

# **Ulaanbaatar Waste Management Improvement Strategy and Action Plan**

**• 2017–2030 •**





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## Abbreviations

<b>ADB</b>	Asian Development Bank	<b>MH</b>	Ministry of Health
<b>AIT RRC.AP</b>	Asian Institute of Technology Regional Resource Centre for Asia and the Pacific	<b>MMHI</b>	Ministry of Mining and Heavy Industry
<b>C&amp;D</b>	Construction and demolition	<b>MNRA</b>	Mongolian National Recycling Association
<b>CB</b>	City budget	<b>MRTD</b>	Ministry of Road and Transportation Development
<b>CRKh</b>	Citizen's representatives Khural	<b>MSMEs</b>	Micro, small and medium enterprises
<b>DB</b>	District budget	<b>NB</b>	National budget
<b>DG</b>	District governor	<b>NGDP</b>	National Green Development Policy
<b>EPCRC</b>	Economic Policy and Competitiveness Research Centre	<b>NGO</b>	Non-governmental organization
<b>GDP</b>	Gross domestic product	<b>ODA</b>	Office Development Assistance
<b>GDSAP</b>	Green Development Strategic Action Plan	<b>PLCD</b>	Product life cycle diagram
<b>GHG</b>	Greenhouse gas	<b>PPP</b>	Public-private partnership
<b>GoM</b>	Government of Mongolia	<b>PS</b>	Public service
<b>Great Khural</b>	KhG	<b>SB</b>	State budget
<b>IETC</b>	International Environmental Technology Centre	<b>SGKh</b>	State Great Khural
<b>IO</b>	International organization	<b>SMEs</b>	Small- and medium-scale enterprises
<b>ISWM</b>	Integrated solid waste management	<b>SWOT</b>	Strengths, weaknesses, opportunities and threats
<b>JICA</b>	Japanese International Cooperation Agency	<b>SWM</b>	Sustainable waste management
<b>MCUD</b>	Ministry of Construction and Urban Development	<b>UWMISAP</b>	Ulaanbaatar Waste Management Improvement Strategy and Action Plan – 2017-2030
<b>MD</b>	Ministry of Defence	<b>UCM</b>	Ulaanbaatar City Municipality
<b>MECSS</b>	Ministry of Education, Culture, Science and Sport	<b>UN</b>	United Nations
<b>MEGDT</b>	Ministry of Environment, Green Development and Tourism	<b>WIS</b>	Waste information system
<b>MET</b>	Ministry of Environment and Tourism		
<b>MFALI</b>	Ministry of Food, Agriculture and Light Industry		

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## Foreword

Waste management improvements, waste reduction and the creation of a clean and healthy The Ulaanbaatar City Municipality envisions and aims to make the Mongolian capital a vibrant, green and livable city. Substantial efforts have been made to improve the environmental quality of the city through various policies and initiatives such as the Green Development Strategic Action Plan for Ulaanbaatar 2020 and the Ulaanbaatar 2020 Master Plan, among others. Significantly, these master plans recognize the importance of waste management as an integral component of a clean and green city.

Yet, numerous challenges remain in terms of air, water and soil pollution linked to improper waste handling in the city. While serious efforts are under way to address these issues, the absence of a dedicated guidance document outlining the objectives and corresponding action plans to achieve sustainable waste management goals and targets was felt.

Ulaanbaatar welcomes the timely development of this Ulaanbaatar Waste Management Improvement Strategy and Action Plan – 2017-2030 to provide a clear vision and guide Ulaanbaatar in dealing with – and remaining at the forefront of – sustainable waste management. This working document outlines the strategic objectives and an action plan for translating those objectives into results, while supporting the city administration’s vision to create a healthy and safe living environment.

The Ulaanbaatar City, Mongolia Mayor’s Office wishes to extend its gratitude to the UN Environment International Environment Technology Centre for its generous financial and technical contribution towards the development of the Ulaanbaatar Waste Management Improvement Strategy and Action Plan – 2017-2030, and to the successful partnership with the Asian Institute of Technology Regional Resource Centre for Asia and the Pacific.

Ulaanbaatar City, Mongolia Mayor’s Office



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## Executive Summary

Waste management has become a major issue in Mongolia due to increased population growth, Solid waste management is one of the greatest challenges faced by Ulaanbaatar, a city that is home to 1.3 million people, almost half of Mongolia's population – and also its economic hub. The rapid rate of urbanization and economic development has, however, given rise to significant negative impacts on the environment, thus challenging the liveability of this vibrant city. Ulaanbaatar generates nearly 1.1 million tonnes per year of municipal solid waste from apartments (in *gers*<sup>1</sup> almost 43 per cent of waste originates from households), roads and public spaces, businesses and government premises.

Waste is disposed in three dumping sites out of which only one meets the criteria of a sanitary landfill. Recycling and recovery of solid waste is minimal. Open dumping and open burning of waste is causing soil, water, and air pollution. Thus, there is a need to develop better ways of managing waste. In this context, the Ulaanbaatar Waste Management Improvement Strategy and Action Plan – 2017-2030 (UWMISAP) is expected to serve as a critical guiding document to set the direction for sustainable waste management.

The Ministry of Environment and Tourism identified a national consultant to draft the UWMISAP in close coordination with the Ulaanbaatar City Municipality (UCM) and other independent waste experts. The strategy and action plan was further developed through a process of extensive consultation with key stakeholders, including national-level workshops. Feedback received after each consultative exercise has been incorporated into the document.

The UWMISAP provides a strategic vision and direction for sustainable waste management from 2017 until 2030. In order to implement the strategy and achieve its set objectives, the document lays out priority actions for the short- and long-term. The key goals of the UWMISAP are to:

1. Develop waste services in the city using innovative ideas and technologies;
2. Improve public awareness and change mind-sets, so that waste is no longer disposed in unpermitted areas; and
3. Contribute – more generally – to the green development of the city.

The strategic objectives presented in this document are consistent with existing regional and city development plans and the master plan. In general, the objectives and activities proposed in this document fall under the following categories:

- Strengthen legal framework, institutions, infrastructure, and financial mechanisms that create an enabling environment to improve waste management;
- Introduce proper prevention, reduce, reuse, recycle, recovery and disposal as per the solid waste management hierarchy;
- Work together with all key stakeholders to develop the required human, technical, and capital resources through proper training, education, and awareness to facilitate and encourage efficient implementation of the UWMISAP.

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<sup>1</sup> *Gers*, also known as *yurts*, are round tents often made of skin where former herders live, mostly on the outskirts of cities, without piped water, sanitation or basic infrastructure.

The document lays out strategic objectives and specific actions under each objective for the following integrated solid waste management (ISWM) components:

1. Policy and legislation;
2. Sustainable financing;
3. Capacity building and awareness;
4. Waste management hierarchy, including reduce, reuse, and recycle (3Rs); and
5. Hazardous waste management.

The UWMISAP is divided into five chapters. The first chapter provides a background for the need for a city waste management strategy for Ulaanbaatar and outlines the process of developing a strategy and action plan. The existing situation of Ulaanbaatar's solid waste generation as well as waste handling and legal framework are discussed in Chapter 2. Based on the baseline information provided in Chapter 2, a list of strategies to fill existing gaps and tap potential opportunities is described in Chapter 3. Chapter 4 presents specific actions to be accomplished under each strategic objective. Chapter 5 concludes with arrangements for implementing and monitoring the UWMISAP.





# 1

## INTRODUCTION

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### Background and Need for a Waste Management Strategy and Action Plan

Population growth, urbanization and industrialization have led to a substantial increase in both volume and types of waste in Ulaanbaatar. Extensive imports of consumer products such as second-hand cars, car parts, lubricants and tyres as well as electrical appliances are adding up and represent new and emerging waste streams in the city. Furthermore, massive growth in the construction sector is generating an ever-increasing quantity of construction and demolition (C&D) waste.

Approximately 1.1 million tonnes of solid waste are generated in the Mongolian capital each year. The majority of this waste is dumped in three disposal grounds, only one of which is categorised as a sanitary landfill. Waste segregation, collection, transportation, material recycling and energy recovery are all gaps in the city's waste management value chain. Improper handling of waste is, therefore, challenging the environment and public health of the city.

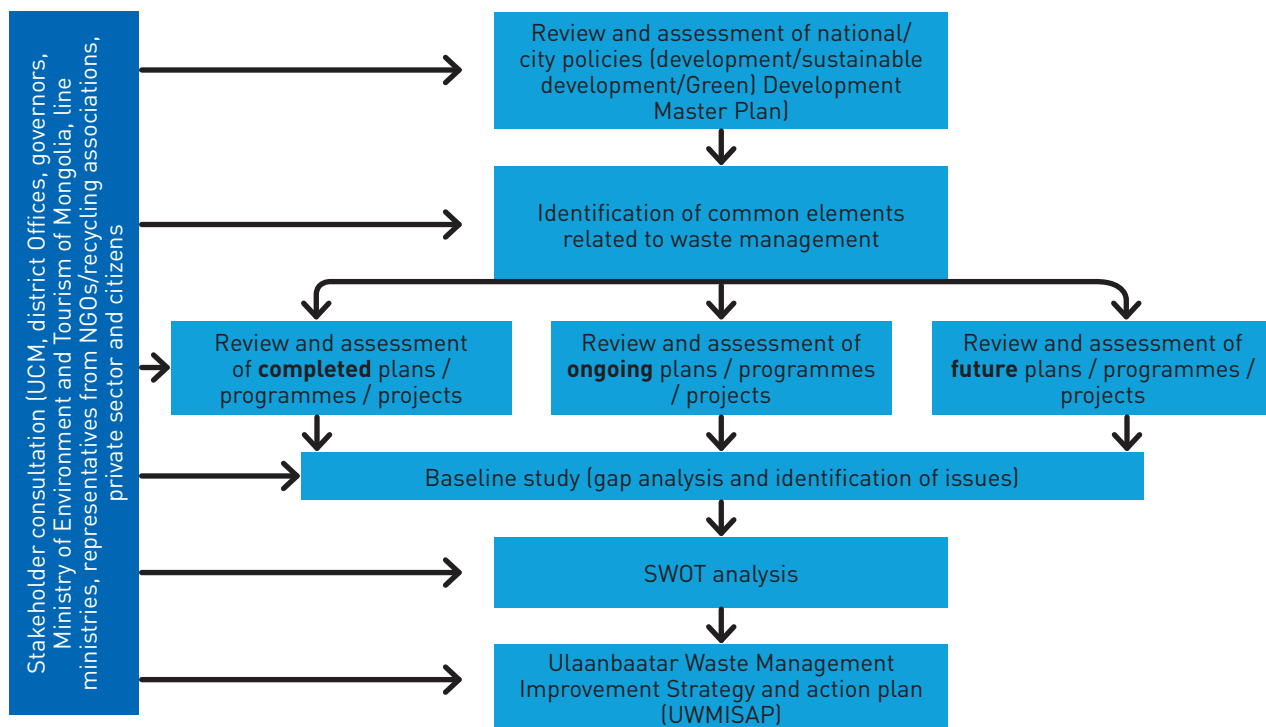
In Ulaanbaatar, waste has been identified as one of the challenges for the realization of the green development pathway chosen by Mongolia. According to the National Green Development Policy 2014 (NGDP), "green development" refers to a pattern of development that reduces poverty while preserving the environment. This inclusive economic model enables the efficient use of resources with an emphasis on waste reduction, supports ecosystem services and lowers greenhouse gas (GHG) emissions. Originating from the NGDP, the city has further developed the Green Development Strategic Action Plan (GDSAP) for Ulaanbaatar 2020.



