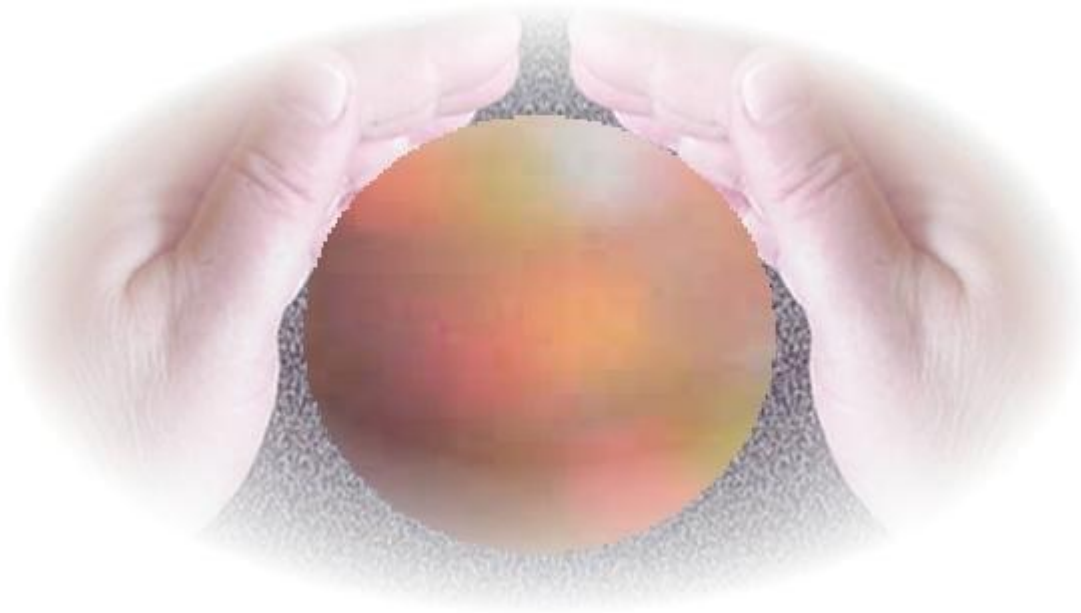


Alternative sources of energy





Lesson Objective

- By the end of this lesson I will be able to offer an explanation for the need to use alternative sources of energy
- Target 1 met?

What is an alternative source of energy?



