Year 8

Geography revision handbook

Everything that you need to succeed in your geography exam.

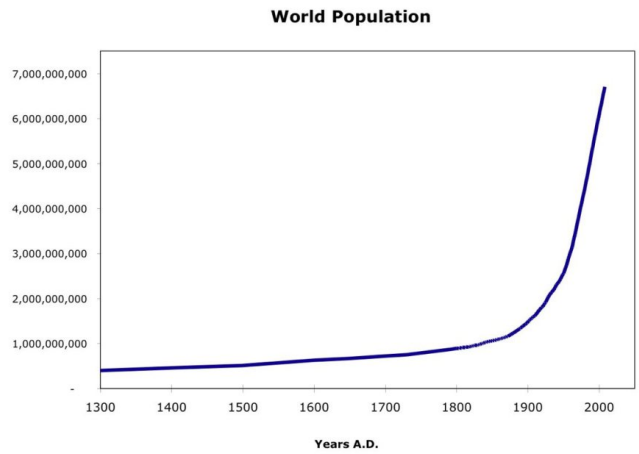
It is recommended that you produce your own revision resources, such as flash cards and mind maps to help you to recall this information in the exam.

Get revising and remember to ask your teacher if you need any help.

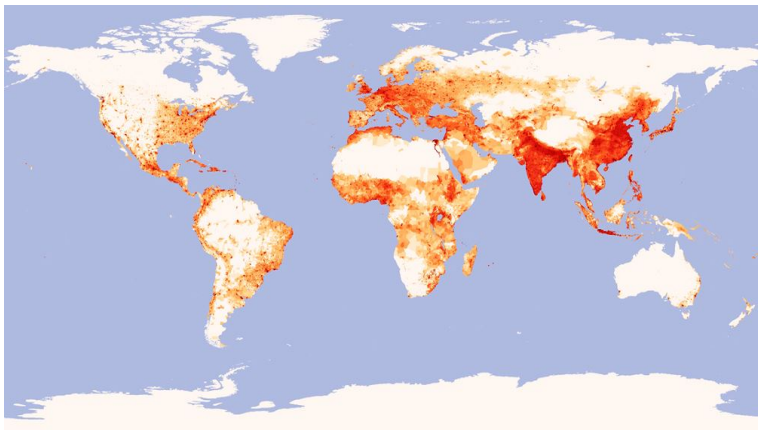
Good luck and work hard!

Population and Migration

Population growth



The world's population has increased rapidly since the industrial revolution. This increase can be described as a J- curve as it shows a steep gradient as time has progressed. The world's population is said to be continuing to rise especially in the developing world. The graph shows a very gradual increase of population from 500BC until around 1800 when the industrial revolution started.



Population density **-**Population density is the average number of people per square kilometre.

It is a way of measuring population distribution and shows whether an area is sparsely or densely populated. Population density is calculated using the following formula: Density= total population ÷ total land area in km2

Population distribution- Where the world's population live.

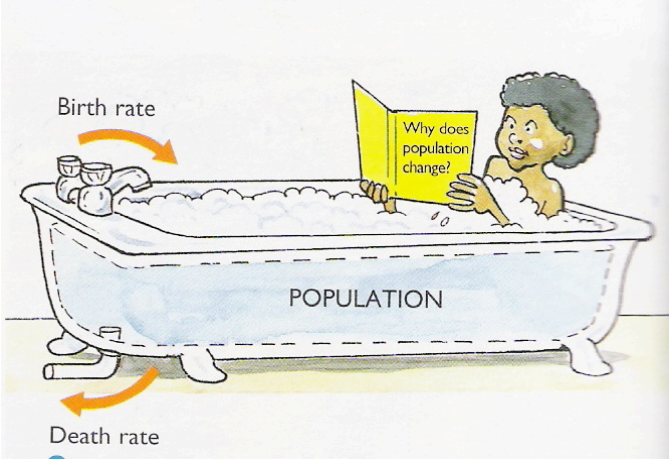
Densely populated- A high number of people per 1km squared.

Sparsely populated- A low number of people per 1km squared.

The world's population is not evenly spread throughout the globe. Most people however live in Asia, especially China (1.3 billion people) and India. Two countries which have developed quickly into powerful nations. Europe is also a densely populated area as the climate and landscape is able to support life. Areas, such as Saharan Africa, the Himalayas and central Australia are difficult landscapes that cannot sustain life.

Densely Populated	Sparsely Populated
A **pleasant climate** means that people will want to live here as it is not too hot/cold or wet/dry.	**Poor water supply** would mean that people cannot drink and hence die
Good water supply means that there is enough water for drinking and agriculture	**Wars and Fighting** are undesirable qualities of an area due to the threat to life
Money available for investment means that the government are willing to invest in education, health care, benefits and the local community	**Lack of Investment** means that further advancement cannot happen and therefore the area fails to improve
Fertile soils to grow crops will mean that there is a constant food supply	**Steep slopes** are unsuitable for building/farming on
Good roads and transport facilities allow easy access in the area and therefore there will be good trade and accessibility	**A government that doesn't listen to its people** and therefore doesn't invest in the area and creates further deprivation
Industry and Jobs so people can earn money and create a better standard of living	**Dense forest** is unsuitable to live within due to lack of area to build in
Government invests money in areas to improve them and hence create a better standard of living	**Little industry and few jobs** leads to little money and high levels of unemployment and therefore deprivation
Good food supply to ensure that people can eat and hence prevent famine	**Poor soils to grow crops** will mean a poor food supply and lack of trade opportunities
Good education system which allows access to better jobs and therefore more money	Climate being **too hot or too cold** makes in unbearable to live in
Flat or gently sloping land perfect for building on meaning that the population can grow and increase industry, jobs and wealth in the area	**Few natural resources** lead to a lack of industry and therefore a lack of jobs and no money
Natural resources for industry, such as coal, to provide jobs and to ensure that the economic status of the area is improving	**Open grassland for animals** means lack of building land for houses and therefore lack of development opportunities
Established medical facilities, such as NHS, means that if people become ill then they can be treated easily	**Too wet or too dry** means that the area will have unsuitable conditions to grow crops/farm animals
	Poor transport links make it difficult to get into/ out of an area and therefore reduce trade opportunities which leads to little money and development within an area

