

Trend

Environmental Impact Monitoring Methods

In recent years, worldwide extreme weather events and climate disasters believed to be caused by global warming, occurring at an ever-increasing rate, have drawn people's attention to climate issues. In order to achieve the Paris Agreement's target of 1.5°C and carbon neutrality, the reduction of greenhouse gases has become a particularly pressing issue. Amid this, companies are being sought to manufacture products that are environmentally friendlier than ever.

In order to reduce the environmental impact of products, it is essential to understand at what stage of the product life cycle the product impacts the environment and to what extent. Life Cycle Assessment (LCA) is a well-known method for evaluating the environmental impact of a product or service throughout its life cycle. LCA measures resource consumption and emissions and evaluates their environmental impact, taking into account not only the environmental impact of the product or service when it is in actual use but also across its entire life cycle (literally from the cradle to the grave), from mining of materials to manufacturing, transportation, and disposal (Figure 1). Based

on the results of the assessment, the manufacturing process and product design are then improved and the materials and means of transport are chosen to reduce environmental impact throughout the product's life cycle.

The methods used in LCA are standardized by the International Organization for Standardization (ISO) 14040 and are split into four stages: (1) Goal and scope definition, (2) Inventory analysis (resources consumed and emitted at each stage), (3) Impact assessment, and (4) Interpretation of results (Figure 2). However, detailed methods are to be set according to the purpose of the calculation and the scope of the assessment.

LCA is merely an assessment method to quantify the environmental impact of a product and a tool for communication. We consider it important to look at the purpose of our LCAs and use the results as a starting point for further investigations into issues such as bottlenecks, priority issues, and unpredictability.

We at Amano Enzyme are committed to reducing the environmental impact of our products by using LCAs in addition to other methods to help achieve a sustainable society.

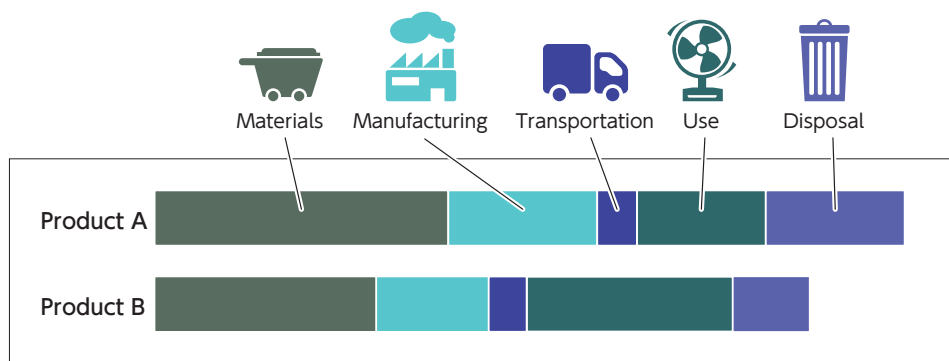


Figure 1. Environmental impact assessment of a product's entire life cycle. Product A has less environmental impact while being used than Product B, but it has a higher environmental impact during manufacturing and disposal. As a result, the environmental impact of Product A is greater than that of Product B over its entire life cycle.

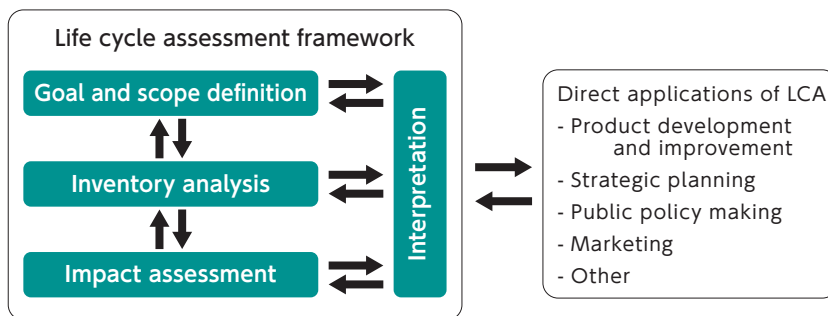


Figure 2. LCA steps and framework as defined by ISO 14040