



## Partnership Ready Cambodia: Waste management

### Current situation

Rapid economic and urban development, coupled with a growing middle-class, has had a significant impact on waste generation, particularly in Cambodia's larger cities. There are challenges at each stage of waste management: collection, disposal and recycling, and inefficiencies within the sector have already caused several health and environmental problems, including increasing air and water pollution. At the same time, waste collection and management is increasingly recognised as a major issue that needs to be addressed – particularly in the major cities of Phnom Penh, Battambang, Siem Reap and Sihanoukville.

The Cambodian Government decided to decentralise the operational tasks of waste management to local levels in 1999, but some local authorities are still unaware of all of their duties and struggle to fulfil their role in waste management. In the major cities, private companies operate the waste collection and transport

services. However, some towns still do not have any waste management services at all. Besides, most municipalities do not have the financial resources or land available to invest in appropriate landfill sites. The lack of qualified staff within existing waste management operators is also a barrier. As a result, all too often households and local businesses manage their own waste by burning rubbish or by disposing it of in public spaces, waterways and vacant areas. The lack of education, particularly in rural areas where the population can be illiterate, makes the challenge of changing behaviours even more difficult. Recognising this looming problem, local authorities are implementing several initiatives to raise awareness, although most are still at an early stage. Some municipalities have introduced a loudspeaker system to inform households about the environmental and health risks of dumping waste along the roadside; others, such as in the coastal town of Kep, have installed billboards.

Municipal Solid Waste (MSW) in Phnom Penh amounts to 4.09 million t/year; MSW per capita is 0.73 kg/day. It is treated in three ways: landfill, recycling and incineration. Most of Cambodia's landfill sites are open dumps without any specific management system.





In Phnom Penh, 83.3% of the waste is disposed at Dangkor landfill that is managed directly by Phnom Penh Capital Administration (PPCA). The Ministry of Environment (MoE) is now considering the implementation of a new dumpsite. CINTRI is currently the primary waste collection and transportation company in Phnom Penh. In 2002, it obtained a 49-year contract with PPCA. There is still vast unmet demand: 99 out of the 277 urban poor communities in Phnom Penh (35.7%) still have no waste management services. In October 2019, the Cambodian Government declared to reform waste collection in the city. The city will be divided into operational zones. Waste collection and transportation will be provided by several companies.

After Phnom Penh, Battambang – the second largest Cambodian city – generates 126 tonnes per day. The United Nations Industrial Development Organization (UNIDO) and the Global Green Growth Institute have signed a technical cooperation agreement to improve waste recycling. In addition, Battambang has been selected by the MoE as the first province to launch its plastic reduction campaign.

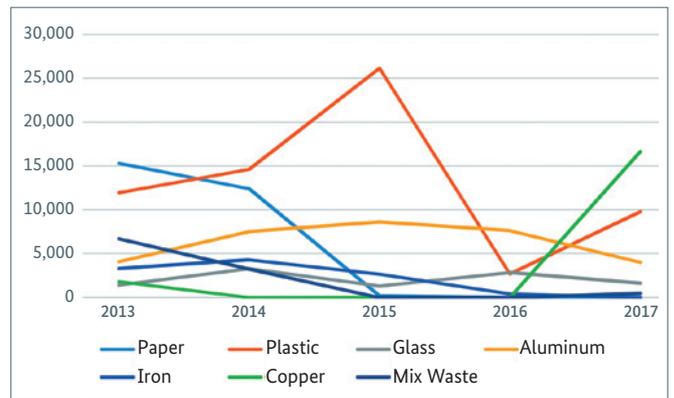
In Phnom Penh, CINTRI has an agreement with Electricité du Cambodge (EDC) to include the collection fee on electricity bills. In other cities, waste companies have difficulty collecting payments directly from households. According to the World Bank, the collection fee system does not allow subcontractors to develop effective waste treatment initiatives since it does not cover operational costs. Another problem is that EDC's purchase

price per kWh is too low (around US\$ 0.07/kWh) and does not cover the estimated operational cost of waste to energy plants.

