

Tubbergen, the Netherlands



Figure 1 The Municipality of Tubbergen. Map data: Google, Landsat / Copernicus

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

The municipality of Tubbergen (see Figure 1) is a small municipality (21,142 inhabitants) in the rural east side of the Netherlands, close to the border of Germany. 9,514 tonnes of municipal solid waste (MSW) was generated in 2016. Tubbergen currently collects 94% of the generated paper and packaging waste (PPW) separately from the residual waste and has an estimated recycling rate of 85%.

PPW collection system

The municipality effectively manages its waste by working together with the regional waste management company NV ROVA. This includes the collection and processing of different types of waste: organic waste (door-to-door collection), commingled plastic, metal and drink cartons (PMD),

residual waste and paper (door-to-door collection, bring points, CAS) and glass (bring points). PMD, paper and cardboard and residual waste are all collected using either mini containers or shared containers. In addition, paper and cardboard waste is periodically collected in the Tubbergen municipality by associations and schools (raising money with the paper and cardboard revenues). Glass is collected using 42 communal containers. PMD and metal is transported to Attero in Wijster, the residual waste is transported to Twence in Hengelo, and the paper and cardboard to Remondis and Peute in Rotterdam.

ROVA is an intermunicipal association, owned by the 23 municipalities it is serving. ROVA owns the waste management equipment and fleet, therefore operational costs and potential investments in equipment are directly made by ROVA.

In the Netherlands, the 'Afvalfonds Verpakkingen' reimburses waste collection companies in order to meet the legal requirements for collection and recycling on behalf of producers and importers. The Afvalfonds is financed by the waste management contribution of the packaging industry. Through this contribution the activities of the Packaging Waste Fund, but also those of the organizations involved, Nedvang, Nederland Schoon, Verpakking chain BV (VPKT) and the Sustainable Packaging Knowledge Institute (KIDV) are funded. VPKT takes care of the sorting and recycling of (plastic) packaging by entering into contracts with post-separators, sorters, recyclers, transporters and storage and transfer stations. Every year, the Afvalfonds receives and distributes approximately € 200 million.

Actions to improve collection

Following "Afvalloos Twente" (waste-less Twente), Tubbergen has opted for the ambitious waste policy plan "Van Afval naar Grondstof, Van Idee naar Aanpak, Van Betalen naar Belonen" (from waste to raw material, from idea to approach, from payment to reward) to achieve a residual waste amount of only 50 kg per inhabitant per year by 2030. To achieve this, various measures were implemented in 2015 (facilitating the transition towards a complete PAYT system) which have resulted in a sharp decline in residual waste and a significant increase in separately collected waste. A decrease in residual waste from 200+ kg per inhabitant per year in 2015 to 63 kg in 2017 and 65 kg in 2018 was achieved. The achieved separation percentage in 2017 was already above the national standard of 75% for 2020.

Since ROVA has been operating in Tubbergen for quite some time, the required investments in equipment were very limited. The municipality Tubbergen invested mainly in communication campaigns, and in new (electronic) containers. Both the citizen waste fees and EPR compensation from Afvalfonds Verpakkingen is paid to the Tubbergen municipality. Revenues from material streams and incineration are collected by ROVA. ROVA charges Tubbergen for a waste management and organisation fee; covering the collection, transport, treatment and analysis of the waste for the PAYT system.

Starting in 2019, Afvalfonds started implementing lower tariffs for easily sortable and recyclable plastics. A similar incentive has been running for biodegradable plastics between 2013 – 2018.