**Table 1 Relevant policies and programmes linked to Ulaanbaatar’s green development**

Policies and Programmes	Link to Waste Management	Vision/Goals/Strategic Actions/ Targets/Indicators
<b>Green Development Strategic Action Plan for Ulaanbaatar 2020</b> , <sup>2</sup> adopted on 23 March 2016 <sup>3</sup>	Improved solid waste management is one of the seven challenges identified by the working groups. It is interconnected with other green goals.	Improved solid waste management through: <ul style="list-style-type: none"> <li>› Expanding formal recycling</li> <li>› Proper disposal of hazardous waste</li> <li>› Development of recycling options for specific materials</li> <li>› Raising public awareness</li> </ul>
<b>Ulaanbaatar 2020 Master Plan, Development Approaches for 2030</b> <sup>4</sup>  The Master Plan 2030, which was approved for implementation by the State Great Khural in 2013, sets out the design and spatial strategies for the long-term development of the city.	The Master Plan identifies implementation of ISWM as one of integral parts of the city development plan to ensure sustainable development, minimization of environmental impacts, and appropriate use of recyclable materials, as well as the elimination of public and environmental health hazards.	The processes involved in integrated waste management include recycling, reprocessing, transportation, efficient disposal, appropriate disposal of safe hazardous waste and regulated reuse and recycling of appropriately reprocessed hazardous waste under professional guidance. Local collection areas will be built in the <i>khoroos</i> to collect, sort and compact waste in accordance with a schedule and sent to sub-centre recycling facilities. <ul style="list-style-type: none"> <li>› Collected waste from the local collection areas will be brought to recycling facilities of city sub-centres and prepared for central waste processing. These centres will have small-scale waste processing capacities.</li> <li>› A central waste processing facility located at Naran will process waste at high-temperatures to extract bio-gas and fertilizers. The facility will be in compliance with international standards for smoke-free, odourless and environmental-friendly waste disposal practices.</li> </ul>
<b>General Development Plan of Ulaanbaatar City for 2016-2020</b> <sup>5</sup>	Following the seventh regular State Great Khural (Parliament) elections, the newly-formed GoM is implementing its Action Programme for the period 2016-2020, reflecting Mongolia’s Sustainable Development Vision 2030.	Waste management improvement has been listed as one of the measures to be taken with regard to green growth. It aims to protect the environment and human health; reduce air, water and soil pollution and implement appropriate waste management in cities.
<b>Ulaanbaatar Waste Management Improvement Programme from 2013-2016 [Ordinance No. 13]</b>	This programme is focused on the use of proper trash bags for the classification of waste, cleaning of public spaces, the establishment of a manufacturing plant for the reprocessing of construction waste and many other activities.	The UCM started implementing waste segregation at source in October 2013, by distributing 15 garbage bags (65*45 cm for apartments and 75*45 cm for <i>gers</i> ) every month to households.
<b>Ulaanbaatar Mayor’s Four-year Roadmap</b>	This action plan was approved by the City Mayor until 2020. Ulaanbaatar’s action plan was developed based on the current economic and social situation with a view to its future prospects. By implementing the plan, Ulaanbaatar will improve waste management in all districts.	Within the framework of this 4-year action plan, the actions which are required are: <ul style="list-style-type: none"> <li>› For ISWM, waste collection, transportation, segregation and treatment will be implemented in all districts</li> <li>› Establish ecopark</li> <li>› Clean waste scattered in trenches and ravines in the city</li> <li>› Improve operation of landfill and waste disposal area, cleaning of public areas</li> </ul>
<b>Ulaanbaatar Economic Development Strategy</b> <sup>6</sup> (adopted on 30 April 2015)	Mid- to long-term objectives to transform Ulaanbaatar into a green development-based city, which ensures safe and reliable livelihoods and liveability conditions	Bringing urban development to a new level, solving problems faced in urban development, defining a new economic policy and improving residents’ livelihoods within the framework of the Revision of the Development Plan of Ulaanbaatar until 2020 and the Development Trend 2030

**Figure 1** Process flow of approach and methodology to formulate the UWMISAP



The development of the UWMISAP is consistent with the existing policy framework, including master plans. A summary of the relevant policies and strategic objectives that provide a guiding framework for Ulaanbaatar to become a clean, green and healthy city are summarized in Table 1.

In order to operationalize the green development agenda in which waste management is one of the key components, the formulation of the UWMISAP is a natural course of action. Furthermore, the UWMISAP is timely, given that Mongolia has recently revised the Law on Waste (2012) to the new Law on Waste (2017), which was endorsed by the Parliament and passed on 12 May 2017.

Realizing this need, the UWMISAP has been developed to improve waste management in Ulaanbaatar. It will be in accordance with the legal requirements, projects and programmes set forth in existing city development plans in order

to reduce the impact of environmental pollution and waste on human health.

### Strategy and Action Plan Development Process

This strategy and action plan was developed through a consultative process. A project team consisting of a national consultant recommended by the Ministry of Environment and Tourism (MET), a focal point from the MET, a team from the UN Environment International Environmental Technology Centre (IETC) and the Asian Institute of Technology Regional Resource Centre for Asia and the Pacific (AIT RRC.AP) worked on the framework of the strategy.

The national consultant coordinated with all relevant stakeholders, including the Ulaanbaatar City, Mongolia Mayor's Office, and incorporated the existing policy framework and strategic objectives summarized in Table 1 for this UWMISAP. Further, the strategy document was developed

2 British Embassy Ulaanbaatar & The Asia Foundation. 2015.

3 Available at <http://baigal.ub.gov.mn/wp-content/uploads/NITKHTT41.pdf>.

4 The Asia Foundation, Government of Australia – Department of Foreign Affairs and Trade and Trade Australian Aid Program. 2014.

5 Government of Mongolia. 2016a.

6 Ulaanbaatar Economic Development Department. 2015.

in accordance with UNEP-UNITAR Guidelines for National Waste Management Strategies.<sup>7</sup>

A stepwise approach was used to formulate this Strategy and is shown in Figure 1 and described in detail.

*Step 1:* Review and assessment of national/city policies (development/sustainable development/green development master plans);

*Step 2:* Identify common elements related to waste management;

*Step 3:* Review and assessment of completed, ongoing and future plans/programmes/projects. The UWMISAP serves to combine previous, ongoing and planned waste management strategy improvements that cater to projects and programmes with an aim to implement them based on effective policy documents. This, in turn, will ensure the achievement of the vision of having a clean and green environment;

*Step 4:* Undertake a baseline study for gap analysis and identification of challenges/issues conducted by AIT RRC.AP in partnership with the UN Environment IETC. The baseline study identifies gaps and waste-related issues requiring immediate solutions;

*Step 5:* Undertake a strengths, weaknesses, opportunities and threats (SWOT) analysis; and

*Step 6:* Develop a strategy and action plan, which encompasses the issues, challenges and barriers

to the implementation and enforcement of proper waste management in the country.

The UWMISAP enables an integration of previous, ongoing, and planned urban waste management improvement projects and programmes so that they may be effectively implemented. This, in turn, will ensure the achievement of a vision for a zero-waste green city. The scope of this document is limited to domestic waste and new and emerging wastes in Ulaanbaatar, such as e-waste and C&D waste. The time frame for the implementation of the strategy and action plan is from 2017 to 2030. The implementation of the UWMISAP is expected to be evaluated and monitored on an annual basis to decide whether further improvements are needed.

The content of the UWMISAP incorporates feedback received during national workshops. The final document will be forwarded to the Ulaanbaatar City Municipality (UCM), the key implementer of the strategy, for its approval and implementation.

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## Structure of the Strategy and Action Plan

The UWMISAP has been organized into five chapters. Chapter 1 provides the justification for the development of this strategy and the process of strategy development. Chapter 2 sets forth a base for the strategy and action plan by describing the existing waste management situation and system of Ulaanbaatar. Specific focus is given to the policies and legal environment pursued by the municipality, which forms the basis for the implementation of the strategy and action plan suggested in this document. Chapter 3 details the principles of the strategy, vision, objectives and expected outcomes. Chapter 4 provides the detailed action plan directed to implement the waste management strategy of Ulaanbaatar, and its budget, financial sources and responsible units/stakeholders and their capacity building needs. Chapter 5 concludes with the implementation and monitoring plan of the UWMISAP.

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<sup>7</sup> UNEP-UNITAR, 2017.



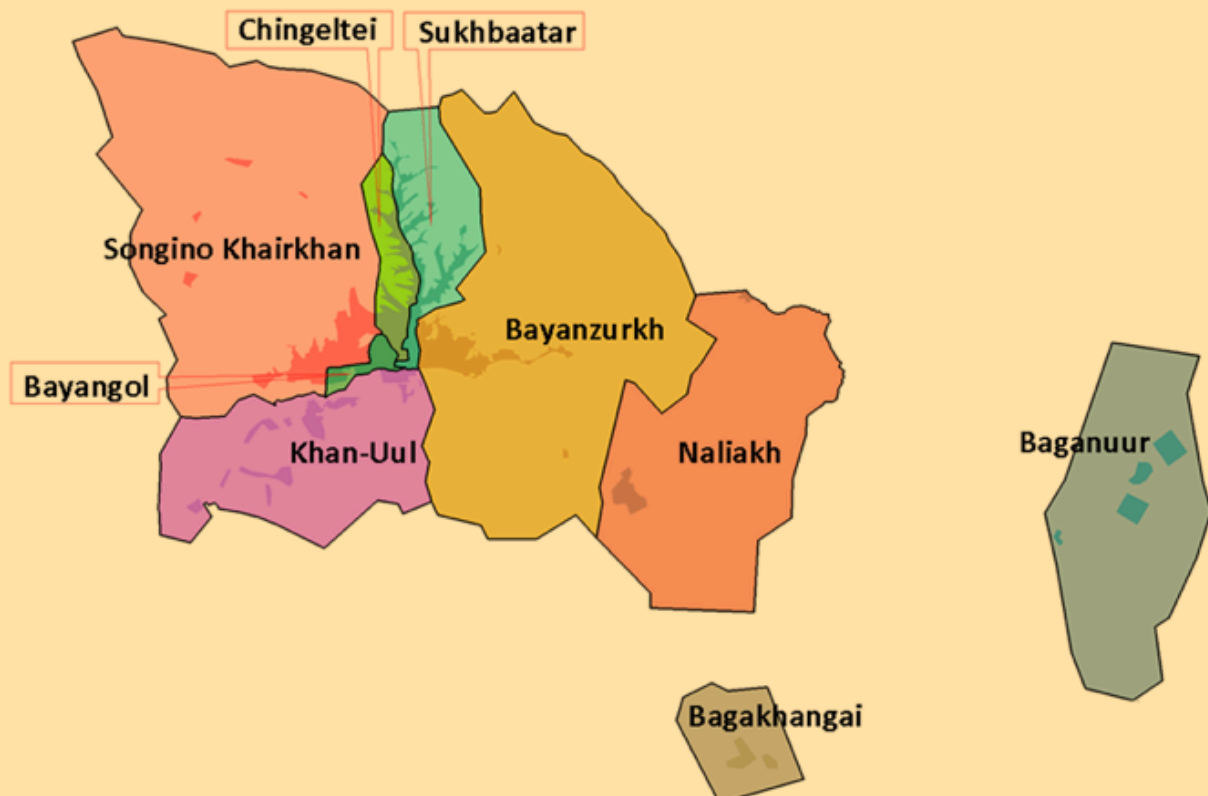


## BASELINE STUDY

### Demographic and Administrative Profile of Ulaanbaatar

Ulaanbaatar is the political, economic and cultural capital of Mongolia. It has its own territory, governance and culture. Geographically, the city is divided into nine *düüregs* or districts, namely: Baganuur, Bagakhangai, Bayangol, Bayanzurkh, Chingeltei, Khan Uul, Nalaikh, Songinokhairkhan, and Sukhbaatar, shown in Figure 2. Each district is subdivided into 121 *khoroos* or sub-districts. Each *khoroos* is further divided into *khesegs* or micro-districts.

Figure 2 Map of Ulaanbaatar, Mongolia



The capital is governed by a city council (the Citizens' representatives Khural, CRKh) of 40 members who are elected every four years. The city council appoints the mayor, who leads the municipality. The mayor sets policy and budget, ensures coordination among the districts, and controls city-wide activities. The districts or *düüregs* are each led by an elected governor and are the smallest administrative unit that avail budgets from the municipality for service improvements. *Khoroos* or sub-districts are the primary level of government that directly interact with residents.

The city has rapidly grown in size over the last three decades as a result of rural to urban migration, attracting people seeking education, employment, services and business opportunities. Currently, the city has a population of 1.3 million, almost half of the nation's 3 million population. Being at the centre of Mongolia's economic growth, the city serves as an engine of innovation, job creation and economic development. It accounts for over 60 per cent of national GDP.

The settlement pattern of Ulaanbaatar consists of two types of housing arrangements. Currently, about 40 per cent of the population of Ulaanbaatar lives in apartment buildings (planned areas) while 60 per cent live in *gers* (unplanned areas).

Rapid urbanization has had an increasingly negative impact on the environment and is one of the main causes of deteriorating living conditions in the city. Air pollution is one of the biggest problems in Ulaanbaatar, as it adversely impacts human health. The city is under heavy smoke throughout winter months due to coal burning in order to meet heating requirements. The Tuul River, which is the key source of water for the city, is heavily polluted due to discharge of untreated or poorly treated wastewater from the central treatment facility. Improper and poor waste handling system in the city compounds pollution in the city.

## Current Waste Management Scenario in Ulaanbaatar

This section briefly summarizes the profile of existing, new and emerging waste streams in Ulaanbaatar and the associated challenges with each type of waste.

