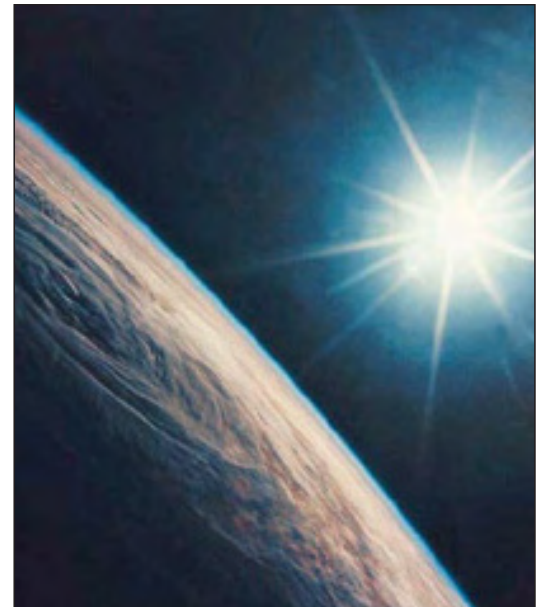


Renewable Energy

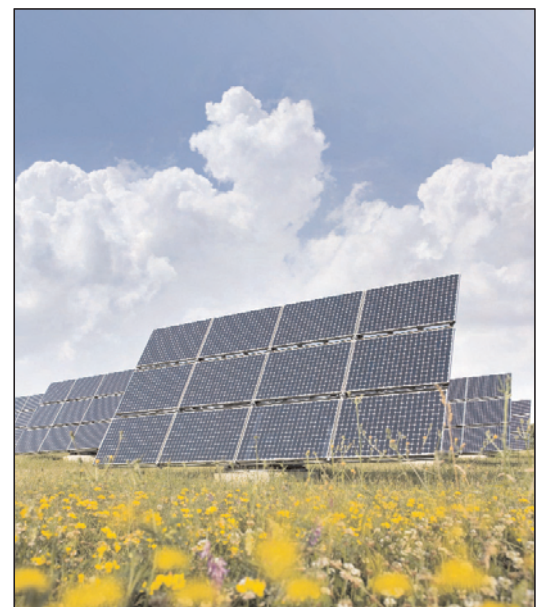
Solar power

3ai

- The Sun is the Earth's primary source of energy. The Sun's energy travels as electromagnetic waves, which include invisible infrared thermal (heat) waves, as well as light.
- Light energy from the Sun is captured by green plants through the process of photosynthesis, in which plants store energy from the Sun by making food (sugar) from carbon dioxide and water. Plants then provide food for animals and the energy harnessed from the Sun is passed along the food chain.
- When heat from the Sun reaches the Earth as thermal infrared radiation, some of the radiation is reflected back to space and some is absorbed, heating up the Earth's surface.
- Some materials and surfaces are better at absorbing heat than others. For example, matt black is good at absorbing heat, whilst white and silver tend to reflect it. You often find that in hot, sunny countries houses are painted white so they do not absorb much heat and keep the rooms inside cool. Highly reflective mirrors can be used to direct the thermal radiation from the sun to provide us with a source of energy.
- The energy we use from the Sun is known as solar power. The Sun can provide us with power in two ways:
 - Some buildings use heating systems in which the Sun is used to warm water for central heating. By using a black layer in solar panels, which absorbs the thermal radiation from the Sun, the water flowing in pipes beneath is heated.
 - Solar power can also be used to generate electricity to power appliances (see sheet 3aii for more information).
- Solar power is a renewable source of energy that does not give off the greenhouse gas carbon dioxide.
- At first solar power was mostly used in countries that received lots of sunlight. However, over the years many developments have taken place to enable energy from the Sun to be harnessed even in regions that receive less sunlight.



The Sun's energy reaches the Earth travelling as electromagnetic waves.



Solar panels capture the Sun's energy.

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