



Science

The Environment



Energy Experts



Aim

- I can take surveys and use the information to help answer a question.
- I can work in a group to investigate the answer to a question.

Success Criteria

- I can take a survey using a tally.
- I can use the results of the survey to answer a question.
- I can think of a way to teach people to use less energy.
- I can communicate my ideas to other people.

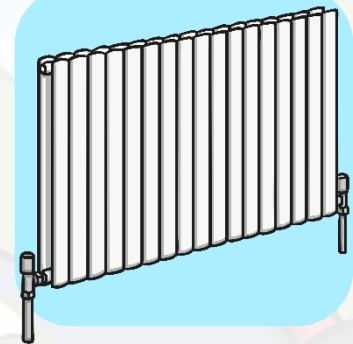
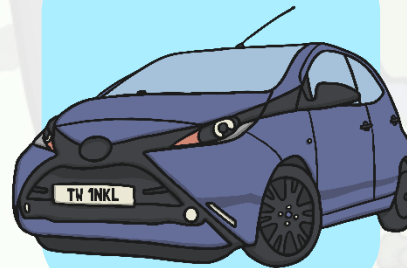
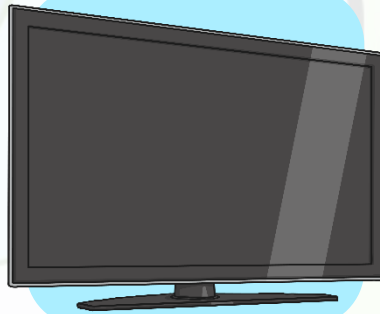
The Problem With Energy



Making Things Work

Many of the things we use in our daily lives need **energy** to make them work.

Here are some examples:



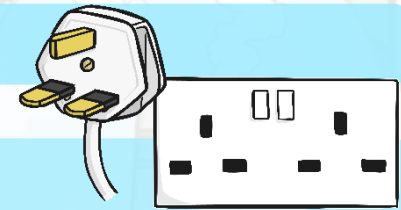
Can you think of any more?

The Problem With Energy



Making Things Work

Some of these things get their energy from **electricity**.



Do you know what these appliances do?



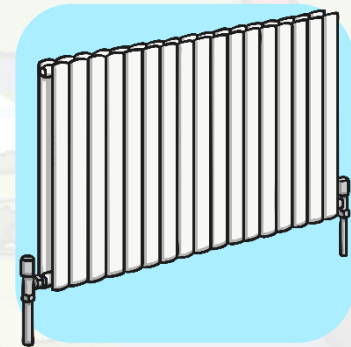
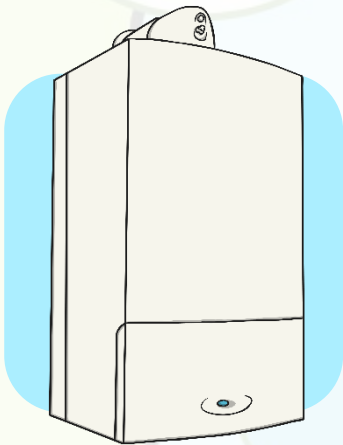
The Problem With Energy



Making Things Work

Some of these things run on **natural gas**.

Do you have any of these at home?

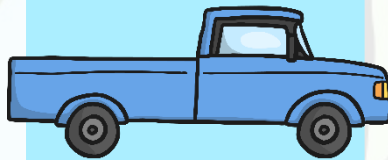


The Problem With Energy



Making Things Work

Some get their energy from **petrol** or **diesel**. These are both made from **oil**.



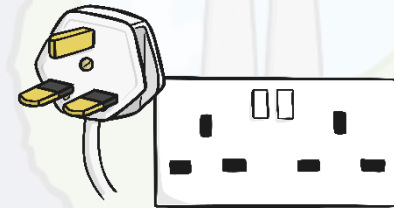
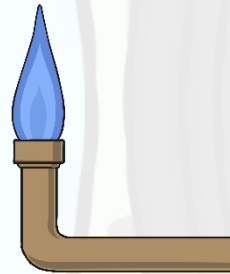
When was the last time you travelled in one of these?