### Municipal Solid Waste Statistics

UCM has undertaken a number of initiatives to improve the municipal solid waste (MSW) management system. However, it still lags behind in service delivery due to increasing waste generation associated with population growth, unplanned settlements and lack of engineering and social infrastructure that makes provision of public services to residents difficult. For these reasons, solid waste management remains a major problem in Ulaanbaatar.

In 2015, Ulaanbaatar generated about 1.1 million tonnes of MSW. The main sources of waste generation are from:

- › Apartments (15 per cent);
- › *Gers* (28 per cent);
- › Businesses and government premises (46.7 per cent); and
- › Roads and public spaces (9.8 per cent).<sup>8</sup>

Figure 3 shows MSW composition during the summer and winter seasons. The major components of solid waste include food, plastic, paper, metal, glass, textile and ash. Waste composition varies significantly depending on the season. In the winter, for instance, ash produced from heating sources accounts for 49 per cent of the total MSW generated.

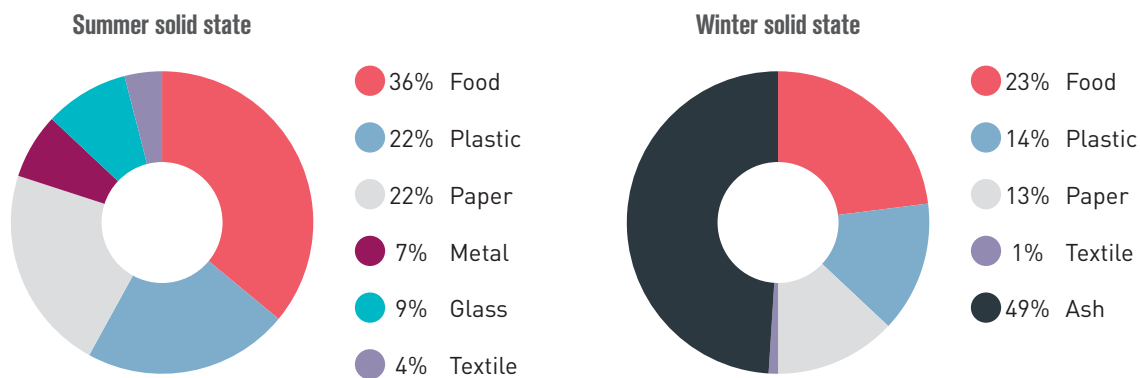
Figure 4<sup>10</sup> shows the annual average MSW composition in Ulaanbaatar. This shows the potential scope for recycling as the recyclable component, including plastic and paper, accounts for more than one-third (37 per cent) of total waste composition.

<sup>8</sup> British Embassy Ulaanbaatar & The Asia Foundation. 2015.

<sup>9</sup> British Embassy Ulaanbaatar & The Asia Foundation. 2015.

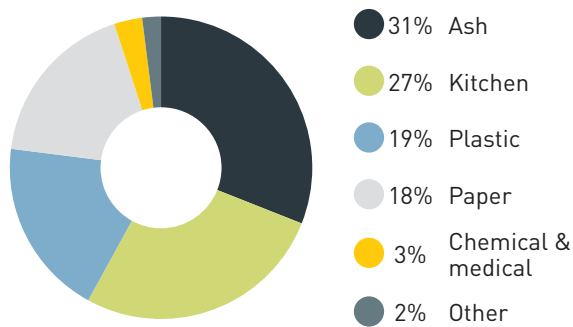
<sup>10</sup> Delgerbayar, B. 2014.

**Figure 3 Composition of solid waste in summer and winter in Ulaanbaatar<sup>9</sup>**



Source: British Embassy Ulaanbaatar & The Asia Foundation. 2015.

**Figure 4 Average annual waste composition in Ulaanbaatar**



Source: Delgerbayar B. 2014.

Besides MSW, new and emerging waste streams in Ulaanbaatar are increasing in quantity every year while the city still lacks proper recycling facilities for many of these wastes. The following sections discuss C&D, electronic, tyre, hazardous and medical wastes in more detail.

### Construction and Demolition Waste

C&D waste is a major waste stream in Mongolia. C&D waste volumes have been increasing considerably due to the booming construction industry, particularly in Ulaanbaatar. It is estimated that construction waste accounts for 20-25 per cent of overall solid waste produced in Mongolia.<sup>11</sup> Apart from new construction, the UCM is planning to demolish a considerable number of

old buildings, thus adding to the amount of C&D waste.

At present, much of this waste is dumped illegally in Ulaanbaatar. Construction companies do not have proper inventory systems to classify the different types of waste or waste separation arrangements. The Ministry of Construction and Urban Development is responsible for the C&D waste stream. There is no existing framework or regulations addressing C&D waste but a Special Inspection Agency is drafting rules and regulations for the proper management of C&D waste, encompassing all aspects from collection, transportation, treatment, and recovery to disposal. Moreover, international organizations such as the European Commission, SWITCH-Asia, and the Economic Policy and Competitiveness Research Centre (EPCRC) are supporting proper management of C&D waste and the greening of the construction industry in Mongolia.

The Greener Construction Project<sup>12</sup> is a partnership between Caritas Czech Republic, Delft University of Technology (Netherlands), Mongolian University of Science and Technology, the Mongolian National Recycling Association, and EPCRC. The project seeks to promote sustainable consumption and production patterns and behaviour in the Mongolian construction industry by mobilizing the private sector along with relevant public sector authorities to develop construction products using fly ash (from coal-fired power plants and ash from households using coal and wood for

11 SWITCH-Asia. 2016b.

12 SWITCH-Asia. 2016a.



heating) and through advocacy to facilitate the use of green construction products and practices. In cooperation with the Construction Development Centre of Mongolia’s Ministry of Construction and Urban Development, this project provided training from 2012 to 2015 to approximately 150 micro, small and medium enterprises and more than 2,000 construction workers in green construction techniques, such as using fly ash to create concrete bricks, aggregate, and dry mortar.

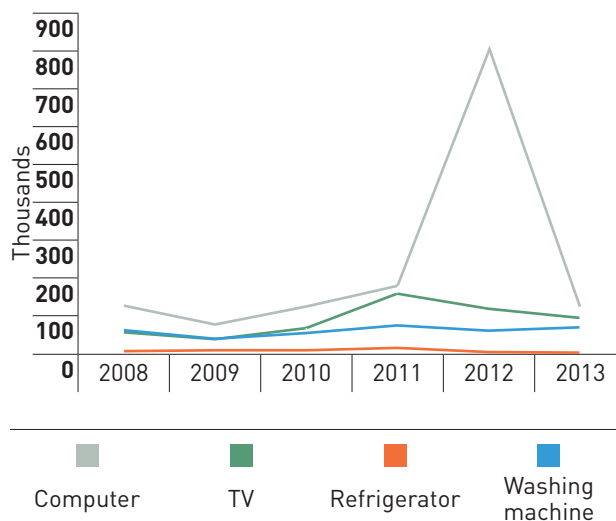
Improving resource efficiency and cleaner production through materials recovery in the Mongolian construction sector is a part of the SWITCH-Asia programme, which is funded by the European Union. The four-year project, which is due for completion in 2020, aims at greening the C&D waste supply chain from design to demolition. The project also works on developing products made from recycled materials, designing marketing strategies and providing labelling schemes to ensure quality and foster trust. In cooperation with both the Government of Mongolia (GoM) as well as large real estate developers and construction companies, the project also aims to encourage the development of new regulations that will make the industry cleaner during both the construction as well as the demolition process.

### E-Waste

Mongolia imports all its electronic products. As of 2011, the import of office equipment and electronics has risen by 28.9 per cent. Figure 5 shows the annual increase in imports of selected electronics and consumer durable products.<sup>13</sup> The majority of computers are imported from the People’s Republic of China, Singapore, the Republic of Korea and the United States.

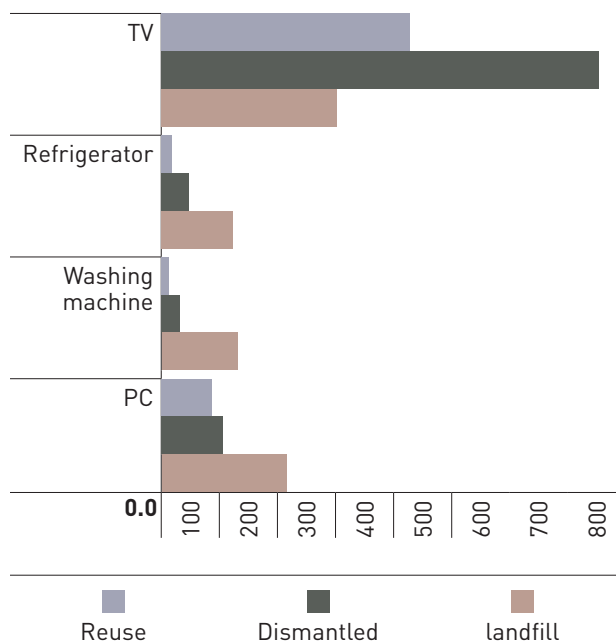
Step, an e-waste initiative of the UN based in Bonn, Germany, indicates in its country profile for Mongolia that 1.8 kg per person of e-waste was generated in 2014, which is equivalent to 5 metric kilotonnes per year.<sup>14</sup> The Japanese International Cooperation Agency (JICA) study on e-waste management in Mongolia indicates that the most preferred management option is reuse

**Figure 5** Import of electronic and consumer durable products into Mongolia from 2008 to 2013



Source: Ganjuurjav, E. and others. 2015

**Figure 6** Management of e-waste in Ulaanbaatar



Source: Korea Environment Cooperation (KECO) (2012).

(45.1 per cent), followed by disposal (31.9 per cent) and recycling (23.0 per cent).<sup>15</sup> Figure 6<sup>16</sup> shows the existing options for e-waste management in Ulaanbaatar.

13 Ganjuurjav E. and others. 2015.

14 Ganjuurjav E. and others. 2015.

15 Ganjuurjav E. and others. 2015.

16 KECO. 2012.

Current e-waste generation and management scenarios indicate that there is a need for proper policy, regulatory and management frameworks for safe and environmentally-sound collection, sorting, dismantling and recycling of e-waste in Ulaanbaatar and throughout Mongolia.

## Tyre Waste

Tyre waste is another significant emerging waste stream in Mongolia, particularly in Ulaanbaatar. In 2011, approximately 362,976 used and new tyres and 2,800 cars were imported to Mongolia. Tyre waste is valued as heating material in harsh winters by poor residents in *gers*. In a survey conducted by the Asia Sustainable and Alternative Energy Programme (ASTAE)/World Bank in 2007, it was found that some 0.2 per cent of households burn anything they can obtain to keep themselves warm, ranging from paper and twigs to plastic, used oil, tyres, and other garbage.<sup>17</sup> Such open burning of waste tyres (including plastics and other material) causes air pollution and unprecedented respiratory health hazards.

Mongolia, has recently established a waste tyre-to-oil plant. The Akhui Mandal factory located in the Bagakhangai district of Ulaanbaatar has the capacity to process 10-12 tonnes of used lubricators, 10-15 tonnes of used tyres and other waste plastics per day, and produces 7-8 tonnes of fuel a day. The waste processing plant is the first of its kind in Mongolia to produce diesel and gasoline fuels meeting the “Euro-4” emissions standard. It is estimated that this recycling factory with modern technology reduces 30 per cent of waste materials.<sup>18</sup>

## Hazardous Waste

Hazardous waste management is a major issue in Mongolia. In 2008, 10,800 tons of hazardous waste were generated in Ulaanbaatar, which is equivalent to 20-30 kg/person/year.<sup>19</sup> Although this per capita value appears low compared to the European average of 40-60 kg/person/year,<sup>20</sup>

it nevertheless represents a major challenge for Mongolia.

From the amount of hazardous waste generated in Ulaanbaatar, approximately 8,000 tons were incinerated, 1,300 tons recycled, 1,000 tons were landfilled and 500 tons were physically or chemically treated.<sup>21</sup> Based on these numbers, it is estimated that about 27,000-54,000 tons of hazardous waste are generated annually throughout the country. According to the 2014 inventory of obsolete chemicals, 369 tonnes and 69,000 litres of outdated chemicals were stored by 297 economic entities in 139 *soums* in 21 provinces. It is estimated that 55.6 per cent of these chemicals are stored at the workplace, 25.4 per cent in inappropriate storage and 2.6 per cent in open areas.<sup>22</sup>

Previously, the import, use and sales of chemicals and hazardous substances were granted to 1,704 entities. Some 231 entities obtained licenses for 302,228 tonnes of chemicals in 2013 and 325 entities obtained 360,500 tonnes of chemicals in 2014. According to the chemicals and hazardous waste inventory conducted in 2014, 250.7 tonnes and 50,584 litres of substances were stored.<sup>23</sup> About 70 organizations and entities in the nine districts of Ulaanbaatar kept 117.9 tonnes and 11,783.8 litres of chemicals and hazardous substances, which did not meet quality standards or were found to have expired. Only 14.6 per cent of the organizations storing chemicals and hazardous substances that need to be disposed have designated warehouses, while 54.9 per cent store the substances at the workplace, 25.4 per cent store them in non-designated warehouses, 2.6 per cent store openly and 1.7 per cent store in building basements.

