

RURAL HOUSEHOLD WASTE COMPOSITION STUDY

Khishig-Undur soum

Bulgan province, Mongolia

2019 - 2020



INTRODUCTION AND OBJECTIVE

Data about waste composition in Mongolia is lacking, especially in rural soums like Khishig-Undur. As part of its waste management project, Ecosoum carried out two household waste composition studies among Khishig-Undur's households in July 2019 and

January 2020, with the support of The Asia Foundation. The goal was to fill the gaps and provide detailed data on how much of each type of waste is produced by an average household in the soum, both in summer and in winter.

STUDY METHODOLOGY

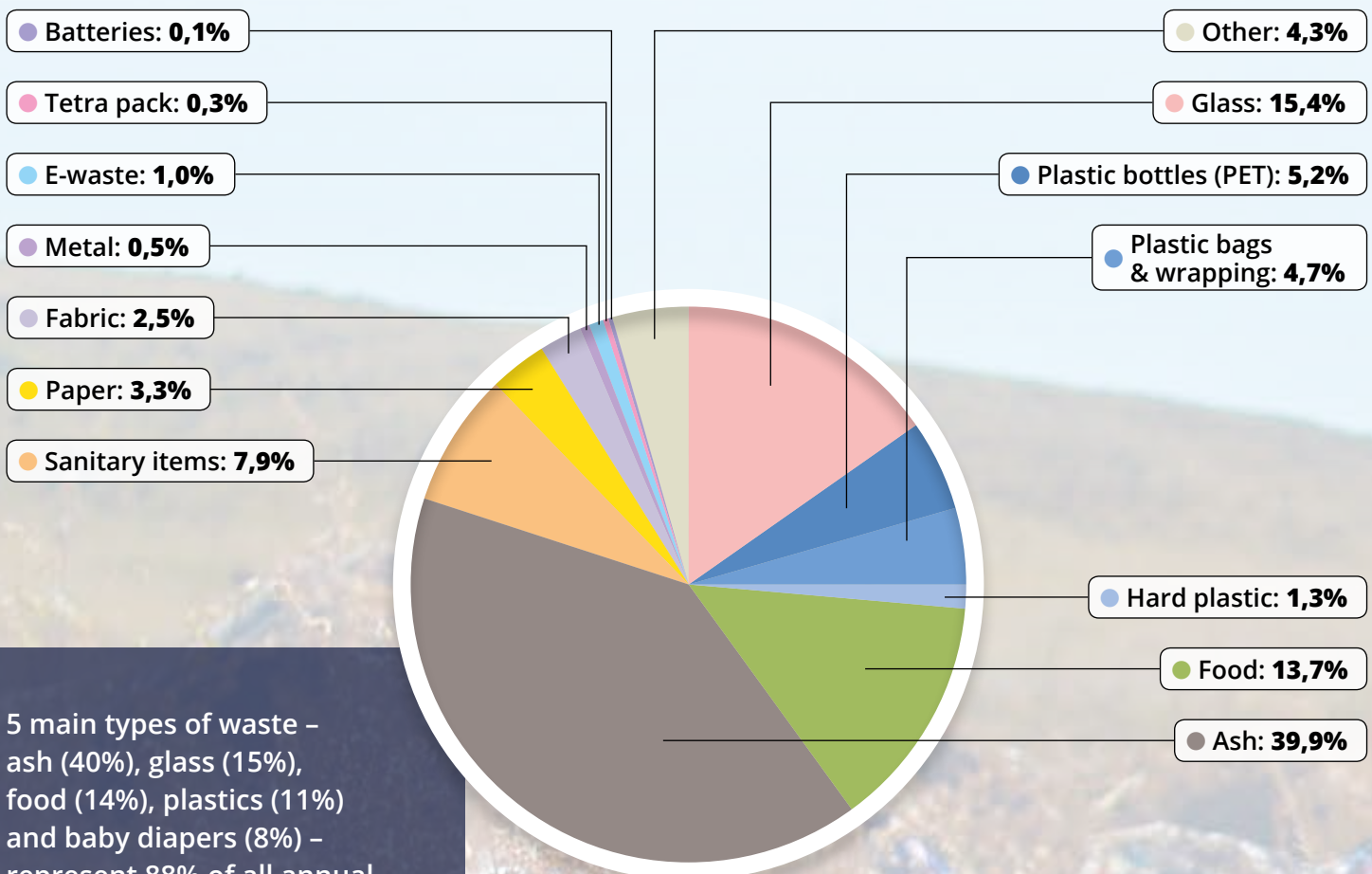
Both studies were based on a representative sample of approximately 10% of Khishig-Undur soum-center's 367 households (36 in summer, 35 in winter). Participating households were asked to keep all the waste they produced over the course of one week and sort it into 14 different categories. At the end of the sorting week, waste was collected and weighted by Ecosoum. Data was then analyzed in order