The Problem With Energy



Making Things Work

Electricity, gas and oil are all sources of **power**. They give us energy to make things work



Think about how hard life would be without them!

Unfortunately, we have a problem...

So many of the things we use need energy and we are all using far too much!
This is causing **big** problems for the environment.

The Problem With Energy



Non-Renewable Energy

Most of our energy is made from burning **fossil fuels**, like oil, coal and gas. These were made under the earth millions of years ago. We get them from mining or drilling deep underground.

When they are used up, there will never be any more. This means that they are **non-renewable**.



Some of our energy is made in **nuclear** power stations.

Nuclear power is made from the metal **uranium**, which is also **non-renewable**.

The Problem With Energy



Non-Renewable Energy

Uranium, coal, oil and gas are all running out!

Scientists think that, if we carry on using as much energy as we do now, that there might be....

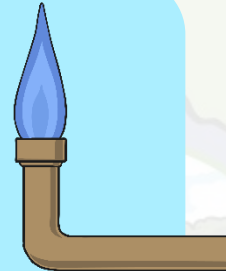
200 years worth of uranium left.



70 years worth of coal.



60 years worth of gas.



And only a 40 year supply of oil.



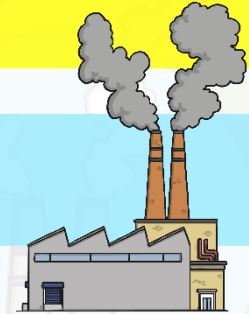
What do you think will happen when they run out?

The Problem With Energy



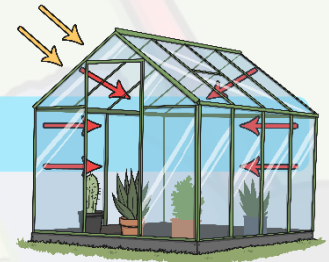
Climate Change

Nearly all of the energy in the world is made by burning the fossil fuels coal, oil and gas.



Making energy from fossil fuels releases greenhouse gases into the atmosphere.

Greenhouse gases are causing **climate change**.



Can you remember what we mean by climate change?

The Problem With Energy



Climate Change

Here are some of the problems caused by climate change....

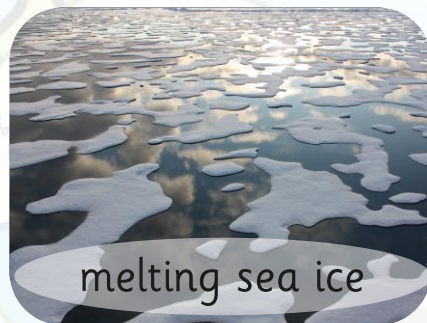


Photo courtesy of Anthony Quintano, U.S Geological Survey, NASA Goddard Photo and Video and Mark Hintsa (@flickr.com)-granted under creative commons licence-attribution

Solutions



What can we do to solve these problems? Do you have any ideas?

There are two main ways that people can help to solve these problems.

- Use renewable sources of power to make our energy.
- Cut down on the amount of energy we use.

Both of these things will help us to use less fossil fuels.



Solutions

Renewable Energy

Luckily, scientists have been working very hard to think of ways that we can make energy without burning fossil fuels. These ways of making energy are called **renewable energy sources**. Renewable means, unlike fossil fuels, they don't get used up. We can keep using them forever and they will never run out!



Also, renewable energy sources do not produce nearly so many greenhouse gases as burning fossil fuels. This means they help reduce climate change too!

