# Renewable Energy

## Comprehension Activity

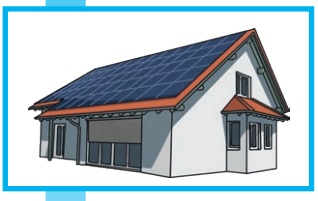
### What is renewable energy?

Renewable energy is energy that comes from sources that are easily made or naturally replenished (restored). We can't run out of renewable energy sources. Renewable energy includes solar, geothermal, wind, hydropower and biomass.

Biomass is an organic form of energy. It comes from plants, waste, wood and any other organism that was alive or once-alive. Because biomass energy sources deplete (run out) if they are not replaced, it can also be a non-renewable source of energy.

### What is solar energy?

Solar energy is the light and heat that comes from the Sun. Solar energy can be collected and used as electricity to power lights, appliances, electronics and other things that use electricity. Solar energy is collected by solar panels. Solar panels are big, black panels that are fitted to the roofs of houses and buildings to collect energy. They are becoming very popular in sunny places. See if you can spot some next time you're going for a walk.



Australia will soon be home to the world's biggest solar farm. This is located in Tennant Creek, Northern Territory and is bigger than 20,000 soccer fields! This solar farm is currently being built and is said to be done in 2027.

### What is geothermal energy?

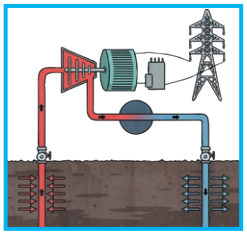
Geothermal energy is created from the heat inside the Earth. You can find it anywhere on the Earth's surface but sometimes you need to drill down through rock to find it.

### Why is using renewable energy sources better for our environment?

Natural gas, coal, petroleum, oil and uranium are all examples of fossil fuels that we burn to create energy. These sources of energy are called non-renewable because once they've been burnt, they're gone and do not naturally restore or fill up again. When we burn fossil fuels, we release harmful chemicals into the air and this is damaging to our environment.

Carbon dioxide is the greenhouse gas that is released when fossil fuels are burnt (or combusted) to create electricity. Extra carbon dioxide in the environment causes the greenhouse effect. The greenhouse effect is where our atmosphere holds on to too much thermal energy that causes the temperature of the Earth to increase. This is called global warming.

Renewable energy is sometimes called 'clean energy' or 'green power' because it does not release any pollution into the air or waterways. Because renewable energy naturally restores and doesn't pollute our environment, causing global warming, it is better for the planet.



Geothermal energy is created as radioactive elements in the Earth's core decay. It can be turned into electricity, used for bathing and used for heating.

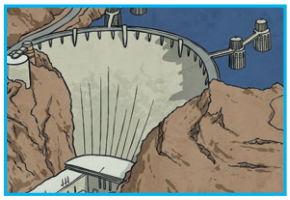
You can find the most active geothermal resources near active volcanoes. These volcanoes are found along major tectonic plate boundaries.

## What is wind power?

Have you ever seen those huge, white windmills? They are called wind turbines and they harness energy from the wind. Wind farms are lots of those white wind turbines together. The wind turns the blades of the turbine and this powers a generator in the base of the turbine and creates electricity. Wind farms can power entire villages. The bigger the turbine, the more electricity it generates.

The largest wind farm in the world is in China. It is called the Jiuquan Wind Power Base and has a whopping 7000 wind turbines. In Australia, the largest wind farm is currently being built. It is called the Macintyre Wind Farm. It is being built in Queensland and will have up to 180 wind turbines.

## What is hydropower?



Hydropower (or hydroelectricity) is also created using a turbine, like wind power. The difference is that, instead of wind, hydropower is generated through running water. The running water makes the turbine blades spin which powers the generator and creates electricity.

Australia's largest hydropower plant is in southern NSW and is called the Snowy Mountains Scheme. It is made up of 9 power stations and 16 major dams, all harnessing the power of water.

## What is biomass energy?

Biomass energy is energy that is created from living or once-living things. The most common biomass material used for energy is plants, wood and waste. Biomass energy can be burnt to create heat, converted into electricity and is the only renewable source that can be made into a liquid form, called biofuel.

Biomass energy relies on growing biomass feedstocks which are big farms that are grown to produce biomass energy.

## Why are non-renewable energy sources still used?

We still use non-renewable energy sources today. The most common non-renewable energy sources used are coal, natural gas, and petroleum. Because they generate more energy, can be stored and moved and are cheaper to convert into electricity than renewable sources, non-renewable energy sources are still very valuable and widely used.

# Questions

Please answer using complete sentences.

1. Sort the following energy sources into renewable and non-renewable using the table below.

**biomass** **coal** **natural gas** **water** **sun**

**uranium** **oil** **wind** **geothermal** **petroleum**

| Renewable | Non-renewable |
|---|---|
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2. What is the difference between renewable and non-renewable energy sources?

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3. Why is renewable energy called 'green power' or 'clean energy'?

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4. Finish these sentences:
   a) Energy that comes from water is called _____.
   b) Solar power is heat and energy that comes from the _____.
   c) _____ is a source of energy that comes from living or once-living things.
   d) _____ is created as radioactive elements in the Earth's core decay.
   e) Wind that turns a turbine, storing energy in a generator, is called _____.

5. Why do we still use non-renewable energy sources today?

_____

_____

_____

6. Why do you think Tennant Creek was chosen to be the site of the world's biggest solar farm?

7. Think about your own home and family. What kinds of energy do you use for day-to-day living?

8. Finish the visual dictionary. Draw a picture to match the energy with its source.

| Solar | Geothermal | Hydropower | Windpower | Biomass |
|---|---|---|---|---|
| | | | | |