to produce the following results. Each participating household was also given a survey containing questions relating to topics that may have impact on household's waste production (type of housing, household composition, average income, type of heating and cooking system, professional activity within household) and that could be used to interpret data.

RESULTS

AVERAGE ANNUAL HOUSEHOLD WASTE COMPOSITION

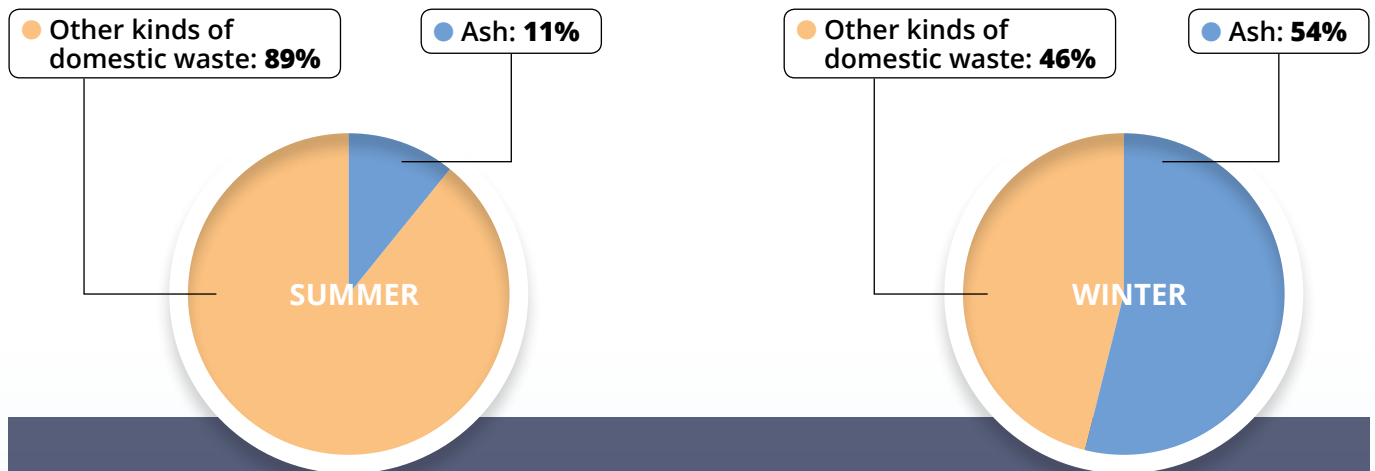
→ % by weight



5 main types of waste – ash (40%), glass (15%), food (14%), plastics (11%) and baby diapers (8%) – represent 88% of all annual household waste (by weight).

