

WASTE MANAGEMENT PROBLEMS IN LAOS

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ABSTRACT

This logistics case review delves into Laos' various waste management problems highlighting different aspects of garbage collection and handling from an operational standpoint. This study involves an integrated approach taking into consideration both peer reviewed journal articles and results of primary research, as well as practical suggestions that are highly relevant to the country's social-economic context as well as environmental conditions. The findings of this research improve comprehension of the main threats facing Laos and suggest environmentally friendly approaches for mitigation of adverse consequences of inadequate waste management.

Keywords: waste management, logistics, Laos, UXO, sustainable solutions

1. INTRODUCTION

Located in south-east Asia, adjacent to Burma, Cambodia, China, Thailand and Vietnam, Laos is a landlocked state. The country is characterized by mountains and lush forests and the Mekong river constitutes the largest proportion of the Western border between Bangkok in Thailand. It is a communist country; its president serves as the chief of the state while the prime Minister is the head of the government. The system of mixed economy in Laos was introduced with gradual reforms towards the liberalization of domestic markets within the state. Furthermore, it's an ASEAN country and also member of the APTA. [1] Handling its garbage provides Laos with a specific set of issues born out of a distressed past as well as explosive contamination. One of the major problems is UXO (Unexploded ordnance or UXO refers to munitions (bombs, rockets, artillery shells, mortars, grenades and the like) that have been used but failed to detonate as intended), that remains in the region as a legacy the Indochina war, in which about twenty thousand tons of explosive ammunition did not explode. UXO in the soil, rivers, paddy field, and jungle remain a high risk both for people lives and environment. During clearance operations, these bombs are detonated and their subsequent discharge contaminate the soil, groundwater, and air quality worsening their environmental state. Additionally, the clearing of UXO requires chopping and disposing vegetation resulting into land quality deterioration and erosion. The combined effects of these hazardous environmental impacts and the risky process of dumping waste poses a challenge to Laos.

The low public waste management and recycling capacity is another major problem that pertains to waste management in Laos. As a result, there is plenty of trash left over because of the expanded amount of throwaway plastics used in the last few years. Several people end up engaging into the practice of illegal dumping garbage into the roads, river, open spaces, or any other open place as the garbage disposal sites. Disposal of trash by burning is another practice that contributes towards deterioration of air quality and public health. Waste management is inadequate while there is no sustainable recycling infrastructure. as such these are some of the causes that lead to pollution which affects humans' health as well as the ecosystem health. Clearing UXO is however a partial solution for addressing the environmental problems. It requires waste management and recycling practices to ensure permanent sustainability of ecology and public health. [2]

The waste in Laos is different to that of some Asian countries, including China, Indonesia, the Philippines, Thailand, and Vietnam. Despite these countries doing something about plastic waste, in Laos, is difficult to

develop waste management systems and legal framework for this purpose. Instead, China has done much more by prohibiting importation of plastic waste and their use at shops. These differences depend on their levels of pollution since South-eastern states like China, Indonesia and Malaysia are among the most marine plastic-polluting countries with little existing recycling infrastructure and an increasing usage of disposables. Lowly developed areas like Cambodia and Laos face plastic pollution as a result of poor waste disposal such as open burning or river dumping. These may pose concerns for Lao but awareness is still low. Various initiatives aimed at responsible waste management are being undertaken in different countries. However, it remains a global issue of concern that continues to elude governments and other entities.

The problem of garbage management can be viewed for example in its Vientiane, Laos where there is a situation: the municipality collects trash only from people with the contracts and the larger part of population throws litter away in various way to the roadside, the open areas and even into the In 2018, only about 27% of Dhaka's population had paid waste collection contract. Therefore, the waste management system was closely examined, establishing critical shortfalls including insufficient law enforcement, confidence, knowledge on waste separation and convenient burning for cost reasons. Through the efforts in Laos it's evident that impactful solution is through awareness campaigns, provision of cheap waste collection services, inclusion of the private sector in waste management, use of clear labels on bins for separation of wastes and enlightening the public about the medical as well as environmental The main objective is to modify people's behaviour, improve their awareness on waste treatment and promote environmental protection in Vientiane.

