Rennes, France

Figure 1 The Municipality of Rennes. 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

Rennes (see Figure 1) is a city in the east of Brittany in north-western France with 438,865 inhabitants. 204,552 tonnes of municipal solid waste (MSW) was generated in 2017. Currently Rennes collects 55% of the generated paper and packaging waste (PPW) separately from residual waste and has an estimated recycling rate of 44%.

PPW collection system

In Rennes, waste collection is managed by Rennes Métropole ("Direction des déchets et des réseaux d'énergie") and operated in collaboration with various subcontractors such as Sita Ouest for household and recyclable waste and Tribord for door-to-door vegetable and bulky waste. Glass

waste is separately collected at bring points, and the different colours are mixed. Paper, newspapers and magazines from households are collected co-mingled with plastic, metal and composite packaging (PMD). Yellow bins collected door to door or bring points have been implemented for collecting these commingled recyclables ("Multi-matériaux"). The Métropole operates 18 civic amenity sites (24.381 inhabitants per CAS).

Actions to improve collection

Rennes has been selected by the French ministry as one of the pilot areas of the national programme on zero waste. The national waste programme set a 10% reduction target of waste generated per inhabitants from 2010 to 2020. During this time, Rennes reorganised their waste collection system, participated in the LIFE+ Miniwaste project to reduce biowaste, and invested largely in communication campaigns on reducing waste as well as additional containers and bring points.

In 2013, Rennes Metropole invested in the acquisition of new containers, bring points and underground waste containers and in construction of new waste disposal centres and in new equipment for treatment such as grinders and shredders.

In July 2017, the list of recyclables to be included in the yellow bins or bring points was extended to all plastic packaging and small aluminium. Important communication campaigns followed this scope extension.

Material flows in the region

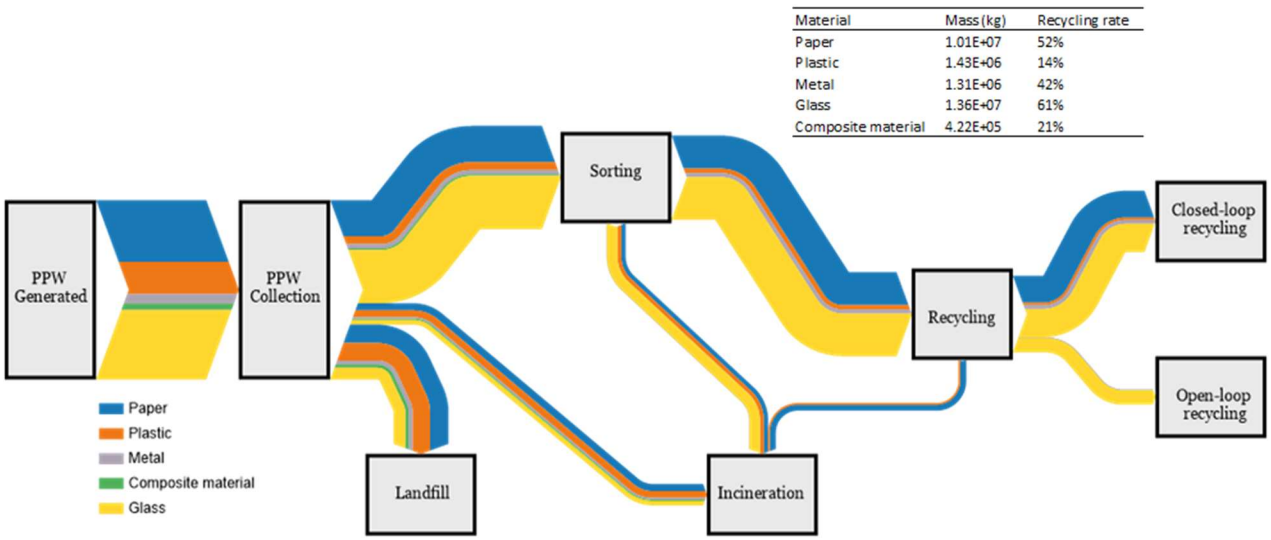

Figure 2 Material flows in the municipality of Rennes (Source COLLECTORS D3.3)

The municipality of Rennes reported to have generated 24200 tonnes of paper, 10350 tonnes of plastic, 3100 tonnes of metal, 19650 tonnes of glass and 1972 tonnes of composite material (Figure 2). Rennes achieved a capture rate of 59%, 25%, 43%, 77% and 27% for these materials respectively. 28% of the

material that enters the residual waste collection is incinerated in France (Eurostat, 2019). Rennes is currently not meeting the 2025 recycling targets of the European Union for any PPW material.

