sites in Laos are inadequate and do not meet international environmental standards (STEA & UNEP, 2006). While there are only five landfills in the whole country, only Vientiane and another town (Luangprabang) have barely sufficient separation of hazardous waste from the rest (STEA & UNEP, 2006).

About 60% of solid waste generated is not collected and disposed of in an unsanitary manner and improper disposal methods are practiced among peoples and waste generators including open burning, household burying, solid waste littering along roadsides, roadside drains, streams and vacant lands.

Waste Generation (per capita/year)

The per capita waste generation per year in the Lao PDR can be estimated using table below where “p” is the urban population of the town/ city.

No	Town/city with its population	Per capita waste generation/year) (Kg/year)	Waste density (Kg/m ³)
1	p > 100,000	237	250
2	40,000 < p < 100,000	219	250
3	30,000 < p < 40,000	200	250
4	20,000 < p < 30,000	182	300
5	10,000 < p < 20,000	164	300
6	p < 10,000	146	300

Source: Technical Manual for SWM, DHUP- MPWT, Lao PDR, 1998

Collection Coverage

On average, 40% of the urban population can receive the solid waste collection service. The findings of this study indicate that waste collection services are still poorly managed in Lao PDR, with only 60 per cent of urban households receiving a weekly waste collection service, while about 35 per cent of rural households receive a weekly waste collection service. Similarly, in line with ESL's (2004a) findings, the research indicates that many households in the rural area have no waste collection service. Specifically, in this study, 40 per cent of households in rural areas indicated that their area is not covered by any waste collection service at all. As a result, the majority of rural residents engaged in inappropriate handling of solid waste such as illegal dumping and open burning (ESL, 2004b; Khanal & Soksavath, 2005). Indeed, the findings of this study show that 30 per cent and 13 per cent of rural respondents burn their waste and illegally dump their waste in open areas.

Number of Landfills/MSW Disposal rate (tonnes/year) .

There are 17 landfills in the Lao PDR which are located in including Vientiane City (Km 32), Luangprabang, Thakhek, Savannakhet, and Pakse but mainly in the suburbs of the provincial towns and 40% of solid waste are collected and disposed of at these landfills. MSW disposal rate is 680,000 tonnes/year. The country has no clear legal/regulatory system to better solid waste management control. In Vientiane capital, around 300 to 400 tonnes of solid waste are generated daily with the average per capita waste generation of 650g per day. KM32 final disposal landfill located at suburban area of Vientiane Capital received around 150 to 200 tonnes of waste daily, of which 40 to 50% are organic. Landfill operation in KM32 is a typical opening dumping without any compaction and soil cover although technical assistance is currently provided by JICA to improve the access to each compartment in order to have the proper controlled landfill. Controlled landfill operation with regular compaction and soil cover will need to be improved for the surrounding environment and sanitation, but it will reflect in increasing methane emission by complete capping of the odorous and unsanitary waste causing anaerobic condition. In this respect, methane capture, flare and/or energy utilization need to put in place

together with controlled/ sanitary landfill operation so that regional and global environment issues are concurrently addressed.

Recycling Rate

Approximately 70 percent of municipal solid waste consists of plastic, paper, glass, cans and metals, which have the potential to be recycled commercially, and reused in various manufacturing and industrial activities. However, the current scale of recycling in Lao PDR is still very modest at about **10%** of solid waste generated which are collected and segregated as recyclables to be reused or recycled within the country and to be exported abroad.

Waste management of Organic fraction (composting, anaerobic digestion)

Composting : in the form of production of good quality and marketable fertilizer and/or soil conditioner from organic matters in the waste

There is no composting plant and anaerobic digestion yet. However, there were a few pilot project introduced at the small community level. Introduction of MBT as the pretreatment of organic waste at the entrance of final disposal site is expected to reduce not only the amount of methane emission, but also the waste itself drastically so that the space for disposal of waste can be saved.

(source: JCM/BOCM Feasibility Study (FS) 2012)

Energy Recovery Rate

Basically, there is no energy recovered from waste yet in Lao PDR due to lacking of knowledge and funds.

Plans, Strategies, Policies (incl. financial instruments) & National Objectives

City Level

Aimed at improving Waste Management in General

Recently, the Vientiane Capital Administration has issued a policy for keeping Vientiane City clean, green, beautiful and livable by launching its six So's (in Lao language) slogans namely: 1st So = peaceful, 2nd So = clean, 3rd So = bright, 4th So = green, 5th So = civilized, 6th So = charming.

Due to some limitations in human resource, financial resource, rules& regulation, and technical and management skills, VUDAA could not provide sufficiently good solutions for sustainable integrated SWM.