AVERAGE SEASONAL ASH PRODUCTION IN HOUSEHOLDS

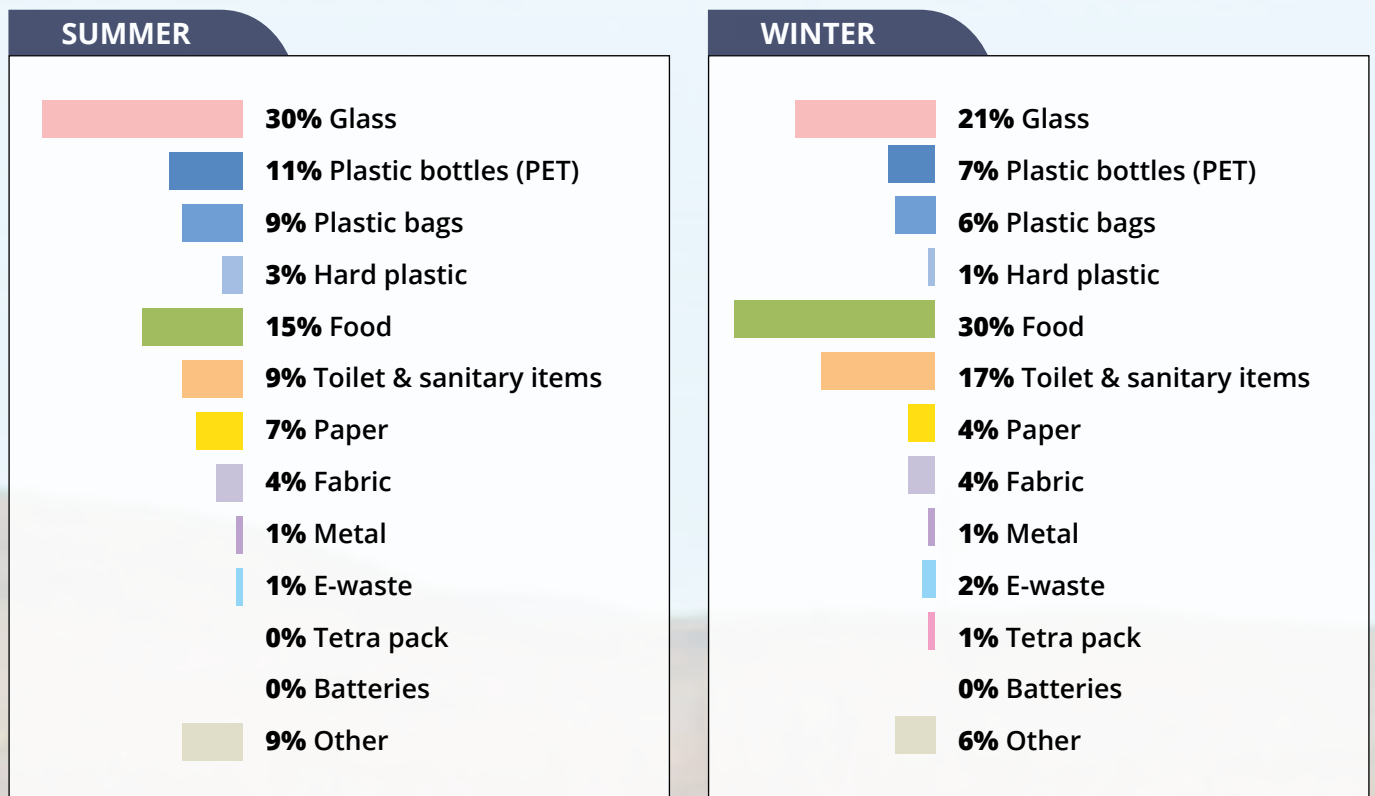
→ % by weight



Ash is produced over 10 times more in winter (4.3kg) than in summer (0.4kg). As a consequence, the relative proportion of ash in total household waste goes from 11% in summer to 54% in winter.

AVERAGE SEASONAL HOUSEHOLD WASTE COMPOSITION (EXCLUDING ASH)

