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ASSESSMENT

Waste Segregation and Recycling Programme

by Yerevan Municipality, 2020-2021

July 2022

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The EU granted project "Capital Cities Collaborating on Common Challenges in Hazardous Waste Management - Yerevan, Warsaw, Tirana" is referred to in working terms by using the abbreviation "HWM project".

Introduction

The assessment was prepared in July 2022 to provide the key information, observations and recommendations related to the Waste Segregation and Recycling Programme introduced by the Yerevan Municipality in 2020. This assessment report was prepared based on the information obtained from the Yerevan Municipality Greening Company (CNCO) for 2020-2021.

Any observations and recommendations in this report were developed by the HWM Project Team and do not necessarily represent the official views of the Yerevan Municipality or the European Union.

Main Findings

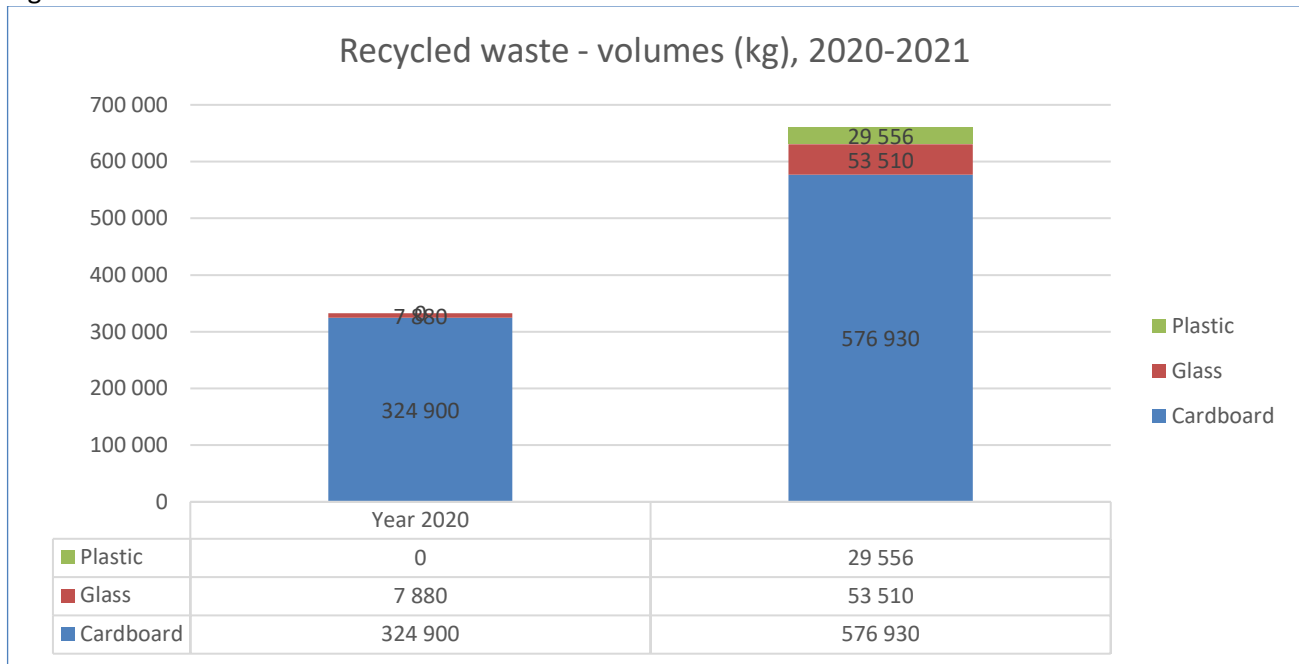
1. Recycled waste volumes and values

The categories of recycled waste were cardboard/paper, glass, and plastic (plastic sold to recyclers since January 2021).

In terms of volumes and values of the recycling waste, the following observations were made:

