

THE LIFE CYCLE MEASURED BY CATAS

The Life Cycle Assessment (LCA)

Life cycle assessment (LCA) is an ISO based method (ISO 14040 e ISO 14044) which allows the analysis of the potential damage of a product or service **on the environment and human health**.

The analysis could span on the entire life cycle, starting from extraction of raw materials to the end-of-life (*cradle-to-grave*) of the product including all other intermediate stages: production, supply to costumers and use.

An LCA study can target to different aims:

- it is a scientific tool for improving the environmental footprint of a product (**eco-design**)
- it is required for type I and II environmental labels (**eco-profile**)
- it is required for type III environmental label (**EPD**). In this case the LCA study must go through a third-party verification before being published

The main phases of an LCA study are:

1. **Goal & Scope definition**, the product or service is defined along with its intended application, the aim of the study (single product, comparative study between more products, ...), the functional unit, the system boundaries (e.g. cradle-to-grave) and the data quality required
2. **Inventory analysis**, an inventory list of all inputs and outputs required for a product or system
3. **Impact assessment**, the impacts on the environment and human health are quantified
4. **Interpretation** of the results

An LCA study is always referred to a specific **functional or declared unit**, i.e. a product or service for which its function is clearly defined. This unit acts as a reference unit for the normalization of all input and output flows.

The Catas LCA service

Catas LCA service is designed in a 3-stages offer (from less to more complete study):

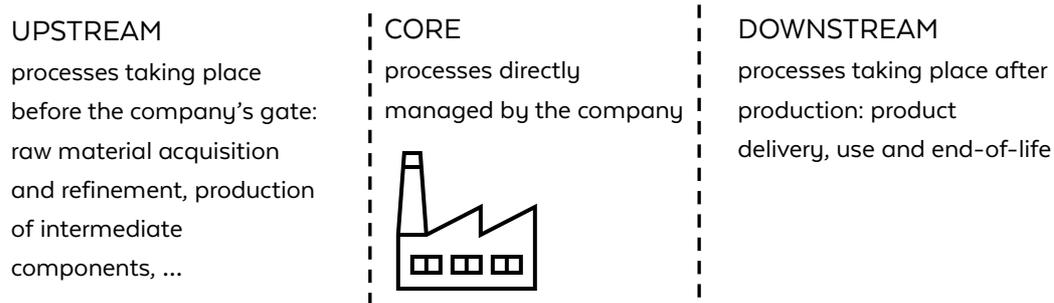
1. Screening

2. Study

3. Ready

1. LCA Screening

Outputs an initial evaluation of the environmental impact of a product, restricted to the analysis of the company's core processes. The study does not go deep into the upstream (processes taking place before the company's gate: raw material acquisition and refinement, production of intermediate components, ...) nor into the downstream (processes taking place after production: supply to the costumers, usage, end-of-life) which will be entirely modelled by means of data from database.



With respect to a chosen calendar year, the company has to supply the following information:

- description of company's processes (core processes, raw materials purchased, production scraps, ...)
- type of material and weight for every component of the product (including packaging)
- distance from suppliers
- energy consumption of core processes (can be derived from allocation)
- air and water emissions of core processes (can be derived from allocation)
- production waste
- information for allocations (if needed), i.e. number of products produced out of total products manufactured in same production line
- type of material and weight for product final packaging

Catas will model the life cycle of the product and will output a report with the following information:

- definition of functional or declared unit considered
- methods used for information gathering and allocation
- inventory of materials, energy consumption, emissions, and waste
- environmental impacts for the relevant impact categories
- gravity analysis (evaluation on the most impacting component/process for each impact category)

The LCA study will be conducted by a Catas team, using SimaPRO® software and validated databases (Ecoinvent, EF, ...).

The study output will not include:

- detailed analysis of upstream processes
- detailed analysis of downstream processes
- sensitivity analysis
- uncertainty analysis of the model

- declaration of conformity to the standards used in the study

NOTE: “LCA screening” studies cannot be verified by a third-party nor published

2. LCA Study

An “LCA study” provides a comprehensive evaluation of the environmental impact of a product with *cradle-to-grave* boundaries (i.e. including upstream, core and downstream).

With respect to a chosen calendar year, the company has to supply the following information (**besides all information required for the “LCA screening” stage**):

- description of raw materials purchased (technical sheets, info about manufacturing processes) including their package and supply chain
- logistic for the delivery of final product (i.e. sales percentages divided by country)
- info on use phase (i.e. maintenance required)
- expected end-of-life

Catas will model the life cycle of the product and will output a report with the following information:

- definition of functional or declared unit considered
- methods used for information gathering and allocation
- inventory of materials, energy consumption, emissions, and waste
- environmental impacts for the relevant impact categories
- gravity analysis (evaluation on the most impacting component/process for each impact category)

The LCA study will be conducted by a Catas team, using SimaPRO® software and validated databases (Ecoinvent, EF, ...).

The study output will not include:

- sensitivity analysis
- uncertainty analysis of the model

If applicable for the product, the appropriate PCR (Product Category Rules) from “International EPD System” will be used.

3. LCA Ready

In case the product is covered by a PCR from “International EPD System”, it is possible to publish an EPD (Environmental Product Declaration) onto the programme operator site (published EPDs can be found at environdec.com/library).

In this case the “LCA study” is further detailed for the purpose of publishing an EPD. In particular, the analysis of sensitivity of the model is also performed. All information and technical sheet provided by the company is filed and prepared for the third-party verification. The EPD draft is also prepared for the verification.

The study will not include:

- critical review from third-party verification body
- support during third-party verification (can be quoted separately)
- communication with “International EPD System” for EPD publication