# Key ideas about Energy

## Energy resources

Energy is needed to make things happen. There are different kinds of energy, such as **light energy** and **heat energy** that we get from the Sun, and **electrical energy**.

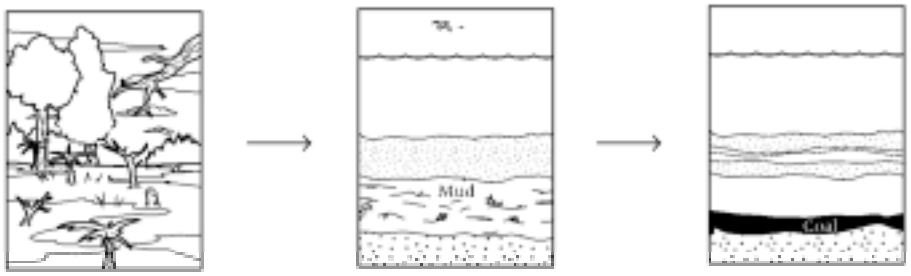
We need **fuels** to provide energy in our homes, factories and for transport. A fuel is something which can release heat energy.

### Fossil fuels

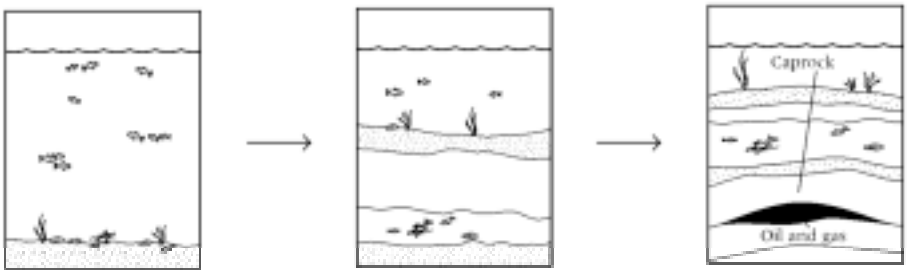
Fossil fuels:

- are made from plants and animals which were trapped in mud and rocks millions of years ago
- include coal, oil and natural gas
- are **non-renewable** (they take millions of years to form, and so our supplies will run out)
- produce gases which cause pollution when they are burnt
- are relatively cheap to obtain
- contain **chemical energy** which changes to heat energy when they are burnt
- originally got their energy from the Sun. The plants that became coal got their energy from the Sun, and the animals that became oil got their energy from plants which got their energy from the Sun.

Electricity is not a fuel. It has to be generated using other energy resources.




*How coal is formed.*




*How oil and natural gas are formed.*

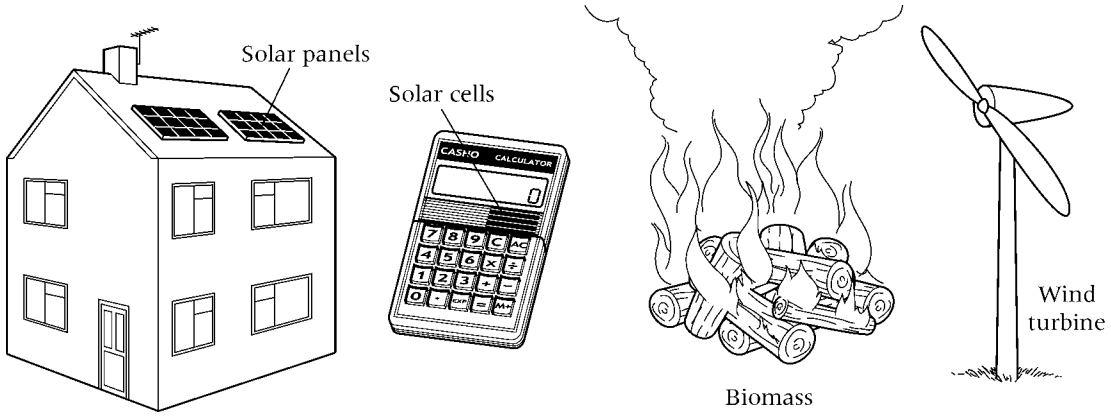
### Making fossil fuels last longer

We can make fossil fuels last longer by using less energy. We could walk or cycle whenever we can, or use a bus instead of using a car. Walking and cycling would make us fitter and healthier, and there would be less pollution if there were not as many cars on the roads. We could also save energy by keeping our houses cooler and wearing more clothes.

## Renewable energy resources

Renewable energy resources:

- include solar, wind, tidal, wave, biomass, geothermal and hydroelectricity
- do not produce harmful gases
- can be expensive
- will not run out.




## Energy in food

Humans and other animals need energy to live. We get our energy from chemical energy stored in food. We need to choose our food so that we get the right amount of energy. If we eat too much we could get fat and become unhealthy. If we do not eat enough we will get thinner and may become ill.

The unit for measuring energy is the **joule** (**J**). There is a lot of energy stored in food, so we usually measure the energy in food using **kilojoules** (**kJ**). 1kJ = 1000J.

## Energy from the Sun

Most of the energy resources we use originally came from the Sun. Only geothermal energy, nuclear power and tidal power do not depend on energy from the Sun.