

# "IDENTIFICATION OF TRAINING AND LEARNING NEEDS" FINAL REPORT

Commissioned party: SICA LLC

Ulaanbaatar  
2021

This publication was produced with the financial support of the European Union. Its contents are the sole responsibility of the project “Sustainable Plastic Recycling in Mongolia” implemented by the Caritas Czech Republic and its partners and do not necessarily reflect the views of the European Union.

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## ABBREVIATION

CSO	Civil Society Organization
KII	Key Informant Interview
MSMEs	Micro, Small and Medium-sized Enterprises
NGO	Non-governmental Organization
OSH	Occupational Safety and Health
UN	The United Nations

## FOREWORD

The research team of “SICA” LLC, a research and consulting company, conducted an “Identification of training and learning needs” assessment commissioned by "Caritas Czech Republic". This study aims to identify the training and learning needs of target groups within the scope of the Sustainable Plastic Recycling in Mongolia project.

We believe that the results of the study will be an important source of information to determine the stakeholders' understanding of the adverse impacts of plastic waste and to address issues related to the training activities aimed at them.

We would like to thank Caritas Czech Republic and MSMEs in the plastic recycling industry, participants in the plastic waste collection process, the capital city, capital city districts, province and soum authorities, NGOs and households for their cooperation in carrying out this study.

### **IMPLEMENTING ORGANIZATION:**

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## EXECUTIVE SUMMARY

Within the framework of “Identification of training and learning needs”:

1. Waste generators (Households),
2. NGOs and CSOs,
3. City administration, city-district, province and soum administrations,
4. SMEs in the plastic recycling sector,
5. Participants in the plastic waste collection were involved in the survey, and the survey is

aimed to identify the training and learning needs of these target groups about waste and plastic waste.

The survey data were collected using primary and secondary data sources such as document analysis, quantitative research, and key informant interviews. The scope was defined as 6 districts in the center of Ulaanbaatar city, Bulgan soum and Khishig-Undur soum of Bulgan province. The survey was conducted on a sample of 503 households, and 28 key informant interviews were conducted. We also analyzed approved programs, plans, and other relevant documents related to waste management, as well as previous work and their reports.

As a result of the survey, training and learning needs of the households are identified as legal awareness on waste related law and regulations, waste sorting, the environmental and health impacts of waste and the benefits of recycling plastic waste. Households assessed the current situation of waste management as very insufficient with 1.9 points (out of 5 points) while they assessed their knowledge and understanding about waste sorting as insufficient to moderate with 2.9 points (out of 5 points).

As for SMEs, there is a need for upgrading their equipment and training specialists in its operation and maintenance, strengthening the organization’s financial capacity, OSH training and training on the international best practices.

Municipal, city-district and province-soum administrations need training on international best practices, recycling and human resource development.

NGOs and CSOs need training in strengthening cooperation with other organizations, fundraising, participating international projects and programs, hardware and technological solutions, increasing organizational competencies, increasing legal capacity and policy impact, knowledge about environmental and economic impacts of waste and potential solutions to reduce negative impacts.

In addition, the results of the survey of plastic waste collection participants identified the need for training on staff capacity building, learning from international best practices, waste transportation, and electronic waste systems in developed countries.



# **CHAPTER 1.**

# **ASSESSMENT METHODOLOGY**

## 1.1 ASSESSMENT GOALS AND OBJECTIVES

The purpose of this assessment is to identify the training and learning needs of the target groups within the scope of the Sustainable Plastic Recycling in Mongolia project.

Within the framework of the main goal, the following objectives were set:

- Identify and assess target groups' knowledge and information gaps, areas of study, training and learning needs
- Assess and analyze the level of knowledge and information of the target groups on waste management and plastic recycling

Primary and secondary sources of information were used to meet the goals and objectives of the study.

## 1.2 THE SCOPE OF THE ASSESSMENT

The survey covered Ulaanbaatar city and Bulgan province in terms of location. Of the 503 households surveyed, 60.6% were from Ulaanbaatar, 39.4% from Bulgan soum and Khishig-Undur soum of Bulgan province. The participants are shown in the following figure.

**Table 1. The scope of the assessment**

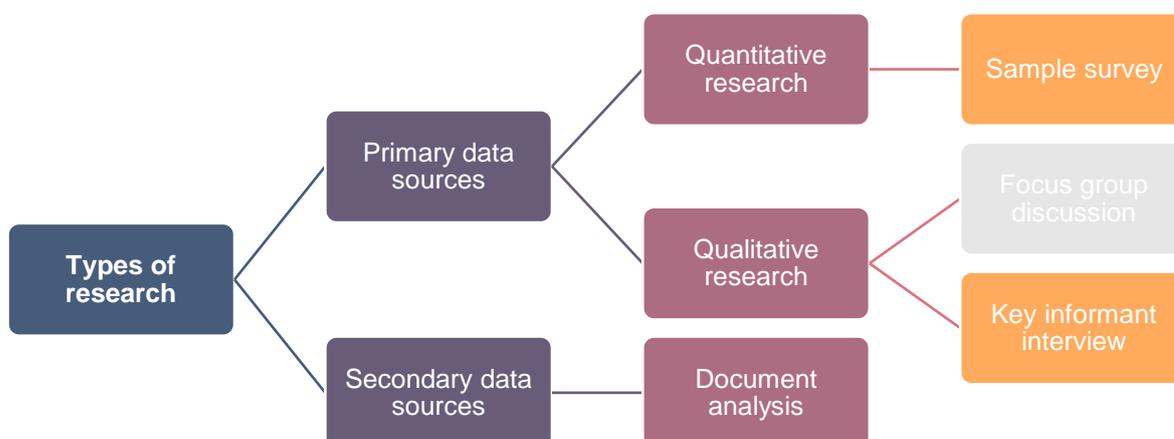
No	Scope
1	Ulaanbaatar city
	Bayangol district
	Bayanzurkh district
	Chingeltei district
	Songinokhairkhan district
	Sukhbaatar district
	Khan-Uul district
2	Bulgan soum of Bulgan province
3	Khishig-Undur soum of Bulgan province



## 1.3 ASSESSMENT METHODOLOGY

We conducted data collection using primary and secondary data sources through document analysis, quantitative research and key informant interviews and analyzed them.

**Figure 1. Types of research**



Quantitative research: The survey was conducted by a trained enumerator (data collector) according to a pre-designed questionnaire from the participants sampled conforming to the statistical methodology.

Key informant interview: Conducted discussions and interviews with stakeholders.

Document analysis: Relevant policies, programs, documents, reports and manuals were analyzed

**Table 2. Type of research**

No	Type of research	Sampling units	Scope	Sample size
1	Quantitative research	<ul style="list-style-type: none"> <li>Households /Waste producers/</li> </ul>	Plastic recycling plants, relevant government organizations and households in Ulaanbaatar city, Bulgan soum and Khishig-Undur soum of Bulgan province	n=503
2	Key informant interview	<ul style="list-style-type: none"> <li>MSMEs in the plastic recycling industry</li> <li>Capital city, capital city districts, provincial and soum authority</li> <li>Participants in the collection of plastic waste</li> <li>Non-governmental organizations and Civil society organizations</li> </ul>		28 times
3	Document analysis	Relevant policies, programs, documents, reports and manuals were analyzed		

### 1.3.1 Quantitative survey

The quantitative survey was conducted by an enumerator (data collector) who was trained according to a questionnaire that included specially prepared questions from the respondents according to the statistical methodology. Enumerators collected information from the survey participants by asking and completing the questions, one by one, in the approved questionnaire.

#### **Sampling distribution:**

Although the size of sample is different depending on the surveys, it is important to be capable of representing the main population. Therefore, the following factors are increasingly considerable:

- Time and finance
- Necessity of detailed and reliable results
- Least margin of error

On basis of above consideration, we define sample size by following function.

#### **Determining the sample size:**

We conducted a survey of households living in Ulaanbaatar city, Bulgan soum, and Khishig-Undur soum of Bulgan aimag, where the project is being implemented. As of 2019, there are a total of 410,389 households living in Ulaanbaatar city and Bulgan province, and this number has been determined as the population (1212.mn). The appropriate sample size was determined as follows.

$$n = \left( \frac{z^2 \times P_0 \times (1 - P_0)}{e^2} \right) \times Def f$$

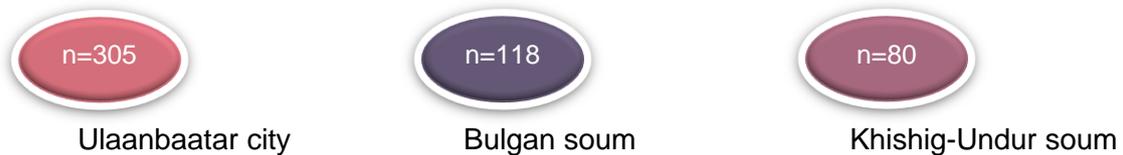
- Z = value of t-statistics at 95 percent significance level 1.96
- P<sub>0</sub> = Key indicators weight
- e = Standard error

- Deff = Design effect is an adjustment made to find a survey sample size, due to a sampling method

**Table 3. Sampling calculation**

Population	Confidence level	Confidence interval	Sample size
410,389	95.0%	±4.4	503

In consideration of the density of population, 60 percent of the participants from the Ulaanbaatar city and 40 percent from the rural areas were estimated.



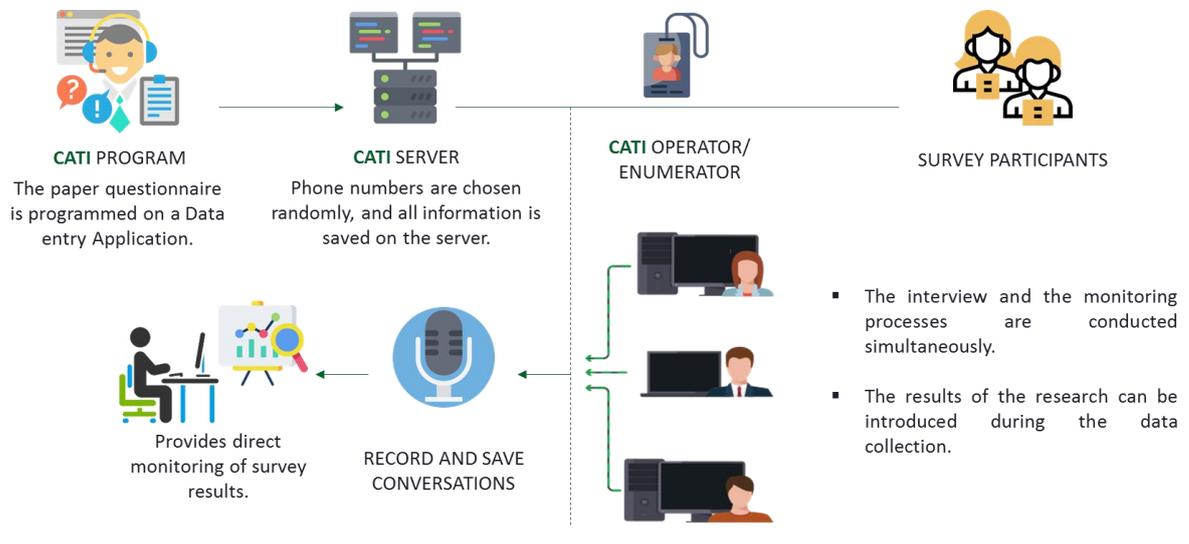
**Data collection process:**

The quantitative survey was conducted over 10 days, and 12 enumerators worked under the direction of the supervisors.

The CATI method of data collection by telephone has several advantages. These include:

- Participants' conversations are automatically recorded on a tape recorder
- The information collected by the researcher is sent to the server from time to time
- Information flow is fully controlled, so there is less chance of data loss
- Direct monitoring of survey results
- Ability to collect information securely and quickly in real-time situations

**Figure 2. Data collection process of quantitative research-CATI**



**1.3.2 Key informant interview**

Key informant interviews have the advantage of being able to interpret the results of the survey, obtain more detailed information about the survey, and compare the results with the results of the survey.

In the case of qualitative research, depending on the purpose, objectives and characteristics of the research, a person with full knowledge, experience and ability to speak on the issue or topic is selected rather than using a certain number of samples and general representation ability.

The following table shows the stakeholders in the key informant interview.

**Table 4. Sampling distribution of KII**

No	Stakeholders	Number of participants
1	MSMEs in the plastic recycling industry	8
2	Capital city, capital city districts, provincial and soum authority	7
3	Participants in the collection of plastic waste	7
4	Non-governmental organizations and Civil society organizations	6
Total		28

**Figure 3. Methodology of key informant interview**



### 1.3.3 Document analysis

Document analysis has the advantage of being able to compare the research results, rules, programs, resolutions, previous reports, and results within a given topic.

**Figure 4. Document research map**



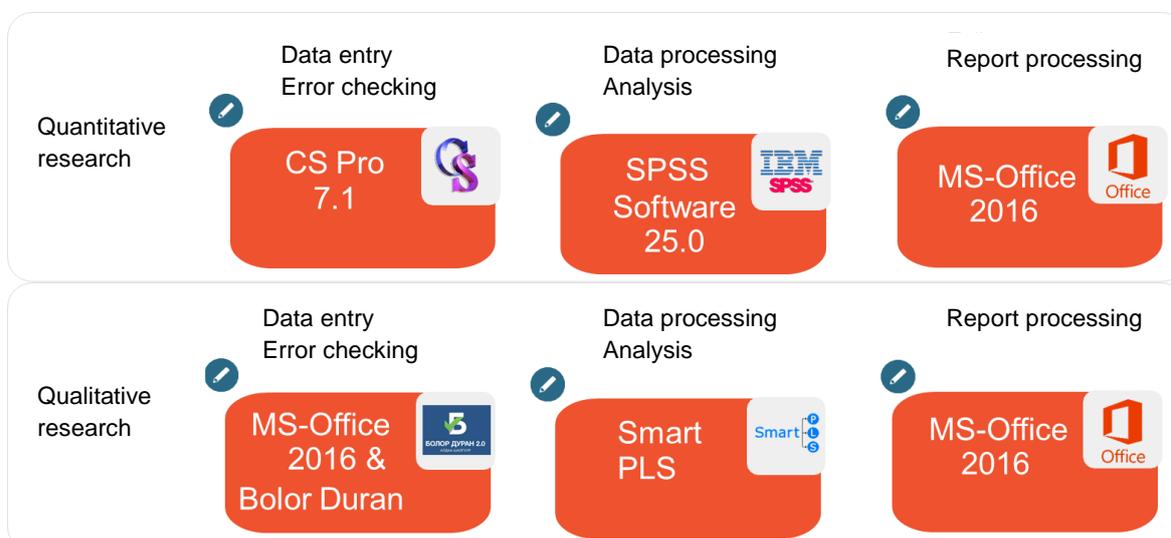
The following documents were analyzed using secondary sources for document analysis. These include:

- Approved programs, plans, orders, and other relevant documents related to waste management
- Previous work related to plastic waste management, and their reports.

## 1.4 DATA PROCESSING AND ANALYSIS

Software usage: Depending on the research method, different software was used to analyze and process data.

**Figure 5. Software usage, survey**



The following software was used during the data processing phase.

- Data entry, error checking: **CS Pro 7.1**
- Data processing: **SPSS Software 25.0, IBM8 SPSS, STATA**
- Report processing: **MS-Office 2016**

### *Entering Quantitative Survey Data and Checking Errors: CS Pro 7.1*

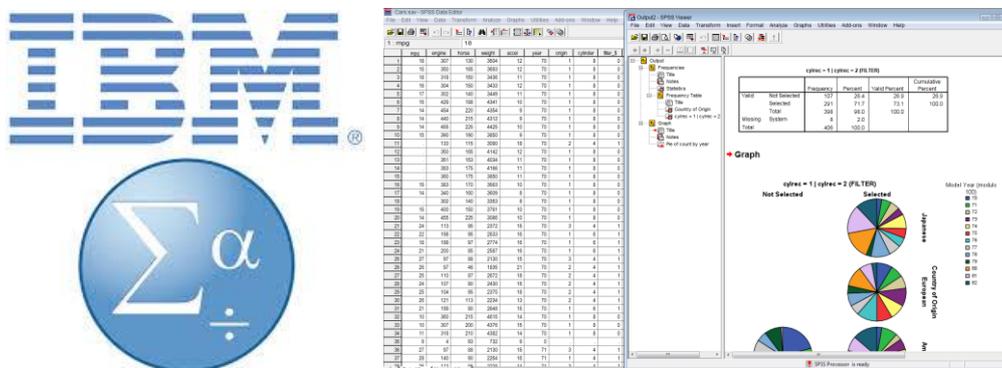
Each time the survey data is sent to the SICA central server, the database manager reads the error protocol using specially designed error-checking software and reports the error to the research team and had them corrected.

### *Quantitative survey data processing: SPSS Software 25.0, IBM8 SPSS, STATA*

Initial revisions and advanced inspections have been carried out since the survey data entry phase. From this time onwards, the development of algorithms for the main and additional survey tables began, and completed when the last household data was received or survey data collection period ended. Data analysis was performed using standard formulas and results table templates developed for this study. Additional tables adapted to the questionnaire were developed using SPSS 25.0, a statistical software package used in the social sciences.

Analysis:

- SPSS: Statistical Package for the Social Sciences
- IBM SPSS: Statistical Product and Service Solutions
- STATA: Data Analysis and Statistical Software



The results of the key informant interviews were processed using the qualitative research software Dedoose.



### Report development: MS-Office 2016

Word, Excel, and Powerpoint software from MS-Office 2016 were used during the report development phase.