Solutions

Solar Energy

Renewable

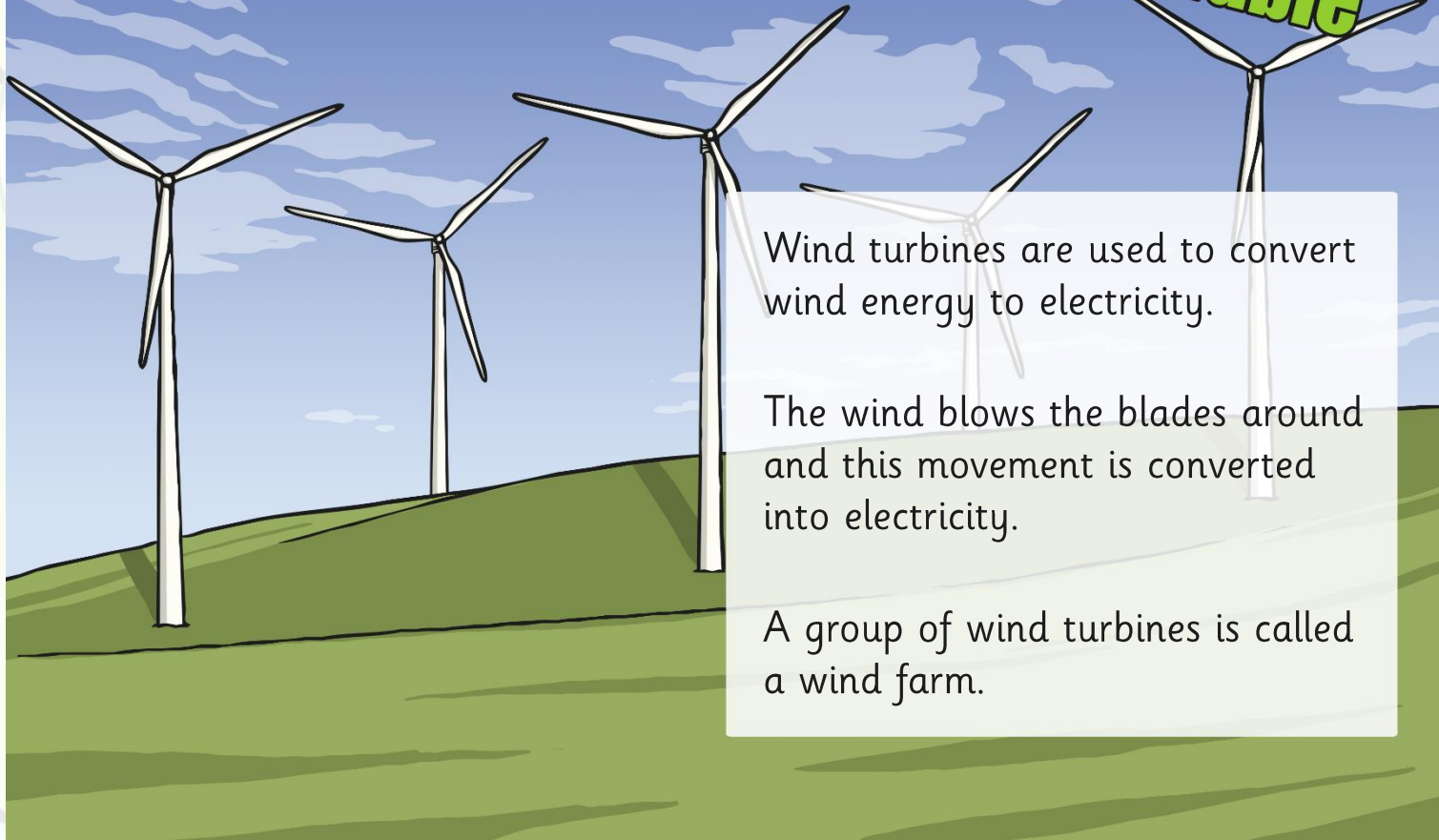
Solar energy comes from the sun.

The sun can be used to give us heat energy.

Solar panels are used to convert sunlight into electricity.

Solutions

Wind Energy *Renewable*



Wind turbines are used to convert wind energy to electricity.

