

Geography Knowledge
organisers

YEAR 7

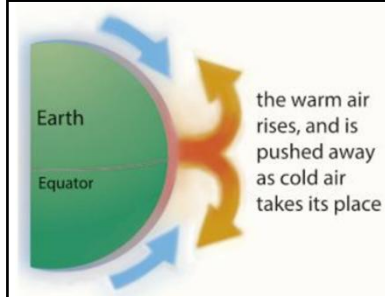
Weather and Climate Year 7 HT1

Key words:

Weather
Climate
Atmosphere
Precipitation
Celsius
Relief
Frontal
Convectional
Temperature
Thermometer
Depression
Air masses
Climate graph

Climate - the **average** atmospheric conditions over long time periods, weeks, months, years

Weather - what is happening in a particular place at a particular time, usually over short periods, hours or days, e.g., rain, blizzard, sunny and calm



The heat from the sun powers our weather by causing warm air to rise and cool it then returns back to Earth. This creates **winds** as the cold air takes the warm area space.

Weather can be measured using a number of instruments.

Thermometer for temperature

Barometer for air pressure

Rain gauge for precipitation

Anemometer for wind speed

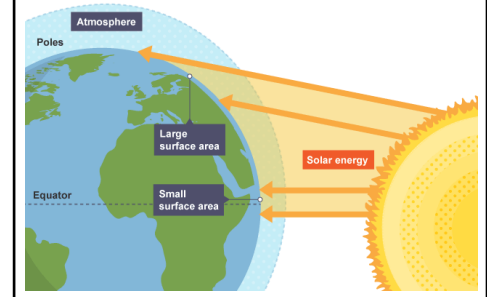
Barometer for air pressure



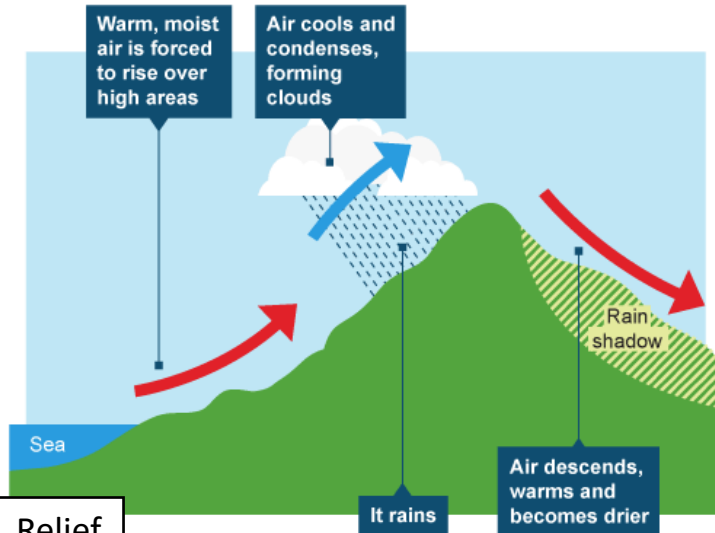
As air **ris**es it **co**ols, **co**ndenses and forms **cl**ouds. **Ris**ing air also creates **low pressure**. Where this happens around the globe there is rainfall – this occurs in tropical rainforest (Brazil, Malaysia, Congo etc) and temperature deciduous forests (like the UK). Where air is **sink**ing there is no cooling, condensing and clouds so there is no rain. This is known as **high pressure** – this occurs in desert regions (Mali, Chad)

Sunlight hit the Earth more directly at the Equator. The curve of the Earth means that sunlight is spread over a wider area the further you move from the Equator.

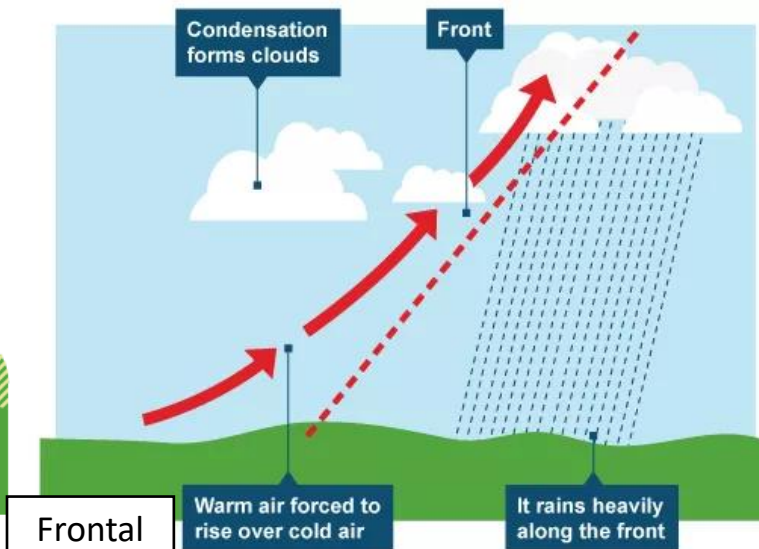
Sunlight hits a smaller surface area at the Equator so heats up quickly compared to the Poles



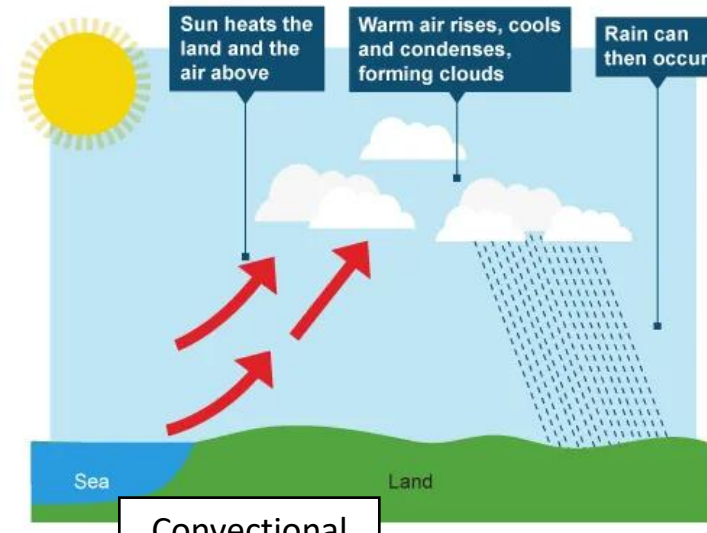
There are **three** main types of rainfall - **Relief** rainfall is common on the west coast of the UK. The UK is affected by **frontal** rain as two air masses collide (warm and cold air) and intense heat on summer days in the south east of the UK can create **convectional** rainfall and thunderstorms.



