Emerging Environmental Issues in Large‐Scale PV and Recycling

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Utility-scale solar photovoltaic (PV) technology is a cost-competitive energy technology with high potential to contribute to a low carbon energy transition. As with any large-scale construction activity, development of utility-scale solar PV projects can require evaluation of a wide variety of potential environmental impacts, including impacts on biodiversity, land use, water resources, and human health.  In several cases, environmental concerns are starting to be addressed by industry cooperation with academic and NGO researchers to provide evidence-based understanding and solutions to environmental challenges.  Examples of industry-researcher collaborations are provided for environmental impacts related to heat island effect, dust management, and avian mortality.  Life cycle management further contributes to the sustainability of utility-scale solar PV, with the development of end-of-life recycling technology addressing decommissioning impacts and product sustainability standards to address product environmental footprint.