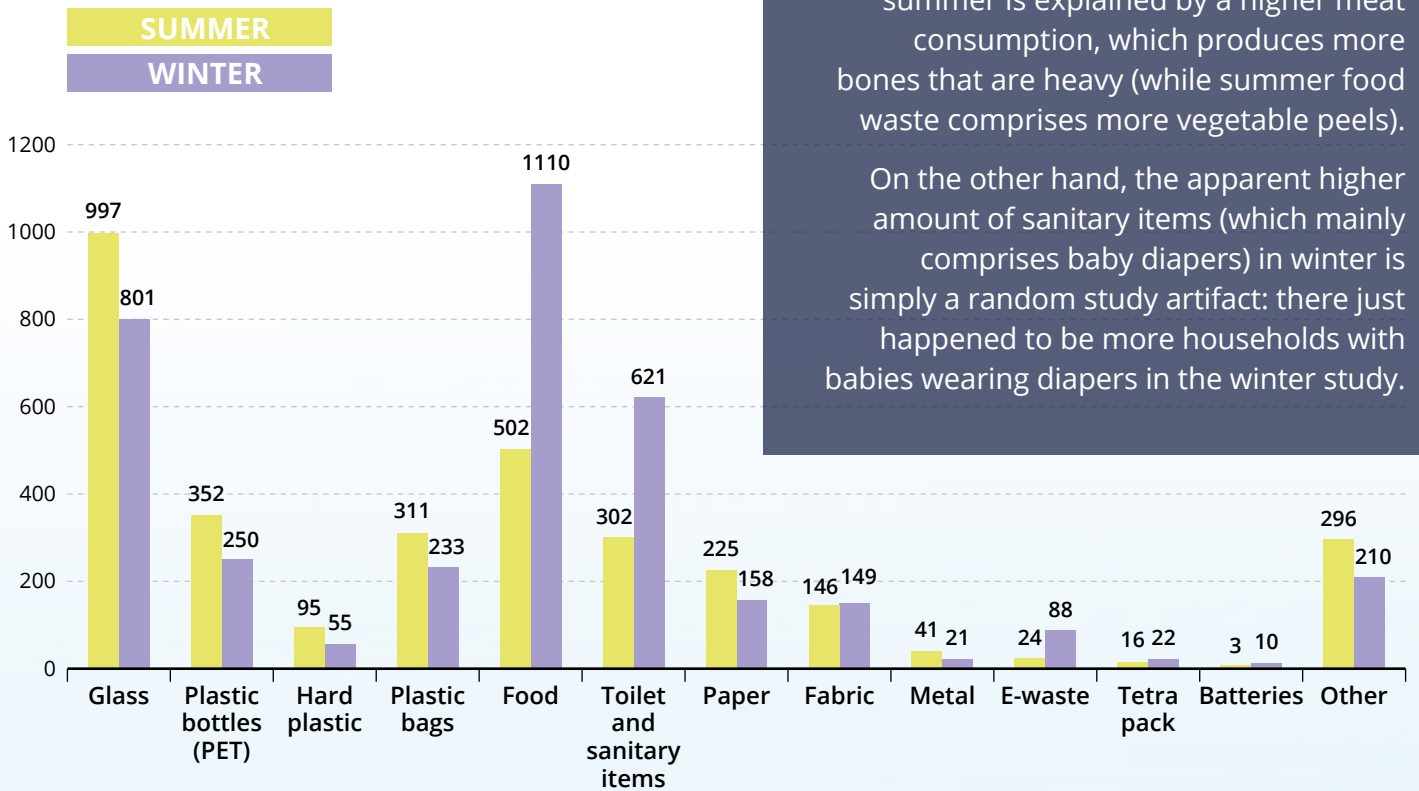
→ % by weight



Glass and **plastics** are found in higher proportion in **summer** (53%) than in winter (35%). On the contrary, **food** waste is produced in higher amount in **winter** (30%) than in summer (15%).

AVERAGE WEEKLY HOUSEHOLD WASTE PRODUCTION BY CATEGORY

→ Gram per week per household



The **double increase in food waste production** in winter compared to summer is explained by a higher meat consumption, which produces more bones that are heavy (while summer food waste comprises more vegetable peels).

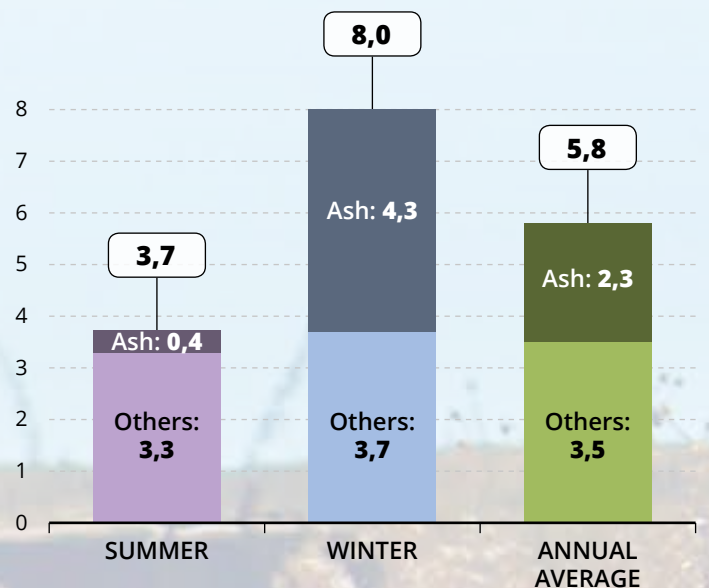
On the other hand, the apparent higher amount of sanitary items (which mainly comprises baby diapers) in winter is simply a random study artifact: there just happened to be more households with babies wearing diapers in the winter study.