Factors affecting population change



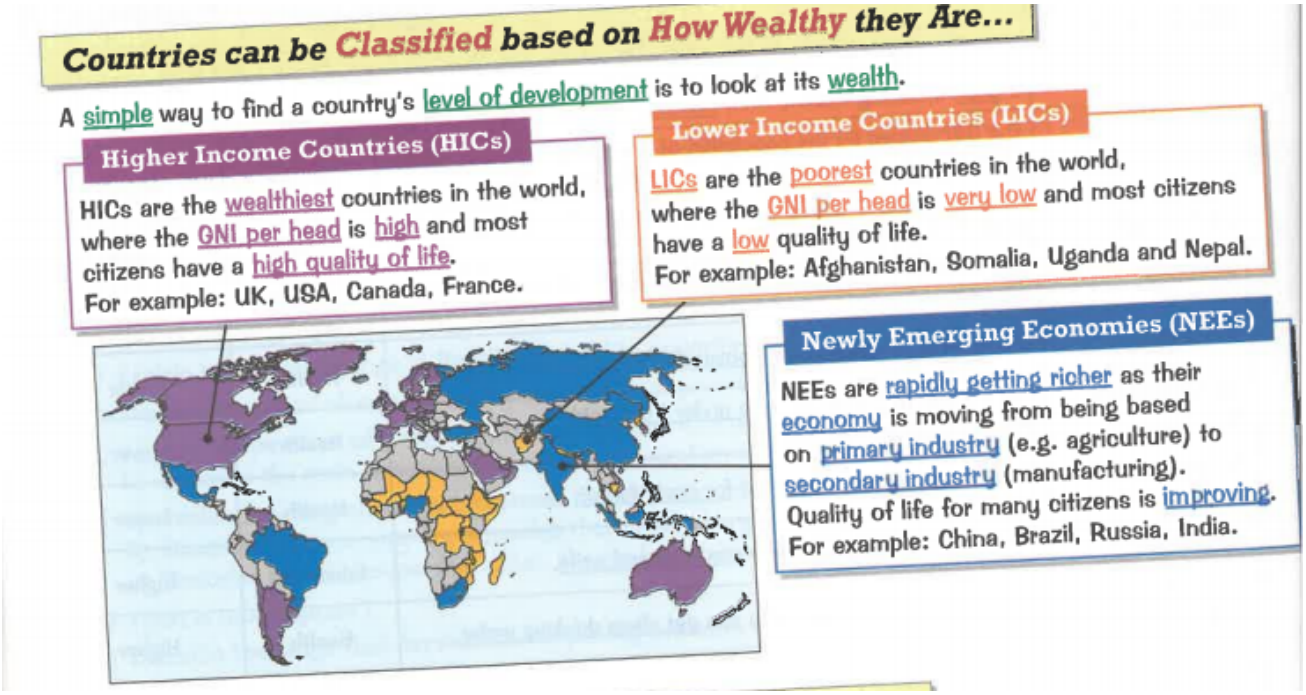
WHAT IS BIRTH RATE AND DEATH RATE

Birth rate - Number of people born per 1000 people per year.

Death rate - Number of people that die per 1000 people per year.

Natural Change – How a population changes due to birth rates and death rates. Calculated by Birth Rates – Death Rates = Natural change.

FACTORS AFFECTING BIRTH RATES	FACTORS AFFECTING DEATH RATES
Good harvest means that there is a good food supply and hence will allow for a growth in families	Food shortages will increase death rates due to lack of food leading to famine
Poor health care will mean that less babies are born	State care for old people reduces death rates due to the elderly being cared for properly – allowing access to medication
Children needed to help with work would mean that families have more children to bring in more money to the family	Poor health care will increase death rates due to preventable diseases being untreated
Rising unemployment means that people will have more free time and hence more chance to reproduce which will lead to more babies	Immunisation against Measles, Mumps and TB reduces death rates due to preventing life threatening diseases
Free Education means that there will be less of a financial strain upon families. Education will lead to a better chance of gaining a good standard of employment which will lead to higher wages and a better standard of living	Improved water supply reduces death rates due to access to drinking water and water for irrigation of crops and hence a food supply
Few schools will reduce birth rates due to lack of educational provisions	War increases death rates
New hospitals lead to higher birth rates due to a better standard of medical facilities. It could also reduce birth rates due to less children dying at child birth.	Outbreak of Cholera increases death rates due to cholera being a major killer within LEDC countries as there is little medication available
Birth control available means that there will be less children being born and therefore a lower birth rate	Good pensions allow for the elderly to be able to have a better standard of living and allows for them to pay for heating and medication – due to the elderly being vulnerable
	Dirty water increases the chance of catching disease and therefore increase death rates
	Severe cyclones, hurricanes and weather increases death rates due to the severe conditions and higher chances of death
	New hospitals reduce death rates due to access to medical care to treat injuries/illnesses
	Free Education means a better understanding of how to take care of yourself and therefore reduce the death rate
	Poor sanitation increases death rates due to the increased chance of disease
	Poor housing means a higher chance of collapsing and therefore increasing death rates



The Demographic Transition Model

The *demographic transition model* shows population change over time. It studies how birth rate and death rate affect the total population of a country.

The five stages of the demographic transition model

1. Total population is low but it is *balanced* due to high birth rates and high death rates.

    - The birth rate is high because of contraception. People also have lots of children because poor healthcare means that many infants die (high infant mortality).
    - The death rate is also high due to poor healthcare or famine, and life expectancy is low (few people reach old age). Income is very low.

2. Total population rises as death rates fall whilst birth rates remain high. Many LIC's are in stage 2.

    - The economy is based on agriculture so people have lots of children to work on farms, which means that birth rates are high.
    - Death rates fall due to improved healthcare, sanitation and diet so life expectancy increases.

3. Total population is still rising rapidly. The gap between birth and death rates narrows, stage 3 is more developed (most NEE's are at stage 3). Natural increase is high.