2. WASTE MANAGEMENT IN LAOS: A LOGISTICS CHALLENGE

Waste management logistics is like a process of handling and delivering waste, just as we handle packages. It begins by collecting waste from various places, similar to picking up parcels. Then, waste is transported to places where it can be dealt with properly (Figure 1), like planning efficient delivery routes. Some waste, like packages that need fixing, can be treated or recycled to make it less harmful to the environment. Waste that cannot be fixed is disposed of safely, like throwing out items we cannot use. Specific materials, such as paper and plastic, can be reused, and we must collect and deliver them to recycling centres, much like returning empty bottles. To ensure that waste is managed well and doesn't harm people or the environment, there are rules and regulations to follow, just as we obey traffic rules when delivering packages. Efficient waste management logistics is all about organizing and delivering waste while keeping costs down and the environment safe. It's a team effort involving government, companies, and environmental groups.

Waste Amounts in Laos Accurate and reliable data on waste amounts are not available. Reported waste generation rates in cities vary between 0.7 and 1.4 kilogram per person per day. The current amount of generated waste in Lao PDR is estimated at around 910,000 tons per year and projected to increase to around 1.4 million tons in 2035. Up to 60 percent of the urban waste consist of organics. About 30 percent are recyclables with the majority (15-25 percent) being plastic content. Systems for data collection, analysis, reporting, and monitoring are required to provide a more comprehensive overview of waste management, help determine areas for improvement, and enhance sector monitoring and planning.

Waste Collection and Transport in most cities are serviced by regular (bi-) weekly curb-side collection along accessible (main) roads, either by city authorities or subcontracted private waste collection companies. Service coverage varies from 20 percent in smaller towns such as Thakek to over 70 percent in Vientiane, based on accessibility. Collection is often limited to urban centres and larger businesses and institutions, and in general areas where payment rates are higher. In rural areas and districts located further from city centres collection is usually at low rates. Vehicle fleets are outdated and with operational deficiencies. There is limited capacity for operation, maintenance, and repairs. In cities where waste collection is outsourced to the private sector, contractual conditions to ensure an adequate service delivery are absent. Contracts between city authorities and private companies typically are short-term (often one year) and do not provide an incentive to invest in equipment and improve quality of service. Also, contracts are very generic without performance commitment or indicators, and they lack requirements for monitoring and reporting. [3]



Figure 1: Garbage trucks at the city landfill (Photo: Lao Economic Daily) [8]

Vientiane Current Status:

- Waste generation rate of 200,000 ton in 2020 (projected to increase to 330,000 tons by 2035)
- Vientiane City Office for Management and Service (VCOMS) in charge of solid waste management
- 12 waste collection operators (2 public and 10 private)
- Fee structure:
- Households: US\$ 4.20 per month
- Restaurants/hotels/markets: US\$ 1.4 - 53 per bag/container.
- Hospitals: US\$ 1.8 per kg for infectious wastes.
- Gate fee at KM32 landfill: US\$ 4.3 per ton
- Total households: 173,840 (100%)
- Accessible: 125,169 Households (72%)
- Contracted: 46,509 Households (27%)
- Not contracted: 78,660 Households (45%)
- Inaccessible: 48,671 Households (28%)
- Landfill at KM32
- Established in 2008
- Collection efficiency. The service coverage varies greatly in Lao and is much higher in the cities than in rural areas. It is assumed that the average collection efficiency is 30 percent but will increase till 50 percent during the forecast period. [3]

Based on the above, the forecast for waste generation and waste disposal and treatment amounts in the period 2020-2035 are presented in the Figure 2 below. As such, current waste generation in Lao PDR is estimated at around 910,000 tons per year, increasing to around 1.4 million tons in 2035. [3,4]