Relief



Frontal



Convectional

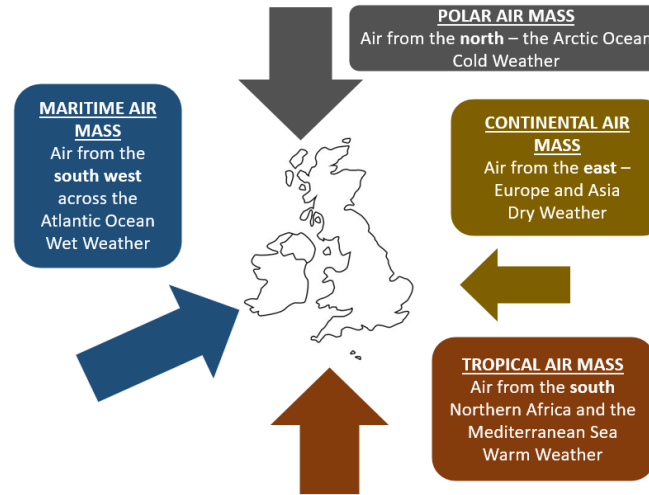
In each type of rainfall it is important to know what causes the air to rise and cool



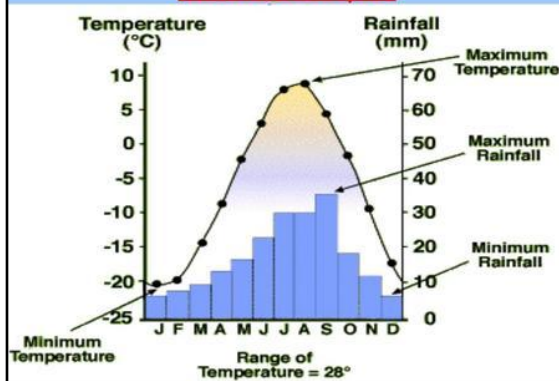
Weather and Climate Year 7 HT1

Air masses can affect the weather of the UK because we have the Atlantic Ocean to the **west** which brings wet weather to the UK and land to the **east** (Europe and Asia) which brings dry weather.

If the air blows from the **south** the temperature increases as they come from tropical regions like the Mediterranean if they blow from the **north** the temperatures will fall as the air has travelled over polar regions like the Arctic Ocean.



Climate Graphs



One way to show climate data is on a **climate graph**. This will have **two** vertical axis one for temperature the other for precipitation. Months are along the horizontal axis. It is important to read these axis carefully. To work out the **range** – you need to calculate the difference between the highest and the lowest value. To work out the **mean** – you need to add all the data set together and divide by how many there are.

To investigate our schools microclimate we need to.....

1: Data collection: In groups we recorded the temperature and wind speed at given points around the school site.

2: Data presentation: Back in the classroom we used the data to draw bar charts to present our data.

3: Our conclusion was thatwe used our data to make a decision...does our school have microclimates?

4: Evaluating the experiment. How could we make our results more reliable? Collect more data over a longer period? Compare winter and summer? What difference would this all make to our conclusions?

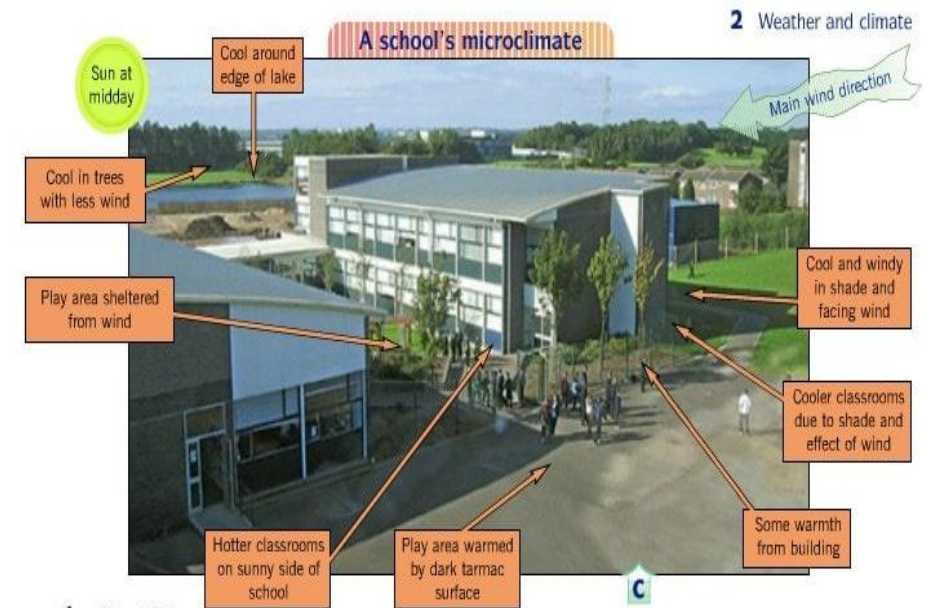
Microclimates

Smaller places like our school, cities and even gardens can have a microclimate.

Definition The climate of a very small or restricted area, especially when this differs from the climate of the surrounding area:

There are several factors that can affect a microclimate: shade, shelter, close to buildings, close to water, altitude.

Think: Which parts of our school site would be warmer or colder? Which places would be windier?



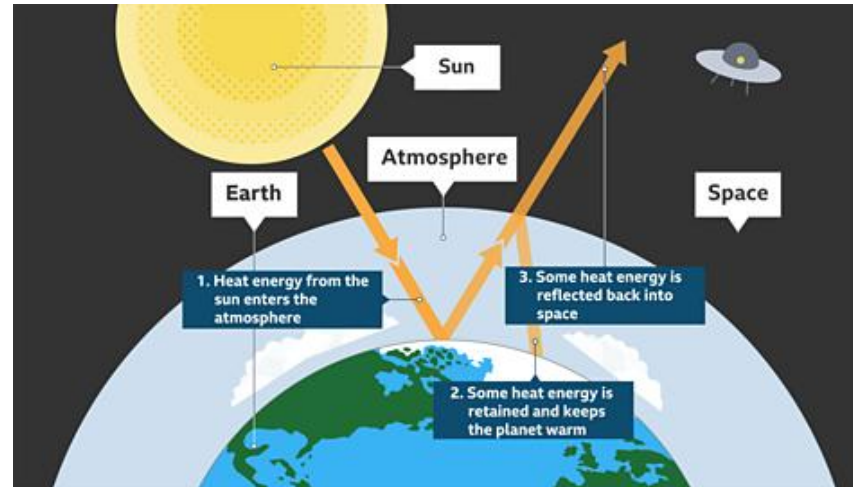
Careers Link: Meteorologist. Climate scientist, Oceanographer, Research scientists, Hurricane hunter, Physicist, TV presenter, Broadcast journalist

Climate Change Year 7 HT2

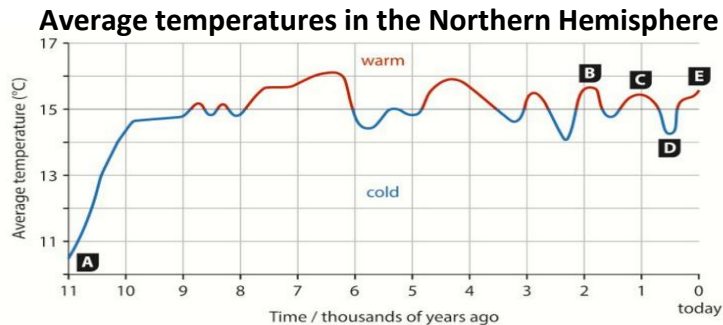
What is the greenhouse effect?

