

PRINCIPLES OF LIFE CYCLE ASSESSMENT

FACT SHEET

This fact sheet outlines the basic principles of Lifecycle Assessment and how it can be used to assist with decision-making in business.

WHAT IS LIFECYCLE ASSESSMENT?

Lifecycle Assessment (LCA, also known as Lifecycle Analysis) uses data to model the resource usage and environmental impacts of a product or service, its materials and processes, and end-of-life scenario.

LCA is a rigorous method used to evaluate the environmental impacts associated with all the stages of a product's life, from raw material extraction through materials processing, manufacture, distribution, use, repair and maintenance, to disposal or recycling. LCA helps us understand the complete picture of how a product impacts our planet, allowing businesses and consumers to make more environmentally responsible choices.

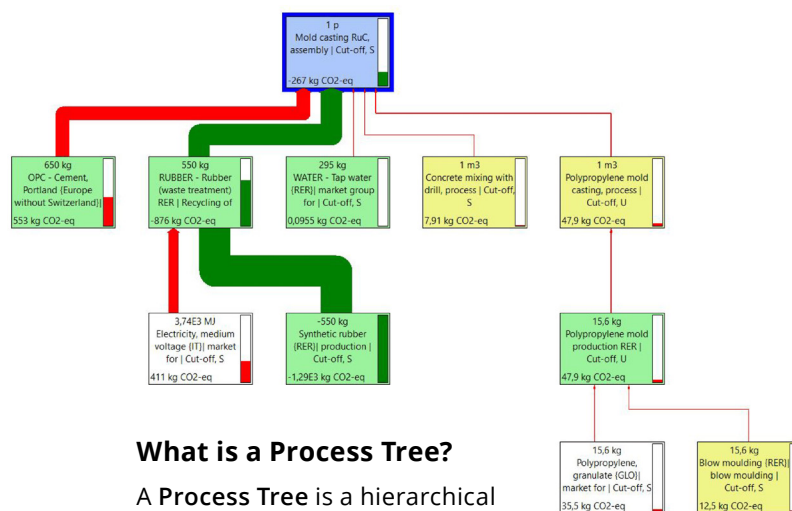
HOW CAN LCA HELP?

Informed decision-making: Helps manufacturers, businesses, and policymakers make informed decisions to reduce adverse environmental impacts.

Innovation in design: Encourages innovation in product design to improve efficiency, reduce waste, and decrease environmental impact.

Transparency and trust: Builds transparency and trust with consumers who are increasingly demanding sustainable products.

Regulatory compliance: Supports compliance with environmental regulations and standards, helping companies gain an advantage in a competitive market.



What is a Process Tree?


A **Process Tree** is a hierarchical representation of the processes in the life cycle of a product, the thickness or colour of the flow lines are used to depict the amount of impact.

Source: Sambucci, M.; Biblioteca, I.; Valente, M. Life Cycle Assessment (LCA) of 3D Concrete Printing and Casting Processes for Cementitious Materials Incorporating Ground Waste Tire Rubber. Recycling 2023, 8, 15. <https://doi.org/10.3390/recycling8010015>

THE FOUR PHASES OF LCA

The process of LCA is divided into four main phases:

- 1. Goal and Scope Definition:** Identifying the purpose and outlining the boundaries of the assessment.
- 2. Inventory Analysis:** Compiling and quantifying inputs and outputs for a product system.
- 3. Impact Assessment:** Evaluating the potential environmental impacts associated with those inputs and outputs.
- 4. Interpretation:** Analysing the results to make informed decisions to reduce the environmental impact.



Prepare a basic inventory of the materials used in your products or services and map your operational processes.

WHAT CAN YOU DO?

For small businesses looking to start their journey toward implementing Life Cycle Assessment (LCA), here are some initial ideas to consider:

Educate your team

Understanding the basics: Begin by educating yourself and your team and encourage lifecycle thinking and continuous improvement. There are many free learning resources available online. Check out the links provided on our webpage at <https://businessactionlearningtas.com.au/life-cycle-assessment/>.

Learn about the latest research: To learn about the latest academic research in Australia, the Australian Lifecycle Assessment Society (ALCAS) hosts a free webinar on the third Wednesday of each month, presenting current research from LCA Experts and students of LCA.

Learn by doing

Explore LCA tools: Some LCA software providers offer scaled-down versions or trials that are less complex and more affordable for small to medium-sized businesses. Explore the suggestions provided in this fact sheet and search for emerging solutions online.

Pilot project: Select a small, manageable project within your business to apply an LCA. This could involve assessing a single product line or a specific aspect of your service. The goal is to learn by doing, without the pressure of having to tackle your entire operations at once.

Review your operations

Inventory of materials and processes: Prepare a basic inventory of the materials used in your products or services and map your operational processes. Work out where these activities interact with the environment.

Identify hotspots: Use this preliminary review to highlight “hotspots” where your business has the greatest environmental impact. This could be in raw material sourcing, energy use, waste generation, or something specific to your industry. Investigate tools for measuring and monitoring the impacts of your hotspots to ensure controls in place are working.

Seek help and support

Professional consulting: Consider consulting with an LCA professional or environmental consultant for initial guidance. Even a short consultation can provide direction, help you avoid common pitfalls, and tailor your approach to LCA effectively.

Network with peers: Join the BREP community to engage with other businesses using LCA and lifecycle thinking, who can provide mutual support, share lessons learned, and exchange best practices.

Explore software solutions

SimaPro

<https://simapro.com/>

OpenLCA

<https://www.openlca.org/>

Footprinter

<https://footprinter.com/>

Ecochain

<https://ecochain.com/>

Sphera (formerly Gaβi)

<https://sphera.com/product-sustainability-software/>

Sustain.Life

<https://www.sustain.life/>

Piqet

<https://piqet.com/>

The Business Resource Efficiency Program (BREP) is delivered by Business Action Learning Tasmania (BALT) in partnership with the Tasmanian government.

Find more information about BREP

businessactionlearningtas.com.au/brep

View more tools and download templates

businessactionlearningtas.com.au/brep-resources

Make contact and get involved

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