

Solar energy is radiant light and heat from the Sun that is harnessed using a range of technologies such as solar power to generate electricity, solar thermal energy including solar water heating, and solar architecture.

It is an essential source of renewable energy, and its technologies are broadly characterized as either passive solar or active solar depending on how they capture and distribute solar energy or convert it into solar power. Active solar techniques include the use of photovoltaic systems, concentrated solar power, and solar water heating to harness the energy. Passive solar techniques include orienting a building to the Sun, selecting materials with favorable thermal mass or light-dispersing properties, and designing spaces that naturally circulate air.

The large magnitude of solar energy available makes it a highly appealing source of electricity. In 2021, Carbon Tracker Initiative estimated the land area needed to generate all our energy from solar alone was 450,000 km²- or about the same as the area of Sweden, or the area of Morocco, or the area of California (0.3% of the Earth's total land area).

In 2011, the International Energy Agency said that "the development of affordable, inexhaustible and clean solar energy technologies will have huge longer-term benefits. It will increase countries' energy security through reliance on an indigenous, inexhaustible, and mostly import-independent resource, enhance sustainability, reduce pollution, lower the costs of mitigating global warming These advantages are global."

In the present book, fifteen typical literatures about Solar energy published on international authoritative journals were selected to introduce the worldwide newest progress, which contains reviews or original researches on Solar energy. We hope this book can demonstrate advances in Solar energy as well as give references to the researchers, students and other related people.¹

The Editorial Board of Academic Archives
Scientific Research Publishing
December 6, 2021

¹ https://en.wikipedia.org/wiki/Solar_energy