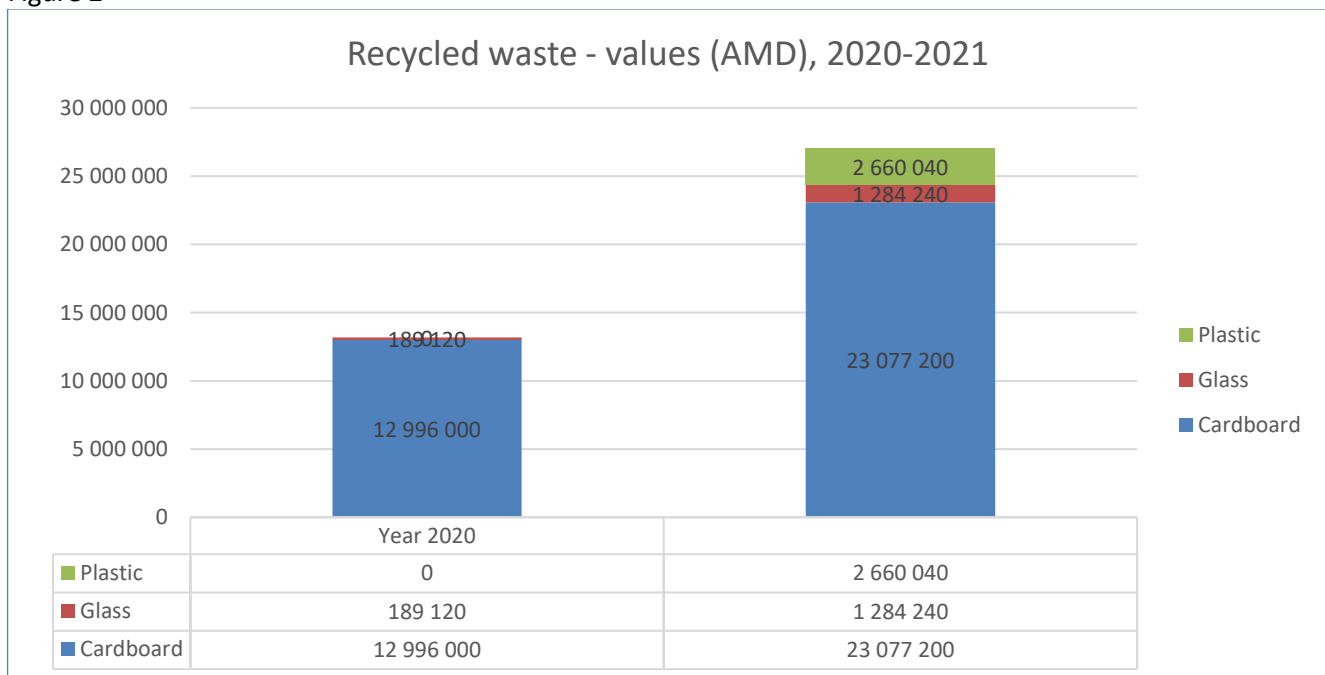
- In 2020, some 333 tonnes were given to recycling, increasing to 660 tonnes in 2021, with 87% of the total volume made up of cardboard, 8% glass, and 5% plastic (2021).
- The overall increase of volumes between 2021 and 2020 (100%) was 198%, for cardboard – 178% and for glass – 678%. As the waste plastic was collected only in 2021, no annual increase could be recorded, however, the increase between January and December 2021 was 206%.
- The volumes of recycled cardboard increased gradually during the period and high levels were maintained throughout the second half of 2021. The volumes of recycled glass increased until March 2021 and then unevenly decreased until the end of 2021 with the main reason behind this trend being the missing containers, possibly stolen for private use (the containers were small size, convenient for home or small commercial use). The volumes of recycled plastic were gradually but unevenly growing throughout 2021.
- Similarly, the incomes from selling recyclable waste increased significantly when comparing 2020 (100%) and 2021: for cardboard – 178%, glass – 679%, and 205% - in total. In 2021, the total income reached 27 million AMD.