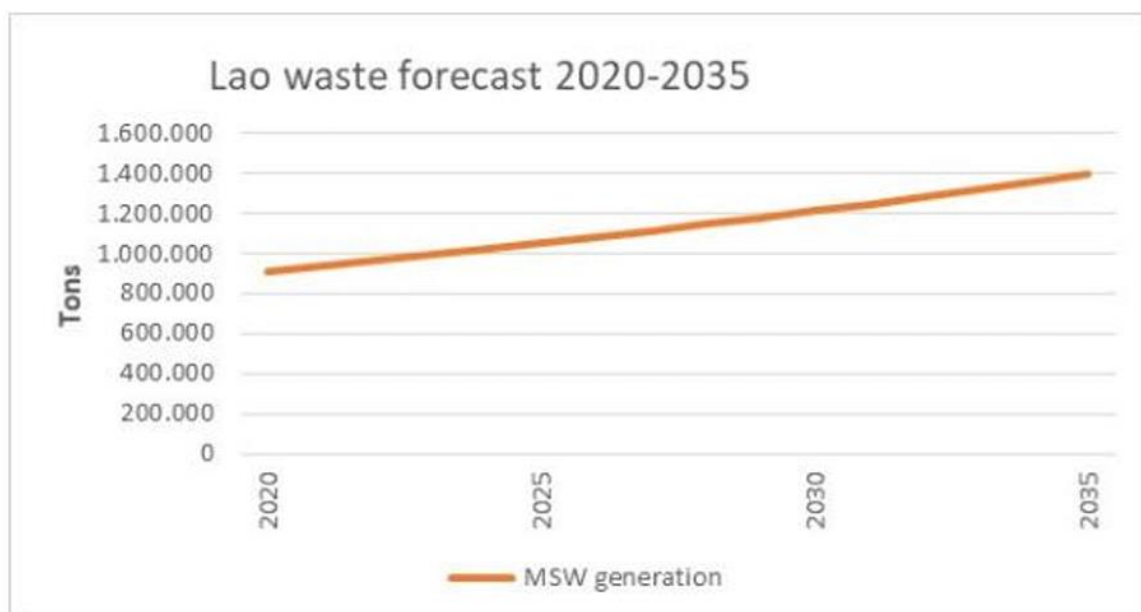


Figure 2 Waste Forecast for Lao PDR (2020-2035) [3]

Authorities have not yet issued any policies or facilities to promote the conversion of waste into valuable resources, making it difficult to promote the “3Rs,” Reduce, Reuse, Recycle, in urban areas. [4]

In Lao PDR, solid waste generation is expected to increase 20% by 2030 and 46% by 2050. The country is already facing challenges related to solid-waste management; these challenges derive from deficient collection systems and inadequate disposal methods. Inadequate solid-waste management practices such as open dumping and burning can harm human health and the environment.

3. WASTE MANAGEMENT IN LAOS

Waste is a problem for more than just the town of Xaythany. Other suburbs are afflicted by the same problem. Vientiane itself, home to more than 900,000 people, produces more than 600 tons of waste daily. Trash is collected by the municipality only if you have a contract, and it comes at a price. Businesses and homes without contracts – that account for about 70 percent of the population in Vientiane – throw their trash anywhere and everywhere: in heaps by the roadside, in open spaces and fields, and sometimes straight into the Mekong River. [5]

The pictures below illustrate how waste is managed in Laos PDR. While there are differences between cities, the general system for picking up household and business waste is usually done every two weeks along the main roads by the government or private companies hired for the job. These contracts are typically short-term, usually lasting a year and can be renewed.

The collected waste is then taken to a designated dumpsite, which is usually located between 2 to 20 kilometres away from the urban areas. There are fees to access these dumpsites, but they apply only to private collectors. Apart from Vientiane (Figure 4), there is no proper waste registration and tracking system. City authorities occasionally ask for reports from the private operators.