## CHAPTER 2. DOCUMENT ANALYSIS

## 2.1 GENERAL INFORMATION ABOUT THE INDUSTRY

In recent years, the issue of waste, especially plastic waste, has attracted attention not only in Mongolia but also around the world. This is due to the rapid development of urbanization, industrialization and technology, as well as the increase in plastic packaging products, which have negative consequences for the environment.

Although there are no detailed data on the total amount of waste generated in Mongolia, the total amount of waste delivered to landfills nationwide (this amount does not take into account the amount of illegal waste, and it is estimated that up to 15.0% of the total waste is dumped at illegal sites in Ulaanbaatar<sup>1</sup>) reached 3.3 million tons in 2018, which is four times more than in 2008.

An average of 20,000 tons of plastic waste is produced annually, of which 7,929 tons come from Ulaanbaatar city.<sup>2</sup> Of this, 15,000 tons are from plastic beverages or PET and 4.5 tons are LDPE household plastic containers.

Because the most plastic waste is not biodegradable, it remains in the environment for a very long time. We know that this can upset the balance of the environment and adversely affect human health and the flora and fauna. Therefore, projects and programs are being implemented related to the classification and recycling of plastic waste and one of them is the Sustainable Plastic Recycling in Mongolia project.

A detailed study on the amount and structure of waste has not yet been conducted in Mongolia, but a study on the amount and structure of household waste in Ulaanbaatar has previously been conducted with the assistance and support of international organizations. The structure of household waste produced by households on a daily basis was determined within the framework of the “Master Plan for Ulaanbaatar City Waste Management” and the “Strengthening the Capacity for Solid Waste Management in Mongolia” technical cooperation project implemented by JICA during the years 2005-2012.<sup>3</sup>

**Table 5. Solid waste structure, by percentage.**

Solid waste structure	Percentage	Combustion waste	Percentage
Food waste	20.7%	Metal	2.55
Paper	8.5%	Bottles	9.3%
Cloth	2.9%	Porcelain stones	2.3%
Diseased wood	0.6%	Others	3.3%
Plastic	12.8%	<b>Ash-free, non-combustible waste</b>	<b>Percentage</b>
Leather, rubber	0.3%	Weight of others (%)	63.2%
		Weight of ash (%)	36.8%
<b>Total</b>			<b>100.0%</b>

Documents related to waste and recycling within the legal environment, policies and strategies are divided into sub-chapters in the following sections..

<sup>1</sup> Byamba, B., and Ishikawa, M. “Municipal solid waste management in Ulaanbaatar, Mongolia: systems analysis” (2017)

<sup>2</sup> Mongolian National Recycling Association (2018)

<sup>3</sup> Ulaanbaatar household Waste composition study report (2019)

## 2.2 REVISED LAW ON WASTE (2017)

The purpose of the law is to regulate the activities related to reduction, sorting, collection, transportation, storage, reuse, recycling, destruction of waste and import, ban of transborder delivery and export of hazardous waste in order to reduce and prevent the negative impact of waste on human health and the environment, to put waste into economic circulation, to save natural resources, and to improve public education on waste. New regulations:

- To put waste into economic circulation through sorting, reuse, and recycling, to encourage citizens and business entities engaged in these activities and to introduce waste-free facilities and technology, and to support green procurement.
- Requirements for packaging, temporary storage, transportation, disposal, storage and recycling of hazardous waste, and registration, licensing, monitoring and reporting of operators.
- Follow the “Polluter pays” principle when calculating waste fees and charges, the manufacturer and the importer shall be responsible for the collection, reuse and recycling of waste and packaging resulting from the use of certain manufactured and imported goods.
- To provide waste education to citizens and business entities aimed at establishing a culture of environmentally friendly consumption, proper waste disposal, sorting and recycling practices, and knowledge about the negative impact of waste on human health and the environment.
- Clarify the responsibilities and liabilities of violators of waste-related legislation.

## 2.3 INTERNATIONAL AGREEMENTS AND CONVENTIONS

Mongolia has acceded to the following international agreements and conventions on human health and environmental protection:

- UN Framework Convention on Climate Change /1993/
- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes /1996/
- Vienna Convention for the Protection of the Ozone Layer /1996/
- Montreal Protocol on Substances that Deplete the Ozone Layer /1996/
- Rotterdam Convention on Preliminary Notification and Consensus on the Use of Certain Hazardous Chemicals and Pesticides in International Trade 1999/
- Stockholm Convention on Persistent Organic Pollutants /2003/

## 2.4 MONGOLIA SUSTAINABLE DEVELOPMENT VISION – 2030

Objective 2 of “2.3.3 Ecosystem balance” in “Mongolia Sustainable Development Vision– 2030” aims to “Advance urban development by increasing accessibility and quality of infrastructure, develop environmentally friendly practices of residents and improve waste management and environmental qualities”. During the implementation stage 2 (2021 - 2025) of the objective, it sets to increase the share of green spaces in urban areas to 25 percent and increase the share of waste recycling to 30 percent. And during the implementation stage 3 (2026-2030), objective is to increase the share of green spaces in urban areas to 30 percent and to increase the share of waste recycling to 40 percent.<sup>4</sup>

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<sup>4</sup> Mongolian sustainable development vision-2030

## 2.5 GREEN DEVELOPMENT POLICY

The goal of the policy is defined as follows. “To become a developed nation who preserved and endowed environmental stability to future generations, ensuring conditions to receive its yield for the long-term by creating economic growth on the basis of green development concept and also inclusive of resident participation.” Green development objectives are as follows.

- Develop natural resource efficient, low emissions and low waste production and consumption.
- Intensify environmental protection and rehabilitation processes to reduce environmental pollution and degradation, and ultimately maintain ecosystem balance.
- Introduce effective leverages of finances, taxes, loans, and incentives to support the green economy, and increase investment in environmental protection, human development and clean technology.
- Support green employment and reduce poverty to develop a green lifestyle.
- Develop cultural and life values coherent to nature and use education, science, technology and innovation as an accelerator of green growth.
- Plan and develop communities in accordance with climate change, regional natural resources and renewable capacity.
- Within the scope of Objective 6 of “Green Development Policy”, it states to reduce waste disposal on landfills by 40.0% within 2030 with the introduction of efficient and productive technology, proper waste management practices in the community through environmental education and development of eco-friendly habits of the residents, and recycling and value added reproduction of waste.<sup>5</sup>

## 2.6 NATIONAL PROGRAM ON THE IMPROVEMENT OF WASTE MANAGEMENT (GOVERNMENT, 2014)

It has been set forth to implement immediately to define the objectives and actions directed towards expanding the concept of green development and taking waste management to a new level and reducing waste at the source by supporting resource-efficient, productive and waste-less clean technologies, enacting the pollutant payments, changing the mindset of citizens by raising awareness based on 3R (reduction, recycling and reuse) principle, creating waste disposal infrastructure, strengthening capacity, increasing the social responsibility of citizens, businesses, and organizations to reduce waste together with the participation of public, and creating a clean and healthy environment.

Goal of the program is to provide clean and healthy environment with an efficient use of resources, a promotion of technology in environmentally friendly waste disposal, and a development of proper management of solid waste by providing education on environmental and ecology friendly practices to residents. Following objectives are set for implementation:

- Advancing the legal environment and management of waste thus improving implementation, and establishing a system of accountability and incentives;
- Increasing production efficiency and decrease consumption of resources and raw materials, reducing waste, supporting advanced waste-free technologies, and establishing a system for proper management and control of industrial waste;

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<sup>5</sup> Green development policy

- Preventing the accumulation of hazardous waste by improving hazardous waste management and building capacity for environmentally friendly disposal;
- Creating a comfortable living environment for the residents by cultivating green consumption culture, and developing waste sorting and ecologically friendly practices;
- Reducing waste disposal on landfills by producing value-added products in recycling, reuse and power generation.

Stage II (2018-2022) of “National Program on the Improvement of Waste Management /Government, 2014/” states that it will intensify efforts to rehabilitate the environment degradation caused by waste, and will foster a culture of green consumption and social responsibility establishing proper waste management system and clean healthy environment.<sup>6</sup>

## **2.7 NATIONAL PROGRAM FOR REDUCING AIR AND ENVIRONMENTAL POLLUTION (GOVERNMENT, 2017)**

The goal of this project is to create safe and healthy environment by reducing air and environmental pollution through planning safe and healthy urban areas and cities for residents, increasing quality and accessibility of infrastructure thus cutting the sources of waste, and cultivating eco-friendly practices of residents. Project will be implemented in two stages (2017-2025).<sup>7</sup>

4.2.9. Advancing waste management by increasing the number of dedicated ash and waste storage points of ger area communities and waste collection and transportation vehicles and supporting waste utilization and recycling industry;
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4.2.10. Reducing the uncontrolled distribution of hazardous waste by establishing facility for temporary storage and disposal of hazardous waste;
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4.2.14. Renewing and enforcing standards aimed at reducing environmental pollution and waste generated by production and services, introducing environmentally friendly and advanced technologies, and using natural resources efficiently and effectively;
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4.5.3. Carry out air pollution control in ger districts, stop waste incineration, and implement measures to support target groups in this area;
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## **2.8 STATE INDUSTRIAL POLICY OF MONGOLIA (2015)**

The purpose of the Policy is to create the industrialization and service with advanced techniques, high technology and competitiveness and to develop the industrial sector as the priority sector that provides the sustainable development of Mongolia.<sup>8</sup>

Within the framework of this objective, “4.1.5. Support socio-economic efficient and recycling factories that are based on advanced techniques, high technology and innovation by investment and financial policy”, the following areas are planned to be pursued.

This includes: 4.2.1.11. The creation of a legal environment for the development of the recycling industry.

## **2.9 THREE PILLARS DEVELOPMENT POLICY (2018)**

In line with the Global Sustainable Development Goals (2015-2030), Mongolia's Sustainable Development Vision-2030, Government Action Plan 2016-2020, Economic Recovery Program,

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<sup>6</sup> National program on the improvement of waste management (Government, 2014)

<sup>7</sup> National program for reducing air and environmental pollution (Government, 2017)

<sup>8</sup> State industrial policy of mongolia (2015)

and Development Road Program, the Three Pillars Development Policy has been developed. It is the fundamental document of the Mongolian investment program of the years 2018-2020.

In the first phase of this policy (2015-2020), the government will protect domestic production, process basic raw materials domestically, promote exports through the introduction of machinery and technology, and implement an import-substituting industrial policy. In the second phase (2020-2025), an export-dominated industrial structure will be established and high technology, machinery, equipment and chemical production will be developed. In Phase III (2025-2030), it is planned to develop a knowledge-based industry and support the export of services and technology.<sup>9</sup>

3.3.3.21 states that in order to create a system for collecting, sorting, processing and reusing urban waste, incentives and subsidies will be provided to companies and individuals operating and using environmentally friendly methods, technologies and activities.

## **2.10 MEDIUM-TERM STRATEGY FOR IMPLEMENTING THE STATE INDUSTRIAL POLICY OF MONGOLIA 2015-2020**

The following principles will be followed in the implementation of the strategy:

- support the production of competitive products based on advanced techniques, technologies and innovations
- support the production of export-oriented, import-substituting end products;
- support the production of competitive products based on advanced techniques, technologies and innovations
- rely on effective partnerships between government, science, civil society and the private sector;
- promoting industry transparency and fair competition among stakeholders.

Within the framework of the strategic objective, Objective 4. To increase the production of competitive products, and support manufacturing and recycling plants that are based on advanced techniques, high technology and innovation through financial policy.

The implementation of strategic goals and measures will achieve the following results:

7.1.1. Create a favorable legal environment for production and trade, and increase the share of the manufacturing sector in GDP;

7.1.9. High-skilled engineers and technicians will be able to work in the country's factories and increase productivity as conditions are created for workers to work stably.

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<sup>9</sup> Three pillars development policy (2018)



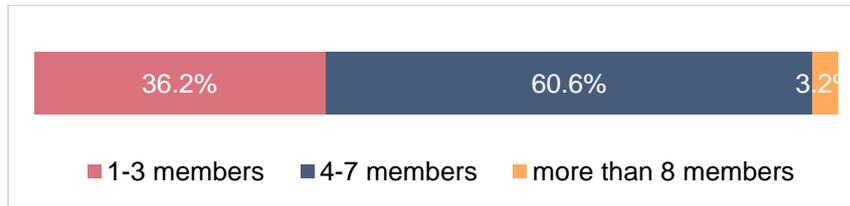
## **CHAPTER 3. RESULTS OF HOUSEHOLD SURVEY**

### 3.1 GENERAL CHARACTERISTICS OF SURVEY PARTICIPANTS

#### ***In terms of household:***

Three out of every 10 households surveyed had 1-3 members, 6 out of every 10 households had 4-7 members, and the rest had more than 8 members.

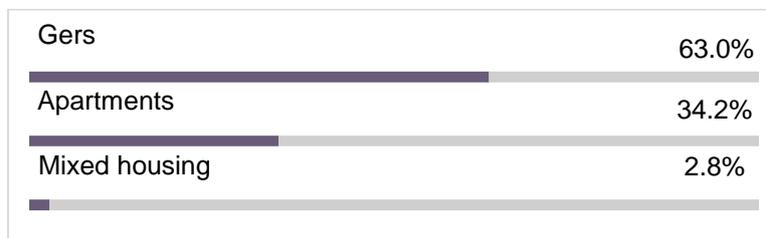
**Graph 1. Households surveyed, by family size**



“Number of household members”  
n=503

In terms of household dwelling types, 6 out of every 10 households live in gers, 3 out of every 10 households live in apartments, and the rest live in mixed housing.

**Graph 2. Households surveyed, by dwelling type**

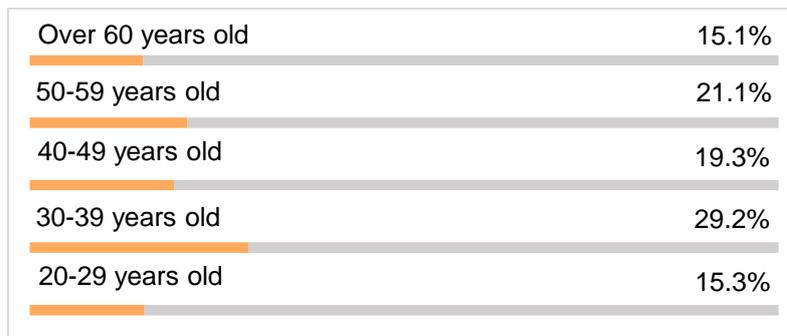


“Household dwelling types of participants”  
n=503

#### ***In terms of survey participants:***

Regarding the age group of the survey participants, the majority of them represents younger generation, 30-39 years old, and the lowest share percentage is over 60 years old.

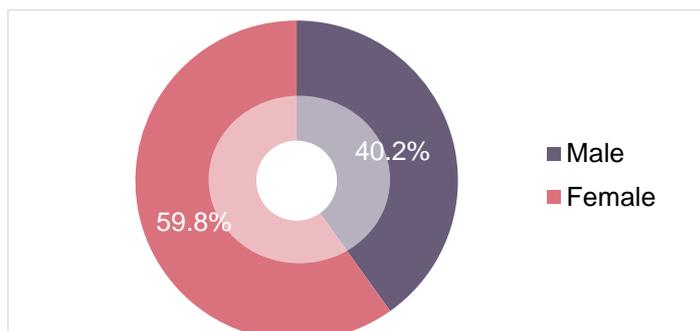
**Graph 3. Survey participants, by age group**



“Age of participants”  
n=503

59.8% of respondents of surveyed households were female, 40.2% of respondents were male.

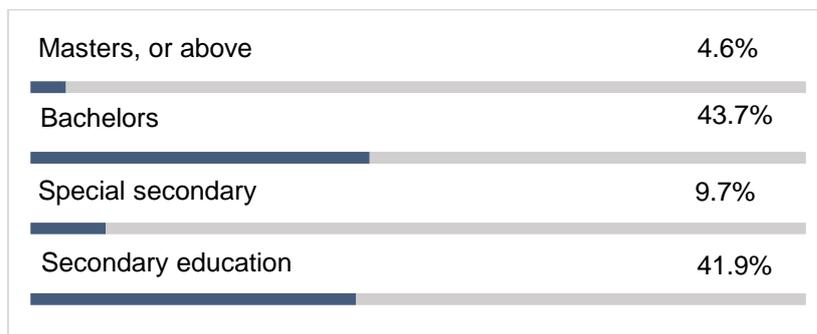
**Graph 4. Survey participants, by gender**



“Gender of participants”  
n=503

In terms of education, 85.6% of the participants have a high school diploma or a bachelor's degree.

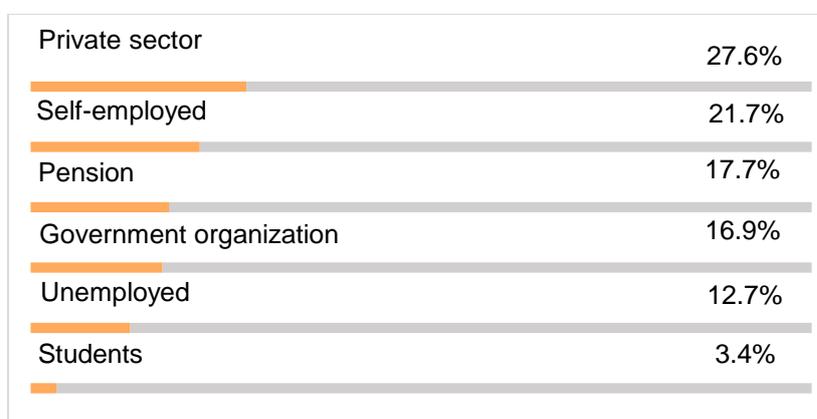
**Graph 5. Survey participants, by level of education**



“Level of education”  
n=503

In terms of employment status, the highest or 49.3% were employed in private sector and self-employed, and the lowest or 3.4% were students.