Climate change is causing the earth's temperature to rise. The **greenhouse effect** is a natural function – without it would be too cold on planet earth to exist, but is affected by human activity.

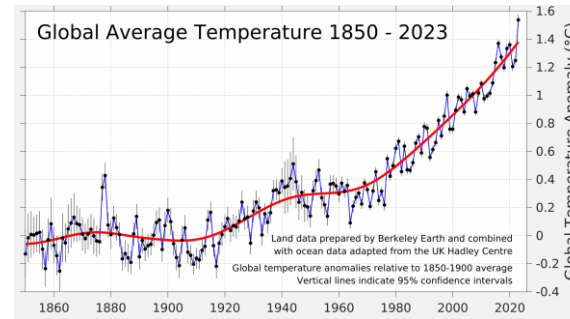
1. The atmosphere allows heat from the sun to heat the earth.
2. The earth gives off heat.
3. The heat is trapped by greenhouse gases e.g. methane, carbon dioxide and nitrous oxide.



What has happened to the Earth's climate?



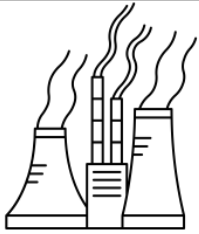
The graph shows that temperatures over the last 11 thousand years have not been consistent, 11 thousand years ago the average temperature was 10.5°C (much colder than today). It also shows that there have been warmer periods.



Global average temperatures have risen by approximately **1.1°C** since the pre-industrial period. The most recent decade (2012-2021) was an average of **1.0°C** warmer than the 1961-1990 period in the UK. The UK has also seen the **10 warmest years** on record occurring since 2003. **2022** was the UK's hottest year, with an average temperature above 10°C.

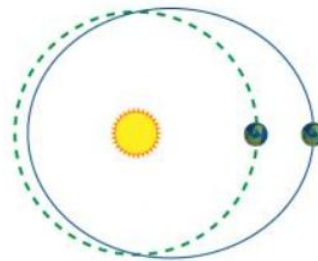
Human causes of climate change:

- **Burning fossil fuels**, e.g. coal, gas and oil in energy production- these release carbon dioxide into the atmosphere, which traps radiation from the Sun in the atmosphere as part of the enhanced greenhouse effect
- **Deforestation** - trees absorb carbon dioxide during photosynthesis. If they are cut down, there will be higher amounts of carbon dioxide in the atmosphere.
- **Dumping waste in landfill** - when the waste decomposes it produces methane.
- **Agriculture** - livestock / grazing animals (cows, sheep, goats) release methane. fertiliser lead to the release of **nitrogen oxides** into the atmosphere.



Natural causes of climate change

- **Orbital changes** - the Earth has natural warming and cooling periods caused by Milankovitch cycles or variations in the tilt and/or orbit of the Earth around the Sun (wobble, roll and stretch theory).
- **Volcanic activity** - during a volcanic eruption carbon dioxide is released into the atmosphere.



Key Vocabulary: Greenhouse gases, Deforestation, Carbon dioxide(CO₂) Fossil fuels, Renewable, Solar, Drought, Effects, Global, Pollution Flooding, Sea level rise, Methane

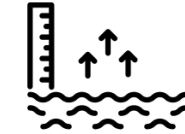
Ambitious vocabulary: Mitigation, adaptation, long wave radiation

Climate Change Year 7 HT2

What are the global impacts of climate change?

Climate change is causing global temperatures to increase and average sea levels to rise. Scientists suggest that the impacts of higher temperatures and rising sea levels could include:

- A change to the location of the Earth's climate belts, which would make it difficult for some countries to grow food causing famine
- Flooding of coastal and low-lying communities – 80 million people will be affected by sea level rise.
- The spread of tropical diseases, like malaria, - an additional 280 million people may be affected
- There will be millions more refugees as people flee from floods, droughts or famine.
- Animals and plants that can't cope by moving or adapting will die out.



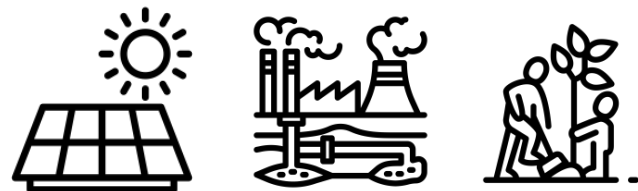
What are the impacts of climate change on the UK?

- Sea levels could rise, covering low lying areas, in particular east England
- Droughts and floods become more likely as extreme weather increases
- Increased demand for water in hotter summers puts pressure on water supplies
- Industry may be impacted, e.g. Scottish ski resorts may have to close due to lack of snow

How can climate change be managed?

Mitigation is reducing or preventing the effects of something from happening. These strategies are:

- Alternative energy - solar, wind, tidal power reduces the use of fossil fuels, so less CO2 is produced
- Carbon capture—storing carbon dioxide gases deep underground
- Planting trees—encouraging **afforestation** reduces CO2 levels in the atmosphere during photosynthesis
- International agreements - countries sign treaties -. the Paris Agreement in 2016, which aimed to limit global warming to below 2°C



How can we adapt to climate change?

Adaptation strategies respond to the effects after they have happened

- Agriculture (farming) must adapt as some crops can't grow in warmer temperatures. But other crops can be grown e.g. oranges and grapes
- Water supply - water can be transported
- Reducing risk from sea level rise—using sea defences



How can individuals reduce their contribution to towards climate change?

Food consumption: eat less meat and more food that's produced locally.

Fly less: if it's the only option pick a destination close by, fly economy and choose to carbon offset.

Reduce car journeys: where possible cycle, walk or use public transport to get to school.

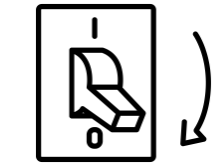
Get involved: find out about organisations that campaign for environmental change.

Green spaces: protect them and if possible, plant trees or introduce plants into your household.

Change your buying habits: avoid single-use items and only purchase clothes you really need.

Recycle your unwanted clothes: donate to clothing banks and charity shops or sell them on.

Use less energy: at home switch off lights and appliances when you're not using them.