The “Coded List and Classification of Wastes discharged at source and their category” records 832 types of wastes of which 222 are hazardous wastes, while 188 are yet to be determined if they fall in the hazardous category depending on the quantity of toxic and hazardous features and hazard category. They have not been registered at the time of publication of this report and

17 Asia Sustainable and Alternative Energy Program. 2007.

18 Montsame. 2017.

19 Jargalsaikhan, L. 2013.

20 Kornyezettechnologia kft. (Environmental Technologies Ltd). 2009.

21 Jargalsaikhan, L. 2013.

22 European Bank for Reconstruction and Development. 2016.

23 Ministry of Nature and Environment. 2015.

**Table 2 Ulaanbaatar waste management at a glance**

<b>Waste/garbage bins</b>	3,150 metal bins	Trash bins of 450-litre capacity each are located in apartment blocks, gers, and near schools and kindergartens.
<b>Waste segregation<sup>24,25</sup></b>	Usually mixed waste collection system exists across the city	<ul style="list-style-type: none"> <li>› In October 2013, waste segregation at source was introduced across the city of Ulaanbaatar.</li> <li>› Plastic bags were distributed to 317,000 households in both gers as well as apartments in all nine districts of Ulaanbaatar.</li> <li>› 15 garbage bags per month were distributed free to households. Apartments received bags that were 65*45 cm in size, while gers received bags that were 75*45 cm.</li> <li>› While the city spent MNT 5 billion over two years to produce these garbage bags, it was seen as a step in the right direction towards segregating recyclables at source.</li> <li>› Two domestic companies, OB Plastic and Mongol Khevel, manufactured the plastic bags.</li> <li>› The bags had “Garbage-free Ulaanbaatar – Asia’s White Diva”, “Do not litter”, and “Place your garbage in plastic bags at scheduled disposal sites” printed on them.</li> <li>› Ger residents were required to put all garbage, except ash, in the bags.</li> <li>› Garbage collection trucks would only load garbage filled in “Asia’s White Diva” plastic bags.</li> <li>› Khoroo cooperatives were responsible for distributing plastic bags each month to households.</li> <li>› For businesses and commercial establishments, each bag was sold for MNT 95.</li> <li>› However, this initiative was not successful due to the lack of awareness about frequency and schedule of waste collection and the lack of enough waste collection trucks in gers. It also led to stray animals spreading garbage on the streets.</li> <li>› Punishment for non-users of the garbage bags also did not materialize due to poor enforcement.</li> </ul>
<b>Collection and transport</b>	118 waste collection trucks	19 companies (out of which 7 are private companies) collect waste in the city. About 90% of waste is collected.
<b>Disposal sites</b>	3 (Narangiin Enger, Moringiin Davaa and Tsagaan Davaa) for 6 central districts.  3 outskirts districts (Baganuur, Bagakhangai, Nalaikh)	<ul style="list-style-type: none"> <li>› Only one disposal site, Narangiin Enger, is a designated engineered landfill. It is located northwest of Ulaanbaatar and was constructed with Japanese cooperation in 2009.</li> <li>› The Republic of Korea subsidized plastics recycling equipment.</li> <li>› The landfill site receives around 1,200 tonnes of waste per day, which are transported from Ulaanbaatar in 300 trucks.</li> <li>› On the landfill premises a sorting centre, Narangiin Enger Recycling Complex, was constructed with Korean support. It segregates waste into glass, plastic and bones.</li> <li>› The landfill is expected to close in 2020.</li> </ul>
<b>Recycling</b>	Since 2014, there are a few small- and medium-scale recycling plants in operation: <sup>26</sup> <ul style="list-style-type: none"> <li>› Six waste metal recycling plants</li> <li>› Three aluminium and alloy recycling plants</li> <li>› Five plastic bag and plastic material recycling plants</li> <li>› Two waste tyre and used oil processing plants</li> <li>› Five waste paper recycling plants</li> <li>› One powder compact fuel processing plant</li> <li>› One glass processing plant</li> </ul>	<ul style="list-style-type: none"> <li>› The Mongolia National Recycling Association (MNRA), founded in 2005, has 186 centres for collecting and purchasing secondary raw materials and recyclables. It runs recycling facilities for waste oil, glass, plastic bags, waste alloys and battery waste.<sup>27</sup></li> <li>› The informal sector is also involved in the collection of recyclables at centralized landfill sites.</li> <li>› There are around 200 waste pickers, most of whom live at dump sites.</li> <li>› Some community-based NGOs are also involved in recycling on a project basis.</li> <li>› Ulaanbaatar-based NGO, Tehnoj, trains vulnerable and low-income communities to convert waste into useful products.</li> <li>› Tehnoj started an initiative, Turning Garbage into Gold, to help low-income communities to set up a “first-hand” system for collection of recyclables in neighbourhoods (through project support and government loans for SMEs), produce recycled household goods such as brooms, chairs, foot covers (often used for walking in temples or schools), picnic mats, waterproof ger insulation sheets and containers of all sizes, and finally to market these products. The programme is currently operational in three outer districts: Khan-Uul, Chingeltei and Songino Khairkhan, and includes 20 production groups of around 5-6 personnel each.<sup>28</sup></li> </ul>
<b>Future projects</b>	Ulaanbaatar is working towards formalising waste recycling activities. The ecopark project (Mayor’s Resolution No. A/695) includes development of a recycling facility at the Narangiin Enger landfill site (52-174.6 hectares) and the Tsagaan Davaa waste collection site (29.4-92.6 hectares). <sup>29</sup>	
	According to the Mongolian National Recycling Association (MNRA), the UCM will provide 270 hectares of land, electricity and heating facilities to the MNRA for building recycling factories in the ecopark area. As of now, 39 projects by 32 enterprises costing MNT 236 billion to recycle nine different types of waste have been registered for the ecopark. <sup>30</sup>	

there is uncertainty about the nature and level of contamination and hazards these substances create and how they are to be disposed.<sup>31</sup>

The road transport sector transfers 7,100 tonnes of wastes of which 1,600 tonnes is solid waste and 5,500 tonnes is liquid waste. A small amount of used oil is processed at the sole oil-processing factory for use as cast grease in construction and building materials while the rest is disposed in the soil. Ulaanbaatar alone discharged 489 tonnes of used oil in 2014. Other hazardous waste, such as filters, are landfilled as MSW; battery acid (a battery contains approximately five litres of sulphuric acid) is discharged into the soil; lead is exported as secondary raw material; and anti-freeze brake liquid is disposed into central wastewater removal lines.<sup>32</sup>

### Medical waste

In 2007, about 2.65 tonnes of healthcare waste were produced each day in Ulaanbaatar, out of which about 0.78 tonnes were medical waste and the remaining 1.87 tonnes were general waste.<sup>33</sup>

Currently, a company 'Element LLC' collects 590 tonnes of medical waste per year from 1,040 hospitals and medical facilities. The company owns 12 special-purpose trucks and sorts, eliminates and landfills 48.5 tonnes of medical waste on average per month and about 590 tonnes annually. Medical waste in special purpose bags are picked up from hospitals and medical facilities and sorted at the sorting plant. Sorted solid waste is disinfected in autoclaves and crushed with a threshing machine. Sorted biological waste is burned in a cremator at 900-1,200°C. Crushed solid waste, burned biological waste ash and crushed and concreted medical waste are finally landfilled.<sup>34</sup>

At present, the Asian Development Bank (ADB) provides support to Mongolia in medical waste handling through its Fifth Health Sector Development Project (2013-2018). Based on World Health Organization recommendations emphasizing the use of non-burning technologies, Mongolia implemented the Strategy for Improving Healthcare Waste Management in Mongolia 2009-2013. The ADB project supports the GoM in implementing its strategy on medical waste management by:

1. Upgrading and expanding a central medical waste facility in Ulaanbaatar to meet international standards;
2. Providing interim hazardous waste storage places in Darkhan and Erdenet as well as a central hazardous waste reception and recycling facility in Ulaanbaatar; and
3. Providing a long-term storage area in Ulaanbaatar for hazardous waste for reprocessing reusable sharps' containers and for recycling plastic waste.<sup>35</sup>

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## Waste Management System in Ulaanbaatar

Although waste management services are available in some places in Ulaanbaatar (mainly in apartments rather than in *gers*), littering and open dumping are significant problems. Lack of or low frequency of waste collection in *gers* often leads to open dumping and burning of waste, which consequently cause soil, water and air pollution. Table 2 provides a summary of waste collection, transportation and disposal in Ulaanbaatar.

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## Current Waste Management Legislative Scenario

The guiding principles of the UWMSAP are in line with the existing Green Development Strategic Action Plan for Ulaanbaatar 2020, City Development Master Plan 2030, Mongolia National Waste Management Improvement Strategy and

24 Zoljargal, M. 2013.

25 KCAP. 2014.

26 KCAP. 2014.

27 Byambasaikhan, D. 2014.

28 UNDP.

29 Leonardo Dicaprio Foundation, FMDV and TAP. 2016.

30 Government of Mongolia. 2016b.

31 Available at <http://www.legalinfo.mn/annex/details/6846?lawid=11218>

32 Ministry of Nature and Environment. 2015.

33 Shinee, E. and others. 2007.

34 Element LLC.

35 ADB. 2012.



Action Plan 2017-2030 and other national and city level policies, laws and regulations.

## Law on Waste

The first law to regulate waste in Mongolia was approved in 2000. Other approved laws include the Law on Prohibition of Importing, Transit and Export of Hazardous Waste (2000), Law on Household and Industrial Waste (2003) and Law on Prohibition of Use and Import of Some Plastic Bags (2009). In 2012, as part of the environmental laws' revision package, these three laws were integrated as the Law on Waste during the spring session of the State Great Hural. The goal of this law is to regulate the actions associated with decrees, classification, collection, transport, storage, recycle, reuse, disposal and export of wastes in order to eliminate and prevent their toxic impact and to prohibit import and transboundary movement of waste.

This law was later revised into the Law on Waste (2012). The 2012 law introduced the 3R principles of reduce, reuse and recycle in greater depth than the previous law. However, regulations related to economic leverage, incentive mechanisms, promotion of waste recovery and requirements on waste handling operations were not clearly stated in the 2012 law. Moreover, requirements of hazardous waste handling procedures and education on waste and public monitoring of violations were not provided. Therefore, there was a need to cover these gaps by revising the law or formulating a new law on waste management.

On 12 May 2017, the Mongolian Parliament passed the Law on Waste (2017), which superseded the previous Law on Waste (2012). The new law on waste management includes ordinary waste and hazardous waste (liquid and gaseous wastes and emissions), with the exception of radioactive waste.

## Procedures

In order to improve waste management, the following procedures have been developed and approved by the GoM:

- › Adoption of the methodology to determine the waste normative (adopted on 7 July 2015);
- › Adoption of the list of hazardous waste (adopted on 29 June 2015);
- › Procedure on the types of waste disposal and burial facilities and points, requirements thereon; the operational responsibilities of citizens, business entities and organizations that will run waste burial (adopted on 29 June 2015);
- › Procedure on creation of waste data base and information service (adopted on 9 April 2014);
- › A rule on waste segregation and separation (adopted in 2011);
- › A rule on classification, collection, temporary storage, transportation and treatment of hazardous wastes (adopted in 2002);
- › A rule on classification, collection, temporary storage, transportation and treatment of medical waste (adopted in 2002); and
- › Procedure on the incentive to be provided to citizens and business entities for introduction of environmentally sound technology (adopted in 1998).