To improve MSW in Vientiane, the core activity has to involve public participation by motivating citizens to reduce waste generation, willingness of people to separate their waste into recycle category. VUDAA is in responsible to expand in collection service area and good transportation of solid waste to disposal site where need to also be improved to the level of sanitary.



There is also issue about hazardous chemical waste i.e. herbicides and pesticides which are used only in moderate levels in Lao PDR, mostly found as a result of low per-capita incomes and traditional agricultural practices in rural areas. However, there is evidence of banned pesticides and herbicides still being imported into Laos from neighboring countries, and dumping of empty barrels in landfills has been recorded in Vientiane Capital and other major cities which contaminated by leachate to the water resources. There is lack of baseline information and assessment on the extent of the problem in the country, and its potential effects on human health.

Aimed at addressing Climate change and reducing SLCPs through waste related activities

There was a plan for upgrading the operation of final disposal sites (landfills) to improve the solid waste management in environmentally sound in many cities. The previous improvement was supported by JICA.

Country Level

Aimed at improving Waste Management in General

The Article 38 of the environmental protection law stipulated that the general and nontoxic solid wastes should be segregated properly into relevant types for reuse and recycling based on methods and techniques available and must be disposed of in the areas determined in the regulations. The implementation and enforcement of regulation and promotion of public participation are needed.

Some of the project could be plan for implementations are:

- Increase the number of landfill to cover all provinces
- Improvement of disposal sites to be sanitary in order to prevent the contamination to ground water, air quality, and public health of people on site
- Improve fee charges system for waste collection and disposal, the payment for households should be depending on level of service and amount of waste collected/ disposed
- promotion of 3Rs public awareness program
- investment in mechanical equipment at disposal facilities including landfill, incinerator
- Cutting down the amount of waste by encouraging both waste reduction, segregation at source and micro-enterprises waste trading to use resources from the waste stream

Aimed at addressing Climate change and reducing SLCPs through waste related activities

The ministry of natural resources and environment has issued the national strategy for climate change of the Lao PDR (12/3/2010) which is aiming at climate change adaptation and reducing SLCPs through related activities.

Project Hand Book for Community Support by PPPUE-UNDP January 2006 raises awareness of people about impact of the waste and gives some good experiences for community participation about disposal , reduce, reuse and recycle waste.

City Level

Legislation governing MSW management

A number of regulation and laws have been provided in Vientiane Capital that deals directly with SWM as follows:

- Decree of the Council of Ministers on the management of towns and public places, 1991;
- Industrial wastewater discharge regulation, 1994;
- Minister's Decision on rules and regulations for town planning, 1996;
- Prime Minister's Decree on the organization of the Urban Development and Administration Authority, 1997;
- Industrial manufacturing law, 1999;
- Environmental protection law, 1999;
- Regulation on the monitoring control of waste discharge (No.1122/STENO) 1998;
- Decree on the Vientiane Capital City about Establishment Company for transport Waste No. 1414/VCC dated November 20, 1998; Environment Protection and Regulation No. 0201/VCC, dated February 09, 1991; Business Royal No. 31/PM, dated February 01, 1996, Business Law No. 03/94/NP, dated July 18, 1994, Business Royal No 31/PM, dated February 01, 1996;
- Disposal Advices and Protection Environment and Regulation No 0201/VCC, dated February 09, 1991

Environment Protection Law No 02/99/NA, dated April 03, 1999 contain general articles refer to the waste. Article 4 focuses about enhancement of the capacity and public awareness and providing education to the citizens to see importance of the environment for their daily life. The article 23 mentions about prohibiting all kind of littering, requirement to allocate waste disposal sites and separate waste before its disposal, incineration burying or other methods of disposal.

Ordinance of Vientiane Capital City No 287/VCC, dated Jun 24, 2008 about the improvement of the price for service solid waste collection in Vientiane Capital City from 4.500 kip per bin to 6000 kips per bin and transfers the responsibility of waste collection to Vientiane Urban Development Administration and Authority (VUDAA)

For municipal solid waste

A draft decree from 2009 ruled on SWM, but not been officially approved yet. This draft presents the overall guidelines and requirements for all the SWM components, including hazardous and medical waste. This draft has been available for review, and comment which has been taken into consideration to the revision.

There is an existing decree on Disposal site management (No 520 / TCPC, dated 23 Feb 2007), regulating site selection and design of disposal sites.

For medical/infectious waste

Decree on Waste Management from Health Care Facilities (No 1706 /MOH, 2/7/2004).

