Cyclad, France

Figure 1. The municipality of Cyclad. Map Data: Google, SIO, NOAA, U.S. Navy, NGA, GEBCO, Landsat, / Copernicus, Maxar Technologies and TerraMetrics.

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.

The case studies were focused on collection of three specific categories of WEEE, namely small household appliances, information technology (IT) equipment and lamps. These categories were selected as high quantities of these materials are still ending up in residual waste.

Description of the region

The Cyclad Mixed Syndicate ensures the collection, treatment and recovery of waste produced by households in the region of the north-east of Charente-Maritime, France. It also organizes awareness campaigns for sorting and reducing waste. The syndicate's formation shows the political

will of a rural area to make use of synergies for an efficient waste management system in a sparsely populated area. The average GDP in Charente-Maritime was 28,140 €/capita in 2015.

WEEE collection system

For waste collection, treatment and final land disposal, Cyclad provides services to 6 "intercommunalities", namely to the Aunis Atlantique, Aunis Sud, Vals de Saintonge, and Coeur de Saintonge, Gémozac and Saintonge Viticole, comprising 188 communes with 148,659 habitants covering an area of 2,704 km^2 (55 inhabitants / km^2). Further, they provide waste treatment services, but no collection, to Ile de Ré and Agglomeration of Saintes.

The recycling of WEEE is financed by the Eco-participation fee paid with each purchase of new equipment. More and more communities are offering this line to their waste treatment centres to facilitate sorting and promote recycling. This is the case for Cyclad, offering the collection in partnership with the PRO Eco-systèmes. Together they collect about 90% of the local WEEE. Lamps and batteries are collected separately by CorePile and Recyclum. Cyclad has 25 civic amenity sites (CAS), there are normally two containers for small WEEE & IT, and two for large WEEE. These containers are shared with Eco-systèmes. When a container is full, Cyclad contacts Eco-systèmes to pick it up and transport it to the recycling facilities.

Cyclad also cooperates with a number of retailers. When the retailers' storage space is full, they call Eco-systèmes to pick up the WEEE. In addition, supermarkets provide drop off points for lamps, batteries and mobile phones. There are five social economy shops in the territory, where people can drop off WEEE and buy second hand upcycled/recycled WEEE objects, i.e. the Emmaüs and Envie networks.

Actions to improve collection

The biggest problem related to WEEE collection in the past was theft. In 2011, France introduced a legal ban on cash transaction for metals, to avoid WEEE leakage at borders and to include scrap dealers in the system and to avoid non-compliant WEEE treatment. In order to protect metals, WEEE and batteries, Cyclad bought containers (20ft) with special locks. In addition, they introduced video surveillance at all sites. They also painted the containers that are shared with Eco-systèmes in orange to make them easier to recognize. Further, they have a special contract with the police, who regularly checks the site to make sure that the employees are safe. Thanks to these measures, the stealing decreased significantly and the WEEE flow became better under control. Further measures that increased the collected WEEE quantities include awareness raising campaigns to mobilize small WEEE that people keep at home in their drawers. Since there was a hoax in France that all WEEE is going to India, some campaigns have been launched to inform the public on where the WEEE goes.

