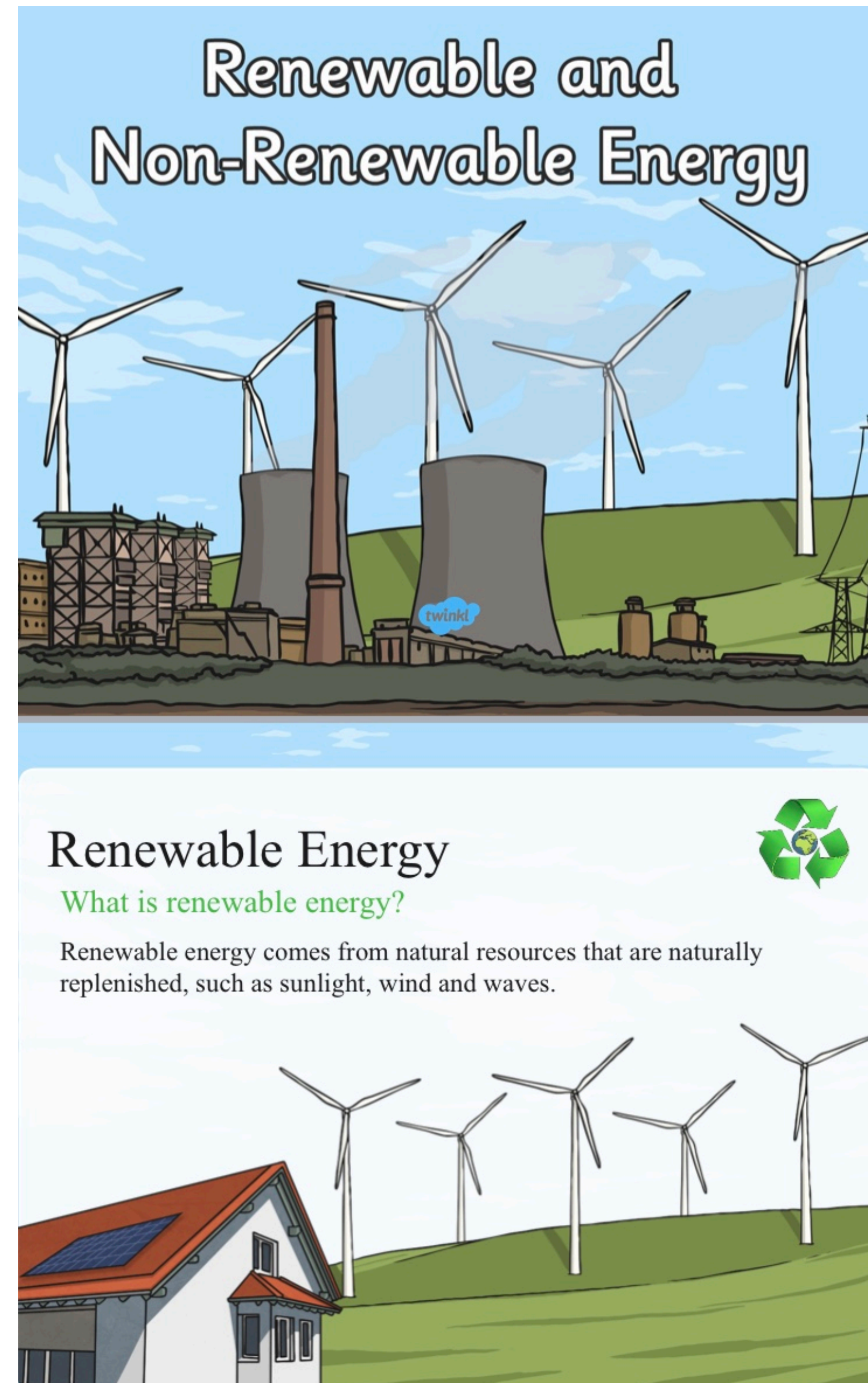


# **Science: Renewable energy**

**Week 5**

**Let's learn: We've learnt about hydropower; now let's explore all renewable energy sources...**





# Non-Renewable Energy



## What is non-renewable energy?

Non-renewable energy comes from natural resources that are not naturally replenished, such as oil and coal.



## What Do We Use Energy For?



Gas is used to heat our homes, water and to cook our food.

We need energy to power our cars. We use diesel, petrol or electricity for fuel.



We use electricity to power lots of things, such as lights, televisions and computers.

## Why Don't We Use Renewable Energy All the Time?

- Renewable energy, such as wind or sunshine, can't be stored to be used whenever we need it.
- If the wind doesn't blow, or if it isn't very sunny, then there may not be enough power for everyone.
- Non-renewable resources, such as oil or coal, can be stored and used when they are needed.
- Non-renewable energy is usually cheaper than renewable energy, which means not everyone can afford to use renewable energy.