Figure 1



Source: Own elaboration based on data from the YM Greening Company

Figure 2



Source: Own elaboration based on data from the YM Greening Company

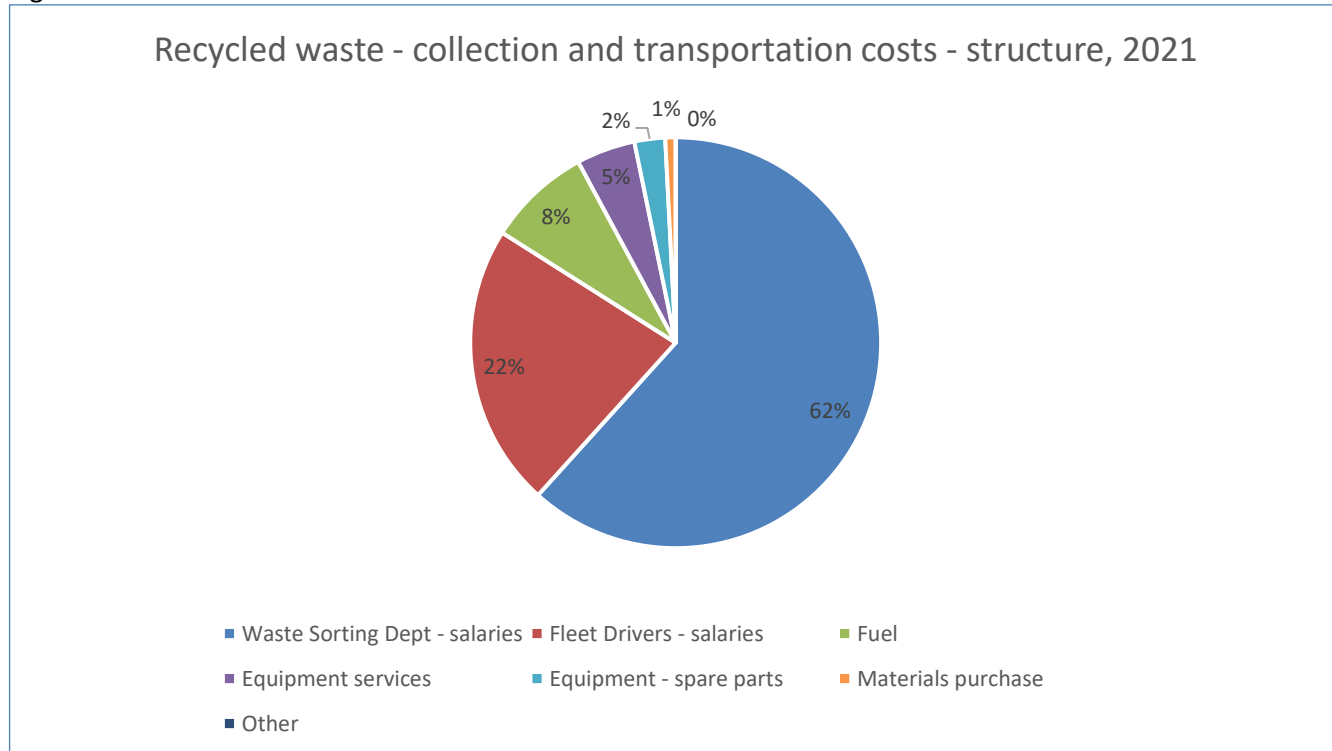
2. Recycled waste collection and transportation costs

The Waste Segregation and Recycling Programme required certain operational costs and investments. The latter ones were not the subject of this assessment.

As regards the operational costs, the main element was the salaries of the technical staff of the Waste Sorting Department of the Yerevan Municipality Greening Company and of the fleet drivers, followed by fuel costs, services, spare parts and other materials. The following observations were made in relation to the operational costs of the Programme:

- The costs increased between 2020 and 2021 as a result of the expansion of the Waste Segregation and Recycling Programme (more types of waste, greater volumes), totalling some 106 million AMD in 2021, with a monthly average of some 9 million AMD. In 2021, the total costs stood at 151% of the 2020 figure. A relatively high increase in nominal terms and percentage-wise was noted for the cost of salaries of the fleet drivers which doubled between 2020 and 2021.
- In 2021, the cost structure differentiated from 2020 and showed a lower share of salaries (84% of the total, 62% of technical staff salaries and 22% of fleet drivers' salaries respectively).

Figure 3



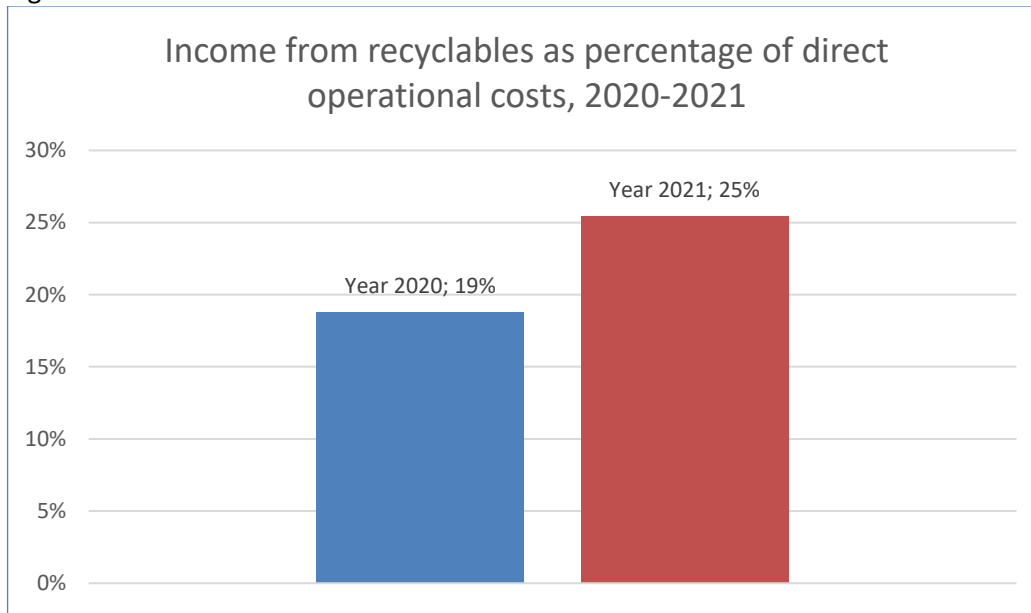
Source: Own elaboration based on data from the YM Greening Company

