

# What is solar waste?

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**In news—** A report by National Solar Energy Federation of India (NSEFI) has found that India could generate over 34,600 tonnes of cumulative solar waste in India by 2030.

## **What is solar waste?**

- It is the **electronic waste (e-waste) generated by discarded solar panels and Photo-voltaic (PV) devices.**
- Photovoltaic (PV) devices contain semiconducting materials that convert sunlight into electrical energy.
- A single PV device is known as a cell, and these cells are connected together in chains to form larger units known as modules or panels.
- Although up to 90% of the components are recyclable, many PV modules contain heavy metals such as **cadmium, copper, lead, antimony or selenium**, and when they are taken out of service or broken, they may be classified as hazardous waste.

## **Key findings-**

- India does not have a solar waste management policy, but the waste can increase by at least four-five-fold by the next decade.
- Solar panels have a life of 20-25 years, and it **is likely that India will be faced with solar waste problems by the end of this decade.**
- While photovoltaics generate only about 3 percent of global electricity, they consume 40 percent of the world's tellurium, 15 percent of the world's silver, a substantial chunk of semiconductor-grade quartz and lesser amounts of indium, zinc, tin and gallium.
- The two most popular module technologies in India are crystallised silicon (C-Si) and thin-film (mainly cadmium telluride, CdTe), with 93 and 7 per cent market

shares respectively.

- The market value of raw materials recovered from solar panels could reach \$450 million by 2030.
- The report has suggested that India should focus its attention on drafting comprehensive rules to deal with solar waste and also suggested a ban on landfills.

### **Solar waste management by other countries-**

- **In Europe, the Waste Electrical and Electronic Equipment (WEEE) Directive** of the EU imposes responsibility for the disposal of waste on the manufacturers or distributors who introduce or install such equipment for the first time.
- **The UK also** has an industry-managed “take-back and recycling scheme”, where all PV producers will need to register and submit data related to products used for the residential solar market (B2C) and non-residential market.
- While there are no federal statutes or regulations in the **United States** that talk about recycling, there are some states who have proactively defined policies to address end-of-life PV module management.
- The federal government in **Australia** has acknowledged the concern and announced a \$2 million grant as part of the National Product Stewardship Investment Fund to develop and implement an industry-led product stewardship scheme for PV systems.