Beyond LCA: Measuring Climate Intensities of Sites or Companies

Problem Formulation

- How can the environmental performance of sites or companies be assessed? Especially if several products and different product ranges are produced? Different vertical ranges of manufacture are included. Hence, the ecological impact has to be referred to different revenue sources.

- Companies are held responsible for environmental impacts of their preliminary and downstream processes outside their company. Thus, the ecological “badges” of these processes have to be attributed to the companies in addition to their direct impacts.

- A concept of comprehensive corporate responsibility has to be included into the indicator system.

State-of-the-Art

- No existing indicator systems include preliminary and downstream processes.

- Hence, the ecological impact has to be covered beyond LCA.

New Approach

- The Cumulative Climate Intensities concept (CCLI) includes ecological impacts along a product’s entire life cycle “from cradle to grave.”

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Concept of Cumulative Climate Intensities

- Learn wide question of aggregating environmental impacts. Focus on climate impact, measured as Global Warming Potential (GWP) of a company’s greenhouse gas (GHG) emissions.

- Can be calculated quite simply (information needed: turnover, prices and amounts of products/services bought and sold, direct GHG emissions, climate intensities of suppliers and disposers).

- Benchmarking becomes possible between different companies and over time.

- Economic allocation of GWP emissions to products, i.e. on the basis of the preliminary products’ share of the corresponding company’s turnover

- Can be applied to measure other specific environmental intensities, such as toxicity, acidification or ozone depletion.

- Contains a wide focus: less GWP (minimal principle) and/or higher value (maximal principle) reward to ecologically balance out entire product range; ecological “alibi products” are not enough, but have to make up a considerable share of the company’s turnover.

Signle Step Process

Production and Supply Processes

- Direct GWP attributed to a company on the basis of the preliminary products’ share of the corresponding company’s turnover

- GWP assigned economically, i.e. on the basis of the (economic) ability to carry the costs for the climate impact

- Corresponding with the “co-operation principle” within environmental policy

- E.g. - Costs for acquired supplies account for 20% of the supplier’s turnover, then 20% of the supplier’s GWP are attributed to the supplies.

- Company is responsible for the suppliers’ entire product ranges, as their business partner, it ensures the entire existence of its suppliers

-Indicator rewards to ecologically balance out entire product range; ecological “alibi products” are not enough, but have to make up a considerable share of the company’s turnover.

Economic allocation of GWP-emissions to products, i.e. on the basis of the preliminary products’ share of the corresponding company’s turnover

- By basing the indicator system on the object category (by product theory)

- A company assigns indirect GWP from its suppliers (to a broader sense: who supply preliminary products and disposal services)

- A company assigns its GWP to its customers who buy products or disposal services by delivering waste to the company.

Comprehensive Formulas

- Effectiveness of the system is measured through "non-superiority" of the system: The GWP-emissions of products are not enough, but have to make up a considerable share of the company’s turnover.

- The denominator Direct plus indirect value added, adds up to turnover

- The numerator: Direct plus indirect emissions

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