Careers

Environmental consultant
Climate change analyst

Energy Efficiency Officer
Renewable energy engineer

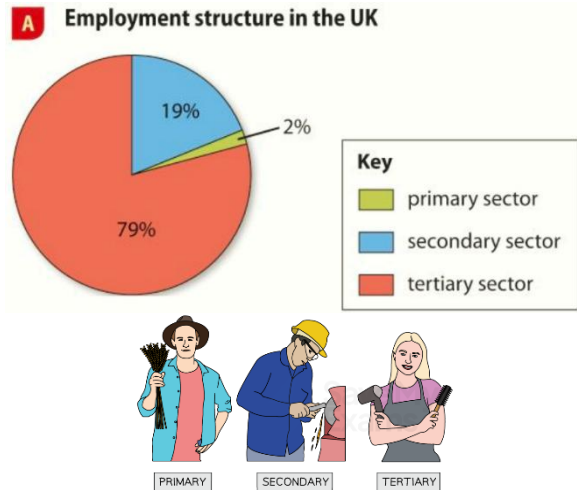
Recycling officer

Economic Activities Year 7 HT3

Types of Industry

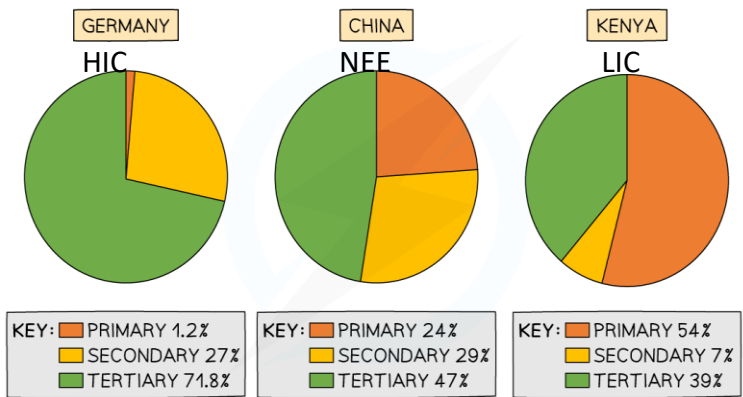
Industry is any economic activity which creates jobs and generates income (money). There are **four** main types of industry:

- **Primary** sector – the extraction of raw materials e.g. forestry, fishing, farming, mining
- **Secondary** sector – taking the raw material and manufacturing them into products
- **Tertiary** sector – providing services to people e.g. doctors, sales assistant, lawyer, chef
- **Quaternary** sector – knowledge based industries or high-tech industries such as ICT, research and development



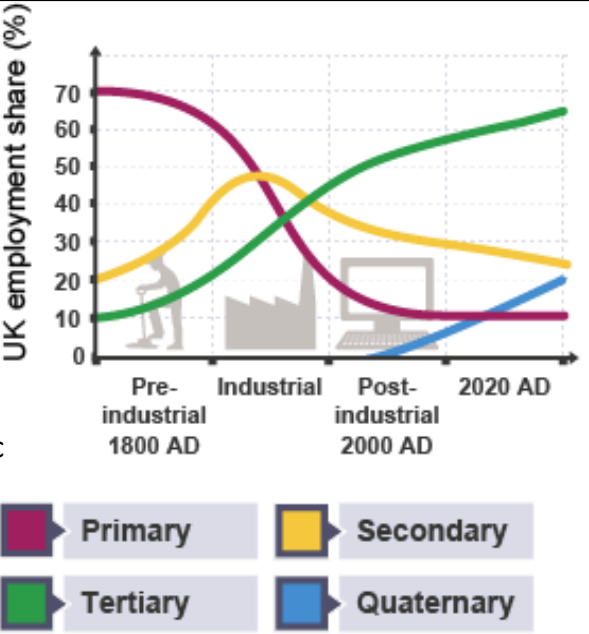
Around the world the employment structure vary

In **low income countries** primary sector dominates like in Kenya. In **newly emerging economies** like China there is often a more balanced employment structure while in **high income countries** like the UK and Germany the tertiary sector dominates.



Economic Change in the UK

In the 1600s over 70% of people worked in the **primary sector**, this has **decreased** due to the increase in the use of **machinery**. Jobs in the **secondary sector increased** during the Industrial Revolution as factories were built and urbanisation occurred, however during the 20th century there was a **decrease** in the number of people working in manufacturing as **mechanisation** (robots) replaced jobs along with increased **competition** from abroad. The **tertiary sector increased** due to the introduction of public services, the growth of financial services and an increase in leisure time and disposable income. Since the 1980s, the development of IT has meant that the **quaternary sector** has become increasingly important.



How can changes in employment affect people's lives?

Doncaster began as a Roman fort in 50AD. During the Industrial Revolution, train building became an important industry. The last coal mine closed in 2015 causing **unemployment** (when people are looking for paid work but can't find it) – this has led to derelict areas, high crime rates and poor health. There have been new tertiary employment opportunities in Doncaster, Amazon, Ikea and Next have warehouses and delivery centres. These new employment opportunities have brought **advantages** and **disadvantages**:

Advantage for Doncaster	Disadvantage for Doncaster
Large brand names like Amazon have depots that provide employment	Much of the employment is low skill and low pay.
Young people with skills don't want to stay in Doncaster for the low paid work.	Once one brand has moved in others will follow creating more jobs.
A new I-Port (inland port) is planned for the region which will stimulate growth.	Contracts for workers are sometimes zero hours. This means they don't have regular paid work every week.
Not all areas benefit. There is still high unemployment in some of the deprived areas of Doncaster.	There are great road and rail links for business



Key vocabulary

Primary, Secondary, Tertiary, Quaternary, Raw materials, Manufacturing, Mechanisation, Employment structure, Rural, Agriculture, Outsourcing, Multinational company, Globalisation

Economic Activities Year 7 HT3

Where are our clothes made today?

Companies that have factories all over the world and shops all over the world are called **Multi National Companies**. MNCs are an example of **globalisation**. This means that we trade all over the world, as products are sold all over the world.

Today many textile companies operate in Asia. This is called **outsourcing**. Large companies like **Primark** make their clothes in countries like Bangladesh because they can pay the workers less money.

PRIMARK®

Advantages for the country:

People get a regular wage and they can begin to save money and improve their lives. People develop new skills. People will pay tax that can be used by the government to build schools and improve healthcare.

Disadvantages for the country:

People often work in poor and dangerous conditions. Many people will leave the countryside leading to a decline in farming and food production.

Production of many items like our clothes involve all the sectors:

Primary involves the gathering raw materials like cotton.

Secondary involves all the manufacturing in factories all over the world.

Tertiary involves the transport of the clothes to the shops and selling them.

Quaternary involves all the research and advertising to sell more goods.



Economic change can improve people's lives

When a country improves its **exports** (goods sold and **exiting** the country) this means they can make more money. In addition, if people are in paid employment with a regular wage they can spend it. If a country improves its **Gross Domestic Product** or **Gross National Income**, then it has more money to spend on health, education, roads and railways.

