

ecologic

CREATING A SUSTAINABLE FUTURE



Life cycle analysis

What is it?

The making of every product damages the environment to some extent. Raw materials need to be grown or extracted, damaging land and living things. During manufacture, packaging and distribution, more materials, and energy and land are used. A product creates waste during all these stages and after use it is eventually thrown away. Life cycle analysis (LCA) is a technique for assessing the potential and real environmental damage during all stages of a product's life – from 'cradle' to 'grave'.

The stages of LCA are:

- material extraction and processing
- manufacturing
- distribution and packaging
- product use
- end of product life

At each of these stages there are **inputs** of energy, raw materials and land use, and **outputs** of wastes including waterborne, airborne and solid waste. Output can also include other environmental damage such as global warming, ozone depletion, damage to land, loss of biodiversity, and visual pollution.

The ultimate output, of course, is a usable product.

How is it used?

Designers can analyse the environmental loads of products over their entire life. LCA is one of the tools used by designers wanting to design, make and promote truly sustainable products.

LCA normally involves three stages:

1. An inventory of likely materials and energy required for a product
2. A partial or full assessment of the potential and actual environmental impacts
3. A review of the product, identifying the changes needed to bring about improvements and another assessment of the changed product

LCA is a new area and therefore 'wrinkles' continue to be ironed out. The results of a full LCA can often be difficult to interpret. The careful collection of all environmental data in a product life cycle in any location is time consuming and expensive. Sometimes not all the relevant data is available.

Why is it important?

Life cycle analysis:

- encourages a more informed and broader view of the environmental impact of a product.
- avoids generalisations about the environmental performance of a material in isolation to its total life cycle. Rather it openly acknowledges the assumptions made, and tests the effects of different assumptions.
- allows designers and consumers to compare the relative significance of different types of environmental impacts with caution.

- ignores personal opinions and myths about the environmental performance of materials and products.
- encourages people to make more informed consumer choices.

Life cycle analysis in *EcoLogic*

See the Kettle chip packet display for an analysis of materials used in the manufacture, packaging and distribution of a 'snack' food.

Want to know more?

These publications and websites provide more information.

Eco-indicator 99, a manual for designers downloaded from www.pre.nl

John Gertsakis, Helen Lewis, Chris Ryan, *A guide to EcoReDesign*, Centre for Design at RMIT, 1997

Shop smart buy green, Environment Australia, 2001

www.powerhousemuseum.com/exhibitions/ecologic.asp