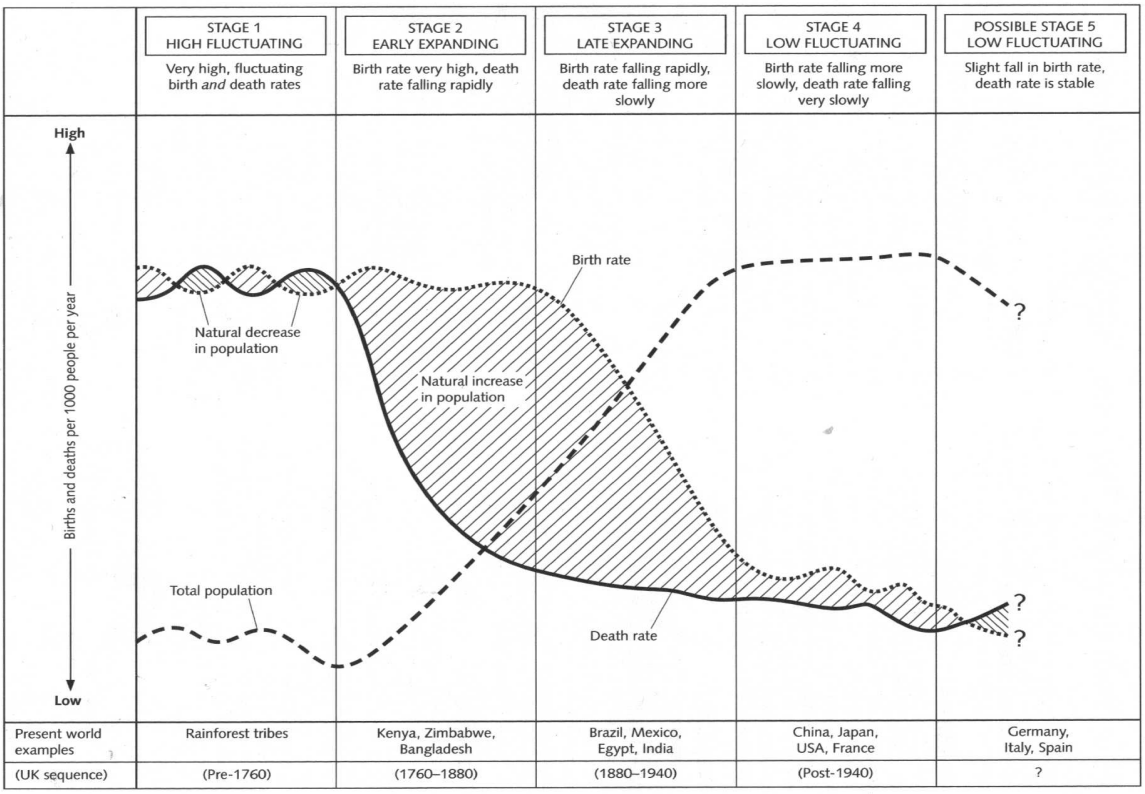
- Birth rate falls rapidly as women have a more equal place in society and better education. The use of contraception increases and more women work instead of having children.
- The economy also changes to manufacturing, so income increases and fewer children are needed to work on farms. Healthcare improves and life expectancy increases.

4. Total population is high, but it is balanced by a low birth rate and a low death rate. Birth control is widely available and there is a desire for smaller families. Most HIC's are in this stage.

    - Birth rates are low because people want possessions and a high quality of life, and may have dependant elderly relatives, so there is less money available for having children.
    - Healthcare is good, so the death rate is low and life expectancy is high. Income is also high.

5. Total population is high but going into decline due to an ageing population. There is a continued desire for smaller families, with people opting to have children later in life.

As a country passes through the demographic transition model, the total population rises. Most LIC's are at stage 2, most NEE's are at stage 3 (with a growing population and a high natural increase). Most HIC's are now at stage 4 of the model and some such as Germany have entered stage 5.



Why do LIC's have more children?

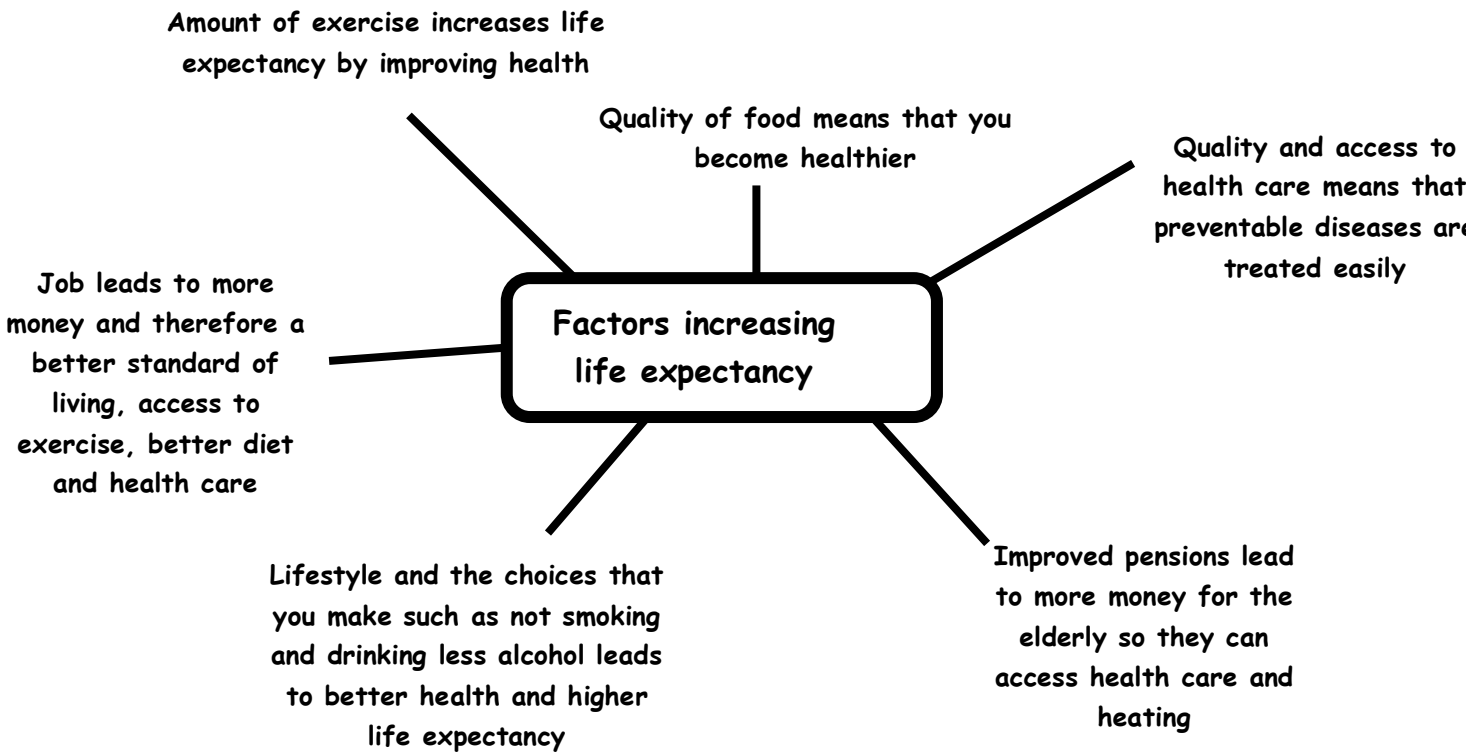
- Children play an important role working with their families…… Who live in rural areas away from the cities.
  - Some countries have no pensions for people in their old age…….. So people will rely on their children to look after them
- Outside the cities the tradition is to have many children……. So people have more children to ensure some survive.
- Many children die young because of poor health care….. Because there are fewer modern influences.
- Birth control isn't always available…….. So parents are unable to plan their families.
- The majority of people are still farmers…….. So people have more children to help them.