**Graph 6. Survey participants, by the status of employment.**

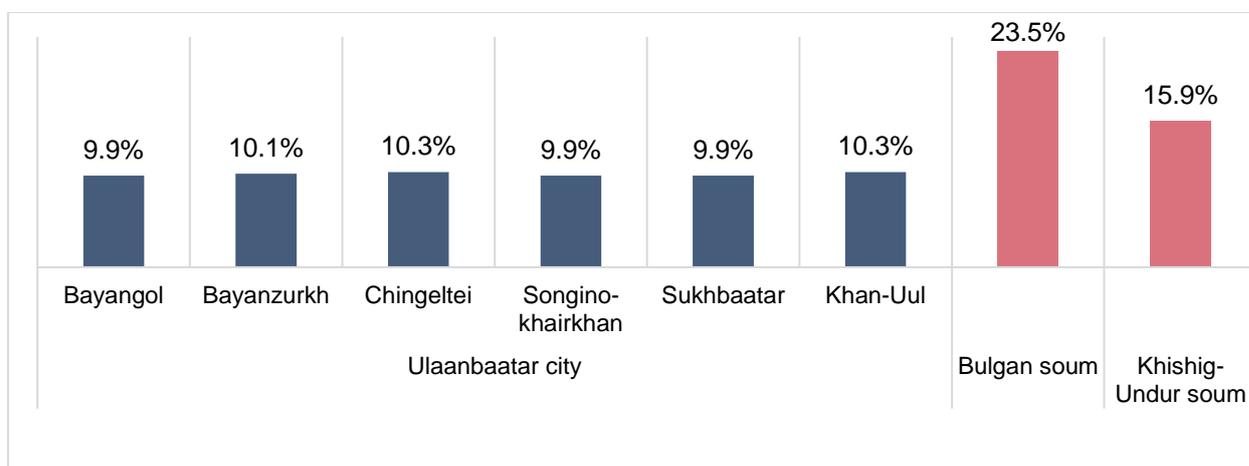


“Employment status”  
n=503

### 3.2 SURVEY RESULTS

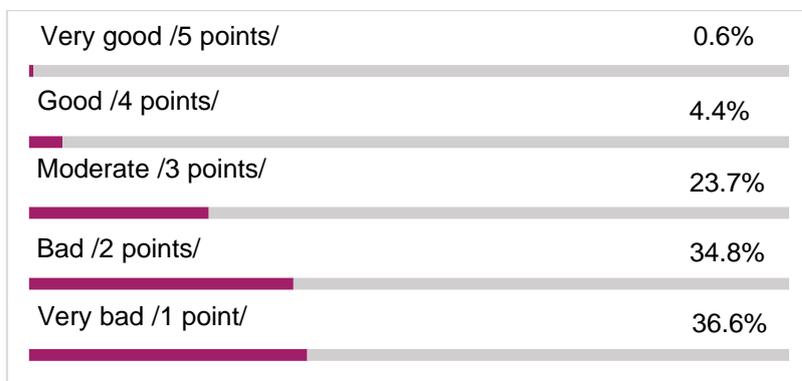
Representing households from 6 districts of Ulaanbaatar city center (n = 305) and Bulgan soum (n = 118) and Khishig-Undur soum (n = 80) of Bulgan province participated in this survey. The ratio of Ulaanbaatar city to Bulgan province was chosen to be 60:40.

**Graph 7. Respondents of the surveyed households, by location and percentage**



Households assessed the waste management situation in Mongolia as follows. The majority of the ratings were “bad” or “very bad” and have provided an average of 1.9 (out of 5) points or “very bad” on waste issues.

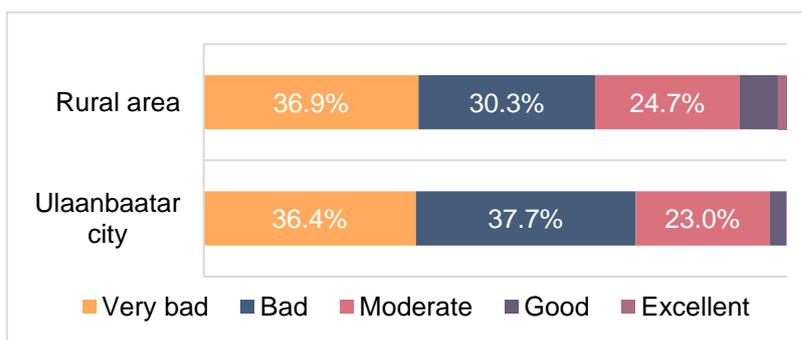
**Graph 8. Waste management situation and evaluation**



“In your opinion, what is the current level of waste management in Mongolia? (Please rate between 1-5 points) n=503

The reasons for each evaluation of waste management situation are provided in Appendix 1-5. On the other hand, Mongolia's average household ratings for waste management by location is 1.9 (out of 5) points or “very bad” for households in Ulaanbaatar city, and 2.1 (out of 5) points or “bad” for rural households.

**Graph 9. Waste management situation, by evaluation, by location**

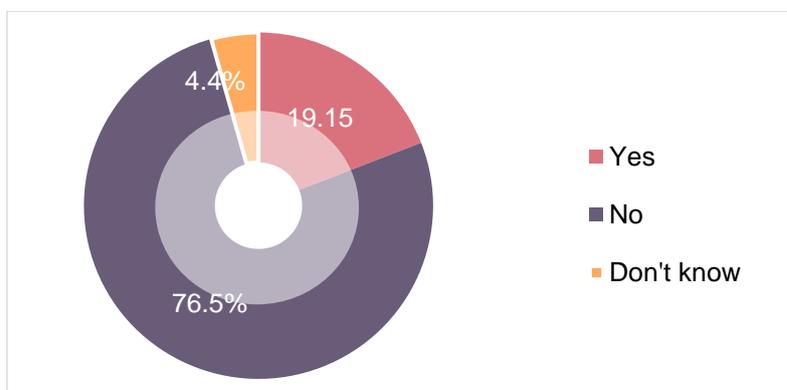


“In your opinion, what is the current level of waste management in Mongolia? (Please rate between 1-5 points) n=503

“City, district/ province, soum of residence” n=503

2 out of every 10 households surveyed received some information about waste recycling projects and programs in their communities, while 7 out of every 10 households did not receive any information.

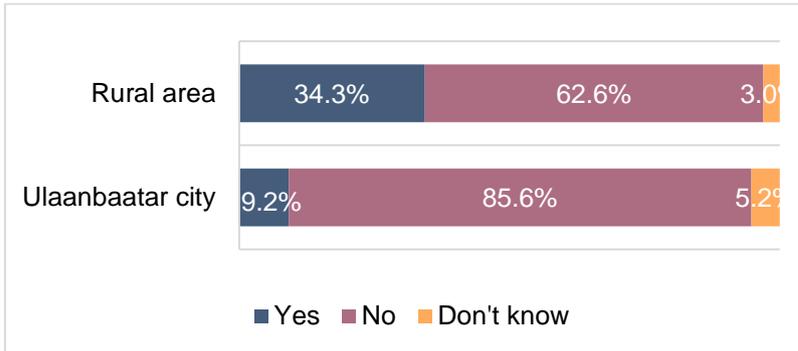
**Graph 10. Access to information on recycling projects and programs**



“Have you received any information about waste recycling projects and programs implemented in your area of residence??” n=503

6 out of every 10 households surveyed in rural areas did not receive any information on waste recycling projects and programs, while 8 out of every 10 households in Ulaanbaatar did not receive such information.

**Graph 11. Access to information on waste recycling projects and programs, by location**

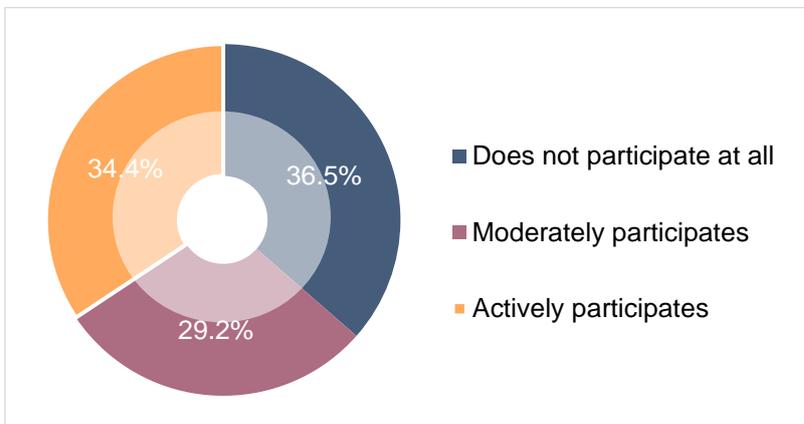


“Have you received any information about waste recycling projects and programs implemented in your area of residence?” n=503

“City, district/ province, soum of residence” n=503

One-third of the households (n = 96) that received information about related projects and programs answered that they are actively involved in the projects or programs.

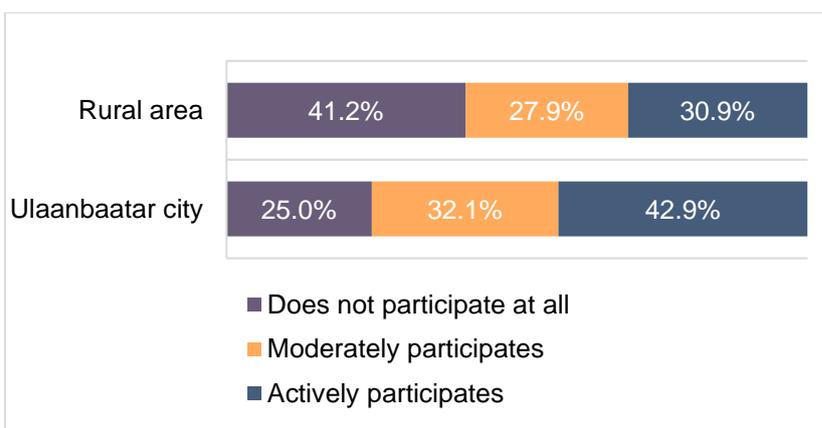
**Graph 12. Participation in projects and programs**



“To what extent are you and your household involved in those projects?” n=96

The following graph shows that the participation of households in the projects and programs in Ulaanbaatar city is higher than the participation of rural households

**Graph 13. Participation in projects and programs, by location**

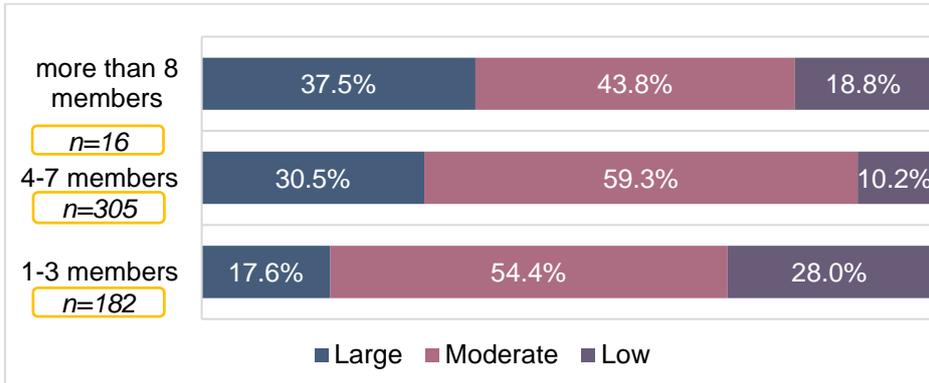


“To what extent are you and your household involved in those projects?” n=503

“City, district/ province, soum of residence” n=503

20.6% of the surveyed households generate large amounts of waste, 57.1% generate moderate amounts of waste, and the rest generate small amounts of waste in a month. If we compare this to the family size, 1 in every 2 households with 1-3 members, 2 out of every 3 households with 4-7 members, and 2 out of every 5 households with more than 8 members are producing moderate waste.

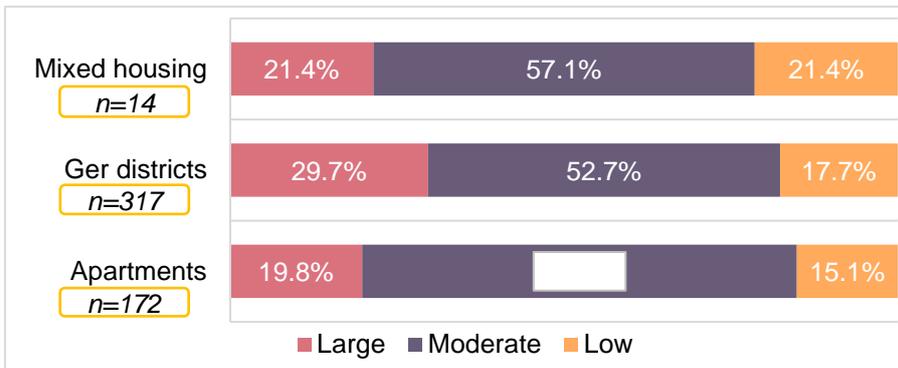
**Graph 14. Amount of monthly household waste, by size of family, by percentage**



“How much waste do you think your household produces per month?”  
n=503

We also reviewed the amount of waste produced per month by type of dwelling. One in every 5 households living in apartments and mixed housing and one in every 3 households in ger district generate large amounts of waste.

**Graph 15. Amount of monthly household waste, by type of dwelling, by percentage**

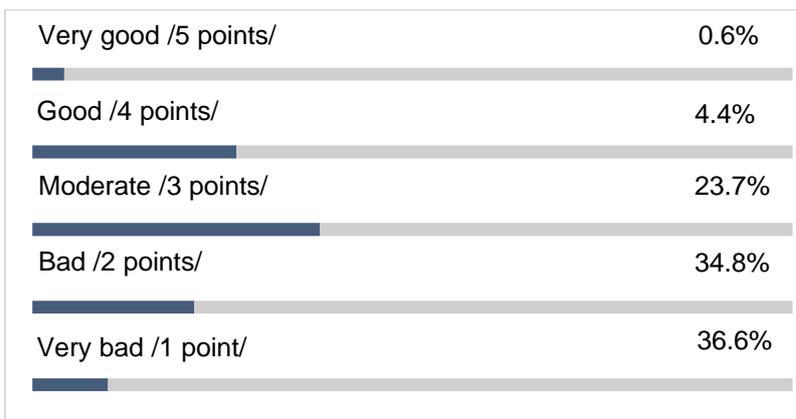


“How much waste do you think your household produces per month??”  
n=503

“Household dwelling”  
n=503

Assessment of household waste sorting knowledge averaged 2.9 (out of 5) points or considered bad. More than 70 percent of the participants rated “bad” or “very bad”.

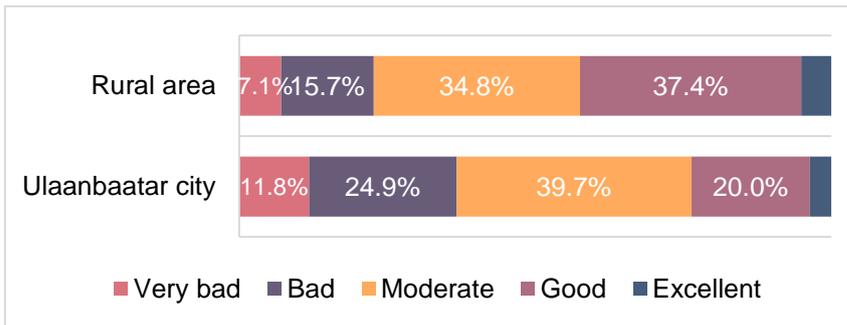
**Graph 16. Waste sorting knowledge and information, by percentage**



“Does your household have an understanding and information on waste sorting? (Please rate between 1-5 points)?”  
n=503

Households in Ulaanbaatar city lack knowledge and information about waste sorting compared to rural households.

**Graph 17. Waste sorting knowledge and information, by location, by percentage**

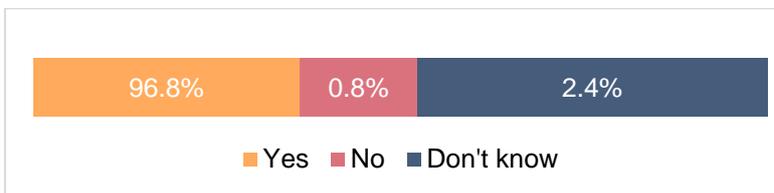


“Does your household have an understanding and information on waste sorting? (Please rate between 1-5 points)?”  
n=503

“City, district/ province, soum of residence” n=503

The majority of households surveyed, 96.8%, believe that it is the right thing to sort of segregate their daily waste.

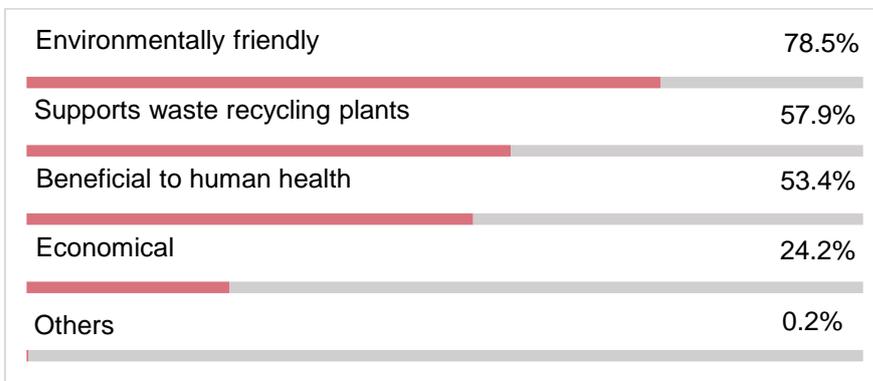
**Graph 18. Whether sorting waste is right or not, by percentage**



“Do you think it is appropriate to sort your daily waste?”  
n=503

Most households agree that sort their daily waste is environmentally friendly, healthy, economical and supports waste recycling plants.

