Ghent, Belgium

Figure 1. The Municipality of Ghent. Map Data: Google, SIO, NOAA, U. S. Navy, NGA, GEBCO

This summary presents the main conclusions of one of the regional case studies conducted during the COLLECTORS project. The studies included a life cycle assessment, a cost-benefit assessment, and a circularity assessment. Social aspects were analysed on a general level based on information provided by the municipality and using focus group discussions in different European regions. References to original research reports are provided at the end of this document.

Description of the region

Ghent (see Figure 1) is a port city in northwest Belgium with almost 250,000 inhabitants. 76,374 tonnes of municipal solid waste (MSW) was generated in 2017. Currently Ghent collects 85% of the generated paper and packaging waste (PPW) separately from residual waste and has an estimated recycling rate of 77%.

PPW collection system

The inter-municipality of IVAGO serves both the city of Ghent and the neighbouring municipality of Destelbergen. IVAGO has its own collection equipment but works together with private company SUEZ to complement the collection services. IVAGO operates its own waste-to-energy plant, producing electricity and heat from residual waste.

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IVAGO collects residual waste, commingled plastics, metal and drink cartons (PMD), glass and paper and cardboard separately throughout the city and has defined three zones that each have their own collection approach:

- Zone C: Container-zone (waste collected in containers);
- Zone Z: Zakken-zone (waste collected in bags);
- Zone S: Sorteerpunten-zone (waste collected at a sorting point).

Depending on the zone, the waste is collected in containers, bags or at bring points. In addition, Ghent has six civic amenity sites where citizens can discard of their waste.

The glass waste from Ghent is transported to High 5 Glass sorting and GRL Glass Sorting. Ghent's Paper waste is sorted by Stora Enso Paper Sorting. The residual waste is sent to IVAGO's incinerator. Lastly, PMD is sorted by Suez in the R&R BE North facility.

Actions to improve collection

Ghent already has a separate PAYT-based waste collection system since 1998. The system remained largely unchanged over the last years and focuses on the separate collection of paper and cardboard, glass, and PMD.

Material flows in the region

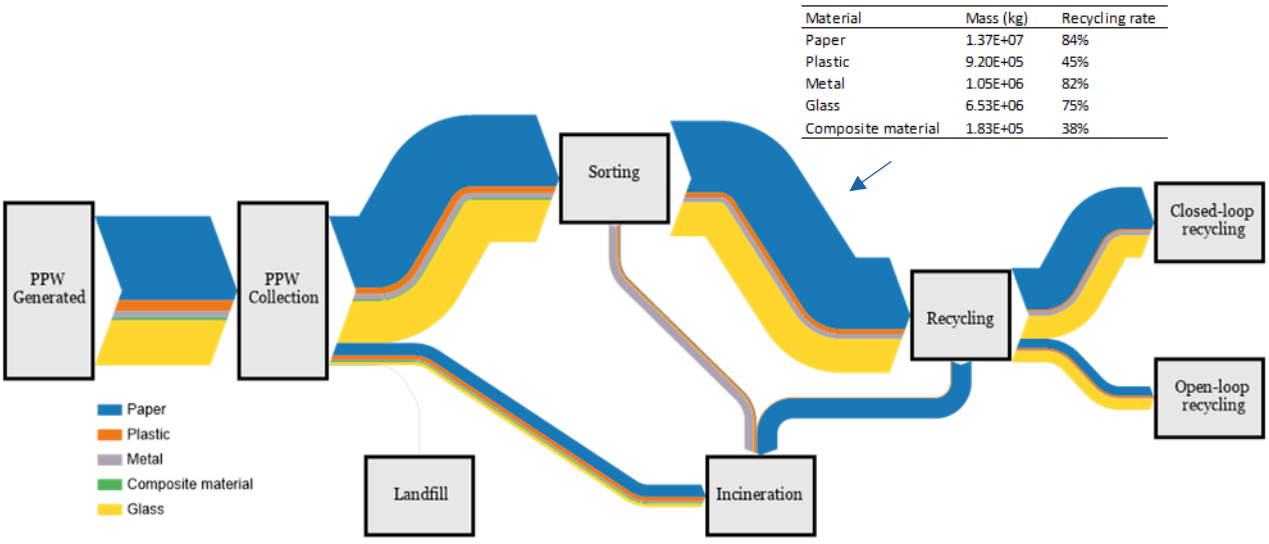

Figure 2 Material flows in the municipality of Ghent (Source COLLECTORS D3.3)

The municipality of Ghent reported to have generated 16,304 tonnes of paper, 2,056 tonnes of plastic, 1,291 tonnes of metal, 8,755 tonnes of glass and 483 tonnes of composite material (**Fout! Verwijzingsbron niet gevonden.**). Ghent achieved a capture rate of 85%, 69%, 82%, 93% and 48% for these materials respectively. 99% of the material that enters the residual waste is incinerated in

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Belgium. Ghent is currently meeting both the 2025 and 2030 recycling targets of the European Union for paper, metal and glass.