The recycling sector remains largely underdeveloped. Currently, more than 3,000 informal waste collectors roam the streets of Phnom Penh gathering recyclable materials. Limited data are available on recycling in Cambodia since a large quantity of waste collected is exported to Thailand and Vietnam due to the lack of domestic recycling infrastructure. Only a few local NGOs currently process waste by recycling and just two composting facilities are known to operate in Phnom Penh. Due to a lack of financial incentives, private sector initiatives remain limited.

**Amount of Recyclable Solid Waste Exported (tonnes/year)**

Source: Phnom Penh Capital Administration. (2018). Phnom Penh Waste Management Strategy and Action Plan 2018-2035.





## Managing waste in different sectors

### → CONSTRUCTION AND DEMOLITION WASTE (C&D)

The construction sector is an important pillar of the Cambodian economy and continues to grow. Effective management of construction and demolition waste (C&D) is still developing. Some waste is collected, treated and disposed of by the informal sector on a contractual basis, some is sold to buyers for reuse (soil, rubble and rock), while other waste is dumped on open land or in remote public areas.

### → INDUSTRIAL WASTE

Industrial waste is increasing because of the rapid development of the industrial sector. In Phnom Penh and Kandal Province, the private company Sarom Trading – which was granted a licence to operate by MoE in 2002 – collects, transports and disposes of industrial waste. The company has its own disposal sites. In a promising development, the Phnom Penh Special Economic Zone (PPSEZ) has implemented a joint venture with the Japanese company GOMI to create an alternative to Sarom Trading. Outside of Phnom Penh and Kandal Province, factories subcontract local companies to manage their industrial waste; however, these companies are unlikely to have the capacity to provide high quality services. The waste is rarely treated and is often mixed with other types of waste at the final disposal site.

### → HAZARDOUS WASTE

Hazardous waste generation is increasing along with the growth of the industrial sector and the consumption of goods that contain hazardous substances. Hazardous waste is only collected, transported and disposed of in Phnom Penh and Kandal Province, where the service is provided by Sarom Trading. In the rest of the country, no specific company or public body currently operates to collect and transport general waste. As a result, it is often mixed with industrial and municipal waste. Many factories do not conduct proactive waste segregation at source, and hazardous waste therefore often ends up in open dump sites.

### → MEDICAL WASTE

The amount of medical waste is increasing as the healthcare sector expands, especially in Phnom Penh where healthcare services are concentrated, and where around 40 tonnes of medical waste are generated each month. Medical waste is often mixed with general waste, which leads it to end up in municipal landfill sites. A Medical Waste Management Unit (MWMU) was established in Phnom Penh and is handled by the Cambodian Red Cross. Today, despite implementation of the MWMU, many medical facilities do not follow correct procedures to separate medical waste, and as with hazardous waste, it often ends up being treated the same as other waste. Some hospitals have set up in-house incinerators, though facilities with fewer resources tend to either burn their waste without respecting appropriate protocols or continue to mix medical waste with general waste.

### → E-WASTE

The development of the Cambodian consumer economy has led to a significant increase in e-waste; particularly TVs, PCs, refrigerators, air conditioners and washing machines. An informal network of waste pickers plays an important role in collecting recyclable materials from e-waste. Valuable waste components are collected and exported, often from open dump sites, whereas non valuable waste is disposed in landfills.



## Policy and regulation

Cambodia's Law on Environmental Protection and Natural Resource Management (1996) tasked the MoE as the leading agency for formulating policies, issuing regulations and coordinating waste management and pollution control actions. In 2008, the MoE developed Cambodia's interpretation of the 3R (reduce, reuse, recycle) strategy, supported by the United Nations Environment Programme.

Several regulations, guidelines and initiatives have been developed over the past two decades. However, the lack of monitoring and implementation capacities remains the major challenge.

According to current regulations, municipalities and provinces are responsible for collecting, transporting and disposing of waste. Sub-Decree No. 36 on Solid Waste Management, from 1999, stipulates that the collection, transportation, recycling, minimisation and dumping of waste in provinces and cities is the responsibility of provincial and city authorities. Sub-Decree No. 113 on Management of Garbage and Solid Waste of Downtowns from 2015 confirms this administrative organisational structure. The

provincial level used to oversee solid municipal waste management but due to its range of responsibilities, the Cambodian Government was encouraged to fully involve the municipalities.

