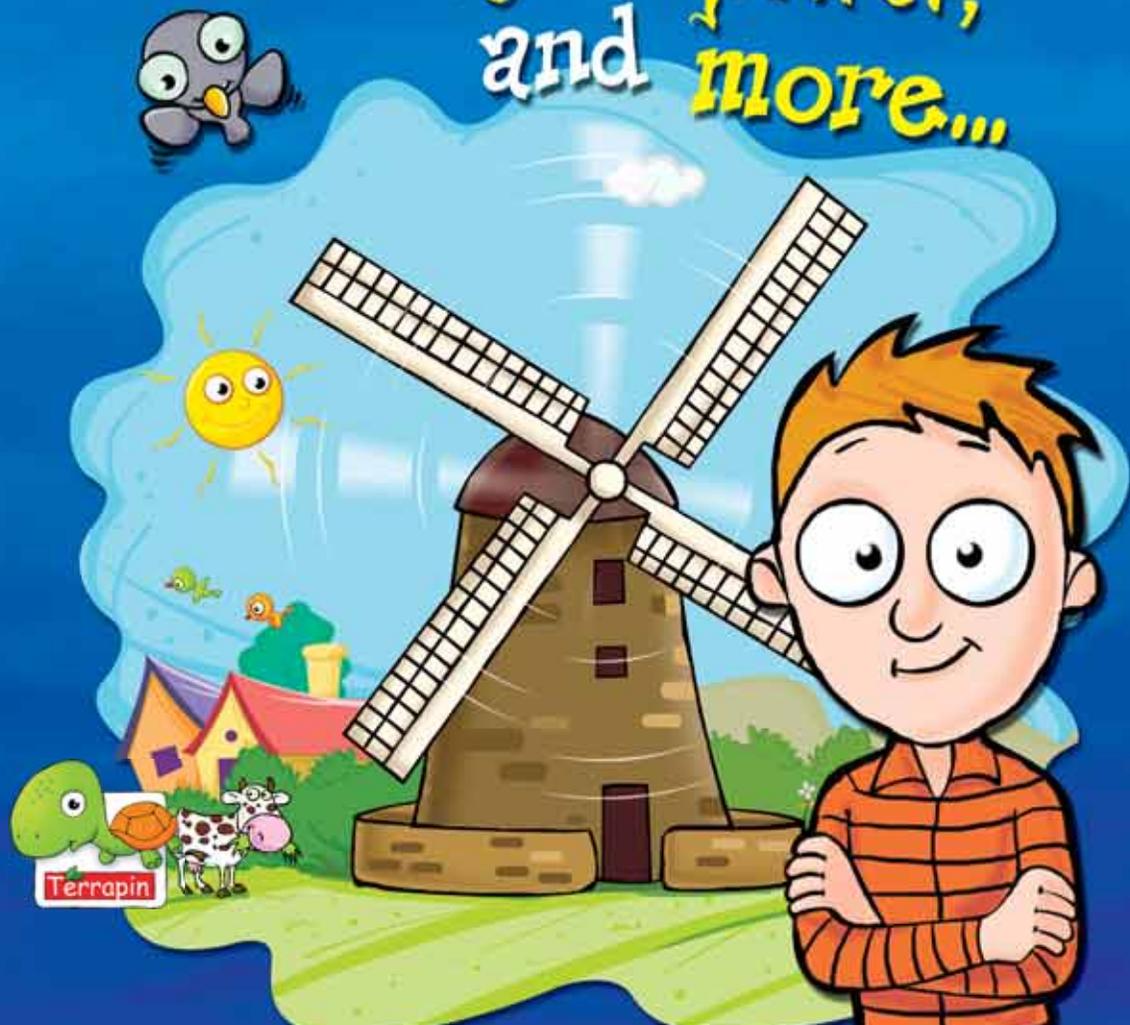




WHAT are WIND POWER, SOLAR POWER, hydropower, and more...





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The Energy and Resources Institute



I HAVE THE POWER!



Have you ever wondered how you are able to walk, run or play? You need energy to do all this. Energy is the ability to do work. Energy can neither be created nor destroyed, but it can be converted from one form to another.