Findings from environmental assessment

In Ghent, reducing capture losses has the largest effect on the environmental performance of the system compared to reducing sorting or recycling losses. Reduced losses of plastic at the collection and sorting stages lead to reduced plastic incineration and thus reduced energy recovery. Recycling more plastic in Belgium, as in the Netherlands, leads to minor increases in the associated freshwater eutrophication potential.

Systemic improvements to the waste management, at all three stages (collection, sorting and recycling) can lead to considerable improvements in Ghent. For instance, a 10% improvement in each stage of management for each material will lead to a 10% improvement in the associated global warming potential (GWP) of the system, the greatest potential improvement in GWP of any of the evaluated case studies.

Findings from economic assessment

Since IVAGO owns the waste management equipment and fleet, operational costs and potential investments in equipment are directly made by IVAGO. IVAGO is a mixed intermunicipal association. The city of Ghent and the municipality of Destelbergen are the government partners. ECOV, a partnership between SUEZ and Indaver, is the private partner. Every year, IVAGO charges Ghent and Destelbergen for the collection, transport and treatment of the household waste. Revenues from material streams and incineration are collected by IVAGO. Revenues from the Belgian EPR Fostplus for packaging waste are collected by IVAGO. Lastly, the municipality collects the waste fee from the citizens.

Ghent has a low waste fee of around € 60 per household. Overall, merely 23% of income is coming from the citizen waste fee; 27% comes from recovered materials; and 23% comes from the EPR fees. The rest is covered by incineration revenues and tax savings. Comparing the waste fee in 2012 and 2018, we see an increase of 13%. This increase seems significant, however in absolute terms Ghent has one of the lowest fees from the assessed cases, and also the lowest absolute fluctuations. The total costs were quite constant during the assessed period. However, the EPR fee for plastic waste increased significantly in 2017, which directly resulted in sharp increase in total benefits. Possibly, this resulted in a slightly lower waste fee after 2016.

In order to present a quick overview of the projected shift in incomes, the items below are listed as a percentage of the total revenues (% of the total revenues);

- the waste fee is decreasing from 26% in 2013 to 21% in 2022;
- the revenues form incineration decrease from 26% in 2013 to 21% in 2022;

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- the recovered materials are decreasing from 30% in 2013 to 24% in 2022;
- the EPR fee contribution increases from 15% in 2013 to 30% in 2022.

Despite the waste collection system already being in place for many years, Ghent still managed to realise a drop in residual waste quantities of 2%, going from 46 kilotonnes in 2012 to 44.5 kilotonnes in 2017. A corresponding increase of 2% in collected recyclable PPW waste was found. Due to less generated residual waste quantities, and more separately collected recyclable packaging waste, the corresponding operational costs per capita for residual waste decreased by 0.37€/inhabitant. The total operational costs for separate collection increased by 0.89€/inhabitant.

Initiatives for citizen participation and social acceptance

In Ghent, the waste collection system is already well internalised by the inhabitants. Therefore, communication campaigns about information and environmental concerns are regularly carried out for specific items, mostly in the occasion of a change in the system. However, via the website, call centre or civic agents, information is available for inhabitants when they need it. Convenience analyses or inhabitants' opinion surveys are carried out.

Selected highlights

- Information campaigns when the system is changing (funded by the regional PRO);
- Information to citizens when setting up a new underground collection;
- Rules for distance to bring points (formulated by the regulator) take into account different factors such as distance or number of inhabitants.

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For more information, please see

D2.4 Report on solutions for tackling systemic and technical boundary conditions. Available at: https://www.collectors2020.eu/results/analysis-of-boundary-condition/

D2.5 Report on implemented solutions and key elements in selected cases for societal acceptance. Available at: https://www.collectors2020.eu/wp-content/uploads/2020/06/Collectors-Deliverable2.5.pdf

D3.2 Report on the economic and financial performance of waste collection systems. Available at: https://www.collectors2020.eu/wp-content/uploads/2020/04/Deliverable3.2_COLLECTORS-project-1.pdf

D3.3 Report of recommendations for improvement of single systems and optimum operation conditions. Available at: https://www.collectors2020.eu/results/environmental-impact/

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