

Vienna, Austria

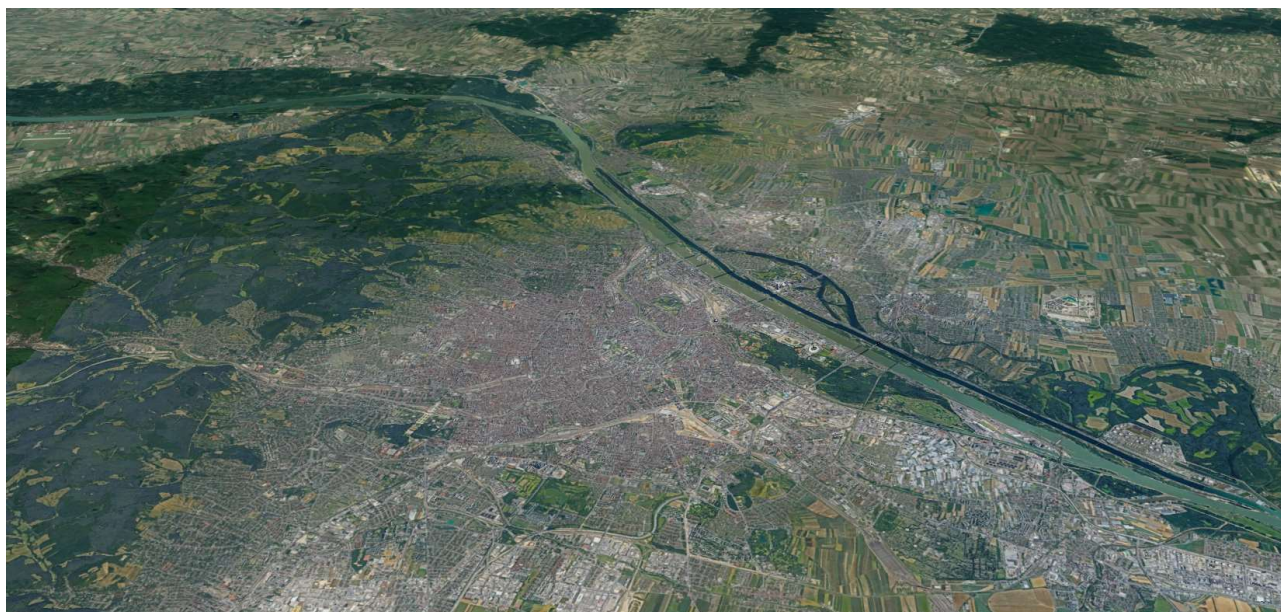


Figure 1. The municipality of Vienna. Map data: Google, CNES / Airbus.

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

Vienna, being the capital of Austria, covers 415 km² and has 1.87 million inhabitants (2017) with an average population density of 4,502 inhabitants /km². 40% of the population live in multi-family houses, 60% in (semi)detached houses. The average household size is 2.06 persons. The GDP in 2017 amounted to 47,700 €/capita.

WEEE collection system

In Austria, around 80,000 tonnes of WEEE are collected every year; the ARA service group (specifically, the ERA compliance service) accounts for 40% of this amount. Every Austrian resident collects around 9.5 kg of WEEE per year. Consumers and businesses can drop off WEEE and used batteries at around 2,100 collection points across the country.

Vienna has 16 recycling-centres or Mistplätze, 93 mobile collection points and 4 stationary collection points on markets. In addition, people can also return WEEE to retailers/distributors when they purchase a new, equivalent device that fulfils the same functions as the old one, if the shop's sales area is greater than or equal to 150 m². Batteries can always be returned to vendors free of charge without a need of purchase.

Separate WEEE collection is divided among 4 PROs (extended producer responsibility organisations set by producers) operating in the entire country (ERA, UFH, ERP and ISA). The Austrian coordination body is called "Elektroaltgeräte- Koordinierungsstelle Austria GmbH (Austrian Coordination Body for Waste Electrical and Electronic Equipment)" (EAK). The EAK is in charge of the following tasks:

- Payment of the fixed infrastructure cost payback sum (Infrastrukturkostenpauschale)
- Pick-up coordination from public WEEE collection points (Collection points can indicate a need for a PRO to pick up equipment via the EAK website when they have accumulated a certain amount)
- Yearly planning of public awareness campaigns focused on WEEE
- Information gathering and writing of yearly report on current state of WEEE collection system
- Gathering of numbers and reporting to European central commission

A separate working group (Arbeitsgruppe Öffentlichkeitsarbeit) is in charge of providing a yearly plan on communication with end-users. They also provide education toolkits, posters, flyers and more.

Recycling facilities in Vienna have "Tandler-Boxes" where equipment in functioning condition can be brought and offered for re-use. In addition, there are numerous repair-shops, -activities, -organizations and events all over the city of Vienna. Via an online tool offered by the "Reperatur Netzwerk", pick-up and return or home repair-service can be requested. The "Reparatur- und Service-Zentrum" has offered its services since 1998. Currently it offers a repair-café, a repair service at home, rent service for equipment and more. It was able to re-use more than 98 tons of equipment and repaired more than 9.000 broken items last year.