AVERAGE WEEKLY HOUSEHOLD WASTE PRODUCTION

→ Kilogram per week per household

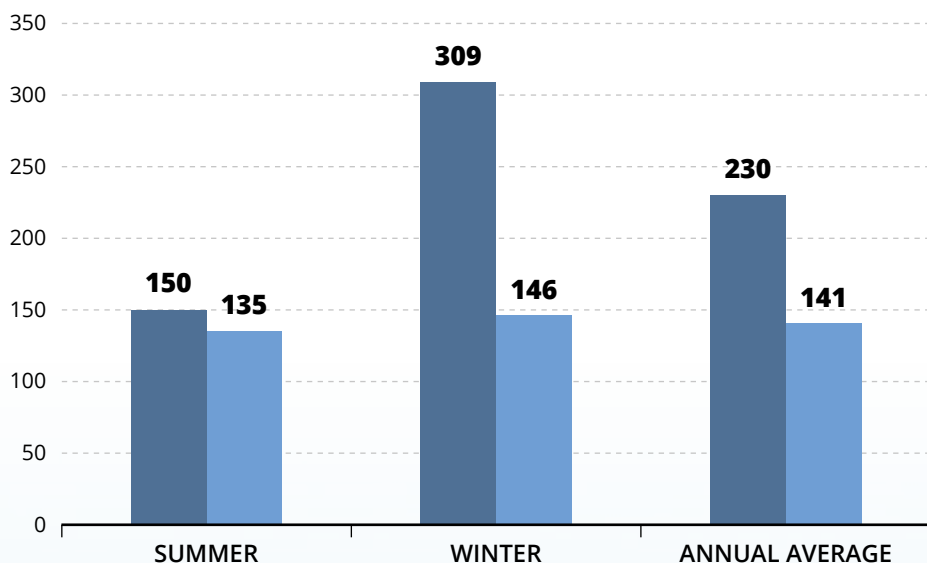
Excluding ash, an average household produces approximately **3.5kg of waste per week**, which corresponds to **0.9kg per person** or **1.7kg per adult** in the household.

Including ash, an average household produces approximately **5.8kg of waste per week**, which corresponds to **1.5kg per person** or **2.8kg per adult** in the household.



