

Unknown Photographer. (2021). *Solar photovoltaic panels*. License held by Creative Commons Attribution-Share Alike 3.0^[14]



Solar power technologies convert sunlight into electrical energy through photovoltaic (PV) panels that concentrate solar radiation and generate electricity that can be stored in batteries.^[15]

As the move away from fossil fuels increases, solar PV panels have become an important source of clean, renewable energy for sustainable development.^[16] A solar PV panel consists of several sheets of silicon crystals sandwiched together by aluminum and glass. When sunlight hits the silicon crystals it creates electrical currents that are carried to a storage battery via copper wires.

A serious disadvantage to solar PV panels is that their production includes very harmful greenhouse gases: nitrogen trifluoride and sulfur hexafluoride.^[17] Therefore, as solar PV panels become obsolete (they have a lifespan of about 25 years) they become large, bulky sheets of toxic waste.^[16]

The International Renewable Energy Agency estimates the world will be generating about 6 million metric tons of new solar e-waste annually, and by 2050, nearly 78 million metric tons of solar PV panels will have reached the end of their life.

Under European Union law, producers are required to ensure their solar panels are recycled properly. In Japan, India, and Australia, recycling requirements are currently under discussion. In the United States, with the exception of a state law in Washington, there are no solar recycling mandates.

Persistent Issues History...

1. Should the United States (or perhaps the United Nations) mandate solar panel recycling? Should it be the responsibility of the solar company or the customer to recycle the obsolete panels?

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15. <https://www.energy.gov/eere/solar/how-does-solar-work>

16. Stone, M. 2020. Solar panels are starting to die, leaving behind toxic trash. *Wired*. <https://www.wired.com/story/solar-panels-are-starting-to-die-leaving-behind-toxic-trash/>

17. Prendergast, C. (2020). Solar Panel Waste: The Dark Side of Clean Energy. *Discover*. <https://www.discovermagazine.com/environment/solar-panel-waste-the-dark-side-of-clean-energy>