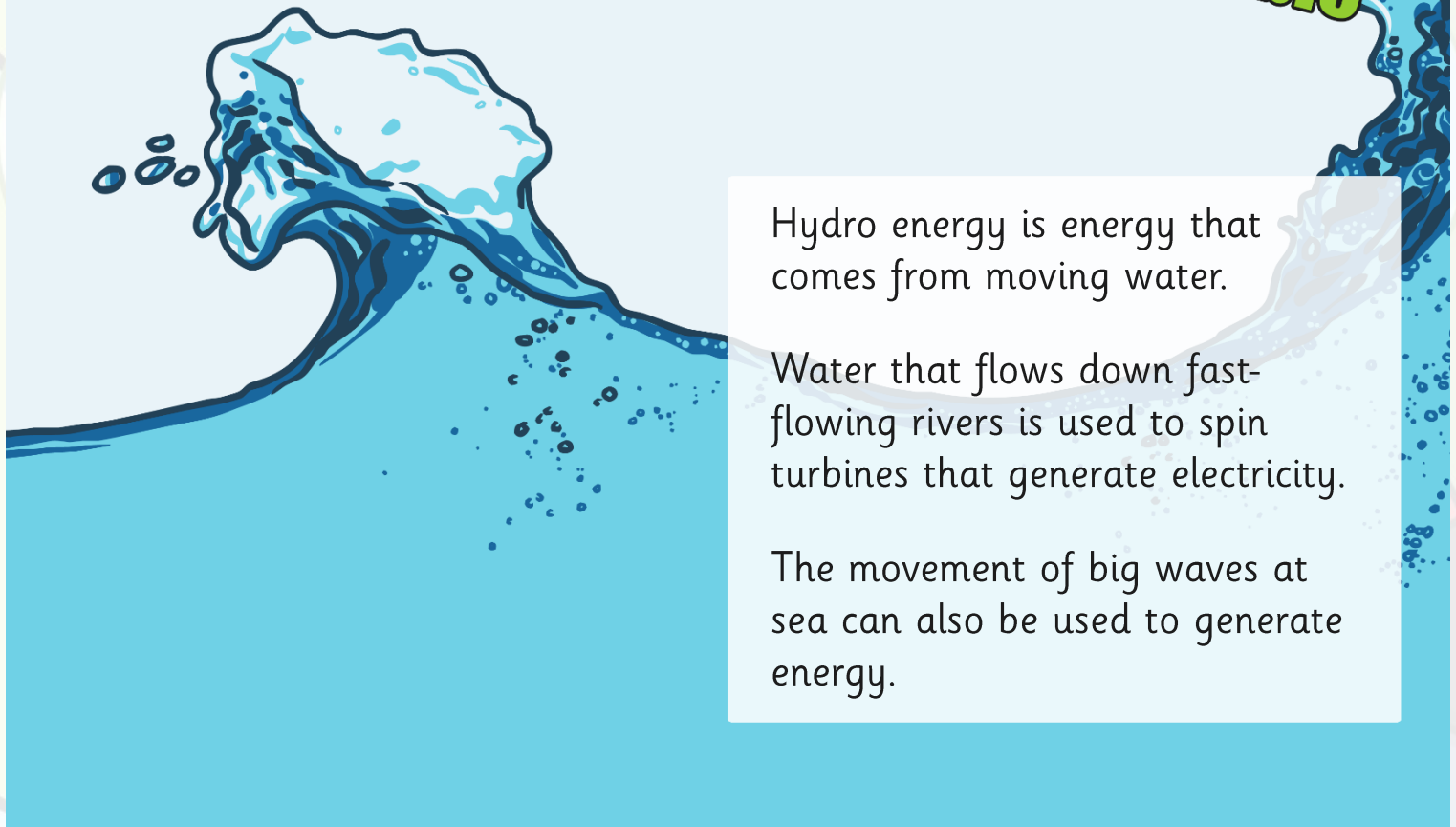
The wind blows the blades around and this movement is converted into electricity.

A group of wind turbines is called a wind farm.

Solutions

Hydro Energy

Renewable



Hydro energy is energy that comes from moving water.