Development Indicators:

- Life expectancy – how many years on average a person lives
- % with access to clean water – percentage of the population with access to clean water
- Number of doctors – how many doctors there are per 1000 of the population
- Literacy rate – what percentage of the population can read and write
- % employed in agriculture - percentage of the population working in farming

How does the fashion industry affect the environment?

Water Use

It takes 2700 litres of water to make one t-shirt and 22,000 to make one pair of jeans. The Aral Sea in central Asia has reduced in size as the rivers that flowed into it have been diverted to grow cotton. This has led to:

- **environmental** issues: loss of aquatic ecosystem, loss of vegetation, windier weather causing dust storms, and a more extreme climate
- **economic** issues: the fishing industry has gone causing unemployment and
- **social** issues: poverty related illnesses



Application of pesticides

Pesticides are used to keep plants free from pests (insects and bugs) that could damage the crop. Farmers can lose a lot of money and end up in debt if their crop fails. Some farmers spend **60%** of their wages on pesticides to try and protect their crop. The chemicals from the pesticides can harm the environment as they are **toxic** and can be washed out of the soil and end up in rivers as well as ending up in the food chain if animals eat the pests. Dust storms can contain pesticides which can affect people's health. They can also harm people who often are not using protective equipment e.g. masks.



Chemical waste from fabric dyeing

Many textile factories drain toxic waste straight into rivers. To clean the waste is expensive and would increase their costs. The **Citarum River** in Indonesia is described as the most polluted river in the world. There are **400 factories** that dump waste into the river. The temperature of the waste is affecting the ecosystem for wildlife. There is no oxygen, therefore fish die which means people lose a source of income. There are heavy metals such as mercury and lead which are released into the river which is affecting local health.



Coasts Year 7 HT4

Key words:

Erosion
Hydraulic action
Abrasion
Attrition
Headland
Transportation
Longshore drift
Fetch
Prevailing wind
Deposition
Spit
Constructive
Destructive

Waves

When a wave reaches the shore, the water that rushes up the beach is known as the **swash**. The water that flows back towards the sea is known as the **backwash**.

Destructive Waves - weak swash and strong backwash

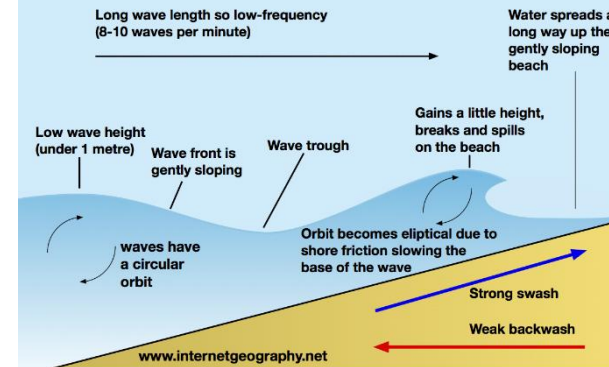
- the strong backwash removes *sediment* from the beach
- the waves are steep and close together

Constructive Waves - strong swash and weak backwash

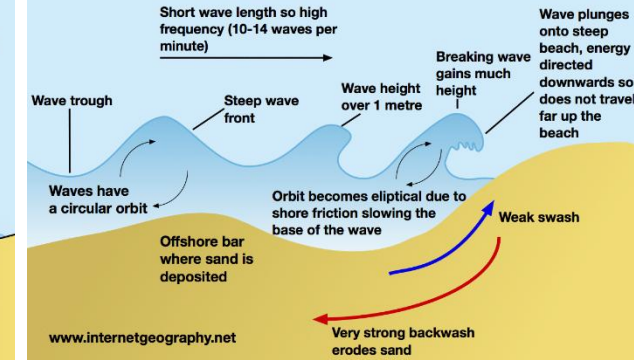
- the strong swash brings sediments to build up the beach
- the backwash is not strong enough to remove the sediment
- the waves are low and further apart

Factors that affect the type of wave are: the strength of the wind, the time the wind has blown for and the distance the wave has travelled called the **fetch**

Constructive Wave



Destructive Wave

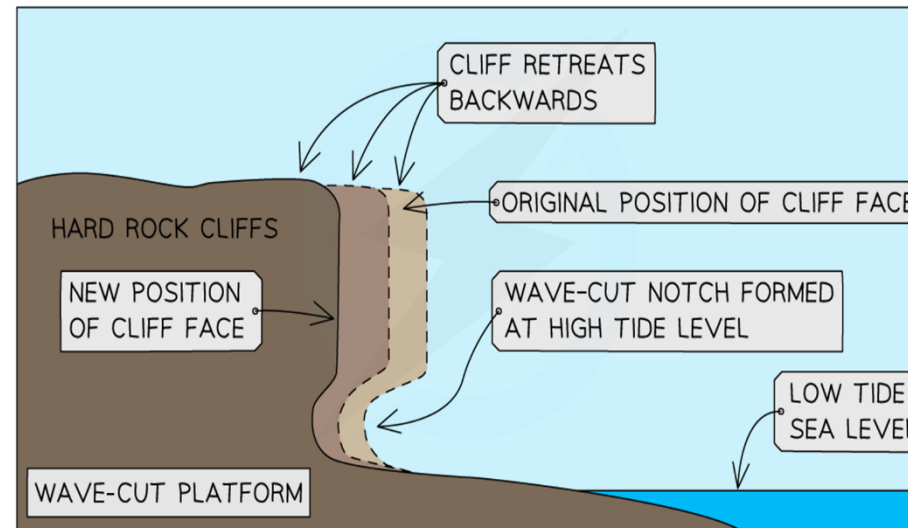


Four types of coastal erosion

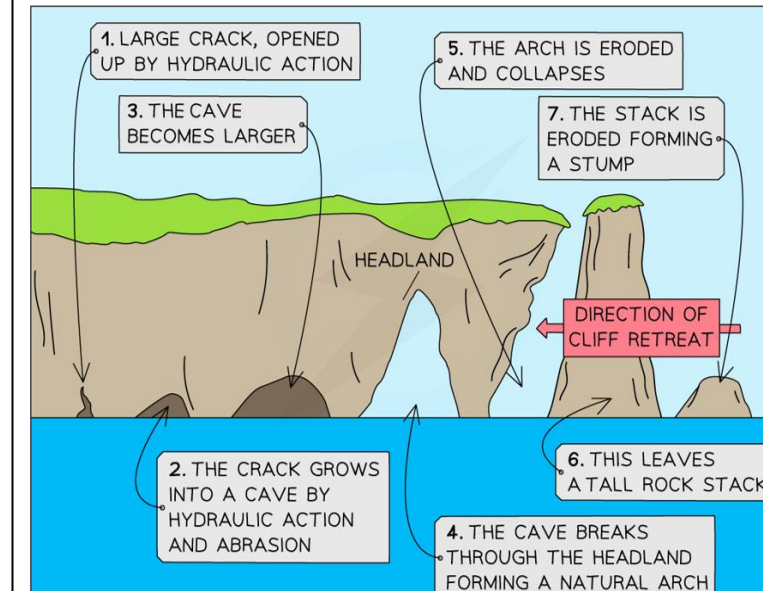
Erosion is the wearing away of rock along the coastline

- **Hydraulic action** - this is the sheer power of the waves as they smash against the cliff. Air becomes trapped in the cracks in the rock and causes the rock to break apart.
- **Abrasion** - this is when pebbles grind along a rock platform, much like sandpaper. Over time the rock becomes smooth.
- **Attrition** - this is when rocks that the sea is carrying knock against each other. They break apart to become smaller and more rounded.
- **Solution** - this is when sea water dissolves certain types of rocks. In the UK, chalk and limestone cliffs are prone to this type of erosion.