The selection of procedures, financing of waste collection, transportation entities and collection of waste service fees have been approved by the Presidium of City Counsel of Ulaanbaatar (CRKh) in 2013.<sup>36</sup>

## Standards

Standards are formulated and passed by the Standardisation and Measurement Agency in Mongolia. The Mongolian Law on Standardisation and Quality Assurance was enacted in 2003 to regulate relations with the state, citizens, business entities and organisations with respect to the determination of the legal basis of standardisation and conformity evaluation and the implementation

<sup>36</sup> Available at <http://www.ulaanbaatar.mn/Home/newsdetail?dataID=2776>

thereof. Some relevant waste management standards are provided here:

- › MNS 5606-1:2016 – Environmental protection. Emission limit for the crematoria operating on diesel fuel;
- › MNS 6501:2015 – Classification and codes of wastes from leather and fur tanning;
- › MNS 6487:2014 – Environment. General requirement and waste. Classification of mineral oil refineries;
- › MNS 6342:2012 – Maximum permissible level of some air pollutants in fuel gas from hazardous waste incinerators;
- › MNS 5344:2011 – General requirements for economical dust transportation;
- › MNS 5975:2009 – Grease catcher equipment in wastewater. General requirements;
- › MNS 5479:2005 – Protection against dangerous goods. Requirement on the method for disposal of waste from toxic chemicals;
- › MNS ISO 11632:2005 – Determination of mass concentration of sulphur dioxide– ion chromatography method;
- › MNS ISO 6853:2002 – Photography – Processing waste – Determination of ammonical nitrogen (micro diffusion method);
- › MNS ISO 6851:2002 – Photography – Processing waste – Determination of total amino nitrogen (micro diffusion Kjeldahl method);
- › MNS 3438:1983 – Auxiliary raw material waste of nonferrous technical requirement;
- › MNS 3383:1982 – The Terms and Definitions of Pollutant Sources for Atmosphere;
- › MNS 0017-2-1-17:1980 – Atmosphere. Vocabulary of waste of industry and pollution related to climate; and
- › MNS 0017-2-0-07:1979 – Waste to air pollution. Classification.

### International Conventions and Treaties

Mongolia is a signatory to several international multilateral conventions and treaties, including 49 under the United Nations, four on diplomatic and consular relationships, one on law of treaties, 44 on human rights, 22 on international security and non-proliferation and prohibition of weapons, six on humanity, 26 on crime, 32 on international trade and development, 13 on transport, communications and customs cooperation, 21 on intellectual property, 22 on marine, 14 on civil aviation, five

on space, 23 on environmental protection, and four on arbitration.

The major multilateral environmental agreements that Mongolia has joined for protection of human health and the environment from toxic and hazardous chemicals include:

- › United Nations Framework Convention on Climate Change (1993);
- › The Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal (1996);
- › The Vienna Convention for the Protection of the Ozone Layer (1996);
- › The Montreal Protocol on Substances that Deplete the Ozone Layer (1996);
- › The Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (1999); and
- › The Stockholm Convention on Persistent Organic Pollutants (2003).

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## Current Waste Management Institutional Scenario

The current institutional scenario with major roles and responsibilities at the national and the Ulaanbaatar city level is described in this section.

### National Level

- › The Parliament has the primary responsibility for approving the budget submitted by the Government for implementing the Law on Waste. The Government's main responsibilities include approval of the national waste management program, approval of regulations for temporary storage, collection, transportation, recycling, disposal, registration and reporting of hazardous waste, approval of a hazardous waste list, and approval of hazardous waste prohibited or limited for import to Mongolia.
- › The MET is responsible for assessing the environmental impacts of waste. This includes, for example, closure of a disposal site;

maintaining statistical records on hazardous waste; advising the government on the policy framework for environmental pollution including sustainable waste management (SWM) and ensuring implementation of the state policy and national programmes on waste management. The MET is entrusted with national responsibility for implementing a SWM policy, including establishing national standards and improving management of the sector.

- › The Ministry of Health (MH) is responsible for establishing the legal context for improvements in public health and healthcare waste.

### City Level<sup>37</sup>

- › Waste management at the city level is the responsibility of the municipal government and the Mayor's Office, in particular.
- › The UCM is charged with enforcing implementation of state policy on waste within the city and the province; developing local plans for waste reduction; maintaining statistical records; approving rules, regulations and procedures for waste collection, transport and disposal; monitoring the implementation of waste legislation; appointing final disposal sites and appointing officers in charge of disposal site operations.
- › Within the UCM, the Public Service Department is in charge of formulating the city's waste management policies.
- › In Ulaanbaatar, the Landscaping and Waste Management Department (previously known as City Waste Management Department) under the Public Services Department, directly manages the collection and disposal of solid waste. This department operates waste landfill sites, collects and transports waste in public places by contracting the state-owned enterprise, Ulaanbaatar Tuk, for these services.
- › Local government-owned enterprise City Development Department. The local government-owned enterprise Ulaanbaatar Utility Complex was liquidated as per the city CRKh presidium resolution #14 and the resolution A/638 dated 5 September 2016 of the Mayor and Governor. In its place, the

local government-owned City Development Department was founded. This Department has the fundamental responsibility and duties to provide Ulaanbaatar with waste management services; landfill wastes in designated areas; support running of waste sorting and recycling services; organize care and protection of greenery, gardening and restoration; responsible for cleaning and improvement of streets, roads, pedestrians and public areas; maintenance of statues and monuments; and neutering stray dogs and cats.

- › It is also responsible for cleaning and maintenance of 337.7 km of public roads in the six districts of Ulaanbaatar, care and protection of 45.9 ha of green areas, 213.8 ha of three waste disposal sites in Ulaanbaatar (Narangiin Enger, Tsagaandavaa and Morin Davaa) and the operation of public restrooms at eight locations. Only one of the three disposal sites (Narangiin Enger) in Ulaanbaatar is a sanitary landfill.
- › At the district level, each infrastructure and public service department in the district governor's (DG) office is in charge of implementing waste management policies (formulated at the mayoral level) and carrying out related work in its designated territory.
- › The number of representatives of Khural of Ulaanbaatar and districts is determined considering demographic settlements and structure of administrative and territorial units, and they shall approve regular waste handling procedures, unit tariffs, determine waste service fee and identify location of waste disposal areas.
- › Waste collection is provided at the district level, where each district is divided into "service zones" that are made up of one or more *khoroos*.
- › Waste collection and transport services are provided by TUKs (to hijilt uilchilgeenii kompani), who are appointed to each zone. They are also responsible for cleaning public spaces such as roads and parks.
- › Some NGOs and informal agencies have SWM interests and perform significant SWM functions, particularly recycling, which may be more formalized at some point in the future.

37 Byamba, B., and Ishikawa, M. 2017.



## Current Waste Management Financing Mechanisms

Waste management services in Ulaanbaatar are financed through various mechanisms, as summarized in this section.

Waste management services are paid for by waste service fees collected from households as well as by additional government subsidies. Since January 2013, waste service fees have been collected as part of electric utility bill payments. Payments are made at commercial banks, which then transfer the fees to the Ulaanbaatar Electricity Distribution Station (UBEDC). The fees are then consolidated and transmitted to the relevant district tax departments and then to the district state departments. The district state departments transfer the fees to public service companies upon estimation. The *khoroos* provide support for collection of waste service fees and monitor collection of fees from households, legal entities and organisations. Figure 7 illustrates the waste fee collection and funds flow.

The fee collection method differs for *gers* and apartments. In *gers*, the fee is included in the electricity bill since July 2011. Although the electric utility charges a 23 per cent transaction fee, the waste fee collection rate increased from 28 per cent in 2011 to 57 per cent in 2014, doubling the collection rate in only three years. In some cases, the transaction fee of 23 per cent is waived from the total amount. In apartments, fees are paid as part of payments to the Ulaanbaatar Housing Public Services Company and are charged a transaction fee of 6 per cent.

The waste fee rate is also different in apartments and the *gers*. Currently, citizens in apartments are paying MNT 2,000, and citizens in *gers* are paying MNT 2,500. These rates were fixed in 2006 through Ordinance 182 by UCM and have not changed since then. The higher amount in *gers* is because collection services in these areas require more resources, as they are scattered and unplanned settlements. For business entities and organizations, each district has set its own tariffs based on the size and type of business. The Law on Waste (2017) states that

**Table 3 Revenues and expenditures of Ulaanbaatar waste (billion MNT)**

No	Year	Revenue from waste service tax	Cost of waste removal, rodent disposal and disinfection	Balance
1 <sup>39</sup>	2013	9.38	17.03	- 7.65
2 <sup>40</sup>	2014	11.25	44.8	- 33.55
3 <sup>41</sup>	2015	12.5	37.3	- 24.8

citizens and entities will pay waste services fees together with fees for electricity, clean water, sewage, heating, maintenance of public space of residential buildings and common services. Service fee revenues shall be accumulated in the *soum* and district budgets (DB), which will be used for the purposes of waste collection, transportation, landfilling and commissioning of services if waste service fees are collected together with other fees together with electricity and public service fees. Finances and activities related to disposal sites are fully covered by the municipality.

Table 3 presents the revenues from waste service fees and the cost of waste removal, rodent disposal and disinfection based on the audited reports of integrated budget performance for 2013-2015 of Ulaanbaatar.

The city has presented a loss of MNT 7.65-33.55 billion in waste services. The revenue of waste services accounts for 0.55-0.61 per cent of the entire city budget revenue, while the cost of waste removal, rodent disposal and disinfection accounts for 1.4-3 per cent of the entire expenditure.

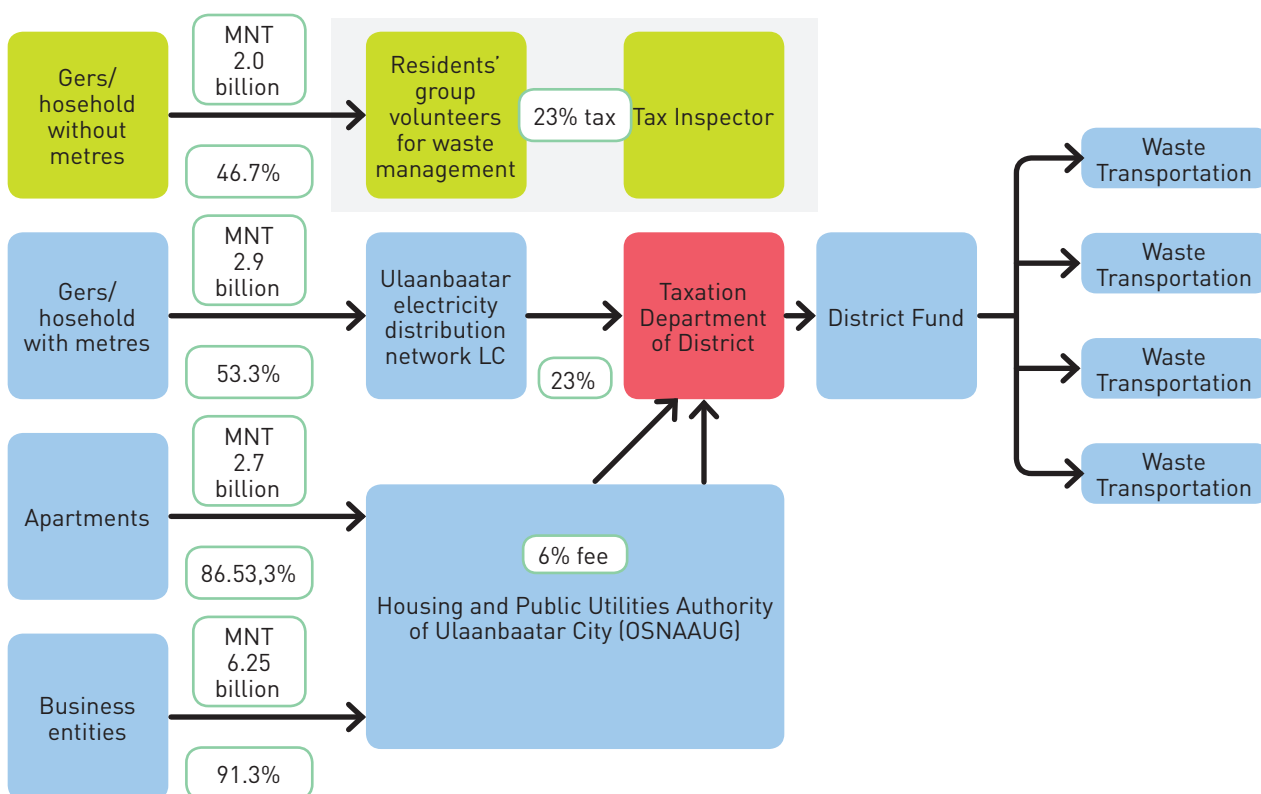
Financing mechanisms for solid waste in Ulaanbaatar are composed of the waste fees equalling MNT 5,000-25,000 collected from private businesses and institutions, MNT 2,500 from households living in apartments and MNT 1,000 from *ger* households.<sup>42</sup>

Although a database of waste fee management has not been established, fee-collecting organizations in the districts submit their financial statements to the treasury departments of their respective districts and the UCM on a quarterly and annual basis.