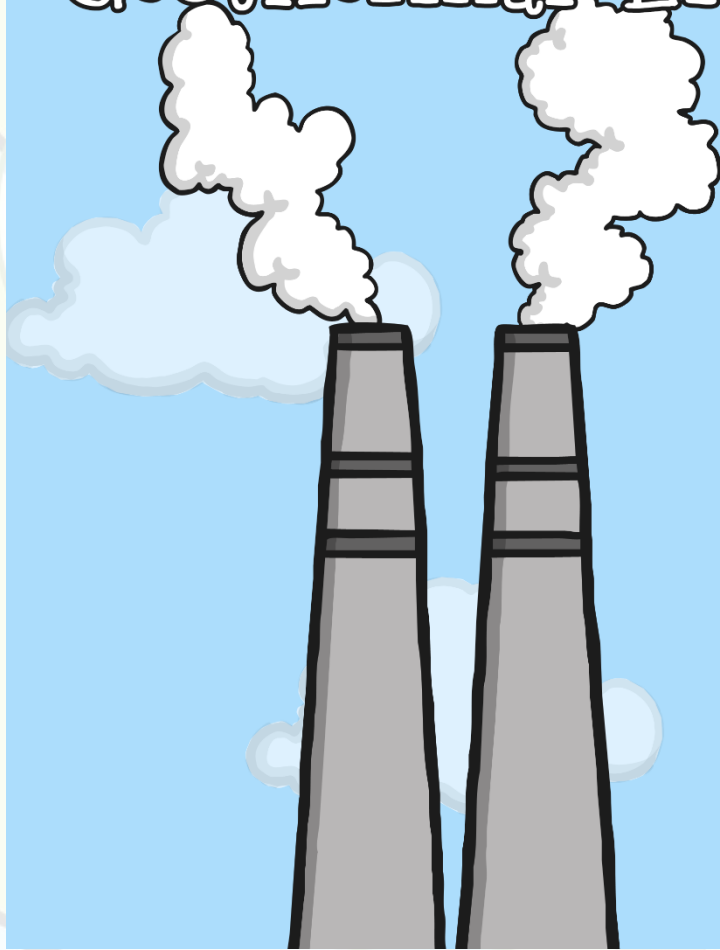
Water that flows down fast-flowing rivers is used to spin turbines that generate electricity.

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

Solutions

Geothermal Energy

Renewable



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.

Solutions

Biomass Energy *Renewable*



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

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

Solutions



Using Less Energy

While energy companies and scientists get to work on making more renewable energy, we can all help by using less energy.



Can you think of any ways that people can use less energy?

Solutions



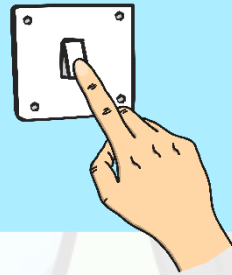
Using Less Energy

Here are a few ideas that can help you use less energy. Did you think of any more?

Read a book instead of watching television.



Turn lights off when you leave the room.



Turn off computers, televisions and games consoles when you are finished with them.



Wear a jumper instead of asking for the heating to be put on.



Walk instead of going in the car.



Energy Enquiry - Ideas



How could we try to teach people to use less energy?

Can we teach people to use less energy?

How would we know if we have done it?

Can we collect any information to help us find out?

Write as many ideas as you can think of.



Energy Enquiry - Ideas



First, we are going to count the number of lights and appliances that are left on in an area when it is empty. This called a survey. Our survey will tell us how good people are at switching off their appliances now.

Can we teach people to use less energy?

Next, in your groups, you are going to choose how you would like to teach people to use less energy. You could design a poster, a leaflet or a short presentation. It's up to you!

After you have taught people in your area about saving energy, we will go back and count the number of lights and appliances left on again. This will tell us if we have been able to make a difference in peoples' behaviour by teaching them to save energy.

Do you think that we will be successful?



Energy Enquiry - Survey



Energy Enquiry Survey Activity Sheet

Area Date of survey Time of survey

Look carefully around the room.

How many of these appliances have been left on while the room is empty?

Count them using a tally.

Appliance	Tally	Total
Lights		
Computers		
Projectors		
Heaters and radiators		
Other appliances		



Total number of appliances left on:

Energy Enquiry - Action



Choose how you want to persuade the people in your area that they need to get better at saving energy.

You could draw a poster, write a leaflet, or put together a short presentation. It's up to you!

As a group, make sure that you get the important information across.

Why do we need to save energy?

- Because we are running out of fossil fuels
- Because using so much energy is causing climate change.



Energy Enquiry-Survey 2



Energy Enquiry Survey Activity Sheet

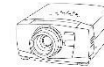
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Lights		
Computers		
Projectors		
Heaters and radiators		
Other appliances		



Total number of appliances left on:

Energy Enquiry -Conclusions



Look carefully at the results of your surveys.

Were you able to teach people to use less energy?

How do you know?

How can you use this information in the future?

Is there anything else that you have learnt?

Can we teach people to use less energy?



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