

Genova, Italy



Figure 1 The municipality of Genova Map data: Google, SIO, NOAA, U.S. Navy, NGA, GEBCO, 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 \(IT\) equipmen and lamps. These categories were selected as high quantities of these materials are still ending up in residual waste.](#)

Description of the region

Genova (see Figure 1) is the capital of the Italian region Liguria and the sixth-largest city in Italy. It is located in Northern Italy on the Gulf of Genova in the Ligurian Sea. [The region](#), covers 240 km² and has 580,097 inhabitants (2017) with an average population density of 2,417 inhabitants /km². The GDP in 2012 amounted to 20,529 €/capita. In 2017 a total of 3,533 tonnes of WEEE were collected,

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i.e. 6.1 kg / capita. The non-retail bring points receive 706 tonnes of WEEE (1.2 kg/cap), while the civic amenity sites (CAS) receive 2,825 tonnes (4.9 kg/cap).

WEEE collection system

Azienda Multiservizi e d'Igiene Urbana (AMIU) organises the WEEE collection for the city of Genova and is totally owned by Genova Municipality. AMIU has 47 mobile collection points for small WEEE and [four](#) "ecological islands", i.e. collection and recycling areas, distributed all over the territory, where citizens can bring their WEEE. The mobile collection system operates daily in different parts of the city. In practice, the mobile collection system operates through a system of two equipped vans (ECOVAN+ and ECOCAR), which stop at different stations at scheduled times and locations, and where citizens can deposit their small WEEE and lamps. Small WEEE and IT can be brought to the ecological islands and to the ECOVAN+.

Actions to improve collection

With the launch of the WEEENMODELS project, the WEEE collection system in Genova was completely revised as AMIU created the new mobile collection points for small WEEE and the [four](#) collection and recycling areas. The WEEENMODELS project involved the testing of a mobile collection system of WEEE in [six](#) locations (all located to the western side of Genova) for [five](#) months (September 2015 - February 2016) in order to understand if citizens would appreciate such collection system. Of the [six](#) collection stations, [two](#) received very positive results, [two](#) were moderately used by citizens, and other [two](#) were almost not used. In total 1,172 kg of small WEEE were collected, out of which 377 kg could be re-used.

The retailers who joined the WEEENMODELS project have a free platform, a container for collecting small WEEE, which is provided by AMIU, a low-cost collection service and the possibility to take WEEE to the AMIU Collection Centre, renovated for that purpose.

The communication campaign, carried out by AMIU, has increased awareness about the separate collection of WEEE. Workshops and laboratories were organized for young participants to increase their knowledge on the concept of circular economy.

Material flows in the region

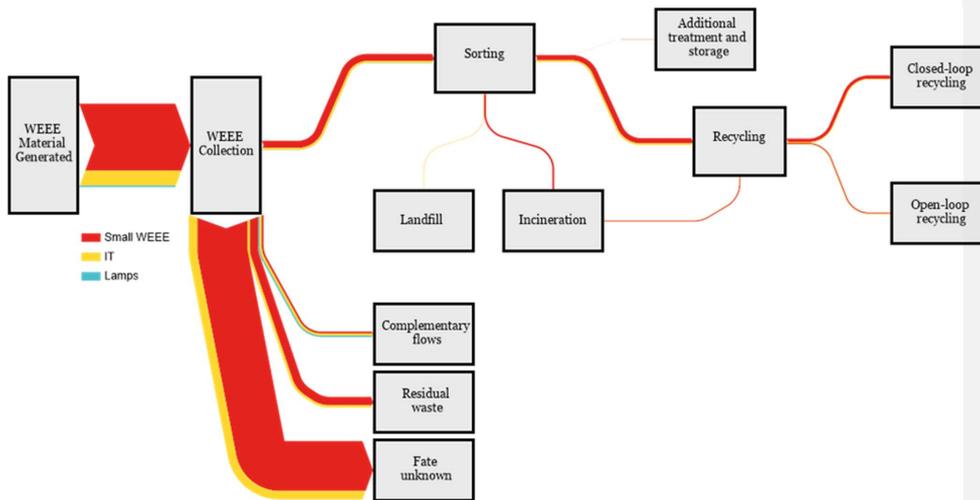


Figure 2. Material flows in the municipality of Genova reflecting the situation after [the](#) improvements (Source COLLECTORS D3.3).

The WEEE flows in Genova are presented in Figure 2. The municipality of Genova reported to have collected an estimated 231 tonnes and 384 tonnes of small WEEE in 2012 and 2016 respectively, meaning that the capture rate for small WEEE increased from 9.0% to 15% in this timeframe. An estimated 65 tonnes and 108 tonnes of IT equipment were collected in these years with a capture rate of 9.1% and 15% respectively. An estimated 4.5 tonnes and 6.2 tonnes of lamps were collected in these years with a capture rate of 5.4% and 8.6% respectively. Of the WEEE that is not collected by a designated WCS, 79% of WEEE has an unknown fate. Improvements can be attributed, in part, to the WEEENMODELS project, which involved the creation of 47 new mobile collection points for small WEEE and [four](#) ecological islands. In addition, an effective communication campaign has been carried out by AMIU and involving retailers allowed the message to reach a wider community.

Findings from environmental assessment

[Ks. löytyisikö tähän jotain kaikille WEEE-caseille sopivaa, yhteistä yhteenvettoa?](#)

[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 did not increase due to the implementation of the new WEEE collection system. By investing € 42,387, AMIU was able to increase the collection rates of SHA and lamps significantly. Taking 2013 as reference year, with 263 tons of SHA and 4.43 tons of lamps collected, the 2016 collection values show an increase in collection numbers of 229.72 tons of SHA and 2.51 tons of lamps. Taking into account the full investment, the cost of additional WEEE collected was € 182.52/ton. It is important to note that collection, transport and processing costs are not included in this calculation. Including these operational costs, combined with the potential recycling benefits (mention 2008 weee costs source), would results in a higher number.

Initiatives for citizen participation and social acceptance

In Genova, information about the recycling system is communicated ~~via different~~[via several](#) channels ~~using both in a public way, via a public~~ communication campaign, and ~~in a way~~ directly targeting citizens, via door-to-door explanations. The communication is mostly done through the website and media, along with the possibility for inhabitants to use the hotline. Additionally, news on the recycling system is published every week in local newspapers. Communication on information and the environment [impacts](#) are made jointly, via the same channels. ~~Regarding convenience, a~~ [An analysis is regularly conducted to assess the waste collection system and its convenience to citizens.](#) Inhabitants' inputs are yearly requested via an auditing process. ~~Locally,~~ [Bringing](#) points are available everywhere for inhabitants, except in civic buildings. The type of collection is adapted to the area targeted, ~~either for only for~~ semi-rural and densely populated areas and [for](#) different entities such as schools, companies or retailers. Mobile bring points are also

available ~~for~~ daily ~~use by the~~ ~~for~~ inhabitants. ~~a~~Additional collaboration was made with retailers within the framework of the European project WEENMODELS ~~Weeenmodels~~.

Selected Highlights (~~innovative/best performing initiatives~~):

- 2 employees (1 full time, 1 part-time) working on digital communication;
- Communication ~~also goes~~ through local newspapers;
- Different types of collection system are available for different organisations, such as schools, companies or retailers.

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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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