Recycling Renewables

As renewables grow, so does the challenge of developing better recycling, improved materials, and policy leading to a circular economy for decommissioned wind turbine blades and solar energy panels.

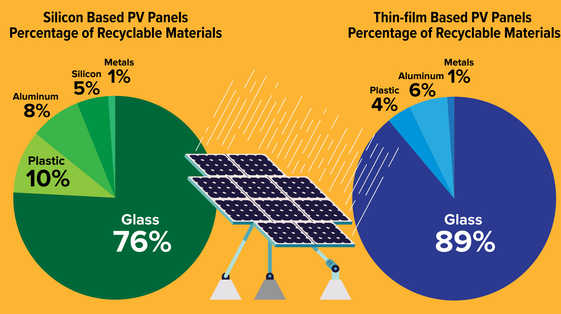
BY CATHY CECERE

Experts predict one-in-eight homes will get some of their electricity via solar by 2030. And turbine blade installations outpaced solar for the first time in 2020 with wind providing more than 30 percent of electricity in five states: Iowa, Kansas, Oklahoma, South Dakota, and North Dakota.

But as the demand for renewable energy grows, thousands of turbine blades and solar panels will reach the end of their design lifetimes. Made of a great deal of recyclable material, the composite materials of the blades and the contaminated materials of the panels represent a particular challenge.

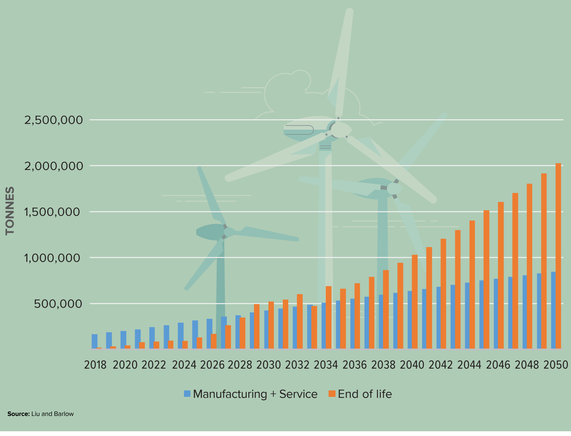
According to Aubryn Cooperman, mechanical engineering researcher at the National Renewal Energy Laboratory in Golden, Colo., assuming a 20-year turbine lifetime the cumulative blade waste in 2050 is approximately 2.2 million tons. Yet Cooperman is hopeful about the future. “I am optimistic about the level of engagement with this issue among researchers, manufacturers, and waste management companies,” she said. “There have been a lot of new projects and progress announced in the last few years.”

THE MATERIALS OF SOLAR PANELS



Source: GreenMatch.com

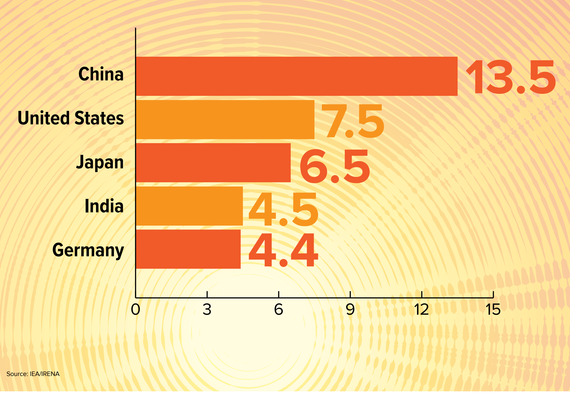
WIND TURBINE BLADE WASTE



Source: Liu and Barlow

TOP FIVE COUNTRIES IN PV WASTE IN 2050

WASTE VOLUME IN MILLION METRIC TONS



Source: IEA/IRENA