

Lesson 5: Green Energy

- I can describe energy types and energy sources.



True or False?

Tick the correct answer.

Energy Source	Non-renewable	Renewable
Solar		
Oil		
Coal		
Wave or tidal energy		
Hydro-electric power		
Gas		
Wind		

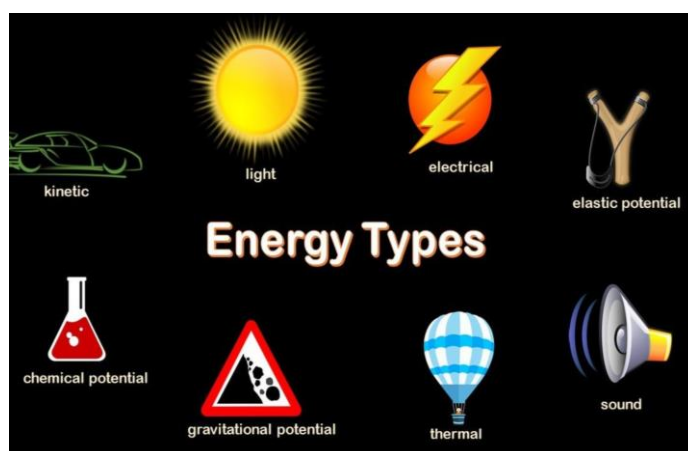


Energy

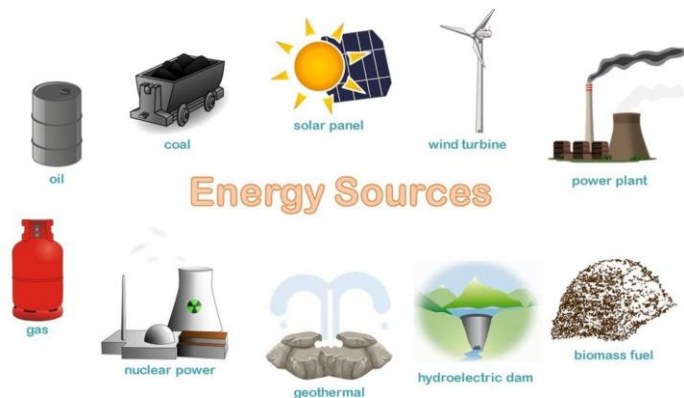
What is energy and where does it come from?

Energy is what enables everything to happen. From the smallest blink of an eye to brilliant output of the Sun, nothing would happen without energy.

There are **eight different types of energy**: kinetic (movement), light, electrical, thermal (heat), sound, elastic potential, gravitational potential (falling) and chemical potential. The potential energies are stored forms of energy.



Energy types can transform from one type into another. For example, when you flick on a light switch, you transform electrical energy into light and heat energy.



Energy cannot be created out of nothing, so we need some method to generate energy. An **energy source** is a method of generating energy. These are important for generating large amounts of energy in a form that is useful.

There are many different energy sources (methods of generating energy, not types of energy). An energy source will transform one energy type into another.

We can categorise energy sources into two groups: renewable and non-renewable.

Non-renewable resources require a fuel to be supplied to generate energy and can be used as long as the fuel can be supplied.

Renewable energy resources can be used again and again indefinitely.

Renewable



Non-renewable



Power stations burn fossil fuels to generate energy. The chemical potential energy stored in the fuels is transformed into electrical energy.

Biomass fuel is made from dead things like **plants, wood, and manure**. This is then burned to generate energy. The chemical potential energy is transformed into electrical energy. So long as we plant new trees when we cut others down, these resources will always be available. It is a sustainable fuel and is therefore classified as a renewable energy resource.



Similarly, **tidal power** is used to generate energy. In the River Thames in London, there are barriers across the mouth of the river. When the tide moves in and out, the water moves through generators. Kinetic energy is transformed into electrical energy.

Solar cells convert sunlight into energy through the cells in the panels. Solar cells even give energy to satellites which orbit the Earth. Solar panels transform light energy into electrical energy, and they are renewable even if they can only generate energy during the daytime.



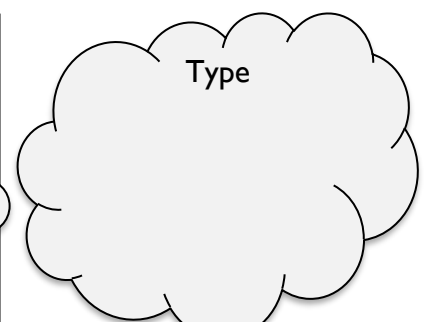
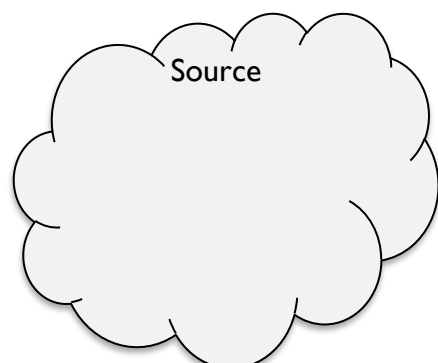
Solar heaters use the sunlight to heat water. A pump pushes cold water from a storage tank through pipes in the solar heater. Here, no transformation takes place. However, thermal (heat) energy is transferred from one place to another.



Source of energy vs Type of energy

What is the difference between a source and a type of energy? Watch this video to find out:

<https://developingexperts.com/s/unit-library/units/223>



**Describing an Energy Source**

Choose an energy source example and complete the info sheet below.

Energy Source Info Sheet

Name of energy source:

Explain how it generates energy.

Picture:

Name the energy types it takes in.

Name the energy types it gives out.

Give an advantage of using this energy source

Give a disadvantage of using this energy source