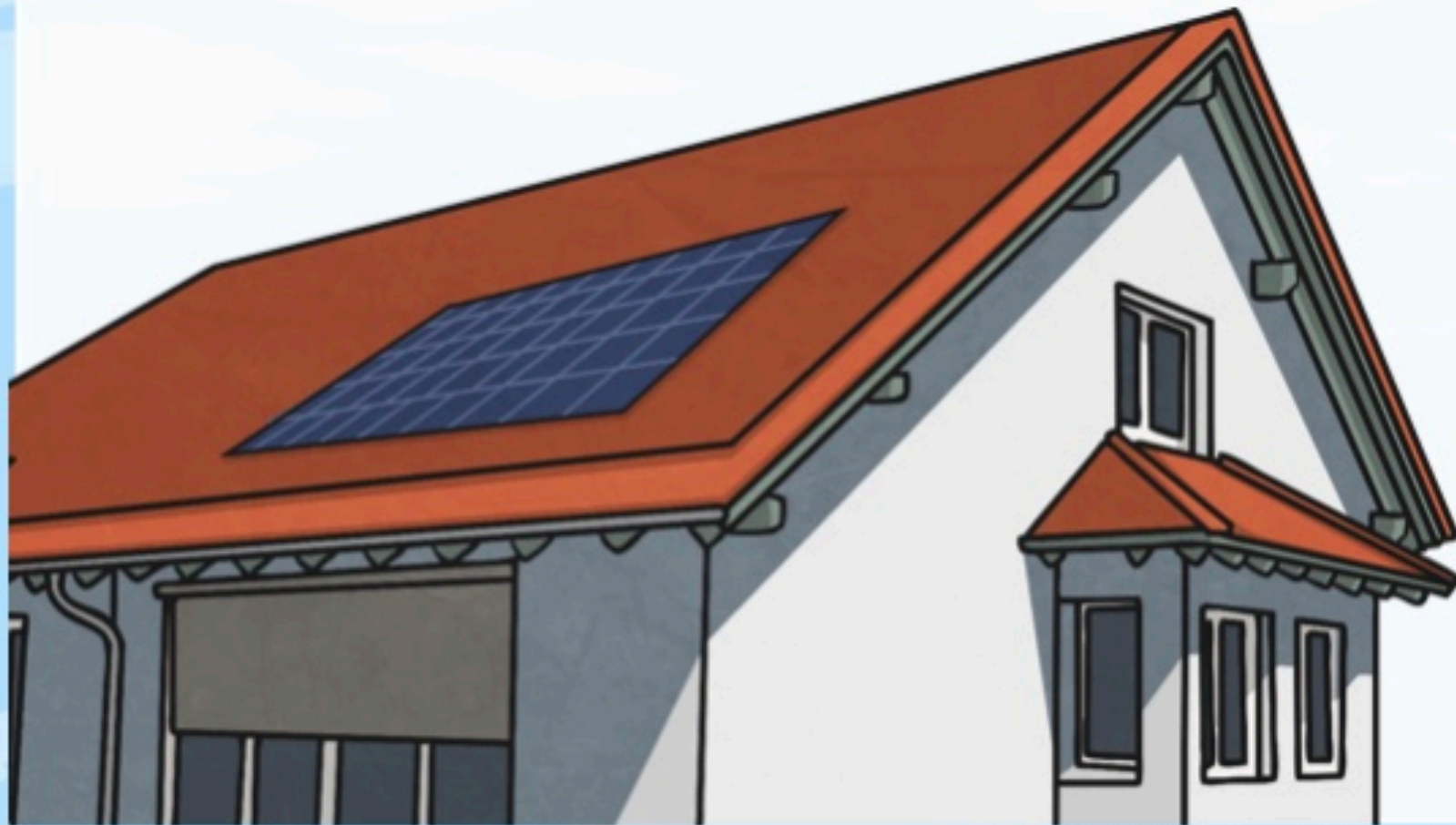


# Solar Energy

Solar energy comes from the sun.

The Sun can be used to give us heat energy.

Solar panels are used to convert sunlight into electricity.



# Hydropower Energy

Hydropower is energy that comes from moving water.

Water that flows down fast-flowing rivers is used to spin turbines that generate electricity.