Move it, hold it!

There are many forms of energy. A cricket ball moving in the air can break a windowpane if it strikes it. The energy contained in the ball due to its motion is called 'kinetic' energy. A brick on top of a building can hurt you if it falls on you from that height. The energy it has due to its position (in this case, height) is called 'potential' energy.

There are many other forms of energy, including electrical energy, chemical energy, biochemical energy, electrochemical energy, and nuclear energy.



Plants get energy from the sun, and animals get energy from eating plants or other animals.





Energy that comes from renewable sources can be used again and again without the fear that we will ever run out of them.

Renewable energy: the new thing in town

Just like you need energy to work, machines, cars, microwaves, light bulbs, and televisions also need energy to run. This energy can come from two sources.

Non-renewable sources, like coal and petroleum, are formed from the buried remains of living creatures, or fossils. Their supply is limited and will finish one day. Renewable energy sources like the sun, water, and wind will last forever.



**GG 4.0
Greencast**
Fossil fuels like coal and petroleum were formed millions of years ago, even before the time of dinosaurs!



THE POWER OF THE SUN



On a sunny day, have you ever used a magnifying glass to burn paper? That's solar energy in action! Energy from the sun can be used for heating and producing electricity.

Catch the sun

If a house is built in the right manner, the sunlight and heat entering it can reduce the use of electricity for lighting and heating. Even the ancient Greeks knew the importance of letting in the sun, and built their houses such that they received the sun's heat in winter. This naturally kept the house warm!

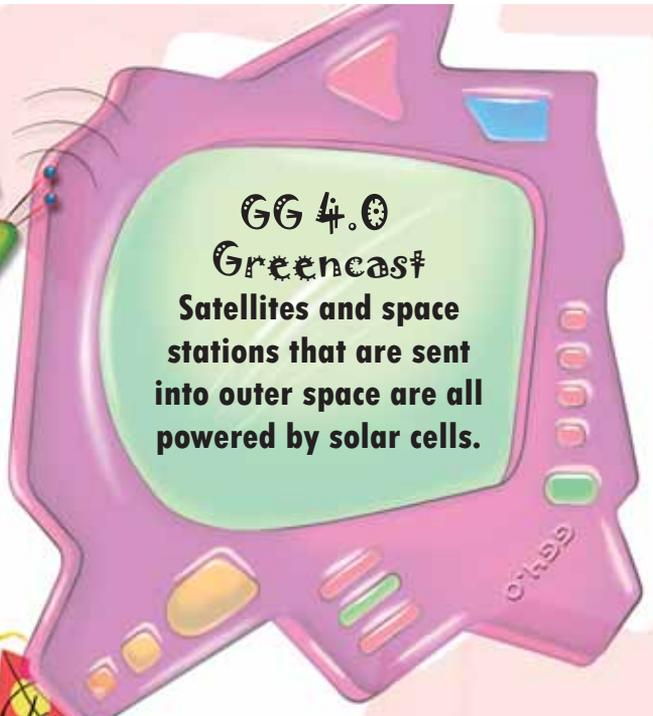
And have you seen buildings with black panels on their rooftops? Those are solar collectors that can heat water for bathing. Similarly, solar cells, also called photovoltaic cells, can convert sunlight into electricity. This electricity can directly run electric lights, or it can be stored in batteries so that it can be used after the sun has set.



Solar power can be used to produce electricity, heat water, and even cook food!