AVERAGE DAILY INDIVIDUAL WASTE PRODUCTION

→ Gram per day per person

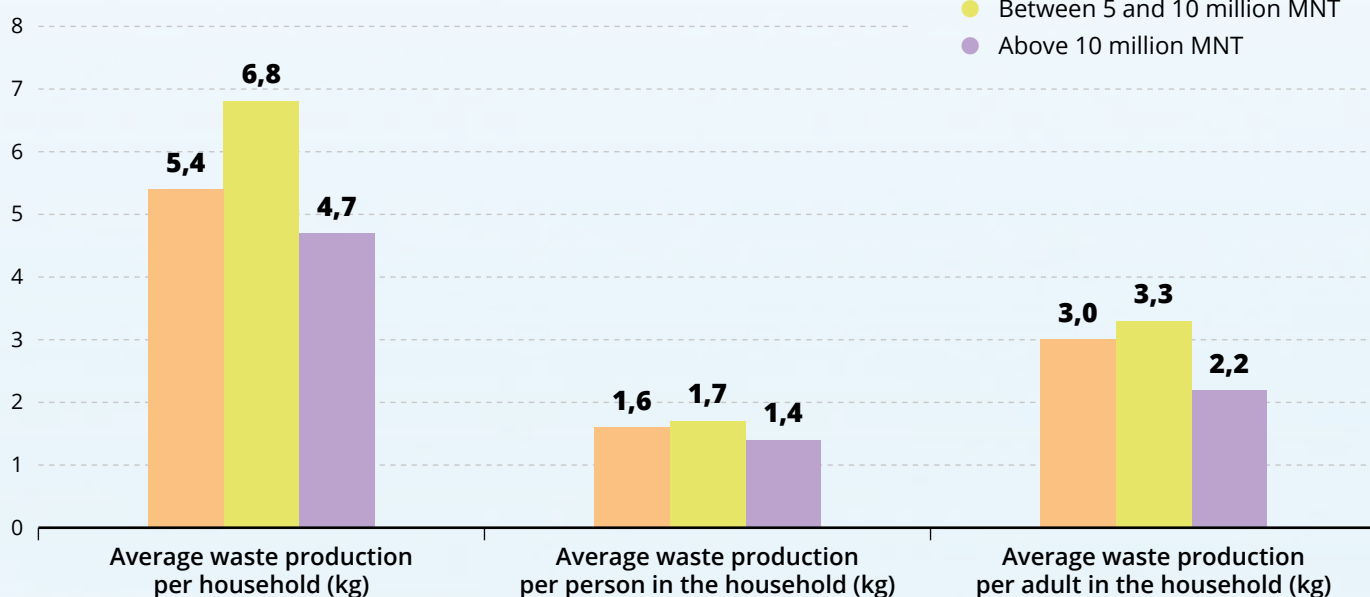


Excluding ash, an average person in Khishig-Undur produces **141g of waste each day** (230g with ash). Ash aside, household waste production rate appears very stable throughout the year (between 135 and 146g).

- Including ash
- Excluding ash

AVERAGE WASTE PRODUCTION DEPENDING ON HOUSEHOLD'S ANNUAL INCOME

→ Kilogram per week per household (including ash)



- Bellow 5 million MNT
- Between 5 and 10 million MNT
- Above 10 million MNT

Households earning **more than 10 million MNT** per year may be producing **slightly less waste** than households with lower incomes. However, this trend was mainly observed in the summer study but was not quite confirmed in winter. It would thus require further analysis to be validated.

SUMMARY AND CONCLUSIONS

- Overall, throughout the year, **almost 90% of all domestic waste is composed of only 5 main categories:** glass, plastic, food, ash and baby diapers. In order to tend towards zero ultimate waste, a soum should thus primarily focus its effort on managing these 5 categories of waste.
- While **ash** is a relatively minor component (11%) of household waste in summer, it is by far the largest one (54%) in winter, with an amount multiplied by a factor 10 (0.4 to 4.3 kg per week).
- While **glass and plastic** represented more than half (53%) of total domestic waste in the summer study (excluding ash), they account for only one third (35%) of it in the winter study. This decrease is also observed in absolute weight (1.8kg in summer against 1.3kg in winter).
- **Food** waste is two times higher in winter than in summer study, both in absolute and relative terms. This observation is to be linked with a higher consumption of meat in winter, which produces more (heavy) bones than in summer.
- Throughout the year, **average weekly household waste production** is approximately 5.8kg including ash, and 3.5kg excluding ash. This waste production rate corresponds to an average of 230g per day per person including ash, and 141g excluding ash. Excluding ash, which has a strong seasonal variation, most household waste is produced on a relatively stable basis throughout the year.

ADDITIONNIAL NOTES AND DATA LIMITATIONS

- In summer, study showed that household waste production tended to decrease as income increases. However, this trend was not really confirmed in the winter study, so additional analysis would be required to confirm or disproof this hypothesis.
- No significant difference was observed between households living in houses and households living in gers. However, the number of households living in ger was significantly lower than those living in houses, so further analysis involving more gers may show interesting results.
- Winter study showed a much higher amount and proportion of sanitary waste, but this observation was only a random study artifact as, randomly, the winter study had more households with babies.
- More broadly, the analysis was based on data collected over the course of one week in summer and one week in winter. Variation based on holidays and other seasonal influences has not been considered.
- Households did not necessarily participate in the study for both summer and winter periods, which means samples are not exactly the same in the two studies.
- Waste production per person doesn't take into account the age of the persons.