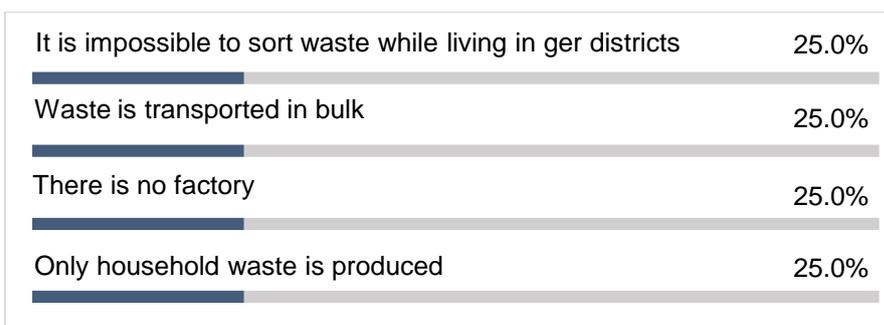
**Graph 19. If yes, why, by reason, by percentages**



“If Yes why?”  
n=487

Households (n = 4) who do not agree with the waste segregation at source mentioned the following reasons.

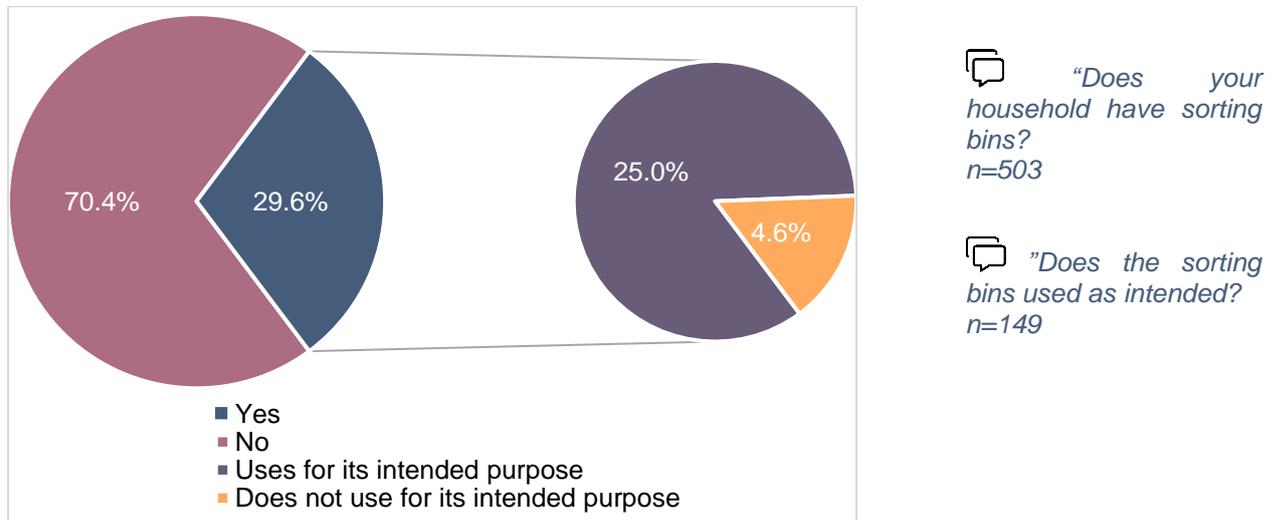
**Graph 20. If not, why, by reason, by percentages**



“If No why?”  
n=4

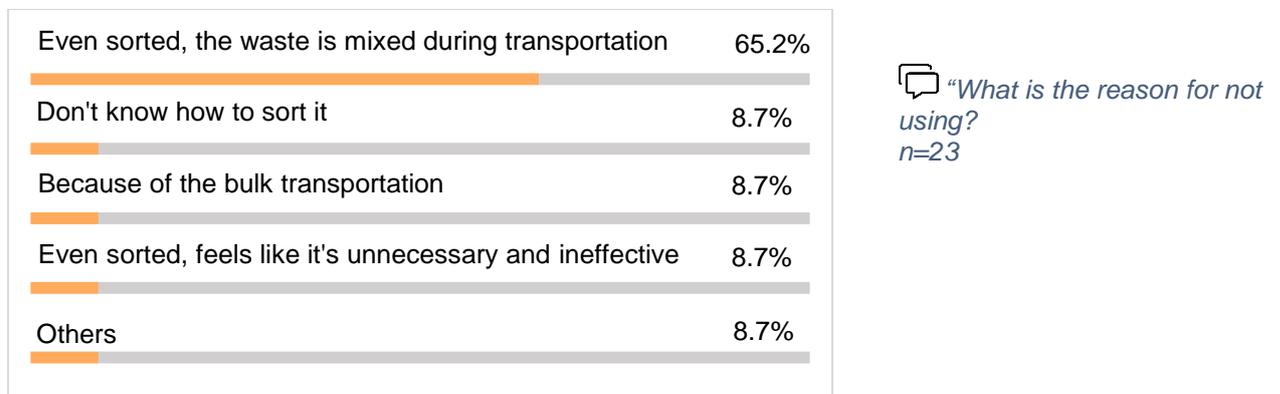
Seven out of every 10 households do not have a waste sorting bins, while the remaining 3 households have the sorting bins. Five out of every 6 households with sorting bins use sorting bins according to their purpose.

**Graph 21. Ownership of waste sorting bins, by percentages**



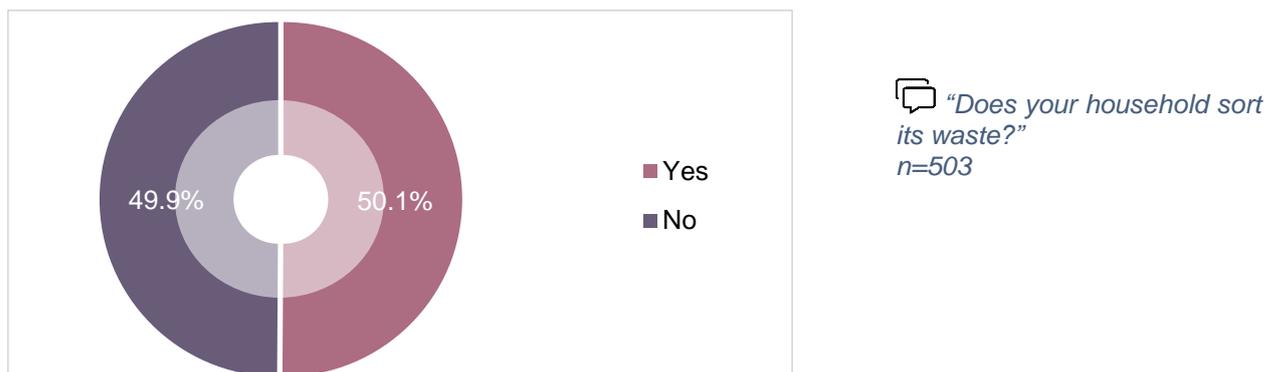
Six out of every 10 households (n = 23) that have waste sorting bins but do not use the bins for its intended purposes said that they stopped sorting waste at source because waste is transported in bulk even though it is disposed separately at the household level. Moreover, these households answered that they did not know how to sort their waste and considered sorting useless and ineffective.

**Graph 22. Reasons for not using sorting bins for their intended purposes, by percentages**



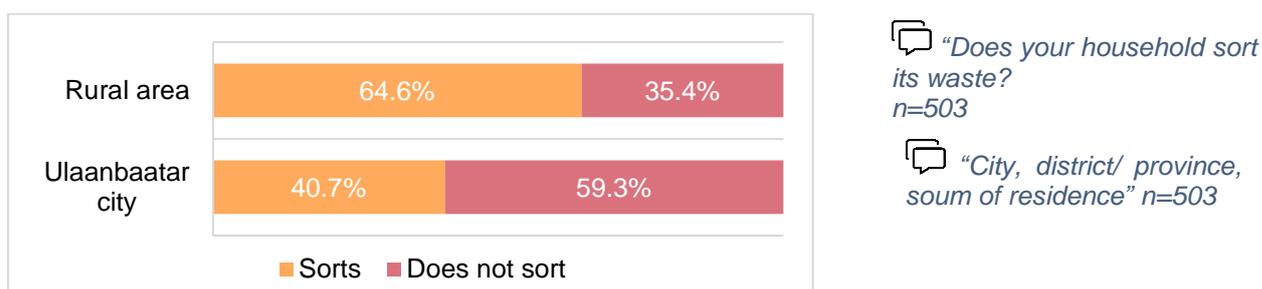
50.1% of households in the sample sort their waste, while the rest do not.

**Graph 23. Whether a household sorts its waste or not, by percentage**



Households from Ulaanbaatar city were less involved than rural households in waste sorting.

**Graph 24. Whether a household sorts its waste or not, by location, by percentage**



One in every 3 households that do not sort their waste does not have sorting bins. Furthermore, common reasons include that waste is discarded at one place even if they sort their waste, that waste is transported together, and that they do not know how to sort.

**Table 6. Reasons for households that do not sort their waste, by percentage**

No	Reasons	Percentage
1	No sorting bin	31.5%
2	Lack of optimal condition and tools	14.3%
3	Garbage truck loads in a bulk	13.5%
4	Sorting bins no effective outcome	12.7%
5	Not used to sorting and don't know how to sort	8.4%
6	Even though the waste is sorted, there is no option besides throwing it into the same container outside	6.8%
7	Even though the waste is sorted, it is dumped on the same disposal site	4.0%
8	I don't know	3.2%
9	No collection point for sorted recyclables	2.4%
10	We burn garbage	0.8%
11	Amount of waste generation is small	0.8%
12	Others	1.6%

“Reasons for not sorting household waste?” n=251

For the participants, the benefits of waste sorting were identified as follows. They enumerate the waste sorting benefits as follows: environmentally friendly and recycling products, healthy and comfortable living environment without exposure to outside wastes.

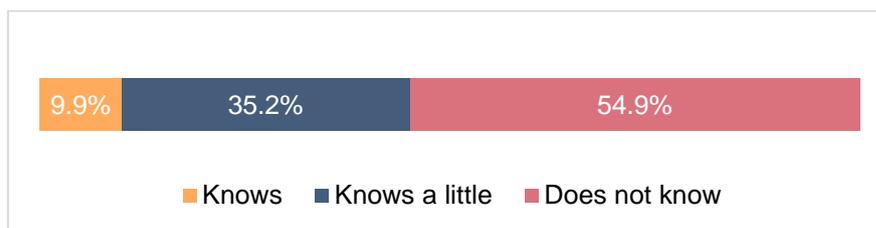
**Graph 25. Waste sorting benefits, by percentage**



“What do you think are the benefits of sorting waste?” n=503

The majority of respondents, or 54.9% do not know the types of plastic waste.

**Graph 26. Types of plastic waste, by percentage**



“Do you know the types of plastic waste?”  
n=503

Level of understanding about hazardous plastic waste among the surveyed households is as follows. One in every 4 households acknowledged that they do not have any understanding about different types of hazardous plastic waste.

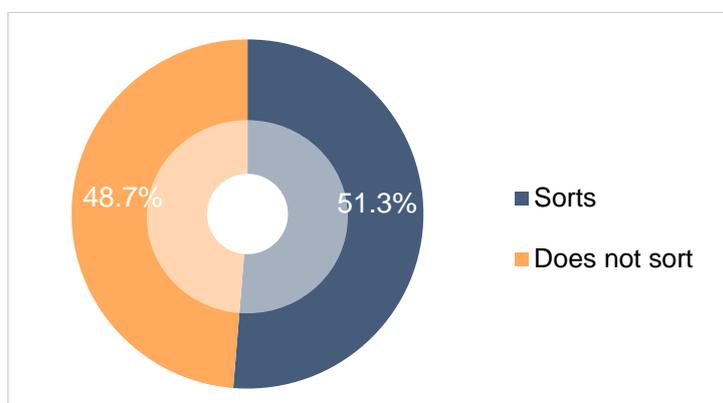
**Table 7. Types of hazardous plastics, by percentage**

No	Hazardous plastics	Percentage
1	Don't know	26.4%
2	All kinds of plastic containers	24.7%
3	Plastic bags	9.5%
4	Non-biodegradable waste	7.8%
5	Chemical waste	6.6%
6	Medical waste	3.6%
7	Gas container	3.6%
8	Oil container	3.2%
9	All types of waste	2.8%
10	Batteries	2.4%
11	Containers not suitable for food	2.4%
12	Non-recyclable waste	1.8%
13	Unlicensed containers without codes and markings	1.6%
14	Glass and cans	1.2%
15	Others	1.2%
16	Gasoline fuel containers	0.6%
17	Car battery	0.4%
18	Disinfectant, household containers	0.4%

“What do you think is hazardous plastic?”  
n=503

When participants were asked if they segregate plastics from other types of waste, approximately 51.3% of them had answered positively

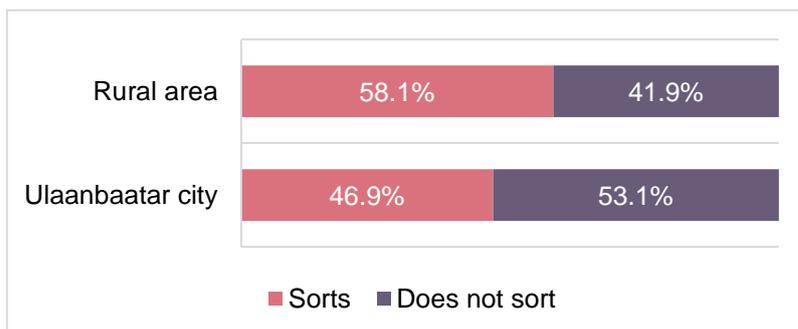
**Graph 27. Whether a household separates plastic wastes from other types of waste, by percentage**



“Do you separate plastic waste from other types of waste?”  
n=503

In terms of location of the households surveyed, rural households are 11.2% more likely to separate plastic waste than households in Ulaanbaatar city.

**Graph 28. Whether a household separates plastic wastes from other wastes, by location, by percentage**

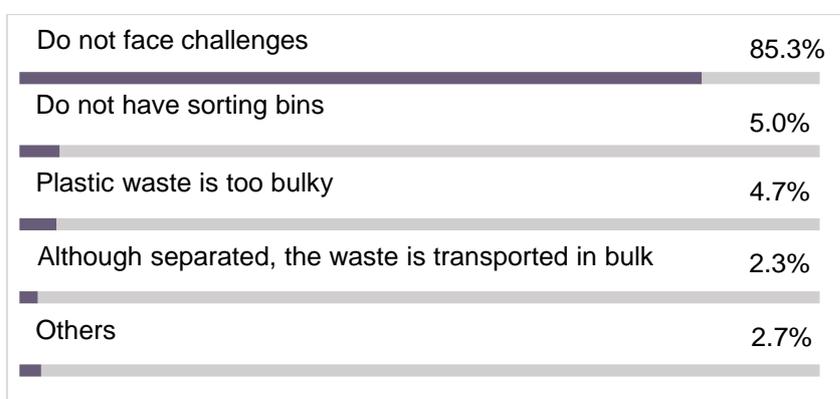


“Do you separate plastic waste from other types of waste?”  
n=503

“City, district/ province, soum of residence” n=503

85.3% of households that separate plastic waste reported that they do not face any challenges, while the rest has named following challenges of not having sorting bins, large in dimensions, and although separated, the waste is transported in bulk.

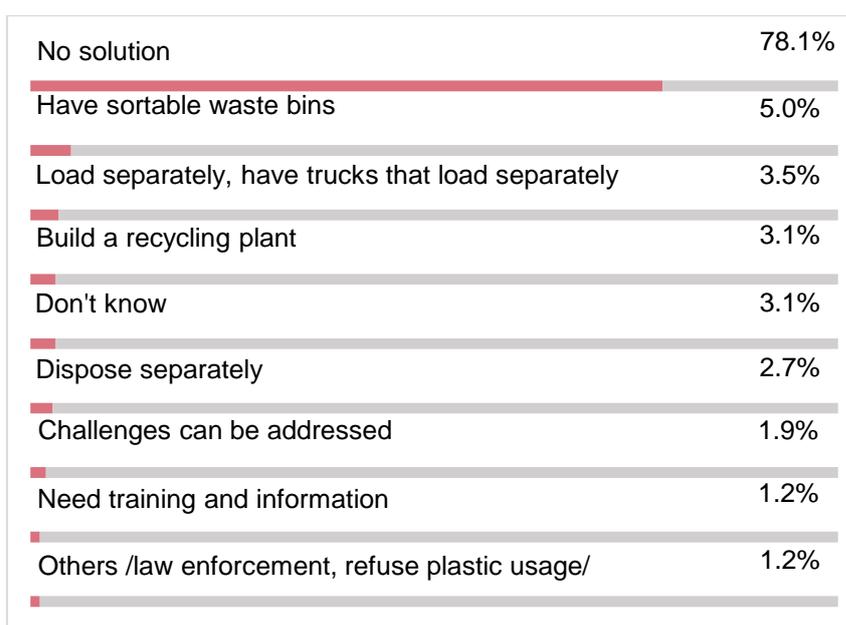
**Graph 29. Challenges in separating plastic waste, by percentage**



“What are the problems associated with separating plastic waste at disposal?”  
n=258

78.1% of households that separate plastics believe that above challenges cannot be solved. The rest of the respondents believe that it is possible to solve the problem if they have sorting bins, waste is not loaded and unloaded in bulk during transportation, residents sort the waste themselves, and the training and information on sorting is provided.