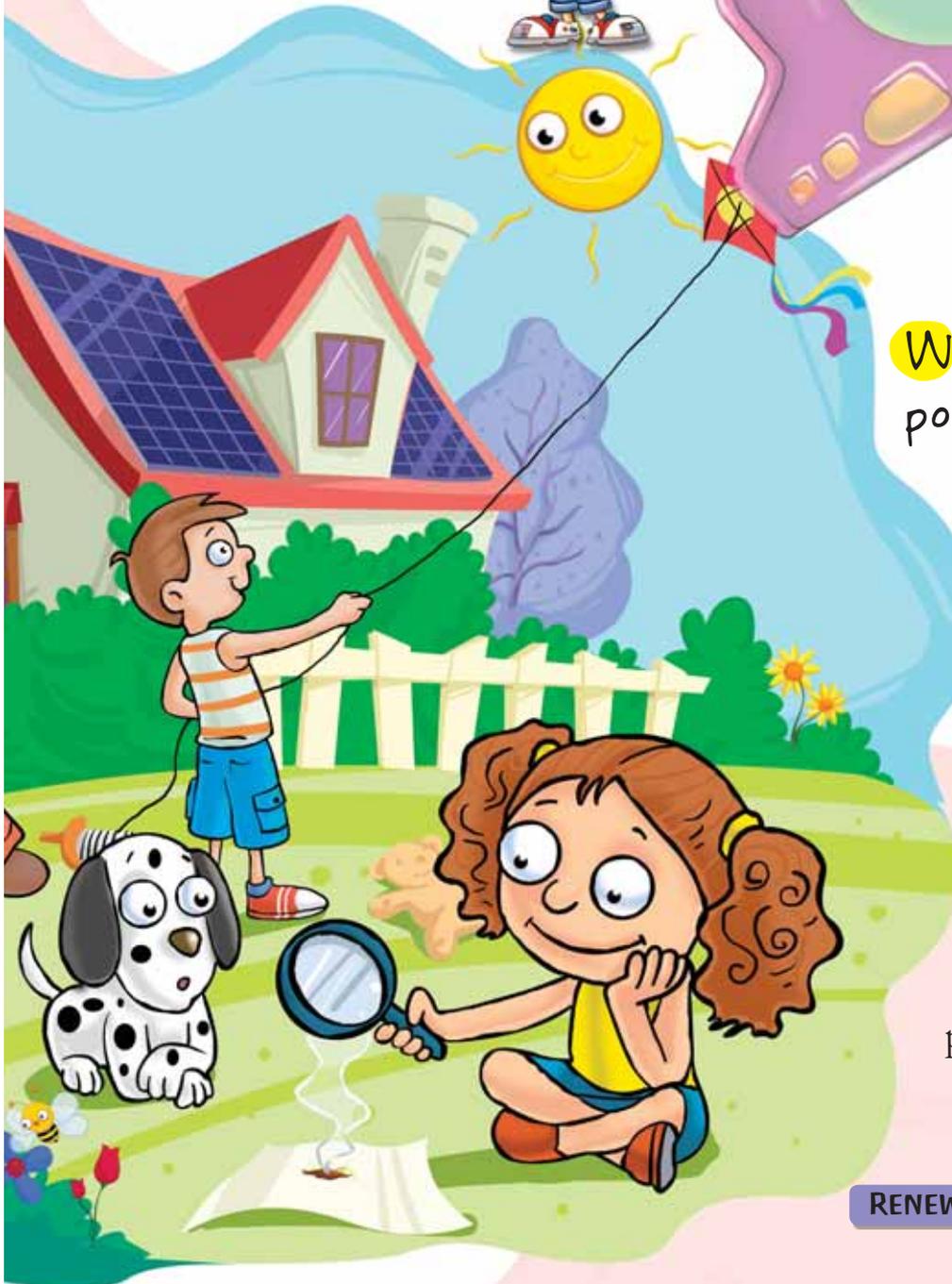


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Satellites and space stations that are sent into outer space are all powered by solar cells.



What are solar power plants?

Solar thermal power plants use the sun's energy to heat fluids. This, in turn, can be used to produce steam. The steam is used to run a turbine, which moves a generator to produce electricity.



RIDE THE WIND



Air in motion is called wind. It has energy that can be used to do work. Ancient Egyptians used wind to sail ships, and the Dutch used windmills to grind grains, pump water, and cut wood at sawmills.

Working with the wind

Windmills use the energy of the wind directly to run a machine, for instance, to turn a grindstone. A wind turbine, on the other hand, uses the energy of the wind to make electricity!

A wind turbine has blades. The wind turns these blades, which spin a generator mounted on the same shaft. This produces electricity.



A wind turbine is quite the opposite of a fan. A fan needs electricity to move its blades that generate wind!