39 Ulaanbaatar City Municipality. 2014.  
 40 Ulaanbaatar City Municipality. 2015.  
 41 Ulaanbaatar City Municipality.  
 42 Jargalsaikhan L. 2016.

38 Arigun, S. 2016.

**Figure 7 Waste fee collection to the budget and funds flow<sup>38</sup>**



## Challenges and Opportunities in the Waste Management Sector in Ulaanbaatar

A SWOT analysis of the current waste management system was undertaken to assess the institutional, legal and financial framework in Ulaanbaatar. The SWOT analysis indicated that the city's effort to embark on a reform agenda is a major strength. The assessment of existing weaknesses, gaps and opportunities served as guide to formulate the strategic objectives and action plans and address existing weaknesses and gaps in order to tap into numerous opportunities. These challenges, gaps, weaknesses and opportunities are described in this section. A major risk is that none of these gaps, challenges and weaknesses will be addressed and that identified opportunities will remain unused, leading to a failure of the current reform process and the overall green development agenda of the city.

## Waste Value Chain: Generation, Collection, Recycling, and Disposal

### Challenges

- Increasing trend of waste volumes and waste types, including e-waste, tyre waste and C&D waste;
- Disparity in waste collection services in apartments and in *gers*;
- Inefficient and infrequent waste collection services (residents are unaware of schedule of waste collection services);
- No effective monitoring and control of open dumping and burning, which consequently leads to littering and soil, water and air pollution. Such uncontrolled disposal chokes the drainage system, including flood protection dams, leading to flooding and spread of infectious diseases;
- There are three waste disposal sites in Ulaanbaatar, only one of which is a sanitary landfill. There is no proper monitoring of landfill operations. Further, leachate and gaseous emissions are neither captured nor treated;

- › Ash and building wastes are disposed illegally in unpermitted areas such as flood protection dams and channels. Such uncontrolled disposal chokes flood protection dams and drainage, which become a source of infectious diseases;
- › Waste sorting is not practiced except for medical wastes; and
- › There is not enough regulation and enforcement of hazardous waste, C&D waste and e-waste. Also, no facility exists to treat or dispose these waste streams. Most of the wastes are dumped together with MSW.

#### Opportunities

Mongolia has few large cities, and Ulaanbaatar being the capital and economic hub provides a unique window of opportunity to make large investments and concentrate efforts in waste management. Some of these opportunities include identifying and implementing interventions or activities addressing each component of the solid waste value chain, i.e., generation, collection, recycling and disposal. These interventions or activities should address all types of waste streams including technology, legal, institutional and financing needs for their environmentally-sound management.

#### Policy/Legal Framework/Master Plans

##### Challenges

- › Overall lack of effective enforcement of policies, laws and regulations; weak monitoring and compliance due to lack of technology, capacity, and financing and other resources;
- › Lack of concerted attempts to unify and achieve common goals mentioned in many policy documents and master plans;
- › Lack of integration and coordination between waste and other relevant sectors. Though waste management is ideally embedded within the larger context of environmental and urban management, as mentioned in relevant laws and regulations at the national level, lack of coordination among these sectors leads to loss of opportunities available through sharing of resources and expertise. The situation is further complicated with overlapping and complex legislations, roles and responsibilities. Also, sometimes the silo method of functioning of institutions causes inconsistencies in the

achievement of the broader goal of sustainable and green development;

- › A disconnect in efforts to engage and educate the public and other relevant stakeholders toward enforcement of waste-related laws and regulations;
- › Frequent revision of laws with changes in government implies lack of continuity, uncertainty and administrative inefficiency;
- › Lack of ownership of master plans and other strategic documents (mostly prepared under technical and financial support of third-party organizations/ donors) by the national and city governments leads to a lack of effort in translating them into reality; and
- › Lack of monitoring mechanisms built into the master plans and lack of appropriate modification in implementing tools to ensure success.

#### Opportunities

Mongolia has been very receptive to new policies and laws. It is one of the few countries that has a National Green Development Policy, and Ulaanbaatar has already developed a GDSAP, in addition to the Ulaanbaatar Master Plan 2030. The city offers an opportunity to demonstrate ownership of an effective waste management system by identifying and implementing activities leading to greater integration and coordination between relevant stakeholders, including the public, to achieve a common, broader vision of waste management. It also offers an opportunity to institutionalize an effective monitoring mechanism to achieve efficiency.

#### Institutional Arrangements

##### Challenges

- › Government and city organizations work separately in the area of waste management without interaction. Therefore, responsibilities of the various waste management stakeholders get duplicated, and their cooperation and interaction has not been integrated nor strengthened. Furthermore, there is no integrated environmental management structure to ensure coordination among relevant organizations;
- › Lack of lateral integration between strategic and operational levels. For example, in Ulaanbaatar,

while service provision for waste collection and management, water supply and sanitation/wastewater services is delegated to the district level, the responsibility of enforcing relevant laws and regulations remains at the higher level, i.e., Mayor's Office and higher.

- › Change in political power often leads to changes within institutions. These changes range from renaming institutions to reassigning duties and powers vested in them. Human resource deployment is also sometimes affected. This lack of continuity, displacement of capacity and uncertainty causes administrative inefficiency.

#### Opportunities

UCM has the power to administer various programmes and plans. The city has the potential to champion the cause of a clean and green city with integrated waste management systems in place. Therefore, an opportunity exists to identify and formulate activities to develop and institutionalize an integrated (lateral and horizontal) environmental management structure with clearly identified roles and responsibilities to ensure administrative efficiency.

#### Capacity Needs

##### Challenges

- › Poor human resources: The UCM has one officer responsible for the city's environmental policy planning. Ulaanbaatar's environmental protection authority including the air quality department consists of only 15 staff; and
- › Lack of administrative capacity (low technical capacity, facilities and equipment) to implement and monitor waste management activities, especially at the local government level.

##### Opportunities

The development and institutionalization of an integrated (lateral and horizontal) and well-defined environmental management structure requires the development of a dedicated pool of personnel at the local level. There is a significant opportunity to increase the staff footprint at all levels and train them depending on existing skill levels as well as using training needs assessments to identify gaps. This will facilitate allocation of responsibility as identified in the organization structure.

#### Technological Barriers

##### Challenges

- › No integrated waste loading and collection system;
- › Old equipment and collection vehicles. The majority of waste trucks are second-hand, out-dated or no longer usable, which results in frequent breakdowns and operational difficulties particularly in Mongolia's harsh winter weather;
- › Lack of sanitary landfills;
- › Very few formal modern sorting and recycling centres; and
- › Limited choice of available technology options due to harsh climatic and weather conditions thereby increasing the operational cost of technologies. For example, anaerobic digesters require deep underground burial, which increases installation and operational costs.

##### Opportunities

Sometimes being the late-starter offers the opportunity to 'leapfrog.' Therefore, there is an opportunity to improve, select and customise demonstration technology for waste management. Ulaanbaatar could then choose the best available technology and best environmental practices learnt from other cities and countries having similar operating circumstances and conditions. Proven waste treatment and recovery technologies could then be transferred, which generate other co-benefits.

#### Financing Constraints

##### Challenges

- › No specific budgetary allocations are made for waste management in Ulaanbaatar each year and only limited funds are available. Local governments can operate waste management activities smoothly, without budget cuts, only if there is some certainty regarding a percentage of annual GDP allocation for waste management, regardless of changes in government;
- › Lack of diverse and innovative financing measures in the waste sector, such as shared cost mechanisms (government budget, private investments, polluter pays principle and extended producers responsibilities, other

development aid). This adds to the financial burden of the implementing agency; and

- › Revenue sources for waste management (e.g., waste fee, water and wastewater charges, polluter pays taxation, etc.) do not cover the full cost of waste collection, transportation, treatment and disposal.

#### Opportunities:

Ulaanbaatar has a sister city partnership and programmes on waste management activities. Further, Mongolia receives other development aid and donor support to improve environmental quality including waste management. An opportunity exists to undertake financial reforms in the city. New financing instruments could be developed and implemented. This could offset the cost of waste management in the city. Moreover, co-financing opportunities for waste management also exist in the city.

## Waste Database

#### Challenges

- › There is no integrated database on waste management (both at the national as well as the city level);
- › Waste-related activity reports are not disclosed to the public;
- › There are no records of sufficient surveys and inventories of sources of waste discharge and their respective composition and quantity. The work on compiling waste inventory started in 2015 in Ulaanbaatar and rural areas; and
- › Statistics on waste and related reports are sparse and often inaccurate.

#### Opportunities:

Having an updated waste database is an integral part of waste management and also a tool to monitor progress made in implementation of strategies and action plans. Ulaanbaatar has recently started waste inventory monitoring, which offers an opportunity to continue the effort. An opportunity exists to develop, implement and maintain a waste management database system for the city. This offers a stepping-stone for developing and implementing a national-level waste database as outlined in the national-level waste management improvement strategy.





# ULAANBAATAR WASTE MANAGEMENT IMPROVEMENT STRATEGY

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## Definition and Scope of the Strategy

The UWMISAP has been designed and formulated to provide an impetus to waste management efforts in the city. The strategy is aligned with the existing Ulaanbaatar GDSAP and the Master Plan 2030, and is a subset of the proposed Mongolia National Waste Management Improvement Strategy and Action Plan 2017-2030. The UWMISAP serves the dual purpose of providing information on the city government's objectives to improve the waste management situation in Ulaanbaatar as well as to inform the government, non-government and other key stakeholders of their roles in achieving these objectives. The implementation period of this strategy is from 2017 to 2030.

In this context, the definitions of waste and related terms in this Strategy have been taken from the Law on Waste (2017), which was passed by the Parliament on 12 May 2017. As per this law, waste is defined as "... any objects and substances that are not further reusable...". The Strategy covers solid waste mainly from domestic sources and new and emerging waste streams such as tyres and C&D waste. The UWMISAP does not cover liquid wastes such as sewage, gaseous wastes, and hazardous waste such as persistent organic pollutants.

The UWMISAP provides an enabling mechanism for the implementation and enforcement of the Law on Waste (2017) and other relevant waste regulations. The strategy applies to all city



administration/institutions, the public, and to all activities that impact Ulaanbaatar’s solid waste management. The Strategy takes a holistic and integrated approach over the entire solid waste value chain, including prevention, generation, segregation, collection and transportation, recycling, treatment, and disposal.

## Guiding Principles

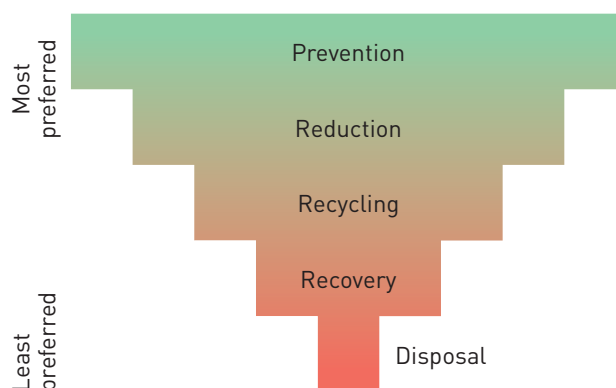
The waste hierarchy presented in Figure 8 forms the basis around which the UWMSAP has been developed. As illustrated in the waste hierarchy, the strategy prefers prioritizing waste prevention and reduction to recycling, recovery and disposal.

Waste prevention requires that the range, composition and design of products be modified in order to reduce waste generation through reduced resource demand and/or improved quality. This approach translates into improved resource efficiency, reduced use of materials both hazardous and non-hazardous and, finally, improved management. These changes are at the heart of the waste management sector and constitute the starting point for developing a sound waste management policy and management system. Improving knowledge and understanding of waste prevention and related concepts is a first step, both within this sector and at the level of consumption.

Further, recycling is facilitated by an improved sorting and segregation system. Although there are many waste sorting systems available to reuse and recover wastes, waste sorting at source or during collection is more economical and generates cleaner materials for recycling.

Disposal is the last preferred option in the waste hierarchy. It has been experienced that in spite of achieving optimum levels of waste reduction, some waste still remains to be disposed. The most suitable means to dispose such wastes is at an engineered landfill facility in order to prevent air, water and soil pollution.