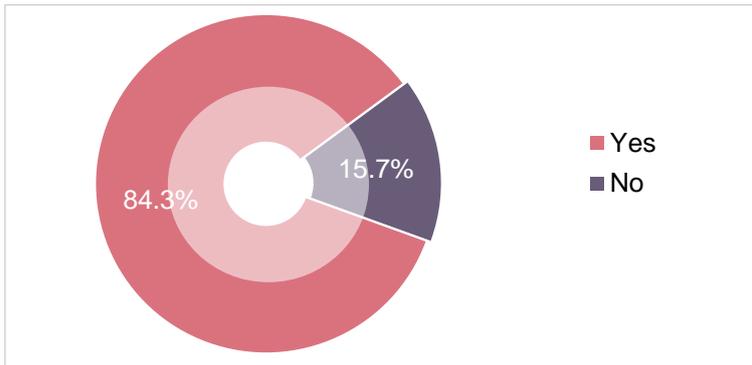
**Graph 30. Possible ways to address challenges, by percentage**



“How do you think these problems can be solved?”  
n=258

Eight out of every 10 households are aware that plastic waste is recycled.

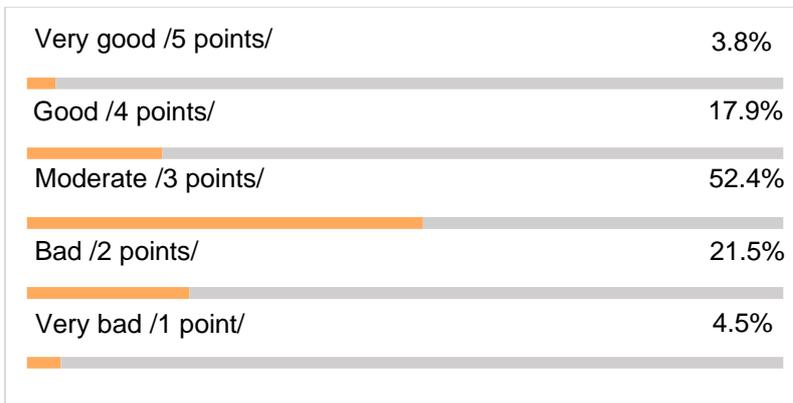
**Graph 31. Whether a household knows that plastic is recycled, by percentage**



“Did you know that plastic waste is recycled?”  
n=503

All households rated their knowledge and understanding of plastic recycling at an average of 2.5 (out of 5) points, or “bad”. Only about 20 percent of households described their knowledge as “very good” or “good”.

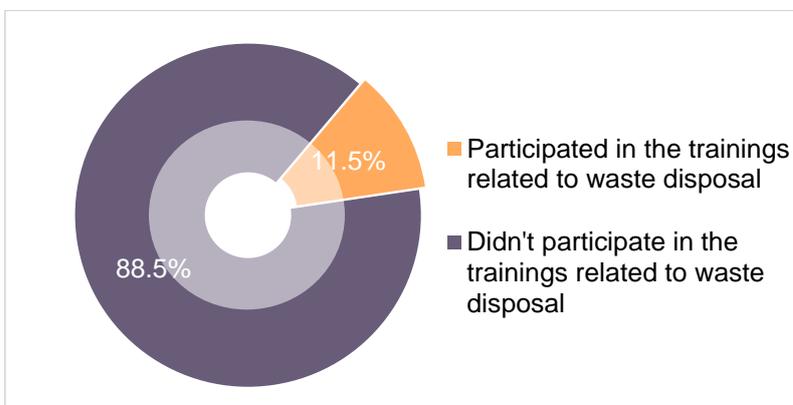
**Graph 32. Knowledge and understanding of plastic recycling, by 1-5 points**



“Evaluate your knowledge of plastic waste recycling within range of 1-5?”  
n=503

Households in Ulaanbaatar city rated their knowledge and understanding of plastic recycling at 2.4 (out of 5) points or “bad” and rural households at 1.8 (out of 5) points or “very bad”. One in every 10 households participated in trainings related to waste disposal.

**Graph 33. Whether a household participated in trainings related to waste disposal, by percentage**



“Have you or your household been provided waste management training before?”  
n=503

Households that participated in trainings related to waste disposal reported the effectiveness of the training as follows

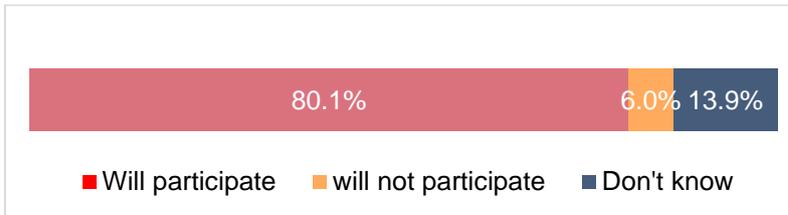
**Table 8. Effectiveness of the training, by percentage**



 “If yes, how effective was it?”  
n=58

If waste-related training is provided, 8 out of every 10 households would like to participate. However, One-tenths of households answered that they would decide based on their circumstances at that time and did not know yet.

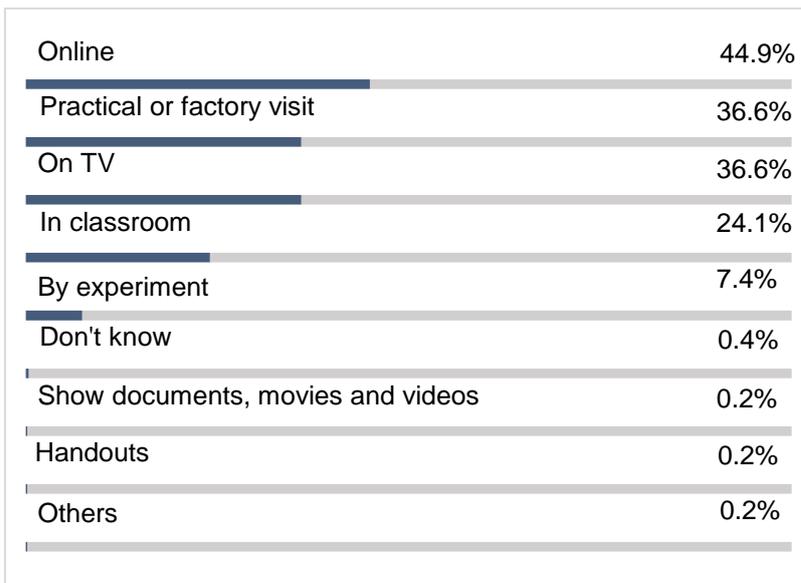
**Graph 34. Whether a household is willing to participate in trainings, by percentage**



 “Would you participate if waste-related training was provided?”  
n=503

When asked about what kind of waste training would be effective, most respondents said trainings that are online, on television, in the classroom, or a trip to a recycling plant.

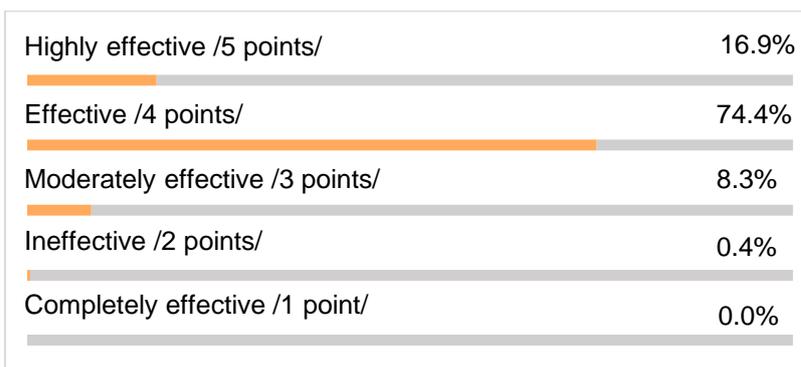
**Graph 35. About the types of training, by percentage**



 “What kind of training do you think will be effective? Select up to 3 answers”  
n=503

91.3% of respondents rated the effectiveness of waste sorting training to households as highly effective or effective, with an average score of 4.1.

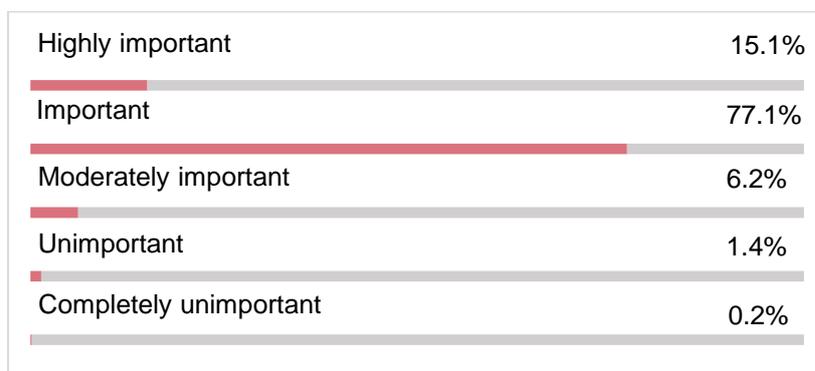
**Graph 36. Effectiveness of waste sorting training to households, by percentage**



 “How effective do you think it is to teach waste sorting to households? (Please rate between 1-5 points)”  
n=503

More than 90 percent of the respondents stressed the importance of providing households with basic information on waste. The average score on this issue was 4.05 or significant.

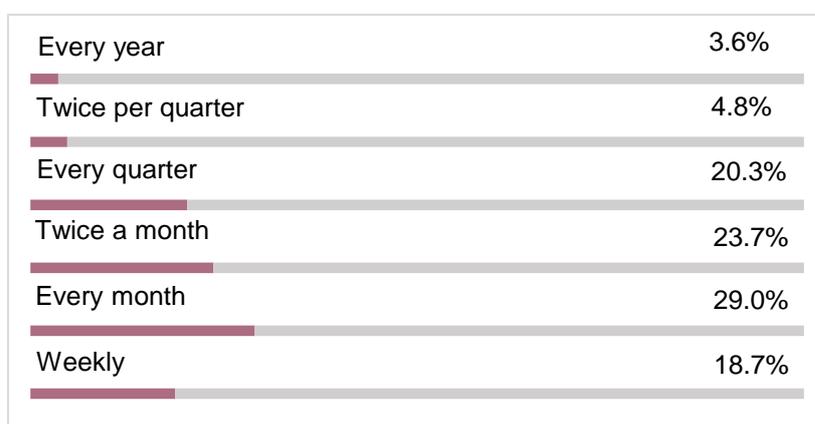
**Graph 37. Importance of providing basic information on waste, by percentage**



“How important would it be for you to be provided with basic information, such as the types and differences between waste and plastic waste? (Please rate between 1-5 points)”  
n=503

The following graph shows the required frequency of trainings to households to be effective. More consistent and as frequent as possible is preferred.

**Graph 38. Training frequency, by percentage**



“What frequency of training do you think is appropriate?”  
n=503

The survey results show that households need information on plastic waste. For example, they want to get information on the process of recycling and what final products are produced, what kind of waste is recycled, and how to sort and classify plastics.

**Table 9. Information on plastic waste**

No	Information on plastic waste	Percentage
1	What products are made	22.7%
2	Nothing	19.3%
3	Not sure	15.9%
4	Recycling process	11.7%
5	Recycling Factories	10.1%
6	How to sort	8.5%
7	All kinds of knowledge and information	2.8%
8	Advantages, uses and benefits	1.8%
9	What kind of waste is recycled	1.4%
10	How harmful it is to the environment	1.4%
11	Knows well	1.2%
12	Waste purchasing points	1.2%
13	Whether it is safe to reuse	1.0%
14	Others	1.0%

“What do you want to know the most about recycling plastic?”  
n=503

### 3.3 CHAPTER SUMMARY

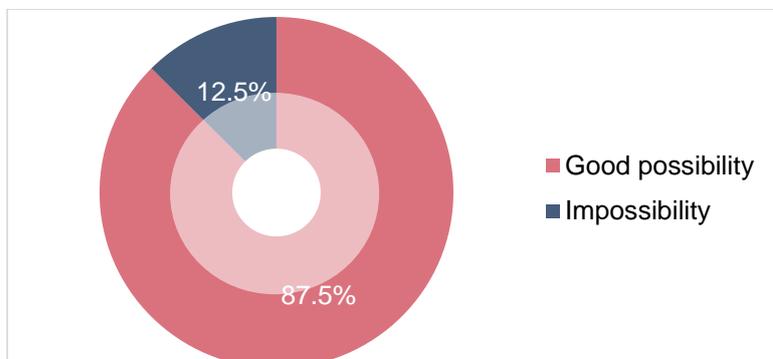
1. The participants' knowledge about waste was assessed very bad or 1.9 (out of 5) points. Of these, households in Ulaanbaatar city rated 1.9 (out of 5) points or “very bad” and rural households rated 2.1 (out of 5) points or “bad”.
2. Seven out of every 10 households have not received any information about waste recycling projects and programs implemented in their communities.
3. Households are classified as large, moderate, or small amounts of waste generations, in terms of the amount of waste they produce per month, and 57.1% generate moderate amounts of waste.
4. One in five households living in apartments and mixed housing and one in every 3 households in ger districts generate large amounts of waste.
5. The waste sorting knowledge of all households was assessed at 2.9 (out of 5) points or bad. Households in Ulaanbaatar city lack information on waste sorting compared to rural households.
6. 96.8% of these households said that their daily waste should be sorted, but half of them did not sort their waste. Of which, the waste sorting of households in Ulaanbaatar city is less than that of rural households.
7. Major reasons for not sorting waste are that there are no sorting bins, and even if households sort their waste, waste is transported in bulk by trucks, and there is only one public bin.
8. Seven out of every 10 households surveyed do not have sorting bins.
9. In addition, one out of every 6 households does not use sorting bins as for the intended purposes.
10. 64.4% of the participants considered the benefits of waste sorting to be environmentally friendly, recyclable and usable.
11. However, the majority or 54.9% did not know about recycling plastic.
12. There are few problems for households that separate plastic waste from other types of waste. For small number of households, there were problems such as large dimensions, and transportation of sorted waste in bulk with other waste and etc.
13. These problems can be solved, if sorted transportation is available, and recycling is built as well as training and information was provided for waste producers.
14. Two out of every 10 households are unaware of the fact that plastic can be recycled and it's possible to produce a variety of products.
15. Participants rated the knowledge of plastic recycling as 2.5 (out of 5) points or bad.
16. One out of every 9 households previously participated in waste-related training, and of which 13.8% concluded that the training was ineffective.
17. If training is provided on this topic, 80.1% are expected to attend.
18. Nine out of every 10 households concluded that it would be effective to teach households about waste sorting.
19. Moreover, providing basic information about waste was rated to be significant at 4.1 (out of 5) points.



# **CHAPTER 4. SURVEY RESULTS OF SMEs IN THE PLASTIC RECYCLING INDUSTRY**

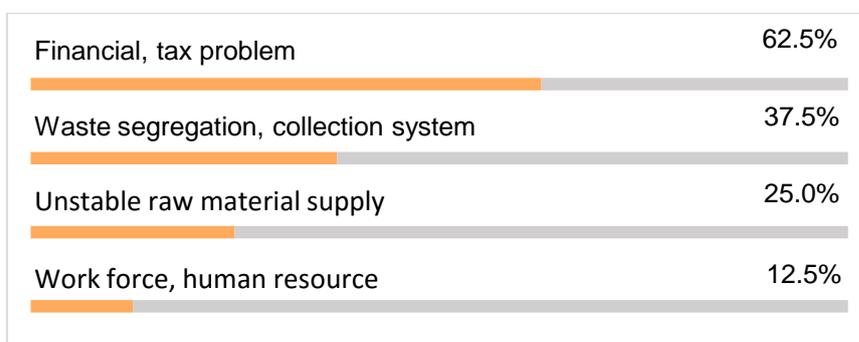
The survey covered 8 MSMEs in the plastic recycling industry. These organizations have been operating sustainably in the industry and have made a significant contribution to the plastic recycling sector. Business owners in Ulaanbaatar city and Khishig-Undur soum of Bulgan province were involved.

**Graph 39. Possibilities of running production, MSMEs**



“What are the opportunities and possibilities in running plastic recycling business?”  
n=8

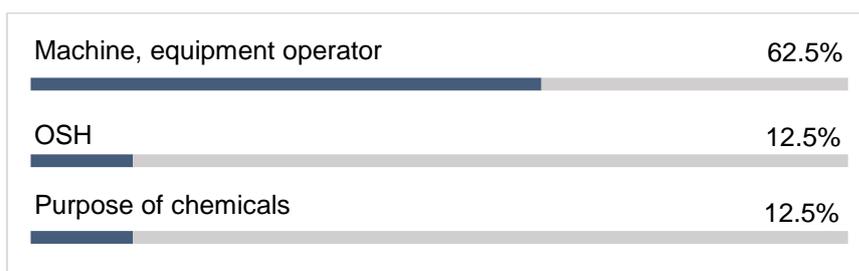
**Graph 40. Challenges encountered, MSMEs**



“What kind of challenges do you face?”  
n=8

It is important to keep pace with technological innovations in products and services. Hence, 62.5% of the representatives believe that there is a need for equipment operator training.