- Article 8: Separation into 3 fractions: Infectious, Sharp and General Waste.
- Article 9: Collection & Storage
- Article 10: Handling & Internal Transfer
- Article 12-13: Communal Storage & Duration

- Article 14-21: Disposal of different Items

Decree on Sanitation of Public Area (No 1705/MOH, 20/7/2004)

Article 3: All people organizations have the responsibility to keep the public place clean and order.

- Article 4: There're two kind of public place

– Open air place: Public Park, stadium, tourist area, parking, fuel station, festival area.

– Public building: Museum, entertain hall, cultural hall, airport terminal, market, port, conference hall and others.

- Article 12: Department of Hygiene / Disease Prevention is the responsible for publishing the regulation and information for nationwide. Manage, monitor and supervise the implementation of this decree. Coordinate with all institutions concerned. Organize meeting and workshop for evaluation and planning. Summarize and report the situation to the government.

- Article 15: Measure taken for the violations and fine start from educate until 5.000.000 kips. In severe case would be send to tribunal court.

Guidance for MSW management (after legislation, before inspection activities)

Regulation on the establishment and business management of solid waste transport services in Vientiane Capital issued by the VUDAA is for guidance on solid waste management in Vientiane Capital City.

VUDAA is encouraging and seeking for private sector participation for household solid waste collection service through various forms of Public-Private Partnership. PPP is expected the significant contribution to achieving (effective) national and stakeholder-promoting sustainable development though the formulation and implementation of specific policy measure.

Inspection activities/supervision and enforcement of legislation

The supervision and inspection of collection and disposal activities are to be done by the Vientiane urban development and administration authority (VUDAA). VUDAA will ensure that tariff levels and structure benefit all customers, including low income ones. The Average collection ratio for urban households in service area is 47.8 percent which is formally collected and disposal by stakeholders. Thus, there are still gaps for VUDAA to increase the capacity of services to more coverage of areas. It could be done in cooperation with private sector. Regulation and efficient human resource are needed to be considered for ensuring the effectiveness of the service system. Enforcement of law will also help prohibit illegal dumping to vacant land.

National Level

Legislation governing MSW management

Overall policy and legislation at the national level, there is the act issued to cover the general MSW management, treatment, recycling, and resource recovery. There also are regulations issued on source reduction, segregation of waste at source, collection, transportation, landfills, incinerator, as well as Industrial waste, healthcare waste and others management.

National government is responsible to propose for promulgating the law whereas specify the local government and private sector cooperation to provide MSW management service throughout the waste stream from collection, transportation, disposal, recycling. Likewise, Industrial waste will be dealing by local authority and private sector.

Now the Department of Housing and Urban Planning is drafting the ministerial decision on municipal solid waste management; the Department of Hygiene and Diseases Prevention has issued the regulation on healthcare waste management; the Department of Industry has issued the Regulation on industrial wastewater management and the Pollution Control Department has issued the regulation on hazardous waste management.

Law related to MSWM are:

- Environment Protection and Regulation No. 0201/VCC, dated February 09, 1991
- Disposal Advices and Protection Environment and Regulation No 0201/VCC, dated February 09, 1991
- The Environment Protection Law of Lao PDR 1999
- Environment Protection Law No 02/99/NA, dated April 03, 1999 contain general articles refer to the waste. Article 4 focuses about enhancement of the capacity and public awareness and providing education to the citizens to see importance of the environment for their daily life. The Article 23 mentions about prohibiting all kind of littering, requirement to allocate waste disposal sites and separate waste before its disposal, incineration burying or other methods of disposal.

Disposal Advices and Protection Environment and Regulation No 0201/VCC, dated February 09, 1991

Regulation on the monitoring control of waste discharge (No.1122/STENO) 1998;

Project Hand Book for Community Support by PPPUE-UNDP January 2006 raises awareness of people about impact of the waste and gives some good experiences for community participation about disposal and reduces, reuse and recycle waste.

For municipal solid waste

- A draft decree from 2009 ruled on SWM, but not been officially approved yet. This draft presents the overall guidelines and requirements for all the SWM components, including hazardous and medical waste. This draft has been available for review, and comment which has been taken into consideration to the revision.
- There is an existing decree on Disposal site management (No 520 / TCPC, dated 23 Feb 2007), regulating site selection and design of disposal sites.

For medical/infectious waste

Decree on Waste Management from Health Care Facilities (No 1706 /MOH, 2/7/2004).