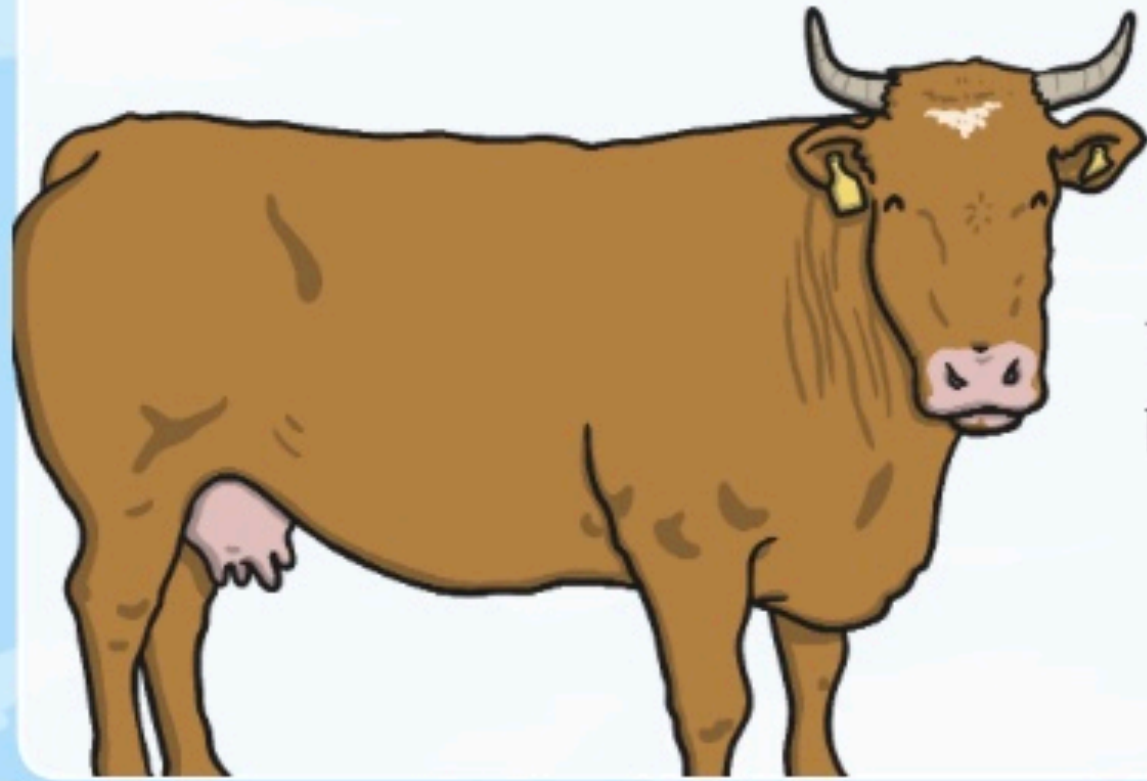
The movement of big waves at sea can also be used to generate energy.





# Biomass Energy

Biomass means 'natural material'. Energy can be obtained by burning natural waste materials such as scrap pieces of wood, dead trees and unused parts of crops.



You can even burn the gas produced by cow manure to make energy.

# Nuclear Energy

Nuclear power stations use uranium as fuel to make electricity. Uranium is a natural resource taken from the ground so it is not renewable.



Nuclear power doesn't produce much waste so it is a very clean way of generating energy.





# Gas Energy

Natural gas is found deep underground and is pumped into our homes. We use it to cook and burn it in a boiler to heat our water.

The gas that we pump from underground will one day run out and there won't be any left to use.



# Oil Energy

Oil is found deep underground and pumped up to the surface for us to use.

Oil is burned at some power stations to make electricity and is also used to make fuel which we use in our cars.

If we keep using oil there will eventually be none left.





# Geothermal Energy



Geothermal energy is thermal energy generated and stored in the Earth.

It is always very warm underground, even if it is very cold on the surface.

We can collect heat from underground and use it to heat our houses.

The lava from volcanoes shows us how hot it is underground.



# Wind Energy



Wind turbines are used to convert wind energy to electricity.

The wind blows the blades around and this movement is converted into electricity.

A group of wind turbines is called a wind farm.



# Activity’: Can you now sort the advantages and disadvantages of renewable energy?

## Advantages and Disadvantages of Renewable Energy

Read each of the statements about renewable energy sources. Match them under the correct heading on the table to show whether the statement is describing an advantage or a disadvantage.

Renewable energy sources will not run out.	Wind turbines can only be used if the weather conditions are suitable.
Solar panels are cheap to maintain.	Renewable energy sources are clean to use as there are fewer greenhouse gas emissions.
Hydroelectric systems can harm environments and wildlife.	The technology required is often expensive to purchase.
Unused energy produced by households can be sold back to the main national grid.	Usually, the energy is produced at a slower rate than when using fossil fuels.
Wind turbines can be very noisy.	Due to use of a stable source of energy, the cost of renewable fuels does not change much.
Renewable energy technologies could produce many jobs in the future.	Renewable energy technologies can be used on small or large scales - e.g. one house or an entire wind farm.
Not all places in the world can make use of renewable energy sources.	A lot of land is required to set up large scale systems to make enough electricity.

Advantages	Disadvantages