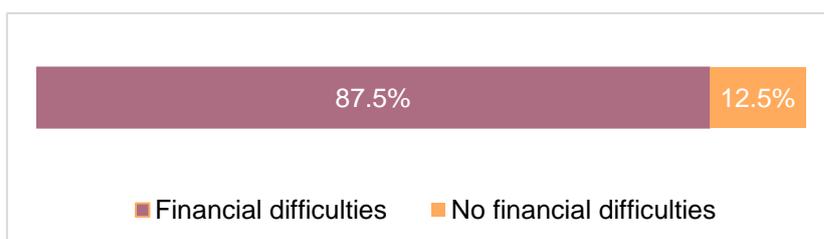
**Graph 41. Areas of training, MSMEs**



“Does your organization need to train its employees? If so, in what areas do you need training?”  
n=8

87.5% of believe that there are financial difficulties in continuing smooth production. Half of them want to have training in how to get financing and train their financial staff in finance.

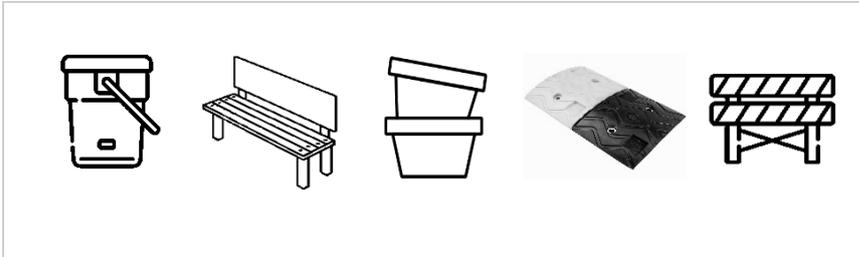
**Graph 42. Financial challenges, MSMEs**



“What are the financial challenges and constraints of running a plastic recycling business? Is there any need for training in this regard?”  
n=8

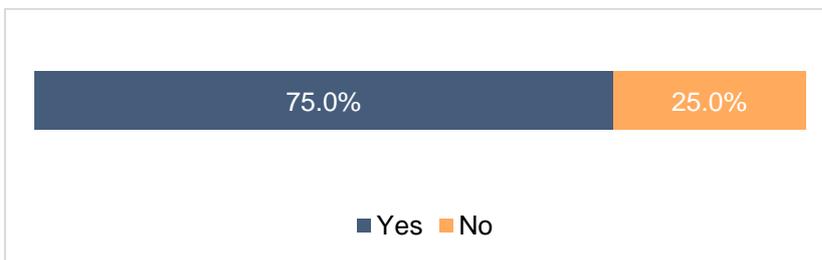
**Figure 6. Whether all the products are sold, MSMEs**

In recent years, consumer demand has increased and the products of these eight MSMEs are sold 100%.



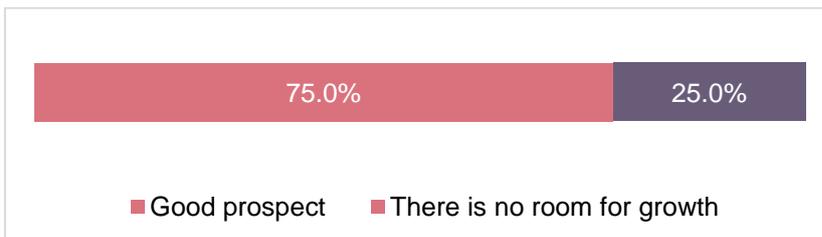
“Is your organization able to sell all products?”  
n=8

**Graph 43. Study the possibility of an export, MSMEs**



“Have you studied the possibility of exporting the product abroad?”  
n=8

**Graph 44. Future trend, MSMEs**



“What do you think about the future trends of recycling plants?”  
n=8

## CHAPTER SUMMARY

1. Seven out of the eight organizations surveyed have expressed that although it is possible to run a plastic recycling factory, they would face difficulties due to financial issues, instability of raw materials, and the lack of a waste sorting system.
2. Although there are no standards or regulations in place for the plastic recycling industry, these eight organizations continue to follow their own rules and regulations.
3. 62.5% of the representatives believe that there is a need for equipment operator training.
4. Although each organization follows safety measures, 25.0% of the surveyed organizations emphasized the need for OSH training.
5. 87.5% of MSMEs believe that there are financial difficulties in continuing smooth production. Half of them want to have training in how to get financing and train their financial staff in finance.
6. Manufacturers have not conducted consumer satisfaction surveys, but they are constantly receiving positive feedback from consumers.

7. 75.0% of MSMEs answered that they have done a lot of research on exporting the final products. However, in the first place, they said that they don't satisfy the domestic market let alone consider the foreign market.
8. Two of the survey manufacturers had experience working with foreign organizations. All eight manufacturers expressed that they are interested in cooperating with international professional experts and studying technology.
9. Out of eight participants, six or 75.0% believe that the future trends of the recycling industry are promising. They emphasized the need to focus on the sustainability of raw materials, primary waste segregation, and support from both sides in public-private partnerships.



# **CHAPTER 5. SURVEY RESULTS OF CAPITAL CITY, CAPITAL CITY-DISTRICTS, PROVINCE AND SOUM AUTHORITIES**

Here are the results of a quality survey conducted with plastic waste recycling decision makers, capital city administrations, city districts, and province and soum authorities.

Key informant interview participants had sufficient knowledge of the recycling plant.

**Figure 7. Knowledge of recycling industry, decision makers**

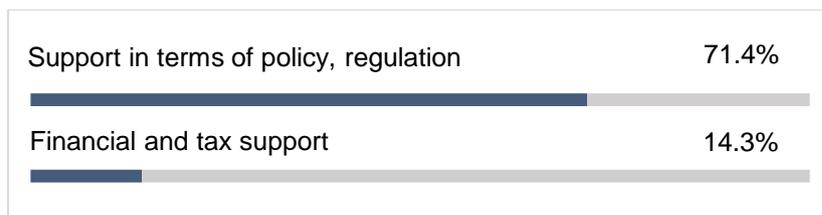


Sufficient knowledge



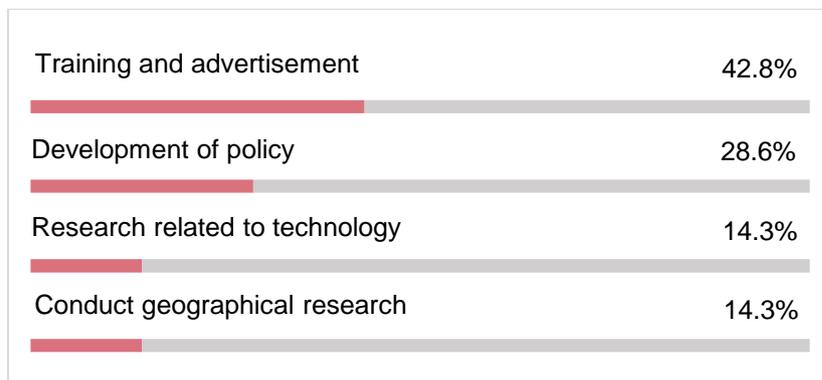
“What do you know about the recycling plant?”  
n=7

**Graph 45. How to support industry, decision makers**



“How to support a plastic recycling plant?”  
n=7

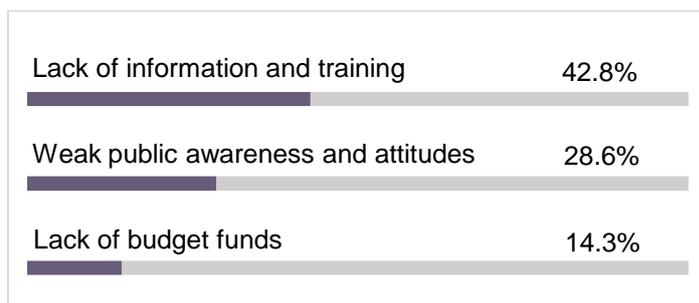
**Graph 46. Opportunities for your organization to participate, decision makers**



“How can your organization be involved?”  
n=7

All of the representatives believe that the waste law is being implemented to some extent.

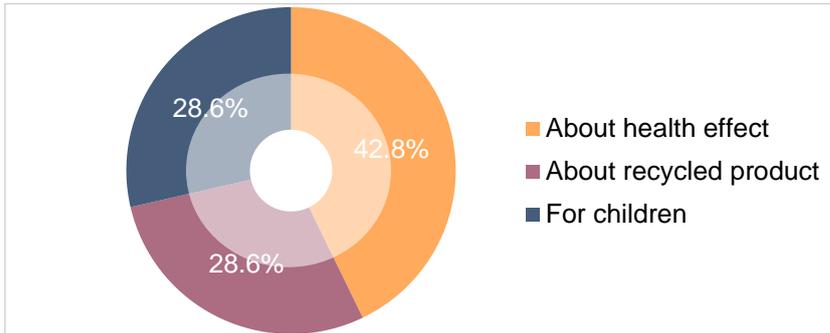
**Graph 47. Implementation and monitoring of the law, decision makers**



“Is there adequate implementation and monitoring of the following provisions of the Law on Waste: 9.1.3., approving and enforcing procedures for cleaning, sorting, collecting, transporting, recycling, reusing, destroying and burying ordinary waste, and 9.3.9., to organize activities such as sorting, collecting, reusing, recycling and reusing waste for the purpose of putting it into economic circulation and providing financial support? What is lacking in order to fully implement the provisions?”

All decision-makers in the study emphasized the businesses and households need to be trained in sorting, collecting, and sorting plastic waste.

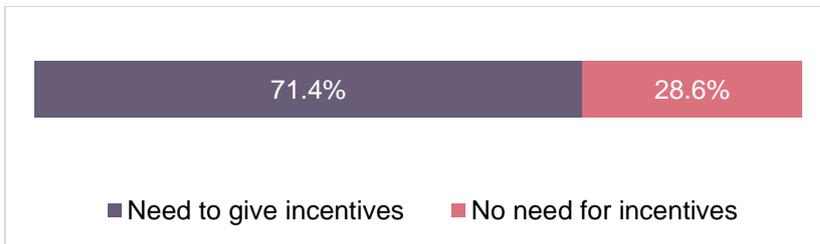
**Graph 48. Need for training in sorting and collecting plastics, decision makers**



“Is there a need for training on separating, collecting and sorting plastic waste? If so, what kind of training is needed?”  
n=7

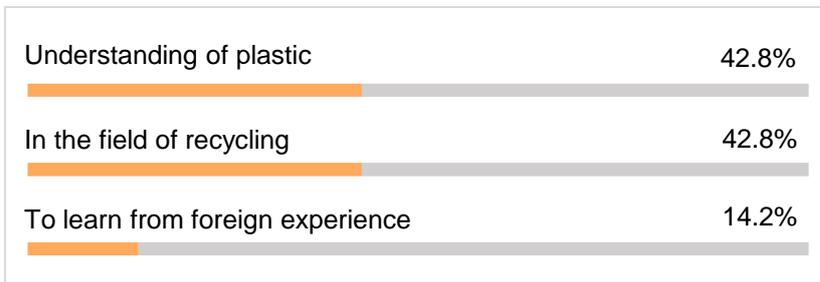
Almost all decision-makers in the survey or seven representatives said that there are currently no incentives for businesses and individuals who regularly sort their waste.

**Graph 49. Whether there should be incentives, decision makers**



“Does your organization reward or encourage organizations and individuals that regularly separate their waste? Should there be an incentive?”  
n=7

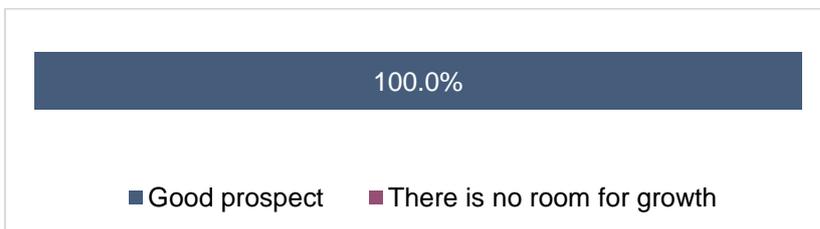
**Graph 50. Employee training need, decision makers**



“Does your organization need to train employees in this area? If so, in what areas do you need training?”  
n=7

100.0% of believe that the future trends of the recycling industry are promising.

**Graph 51. Factory trends, decision makers**



“What do you think about the future trends of recycling plants?”  
n=7

## CHAPTER SUMMARY

1. 50.0% of the participants believe that the plastic waste recycling plant should be supported at the policy level. Local authorities can provide support through policy coordination, field and technology research, and training.
2. 42.8% of the respondents pointed out that there is a lack of public awareness and

information on recycling and waste management, 28.6% stated that citizen participation was low in this matter, and the remainder respondents reported that the lack of budget funds was the main barrier to the full implementation of this law.

3. 71.4% of the participants said that there should be an improvement in waste management and organization, consequently, it is necessary to prioritize waste sorting at the primary level.
4. 42.8% of the participants said it is important to teach about recyclable products, 28.6% of the participants said that children should be taught recycling training from an early age and the rest state that people should understand the negative effects of plastic waste on health. .
5. 71.4% of the participants believe that incentives should be provided, while the remaining 28.6% believe that they should fulfill their civic responsibilities and businesses should sort waste within the framework of their social responsibility.
6. There is a need to train employees in decision-making organizations. The participants agree 100.0%.
7. 28.6% of the participants believe that there is a need for recycling training.
8. All participants agree 100.0% on the need to study the experience of foreign countries and to cooperate with experts on waste recycling and its final products.



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## **CHAPTER 6. SURVEY RESULTS OF NGOs AND CSOs**

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This group includes representatives of non-governmental organizations operating in the field of waste management that work to change public attitudes and support government activities.

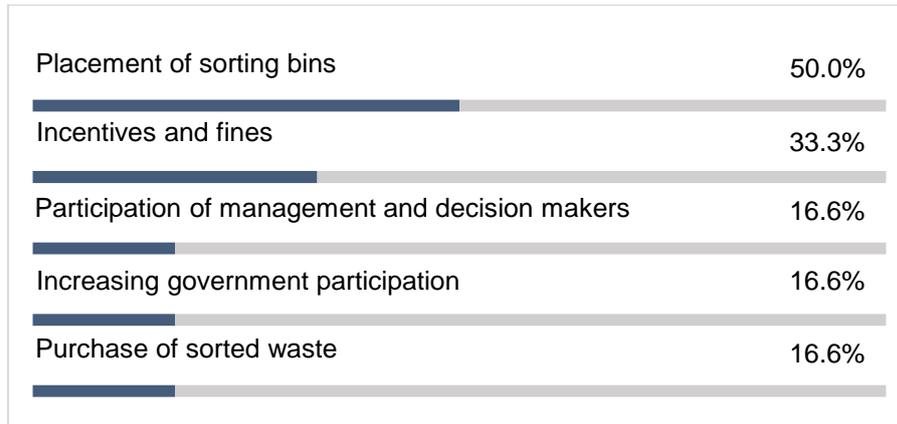
All participants had sufficient knowledge of waste legislation.

**Figure 8. Knowledge of regulation on waste, NGOs**



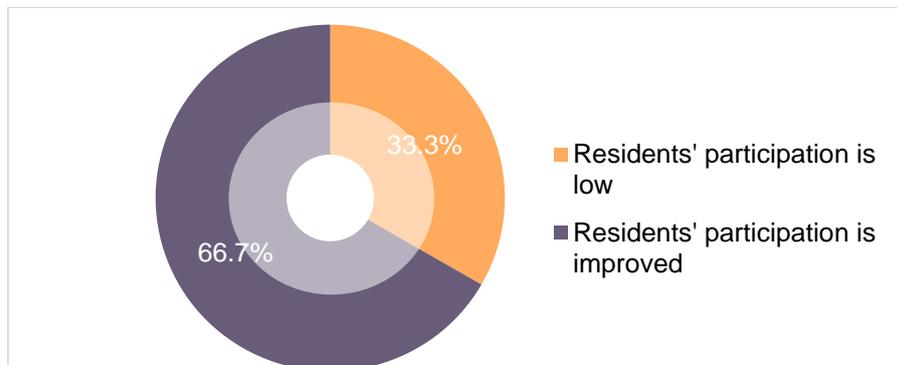
“How knowledgeable is your organization about waste legislation?”  
n=6

**Graph 52. Activities to change the attitude of residents, NGOs**



“What should be done to change the attitudes and perceptions of waste producers? For example, what should be done at the household and enterprise level?”  
n=6

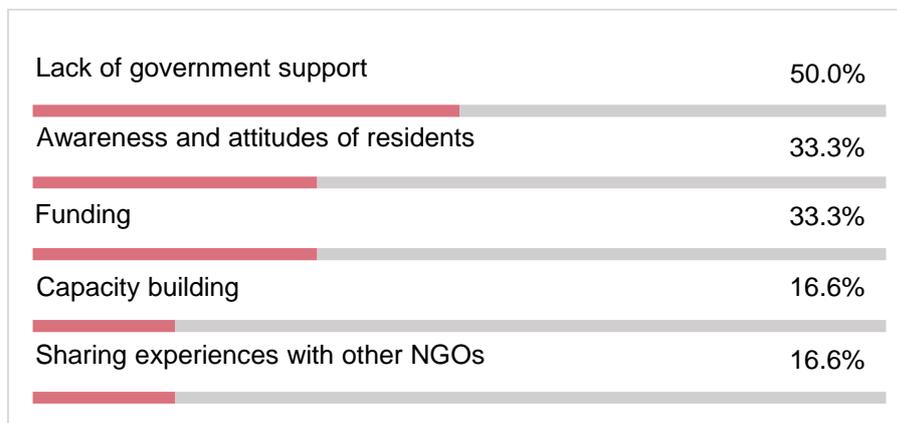
**Graph 53. Residents' participation in sorting, NGOs**



“How is the participation level of citizens and the public in the separation and collection of plastic waste?”  
n=6

It is difficult to work in this area as one or two trainings are not enough to train residents for regular waste sorting.