- Article 8: Separation into 3 fractions: Infectious, Sharp and General Waste.
- Article 9: Collection & Storage
- Article 10: Handling & Internal Transfer
- Article 12-13: Communal Storage & Duration
- Article 14-21: Disposal of different Items

Decree on Sanitation of Public Area (No 1705/MOH, 20/7/2004)

- Article 3: All people organizations have the responsibility to keep the public place clean and order.
- Article 4: There're two kind of public place
 - Open air place: Public Park, stadium, tourist area, parking, fuel station, festival area.
 - Public building: Museum, entertain hall, cultural hall, airport terminal, market, port, conference hall and others.

- Article 12: Department of Hygiene / Disease Prevention is the responsible for publishing the regulation and information for nationwide. Manage, monitor and supervise the implementation of this decree. Coordinate with all institutions concerned. Organize meeting and workshop for evaluation and planning. Summarize and report the situation to the government.
- Article 15: Measure taken for the violations and fine start from educate until 5.000.000 kips. In severe case would be send to tribunal court.

Guidance for MSW management (after legislation, before inspection activities)

Strong political commitment from the government to promote sustainable environment protection in the country, especially support Public Private Partnership household solid waste collection service systems in the long term. That is very important to ensure the success of the Public Private Partnership programmed. The government should play more attention to motivate private sector involvement in planning, operation and implementation of urban infrastructure services, including household solid waste collection service system. Therefore, the government needs to support solid waste sector and use strong policies and regulations.

Inspection activities/supervision and enforcement of legislation

The government should formulate clear legislation and regulatory systems that give guidance and confidence to all partners, especially, to private sectors, in other to determine their own policies and plan to protect their financial and property right. The specific laws and regulations need to be carefully balance as too much strong emphasis on customer right and interest, subsequent over regulation may prevent private sector entering this market and deny to the communities the access to the service again

Current Projects or Activities Aimed at Reducing SLCP Emissions

Currently, Mechanical Biological Treatment (MBT) of Municipal Solid Waste, and Landfill Gas (LFG) Capture, Flaring and Utilization are promoted in LAO PDR, in other to estimate the amount of GHGs emission. The proposed projects assessed in this study are:

- Landfill Gas capture, flaring and/or energy utilization from final disposal landfills of municipal solid waste, and
- Aerobic treatment of organic matters in municipal solid waste with mechanical biological treatment (MBT) technology.

The reference scenario in relation to the proposed projects is defined as “Shallow uncontrolled landfill of all the waste received at KM32 with no LFG capture as well as no aerobic treatment of organic matters in the waste, which is the current operation of landfill at KM32, the project location. The project boundaries are set for each proposed project as described in the table below respectively.

(Source: JCM/BOCM Feasibility Study (FS) 2012)

Identified Priorities for next cooperation

- To cooperate with CCAC-MSWI in the areas of legislation, strategy formulation, capacity building, awareness raising and implementation of a pilot project
- To develop city action plan based on priorities identified:

- Capacity building the state worker to collect the necessary data/information on waste characteristics.
- Implementation of policy, plan to enhance segregation, collection, and disposal
- Strategic plan to enforce the legislation
- Public awareness raising for all stakeholders
- Technical assistance including economic analysis to identify best available and appropriate applications
- Investment assistance to improve open dumping to sanitary landfill
- City exchange visit to draw lessons learnt from other ASEAN cities experience of good practices and achievement in the municipal solid waste management
- Pilot project demonstration in order for the upscaling to the other cities and the country level

Key Stakeholders

The key stakeholders envisaged are formal sector, informal sector, administrators and practitioners.

Prime Minister's Office (PMO)

Department of Housing and Urban Planning, Ministry of public Works and Transport,
www.dhup.gov.la, <http://www.mpwt.gov.la/lo/>

Vientiane Urban Development and Administration Authority, Vientiane Capital, Lao PDR

Department of Hygiene and Diseases Prevention, Ministry of Public Health, <http://www.moh.gov.la/>

Department of Industry, Ministry of Industry and Commerce

Department of Mine, Ministry of Energy and Mine

Department of Agriculture, Ministry of Agriculture and Forestry

Department of Pollution Control, Ministry of Natural Resources and Environment, <http://monre.gov.la/>

Japan-JICA

UNEP

Asia Development Bank (ADB)

World Bank: Environment Protection Fund

Additional Useful Information

The share of responsibilities on the solid waste management among ministries concerned is as follows: the overall management of solid wastes is to be done by the Ministry of Natural Resources and Environment, the management of municipal solid wastes is under the mandate of the Ministry of Public Works and Transport and the Urban Development and Administration Authorities, the management of industrial wastes is the responsibility of the Ministry of Industry and Commerce and the management of healthcare wastes is to be done by the Ministry of Public Health, etc.

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