Birth rates in MEDCs are falling as people choose to have smaller families later in life. Contraception is easily available and well understood.

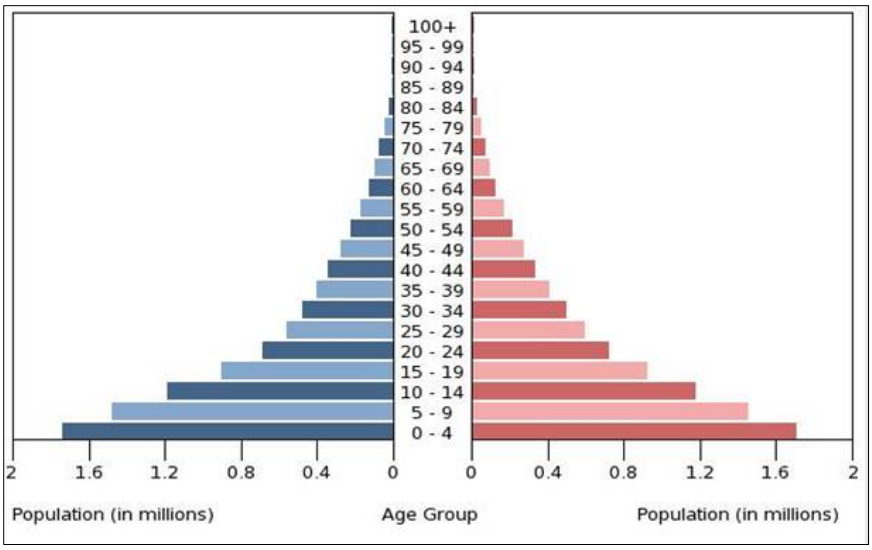
An ageing population

- As people live longer, the structure of a population changes.
- Many MEDCs are now experiencing a significant increase in the number of elderly people as a proportion of the population.
- As birth rates fall and people have smaller families, the number of young dependants is falling and the number of elderly dependants is rising.
- In the near future this will mean that there are fewer economically active people to support the elderly population.

<u>What factors increase life expectancy?</u>



Population Structure & the DTM

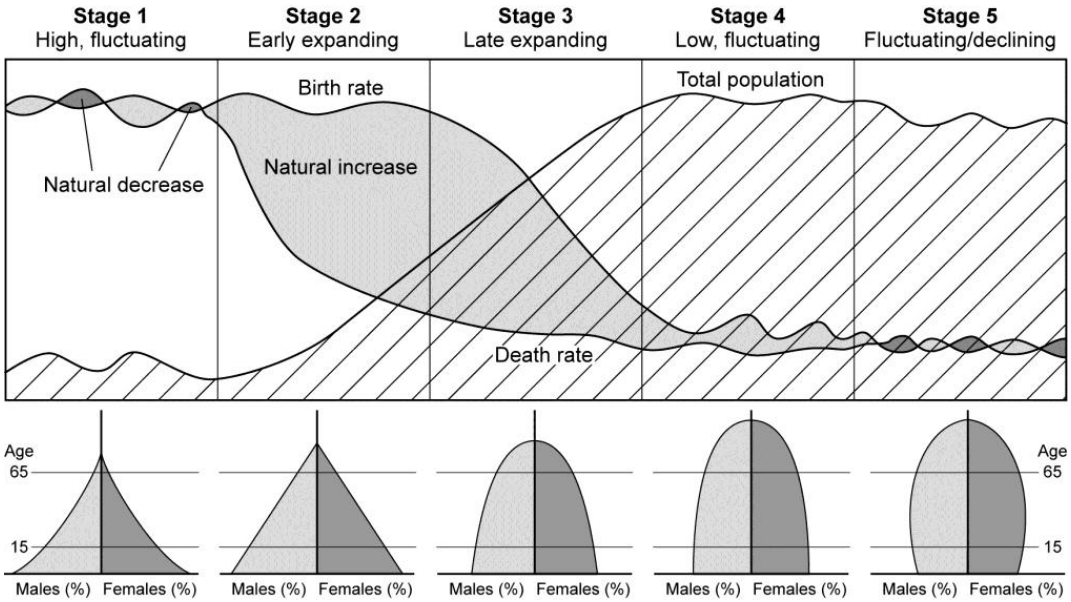


Population pyramids are graphs that show population structure, i.e. how many males and females of different age groups are in the population in each place. Population structures change from place to place and over time. The population pyramids for the countries below are different shapes.

How do we read population pyramids?

The graph is split into males and females on each side.

- A wide base means there are lots of young people, and suggests a high birth rate.
- A narrow base means a smaller proportion of young people, suggesting a low birth rate.
- A wide middle, tall pyramid means an ageing population, suggesting that there is a long life expectancy
- The population pyramids go from being concave in shape in stage 1, to become a convex shape.
- The population is displayed as bars of different age groups – these go up in 5s. These can be shown as the total number or sometimes as a percentage of the population.



Measures of Development & the usefulness of the development indicators

What is development?

Development is the progress of a country in terms of economic growth, the use of technology and human welfare. There are different types of development, including economic, social, cultural and environmental developments.

Development means positive change that makes things better. As a country develops it usually means that people's standards of living and quality of life will improve. Different factors affect a country's level and speed of development.

- Environmental factors such as natural hazards e.g. earthquakes
- Economic factors such as trade and debt
- Social factors such as access to safe water and education
- Political factors such as stable government and civil war.

The development gap is the difference in standards of living between the world's richest and poorest countries.

We measure development using development indicators:

Development indicator	**What it is?**	**Social/ Economic**	**Strengths**	**Limitations**
Gross National Income (GNI)	Measurement of economic activity calculated by dividing the total national income by the size of the population.	E	GNI is a good indicator of the state of the economy and provision of services.	There is no built-in measure of how much a unit of currency will buy as £1 or $1 can vary hugely on what it can buy in different countries. GNI does not take into account subsistence or informal economies which are very important in less developed countries. Can hide inequalities as it does not show the distribution of wealth. Hides variations between regions in the country and between classes. GNI is a blunt tool for assessing development and does not take consideration of the living standards of the country.

Life Expectancy	The average number of years a person is expected to live.	S	Life expectancy links all these indicators together as in general a higher life expectancy usually means the more developed the country.	Data can be out of date or hard to collect.
Birth rate	The average number of years a person is expected to live.	S	Birth rate can be used for predicting the future situation and planning accordingly.	Hard to get an accurate figure as many births in the less developed countries would be un-registered and therefore level of infant mortality may be significantly above the published statistics.
Death rate	The number of deaths per 1000 people per year.	S	Death rate is an easy to use indicator.	Death rate does not actually tell us what is responsible for the high death rate. For example a high death rate could be a result of a natural disaster not poor health care
Infant Mortality	The number of babies that die under one year of ages, per 1000 live births.	S	Infant mortality indicates quality and access to health care, water quality, food supply and level of education.	Data may be unreliable (the level of infant mortality is well above the figures given by some countries).
Literacy rate	Percentage of people in a country to have basic reading and writing skills.	S	Literacy rates indicate the amount of education on offer.	When used on its own, literacy rate doesn't tell us whether the figure is a consequence of too few schools or the fact that children have to work.

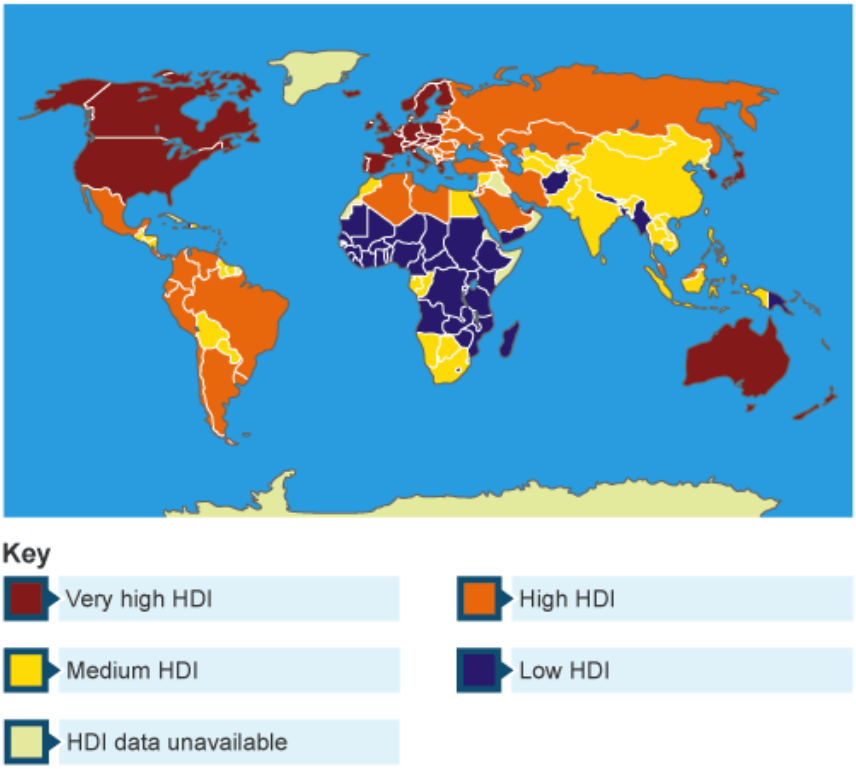
Measuring development is not straightforward. It can be misleading to look at one single wealth indicator like GNI per capita because the wealth of a country might not be shared out equally. Also, one country might be seen as very developed when using one indicator, but far less developed when using a different indicator. Therefore, geographers use more than one indicator when measuring development.

Human Development Index

The United Nations now uses a composite indicator called **HDI (human development index)** which is made up of a number of important measures, such as:

- GNI per capita
- number of years schooling
- life expectancy

The measures range from 0 to 1. An HDI between 0.8 and 1 is high and between 0.6 and 0.4 is low.



Causes of uneven development

Physical Factors	Economic Factors	Historical/Political Factors
Climate related disease – many tropical countries unfortunately suffer from diseases that thrive in hot humid conditions, such as Dengue Fever and Malaria. People who get these diseases are ill and cannot work or may even die, limiting development.	**Debt** - Many LEDCs are in **debt** to MEDCs. These countries borrowed in the 1960 s and 70s at low interest rates but the rates went up. Some of their income has to pay off these debts.	**Poor governance** can ruin the development of a place. Money that could be spent on development may be used to fund military weapons or an affluent lifestyle of an elite group of people.
Water quality can have a massive impact on people. Poor water quality has a direct impact on people's lives as it is an essential element for live. Poor water quality can lead to disease (e.g. Yellow fever and Malaria (both related to mosquitos which breed around water)), which weakens people and therefore has a direct impact on their productivity and hence economic development.	**World trade** - the world's poorest countries have also been at the mercy of a global trade system designed and controlled by the world's richest countries. Their products are often heavily taxed by rich countries.	**Political Corruption** is a factor – some governments have corrupt officials who make money and wealth at the expense of the people that they are supposed to represent. When politicians are corrupt developments in health, education, roads, power generation and clean water are less.
Being landlocked with bad neighbours – although this has a	**Goods sold** - many poorer countries export only lower value	**War** - countries such as the Sudan, Democratic Republic of

political element to it, countries that have no access to the sea are at the mercy of their neighbours. If they are "bad neighbours" who expect huge payments or have regular conflict, this can severely limit development.	raw materials such as agricultural goods, whilst they buy back more expensive manufactured goods or services. Poorer countries do not have the capital to set these types of industries up.	the Congo and Rwanda have had wars in recent decades. Wars consume vital resources and divert attention away from the crucial issues for normal people, healthcare, reliable food supplies, stability, economic well-being and access to clean drinking water.
Natural resources – countries with few natural resources start off at a very low economic base and find it hard to create products that can sell on world markets. There are also countries, such as Japan, which are low in natural resources, but have based their development on human factors such as education and skills.	**The POVERTY TRAP** - unfortunately poverty can lead to more poverty. Low investment in key areas such as infrastructure (roads, rail, telecommunications etc.), education and healthcare can have dire consequences for a population. Lack of investment in things like these can exacerbate (make worse) poverty, and keep countries mired in a low level of development.	**Colonialism** has limited many LICs' level of development. A colony often helped supply food and minerals to countries like Britain and France. There was investment in colonies, but this was focused on things that would help the trade between the countries. Colonialism also is linked with the exploitation of people and resources throughout history, the slave trade robbed African countries of productive population for example.
Climatic hazards such as hurricanes and drought are more likely to strike some countries than others. For fragile countries a drought could have a devastating impact on development. The 2011 to 2012 Horn of Africa famine that affected Ethiopia, Eritrea, Kenya and Somalia had a long term impact. As well as killing and weakening people from hunger and thirst, many of these countries had to deal with a refugee crisis, moving valuable resources away from other development aims.	**INVESTING** - A poorer country finds it more difficult to invest in **education**. The problem is made worse because many countries have a high dependency ratio. Having money to invest in a healthcare system is important for a country to develop. That is because it is difficult for sick people to work hard.	
Climate – climate can be positive, it can be great for crop growth and could also help promote industries like tourism		

Consequences of uneven development

Uneven Development has Consequences

Uneven development leads to great differences in wealth and health, and has caused large flows of international migration.

Wealth

1) People in more developed countries have a higher income than those in less developed countries.
2) For example, GNI per head in the UK is over 40 times higher than in Chad.

Health

1) Healthcare in more developed countries is better than in less developed countries.
2) People in HICs live much longer — e.g. the UK's life expectancy is 81, but in Chad it's only 51.
3) Infant mortality is also much higher in less developed countries — e.g. it is 85 per 1000 births in Chad, compared to 4 per 1000 births in the UK.

International Migration

1) If neighbouring or nearby countries have a higher level of development, people will seek to enter that country to make use of the opportunities it provides to improve their quality of life.
2) For example, Mexico (an NEE) borders the USA (an HIC). Every year over 130 000 Mexicans move to the USA legally (and thousands more enter illegally) to seek better paid jobs and a higher quality of life.

Reducing the development gap

There are lots of strategies that can reduce the development gap:

Aid

1) Aid is given by one country to another as money or resources (e.g. food, doctors).
2) It is spent on development projects, for example constructing schools to improve literacy rates, building dams and wells to improve clean water supplies and providing farming knowledge and equipment to improve agriculture.
3) Aid can definitely help, but sometimes it is wasted by corrupt governments. Or once the money runs out, projects can stop working if there isn't enough local knowledge and support to keep the projects going.

Fair Trade

1) The fair trade movement is all about farmers getting a fair price for goods produced in LICs, e.g. coffee and bananas, allowing them to provide for their families.
2) Companies who want to sell products labelled as 'fair trade' have to pay producers a fair price.
3) Buyers also pay extra on top of that to help develop the area where the goods come from, e.g. to build schools or health centres.
4) But there are problems — only a tiny proportion of the extra money reaches the original producers. Much goes to retailers' profits.

Debt Relief

1) Debt relief is when some or all of a country's debt is cancelled, or interest rates are lowered. This means they have more money to develop rather than to pay back the debt.
2) For example, Zambia (in southern Africa) had $4 billion of debt cancelled in 2005. In 2006, the country had enough money to start a free healthcare scheme for millions of people living in rural areas, which improved their quality of life.

Investment

1) Foreign-direct investment (FDI) is when people or companies in one country buy property or infrastructure in another.
2) FDI leads to better access to finance, technology and expertise, and improved infrastructure, improved industry and an increase in services.

Industrial Development

In countries with a very low level of development, agriculture makes up a large portion of the economy. Developing industry increases GNI and helps improve levels of development as productivity, levels of skill and infrastructure are improved.

Using Intermediate Technology

1) Intermediate technology includes tools, machines and systems that improve quality of life but are also simple to use, affordable to buy or build and cheap to maintain.
2) For example, solar powered LED lightbulbs are used in parts of Nepal where the only other lighting options are polluting and dangerous kerosene lamps or wood fires.
3) This allows people to work in their homes or businesses, and children to study, after dark. As a result, skills, incomes and industrial output can increase, which helps reduce the development gap.

Tourism

Tourism can also provide increased income as there will be more money entering the country. Countries like Kenya are using tourism to increase their level of development (see next page).

Microfinance Loans

1) Microfinance is when small loans are given to people in LICs who may not be able to get loans from traditional banks. The loans enable them to start their own businesses and become financially independent.
2) Although microfinance works for some people, it's not clear that microfinance can reduce poverty on a large scale.

Tourism in Kenya

Why visit Kenya? Kenya has an attractive climate (tropical) with sunshine all year round, hot and humid at the coast; temperate inland and dry in the NE.

- **Safari holidays** are popular e.g. in the Maasai Mara/ Nakuru National Park. Kenya has spectacular wildlife including the big 5 – elephant, lion, rhinoceros, leopard and buffalo.
- **Cultural experience** – many tourists visit local tribes such as the Maasai to find out more about their lifestyle and traditions.
- **Coastal holidays** – SE of Kenya has fine sands and coral reefs with spectacular marine life – e.g. Mombassa.

Tourism is Helping Kenya to Increase its Development

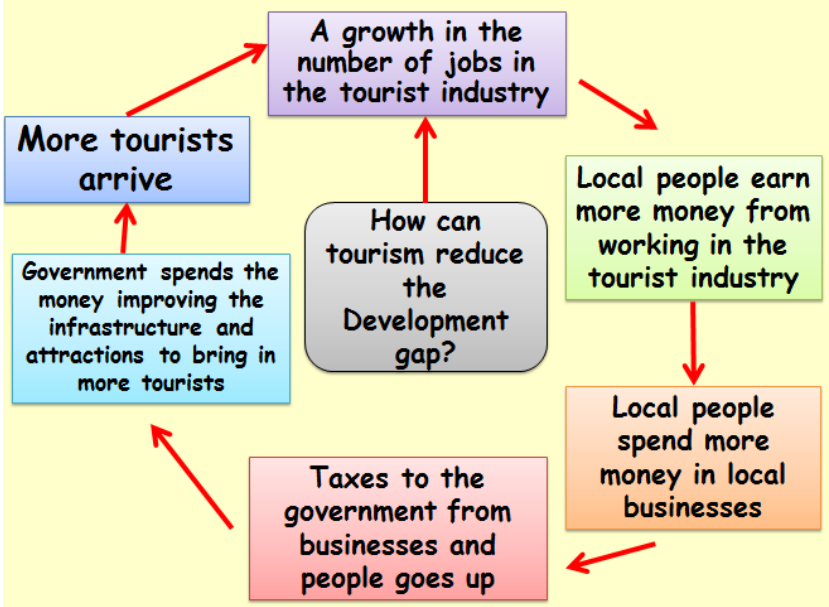
1) Kenya is a low-income country in East Africa. It attracts tourists because of its tribal culture, safari wildlife, warm climate and beautiful unspoilt scenery. Kenya's government is trying to boost tourism as a way of increasing its development.
2) Visa fees for adults were cut by 50% in 2009 to make it cheaper to visit the country. They were also scrapped for children under 16 to encourage more families to visit.
3) Landing fees at airports on the Kenyan coast have been dropped for charter airlines.
4) Tourism has increased from 0.9 million visitors per year in 1995 to 1.8 million in 2011.

Effectiveness — Benefits

1) Tourism now contributes over 12% of Kenya's GDP — money that can be spent on development and improving quality of life.
2) Nearly 600 000 people are directly or indirectly employed by the tourism industry — that's 10% of all employment in Kenya.
3) The 24 national parks charge entry fees to tourists. This money is used to maintain the national parks, which helps to protect the environment and wildlife.
4) Since 2000, Kenya's score on the Human Development Index has increased from 0.45 to 0.55.

Effectiveness — Negatives

1) Only a small proportion of the money earned goes to locals. The rest goes to big companies, often based in HICs overseas, so doesn't help to close the development gap.
2) Some Maasai tribespeople were forced off their land to create national parks for tourists.
3) Tourist vehicles damage the environment, e.g. safari vehicles destroying vegetation and disturbing animals.



This diagram shows the multiplier effect on how tourism can reduce the Development gap.

Rivers

Drainage basin- the catchment area of water which flows into one main river channel

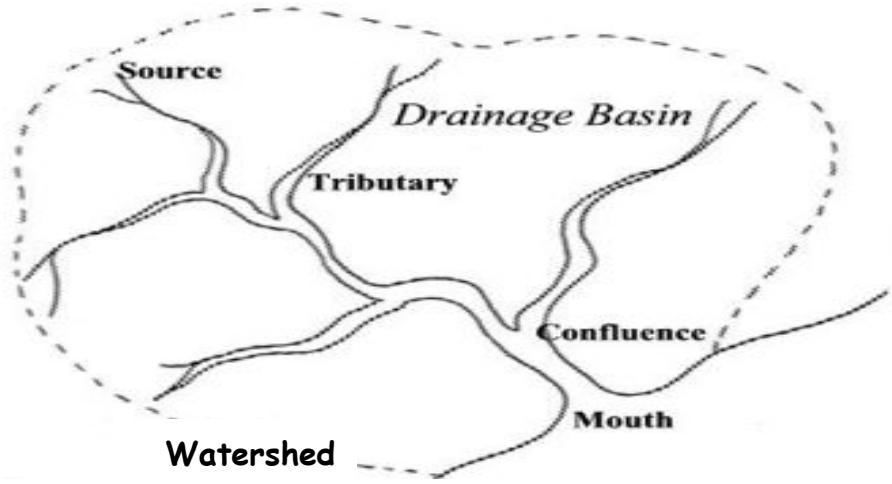
Source- the point where the river starts, often high up in the mountains

Tributary- smaller streams which join the main channel and drain the water in the drainage basin.

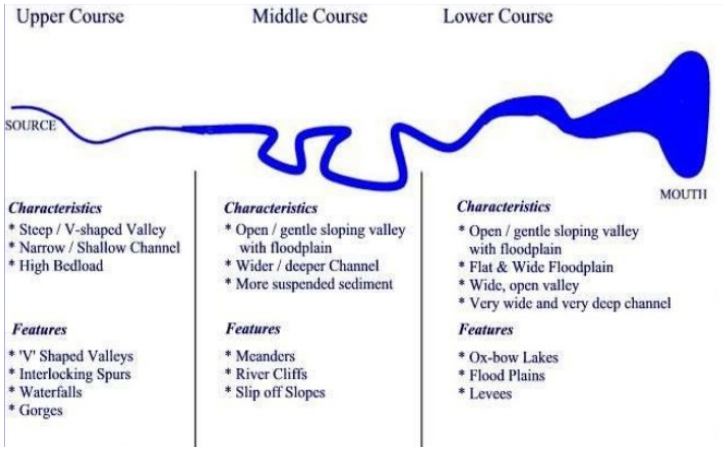
Confluence- where two rivers meet

Mouth- the point where the river reaches the sea, often the landscape is very flat.