**Figure 8** The waste management hierarchy



Based on the waste hierarchy, the UWMISAP has adopted the following principles that also serve as the guiding principles for the existing Ulaanbaatar City Green Development Strategic Plan 2020 and the Mongolia National Waste Management Improvement Strategy and Action Plan 2017-2030:

- Create sustainable and green development to support zero-waste development, reducing waste (and pollution) in the production process;
- Value waste as a resource;
- Segregate waste at source;
- Increase waste recycling and reuse through economic incentives;
- Select appropriate and affordable technologies for waste management;
- Remove wastes using means and technologies which cause less harm to the environment;
- Promote technology that has GHG emissions reduction potential;
- Support polluter pays principle, extended producer responsibility and take-back systems;
- Integrate the informal sector in waste management services;
- Enable conditions for public-private partnerships (PPP) in improving public services (waste collection and management);
- Explore and experiment with innovative financing mechanisms for waste management (public budget, revenue collection mechanisms, municipal bonds, private sector investment);
- Encourage citizen participation through public awareness and education; and
- Transparent waste governance.



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## Vision

The UWMSAP sets out the following mission to become a sustainable city with a clean environment:

*“To create a healthy and safe environment for citizens through improved, sustainable and integrated waste management.”*

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## Mission

Ulaanbaatar will develop and deliver waste management services enriched with innovative content and technology, improved public awareness and with a mind-set to not dispose wastes in unpermitted areas, rather adopt reuse and recycling practices, and hence contribute to the green development of the city.

*“Ulaanbaatar City commits to completely curb open and illegal dumping of wastes; instead, waste sorting, reduction, reuse and recycling are fully introduced and employed leading to sustainable waste management.”*

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## Framework

This UWMISAP covers domestic waste, and emerging waste streams such as used tyres and C&D waste. It also describes the city’s policies, financial mechanisms, technologies and infrastructure related to the environment and waste management. Stakeholder participation and commitment required to achieve the strategy’s goals and objectives is also discussed.

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## Implementation of the Strategy

The UWMISAP is expected to be implemented in three phases:

Phase I includes short-term targets set between 2017 and 2020. The targets include increased citizen and private sector involvement and realisation of policies and actions to improve the legal environment, institutional arrangements and management to reduce waste generation.

Phase II encompasses medium-term targets for 2021 to 2024. During this phase, targets include strengthening waste management infrastructure, human resources and financial capacity, introducing incentive systems and enhancing social responsibility in waste management.

Phase III includes long-term targets set for completion between 2025 and 2030. They include stepping up restoration of environmental deterioration caused by wastes; introducing systems, production and technology to reuse, recycle and process wastes; and creating an effective and long-lasting waste management system to maintain a clean and healthy environment.

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## Strategic Goals and Objectives

The overall goal of this UWMISAP is to reduce waste generation, increase recycling and minimize the negative impacts of waste on public health and the environment within the city of Ulaanbaatar. The following broad strategies (and objectives) are therefore proposed to achieve the above-stated goal.

**Strategy 1: Strengthen the regulatory framework, institutions, infrastructure, and financial mechanisms to improve waste management**

**Objectives**

- 1.1 Develop and enforce a regulatory framework that is effective in waste management;
- 1.2 Clearly delineate the roles and responsibilities of the various city administrative units that are responsible for waste management;
- 1.3 Upgrade infrastructure for improved waste management; and
- 1.4 Assure sustainable financing for waste management.

**Strategy 2: Introduce proper cleaning, storage, transportation and disposal systems to prevent illegal dumping and open burning**

**Objectives**

- 2.1 Extend full coverage of waste management services to all parts of the city, including *gers* and outskirt areas;
- 2.2 Improve the quality and accessibility of waste loading and collection services;
- 2.3 Minimize the exposure of the environmental components (air, water, soil, flora and fauna) to waste by curbing open and illegal dumping and stopping open burning of waste; and
- 2.4 Improve and upgrade technology, operations and monitoring systems of central waste points.

**Strategy 3: Introduce proper prevention, reuse, recovery and recycling systems to optimize resource management and reduce waste sent to landfills**

**Objectives**

- 3.1 Implement a waste prevention system;
- 3.2 Implement a 3R system;
- 3.3 Support production and encourage activities with technology interventions to prevent, segregate, reuse and recycle waste; and
- 3.4 Increase the roles, responsibilities/duties and involvement of the private sector in waste collection, sorting and recycling.

**Strategy 4: Strengthen and build capacity of the UCM, which is responsible for waste management, and other non-governmental key stakeholders, including the public, in order to achieve the stated goal**

**Objectives**

- 4.1 Maintain an updated waste management information system;
- 4.2 Identify and address professional development, technical and financial management training needs for the staff of city administrative institutions;
- 4.3 Raise public awareness of all key stakeholders through continuous information and education campaigns and demonstration projects; and
- 4.4 Establish effective reporting and monitoring mechanisms.

**Strategy 5 – Establish proper management of hazardous waste collection, transportation, recycling recovery and disposal**

**Objectives**

- 5.1 Improve the legal framework and regulations related to hazardous waste; and
- 5.2 Promote effective recycling, treatment and final disposal of hazardous waste by introducing selected technologies.

## Quantitative Targets

The UWMISAP aims at ensuring tangible implementation of the waste management improvement plan. In order to do so, priority near- and long-term actions, with ambitious yet realistic quantitative targets, are proposed as shown in Table 4. Some of the targets have been borrowed from existing roadmaps and master plans, in particular the Green Development Strategic Action Plan for Ulaanbaatar and the Mongolia National Waste Management Improvement Strategy and Action Plan 2017-2030.

The action plan for reaching these targets is detailed in Chapter 4.

## Financing

The proposed action plan is expected to be financed by the following sources:

- City and district budgets;
- Waste service fees;
- Funds obtained from business establishments and corporations; and
- International organizations, loans and grants by donors.

**Table 4 Quantitative targets towards implementation of UWMISAP**

Objectives		Targets	
		2020	2030
<b>Waste reduction</b>	Overall household waste	15% of the baseline level	30% of the baseline level
	E-waste	5%	10%
	C&D waste	15%	30%
	Tyre waste	15%	30%
<b>Waste collection</b>	Technical and technological fleet reform	40%	80%
	Waste loading and collection services in gers and outskirts areas	80%	100%
	Waste collection fee recovery from households and businesses entities	100%	100%
<b>Waste segregation at source</b>	In October 2013, a separate garbage bag system was introduced in Ulaanbaatar	15%	30%
<b>S u b - c e n t r e sorting facility</b>	Intermediary sorting stations prior to landfilling and/or recycling destination	1 each in 5 districts	1 each in all 9 districts
<b>Waste recycling</b>	Plastic, metal, glass (from domestic waste)	40%	60%
	C&D waste	30%	50%
	E-waste	30%	50%
	Tyre waste	30%	50%
<b>Sanitary landfill</b>	Only one sanitary landfill (Narangiin Enger) is currently in operation in Ulaanbaatar. It was constructed in 2009, with the expectation of closing in 2020, thereby requiring another sanitary landfill.	1	2



# 4

## ACTION PLAN

This chapter defines the means, activities and criteria to reach the vision and mission and result of the UWMISAP, based on the current waste management scenario and challenges in Ulaanbaatar.



Strategy 1: Strengthen the regulatory framework, institutions, infrastructure, and financial mechanisms to improve waste management

Objectives	Actions	Responsible organization(s)	Implementation period	Resource mobilization	Targets/Indicators
1.1 Develop and enforce a regulatory framework that is effective in waste management	<p>1.1.1 Develop regulations and guidelines for waste management based on the updated waste law and according to international best practices and standards</p> <p>1.1.2 Legislate for an extended producer responsibility (EPR, or take-back) system and develop guidelines and procedures for managing packaging and e-waste</p> <p>1.1.3 Develop guidelines and standards for construction, operation, monitoring, closure and post-closure monitoring and rehabilitation of waste disposal sites (landfill)</p> <p>1.1.4 Legislate a transboundary waste trade policy</p> <p>1.1.5 Promote integration of the informal waste sector by securing their livelihoods (establish cooperatives)</p>	UCM, DG  MET  UCM  MET	2017–2020  2017–2025  2017–2030  2017–2025	City budget (CB)  CB, State budget (SB), International organization (IO)  CB, IO  CB, SB, IO	<p>Establish general and hazardous waste handling procedures, guidelines and monitoring mechanisms</p> <p>Establish target-based EPR mechanisms and implement producer take-back of products at their end-of-life phase</p> <p>Develop guidelines and standards</p> <p>As most consumer goods (automobile/parts, electronic products) are imported to Mongolia and recyclable materials are exported to China, a proper legal and monitoring mechanism should be developed to deal with management of wastes from such imports and exports</p> <p>Integration of informal sector for recycling at the city level without conflicting with formal recyclers</p> <p>Clearly delineate the roles and responsibilities of the various city administrative units</p> <p>Clearly define duties and accountability of waste management stakeholders and improve coordination among the various units</p> <p>Skilled staff, with greater capacity and capabilities</p> <p>Increased waste management efficiency and capacity</p> <p>Increase waste management efficiency and capacity</p>
1.2 Clearly delineate the roles and responsibilities of the various city administrative units that are responsible for waste management	<p>1.2.1 Update/amend regulations defining the roles and responsibilities of different city administrative units at the district level that are responsible for waste management</p> <p>1.2.2 Review existing regulations reflecting roles and responsibilities of city administration units and update regulations clearly defining their roles and responsibilities</p> <p>1.2.3 Capacity building for related staff to meet their roles and responsibilities</p> <p>1.2.4 Form a separate department responsible for implementation of waste management at UCM</p> <p>1.2.5 Introduce a consolidated management system for waste management in all 6 central districts</p>	UCM, Non-government organizations (NGOs)  UCM (legal and Landscaping and Waste Management Department)  UCM, KhG  Ulaanbaatar and district governors  UCM  UCM, DG	2017–2018  2017–2020  2017–2020  2017–2020  2017–2025	CB  CB  CB  CB  CB	<p>Integration of informal sector for recycling at the city level without conflicting with formal recyclers</p> <p>Clearly define the roles and responsibilities of the various city administrative units</p> <p>Clearly define duties and accountability of waste management stakeholders and improve coordination among the various units</p> <p>Skilled staff, with greater capacity and capabilities</p> <p>Increased waste management efficiency and capacity</p> <p>Increase waste management efficiency and capacity</p>



Objectives	Actions	Responsible organization(s)	Implementation period	Resource mobilization	Targets/Indicators
1.3 Upgrade infrastructure for improved waste management	1.3.1 Upgrade waste disposal centres/landfill to a higher level	UCM	2017-2030	CB, IO	Upgrade 2 landfills by upper level in 2025, 3 in 2030
	1.3.2 Construction of a new sanitary landfill facility	UCM	2017-2020	CB, PPP	Construct 1 sanitary landfill by 2024, 2 sanitary landfills by 2030.
	1.3.3 Promote PPPs to implement infrastructure projects in different stages of municipal waste management such as collection, transport, recycling, composting, waste-to-energy, etc.	UCM	2017-2030	Policy support instrument	Increase collection rate,
	1.3.4 Proper closure and capping of the Narangiin Enger sanitary landfill site whose lifespan expires in 2020	UCM, Narangiin Enger authorities	2017-2020	CB, IO	Properly close landfill in 2020, properly rehabilitate landfill by 2025, post-closure monitoring until 2030
	1.3.5 Organize advance training and capacity building for operators and staff of landfill	UCM, DG	2017-2030	CB, IO	Improved institutional capacity, improved safety and reduced exposure
	1.3.6 Upgrade technologies and equipment at waste disposal centres in Ulaanbaatar	UCM, DG	2017-2030	CB, IO	Renew 60% by 2024, 80% by 2025, 100% by 2030
	1.3.7 Update and upgrade waste registration and reporting system through waste information system (WIS)	UCM, Ulaanbaatar and district governors	2017-2030	CB, IO	WIS implemented in 2020
1.4 Assure sustainable financing for waste management	1.4.1 Improve financial mechanisms related to waste fees collection and payment				
	1.4.2 Provide preference/priority to goods and operations which reduce waste, waste-less technology, and reuse, and recycle and processing wastes for any goods and services in procurement procedures, based on tenders announced by UCM	UCM, Ulaanbaatar and district governors procurement department	2017-2030	CB	Amend procedures on goods and service selection and procurement through open competitive bidding leading to reduced capital expenditure
	1.4.3 Develop innovative financial and economic models to process waste in the Ulaanbaatar (e.g., bundled finance, results-based payments of waste management services)	UCM, tax department	2017-2020	CB, IO	Develop financial and economic model to recycle waste leading to sustainable waste management
	1.4.4. Judiciously have cost-effective capital expenditures to reduce and process waste	UCM	2020-2024	CB, IO	Optimum investment in waste recycling
	1.4.5 Develop technology and programmes to employ future waste flows and matching infrastructure to deal with the waste	UCM, Ulaanbaatar Department of Industry and Innovation	2017-2024	CB, IO	Develop waste flow and structure models
	1.4.6 Change waste service fee from "household-based" to "per person basis"	UCM, Landscaping and Waste Management Department	2017-2024	CB	Improve revenue generation based on collection of waste service fees on a per person basis
	1.4.7 Develop and update norms on waste service	UCM	2017-2024	CB	Developed norms for waste handling per unit on a cost basis, etc.

