

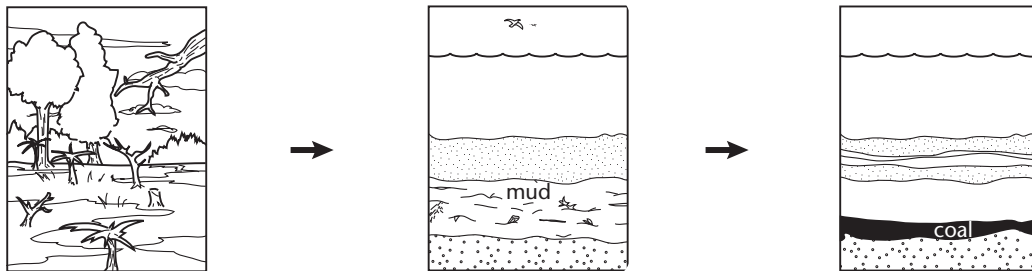
Energy and sustainable living

Most things that happen need a store of energy. **Fuels** store energy, and this energy is **transferred** when the fuels burn. Burning fuels are used to heat things.

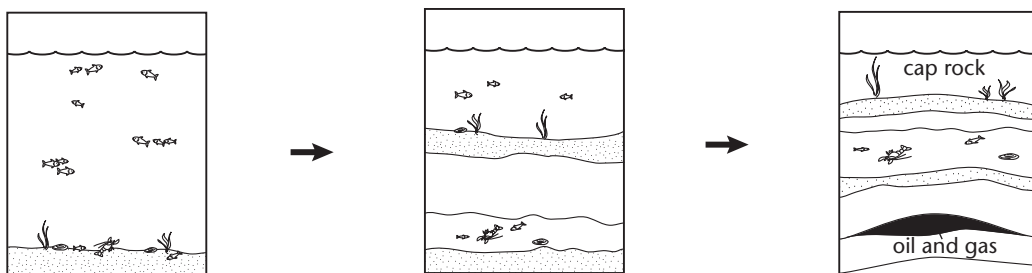
Fossil fuels:

- are made from plants and animals that 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 that cause pollution and **global warming** when burnt
- are relatively cheap to obtain
- contain a store of energy that is transferred to their surroundings when 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.



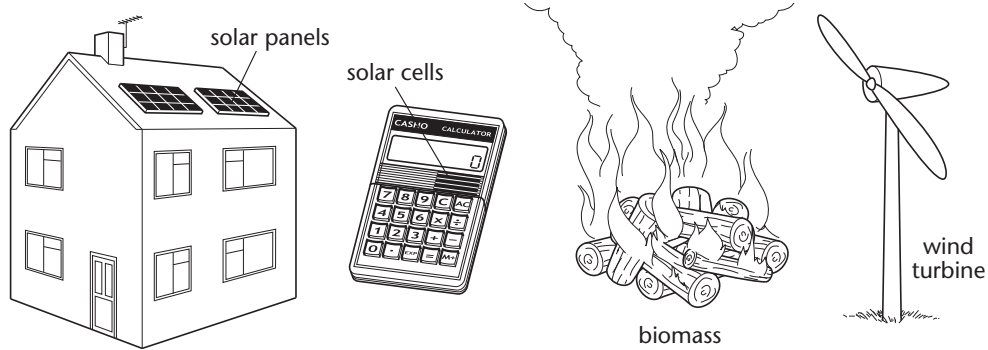
How oil and natural gas are formed.

Making fossil fuels last longer

We can make fossil fuels last longer and help to reduce global warming by using less of them. 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 putting on more clothes if we are cold instead of turning up the heating.

Renewable energy resources:

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

**Energy in food**

Humans and other animals need energy to live. The energy resource for our bodies is the energy stored in food. We need to choose our food so that we get the right amount of energy.

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)**. $1 \text{ kJ} = 1000 \text{ J}$.

Energy from the Sun

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