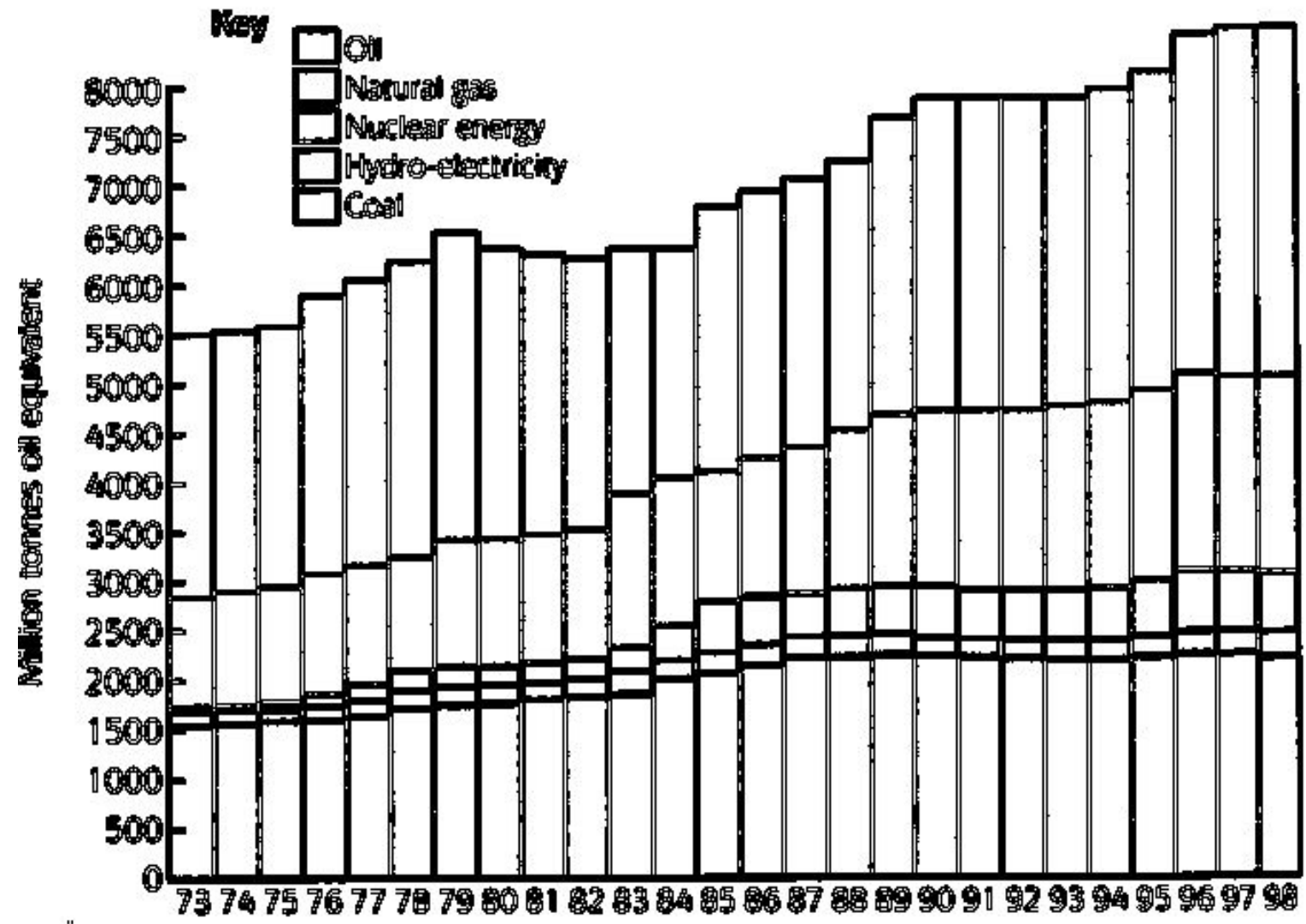
- An energy source that can be used instead of fossil fuels
- It is usually a renewable source of energy that could be used should fossil fuels run out



Why is there a need for alternative sources of energy?



- The graph that you completed last time shows just how much we rely on fossil fuels
- 90 per cent of the worlds energy supply's come from fossil fuels
- Fossil fuels are convenient and relatively cheap – a litre of petrol in 1998 would have been 20p if there was no tax added!



How much longer can we depend on fossil fuels?



- Because they are fossil fuels they DO have a life expectancy
- “Oil has 40 – 50 years left”
- In 1960 they said this too! – what has happened is that we have found new reserves of oil and new technology has made the oil we use last longer





- Burning fossil fuels has increased atmospheric pollution.
- Vehicle exhausts contribute to acid rain more so than power stations burning coal.
- The carbon stored in fossil fuels is released as carbon dioxide when they are burnt – this leads to the green house effect and global warming
- Don't get this confused with the hole in the ozone layer – this was caused by CFC's

