Life Cycle Assessment (LCA) Frequently Asked Questions (FAQs)

What is Life Cycle Assessment (LCA)?

LCA is a quantitative assessment of the human health and environmental impacts associated with an industrial system from "cradle to grave" — i.e., from raw material extraction, processing, and transportation (e.g., for materials, fuels, and electricity) through manufacturing, distribution, use, and end-of-life (e.g., disposal, recycling). Product LCAs center on specific products that perform a defined function. Some LCA studies are truncated to consider only a portion of this scope, such as from "cradle to gate" whereby the analysis stops when products leave the manufacturing site. Learn more about LCAs here.

Why do companies conduct LCA studies?

LCAs support a variety of objectives. They help companies develop intensity metrics by quantifying the amount of material and energy used and the emissions released to produce a certain quantity of products. These metrics can then be used to track improvements over time, or to make comparisons to other products that perform the same product function (whether internal or external to the company). LCAs are also used to address customer and stakeholder questions about the product. Finally, LCAs are the backbone of market claims and disclosures, such as Environmental Product Declarations (EPDs).

What data are collected for an LCA?

A variety of data is collected to quantify impacts. These data pertain to material and energy flows — that is, inputs and outputs of the product system. The following types of data are commonly needed:

- Annual energy use (i.e., electricity and fuel use)
- Annual water use
- Annual waste generation and emissions generation
- Material composition and supplier location
- Packaging
- Product/co-product production levels
- Transportation distance representing distribution of the product
- Anticipated product lifetime
- Product use-related operations and maintenance (i.e., resource consumption and emissions) (for cradle-to-grave LCAs only)
- Product disposition at end of life.

How long does an LCA take?

The amount of time it takes to complete an LCA study depends on the complexity of the project and the availability of the data needed to conduct the analysis. From start to finish, it is typical for a study to take 3-6 months, including the 3rd party critical review.

What types of impacts are covered by the assessment?

At a minimum, LCA studies assess the following potential impact categories, which are common to virtually all product systems:

- Global Warming
- Ozone Depletion
- Eutrophication
- Acidification
- Photochemical Ozone Formation (Smog)
- Resource Depletion.

There may also be additional impact categories that are relevant to a particular product system that can be included in the analysis.

Why do LCA studies typically report “potential” rather than “actual” impact levels?

Under conventional LCA procedures, the inputs and outputs of an industrial system are assessed. This information provides an indication of the degree to which the system may affect human health and the environment, that is, the potential to cause harm. It is also possible to take this analysis one step further, with advanced LCA that adds site-specific “environmental characterization” into the equation. This brings an even higher level of certainty to the impact results.

How much does an LCA cost?

The cost of undertaking an LCA study is determined on a time and materials basis, which depends on the complexity of the project.

Are LCAs conducted in accordance with standards?

Yes, LCAs are conducted in conformance with the ISO 14040 series of standards, especially ISO 14040 and ISO 14044. These standards address the life cycle inventory, the life cycle impact assessment, and interpretation of the results. Find out more about how your company can benefit from LCA by getting in touch with SCS Consulting Services.