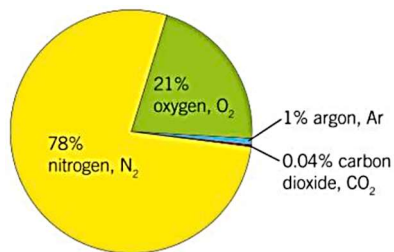
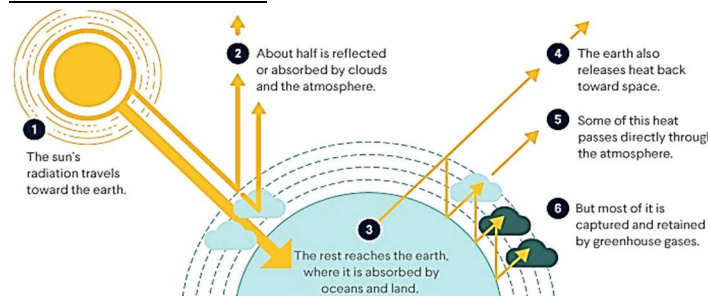


Knowledge Organiser – 7 Earth - Climate and Earth's resources

EARTH'S ATMOSPHERE

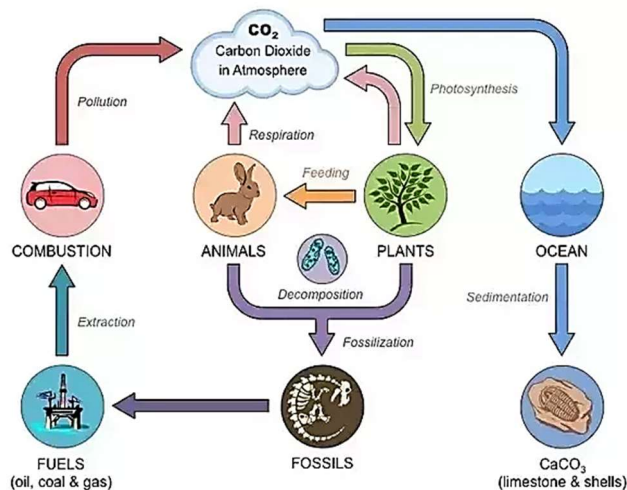


THE GREENHOUSE EFFECT



The Sun heats the Earth's surface. The warm surface emits radiation. Some of this radiation goes into space, some absorbed by gases. This keeps the Earth warm (greenhouse effect). The eventually increase in the Earth's temperature is called global warming.

THE CARBON CYCLE



- Carbon is constantly recycled through natural processes in the atmosphere, ecosystems and Earth's crust. Human activities also contribute to carbon recycling.
- Respiration and combustion ADD carbon dioxide to the atmosphere.
- Photosynthesis and carbon dioxide dissolving in the oceans REMOVE carbon dioxide from the atmosphere.

Most reactive

Potassium
Sodium
Calcium
Magnesium
Aluminium
Carbon
Zinc
Iron
Tin
Lead
Copper

Least reactive



CLIMATE CHANGE

- Human activities that add extra CO₂ to the atmosphere include:
 - Burning fossil fuels and burning or cutting down forests
 - Farming animals (cows)
- Extra carbon dioxide causes global warming. This can change weather patterns (increase rainfall → flooding, droughts and heatwaves → crop failures).
- Long term changes are called climate change, this leads to glaciers and polar ice melting making sea levels rise (flooding). Or lead to extinction of plants and animal species.

How can we prevent climate change?

- Using solar panels and other renewable resources to generate electricity.
- Using cars less.
- Buying and wasting less.

EXTRACTING METALS

- Aluminium is extracted from bauxite rock (an ore).
- The method for extraction depends on the reactivity of the metal.
- Any metal below carbon in the reactivity series (e.g. zinc, iron, lead, copper) can be displaced from its compound by carbon. For example; carbon + copper oxide → copper + carbon dioxide
- If a metal is above carbon in the reactivity series (e.g. aluminium, magnesium, sodium), it will be extracted from its ore by electrolysis. This is an expensive process as the mineral must be heated to high temperatures so it melts (lots of energy is needed). Greenhouse gases may also be produced.

RECYCLING

- ☺ Resources will last longer.
- ☺ Uses less energy than using new materials.
- ☺ Reduces waste and pollution.
- ☹ Some people think separating rubbish is a nuisance.
- ☹ Lorries that collect recycling create pollution.
- ☹ Companies that recycle plastic waste need to separate different plastic from each other. This is done by hand and takes a long time.



KEYWORD	DEFINITION
Atmosphere	The mixture of gases surrounding the Earth.
Carbon cycle	Summarises how carbon and its compounds enter and leave the atmosphere and the carbon sinks.
Carbon sinks	Areas of vegetation, the ocean or soil, which absorb and store carbon. Carbon and its compounds may remain in carbon sinks for many years.
Climate change	A long- term change in weather patterns.
Combustion	A chemical reaction in which a substance reacts quickly with oxygen and gives out light and heat. Also known as burning.
Electrolysis	Using electricity to split up a compound into its elements.
Extraction	Separation of a metal from a metal compound.
Fossil fuels	A fuel made from the remains of animals and plants that died millions of years ago. Fossil fuels include coal, oil and natural gas.
Global warming	The gradual increase in the average surface temperature of the Earth.
Greenhouse effect	When energy from the Sun is transferred to the thermal energy stores of gases in the atmosphere.
Greenhouses gas	A gas that contributes to the greenhouse effect, such as carbon dioxide and methane.
Minerals	Naturally occurring metals and their compounds.
Natural resources	Materials from the Earth, its atmosphere and the oceans, which act as raw materials for making a variety of products.
Ore	A naturally occurring rock that contains enough of the mineral to make it worth getting the mineral – and the metal it includes- out of the rock.
Recycling	Collecting and processing a material so that it can be used again.