The Green House Effect





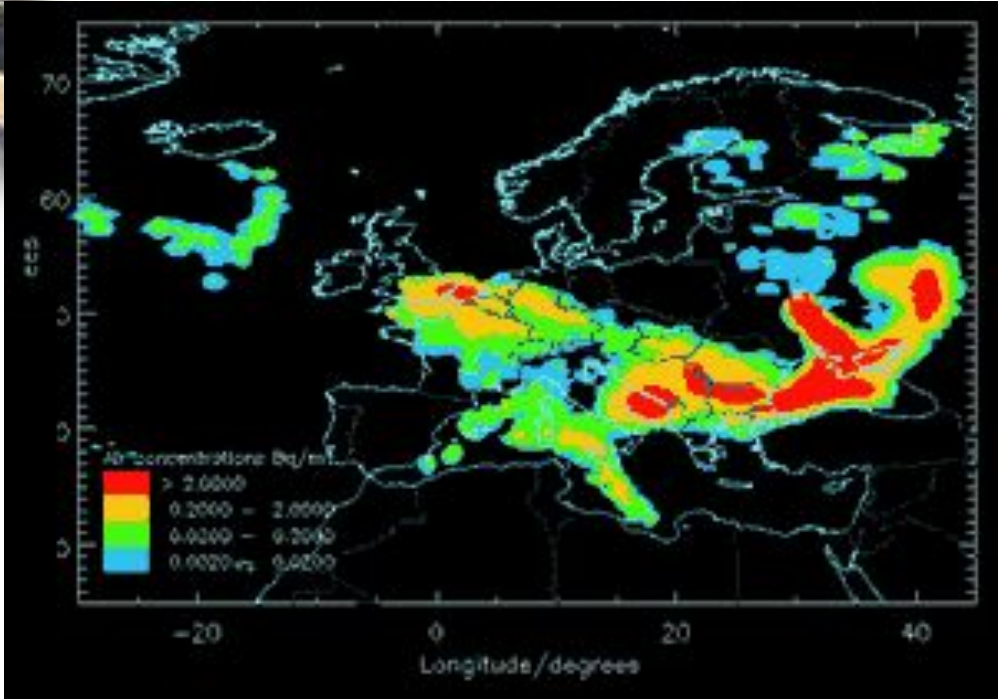
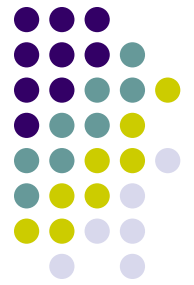
- Coal has the longest life expectancy
- Environmentalists dislike the burning of this fossil fuel the most as it gives off the most CO₂
- Unless cheap alternatives to burning coal are found there is likely to be an increase in its use – especially from Asia which has a lot!



So what are the alternative energy sources to fossil fuels?

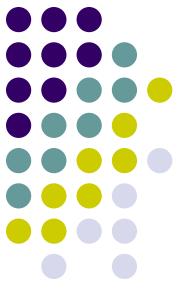
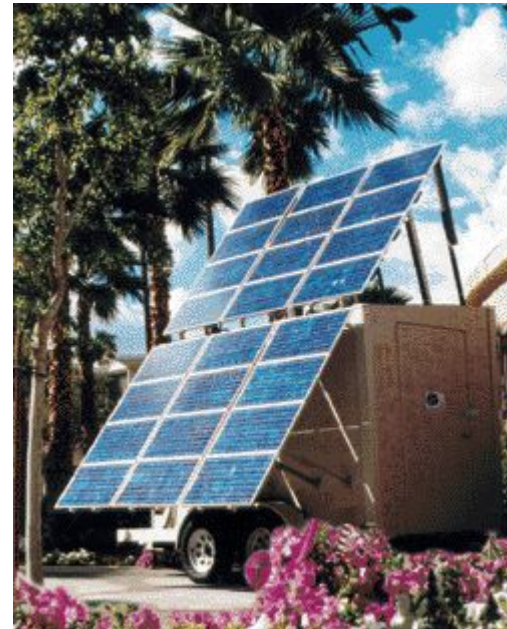


- Once upon a time – nuclear power was seen as the answer. Huge amounts of power could be produced from a small amount of uranium
- However, it was not well known that it produced radioactive waste
- The waste is dangerous to health and life for hundreds of years
- There is no secure place for storage.
- Public confidence has also been shattered by the explosion at Chernobyl in 1986