3. Operational sustainability

In terms of operational financial results, the incomes generated by the Waste Segregation and Recycling Programme compared to operating costs stood at 19% in 2020 and 25% at 2021.

At this point, the Programme is not considered financially sustainable yet, however, the situation showed a significant improvement with the increase in volumes of recycled waste between 2020 and 2021.

Figure 4



Source: Own elaboration based on data from the YM Greening Company

Recommendations

The following recommendations were made for the Waste Segregation and Recycling Programme by the Yerevan Municipality, both of operational and strategic relevance:

Operations:

1. By increasing the volumes and thus the values of recycled waste, the Waste Segregation and Recycling Programme can become operationally sustainable. Maintaining the current relations between income and operational costs increases, it is estimated that to reach full operational sustainability, the volume of recycled waste should grow from 660 tonnes in 2021 to over 21,120 tonnes. This means an increase of some 32 times. Considering that the annual waste generation for Yerevan in 2021 was approximately 373 kg per capita, and 413,100 tonnes in total, the operational sustainability of the Programme will be reached when only slightly over 5% of the total municipal waste is subject to recycling. **Recycling more than 5% of municipal waste is expected to make the operations of the Waste Segregation and Recycling Programme in Yerevan financially sustainable with incomes exceeding the operating costs. Currently, only 0.16% of municipal waste is directly recycled under the Programme.**
2. Further economies of scale are expected in relation to the efficiency and costs of operations of the Programme when it is expanded, as reorganisation and larger scales of logistical (routes, schedules, frequency of collection, etc.) and other organisational issues (work organisation, specialisation, etc.) will allow more efficient use of resources of the Programme.
3. **A careful examination and coordination between the operations of the two municipal companies engaged in waste management (Greening Company and Public Utilities Company) are required to adjust the locations, numbers and capacities of containers used for the collection of recyclable waste and mixed waste.** Such analyses should be conducted continuously as the Waste Segregation and Recycling Programme is expanded.

Strategic considerations:

1. As stated before, currently, only some 0.16% of municipal waste in Yerevan is recycled under the Waste Segregation and Recycling Programme. Additionally, some more waste is recycled by other entities as well as informally, however, any such actions do not generate significant amounts of waste for recycling. In practical terms, there are no limitations to increasing the volumes of recycled waste in Yerevan apart from the need to finance the relevant investments and to provide wider opportunities and awareness to citizens and local businesses to participate in waste segregation.
2. Considering the possibility of having more than 50% of all municipal waste recycled (the current EU objectives are to recycle at least 65% of municipal waste by 2035), **the Programme expansion in Yerevan is both guaranteed and necessary.**
3. This assessment was limited to the direct operational aspects and the financial side of the Waste Segregation and Recycling Programme. However, considering the negative economic, environmental and social costs of landfilling mixed municipal waste, especially the related Green House Gas emissions, and water and soil contamination, as well as the necessity of building climate change resilience and preventing degradation of the natural environment, **Yerevan Municipality should elaborate and implement a vigorous strategy to rapidly expand its Waste Segregation and Recycling Programme.**
4. The expansion of the Waste Segregation and Recycling Programme will find broad support and attract funding from the national budget as well as from donors and international financial institutions.
5. Considering the fact that the population's perceptions gradually shift towards environment- and climate-friendly behaviours and policies, the Waste Segregation and Recycling Programme expansion shall meet with popular social and political support.

The above findings and recommendations are consistent with investment recommendations provided to the Yerevan Municipality by the HWM project earlier in 2022.

Annex

Operational data for 2020 and 2021 (separate file).