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Technical Sector Report on Data Models for Renewable Energy

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Executive Summary

The analysis in WP1 unveiled an interest to focus on photovoltaics and to deploy LCA for the purpose of labelling of larger, customised PV installation projects.

The LCA to go approach is meant to facilitate communication of the environmental performance of a PV project, similarly to financial assessments of such projects. This methodology paper outlines the approach to calculate energy impact and greenhouse gas emissions over the full anticipated lifetime.

The Key Environmental Performance Indicators for the photovoltaics sector cover Energy consumption per life, lifetime power output (including energy yield ratio and energy payback time), and the carbon footprint (including CF per product unit, and emission savings).

The data model is partly based on data entries to be made by the user, partly on data to be calculated in conventional planning tools, and partly on generic background data: It is evident for the photovoltaics business, that software tools are in daily use to calculate the energy performance as a key layout criterion for such kind of installations. The energy calculations from these analyses should be used for the LCA to go assessments to avoid redundant work. These other tools (RETScreen, PVsyst) lack the capability to address the embedded energy or production related carbon footprint of PV systems – this gap is addressed by LCA to go and the sectoral concept for photovoltaics.

Comprehensive LCA data already exists for PV modules, parts and Balance-of-System components. These generic data constitute a profound basis for general assessments. A later extension of the tool to cover and enter specific data for modules and inverters is intended and should be incentivized.

The interest to get such kind of assessments embedded in a larger labelling or certification scheme became also evident in WP1. As no such scheme exists yet, similar approaches from the buildings sector are analysed in detail, and recommendations are derived how such schemes could serve as a blueprint for PV systems.