About the ecosystem Recycled plastics from WEEE LCI Database

This database provides new possibilities to the producers and especially producers of Electrical and Electronic Equipment to integrate resource efficiency based on recycled plastics integration projects in their eco-design strategies.
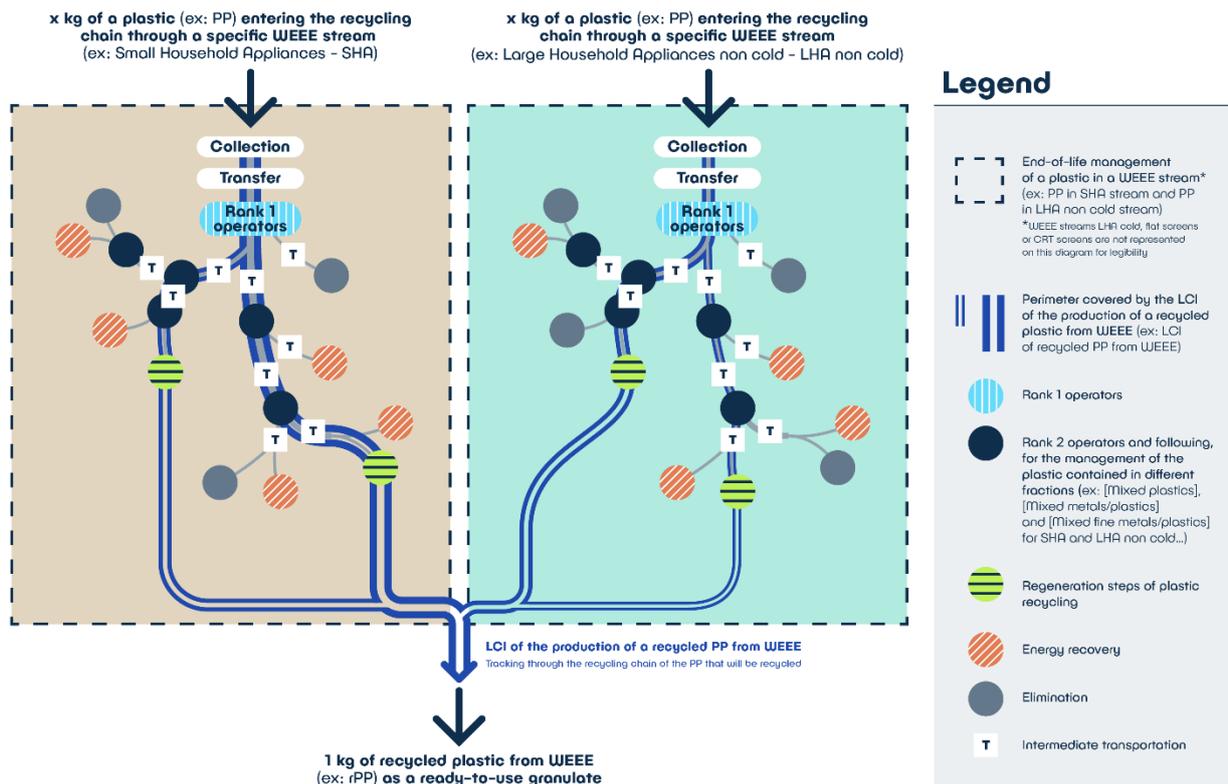
The database, compliant with ILCD entry-level and ISO14040-14044 requirements, covers the main plastics recycled from WEEE to date: recycled Polypropylene (**rPP**), recycled Polystyrene (**rPS**) and recycled Acrylonitrile butadiene styrene (**rABS**).

This database intends to support eco-design initiatives based on recycled plastics integration projects notably by:

- Providing data on the production of recycled plastics from the WEEE sector specifically, reducing current data gaps.
- Providing ready-to use data on the production of recycled plastics from WEEE under granulate format, that can be directly used by producers in their environmental analyses.

For this purpose, each LCI represents the whole chain for the production of recycled plastics (rPP, rPS or rABS) from household Waste electrical and electronic equipment (WEEE) collected in France in the context of French WEEE producer responsibility organisation (PRO) and regenerated in Europe. It includes all the management phases from the collection of WEEE at collection points to the final regeneration of the plastic under granulate format, including the regeneration steps. The modelling also takes into account the different WEEE flows where such plastics are found (Small household appliances, Large household appliances cold, Large household appliances non cold, Flat screens and CRT screens) in order to be really representative of the diversity of the WEEE collected.

In terms of perimeter, only the environmental impacts of the recycled plastics production are covered, as represented on the diagram below. No substitution benefit related to the substitution of virgin material by the recycled material is included in the dataset. Benefits from avoided end-of-life thanks to recycling are also not included.

x kg of a plastic (ex: PP) **entering the recycling chain through a specific WEEE stream** (ex: Small Household Appliances – SHA)

x kg of a plastic (ex: PP) **entering the recycling chain through a specific WEEE stream** (ex: Large Household Appliances non cold – LHA non cold)

Collection
Transfer
Rank 1 operators

Collection
Transfer
Rank 1 operators

LCI of the production of a recycled PP from WEEE
Tracking through the recycling chain of the PP that will be recycled

1 kg of recycled plastic from WEEE
(ex: rPP) **as a ready-to-use granulate**

Legend

End-of-life management of a plastic in a WEEE stream*
(ex: PP in SHA stream and PP in LHA non cold stream)
*WEEE streams LHA cold, flat screens or CRT screens are not represented on this diagram for legibility

Perimeter covered by the LCI of the production of a recycled plastic from WEEE (ex: LCI of recycled PP from WEEE)

Rank 1 operators

Rank 2 operators and following, for the management of the plastic contained in different fractions (ex: [Mixed plastics], [Mixed metals/plastics] and [Mixed fine metals/plastics] for SHA and LHA non cold...)

Regeneration steps of plastic recycling

Energy recovery

Elimination

T Intermediate transportation

As shown on this diagram each LCI is based on a **"confluence" principle**: plastic parts (e.g.: parts made of PP), which are initially dispersed in various WEEE collected in different WEEE streams, are processed by several actors along the recycling chain and eventually feed a common pool of recycled plastic (e.g.: rPP) from WEEE. The corresponding LCI therefore represents an average recycled plastic (e.g.: rPP) from WEEE, that integrates all the branches of the WEEE recycling chain leading to the recycled plastic.

To achieve this modelling, data from different sources and especially from the field have been gathered to feed the material flow analysis and the modelling of impacts of each step of the recycling chain. The data sources, the modelling and the methodology used have been cross-checked by **ecosystem**, the developer (Bleu Safran), and **peer-reviewed by recognized and independent experts** (Arts et Métiers – Institute of Technology Chambéry and Arts et Métiers, I2M Bordeaux Campus).

To learn more on the methodology

These LCI and their accompanying metadata are freely available and downloadable on the **ecosystem** platform: http://weee-lci.ecosystem.eco/Node. Users can view the data in the "Processes" section, when selecting the corresponding data stock.

The methodology and data sources are also detailed in the Modelling principles report that can be found in each LCI metadata or directly via the section "Sources".

For any other question regarding this Recycled plastics from WEEE LCI Database, feel free to contact ecosystem: weee-lci@ecosystem.eco

Partnership

The Recycled plastics from WEEE LCI Database was developed by **ecosystem**, accompanied by Bleu Safran (expert consultant specialized in LCA applied to waste management). **ecosystem thanks all the stakeholders of the recycling chain who have mobilized and devoted time to carry out this work.**

Project leader:

Accompanied by: