



Need to know: Life Cycle Assessment (LCA)

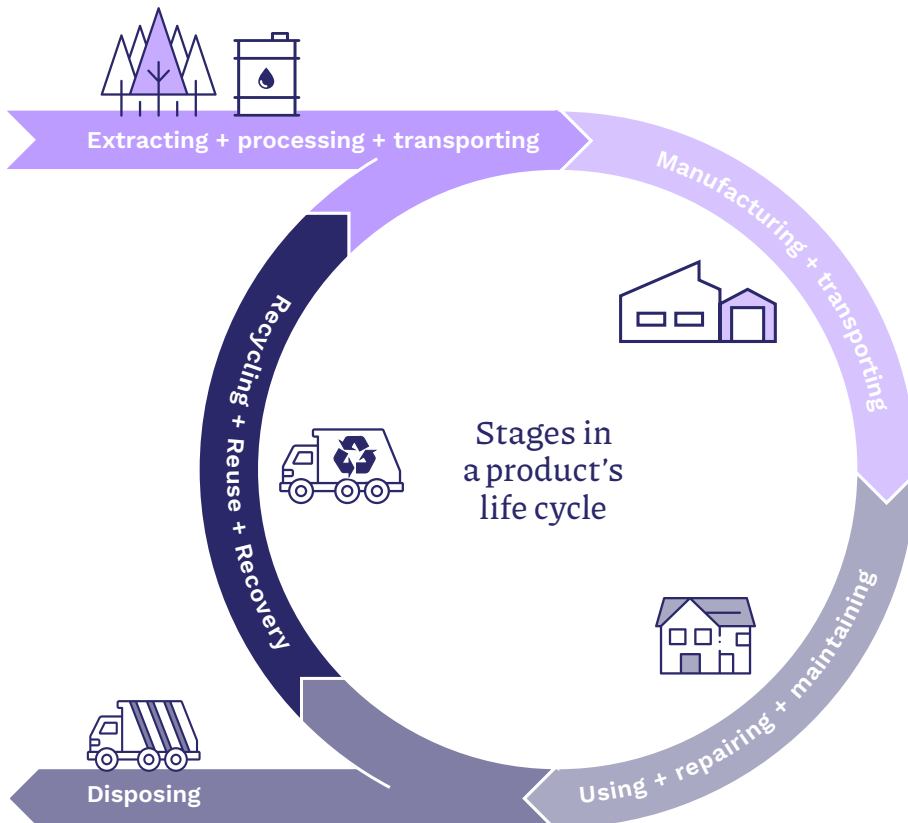
What is a Life Cycle Assessment (LCA)?

LCA is a tool that measures the environmental footprint of a product or service over its life cycle.

LCA provides information to help businesses understand, manage and communicate their environmental impacts.

Sustainability tools and concepts can seem daunting, we know.

We're here to help, with our suite of thinkstep-anz *Need to Know* guides. They're short, they summarise what you need to know (and leave out what you don't), and we've written them in plain English.



LCA calculates a snapshot of your product's environmental impacts, including:

- What goes into the product to make it (e.g. energy and raw materials)
- What comes out when the product is used and disposed of (e.g. waste, water pollution, carbon).

The lower the 'impact', the smaller your product's environmental footprint.

Why do an LCA?

LCA adds business value

LCA bridges the gap between complex environmental data (e.g. emissions and waste) and the information your business needs to make decisions (e.g. about product design or choosing a supplier). LCA can help your business identify opportunities that create value.



Business opportunities

- Improve your product and market it with credible environmental claims
- Identify risks
- Improve your processes
- Improve relationships with your employees, suppliers, community and regulator



Business results

- = Stronger market share
- = Lower costs and risks
- = Stronger relationships and reputation
- = Engaged employees
- = Social licence

Many audiences may be interested in the results of your LCA

These include your wholesale customers, retail customers, investors, regulators, suppliers, community, and employees.

You can summarise the technical results of your LCA in an Environmental Product Declaration (EPD). As EPDs are verified by third-party experts, they provide trusted information.

LCA supports comparisons and trade-offs



'Benchmark'
your products



Compare impacts across products (your own and competitors')



Understand 'trade-offs' between impacts. How does redesigning your product to reduce carbon affect the water you use?

LCA measures many types of environmental impacts, including:



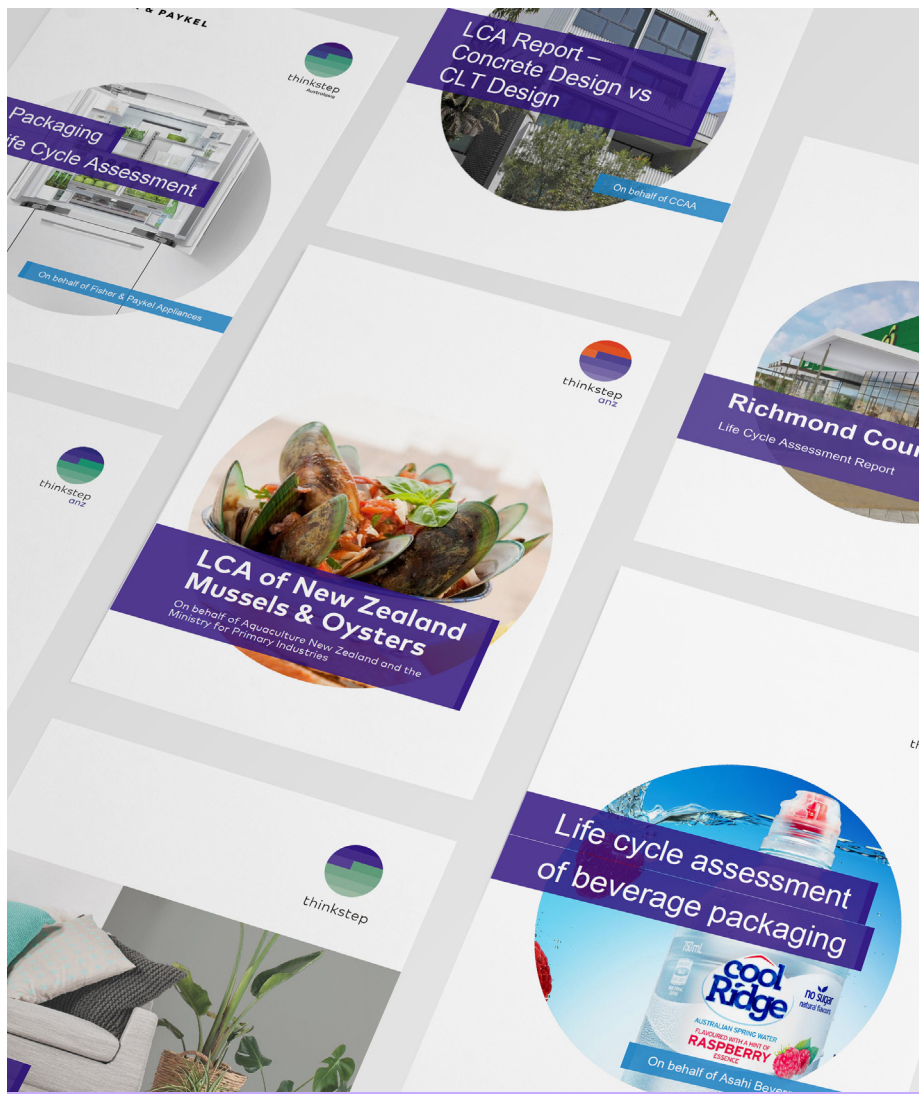
Energy: The amount of energy used (e.g. Cumulative Energy Demand (CED))



Carbon: The amount of greenhouse gases emitted (carbon footprint)



Impacts of emissions: The impact of emitted gases, liquids and particles, for example in depleting ozone and polluting waterways



LCA can analyse many types of products

There are LCAs for jet engines, drinking cups, computers – and even New Zealand Greenshell mussels. If you can identify a system with a beginning and an end, you can review how that system affects the environment from start to finish.

In each case, LCA measures the impact of a single unit of the product – say, one jet engine or 100g of mussel meat.

How do I do an LCA?

LCAs are produced by environmental specialists

These specialists are typically environmental scientists, engineers, or economists.

The assessment follows globally agreed standards (the International Organization for Standardization’s ISO 14040 and 14044). It is often carried out using specialist software (such as GaBi or SimaPro) and existing ‘datasets’ too (verified data from other studies).



LCA involves four stages

1 Goal and scope



- In this stage you will answer:
- Who is interested in the results?
 - How will the results be used?
 - What product are you measuring? What is a meaningful unit of your product (e.g. one piece, one kilogram)?
 - What stages are you including in the product’s lifecycle? From extracting raw materials through to the final product, including all transports? Or some of these stages only?
 - Are you also taking the use of the product into account?
 - Do you consider what happens at the end of the product’s useful life e.g. when it is recycled, reused or sent to landfill?
 - Which impacts are you measuring? Energy used? Ozone depleted? Both? Something else?

2 Inventory analysis



In this stage you compile your data and the flows in and out of your product’s system over its life cycle. Inward flows include the raw materials you use. Outward flows include waste and emissions to air and water.

3 Impact assessment

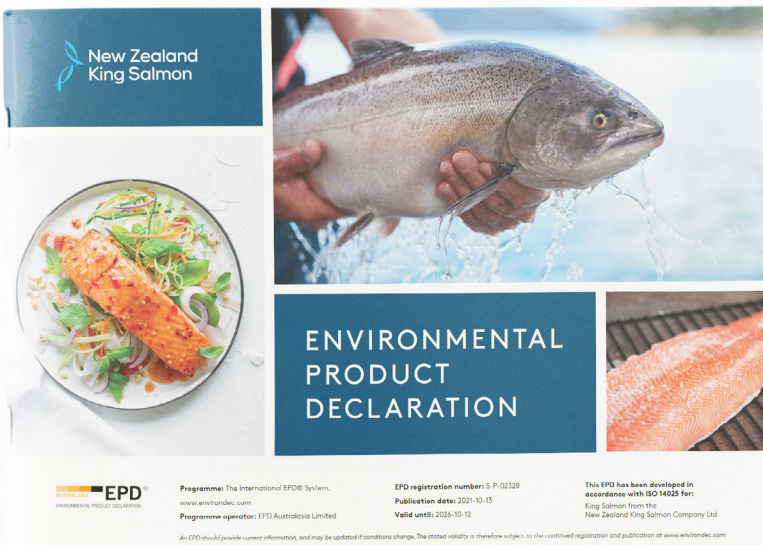


This is where you calculate your impacts, such as your carbon footprint.

4 Interpretation



This is where you analyse the results and identify ways to improve your product.



How do I share the results of my LCA?

An Environmental Product Declaration (EPD) may be the way to go! An EPD is a verified, public summary of the information contained in your product's LCA. You can learn more about EPDs [here](#).

What else do I need to know?

LCAs have their strengths and weaknesses

While LCAs may seem complex, they are never more complex than what you're assessing: the end-to-end system involved in your product's lifecycle.



LCA shines if you want to:

- consider a product's full life cycle
- use data and analysis
- take a 'systems' approach and avoid shifting burdens
- highlight trade-offs between different environmental impacts
- gain a benchmark for future improvements
- support environmental claims with data
- collect data to assess a carbon footprint



LCA is less helpful if you're wanting

- a view over time rather than a snapshot
- to know whether your product is 'good' or 'bad'. LCA provides data without judgment.
- to assess impacts related to ecology and biodiversity
- to include impacts that can't be quantified (e.g. the risk of a plastic product ending up in the ocean)
- to sum different impacts into a single 'score'. As there is no absolutely scientific way to do this, you have to look at different impacts one at a time.



About thinkstep-anz

We're an independent sustainability firm with offices in Australia and Aotearoa New Zealand.

Our team works with you to put sustainability at the heart of your business, to set you up to succeed and inspire you to keep achieving more.

We focus on what matters and use data to understand organisations and their impact. We provide practical resources and ideas that move you ahead.

It's what we've been doing for over 15 years – bringing our technical expertise and business know-how to create value for organisations like yours and help you tell your story.

Succeed sustainably

Let's work together to put sustainability at the heart of your business: your strategy, products and services, your processes, technology and relationships. We can also build your in-house skills and tell your sustainability story.



Product



Carbon



Strategy



Reporting



Communication



Software

We don't just talk about sustainability – we practise it too:



Keen to learn more?

Please contact us. Our specialists would love to talk with you.

meet@thinkstep-anz.com



Check out the other guides in our growing *Need to Know* series:

- [Environmental product declarations](#)
- [Task Force on Climate-Related Financial Disclosures](#)



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meet@thinkstep-anz.com
www.thinkstep-anz.com

thinkstep ltd (NZ) +64 4 889 2520
Wellington | Auckland | Hamilton | Christchurch

thinkstep pty ltd (AU) +61 2 8007 3330
Sydney | Canberra | Brisbane | Adelaide | Perth