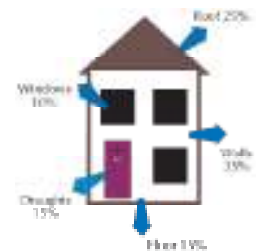


Chapter 41 & 42 –Energy Conservation and Sources

Energy in the home

Because of the cost of energy and the threat to the supply of oil and gas etc, we need to play our part in helping the environment by not wasting energy. One way to do this is not to leave electrical items switched on when not in use. We also need to ensure our houses are properly insulated from heat energy loss. This diagram shows how much energy could be lost without proper insulation.



Non-renewable energy sources

A fuel is any substance that can be used as a source of energy. A lot of our energy comes from burning ‘fossil fuels’, this is oil, coal and gas which is made up of the remains of plants and animals that lived on the earth millions of years ago.

Unfortunately, fossil fuels will not last forever, they will eventually run out; this is why they are a **non-renewable source**.

Another problem with fossil fuels is that the burning of them causes air pollution leading to the speeding up of the greenhouse effect and global warming.



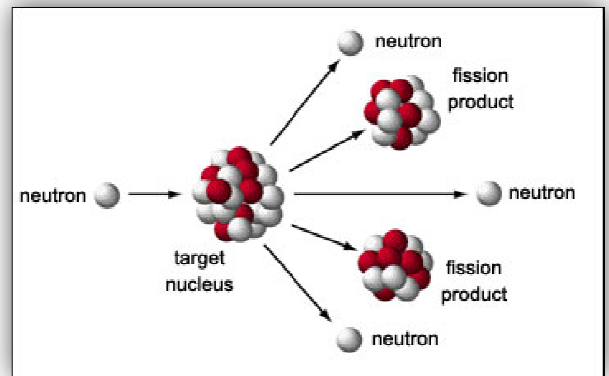
Renewable sources of energy

Type of energy	How it is produced	Disadvantages
Hydroelectricity 	A dam is built across a river forming a lake. Water flowing through the dam turns a generator to produce electricity	Not all rivers and lakes are suitable and it can ruin the habitat of plants and animals where the lake is built
Wind Energy 	Large windmills are used to turn generators.	They are expensive to build, they do not give out a lot of energy, and few areas are suitable. They can be unsightly if located in a scenic area.
Tidal Energy 	A dam is built across an estuary. The flowing water of the tide going in and out turns generators producing electricity.	They are expensive to build and few areas are suitable.
Solar Energy 	The sun’s energy is trapped by solar panels and is used to heat water, other solar cells can produce electricity.	The energy is most needed in winter when the sun is at its weakest.
Biomass	Fast-growing plants are used to make alcohol which can be used instead of petrol	Very large areas of land are needed.

Nuclear Energy

Nuclear energy is the energy stored in the nucleus of an atom.

Some substances on the Earth are unstable and give out energy in the form of **radioactivity**; substances such as **uranium** and **polonium**. A much greater amount of energy can be released by a process called **nuclear fission**, this is where a neutron particle strikes a nucleus splitting it up and releasing a huge amount of energy. This also frees up more neutrons and the reaction keeps happening, this is called a **chain reaction** and can be seen in the diagram on the right.



Advantages	Disadvantages
A fairly large supply of fuel is available. Huge amounts of energy can be released from a tiny amount of fuel.	Reactors are very expensive to build and maintain. Dangerous nuclear waste is produced.