**Strategy 2: Introduce proper cleaning, storage, transportation and disposal systems to prevent illegal dumping and open burning**

Objectives	Actions	Responsible organization(s)	Implementation period	Resource mobilization	Targets/Indicators
2.1 Extend full coverage of waste management services to all parts of the city, including rivers and outskirts areas	2.1.1 Organize frequent collection schedules in green zones, summer house areas and along the river banks	UCM, Ulaanbaatar and district governors; homeowners' associations	2017-2030	CB, DB	Achieve 100% waste collection in the city
	2.1.2 Improve waste cleaning and collection service in green zones, summer house areas and along the river banks	UCM, Ulaanbaatar and district governors	2017-2030	CB, DB	Waste cleaning and collection target 30% by 2020, 50% by 2025, 80% by 2030
	2.1.3 Form independent waste service systems in outskirts khorroos	UCM and KhG	2017-2030	CB, DB	Operational independent waste service system
	2.1.4 Build/place sanitary temporary waste storages in green zones and outskirts areas	UCM, Ulaanbaatar and district governors	2017-2030	IO, CB, IO, PPP	Installed standard waste storage bins 30% area of outskirts by 2020, 60% by 2025, 100% by 2030
	2.1.5 Promote PPP to conduct complex waste handling services in outskirts areas and green zone areas	UCM, Ulaanbaatar and district governors	2017-2030	CB, PPP	Waste handling service conducted through PPP
	2.1.6 Create workplaces for waste inspectors in outskirts areas	UCM, Ulaanbaatar and district governors	2017-2020	CB	Institutionalized position of 1 waste inspector for each outskirts khoroo
	2.1.7 Implement protecting, monitoring and penalty system for river-basin areas	UCM, Ulaanbaatar and district governors	2017-2030	IO, CB	Implement waste monitoring system along river basin and green zone areas
2.2 Improve the quality and accessibility of waste loading and collection services	2.2.1 Upgrade waste sorting and collection trucks and equipment	UCM, DG	2017-2025	IO, CB	Achieve 40% technical and technological fleet reform as of 2020 and 80% as of 2025
	2.2.2 Expand waste loading and collection services to rivers	UCM, Ulaanbaatar and district governors	2017-2025	CB,	80% service provision in rivers by 2020 and 100% by 2025
	2.2.3 Improve waste control, inspection and monitoring systems	UCM, Ulaanbaatar and district governors	2017-2024	CB	Improve waste control, inspection and monitoring systems
2.3 Minimize the exposure of environmental components (air, water, soil, flora and fauna) to waste by curbing open and illegal dumping and stopping open burning of waste	2.3.1 Ban open dumping and open burning of wastes	UCM, Ulaanbaatar and district governors	2017-2018	CB, DB	Achieve complete ban on open dumping and open burning of waste
	2.3.2 Impose fines for street littering, open burning and open dumping	UCM, Ulaanbaatar and district governors	2018	CB, DB	Clean public space and streets
2.4 Improve and upgrade technology, operations and monitoring systems of central waste points	2.4.1 Develop a design for waste processing units to be built at ecoparks that will be established at central waste points and define financing mechanisms based on their baseline survey and future scenario.	UCM, MET	2017-2024	IO, CB	Build ecoparks
	2.4.2 Promote low-carbon technology/ infrastructure	UCM	2017-2024		GHG emissions reductions from waste and sanitation sector



Strategy 3: Introduce proper prevention, reuse, recovery and recycling systems to reduce waste to optimize resource management and reduce waste sent to landfills

Objectives	Actions	Responsible organization(s)	Implementation period	Resource mobilization	Targets/Indicators
3.1 Implement a waste prevention system	3.1.1 Require all national industries and manufacturers to develop product life cycle diagrams (PLCD) for their products. Based on PLCDs, manufacturers to take measures to prevent waste generation from their products through improved product design, packing, quality, etc.	UCM, Landscaping and Waste Management Department, MoG, MET	2017-2030	CB, PPP, donor funds	5% of national industry, manufacturers develop PLCD by 2020, 10% by 2025, 25% by 2030
	3.1.2 Develop waste prevention guidelines and programmes		2017-2020	CB, donor funds	Develop guidelines and programmes
	3.1.3 Implement EPR mechanisms		2017-2030	CB, PPP, donor funds	5% of industry, manufacturers develop PLCD by 2020, 10% by 2025, 25% by 2030 as well as for imported FMCG and electronics
3.2 Implement a 3R system	3.2.1 Develop incentive mechanisms to encourage purchase of products produced from recycled and recovered materials	UCM, Landscaping and Waste Management Department, tax department	2017-2030	CB, PPP, donor funds	Increase recycling products in the market by 10% by 2020, 20% by 2025, 40% by 2030
	3.2.2 Develop standards for waste separation bins and schedules for recycled waste collection. Announce and advertise to public	UCM, Ulaanbaatar and district governors	2017-2025	CB, PPP, donor funds	Develop standards; increase recycled waste collection and recycling efficiency
	3.2.3 Place standard waste separation bins at or near public places such as restaurants, shops and streets	UCM, Ulaanbaatar and district governors	2020-2030	CB, PPP, donor funds	Install waste separation bins 50% by 2025, 100% by 2030
	3.2.4 Upgrade recycled waste collection equipment and trucks	UCM	2020-2030	CB, PPP, donor funds	Upgrade and install 30% by 2025, 60% by 2030

Objectives	Actions	Responsible organization(s)	Implementation period	Resource mobilization	Targets/Indicators
3.3 Support production and encourage activities with technology interventions to prevent, segregate, reuse and recycle waste	3.3.1 Conduct surveys of technology needs and potential production for the reuse of C&D waste in cooperation with MET and initiate its usage	UCM, MET	2017-2024	IO, PPP	Reduce C&D waste by 15% by 2020 and 30% by 2024
	3.3.2 Conduct studies for the reduction and recycling potential of e-waste in cooperation with MET	UCM, MET	2017-2024	IO, PPP	Reduce e-waste by 5% by 2020 and 10% by 2024
	3.3.3 Conduct studies for identifying potential technology and production facilities to reuse and recycle other wastes and implement a pilot project	UCM	2017-2024	IO, NGOs, PPP	Reduce wastes from all types of sources by 15% by 2020 and 30% by 2024
	3.3.4 Conduct studies, in cooperation with research institutes, on recycling/composting of food waste discharged by large food markets in Ulaanbaatar and implement a pilot project	UCM, NGOs, MET	2017-2024	IO, NGOs, PPP	Reduce organic waste by 20% by 2020 and 50% by 2024
	3.4 Increase the roles, responsibilities/duties and involvement of the private sector in waste collection, sorting and recycling	3.4.1 Support, in cooperation with NGOs, the waste collectors/individuals who collect recyclables and protect their rights (livelihood and safe working conditions)	UCM, NGOs	2017-2020	CB
3.4.2 Support national producers that reuse packaging waste	3.4.3 Study effective methods to process ash waste produced by ger households and thermal power plants, and reuse/recycle the waste ash	UCM, Ministry of Finance	2017-2024	CB	Segregation of waste at source reaching 50% by 2020 and 100% by 2024
	3.4.4 Continue distribution of garbage bags for waste segregation at source and monitor compliance strictly	UCM, MET, MH	2017-2024	SB, CB, IO	Reduce waste ash generation by 15% by 2020 and 30% by 2024
	3.4.5 Regularize waste segregation at sources through economic initiatives/instruments such as provision of incentives, advocacy, public awareness, branding, support and provision of tax relief to entities and organizations	UCM, MF	2017-2024	CB, SB	Waste segregation at source reaching 50% by 2020 and 100% by 2024
	3.4.6 Improve source segregation of waste; improve recycling ratio of the sorted waste	UCM, KhG	2017-2024	CB, donor funds	Improve source segregation of waste; improve recycling ratio of the sorted waste
	3.4.7 Waste segregation at source reaching 50% by 2020 and 100% by 2024	UCM, MF	2017-2024	CB, SB	Waste segregation at source reaching 50% by 2020 and 100% by 2024

Strategy 4: Strengthen and build capacity of the UCM, which is responsible for waste management, and other non-governmental key stakeholders, including the public, in order to achieve the stated goal

Objectives	Actions	Responsible organization(s)	Implementation period	Resource mobilization	Targets/Indicators
4.1 Maintain an updated waste management information system	4.1.1 Conduct comprehensive inventory of waste sources, waste points, quantities discharged and waste reuse, and establish baseline data	UCM (Landscaping and Waste Management Department)	2017-2020	IO, NGOs	Establish proper waste information system (waste database and updated baseline survey)
	4.1.2 Improve the content of the forms and reports for waste data to form a database with more accurate and physical data	UCM (Landscaping and Waste Management Department)	2017-2020	CB, IO	Form a waste database
4.2 Identify and address professional development, technical and financial management training needs for the staff of city administrative institutions	4.2.1 Conduct training needs assessments for waste management officials and develop and implement training modules	UCM	2017-2030	CB, donor-funded scholarships for education and training	Achieve higher percentage of trained officials working in the UCM
4.3 Raise public awareness of all key stakeholders through continuous information and education campaigns and demonstration projects	4.3.1 Organize training and advocacy and inform the public about amended laws and regulations, financing and incentive mechanisms	UCM, MET, The Ministry of Education, Culture, Science and Sport (MECSS), NGOs	2017-2020	CB	Increase frequency of training and advocacy for the public
	4.3.2 Offer waste-related training starting from pre-school	UCM, MET, MECSS	2017-2018	CB	Develop mind-sets and habits of waste sorting and proper waste disposal from early childhood
	4.3.3 Improve public awareness with respect to domestic waste sorting and recycling, proper consumption of chemicals and individual's social responsibility	UCM, MECSS, media	2017-2020	CB	Reduce wastes from all types of sources by 15% by 2020 and 30% by 2024
4.4 Establish effective reporting and monitor mechanisms	4.4.1 Implement successful pilot demonstration projects on effective reporting and monitoring mechanisms through WIS and replicate the success to other cities	UCM	2017-2024	CB, donor funds	Achieve successful city-wide replication and scaling up of projects

Strategy 5: Establish proper management of hazardous waste collection, transportation, recycling recovery and disposal

Objectives	Actions	Responsible organization(s)	Implementation period	Resource mobilization	Targets/Indicators
5.1 Improve the legal framework and regulations related to hazardous waste	5.1.1 Develop and update hazardous waste regulations and procedures based on the amended Law of Waste (2017)	UCM, MET	2017-2020	CB, donor funds	Develop procedures
	5.1.2 Develop hazardous waste handling standards, including hazardous waste landfill establishment	MET, UCM	2017-2020	CB, donor funds	Develop standards
5.2 Promote effective recycling, treatment and final disposal of hazardous waste by introducing selected technologies	5.2.1 Implement source segregation and collection systems	UCM, Ulaanbaatar and district governors	2017-2030	CB, donor funds	Achieve hazardous waste segregation of 10% by 2020, 20 % by 2025, 30% by 2030
	5.2.2 Support/subsidize proven local technologies for management of special waste streams that need immediate attention, such as composting for organic waste	UCM, Ulaanbaatar and district governors	2017-2030	CB, donor funds	Achieve local technology penetration of 10% by 2020, 20% by 2025 and 30% by 2030
	5.2.3 Construct hazardous waste landfill	UCM, MET	2017-2025	CB, donor funds	Establish hazardous waste landfill by 2025



# 5

## IMPLEMENTATION AND MONITORING

Various laws, procedures, programs and plans have been developed to support green development and waste management improvement in Mongolia, and particularly in Ulaanbaatar. However, a proper waste management system has not been developed yet. Therefore, existing challenges and their solutions, as well as expected outcomes and the means to reach them were identified in the process of developing the UWMISAP, which to an extent rely on the implementation, impacts and experiences of previous projects and programs.

Commitment and involvement of stakeholders are vital in the effective implementation of the UWMISAP. Moreover, there is an urgent need to develop the financial and human resources capacity to implement this strategy.

The realization of the vision, objectives and expectation of the outcomes of the UWMISAP will be monitored as follows:

- › UCM will be responsible for implementation and monitoring of this strategy;
- › The head of the UCM will report the progress and results of the UWMISAP to the Mayor and Governor; and
- › The indicators of the expected outcomes of each action have been described and the strategy will be evaluated according to the indicators annually. If necessary, further improvements will be made.





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