Guest Speech

Life Cycle Assessment (LCA) and the natural environment:
current assessment options and the way forward

Francesca VERONES
Norwegian University of Science and Technology (NTNU), Norway

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Life Cycle Assessment (LCA) is a methodology that aims at analysing the environmental impact of a product or a process throughout its whole life cycle (ISO 2006a; ISO 2006b). The motivation of LCA is to ensure that relevant environmental consequences and implications can be highlighted and calculated before the decision is put into practice. The life cycle typically starts with the extraction of raw materials, continues with the manufacturing phase, a use phase and ends with disposal and/or recycling. In between all these life cycle stages transport processes are included. In a first step, a life cycle inventory (LCI) is established. Here all the relevant emissions and resource uses are collected, such as how many kg CO2 have been emitted during the different processes or how many kg of iron have been used. In the next step, the life cycle impact assessment (LCIA), the consequences of these material uses and emissions are assessed. This is done by assigning damage values to each of the information collected in the LCI. There are three main safeguard subjects that emphasis is put on during life cycle assessment: human health, ecosystem quality and natural resources.

For the purpose if this talk here, we will only consider "ecosystem quality" further. Ecosystem quality is traditionally measured in potentially disappeared fractions of species (PDF) (Goedkoop et al. 1999; Huijbregts et al. 2014) or in species.yr (Goedkoop et al. 2009). Other units exist, but are not commonly used. What is important, is to see that currently LCA does actually consider species richness as its indicator of choice. The LCA community is aware that species richness as such, is not necessarily representative of "ecosystem quality" and discussions are ongoing in the UNEP-SETAC flagship project "Global Guidance for Life Cycle Impact Assessment Indicators and Methods" on the appropriate endpoint unit. The way forward will include completion of impact pathways and spatial differentiation.

Literature

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