Methodology Guidelines on Life Cycle Assessment of Photovoltaic Electricity

R. Frischknecht, P. Stolz. G. Heath, M. Raugei, P. Sinha, M. de Wild-Scholten

Uster, 6 April 2020
Scope of the update toward the 4th edition

- Technical characteristics
  - Service life
  - Performance ratio
  - Degradation rate
  - Curtailing and DC:AC ratio
- Building Integrated PV electricity
- Environmental indicators
  - Updated according to the Product Environmental Footprint impact assessment method
- Minor editorial corrections
Main findings

• Technical characteristics
  • Default performance ratio: 0.75 and 0.8 for residential and utility scale PV systems, respectively
  • Degradation rate: 0.7 % points per year confirmed
  • Curtailing: environmental impacts of 1 kWh PV electricity may be higher because of curtailing (annual yield lower than under optimal, full utilization of PV electricity production)

• BIPV electricity LCA
  • Functional unit: 1 kWh AC electricity
  • Building specific annual yield
  • Allocation: active elements to be attributed to electricity production
  • (LCA methodology for BIPV building elements and of buildings with BIPV to be elaborated under the lead of PVPS Task 15)

• Environmental indicators
  • Environmental Footprint method, final version
  • Biodiversity loss due to land use: indicator recommended by UN Environment
  • Cumulative Energy Demand (non renewable, renewable)