About the ecosystem WEEE LCI Database

This innovative database provides unprecedented possibilities to the producers of Electrical and Electronic Equipment to integrate resource efficiency in their eco-design strategies. The database, compliant with ILCD entry-level and ISO14040-14044 requirements, covers all categories of household appliances as well as certain professional equipment, as defined in the WEEE Directive (2012/19/EU).

The equipment categories covered in the database are:

- For Household equipment: Large Cooling Household equipment, Large Household equipment Non Cold, Small Household equipment, Flat Screens and Lamps
- For Professional equipment: Self-Contained Emergency Lighting, Small Professional equipment (Medical, Building, Industry, Research), Large Professional equipment (Medical, Building, Industry, Research), Professional Lighting equipment, Professional Inverters, Electrical Motors for industrial applications, Water Fountains LCI, Professional cold cabinets (with compressor), Heat Pumps and Air-conditioners (fluid filler < 2kg), Rooftop Air-conditioners.

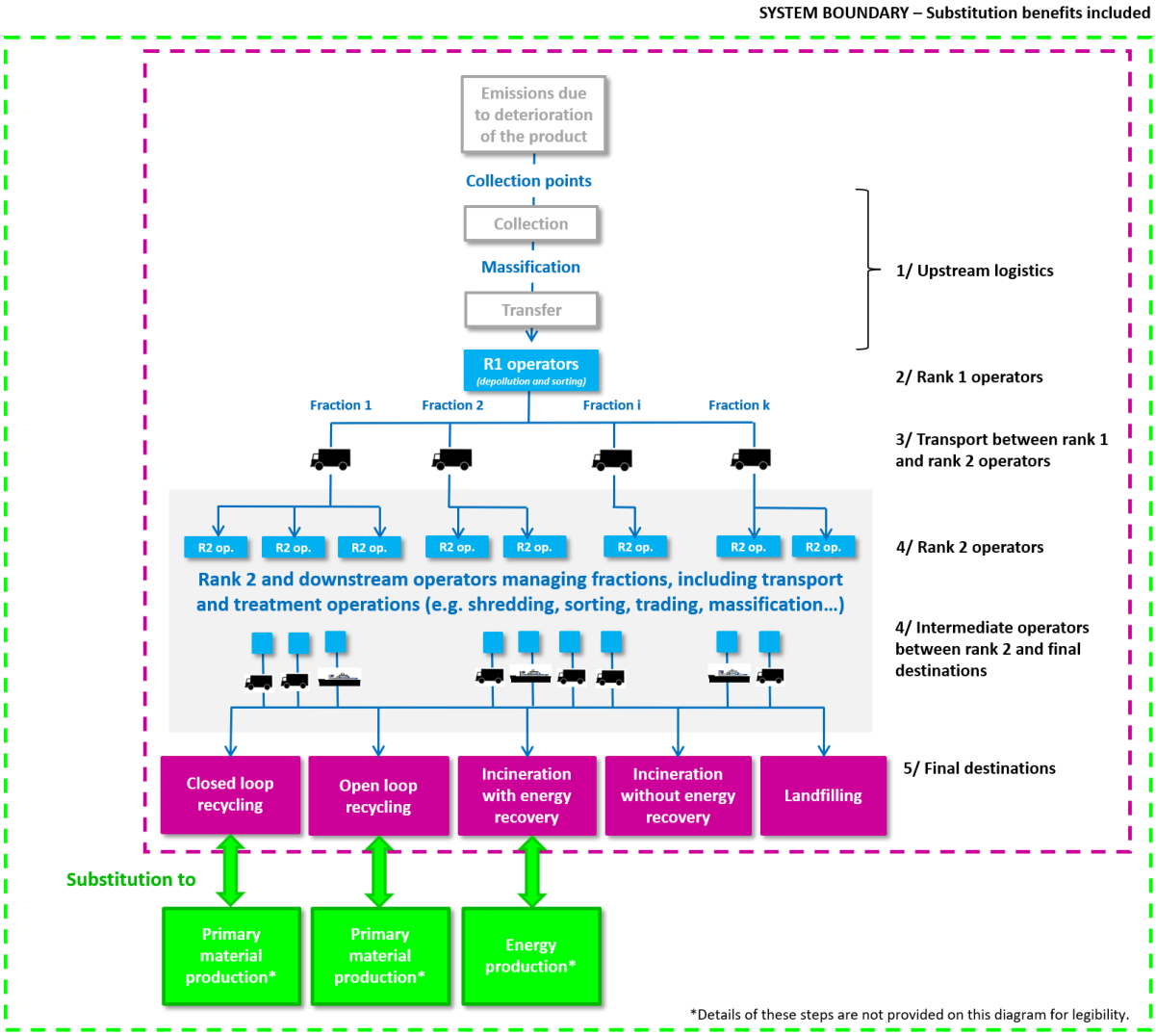
This database contributes to solve several challenges faced by producers to adopt a circular approach, from an environmental assessment perspective, notably by:

- Reducing the dissymmetry between production and end-of-life modelling, in terms of reliability and granularity of the data used.
- Facilitating the modelling of a life-cycle stage which is generally not managed by material producers nor product manufacturers, and involves multi-step and multi-actor pathways.
- Taking into account, on the basis of field data, the environmental benefits of material and energy recovery.

For this purpose, the LCI have been developed at the scale of a **couple material/WEEE category** (e.g.: LCI of the end-of-life of 1kg of steel in Large Household equipment Non Cold, LCI of the end-of-life of 1kg of glass in Lamps, etc.), and cover **all the operations from WEEE collection in France to final destinations** of the processed fractions (recycling, energy recovery, landfilling). Thereby, the database allows to take the complete recycling chain into account and to adapt the assessment specifically to the product design, without requiring any additional hypothesis or settings than the product material composition. The scale of analysis can thus be consistent between the different life-cycle stages linked to material efficiency: raw material extraction, manufacturing, end-of-life.

As regards the benefits of recycling and energy recovery, two variants of LCI have been produced:

1. **LCI not including the benefits** of recycling and energy recovery [=Substitution benefits not included] – **all stages of the recycling chain integrated in the perimeter surrounded by the pink dotted line** on the diagram below.
2. **LCI including the benefits** of recycling and energy recovery [=Substitution benefits included] - **all stages integrated in the perimeter surrounded by the green dotted line** on the diagram below.



As shown on this diagram each LCI is based on a **"diffluence" principle**: a material collected in a WEEE stream (e.g. Small Household equipment stream) diffuses during the processing steps toward all of its final destinations.

To achieve this modelling, data of different sources have been gathered, cross-checked and peer-reviewed by independent experts to feed the material flow analysis:

- Sampling programmes and WEEE material composition analysis.
- Recurrent batch assessments on output fractions, for treatment plants covering more than 90% of WEEE volumes managed by **ecosystem**.
- Traceability on the downstream acceptors of the output fractions.
- Questionnaires to treatment plants on residues or mixed fractions compositions, energy consumptions and emissions.

These data sources have been cross-checked by **ecosystem**, the developer (Bleu Safran), and **peer-reviewed by recognized and independent experts** (Solinnen, Büro für Umweltchemie).

To learn more on the methodology

All 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". A User guide is also at your disposal in the same section.

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

Partnership

The WEEE LCI Database was developed by **ecosystem** (merging of Eco-systèmes and Récylum), accompanied by Bleu Safran (expert consultant specialized in LCA applied to waste management). This project has been co-financed by ADEME (French environmental agency).

Project leader:

Accompanied by:

Co-financed by: