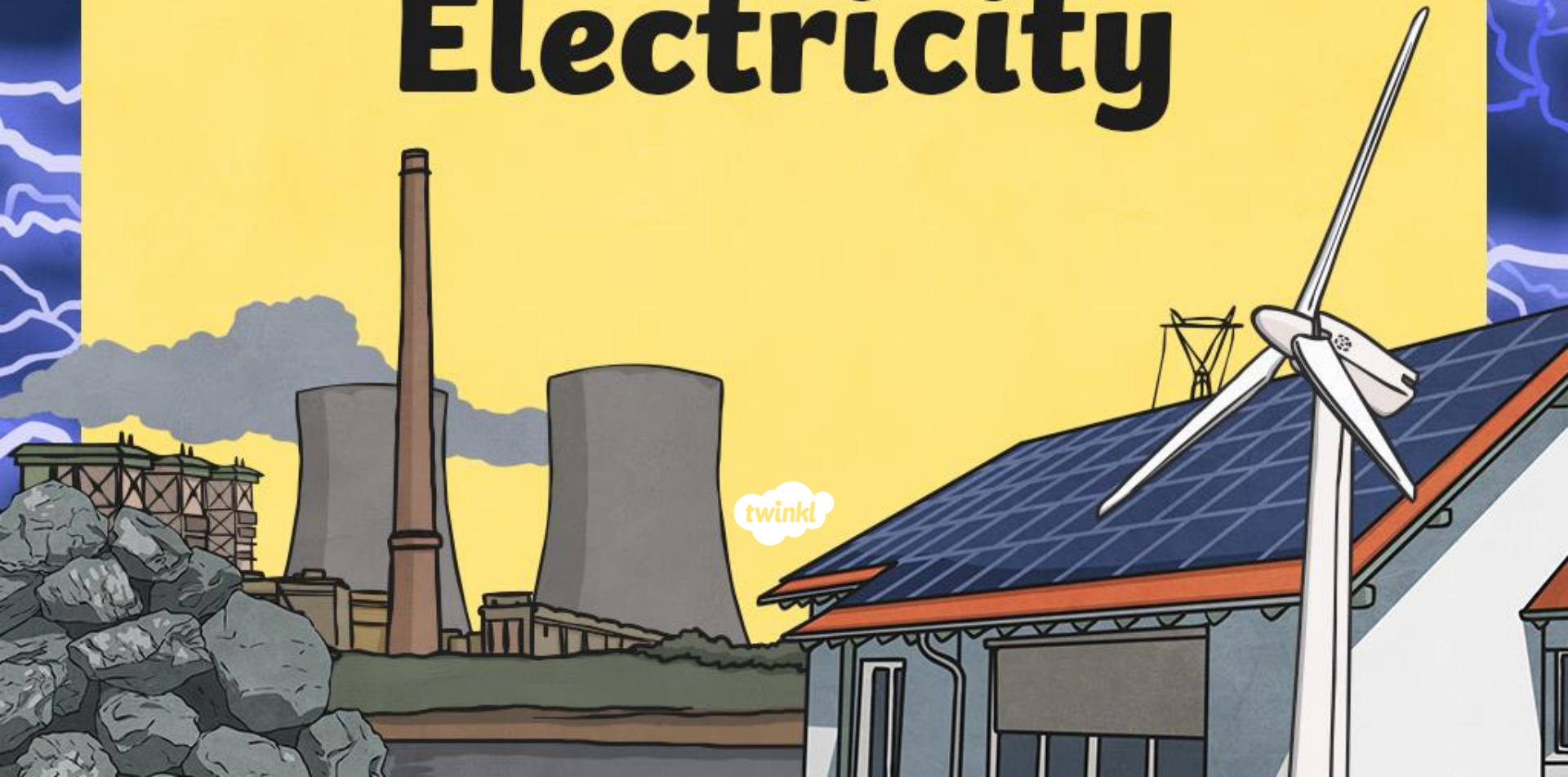
Exciting Electricity

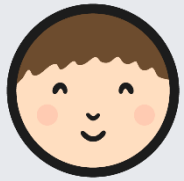


What Makes It Work?

Whole Class

Look at these pictures. Think about what all the items have in common. How do they all work?

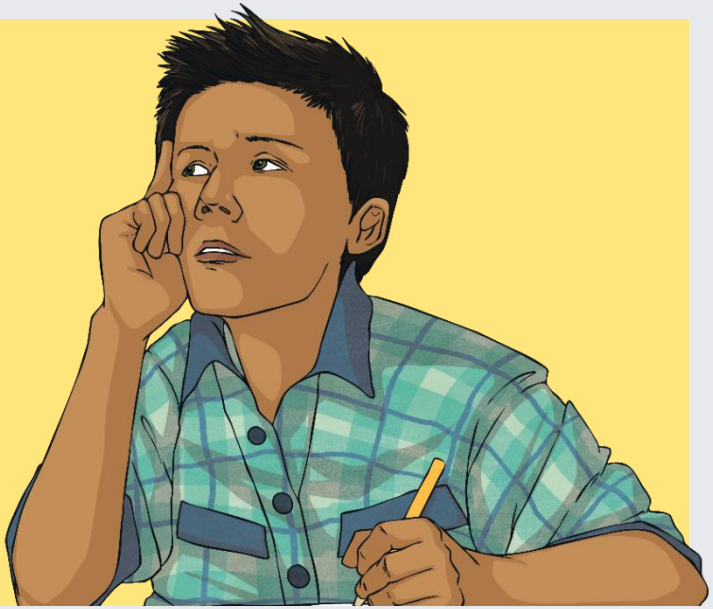
Electricity



All of the items shown on the previous slide are powered by electricity. Electricity makes them work.

What do you know about electricity? Create a mind map to show what you already know about this topic.

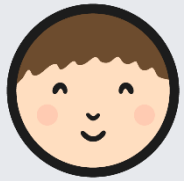
Can you think of any questions you would like to find out about electricity?



Think about:

- Where electricity comes from;
- How switches work;
- Which materials allow electricity to flow through them;
- Some items that use electricity to work.

Electricity



Mind Map

Draw or write about the things you already know about electricity.

Where does electricity come from?

How do switches work?

Which materials let electricity flow through them?

Electricity

Which items need electricity in order to work?

How can we use electricity safely?

How does electricity occur naturally?

Do you have any questions about electricity? What would you like to find out? Write your thoughts below.

What is Electricity?

Definition:

When we refer to **electricity**, what we usually mean is **electric current**, which is the **flow** of **electric charge.**

Electricity occurs naturally. Some examples include:

Lightning

Static electricity

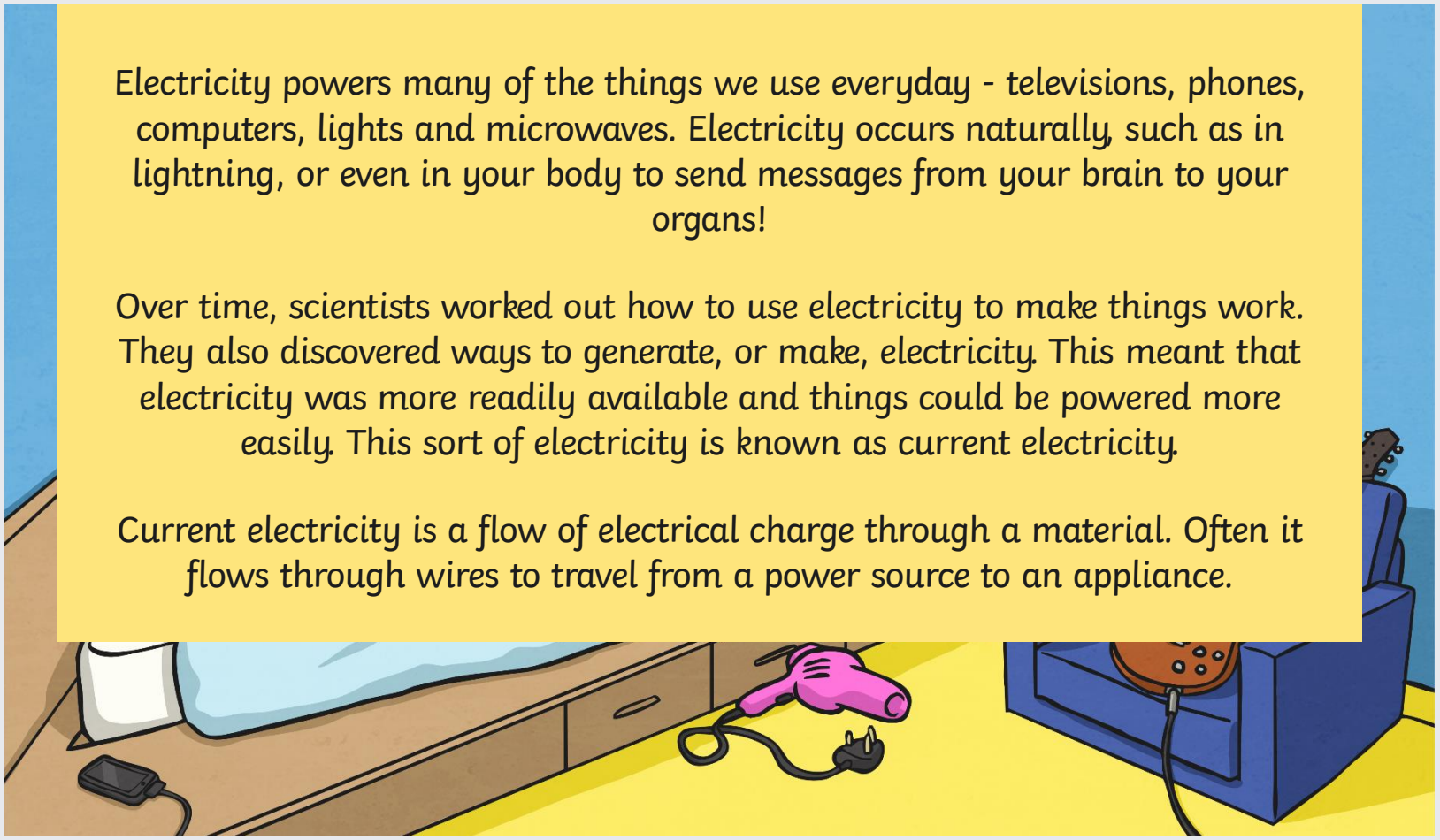
Bioelectricity is produced in living things, such as electric eels

What is Electricity?

Electricity powers many of the things we use everyday - televisions, phones, computers, lights and microwaves. Electricity occurs naturally, such as in lightning, or even in your body to send messages from your brain to your organs!

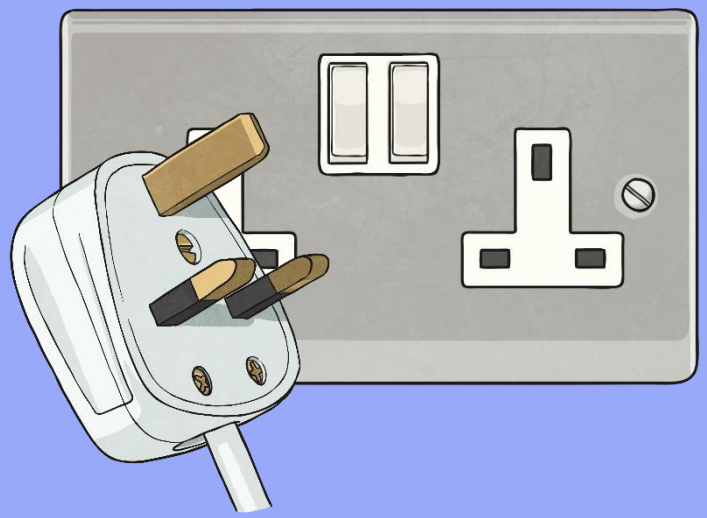
Over time, scientists worked out how to use electricity to make things work. They also discovered ways to generate, or make, electricity. This meant that electricity was more readily available and things could be powered more easily. This sort of electricity is known as current electricity.

Current electricity is a flow of electrical charge through a material. Often it flows through wires to travel from a power source to an appliance.

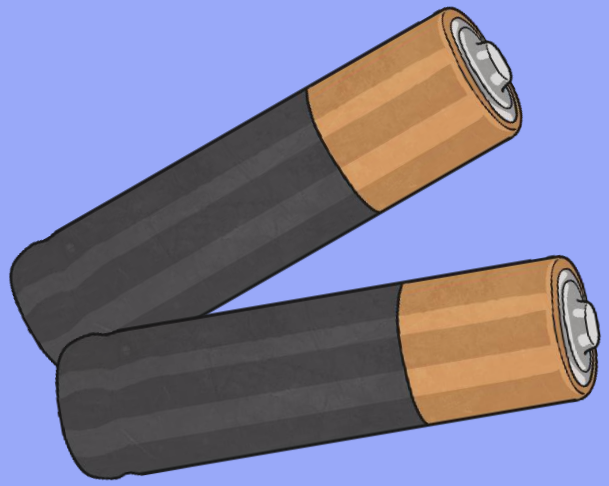


What is Electricity?

There are two types of electrical current that we use to power appliances:



Mains electricity: which is an **alternating current (AC).**



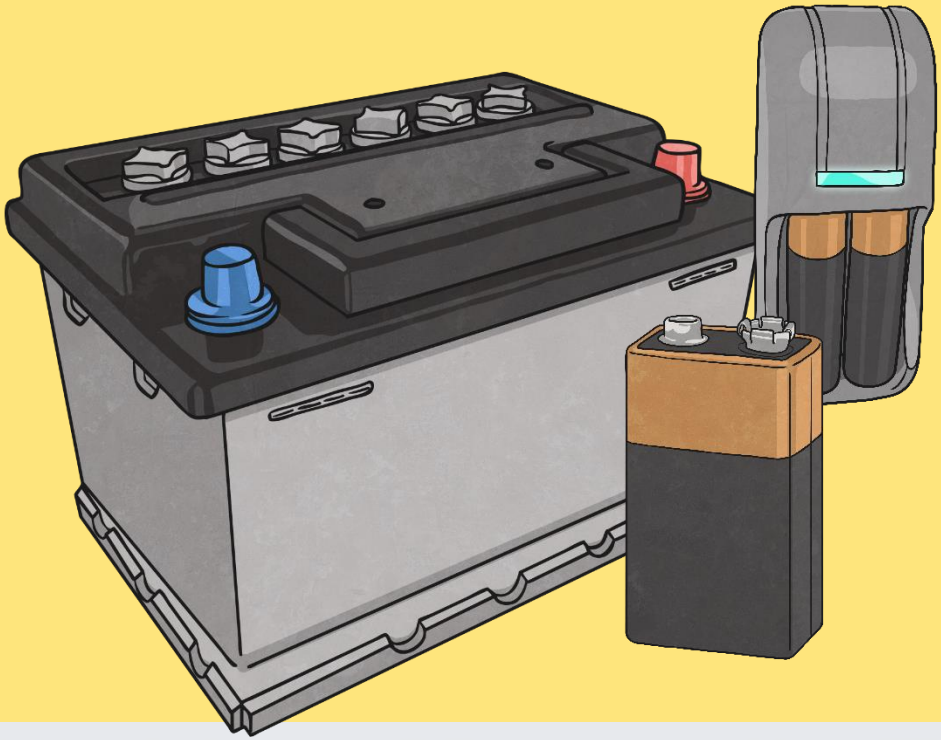
Batteries: which generate a **direct current (DC).**

Where Does Electricity Come From?

An energy source is a way of powering something.
Electricity is a secondary energy source. This means it is made from primary sources of energy.

Some primary sources of energy include:

- Coal
- Oil
- Natural gas
- Wind power
- Solar power



Where Does Electricity Come From?

Since electricity is a secondary source of energy, it needs to be generated, or made, from a primary source of energy.

Fossil Fuels

Coal, oil and natural gas are fossil fuels. Burning them produces heat, which generates electricity.

Nuclear

This is the energy that is created when atoms are either combined or split, creating heat. This can be converted into electricity.

Hydro and Wind

Water is used in dams, and wind is used to turn windmills. These both generate electricity.

Solar

The sun's rays shine on special panels, which convert its energy into electricity.

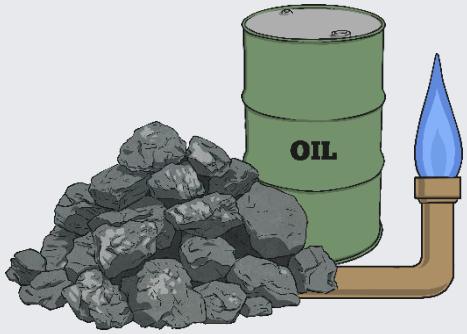
Geothermal

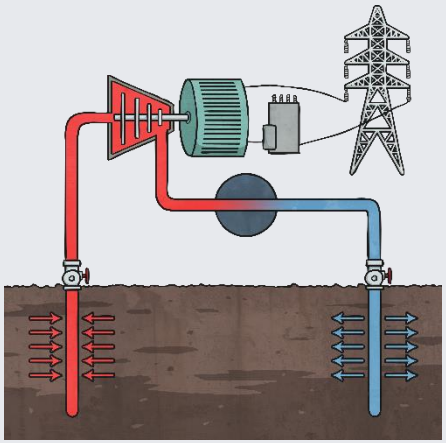
Geothermal energy is heat from the Earth, which can be converted into electricity.

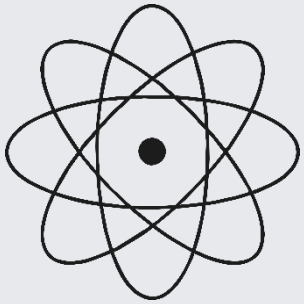
Where Does Electricity Come From?

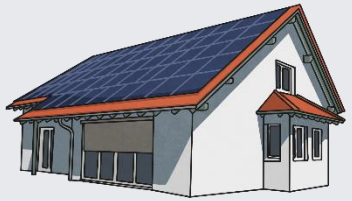
Can you match the images of the primary energy sources with their names?
Click each image to see which energy source it matches with.

Fossil Fuels | Geothermal | Hydro and Wind | Solar | Nuclear





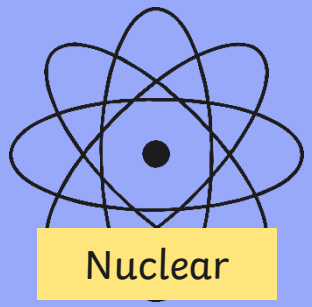




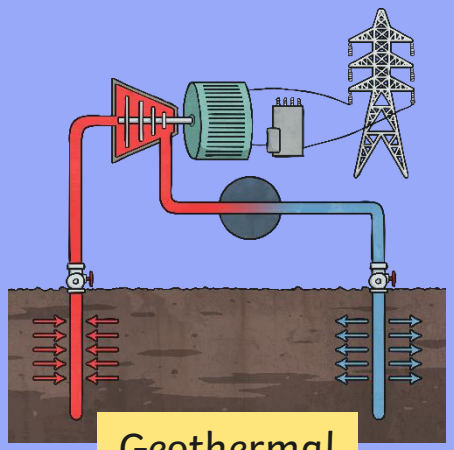
Where Does Electricity Come From?

Did you match the images with the energy sources?

Fossil Fuels



Nuclear

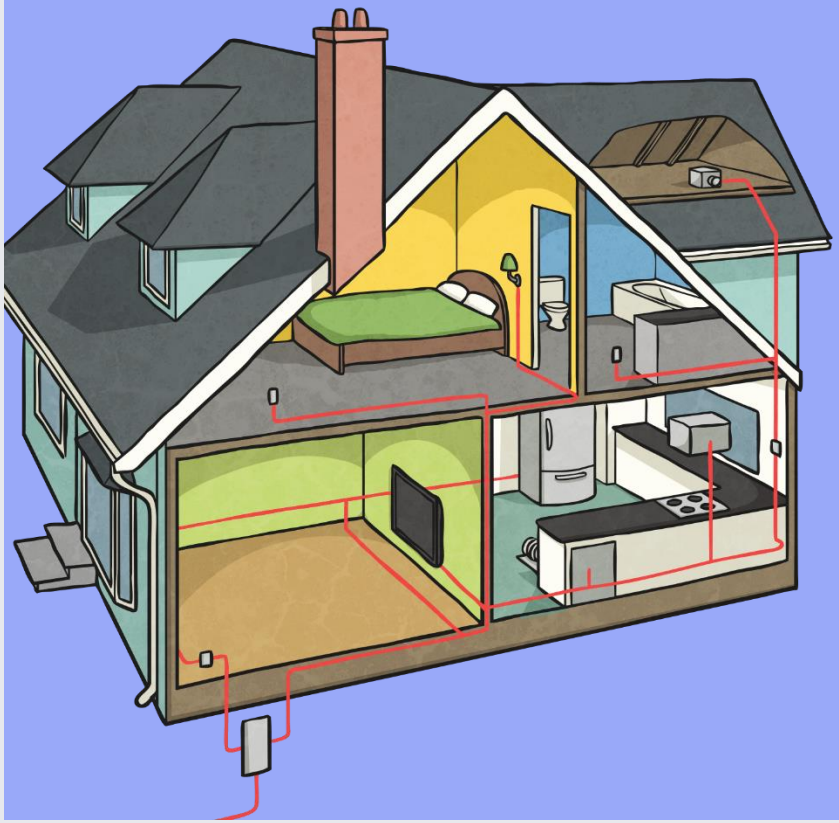


Geothermal

Hydro and Wind

Solar

Where Does Electricity Come From?

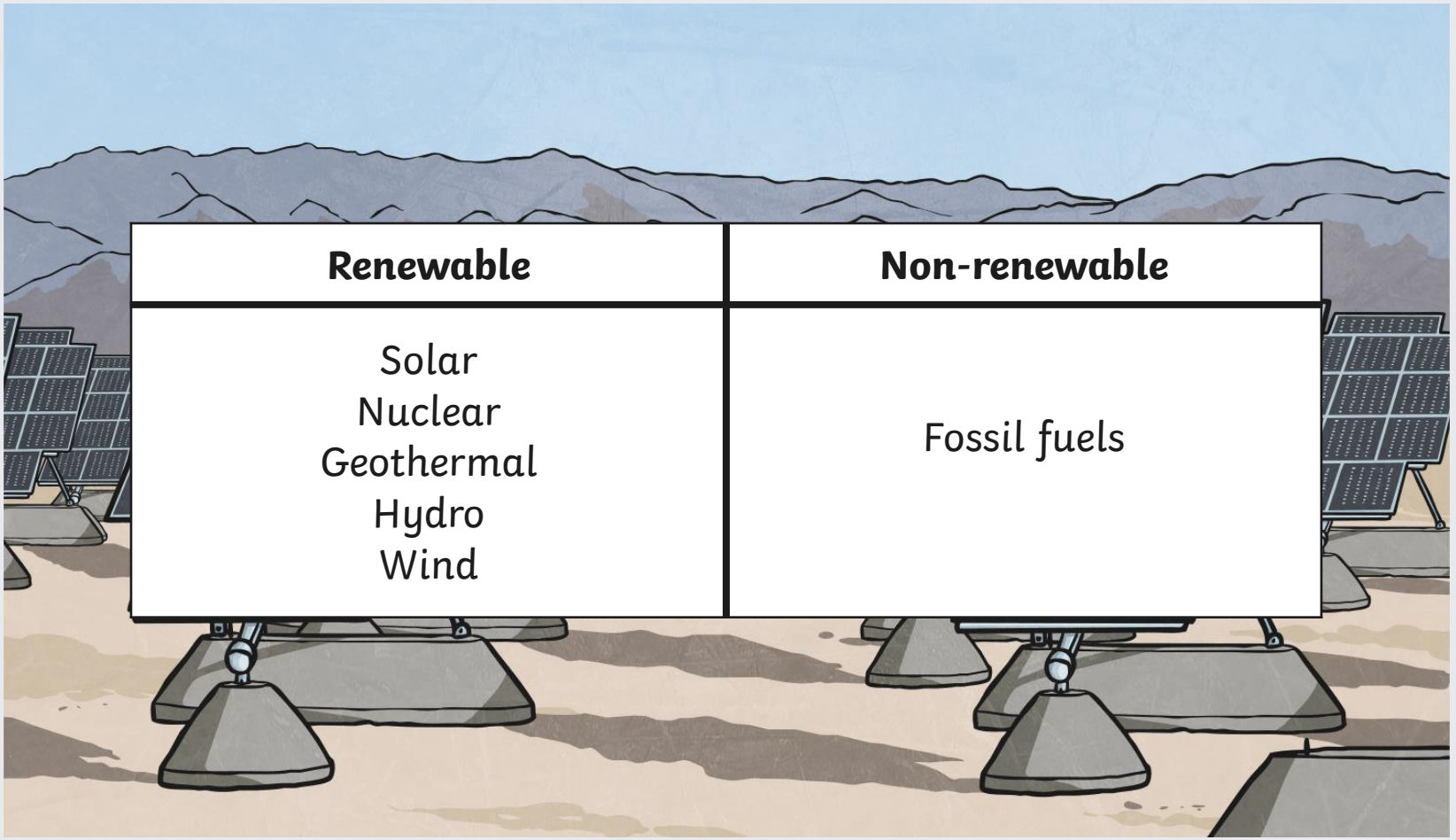


So there are several different ways of generating electricity for us to use to power our appliances.

Some of these methods of generating electricity are renewable. This means they will never run out, so we can use them to generate electricity for ever.

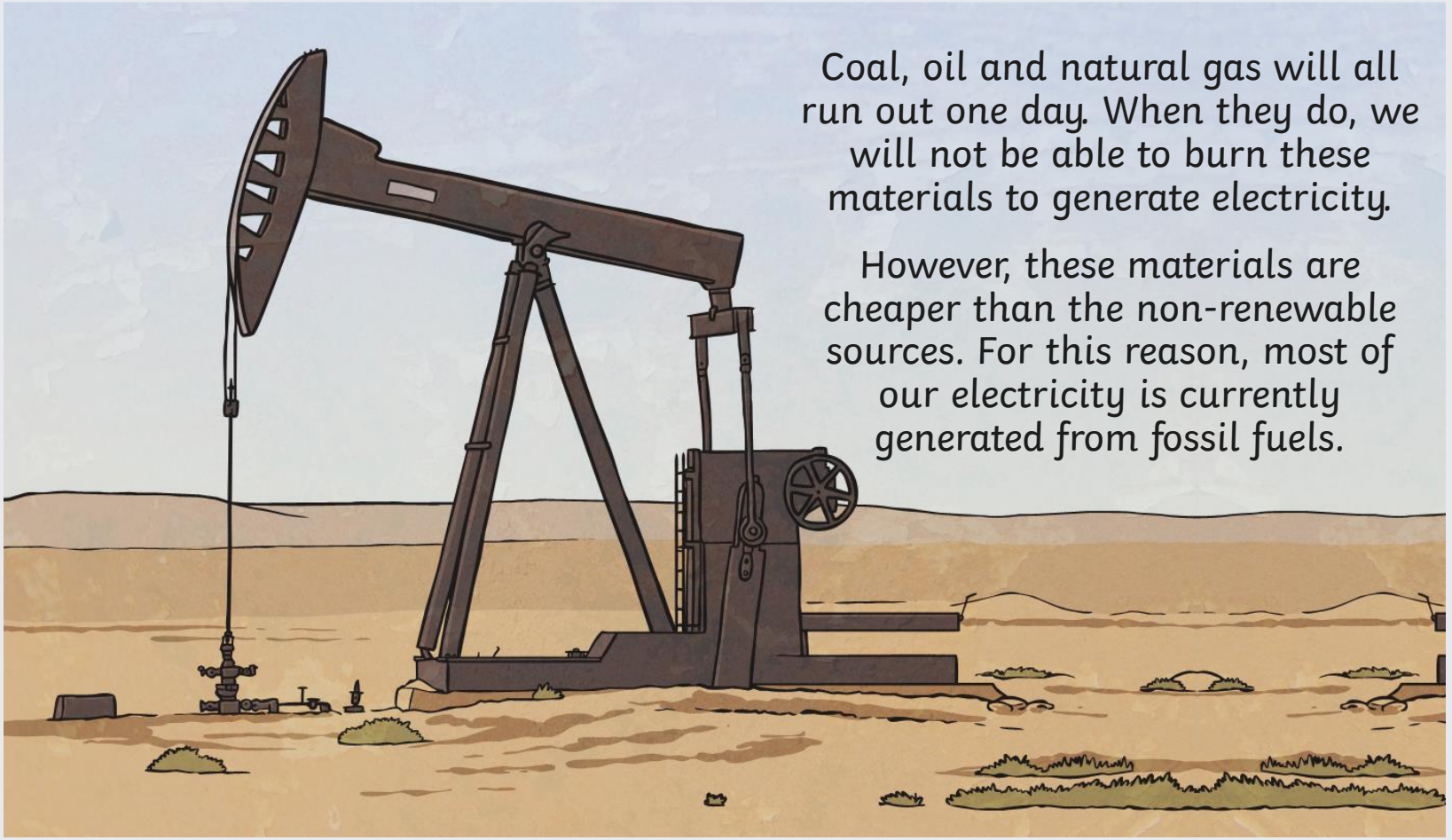
However, some methods are non-renewable. This means that they will run out, and when they do we will not be able to use them to generate electricity.

Where Does Electricity Come From?



Renewable	Non-renewable
Solar Nuclear Geothermal Hydro Wind	Fossil fuels

Where Does Electricity Come From?



Coal, oil and natural gas will all run out one day. When they do, we will not be able to burn these materials to generate electricity.

However, these materials are cheaper than the non-renewable sources. For this reason, most of our electricity is currently generated from fossil fuels.