Coastal erosion landform - A wave cut platform is formed at the base of a cliff and can exist between a stack and the headland



Coastal erosion landforms Crack, cave, arch, stack, stump

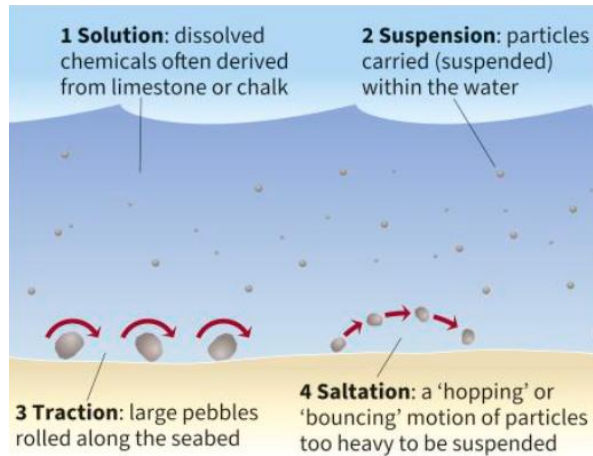


Durdle Door in Dorset is a natural arch
Old Harry in Dorset is a sea stack
Old Harry's wife is a stump

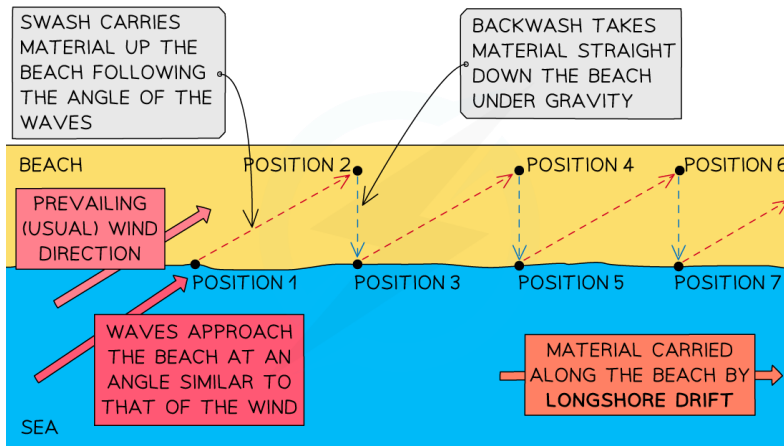
Coasts Year 7 HT4

Coastal transportation

Beach material can be moved in **four** different ways. These are:

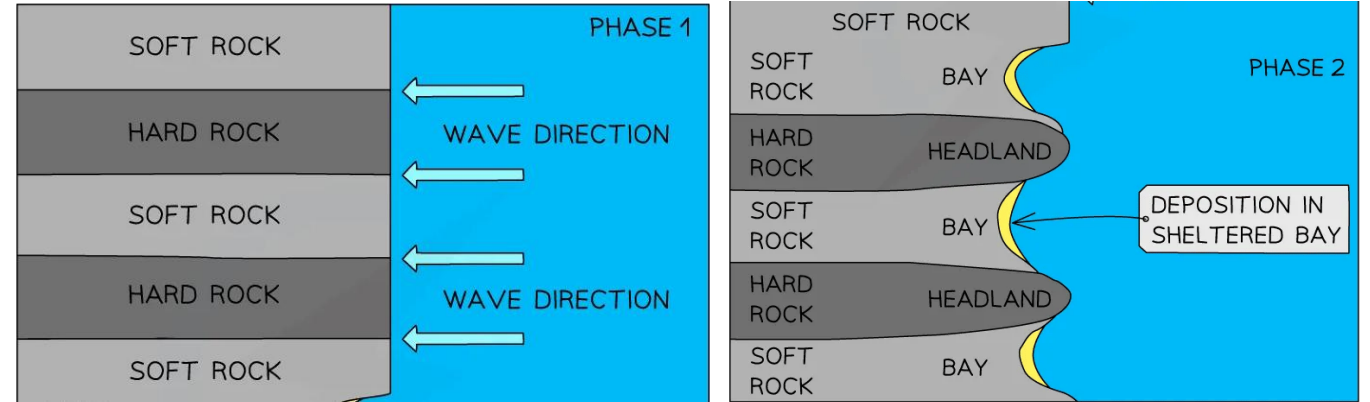


Sediment is carried by the waves along the coastline. The movement of the material is known as **longshore drift**. Waves approach the coast at an angle because of the direction of prevailing wind. The swash will carry the material towards the beach at an angle. The backwash then flows back to the sea, down the slope of the beach. The process repeats itself along the coast in the zigzag movement.



Coastal erosion landforms – Headlands and Bays

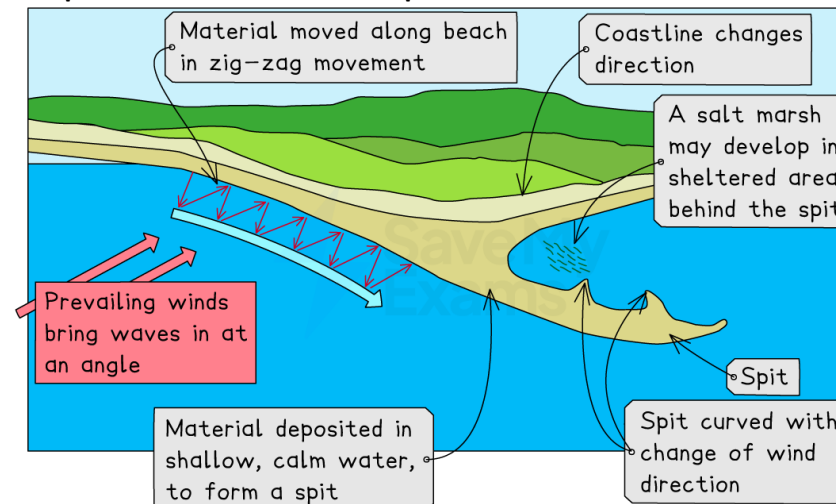
Cliffs along the coastline do not erode at the same pace. When a stretch of coastline is formed from different types of rock, headlands and bays can form.



