

## Global guidance on environmental life cycle impact assessment indicators: Progress and case study - DTU Orbit (08/11/2017)

### Global guidance on environmental life cycle impact assessment indicators: Progress and case study

**Purpose** The life cycle impact assessment (LCIA) guidance flagship project of the United Nations Environment Programme (UNEP)/Society of Environmental Toxicology and Chemistry (SETAC) Life Cycle Initiative aims at providing global guidance and building scientific consensus on environmental LCIA indicators. This paper presents the progress made since 2013, preliminary results obtained for each impact category and the description of a rice life cycle assessment (LCA) case study designed to test and compare LCIA indicators.

**Methods** The effort has been focused in a first stage on impacts of global warming, fine particulate matter emissions, water use and land use, plus cross-cutting issues and LCAbased footprints. The paper reports the process and progress and specific results obtained in the different task forces (TFs). Additionally, a rice LCA case study common to all TF has been developed. Three distinctly different scenarios of producing and cooking rice have been defined and underlined with life cycle inventory data. These LCAs help testing impact category indicators which are being developed and/or selected in the harmonisation process. The rice LCA case study further helps to ensure the practicality of the finally recommended impact category indicators.

**Results and discussion** The global warming TF concludes that analysts should explore the sensitivity of LCA results to metrics other than GWP. The particulate matter TF attained initial guidance of how to include health effects from PM<sub>2.5</sub> exposures consistently into LCIA. The biodiversity impacts of land use TF suggests to consider complementary metrics besides species richness for assessing biodiversity loss. The water use TF is evaluating two stress-based metrics, AWaRe and an alternative indicator by a stakeholder consultation. The cross-cutting issues TF agreed upon maintaining disabilityadjusted life years (DALY) as endpoint unit for the safeguard subject "human health". The footprint TF defined main attributes that should characterise all footprint indicators. "Rice cultivation" and "cooking" stages of the rice LCA case study contribute most to the environmental impacts assessed.

**Conclusions** The results of the TF will be documented in white papers and some published in scientific journals. These white papers represent the input for the Pellston workshop™, taking place inValencia, Spain, from24 to 29 January 2016, where best practice, harmonised LCIA indicators and an update on the general LCIA framework will be discussed and agreed on. With the diversity in results and the multi-tier supply chains, the rice LCA case study is well suited to test candidate recommended indicators and to ensure their applicability in common LCA case studies.

### General information

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