Findings from environmental assessment

The environmental impacts associated with the collection and sorting of the PPW accounted for only a small portion of the overall impact for each impact category. For instance, the global warming potential (GWP, reflecting the total amount of greenhouse gas emissions) associated with collection and sorting for each material was only 0.5% for paper collected in Rennes.

In Rennes, reducing capture losses has the largest effect on the environmental performance of the system compared to reducing sorting or recycling losses. Reduced capture losses of plastic leads to an increased GWP associated with PPW in Rennes. The loss of plastic at the sorting stage is substantial, due to the PMD + Fibres commingling collection system employed by the municipality. In addition, the incineration rate of residual waste is low, relative to other municipalities. Since 100% of the waste lost at the sorting stage is incinerated, the amount of plastic incineration will actually be increased if capture losses are reduced in Rennes, leading to increasing greenhouse gas emissions.

The life cycle assessment shows how systemic improvements to the waste management, at all three stages (collection, sorting and recycling) can lead to a 4.4% improvement in the associated GWP of the system. This is the lowest estimated improvement potential in GWP of the five PPW case studies. This is reflective of Rennes current performance, but also the PMD + Fibres commingling collection method.

Findings from economic assessment

CITEO (previously Eco-Emballages) is a non-profit company and a collective EPR scheme for household packaging waste in France. It was the first French eco-organisation and was founded in 1992. The scheme applies to all packaging consumed by households as end-users and affects all companies, producers and importers responsible for placing packaged products on the French market which then become household packaging waste. CITEO concludes contracts with municipalities, and covers 80% of the waste management costs.

Based on the cost-benefit assessment, an average of 57% of income is coming from the citizen waste fee; 23% comes from government and industry (EPR) support; and 18% comes from materials sold to recycling. The rest is coming from tax savings from not incinerating waste. The citizen waste fee (TEOM) is collected by Rennes Metropole, as well as potential government or industry (EPR) support.

During the assessed period 2012-2021, Rennes Metropole realises a drop in collected residual waste quantities of 1%, and a corresponding increase of 6% in collected recyclable packaging waste. Due to less generated residual waste quantities, and more separately collected recyclable packaging waste, Rennes is able to decrease the operational costs per capita for residual waste collection and

processing with € 1.52 per inhabitant. The operational costs for the recyclable packaging waste stream increases with ca. € 1.11 per inhabitant. The total investment Rennes made was in total € 1.76 million, which comes down to € 4.20 per inhabitant.

Rennes managed to keep a stable and slowly decreasing waste fee for its citizens during 2011-2017. The waste fee was 4% lower in 2017 compared to 2011. Looking at the total costs and benefits, the costs have more or less stabilized over the years, whereas the benefits have been slowly increasing which is largely due to more government and industry support.

In order to present a quick overview of the projected incomes until 2021, the items below are listed as a percentage of the total revenues (% of the total revenues);

- the waste fee is decreasing from 58% in 2012 to 55% in 2021;
- the revenues from recovered materials are fairly stable and only decrease from 19% in 2012 to 18% in 2021;
- the government and industry support increases from 19% in 2012 to 25% in 2021.

Initiatives for citizen participation and social acceptance

Rennes' societal acceptance system is handled by Rennes metropolitan area in charge of the waste collection system. The system relies a lot on raising awareness and providing sorting information through public communication and consultation of citizens through door-to-door explanation, sending letters to new inhabitants and the deployment of civic agents. However, there is not a strong emphasis on the use of social media. Regarding the convenience of the system, an analysis is done on a regular basis for the system to be the most optimal. Citizens also have the opportunity to express their preferences regarding the waste collection system. Regarding social norms, the focus is very much on densely populated areas with high-rise buildings and the youth through school animations. Specific employees are also in charge of involving the hotels, restaurants and the cafeterias, businesses and retailers in sorting their waste.

Selected highlights:

- Individual letters to households when there is a change in the system;
- Door-to-door explanation with specific focus on high-priority neighbourhoods;
- Regular review of the waste collection system;
- Citizens are consulted to give their preferences regarding the system setup or changes;
- Focus on different organisations via employees in charge of informing them;
- More emphasis put on densely populated areas and high-rise buildings.

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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This project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 776745