Coastal deposition

Deposition - when the sea loses energy, it drops the sand, rock particles and pebbles it has been carrying. Deposition happens when the swash is stronger than the backwash and is associated with constructive waves

Depositional landform - Sand spits



Depositional landform - Sand bars



Population Year 7 HT5

Key Words

Natural increase
Birth rate
Death rate
Distribution
Density
Densely
Sparsely
Life expectancy
Youthful
Ageing
Exponential
Policy
Trends
Overpopulation

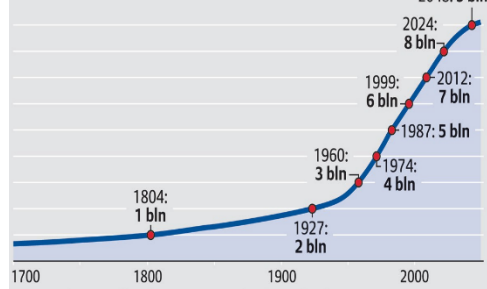
Population Growth

The world's population does not stay the same. In fact, over the last few hundred years it has been growing faster and faster.

In the entire world, there has been an explosion in population. During the 1st century AD, the world population was about **300,000 people**. The current population is over **7 billion**, and most of the **growth** has taken place within the last **100 years**. In fact, in the late **1990s**, the world population was **5.9 billion**, which increased to over **8 billion in 2022**.

POPULATION OF THE EARTH

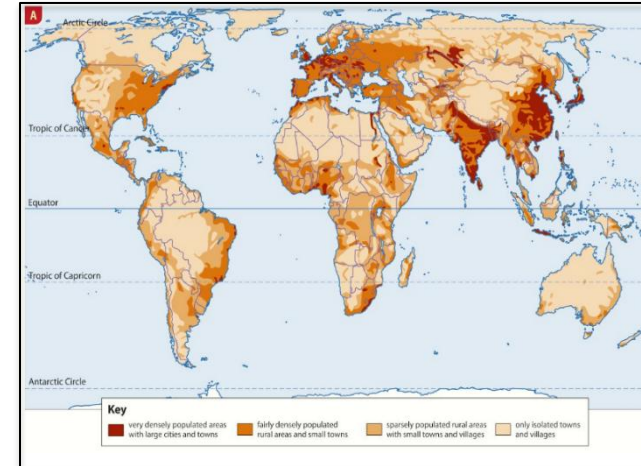
Number of people living worldwide since 1700 in billions



What causes population to change?

- births (e.g. availability of contraception and trends)
- deaths (e.g. war and disease)
- migration (e.g. people moving into or out of a country)

The population is growing at around **1.2% each year**. This is roughly an extra **80 million** people each year. The rate of growth is not the same everywhere, the map to the left shows that the population is rising fastest within central **Africa**. Generally population growth is faster in poorer, less developed countries and lower in wealthier countries.



World population distribution describes how people are spread out across the globe. The human population is not spread evenly. Few people live in locations that are **sparsely** populated and **densely** populated places have many.



Factors affecting how densely/sparsely populated an area is:

Sparse Populations: steep slopes, harsh climate, dense forest, isolated area, poor transport links, few jobs, lack of resources.

Dense Populations: flat or gently sloping land, mild climate, good soils, water, good transport links, places to work, resources e.g. coal, oil.

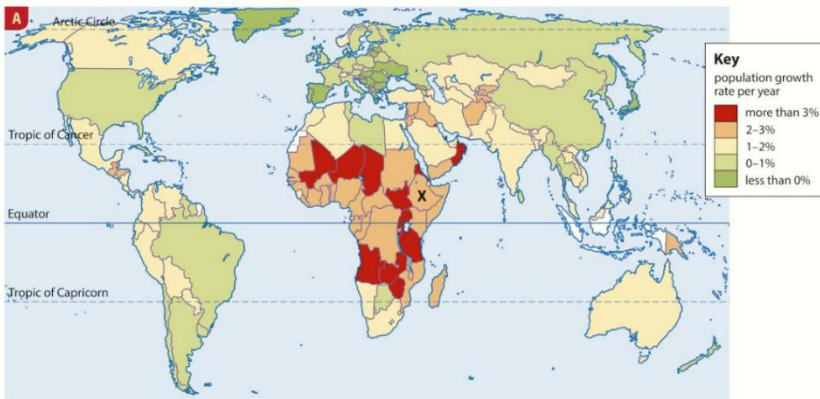
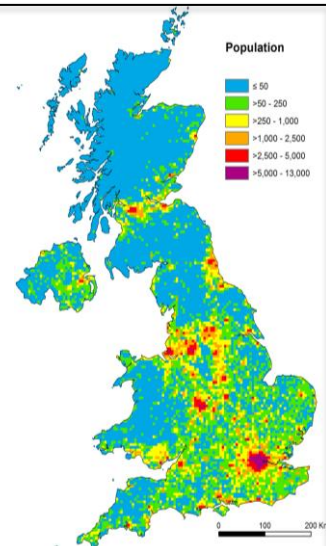
UK population distribution

Population distribution in the UK is also uneven. Some parts of the UK are very crowded. The **south east**, which includes the city of **London**, has a much greater population than the **highlands of Scotland**.

Reasons for the population distribution in the UK
The **south east of England** benefits from: good transport links, easy access to the rest of Europe, being the seat of Government.

North West England has a high population density because many people located there because of raw materials (coal) and industry.

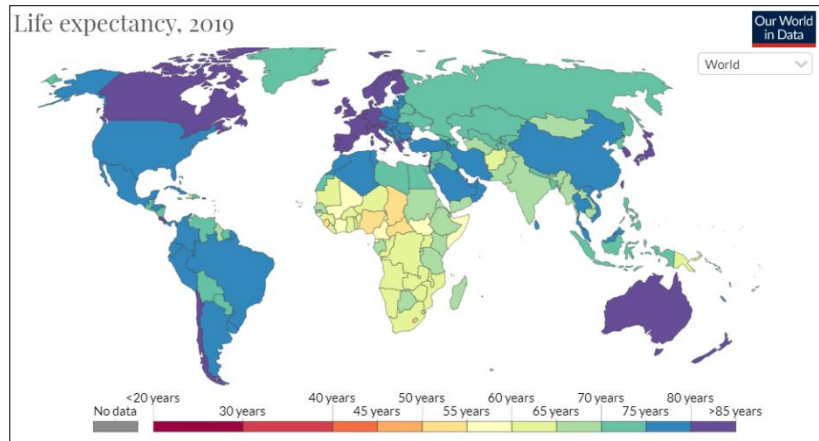
Scotland has a low population density because: some areas are remote, it is mountainous, making areas less accessible



Why are growth rates so high in some places?