Collection in larger cities has proven especially difficult due to the anonymity they offer, but the "Demontage und Recycling Zentrum" (DRZ) deserves special mentioning. On top of offering pick-up, repair and recycling of WEEE, the centre has its own upcycling unit and is able to cover up to 25-

33% of its cost by selling used and redesigned appliances. On top of that, a great part of the dismantling and repair is done by people previously long-term unemployed and, most recently, gives work to refugees. As such, it is also a project with a big positive social impact.

Actions to improve collection

Measures to improve the cost efficiency ratio include:

- public relation schemes, restrictions to informal-collection,
- reduction of expenses for logistics costs,
- increase revenue in marketing,
- improved collection pick-up coordination with partners/recyclers.

Three WEEE categories are collected in containers: 30m³ (small WEEE); lattice boxes (IT-monitors / display devices); 240l bins (gas-discharge lamps; w/ 120l bag, if broken).

Material flows in the region

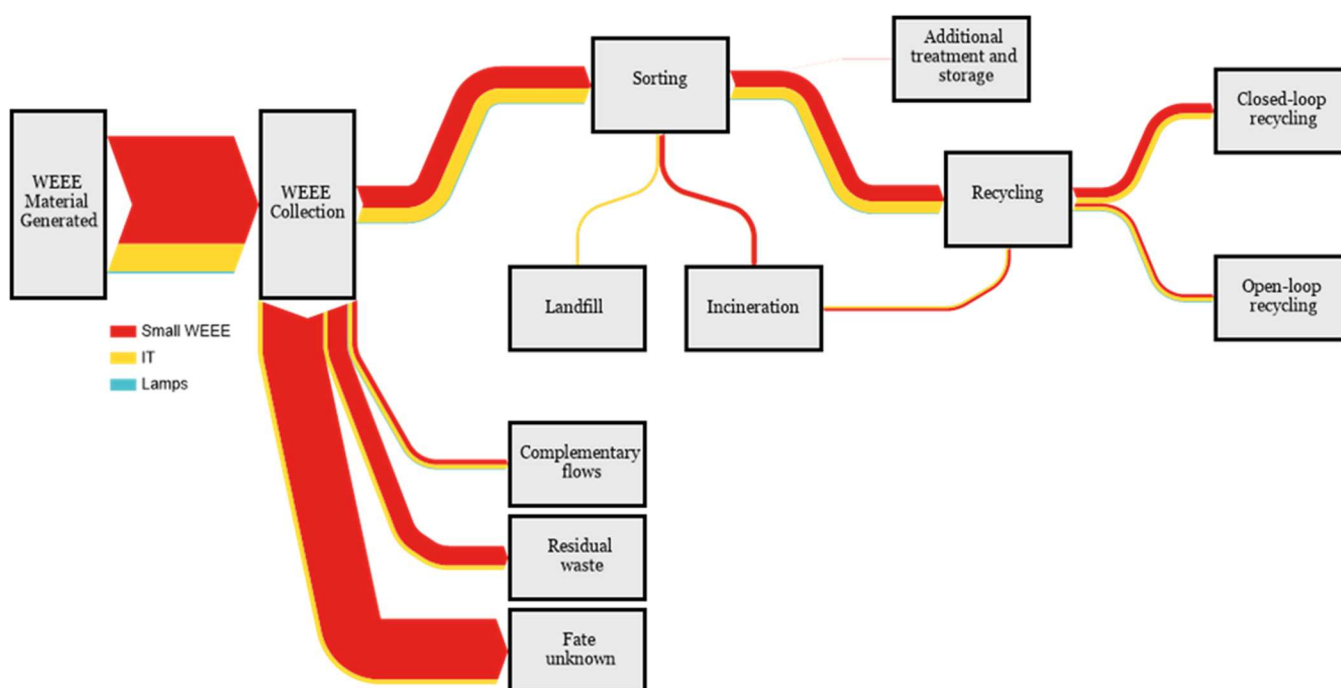


Figure 2. Material flows in the municipality of Vienna reflecting the situation after improvements (Source COLLECTORS D3.3).

The WEEE flows are presented in Figure 2. The municipality of Vienna reported to have collected an estimated 2,397 tonnes and 3,677 tonnes of small WEEE in 2010 and 2015 respectively, meaning that the capture rate for small WEEE increased from 20% to 29% in this timeframe. An estimated 2,220 tonnes and 2,465 tonnes of IT equipment were collected in these years with a capture rate of 57% and 60% respectively. An estimated 89 tonnes and 159 tonnes of lamps were collected in these

years with a capture rate of 33% and 55% respectively. Of the WEEE that is not collected by a designated WCS, 66% of WEEE has an unknown fate.

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

As for the Vienna case identified no direct investments in the reference period, no cost effectiveness of the collection increase calculated. Regarding the financing of the WEEE collection, the PRO fees were reduced by €18/tonne for small household and IT appliances (SHA&IT) and by €60/tonne for lamps during assessment period, while the collection rates of SHA&IT increased by 6% and lamps by 45%.

Initiatives for citizen participation and social acceptance

To involve citizens in Vienna's WEEE collection system, information is mostly disseminated via online means, such as the website, a hotline and social media. Stands are sometimes organised during events but there is no public information campaign. A strong emphasis is put on making the system more convenient with information on the website regarding the collection points as well as a mobile collection system regularly available.

Selected highlights:

- Wide use and dissemination of the hotline
- Mobile collection system available regularly and free of charge for small quantities
- Specific focus on the youth via the use of social media

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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