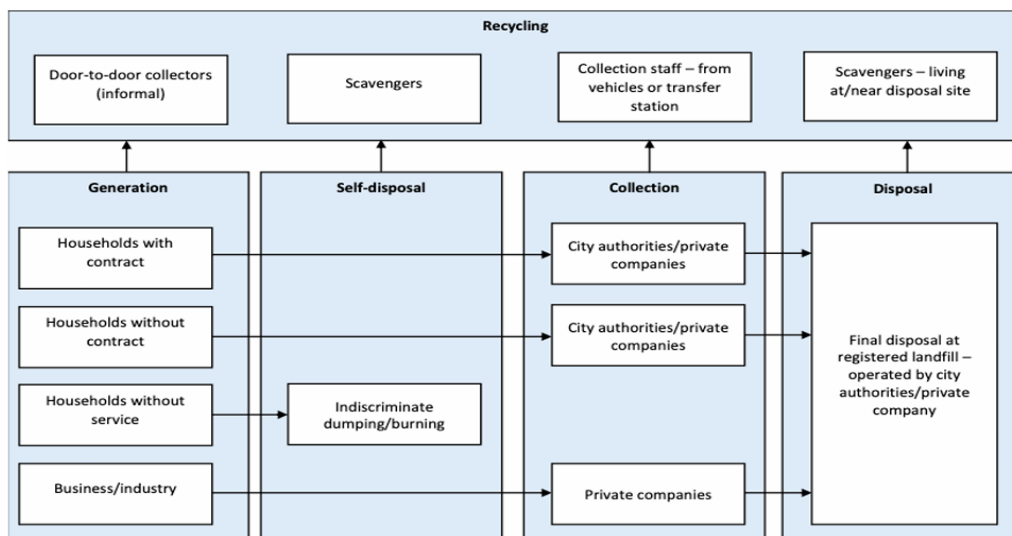


Figure 3 Waste Flow in Lao PDR from Generation to Final Disposal [9]

Figure 3 gives a visual representation of how waste moves from where it's generated to its final disposal. It shows that both the city and private companies handle waste collection and disposal, and there is an informal sector involved in recycling. Households receive waste collection services when they are accessible, regardless of whether they have a contract for it.

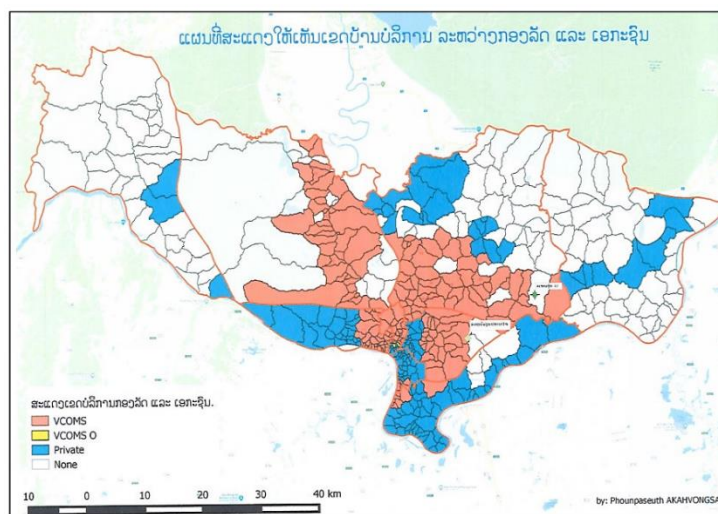


Figure 4 Waste Collection Coverage of Vientiane [3]

The map includes the 27 percent of households which pay for collection, as well as the remaining 45 percent of households for which collection is still conducted even though they do not pay for the service.

4. CONCLUSIONS

The Lao government has expressed a commitment to addressing the solid waste and plastics challenge. The government is developing a National Plastics Action Plan with support from the World Bank and the EU Switch Asia Facility. Laos has also signed the ASEAN Bangkok Declaration on Marine Plastics, and ratified the amended Basel Convention, which focuses on control of transboundary plastics.