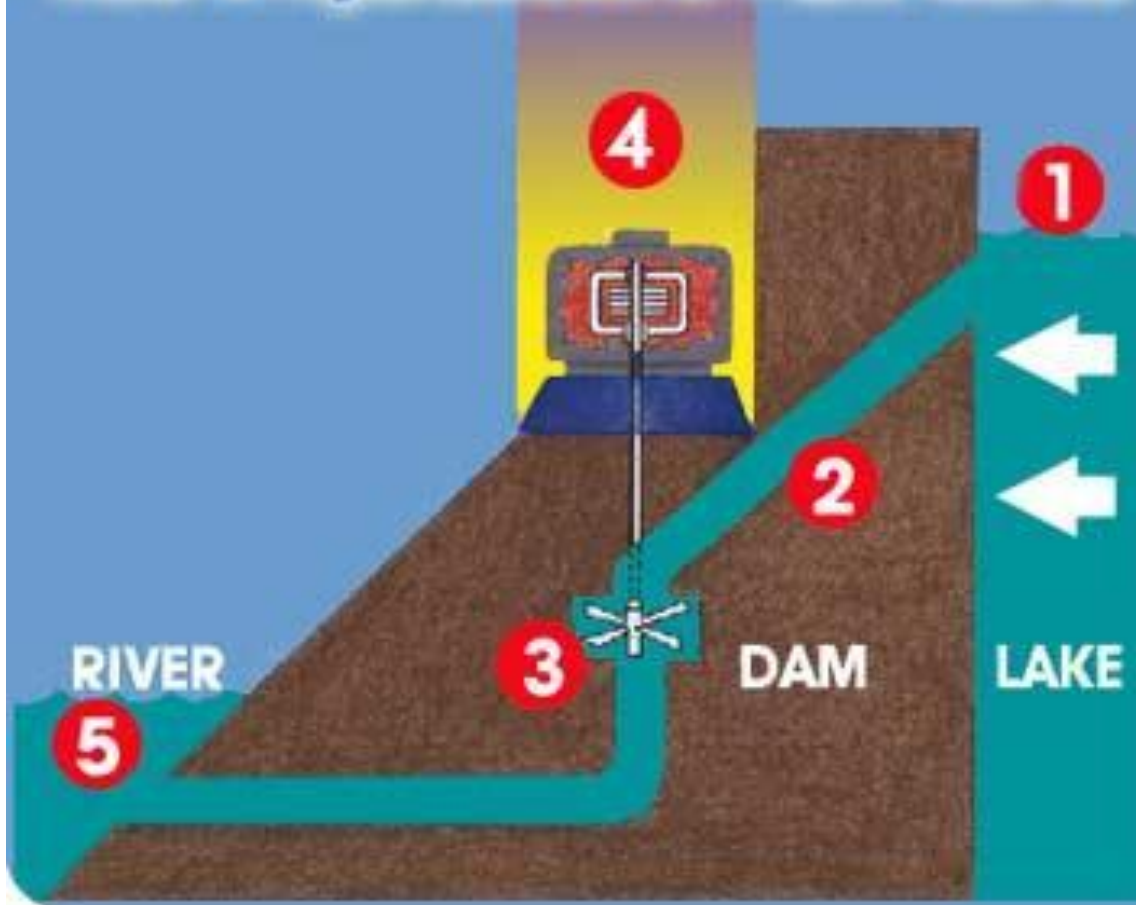
Other hopes?

- Now that nuclear power is considered too risky hopes lie with things like sun, water, wind, waves and tides.