Material flows in the region

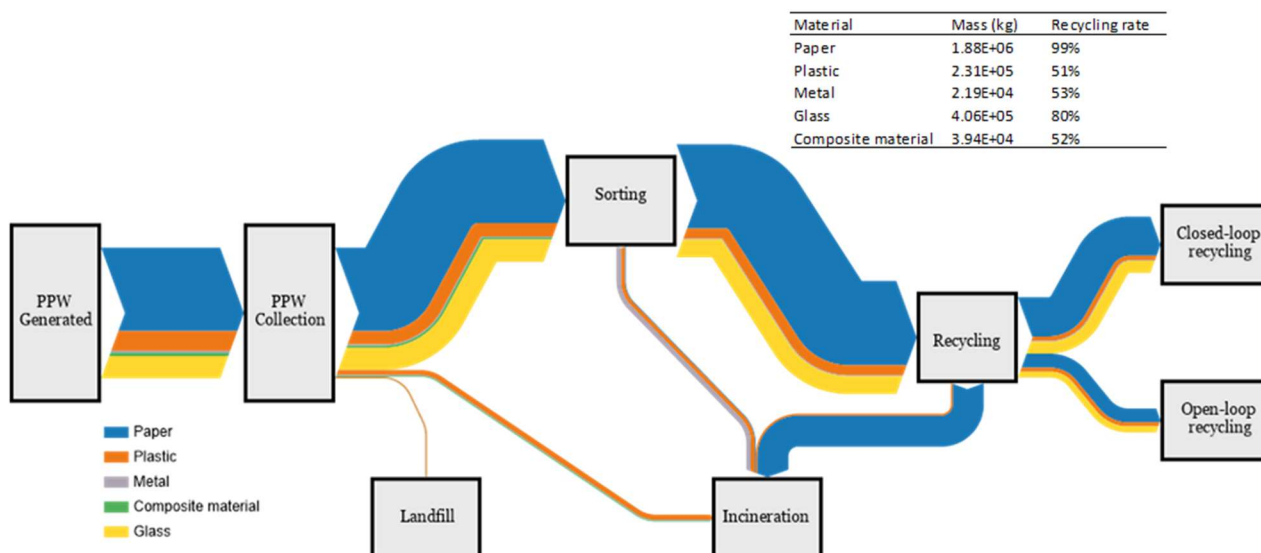


Figure 2 Material flows in the municipality of Tubbergen (Source COLLECTORS D3.3)

The municipality of Tubbergen reported to have generated 1903 tonnes of paper, 449 tonnes of plastic, 41 tonnes of metal, 507 tonnes of glass and 76 tonnes of composite material. Tubbergen achieved a capture rate of 100%, 68%, 53%, 100% and 66% for these materials respectively. 81% of the material that enters the residual waste is incinerated in the Netherlands (Eurostat, 2019). Tubbergen is currently meeting the 2025 recycling targets of the European Union for paper, plastic and glass and non-ferrous metal. Tubbergen is currently already achieving the 2030 recycling targets for paper and glass.

Findings from environmental assessment

In Tubbergen, depending on the environmental impact category, reducing sorting losses and recycling losses have the largest effect on the environmental performance of the system, more than increasing capture rates. In terms of global warming potential (GWP), increasing recycling is more impactful, whereas collection is more important to fossil resources depletion potential (FDP). Little more paper and glass can be captured in Tubbergen and this is reflected in the negligible changes in the environmental impacts for reduced capture losses of these materials.

In Tubbergen, reduced losses of plastic at the collection and sorting stages leads to reduced plastic incineration and thus reduced energy recovery. Recycling more plastic in the Netherlands, instead of burning it, leads to increased associated freshwater eutrophication potential (FEP).

Systemic improvements to the waste management, at all three stages (collection, sorting and recycling) could lead to considerable improvements in Tubbergen. For instance, a 10% improvement in each stage of management for each material will lead to a 7.15% improvement in the associated GWP of the system.

Findings from economic assessment

Overall, an average of 42% of income is coming from the citizen waste fee; 45% comes from the EPR fees; and ca. 6% comes from incineration benefits.

Tubbergen managed to implement a separate collection system by eventually even lowering the costs for its citizens. During and after the implementation the waste fee has been decreasing. Comparing the waste fee in 2011 and 2017, we see a drop of 23%. The sharp increase in benefits from producer fees from plastics possibly enabled Tubbergen to reduce its waste fees. In addition, a decrease in collection and processing costs for residual packaging waste occurred between 2014 – 2015, however, this was largely counter balanced by the increase in costs for collection of PMD. Lastly, the incineration tax increased from € 13.21 per tonne in 2018 to € 32.12 per tonne in 2019, but Tubbergen has very low quantities of residual waste.

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 60% in 2013 to 32% in 2022;
- the revenues from incineration decrease from 13% in 2013 to 3% in 2022;
- the EPR fee contribution increases from 26% in 2013 to 53% in 2022.

Tubbergen realised a drop in collected residual waste quantities of 65%, going from ca. 4.000 tonnes in 2013 to 1.003 tonnes in 2017. A corresponding increase of 24% in collected recyclable PPW waste has been found. Due to less generated residual waste quantities, and more separately collected recyclable packaging waste, Tubbergen has been able to decrease the operational costs per capita for residual waste collection and processing. The operational costs for the recyclable packaging waste stream increased with ca. € 10 per inhabitant. The total investment Tubbergen made was in total € 175.000, which comes down to € 8.27 per inhabitant.

Initiatives for citizen participation and social acceptance

In Tubbergen, a strong emphasis is put on disseminating information about the waste collection system to citizens. Publication of guidelines within local newspapers and a waste coach program are among the taken measures. If citizens have questions and/or complaints, the system receiving the comments ensures a reply within the following 48 hours. Although there is a strong focus on information,

communication about environmental aspects is very low. A convenience analysis is not done at the local level, but feedback from inhabitants is collected. Additionally, the city intensively uses examples of best functioning practices from the country.

Selected highlights:

- A waste coach is available to inform and consult inhabitants about the waste collection system;
- Information about the waste collection system is published in the newspapers;
- Responses to complaints and requests are made within 48 hours;
- A satisfaction survey is carried out every year to get inhabitants' feedback;
- Specific school programs are present to incentivise pupils to sort their waste.

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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