Sub-Decree No. 16 on Electrical and Electronic Equipment Waste Management was implemented in 2016 to prevent the disposal of e-waste into rivers or dumps by stipulating penalties for individuals and businesses.

The MoE introduced Sub-Decree No. 138 on the Management of Plastic Bags in 2017 requiring supermarkets and shopping malls to charge customers 400 riels (about US\$ 0.10) per bag. The goal is to change people's behaviour; distribution of plastic bags by supermarkets has been reduced by 30% as a result. The MoE has also considered introducing a complete ban on plastic bags, but acknowledges that implementing it would be extremely difficult.

A new sub-decree to regulate single-use plastics and foam containers is currently being formulated by the MoE, with the support of the United Nations Development Programme, the World Bank and the National Waste Management taskforce. The new regulation aims to reduce the use of plastic bags, straws and styrofoam containers, to find a sustainable alternative to single-use plastics and to raise people's awareness on the subject.



Currently, no laws or policies specifically target C&D waste. However, Sub-Decree No. 113 (2015) on Urban Solid Waste Management mentions how C&D waste should be treated and disposed of. Recognising the current gap in legislation, the MoE is supporting an initiative that will develop C&D waste treatment in Sihanoukville, and aims to identify and eventually disseminate best practices. A clause in the Sub-Decree stipulates the responsibilities of C&D waste generators with respect to effective transportation and disposal. The generators can choose to subcontract or perform these tasks themselves.

The use of economic incentives and self-regulation instruments have so far not been implemented to any significant degree. Many factories have no internal policy on waste management. There are no specific incentives available for companies that wish to develop initiatives to implement the 3R strategy.

Sub-Decree No. 124 on Tax Incentives for Small and Medium-Sized Enterprises operating in defined priority sectors came into effect in October 2018. Waste processing for the tourism sector is one of the priorities. The authorities have also established a list of supplies that are exempt from value-added tax, in line with the 2017 Law on Financial Management. The term 'supplies' refers to both services and goods.

### Best Practice

#### Rubbish management instead of littering in Leuk Daek District

For many years, villagers have polluted the district's environment with rubbish due to a lack of a well-functioning waste collection system. While some citizens do not care about the district's environment and do not mind disposing of their waste in public spaces, others complain about the smell and rubbish in their neighbourhood which affects living conditions and their well-being.

A waste management strategy and related activities have been developed with financial support and technical advice from the EU-funded Project for Decentralisation and Administrative Reform, implemented by GIZ. These activities include awareness-raising campaigns for sustainable waste management in private households and public spaces, installing signboards and rubbish bins in selected communes in the district (particularly in market areas) to avoid littering.

## Business opportunities

Cambodia's tremendous backlog demand in waste management offers a huge range of business opportunities. Germany is regarded as an international leader in successful waste management and recycling. Several German companies already operate businesses in the waste management sector in South-East Asia.

Ambitious objectives, such as the implementation of the 3Rs principle, and the associated efforts need process know-how and modern, solid equipment for virtually all areas and stages of disposal: From waste collection to sorting, treatment and disposal of waste (with either biological, physical or thermal methods), the reduction of landfill and the establishment of formal recycling structures, from emission protection, landfill monitoring and aftercare. This opens business opportunities for both German planning and consulting agencies as well as technology and equipment suppliers. However, there is relatively strong competition especially from suppliers in the region, such as from Japan and Korea.

Business opportunities are also opened up by development cooperation initiatives of major development banks such as the World Bank and Asian Development Bank (ADB), for instance ADB's Second Greater Mekong Subregion Tourism Infrastructure for Inclusive Growth Project or the World Bank Solid Waste and Plastic Management Improvement Project. In areas where German companies have a key technological position, they also hold an important position in Cambodian tenders.

Specific opportunities lie in the following areas:

### → WASTE TO ENERGY

Germany has developed facilities to produce electricity from waste to the extent that Germany imports waste to supply fuel to plants. Shandong Wangeng Energy Technology Co., LTD, a Chinese investment company, held talks with high-level officials to build a recycling plant in Phnom Penh while another Chinese company met with the MoE regarding plans for plants in Sihanoukville and Siem Reap. This recycling process has recently been encouraged by the highest authority of the Cambodian Government. However, due to recent developments involving waste imports, the approval of any investment will be conditional on processing domestic waste only. The business environment can evolve quickly to encourage foreign investment. It is strongly recommended that companies in this sector closely monitor all relevant developments.



