PHOTOVOLTAICS

Solar footprints

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The status of photovoltaics (PV) as a viable renewable electricity source is now undeniable, but as deployment continues, the impact of this new technology on the environment and on resources remains to be quantified. Now, Andreas Wade and colleagues from the USA, Switzerland and Germany report on the efforts of a broad international coalition of PV stakeholders to use and evaluate the methodology laid out by the European Commission in the pilot phase of the assessment of product environmental footprints.

The life cycle assessment includes the manufacturing of a PV module producing 1 kWh of d.c. electricity and the balance of system components, the operation of the system, and the dismantling and recycling of the materials. The key parameters of the PV systems are its annual yield, degradation rate, and its expected lifetime, while indicators of environmental impacts include resource depletion and human and freshwater toxicity. The researchers find that the selection of the installation site is generally one of the most effective ways to limit the environmental impact of PV electricity. Importantly, the scientific soundness and quality as well as the societal and political acceptance of the impact assessment are ensured by the participation of a variety of stakeholders, such as regulatory bodies, companies and non-governmental organizations. In carrying out the assessment, the researchers encounter both methodological and data-related challenges, including outdated mineral resource data and the current lack of statistics on recycling of waste modules.

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