

# Renewable energy fact cards

## Geothermal Energy

**Made by:** underground water being heated by hot rocks in the Earth. The steam can be used to turn turbines which then power generators to produce electricity.

**For:** it is free and available day and night.

**Against:** only available in certain parts of the world. Sometimes poisonous gases are given off.

**Impact on the environment:** some impact from the installation of the equipment that is needed to direct steam to turbines.

**Energy provided:** one geothermal power plant provides enough electricity for 20 dwellings.

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## Solar Energy

**Made by:** using the sun's energy in two main ways:

- 1) to heat solar panels which in turn can be used to heat water;
- 2) in solar cells which can transfer light energy directly into electricity.

**For:** sun's energy is freely available whenever the sun is shining

**Against:** solar panels require continuous sunshine, unless the energy can be stored in batteries. Solar cells are expensive to buy.

**Impact on the environment:** some impact as may need large area for solar cells.

**Energy provided:** a single photo voltaic cell provides enough electricity for 5 dwellings.

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## Wind Energy

**Made by:** the wind turning blades which drive a turbine which in turn drives the generator to produce electricity.

**For:** whenever the wind blows energy is provided.

**Against:** large number of turbines are needed to produce a high amount of energy. Only works well in windy places (mountains or off-shore).

**Impact on environment:** some impact from installing wind turbines.

**Energy provided:** two windmills provide enough electricity for 15 dwellings.

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## Hydroelectric Energy

**Made by:** the falling water being diverted from a river and turning a waterwheel or turbine, which in turn drives the generator to produce electricity.

**For:** if there is good rain supply, there will always be water to produce energy.

**Against:** only suitable for hilly areas with rivers.

**Impact on environment:** some impact from diverting rivers. This may upset the ecology of the area or the fertility of surrounding land.

**Energy provided:** a single hydroelectric plant provides enough electricity for 40 dwellings.

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## Tidal Energy

**Made by:** placing a barrage across the mouth of an estuary. Tidal water passes through holes in the barrage. The moving water drives a turbine which in turn drives the generator to produce electricity.

**For:** whenever there are tides, energy is provided.

**Against:** barrages are expensive to build.

**Impact on the environment:** some impact through barrier installation can disrupt tidal flow to shore and hence the movement of nutrients and organisms.

**Energy provided:** a single barrage provides enough electricity for 25 dwellings.

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## Wave Energy

**Made by:** placing buoys (floats) in the water (sea) which convert wave movement into vertical movement inside the buoy. The vertical movement drives a turbine which in turn drives the generator to produce electricity.

**For:** whenever there are waves, energy is provided.

**Against:** a large number of buoys are needed to generate enough electricity for a town. Only works where there are big waves.

**Impact on the environment:** minimal impact caused only when there are many floats in the water.

**Energy provided:** 10 buoys provide enough electricity for 10 dwellings.

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## Biomass Energy

**Made by:** solid organic materials (wood, dung, sugar cane) being combusted and the heat released being used to produce steam, which in turn can be used to drive a generator to produce electricity.

**For:** plants are renewable; they can be grown continuously.

**Against:** combustion produces carbon dioxide and other pollutants.

**Impact on environment:** pollution caused by combustion.

**Energy provided:** a single generating plant provides enough electricity for 25 dwellings.

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## Biogas Energy

**Made by:** the decomposition (rotting) of plants and animal manure in a tank. The methane gas produced is combusted and the heat released is used to produce steam, which in turn drives a generator to produce electricity.

**For:** uses natural waste products.

**Against:** combustion produces carbon dioxide and other pollutants.

**Impact on environment:** pollution caused by combustion.

**Energy provided:** a single generating plant provides enough electricity for 20 dwellings.

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