

SOLAR POWER



CASES

FACT SHEET

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What is Solar Power?

The energy of the sun has many useful applications on earth, including providing natural light, heating buildings and for photosynthesis—the ability of plants to turn sunlight into chemical energy. For many decades, sunlight has also been used as a source of energy for producing electricity using solar photovoltaic cells.

Photovoltaic cells are made up of two layers of semiconductor materials—one with negative charged ions and one with positive charged ions. When the solar energy reaches the PV cells, electrons are set into motion creating electricity.

What is Solar Power Used For?

Solar PV cells can be found in simple technologies like calculators or wristwatches or, increasingly, in large grid-scale power plants. Solar PV is a relatively simple technology that is fairly easy to manufacture and install. Because of this, the production and deployment of solar panels has increased greatly within the past decade. This has led to a steep decline in costs making solar power the least expensive source of energy in many countries.

Aside from its low cost, another advantage of solar energy is that it is a relatively predictable form of energy. We can often forecast how many hours of solar energy there will be at a specific location on a certain day. Solar energy is particularly reliable in regions closer to the equator, where most of the earth's population lives. Unlike regions closer to the northern and southern poles, daylight hours in areas near the equator don't vary greatly across seasons and are fairly consistent throughout the year.

Due to their relatively small size, ease-of-use and simple operation, solar PV is unique

among renewable energy sources as a means for individual households to produce their own electricity. Since there is very little maintenance and most jurisdictions have tax incentives to encourage homeowners to install solar PV, solar energy offers the opportunity to reduce electricity bills or even provide homeowners with credits from utility companies by supplying electricity from roof-installed PVs to the local grid.

Solar Power and Renewable Energy

The installed capacity of solar PV for energy has multiplied by over 20 times within the past decade from 40 GW in 2010 to 843 GW in 2021. [1] The growth in manufacturing of solar panels and advancements in PV technologies, which have been spurred by the rapidly increasing demand for solar power, has brought the price of solar energy on par with the cheapest fossil fuels, such as coal.

Despite large increases in solar PV capacity, solar power currently only represents a small percentage of global energy supply at 681TWh of electricity production.[1] If present trends in solar energy production continue, such as the diminishing cost differential between utility solar modules and consumer market share of residential solar PV, government incentives to install solar PV and dropping costs, global solar power capacity could multiply quickly over the next decade.

[1] IRENA (2022), Renewable Power Generation Costs in 2021 International Renewable Energy Agency, Abu Dhabi, 30.

[1] IEA, "Supply," Key World Statistics 2021, International Energy Agency, <https://www.iea.org/reports/key-world-energy-statistics-2021/supply>.