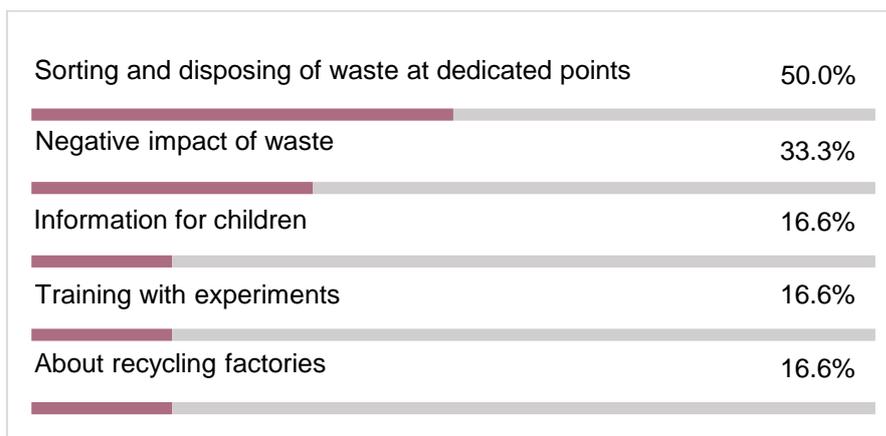
**Graph 54. Obstacles encountered, NGOs**



“What are the challenges facing civil society organizations working in this area?”  
n=6

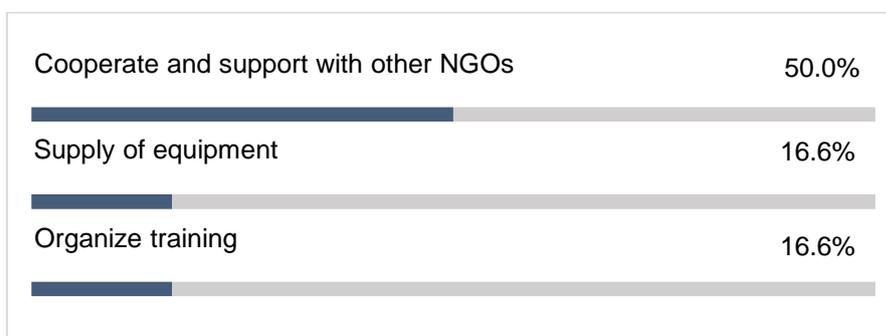
There is a training need for households and businesses.

**Graph 55. Training needs of businesses and households**



“What training do you think is needed for the waste-producing households and organizations?”  
n=6

**Graph 56. Role of NGOs**



“What should be the responsibilities and role of civil society organizations in the future?”  
n=6

## CHAPTER SUMMARY

1. All 6 NGOs surveyed have sufficient knowledge of waste legislation.
2. The following activities can be effective in changing the attitudes and perceptions of waste producers. These include:
  - 50.0% of the participants believed that sorting containers should be placed near households and enterprises.
  - 33.3% of the participants suggest buying sorted garbage in order to encourage waste producers.
  - 33.3% think it is necessary to fine waste producers who do not sort their waste based on the law on infringement and the law on waste or reward them if it is implemented well.
  - 16.6% train citizens to imitate through management and decision-makers.
  - 16.6% believe that government involvement needs to be increased.
3. 66.7% of participants stated that in recent years, citizens' attitudes have changed and participation has increased due to the paid purchase of plastic waste
4. NGOs working in this area are involved in organizing trainings for waste producers, advising on waste sorting, and changing attitudes and practices.
5. 33.3% of NGOs lack financial resources, and 50.0% lack government support for sustainable activities.

6. Most NGOs are willing to build their capacity by exchanging experiences with other NGOs.
7. There is a following training need for households and businesses. Emphasized training topics include:
  - 33.3% - About negative impacts of waste
  - 50.0% - About how waste can become secondary raw material if people could sort it and throw it in the dedicated place
  - 16.6% - Raising awareness and knowledge of children
  - 16.6% - Trainings to introduce waste recycling MSMEs and provide information about their operation.
8. In the future, it is possible to work with and support non-governmental organizations and organize trainings and seminars.

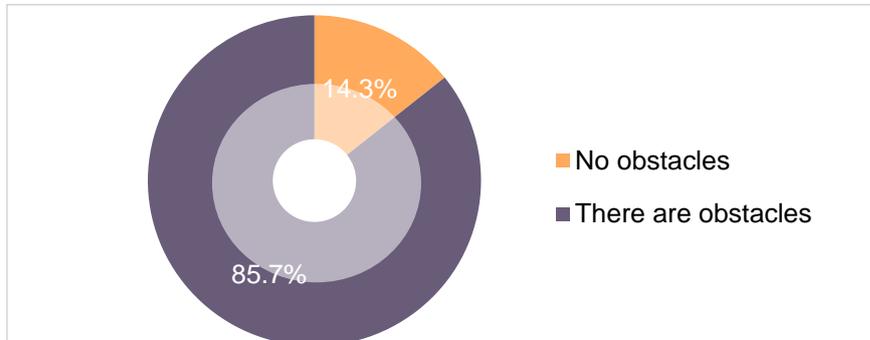


**CHAPTER 7.  
SURVEY RESULTS FROM  
PARTICIPANTS IN PLASTIC WASTE  
COLLECTION**

This chapter includes a survey of participants in the collection of plastic waste in Ulaanbaatar city and rural areas. This study included secondary raw material collection points and those parties who sort at these points and supply to the recycling plants.

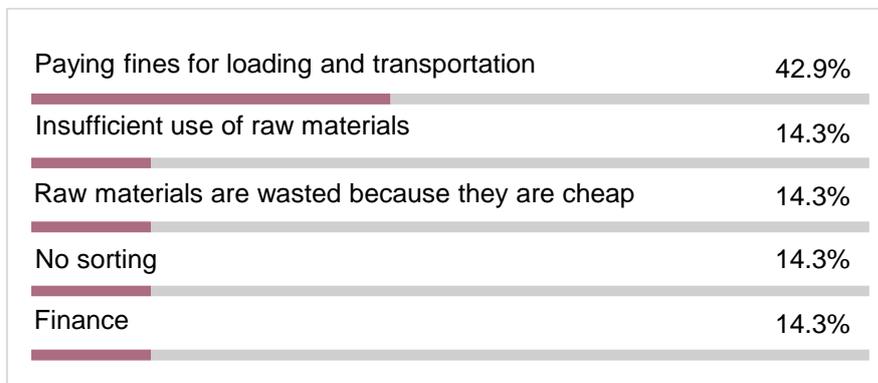
14.3% of the respondents believe that there are no obstacles to the collection of plastic waste

**Graph 57. Whether there are obstacles, participants in collection**



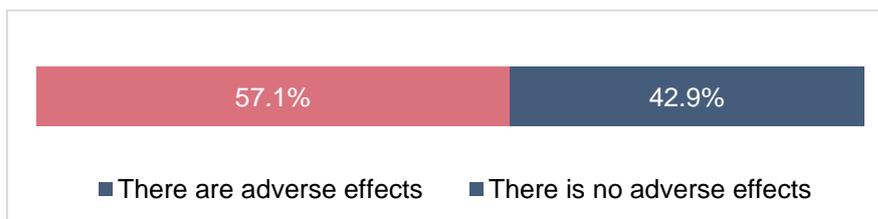
“What are the constraints to the efficient collection of plastic waste?”  
n=7

**Graph 58. Some obstacles, participants in collection**



“What are the constraints to the efficient collection of plastic waste? Please enumerate?”  
n=7

**Graph 59. Whether there any adverse health effects, participants in collection**



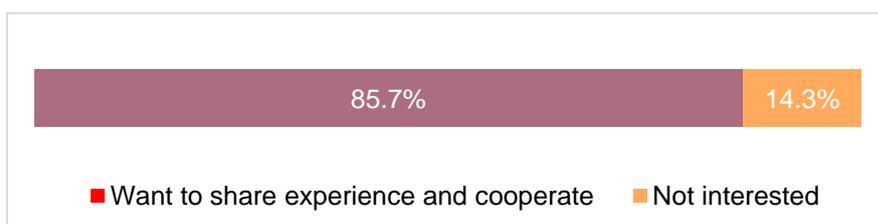
“Do you think that plastic waste collection is harmful to health?”  
n=7

**Graph 60. Protective equipment, participants in collection**



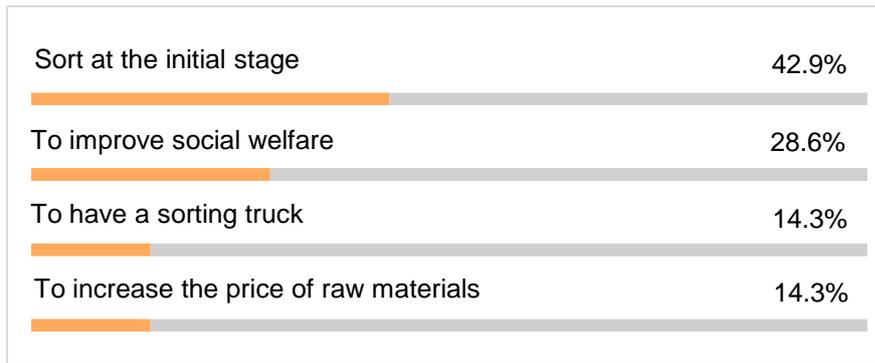
“If there is an adverse effect to the health, do you use individual protective equipment (masks, gloves, goggles, etc.)? If not, why not?”  
n=7

**Graph 61. Cooperation with foreign countries, participants in collection**



“Do you want to share experiences with other countries and work with experts in this field?”  
n=7

**Graph 62. How to collect effectively in the future, participants in collection**



 *“In your opinion, what would be the most effective way to collect plastic waste in the future?”*  
n=7

## CHAPTER SUMMARY

1. 85.7% of the respondents believe that there are barriers to the collection of plastic waste. These problems are classified as follows. These include:
  - 14.3% of participants do not sort waste at source
  - 42.8% are regularly fined for loading and transporting light waste with large dimensions
  - 14.3% of the participants do not fully use the collected raw materials
  - 14.3% have lack of funding for transportation of sorted waste
  - The rest of the participants think that problem of chaotic waste disposal is arising due to the cheap price of secondary raw materials.
2. 28.6% of participants state that there will always be a training need for workers who play any role in garbage collection including loaders and drivers as long as the waste is collected.
3. The majority of respondents or 57.1% believe that plastic waste collection is harmful to health.
4. 85.7% of participants are highly interested in knowing more about international best practices and working with foreign experts. One of the seven participants had previous experience working with Chinese organizations.
5. To effectively collect plastic waste in the future, 42.8% of participants suggest sorting waste at the source and improving the social welfare of workers, 28.6% think that it is necessary to have transportation vehicles dedicated to loading sorted waste, and the rest of the participants believe that plastic waste should be bought at an increased price to incentivize residents and collectors.



# **CHAPTER 8. GENERAL SUMMARY**

Within the scope of "Identification of Training and Learning Needs" assessment, representatives of waste producing households, participants in collection of plastic waste, MSMEs in plastic waste recycling, decision-makers and NGOs were included. Knowledge and understanding of waste and plastic recycling of these target groups were assessed and analyzed. Based on the survey results from each group, the following training needs were identified.

### FOR HOUSEHOLDS:

For households both in Ulaanbaatar city and rural areas, regardless of their location, the training needs are identified as follows:



#### 1. Legal framework training

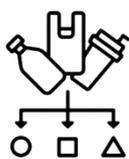
Content: Basic concepts of waste and plastic waste (types and differences between waste and plastic waste, etc) Within the framework of the law, residents and businesses should dispose of their waste properly.

#### Waste management:

Ulaanbaatar city: **1.9 points** (out of 5)  
 Bulgan soum: **2.3 points** (out of 5)  
 Khishig-Undur soum: **1.7 points** (out of 5)

#### Importance of providing basic information on waste:

Ulaanbaatar city: **4.1 points** (out of 5)  
 Bulgan soum: **3.9 points** (out of 5)  
 Khishig-Undur soum: **4.2 points** (out of 5)



#### 2. Waste sorting training

Content: How to properly sort waste and the recyclability based on sorting

#### Waste sorting knowledge and information:

Ulaanbaatar city: **2.8 points** (out of 5)  
 Bulgan soum: **3.2 points** (out of 5)  
 Khishig-Undur soum: **3.2 points** (out of 5)



#### 3. Negative health effects of waste

Content: How health is affected by open and unsanitary waste disposal.

#### Waste sorting is good for health:

Ulaanbaatar city: **53.8%**  
 Bulgan soum: **56.1%**  
 Khishig-Undur soum: **22.5%**



#### 4. Negative effects of waste on the environment

Content: How does open and unregulated waste affect nature, the environment and wildlife

#### Waste sorting and recycling is environmentally friendly:

Ulaanbaatar city: **71.5%**  
 Bulgan soum: **83.1%**  
 Khishig-Undur soum: **15.0%**



### 5. Training on the benefits of recycling plastic waste

Content: Socio-economic and environmental benefits of sorting and recycling plastic waste

**Do not know that plastic waste is recycled.:**

Ulaanbaatar city: **18.0%**

Bulgan soum: **10.2%**

Khishig-Undur soum: **15.0%**

### Forms of training



a. Online



b. Television



c. Practice

Frequency of training

**MONTHLY**

## FOR THE MSMEs IN THE PLASTIC RECYCLING SECTOR:



### 1. Equipment operator training

As production and services develop, machinery and equipment need to be constantly updated, thus it is necessary for MSMEs surveyed to upgrade their equipment and train specialized workforce in its use and maintenance.



### 2. Financial training

Strengthening the financial capacity of the organization



### 3. Learning from the international best practices

It is necessary to learn about the international best practices of waste management and advanced technologies of waste recycling by working with international experts.



### 4. OSH training

In any industry, occupational safety and health at the workplace is a priority. There is a need for MSMEs to get training on OSH to prevent industrial accidents, ensure safe handling of equipment and increase the responsibility and the knowledge of the employees.



### 5. Technological training

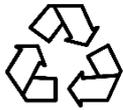
1. Training on chemical and physical properties of plastics
2. Training on the composition, purpose and use of chemical compounds.

## FOR AUTHORITIES OF CAPITAL CITY, CITY DISTRICTS, PROVINCE, AND SOUM:



### 1. Learning from the international best practices

1. Training about how waste is sorted and the type of final product
2. Study and implement international best practices of waste management and recycling projects and learn from experts by cooperating with them.



### ***2. Recycling training***

Training on plastic waste recycling is very rare while the understanding of such activity is crucial for our service employees. There is a need for training to introduce scientific advances, progress in resource recycling and circular economy



### ***3. Human resource training***

It is necessary to train specialists who will work for long time and persistently in the field.

## **FOR NON-GOVERNMENTAL ORGANIZATIONS AND CIVIL SOCIETY ORGANIZATIONS:**



### ***1. To cooperate with and provide support for other NGOs***

Training is needed to support the establishment of effective cooperation and coordination with other NGOs and civil society organizations working in this area



### ***2. Training about fundraising***

To sustain the regular operation of the organization, it is necessary to seek financial resources and apply for funding from various projects and programs. Hence, there is a need for training on how to prepare the application and write project proposals and build necessary capacities to get funding from international donors.



### ***3. Training to increase technical knowledge***

NGOs need to provide all kinds of knowledge and information to help change people's perceptions and attitudes. Hence, there is a need for increasing knowledge about innovative technologies and process of plastic waste recycling activity.



### ***4. Organizational capacity training***

There is a need for capacity building training in an organization to keep it operational and employee stable.



### 5. Policy advocacy and legal capacity training

Legal capacity building training to participate in monitoring and improvement of national policies, programs, law and regulations.



### 6. Environmental and economic impact of waste and ways to address them

There is a need for training to give comprehensive understanding of the current and the future environmental impacts and consequences of waste on environment and economy, strategies to address negative impacts and improve waste management based on scientific studies. It will help us to change people's attitude towards nature and create environmentally friendly habits among public.

## FOR PARTICIPANTS IN PLASTIC WASTE COLLECTION:



### 1. Capacity building training for employees

Introduce the specifics of the industry and the value of professional work



### 2. Learning from the international best practices

Training about what techniques and technologies are used, how to sort and collect waste



### 3. Waste transportation system training

Improve a comprehensive waste transportation system and introduce good transportation innovations and practices



### 4. Human resource training

Employees need training in social security and sustainable employment



### 5. Digital waste systems in developed countries

There is a need for knowledge about sanctions for non-segregation of waste and digitalization of waste related data in developed countries.