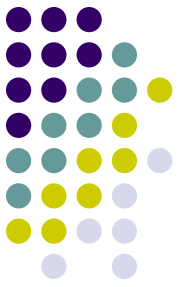


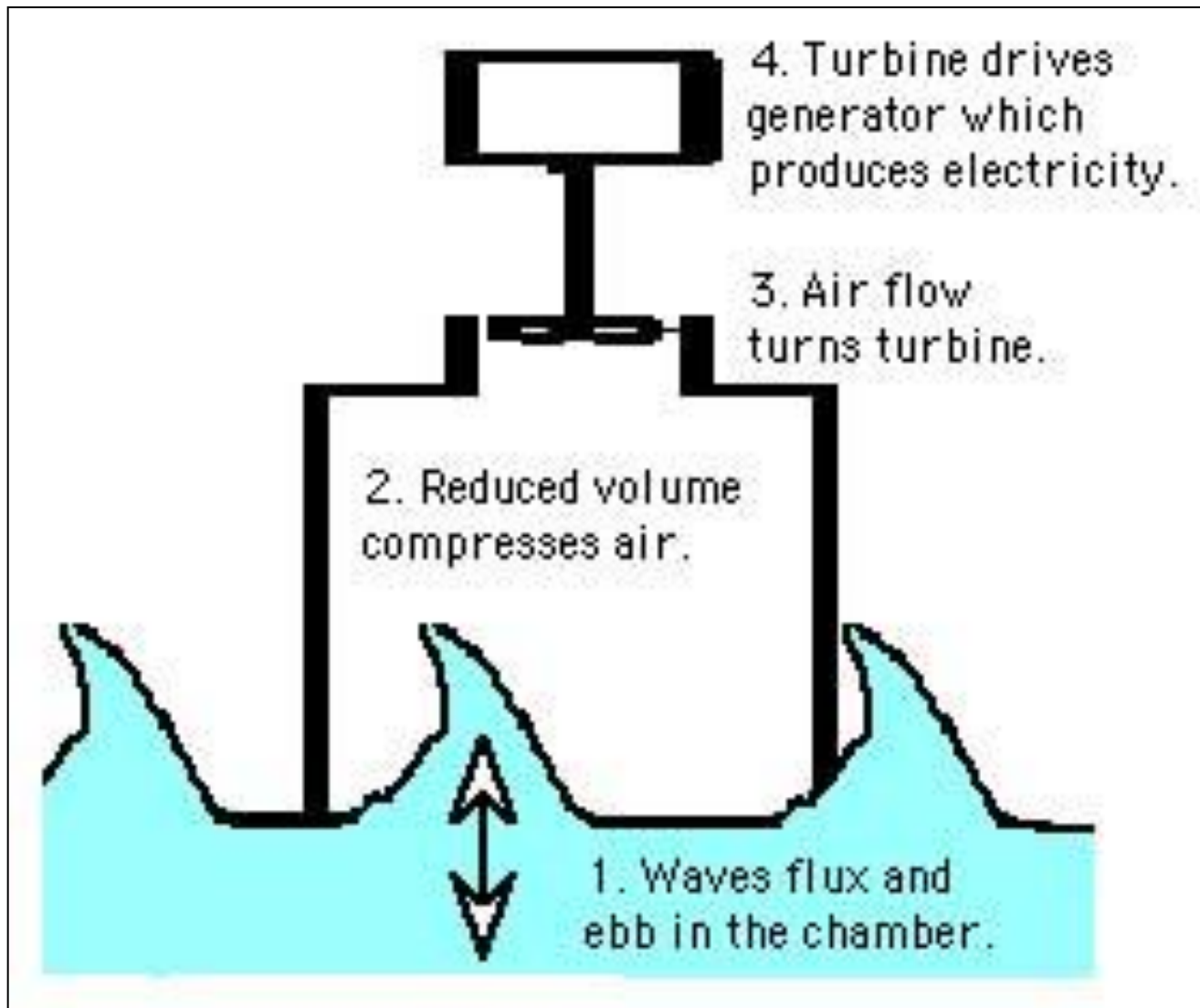
How A Hydroelectric Plant Works



- 1 Reservoir Water** behind the dam pushes forward at high pressure.
- 2 Turbine Passages** when opened, give the water a route to flow through the dam at high speed.
- 3 The Turbines** are like big propellers. They are placed in the middle of each water passage. The rushing water spins the propellers which in turn spins the shafts to the generators.
- 4 The Generators** produce the electricity. Each generator is connected by a drive shaft to a turbine.
- 5 Exhaust Water** continues on down the river.







Advantages of using natural sources of energy



- They are inexhaustible – they will always be available – they are renewable
- They are clean and will not damage the Earth
- There are several types – so one or more of them is present in each country
- Most natural sources can be used on a small scale and serve local needs therefore cutting costs of transmitting the energy



Review

- Explain why fossil fuels are:
 - (a) cheap
 - (b) in limited supply
 - (c) dirty

Put forward arguments in favour of:



- (a) Using natural gas instead of coal
- (b) using nuclear power rather than oil
- (c) using alternative sources of energy rather than nuclear power