### → INDUSTRIAL WASTE MANAGEMENT

The Phnom Penh Special Economic Zone (PPSEZ) and international garment brands have expressed their concerns about inappropriate treatment and disposal of their products. Opportunities lie in industrial waste collection and transportation services.

### → RECYCLING OF ORGANIC WASTE BY COMPOSTING

Only two composting facilities are known to operate in Phnom Penh, the NGO Community Sanitation and Recycling Organization (CSARO), and TwinAgri, a company from Singapore. Urban organic waste in Cambodia could be utilised for animal feed, composting and as fertiliser. Considering the cost of available technologies, composting is more appropriate than anaerobic digestion. Due to the lack of financial incentives, private sector initiatives remain limited. The hospitality sector is likely to be interested in these services if a company could collect their organic waste to supply a composting plant. If companies implemented waste selection processes at source and paid collection fees, conditions for profitability could be met.

### → LOGISTICS FOR SPECIFIC WASTE TYPES

Opportunities exist for German companies to provide logistic services for companies processing forms of waste. Several projects are being developed to profitably recycle or process certain types of waste, though these companies do not have the expertise or vehicles required for collection and transportation. For example, at the PPSEZ, Chip Mong Insee is planning to collect the waste generated by nearby garment manufactories to supply kilns at its cement plant in Kampot. The company expressed interest in subcontracting the relevant logistics to a reliable foreign firm. Chip Mong Insee is expecting the amount of waste collected to increase as reuse of this waste has been successful in other countries such as Thailand and Sri Lanka. As another example, GOMI will recycle plastic waste at the PPSEZ by the end of 2019. Recognising the amount of plastic waste generated in Phnom Penh by households and businesses, GOMI could (and is expected to) consider expanding its activities outside the PPSEZ.

### → PLASTIC WASTE RECYCLING

Initiatives to recycle plastic are still limited in Cambodia. In the informal sector, plastic waste is collected by waste pickers who collect plastic bottles and cardboards. This waste is sold to middlemen and is then exported to Thailand and Vietnam. However, Thailand will ban plastic waste importation in 2020 while Vietnam will implement a similar ban in 2025. As a result, large quantities of plastic waste will remain in Cambodia and will affect the environment if not treated appropriately. A German company specialised in plastic could quickly develop its activities here since there is almost no competition; many informal waste pickers could operate at the beginning of the supply chain since most households and businesses do not segregate at source. In Battambang, COMPED – a Cambodian NGO – is currently collecting plastic waste from the river, with a small catamaran financed by a German organisation, One Earth – One Ocean. The plastic waste will be recycled into granules for export. Considering the large quantity of plastic waste currently disposed of in Cambodia, there is space for other German companies to operate across the chain of recycling processes.

### → HAZARDOUS, MEDICAL AND E-WASTE RECYCLING

A German company specialised in hazardous, medical and e-waste recycling could quickly develop its activities here since there is little competition.



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**Practical information and sources:**

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The booklet shows companies the economic potential of future markets as well as the funding and consulting opportunities offered by the German development cooperation. “New Markets - New Opportunities: A Guide for German Companies” is supported by the Federal Ministry for Economic Cooperation and Development (BMZ). All issues are published on the websites of GTAI and GIZ. You can find selected issues, for example on Cambodia also at

[www.bmz.de/ez-scouts](http://www.bmz.de/ez-scouts).



Published by:



In Cooperation with:



Published by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Registered offices  
Bonn and Eschborn, Germany

Dag-Hammarskjöld-Weg 1-5  
65760 Eschborn, Germany  
T +49 6196 79-0  
F +49 6196 79-11 15  
info@giz.de  
www.giz.de

Project Global Business Network (GBN) Programme

Author EuroCham Cambodia  
T +855 023 964 141  
info@eurocham-cambodia.org

Layout [www.w4gestaltung.de](http://www.w4gestaltung.de)

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As at Eschborn, November 2019

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Berlin



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