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Kjær, Louise Laumann; Pigosso, Daniela Cristina Antelmi; McAloone, Tim C.

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A Guide for Evaluating the Environmental Performance of Product/Service-Systems

Louise Laumann Kjaer*¹, Daniela C. A. Pigosso¹, Tim C. McAloone¹

1: DTU; Department of Mechanical Engineering; Engineering Design & Product Development

*Corresponding author email: llkj@dtu.dk

New business opportunities and improved sustainability can be fostered by delivering product functionality rather than ownership through e.g. sharing systems, performance-based contracts, subscriptions etc. (Bocken et al., 2014). This is aligned with the concept of Product/Service-Systems (PSS), in which products and services are combined in a system to satisfy user needs (Baines et al., 2007). However, it is well known that PSS offerings are not necessarily more sustainable from an environmental perspective. Because of that, systematic and quantitative assessments of their actual environmental performance are called for (Kjaer et al., 2016). In order to address this issue, a Guide for evaluating the environmental performance of PSS based on Life Cycle Assessment (LCA) methodology has been proposed. The Guide was developed based on identified challenges for LCA on PSS, a review of existing LCA on PSS case studies, expert consultations, case study applications, and structured user feedback. The guide consists of 6 steps (Figure 1), which are aligned with the phases of an LCA. The guide focus on defining a proper study scoping to ensure (i) that the reference system to which the PSS is compared is properly explored and that relevant product systems that the PSS substitutes are identified (supported by step 2), (ii) that the system chosen for analysis are comparable in terms of functional outcome and perceived value, since differences in user perceived outcome might trigger rebound effects (supported by step 3), and (iii) that all relevant processes on which the PSS depends are included in the assessment (supported by step 3). The Guide may be used by industry, authorities or researchers interested in evaluating the environmental performance of PSS. Future work includes various full case applications and further enhancement of the Guide through collaborations with relevant stakeholders.

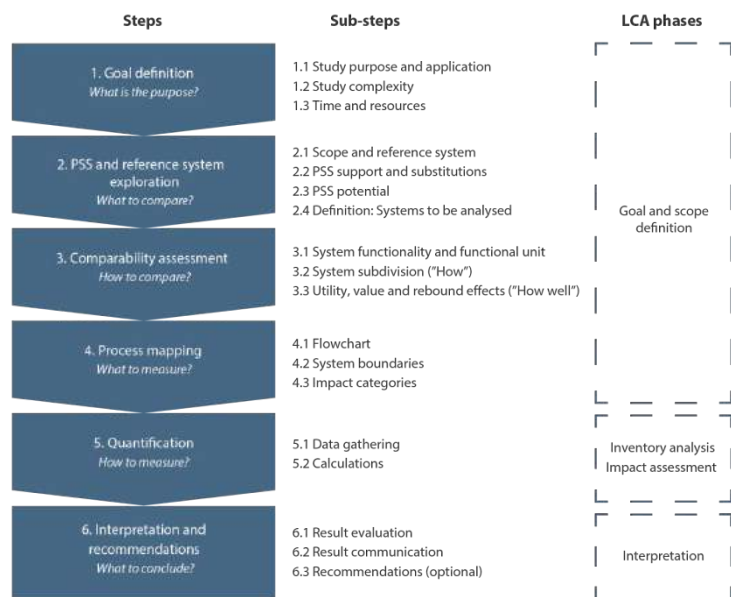


Figure 1: Overview of guide steps

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