To reduce plastic pollution and provides a basis for better solid waste management. Recommendations include:

- Adopt a mix of regulatory and economic instruments, voluntary agreements, and awareness-building activities for plastics management.
- Focus on the top 10 plastic product items, which represent 95% of plastic found in rivers.
- Introduce measures gradually, starting with simple, low-cost actions that have wide political and public support and can be readily monitored and enforced.
- Focus on the hospitality and tourism sectors, where many measures are immediately feasible and impact can be significant.
- Engage the private sector and retail businesses in plastic reduction, collection, and recycling.
- To reduce plastic pollution, behaviour change will be needed. Consumers and retailers can play key roles in preventing and managing of waste. Regulations can help people with the necessary changes by making it easier for them to identify, separate, reuse and, recycle waste. Retailers can provide environmentally friendly alternatives to plastic food packages, while consumers can bring reusable containers when shopping. [6]
- The following recommendations can help improve the Lao waste-collection system:
- Adapt fees to reflect the quality of the service. People need to think the price is fair in relation to the service provided.
- Improve waste-collection service practices by including private, informal, and start-up companies focused on sustainable alternatives in discussions and planning.
- Increase awareness through timely information campaigns. The use of influential figures (Figure 7) at schools, temples, and other institutions can help grab attention and convey personalized messages. [7]

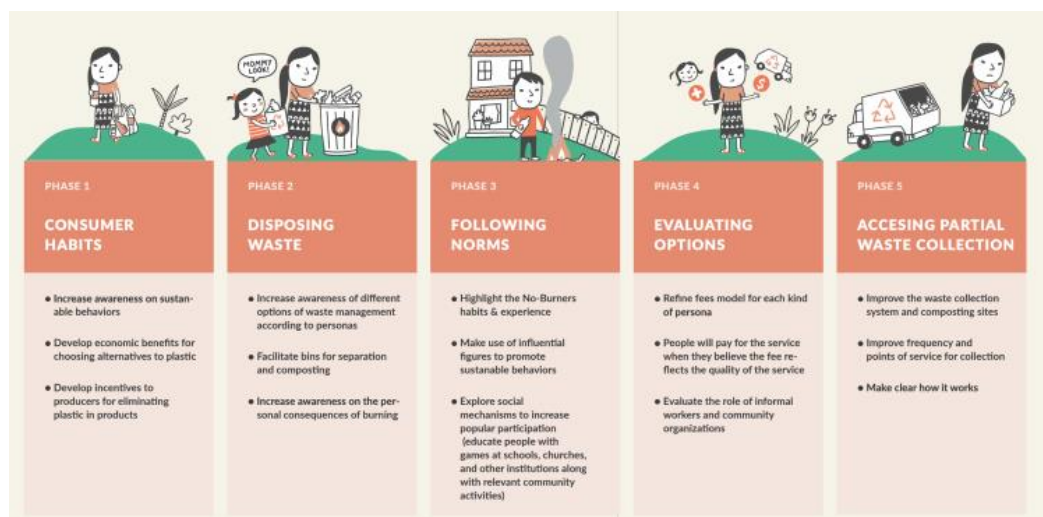


Figure 5 Recommendations photo by world bank blogs

In my opinion, we can solve our country's waste problem by taking basic actions that everyone can comprehend. First, we must inform people about the problem and educate them how to improve. This includes discussing how dumping rubbish in the wrong locations may pollute our environment and threaten our health. Following that, we must ensure that everyone can afford to have their waste taken up. Some individuals are now unable to pay for this service, therefore they dispose of their garbage in locations where it should not be. To address this, we may encourage businesses to assist with trash collection and create jobs. More of our rubbish will wind up in the correct locations this way.

Recycling items such as plastic, paper, and glass is also a good idea. Recycling implies reusing old materials to create new ones, which is beneficial for the environment. The government may impose rules to ensure that we recycle, and if people do not obey the guidelines, they may be fined. The government may also help enterprises that are environmentally friendly and employ recyclable materials. To improve our waste management, we may collaborate with other nations and organizations that have prior expertise. They can provide us good ideas and guide us in the proper direction. It's also critical to engage our communities and get everyone involved in keeping our areas clean and recycling. Finally, we should maintain track of our progress. We need to gather garbage data to assess if we're becoming better at handling it. This will let us know if our strategy is working.

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