- People think of children as a form of security. They can earn money or help on the farm, but some won't survive, so a big family is welcomed.
- Many women have no access to advice about spacing out their children. They may have babies one after another.
- Many girls have little choice. They leave primary school after a year or two. They may be married young and husbands might control how many children they have.

Population Year 7 HT5



Life Expectancy is how many years a person can expect to live. Average life expectancy in the **UK is 82 years**, where as for Nigeria it is 54 years.

Life expectancy varies due to factors such as: famine, war, disease, access to clean water, education, food and medical help.

Overpopulation is when there are too many people for the available resources. Impacts of overpopulation include:

Social Impacts	Economic Impacts	Environmental Impacts
There are food shortages if the country cannot grow or import enough food.	Wages are low due to high competition for jobs	There is an increase in the amount of pollution as more people equal more greenhouse gas emissions.
Services such as healthcare and education cannot cope with the large young population so not everyone has access to them.	There becomes not enough jobs for the number of people, so unemployment is high.	There is an increase in the amount of waste and landfill sites.
Diseases spread more quickly especially in low quality housing areas.	With fewer resources, there will be an increase in living costs	The more land we take over, the less land there is for other living species e.g. pandas

China’s population was growing rapidly during the 1950s -1970s with so many people, there were not enough resources to go around, therefore **the China One Child Policy** was introduced in 1980, this was relaxed in 2015 to allow a family to have **two** children and was adjusted again in 2021 to become the **three** child policy.



Impacts of the One Child Policy		
The fertility rate has dropped from 5.7 in 1960 to 1.5 in 2011.	About 400 million births may have been prevented.	In urban areas the policy was very effective.
It has led to an ageing population with a high dependency ratio . The ageing population is also increasing because of the improvements in living standards and life expectancy in the country.	The cultural preference for boys has meant that there seems to be a gender imbalance in China	There were reports of female infanticide , especially when the policy was first introduced.

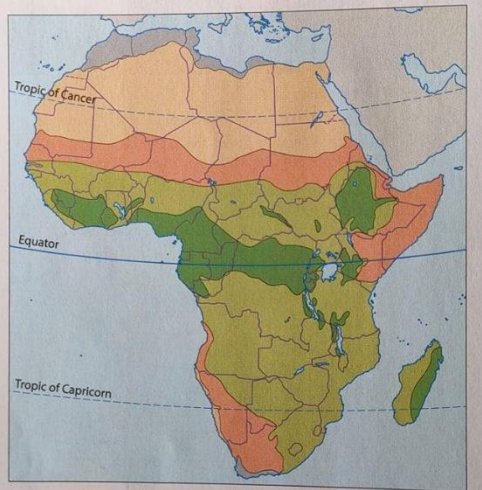
An **ageing** population is when there are **more people over 65 than under 15**. This results in the working population having many elderly people to support, however as the percentage of young people is low, when they grow up, there won’t be enough of them to do all the work. Therefore immigrants from other countries might have to move to countries such as Germany to fill job shortages.

A **youthful** population is when there is a **high percentage of people under 15 than over 65**. With so many young people, many may find it hard to get work when they grow up. Countries with an youthful population have to invest in education facilities and health care services to provide for their population.

Biomes of Africa Year 7 HT6

A **biome** is a large region with its own distinct climate, plants and animals.

There are **four** main biomes in Africa as shown in the map below.



Hot desert

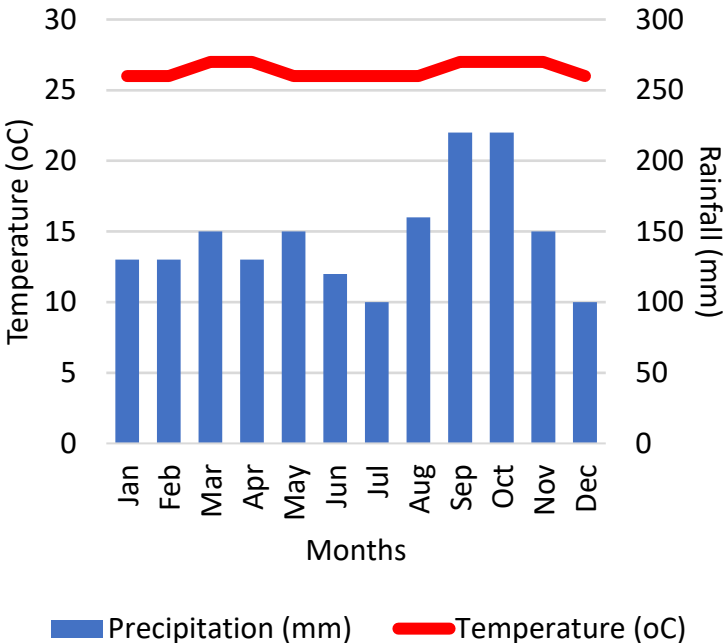
Semi-desert

Savanna

Rainforest

Name of biome	Climate (temperature and rainfall)	Plants and Animals	Challenges the biome faces
Hot Desert	Hot in the day – up to 50°C. Cold at night. Very little rain – some places get almost none	Plants and animals have to adapt to the climate. Camels, gazelles, ostriches, vipers, sand rats	Extreme temperatures
Semi Desert	Always hot or warm (but cooler than the desert). There is a wet and a dry season	Wild dogs, rodents. Domestic animals – cattle, sheep, goats. Grasses, low shrubs and scattered trees	The rains often fail, so animals and crops may die.
Savannah	Warm all year, with a rainy season and little rain the rest of the year	Lions, elephants, zebras, giraffes. Rolling grasslands, acacia trees	Desertification – when deserts expand and get bigger
Rainforest	Warm and wet all year – but less than the Amazon rainforest	Chimps, gorillas, monkeys, snakes, hippos and birds. Thousands of species of plants, low shrubs, ferns and 45m tall trees	Deforestation – people cut down the trees for timber or to grow crops

A climate graph of the Congo Rainforest



Deforestation is the removal of trees.

Causes: logging, dam building, farming, mining, settlement and fuel wood, road building

Consequences: Creates jobs, soil erosion, loss of habitats, climate change
Different groups of people have different views on deforestation.

Tourism in Kenya – in 2020 over 2 million people visited Kenya

There are both **positive** and **negative** impacts of tourism, for example, it **creates jobs**, however the jobs can be **poorly paid**. Tourists **bring money to the country**, however the **local people may see very little of the money that tourists spend**. Tourists **enjoy the attractions**, however can **damage the landscapes**.

Like deforestation, different groups of people have different views on tourism.

Plant and animal adaptations in the Sahara Desert – have to be able to cope with the climate including very little rainfall and high day time temperatures and cold night time temperatures.

