Non-renewable energy

Fossil fuels
Fossil fuels are oil, coal and natural gas.

They are the remains of ancient plants and animals, found underground.

These fuels are limited – one day they will run out.

Today, most of the UK's electricity comes from power stations that burn fossil fuels.

Burning fossil fuels creates 'greenhouse gases', such as carbon dioxide (CO_2), which are thought to damage the Earth's atmosphere.

Other types of pollution, such as acid rain, are also caused by these power stations.

Nuclear energy
Nuclear power generates electricity using dangerous substances as fuel.

The radioactive metal uranium gives off heat, which can be used to make steam to drive generators.

Nuclear power stations do not produce much pollution, but the waste they make can be dangerous to living organisms.

Research

1. What is climate change?

_____

2. What has it got to do with supplying energy?

_____

3. What is acid rain?

_____

4. Why are fossil fuels not renewable?

_____

5. Write down two disadvantages of coal as a fuel.

_____

6. In addition to burning it to make electricity, what else is oil used for?

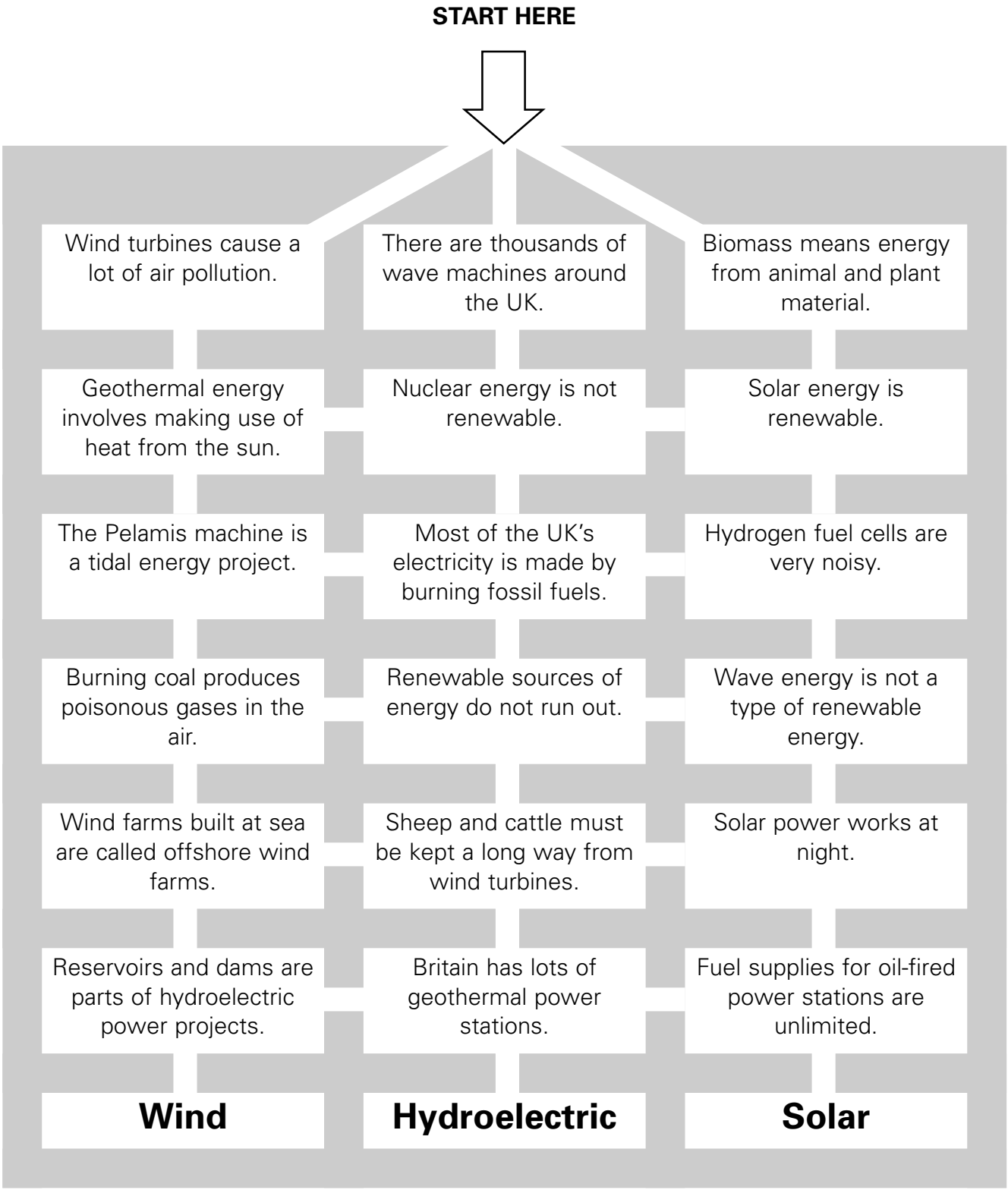
_____

7. Why are the UK's nuclear power stations all by the sea?

_____

The renewable energy maze

There is only one correct way through this maze – it follows all the **true statements**. Colour your way through the maze. Which type of renewable energy do you reach?



Compare types of renewable energy

Here are the eight types of renewable energy.

Wind Waves Solar Biomass Tidal
Hydroelectric Geothermal Hydrogen fuel cells

1. Which renewables depend heavily on the weather?

_____

_____

2. Which renewables can work on a small scale (e.g. to provide energy for just one building)?

_____

_____

3. Which renewables have the smallest effect on the environment?

_____

_____

4. Which renewable projects are very expensive to build?

_____

_____

5. Which renewables are the most suitable for the UK?

_____

_____

6. Identify the renewable (circle the answer).

a) It uses PV cells.	Hydroelectric	Solar	Biomass
b) It needs a supply of gas.	Fuel cells	Geothermal	Wave
c) It produces gas from rubbish.	Biomass	Wind	Hydroelectric
d) It uses heat from the Earth.	Fuel cells	Biomass	Geothermal

A mock public inquiry

When a large renewable energy project such as a new wind farm is planned for a particular place, there is always a chance for people to say what they think about the idea before it goes ahead.