### APPENDIX 1. REASONS FOR THE VERY GOOD EVALUATION RESULT, BY PERCENTAGE

No	Reasons	Percentage
1	Waste is reduced, improving	33.3%
2	Started sorting waste	33.3%
3	Others	33.3%

 “Why did you choose this answer? State your reason?”  
n=3

### APPENDIX 2. REASONS FOR THE GOOD EVALUATION RESULT, BY PERCENTAGE

No	Reasons	Percentage
1	Waste is reduced, improving	36.4%
2	Improved waste collection	36.4%
3	Started sorting waste	18.2%
4	Waste is recycled for reuse	4.5%
5	Others	4.5%

 “Why did you choose this answer? State your reason?”  
n=22

### APPENDIX 3. REASONS FOR THE MODERATE EVALUATION RESULT, BY PERCENTAGE

No	Reasons	Percentage
1	There is a lot of waste	29.0%
2	Waste is not transported on time	10.9%
3	Waste is reduced, improving	10.1%
4	Waste is dumped outside	7.6%
5	Don't know	6.7%
6	Waste is not sorted	5.9%
7	Waste collection has improved	5.9%
8	There is a lot of waste due to people's attitude	5.0%
9	Waste management and organization is bad	4.2%
10	There is no recycling	3.4%
11	There is no sorting bin	2.5%
12	Started to sort waste	1.7%
13	It is possible to recycle and reuse waste	1.7%
14	Waste is not cleaned properly	1.7%
15	Garbage has become a problem in ger districts	1.7%
16	There is no recycling plant	0.8%
17	Others	0.8%

 “Why did you choose this answer? State your reason?”  
n=119

### APPENDIX 4. REASONS FOR THE BAD EVALUATION RESULT, BY PERCENTAGE

No	Reasons	Percentage
1	There is a lot of waste	37.1%
2	Waste is not sorted	21.7%
3	Waste is dumped outside	8.6%
4	Waste is not transported on time	6.3%
5	There is a lot of waste due to people's attitude	5.7%
6	There is no recycling	5.7%
7	Waste management and organization is bad	4.6%
8	There is no recycling plant	3.4%
9	There is not enough garbage dump	1.7%
10	There is no sorting bin	1.7%
11	Don't know	1.7%
12	Garbage has become a problem in ger districts	1.1%
13	Others	0.6%

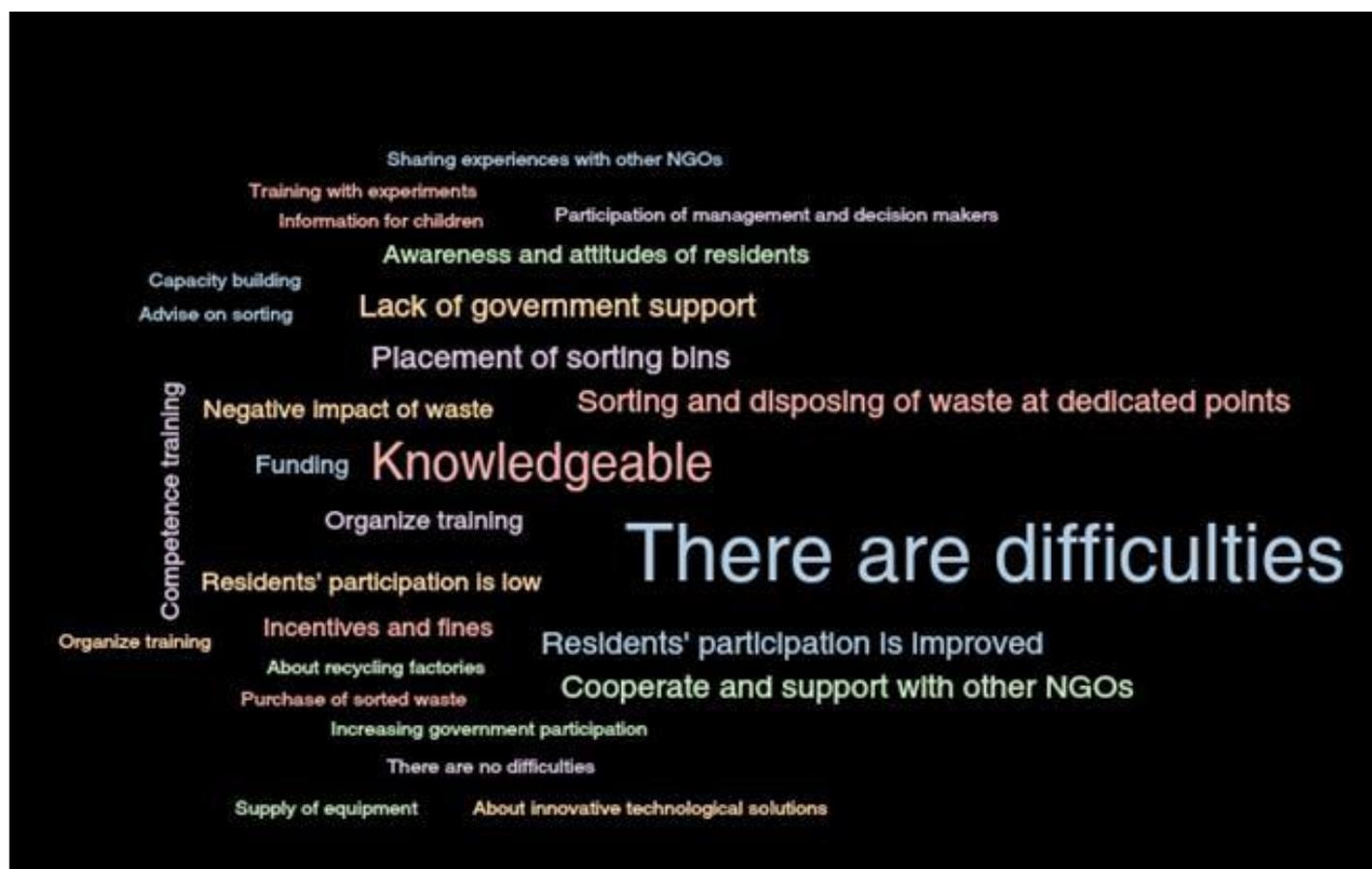
 “Why did you choose this answer? State your reason?”  
n=175

## APPENDIX 5. REASONS FOR THE VERY BAD EVALUATION RESULT, BY PERCENTAGE

No	Reasons	Percentage
1	There is a lot of waste	31.0%
2	Waste is dumped outside	21.2%
3	Waste is not sorted	15.2%
4	Waste is not transported on time	6.5%
5	There is no recycling	6.0%
6	There is no recycling plant	5.4%
7	Waste management and organization is bad	4.9%
8	There is a lot of waste due to people's attitude	3.8%
9	There is not enough garbage dump	3.8%
10	There is no sorting bin	1.1%
11	Garbage has become a problem in ger districts	0.5%
12	Don't know	0.5%

“Why did you choose this answer? State your reason?”  
n=184

## APPENDIX 6. MOST RECURRING KII RESULT, DEDOOSE



## APPENDIX 7. QUESTIONNAIRE OF HOUSEHOLD SURVEY



Research and consulting services  
SICA LLC

### "IDENTIFICATION OF TRAINING AND LEARNING NEEDS" ASSESSMENT SURVEY QUESTIONNAIRE

Hello, good day to you. I am \_\_\_\_\_, a researcher at SICA LLC. Training and Learning Needs Assessment Survey is being conducted within the scope of "Sustainable Plastic Recycling Project in Mongolia". The purpose of this study is to assess the current knowledge of households about waste related issues and identify the training and learning needs. We will keep the information you provide confidential, strictly in accordance with Article 5.2 of the Law on Organizational Confidentiality, and we will not mention your name or business activities in the presentation of the survey results.

#### SECTION FOR ENUMERATOR INPUT

No	Question	Answer	Description/Step
0	Enumerator information:	i Interviewer number: _____ ii Questionnaire number: <span style="border: 1px solid black; display: inline-block; width: 40px; height: 15px; vertical-align: middle;"></span> iii Survey location: _____	

#### CHAPTER I. STANDARD QUESTIONS

No	Question	Answer	Description/Step
a	City, district/ province, soum of residence	Ulaanbaatar <span style="float: right;">1</span> Bulgan, Bulgan soum <span style="float: right;">2</span> Bulgan, Khishig-Undur soum <span style="float: right;">3</span>	
b	District of residence	Bayangol <span style="float: right;">1</span> Bayanzurkh <span style="float: right;">2</span> Chingeltei <span style="float: right;">3</span> Songinokhairkhan <span style="float: right;">4</span> Sukhbaatar <span style="float: right;">5</span> Khan-Uul <span style="float: right;">6</span>	
c	Address	_____	

#### CHAPTER II. KNOWLEDGE AND UNDERSTANDING OF WASTE MANAGEMENT

1	In your opinion, what is the level of waste management issue in Mongolia? (Please rate between 1-5 points)	Very bad <span style="float: right;">1</span> Bad <span style="float: right;">2</span> Moderate <span style="float: right;">3</span> Good <span style="float: right;">4</span> Very good <span style="float: right;">5</span>	Very bad-1 Bad-2 Moderate-3 Good-4 Very good-5
2	Why did you choose this answer? State your reason.	_____	
3	Have you received any information about waste recycling projects and programs implemented in your area of residence?	Yes <span style="float: right;">1</span> No <span style="float: right;">2</span> Don't know <span style="float: right;">3</span>	→ Move to question 5
4	To what extent are you and your household involved in those projects?	No participation <span style="float: right;">1</span> Moderate participation <span style="float: right;">2</span> Active participation <span style="float: right;">3</span>	
5	How much waste do you think your household produces per month?	Large amount <span style="float: right;">1</span> Moderate amount <span style="float: right;">2</span> Low amount <span style="float: right;">3</span>	
6	Does your household have an understanding and information on waste sorting? (Please rate between 1-5 points)	Very bad <span style="float: right;">1</span> Bad <span style="float: right;">2</span> Moderate <span style="float: right;">3</span> Good <span style="float: right;">4</span> Very good <span style="float: right;">5</span>	Very bad-1 Bad-2 Moderate-3 Good-4 Very good-5
7	What channels do you frequently use to receive information about waste disposal?	Television <span style="float: right;">A</span> Online <span style="float: right;">B</span> Newspaper <span style="float: right;">C</span> Personal network (friends) <span style="float: right;">D</span> Others (please note) <span style="float: right;">E</span>	Multiple answers can be chosen
8	Do you think it is appropriate to sort your daily waste?	Yes <span style="float: right;">1</span> No <span style="float: right;">2</span> I don't know <span style="float: right;">3</span>	→ Move to question 10 → Move to question 11
9	If Yes why?	Environmentally and ecologically friendly <span style="float: right;">A</span> Good for health <span style="float: right;">B</span> Economical <span style="float: right;">C</span> In support of waste recycling plants <span style="float: right;">D</span> Others (please note) <span style="float: right;">E</span>	Multiple answers can be selected. Regardless of the answer move to question 11
10	If No why?	_____	
11	Does your household have sorting bins?	Yes <span style="float: right;">1</span> No <span style="float: right;">2</span>	→ Move to question 14
12	Does the sorting bins used as intended?	Yes <span style="float: right;">1</span> No <span style="float: right;">2</span>	→ Move to question 14
13	What is the reason for not using?	_____	
14	Does your household sort its waste?	Yes <span style="float: right;">1</span> No <span style="float: right;">2</span>	→ Move to question 16
15	Reasons for not sorting household waste?	_____	
16	What do you think are the benefits of sorting waste?	_____	
17	What do you think is hazardous plastic?	_____	

18	Do you know the types of plastic waste?	I know 1 I know only little 2 I don't know 3	
19	Do you separate plastic waste from other types of waste?	Yes 1 No 2	→ Move to question 22
20	What are the problems associated with separating plastic waste at disposal?	_____	
21	How do you think these problems can be solved?	_____	
22	Did you know that plastic waste is recycled?	Yes 1 No 2	→ Move to question 24
23	Evaluate your knowledge of plastic waste recycling within range of 1-5?	Very bad 1 Bad 2 Moderate 3 Good 4 Very good 5	Very bad-1 Bad-2 Moderate-3 Good-4 Very good-5
<b>CHAPTER III. TRAINING NEED</b>			
24	Have you or your household been provided waste management training before?	Yes 1 No 2	→ *love to question 26
25	If yes, how effective was it?	It was effective 1 It was ineffective 2	
26	Would you participate if waste-related training was provided?	Will participate 1 Will not participate 2 I don't know 3	
27	What kind of training do you think will be effective?	Classroom A Online B Television C At the plant, PRACTICAL D Experiment E Others (please note) F	Select up to 3 answers
28	How effective do you think it is to teach waste sorting to households? (Please rate between 1-5 points)	Completely ineffective 1 ineffective 2 Moderately effective 3 Effective 4 Highly effective 5	Completely ineffective-1 Ineffective-2 Moderately effective-3 Effective-4 Highly effective-5
29	How important would it be for you to be provided with basic information, such as the types and differences between waste and plastic waste? (Please rate between 1-5 points)	Completely unimportant 1 Unimportant 2 Moderately important 3 Important 4 Highly Important 5	Completely unimportant-1 Unimportant-2 Moderately Important-3 Important-4 Highly important-5
30	What frequency of training do you think is appropriate?	Weekly 1 Monthly 2 Twice monthly 3 Quarterly 4 Twice quarterly 5 Annually 6	
31	What do you want to know the most about recycling plastic?	_____	
<b>CHAPTER IV. GENERAL INFORMATION</b>			
32	Age of participants:	20-29 years 1 30-39 years 2 40-49 years 3 50-59 years 4 Above 60 5	
33	Gender of participants:	Male 1 Female 2	
34	Level of education:	Secondary education 1 Special secondary 2 Bachelors 3 Masters, and above 4	
35	Employment status:	Government organization 1 Private sector 2 International organization 3 Self-employed 4 Student 5 Pensioner 6 Unemployed 7	
36	Number of household members	<input type="text"/>	
37	Household dwelling	Apartment 1 Ger district 2 Mixed-housing 3	

**THANK YOU FOR TAKING THE SURVEY**

## APPENDIX 8. KEY INFORMANT INTERVIEW QUESTIONS

### KEY INFORMANT INTERVIEW QUESTIONS - 1

(SMEs in the plastic recycling industry)

#### Interview Part I

1. What are the opportunities and possibilities in running plastic recycling business? What kind of challenges do you face?
2. Does your organization follow rules and standards?
3. What is the appropriate level of human resource and their capacity? Does your organization need to train its employees? If so, in what areas do you need training?
4. What are the financial challenges and constraints of running a plastic recycling business? Is there any need for training in this regard?
5. What is the level of OSH in the organization?
6. How do you see the marketing and market opportunities of recycled products? Is your organization able to sell all products? Is there a customer satisfaction survey? Have you studied the possibility of exporting the product abroad?
7. Do you want to share experiences with other countries and work with experts in this field?

#### Interview Part II

1. What do you think about the future trends of recycling plants?
2. Please name 5 major domestic producers that can make up your raw materials.
3. Please enumerate the kind of training needs.

## KEY INFORMANT INTERVIEW QUESTIONS - 2

(Capital city, capital city districts, provincial and soum authority)

### Interview Part I

1. What do you know about the recycling plant?
2. How to support a plastic recycling plant? How can your organization be involved?
3. Is there adequate implementation and monitoring of the following provisions of the Law on Waste: 9.1.3., approving and enforcing procedures for cleaning, sorting, collecting, transporting, recycling, reusing, destroying and burying ordinary waste, and 9.3.9., to organize activities such as sorting, collecting, reusing, recycling and reusing waste for the purpose of putting it into economic circulation and providing financial support? What is lacking in order to fully implement the provisions?
4. Are there any areas for improvement in waste management and organization? How is plastic waste collected, transported and processed in your administrative unit? What are the issues related to regulating them in the current legal environment?
5. Is there a need for training on separating, collecting and sorting plastic waste? If so, what kind of training is needed?
6. Does your organization reward or encourage organizations and individuals that regularly separate their waste? Should there be an incentive?
7. Does your organization need to train employees in this area? If so, in what areas do you need training?
8. Do you want to share experiences with other countries and work with experts in this field?

### Interview Part II

1. What do you think about the future trends of recycling plants?

## **KEY INFORMANT INTERVIEW QUESTIONS - 3**

### **(Participants in the collection of plastic waste)**

#### **Interview Part I**

1. What are the constraints to the efficient collection of plastic waste? Please enumerate?
2. What is the appropriate level of human resource and their communication attitude? Does your organization need to train its employees? (Private collectors are not questioned)
3. Do you think that plastic waste collection is harmful to health?
4. If there is an adverse effect to the health, do you use individual protective equipment (masks, gloves, goggles, etc.)? If not, why not?
5. Do you want to share experiences with other countries and work with experts in this field?

#### **Interview Part II**

1. In your opinion, what would be the most effective way to collect plastic waste in the future?
2. What kind of training do you think should be provided with regards to the plastic waste collection?

## **KEY INFORMANT INTERVIEW QUESTIONS - 4**

### **(Non-governmental organizations and Civil society organizations)**

#### **Interview Part I**

1. How knowledgeable is your organization about waste legislation?
2. What should be done to change the attitudes and perceptions of waste producers? For example, what should be done at the household and enterprise level?
3. How is the participation level of citizens and the public in the separation and collection of plastic waste? How does your organization participate?
4. What are the challenges facing civil society organizations working in this area?
5. What training do you think is needed for the waste-producing households and organizations?

#### **Interview Part II**

1. What should be the responsibilities and role of civil society organizations in the future?
2. Please enumerate the training needs of your organization.

## DOCUMENTS USED

1. Ulaanbaatar household waste composition study report -2019
2. The study on solid waste management plan for Ulaanbaatar city -2007
3. Environmental Information Center <https://eic.mn/waste/wasteinfo.php?type=1>
4. Handbook issued by the Mongolian National Recycling Association
5. Website of recycling plants
6. Revised Law on Waste (2017)
7. Three Pillars Development Policy (2018)
8. Mongolia Sustainable Development Vision – 2030
9. National program on the improvement of waste management (Government, 2014)
10. National Program for Reducing Air and Environmental Pollution (Government, 2017)
11. State Industrial Policy of Mongolia (2015)
12. Medium-term Strategy for Implementing the State Industrial Policy of Mongolia (2015-2020)
13. Green Development Policy (2014)
14. Byamba, B., and Ishikawa, M. (2017). "Municipal solid waste management in Ulaanbaatar, Mongolia: systems analysis"