Abstract LCA Forum

# The Time dimension in an LCA for a train's component

Life Cycle Assessments are assessing a product over its whole life cycle – well known. Products from railway manufacturing may face a complicated life, lasting for more than 25 years, and including a complex structure of maintenance processes, both preventive and corrective (i.e. repair processes). In life cycle costing, a discounting of future costs is an often used option, which is in line with good practice in investment cost accounting. In Life Cycle Assessment, it is not. It is even so that introducing time in the life cycle is not common in LCA. Why should it? And is it that feasible, for complex life cycles?

We display two different algorithms for calculating a Life Cycle Assessment over time, show and discuss their requirements, and show an LCA calculation over time, performed for a German train's component. We discuss these results in comparison to an LCA for the same component, calculated without a timely resolution. This comparison reveals four main advantages, and also disadvantages, of 'introducing time' in LCA results.

The advantages are of (i) methodical nature (coherence with methods from the area of financial accounting), (ii) to allow a general inclusion of future's uncertainty, (iii) to be able to care for the timely behaviour of substances, (iv) to be able to incorporate prognoses on the future environment and also on processes, and, finally, (v) to enable the user to express his or her views on the future in the results of an LCA (coherence with the user's perspective on the future).

We are looking very forward to discussing and hopefully presenting our ideas at the Forum.

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