Some people might agree with it being built there, and some people might object to it. If there is a lot of disagreement, there may need to be a **public planning inquiry** to decide whether to build it or not.

What to do

1. Read the box about public planning inquiries. Your class is going to hold a mock (pretend) public inquiry to decide if a new wind farm should be built on hills close to a village in the countryside.
2. Your teacher will tell you which side you are on: for or against.

   I am _____ the new wind farm.
3. You must work as a team to convince the commissioner (your teacher) that you are right.
4. You need to write a short written statement (50 words) to sum up your three main arguments. Also think of what you will say to support your arguments.
5. You can also collect pictures, facts or other information to help you convince the commissioner.

Public planning inquiry

- It is a meeting to decide if a project or building should be built in a particular place. It is like a court in some ways.
- There is one person in charge – the **commissioner**.
- Each side (the people for and against the plans) reads out a **written statement** explaining their views.
- Anybody else at the meeting can also speak to give their **opinions.**
- The two sides can call **witnesses**, e.g. experts who can say whether the chosen site is the best place for the planned project. These people can be questioned.
- **Documents**, containing **evidence**, can be given to the commissioner by each side.
- The commissioner reads out a summary of evidence then **decides** whether the plans should go ahead or not.

Our three main arguments

1.

_____

2.

_____

3.

_____

Renewables and the environment

1. Draw lines to match each type of renewable energy on the left with the boxes that show how the environment is affected. You may match each renewable with more than one box.

Wind energy

Wave energy

Solar energy

Hydroelectric energy

Biomass energy

It is very visible, even from a distance. It could spoil the landscape for some people.

It does not have a bad effect on wildlife.

It blends in well with surroundings and does not spoil views.

There is some air pollution.

It is a very clean source of power. It causes almost no pollution.

Building the project could have a big effect on animal and plant habitats.

It is a very quiet technology.

It uses up a lot of land.

2. Write down which renewable you think is best for the environment. Explain why.

_____

_____

_____