Material flows in the region

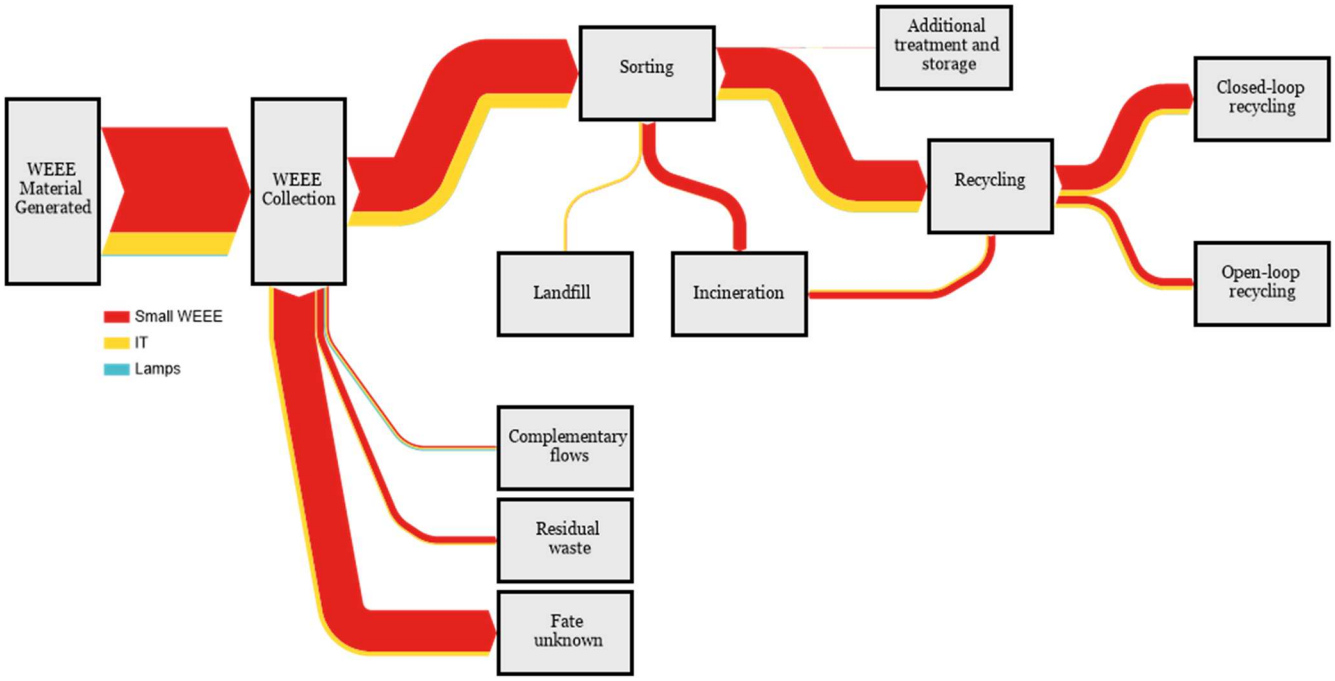

Figure 2. Material flows in region of the north-east of Charente-Maritime, reflecting the situation after improvements (Source COLLECTORS D3.3).

Cyclad reported to have collected an estimated 482 tonnes and 736 tonnes of small WEEE in 2015 and 2017 respectively, meaning that the capture rate for small WEEE increased from 61% to 73% in this timeframe. An estimated 118 tonnes and 195 tonnes of IT equipment were collected in these years with a capture rate of 61% and 73% respectively. It is assumed that no lamps were collected in a dedicated WEEE waste collection system in 2015. In 2017, 3 tonnes of lamps were collected, giving Cyclad a capture rate of 14% for lamps. Of the WEEE that is not collected by a designated WCS, 78% of WEEE has an unknown fate. Increased capture rates of WEEE in the north-east of Charente-Maritime are likely the result of a legal ban on cash transaction for metals, which helps prevent WEEE leakage via complementary flows or other fates. This has been paired with improved security at the CAS, i.e. locked containers and camera surveillance.

Findings from environmental assessment

In most cases, the production of the constituent materials of electrical and electronic equipment is the largest contributor to the environmental impacts of the WEEE. However, in some cases the disposal is the most important factor. The environmental impacts associated with collection and sorting of WEEE is only a small portion of the overall environmental impact for each assessed environmental impact category (ranging between 0.01-0.8% for small WEEE, 0.6-2.6% for IT equipment and 2.6-8.9% for lamps). When comparing the assessed WEEE categories, lamps have the lowest environmental impacts, and IT equipment has the highest impacts except for the marine

eutrophication potential (MEP) impact category, in which highest impacts were related to small household appliances.

There were some difficulties in assessing the environmental benefits related to increasing capture rates of WEEE. This relates to the fact that the fate of large shares of the assessed WEEE categories is still unknown. Evaluating impacts from re-use was not within the scope of the project, but it was assumed that directing functional devices to re-use could create significant environmental benefits. However, in order to include these benefits in system level assessment, the amount of re-used devices should be known.

Findings from economic assessment

The cost effectiveness of the investment was assessed assuming the operational costs have not increased due to the implementation of the new WEEE collection system. The investment made by Cyclad in 2014, and financially supported by ESR, amounted to € 107,914. By investing this amount, Cyclad was able to increase both the collection of SHA, IT and lamps by keeping the valuable WEEE appliances within their collection grounds. Taking 2014 as reference year, with 433 tons of SHA and IT and 1.82 tons of lamps collected, the 2018 collection values show an increase in collection numbers of 201.9 tons of SHA/IT and 3.52 tons of lamps. Therefore, the cost of additional WEEE collected was € 525.33/tonne.

Initiatives for citizen participation and social acceptance

Cyclad communicates about the WEEE collection system and environmental impacts through the same channels. A strong emphasis is put on communicating sorting guidelines with reminders sent every two years to the inhabitants' mailboxes. The system mostly relies on collection points, for which a deep analysis of convenience has been conducted considering many factors such as location, opening hours or accessibility.

Selected highlights

- Communication to all citizens every two years;
- Radio chronicles on WEEE two times a year;
- System mostly relying on CAS's that have been modernised;
- Comprehensive analysis done upstream to make the system convenient to use for inhabitants;
- Analysis of population density to adapt the collection system.

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