

# Energy

# 6

## Our main ecological challenge today is how to use energy sources to make electricity without harming the environment.

### AIM

By the end of this Report, you should be able to describe how we use energy, where we get it from and what we can do to minimise the impact on the environment.

### WHERE IS ENERGY USED?

In the UK, we have energy supplied to our homes – about 30% of the total energy the UK uses goes to people's houses. Lots of our energy goes into industry and businesses, allowing them to grow, and we have the energy available to travel extensively as well.

If we didn't have this energy, the country would be much worse off. For example, we take electricity for granted, but much of the world still doesn't have access to it. This means no electrical machines at home to improve your way of life, and not much opportunity for business and industry to flourish. In this country we are very lucky.



Unfortunately, this energy use comes at a cost to the environment.

We get most of our energy from the Chemical Energy stored in **fossil fuels** – coal, oil and gas. Most of our power stations use one of these, so our electricity comes from these too. Fossil fuels were formed over millions of years, but once we



take them out of the ground and burn them, they are gone. This means they are **non-renewable** and we will one day run out.

The other problem with fossil fuels is that when you burn them to get the energy out as heat, **Carbon Dioxide (CO<sub>2</sub>)** gas is given off. Many people argue that by doing this we are contributing to Global Warming, which is bad news. Even if we aren't and the CO<sub>2</sub> is naturally going up, too much CO<sub>2</sub> in the atmosphere will lead to different conditions on Earth and could mean larger deserts in some places and colder weather in others, higher sea levels, flooding and wind storms. Some scientists say that we are already seeing the effects of this, with many flash floods in the UK and warmer temperatures on average last year. So it's up to us to cut down on the amount that we release.

But this means cutting down on electricity production from fossil fuels! So what can we do?

# Task 1

## Cutting Down

In the UK, we all waste an awful lot of energy. From old, inefficient power stations on a big scale, right down to leaving plugs on and appliances on 'standby' instead of turning things off at the wall. But how much do people know about the importance of saving energy?

Take a survey of people you know.

Firstly, ask people if they think they ever waste energy around the home or at work and record the number of answers you get for 'yes' and 'no'. Then ask them how they think they could save energy. Make a list of the suggestions underneath your 'yes-no' tally.

# Task 2

## The Energy Crisis

Here are the fossil fuels, which are the main things we use at the moment that might run out:

**COAL**

**OIL**

**NATURAL GAS (METHANE)**

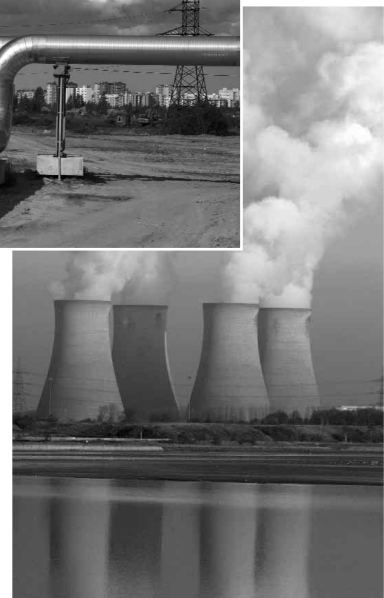
Write an article for a local newspaper explaining what we use each of these for, how long they will last unless we change and what will happen if we carry on using them up at the current rate.



## WHAT IS SUSTAINABLE DEVELOPMENT?

'Sustainable Development' is what the people looking into energy use really want. It means letting the world develop today as much as possible, without taking away the opportunity for development in the future.

- Using up all our coal **isn't** sustainable development, because in the future there won't be any coal to use!
- Making electricity using wind farms **is** sustainable development, because there will always be wind and so people will always be able to do this.
- Cutting down all of our forests to fuel power stations **isn't**, but designing forests that re-grow at the same rate they are cut down **is**.



## THE DIFFERENT WAYS TO MAKE ELECTRICITY

The main energy concern today is our electricity production – how can we do this without harming the environment or running out?

Let's look at the different ways to generate electricity. There are many different types of power station, some of which we use a lot and some of which we don't use at all at the moment:

- COAL, OIL, and GAS POWER STATIONS
- NUCLEAR POWER STATIONS
- BIOMASS POWER STATIONS
- HYDROELECTRIC POWER STATIONS
- TIDAL POWER STATIONS
- WAVE POWER STATIONS
- WIND POWER STATIONS
- GEOTHERMAL POWER STATIONS

It is up to you to find out how each one works, and what its advantages and disadvantages are.

# Main Task

**Make a poster for your school. If you are in a team, make a whole wall display.**

- The title is 'THE FUTURE OF ENERGY'
- It should start with your work from Task 1 and Task 2 at the top.
- Do a big section on 'Making Electricity'. In this, describe how each type of power station on page 3 works, and give all the good things and bad things about each one that you can find.
- The next section should be about what types of power station are used at the moment in the UK.
- Do a Conclusion, which is your ideas on how the UK should generate its electricity in the future, in order to get all the energy it needs while looking after the environment at the same time – **SUSTAINABLE DEVELOPMENT!**

## fact

### **The UK is shutting down its Nuclear Power Stations.**

Because nuclear energy needs to have lots of safety precautions, nuclear power stations are not designed to stand forever. Our current nuclear power stations are reaching the end of their lifetimes.

In a few years, we will have none left unless we replace them.

There is a big debate at the moment – some say we should build new nuclear power stations, because they give off no CO<sub>2</sub> when they're running, others say we shouldn't because we don't know what to do with the nuclear waste.

## fact

### **How long have we got?**

Estimates are hard to make, but at the current use we have

#### **COAL**

(the most polluting): about **200 years.**

#### **GAS**

(the least polluting): about **70 years.**

#### **OIL**

(used in making electricity, diesel, petrol, plastic, and many more): between **25 and 40 years.**

**With fossil fuels running out and the continuing debate about nuclear power, what do you think should be the future of energy policy in the UK?**