Does wind grow on farms?

At a wind farm several wind turbines are placed together to produce large amounts of electricity. They are usually

found near sea coasts and in other large, open spaces, where the wind is strong. Wind farms built on the sea are called offshore wind farms.



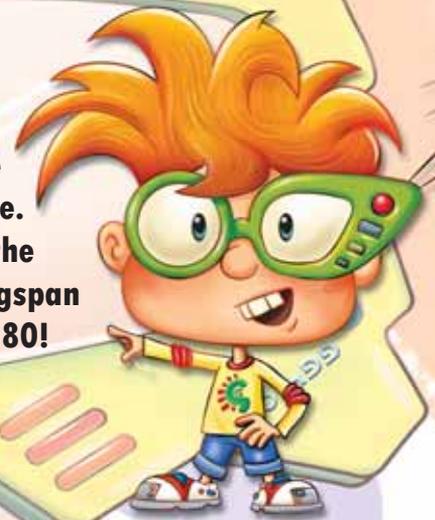
The largest wind turbine is being placed in the North Sea. Its blades measure 126 metres. That's way bigger than the length of a football field!



Germany ranks first in wind power installations, followed by the United States, Spain, and India.



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The rotor of a large wind turbine is 126 metres wide. Compare that to the eighty-metre-wingspan of an airbus A380!



RUNNING ON WATER

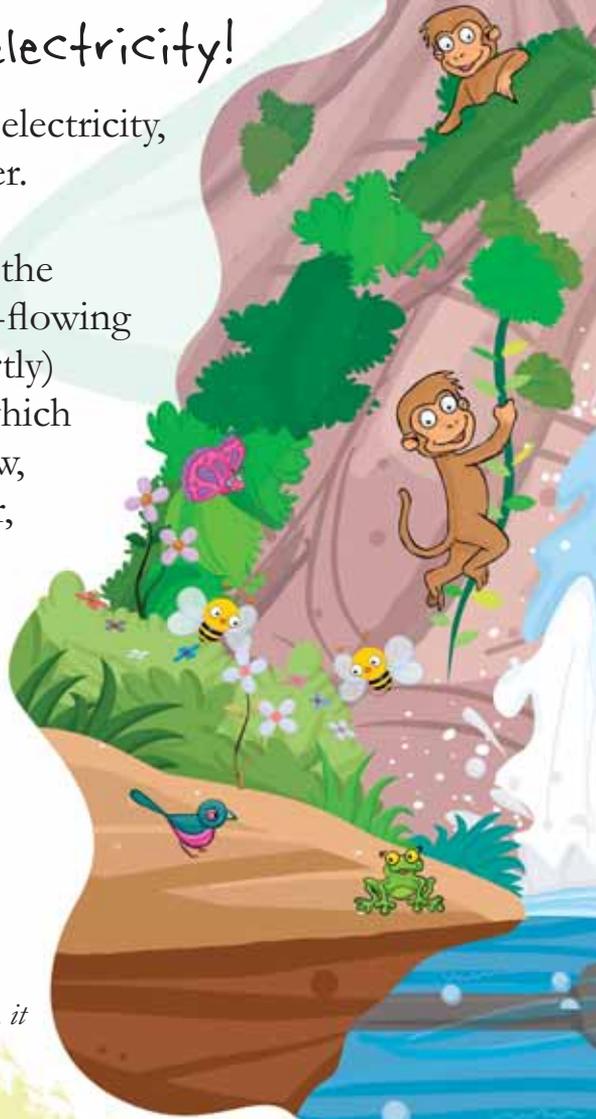


Human beings have been using the power of water for thousands of years to turn a paddle wheel to grind grain. Today, water is the most commonly used renewable energy source to generate electricity.

Waterfall to electricity!

Hydropower, or hydroelectricity, is generated from water. A hydropower plant is usually constructed in the mountains, where fast-flowing rivers are diverted (partly) into reservoirs from which water is allowed to flow, in a controlled manner, through turbines. The turbines spin a generator that produces electricity. The water, after passing through the turbines, flows back into the river.

When water falls from a height, it spins the blades of a turbine.



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