Watershed- the high up boundary which separates two drainage basins



A river travels from an area which is steep and V shaped, high up in the mountains. This is called the Upper course of the river. As the river travels towards the mouth, the landscape around it gradually decreases in gradient and widens. The channel at this point also increases in size; both in width and depth. This is called the middle course. In the lower course the river is at its widest and deepest, taking up the whole of the valley. This is the mouth of the river.



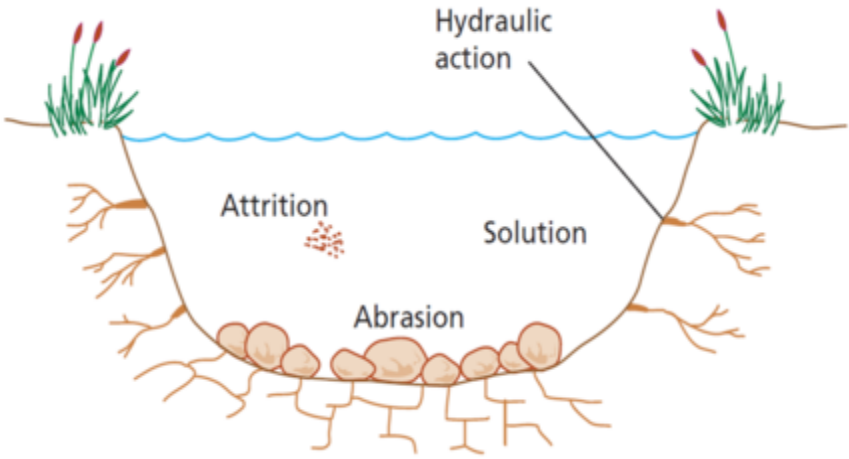
River Processes

The river changes the channel and the landscape in 3 main ways: Erosion, Transportation and Deposition

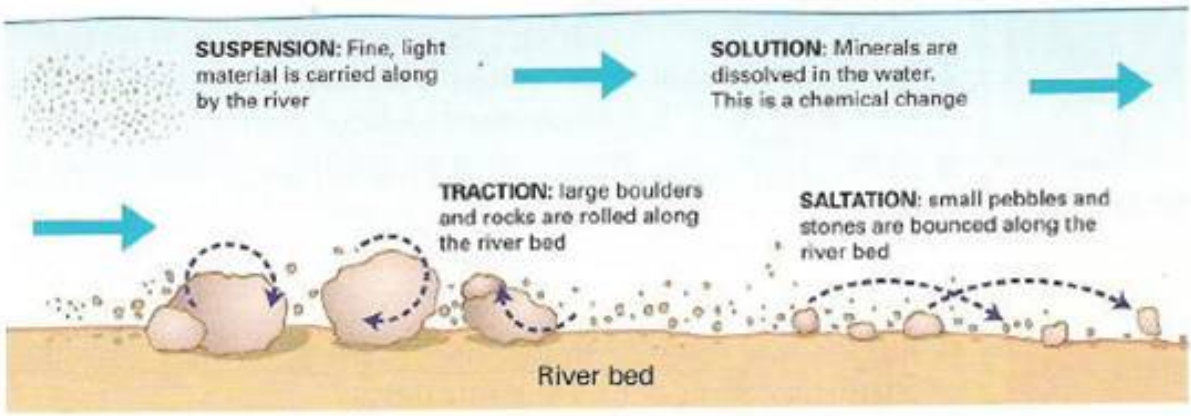
Erosion- Is where the river removes and destroys materials in or near to the river

Transportation- is the movement of materials within the river

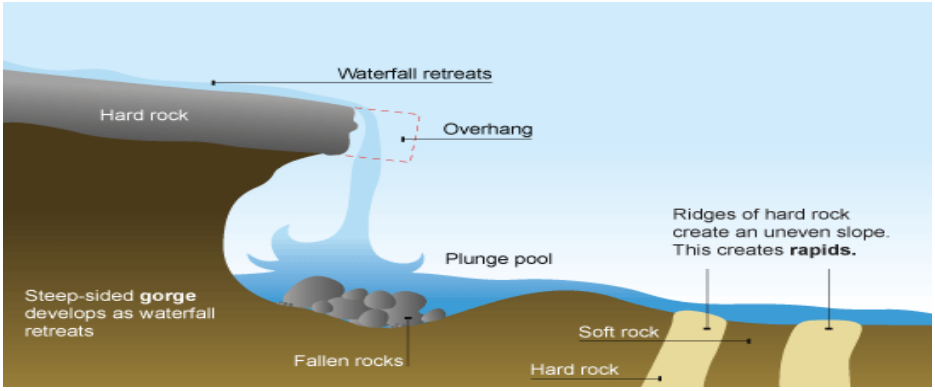
Deposition- is the dumping of the rivers load, often due to a loss of the river's energy



Erosion process	Description
Attrition	Rocks and stones knock together and wear each other away.
Abrasion	Sand and stones in the river scrape the bed and banks and wear them away.
Solution	Water dissolves soluble minerals from the bed and banks.
Hydraulic Action	Water is forced into cracks in the river bank forcing them to break apart.



Waterfalls



1. Waterfalls are found in the upper course of a river. They usually occur where a band of hard rock lies next to soft rock. They may often start as rapids.
2. The soft rock gets eroded more than the hard rock creating a step. The softer rock gets eroded by hydraulic action and attrition.
3. The softer rock undercuts the harder rock and an overhang is formed. A plunge pool is created.
4. The plunge pool gets deeper as more erosion occurs.
5. The hard rock above becomes unstable and starts to collapse. Rocks fall into the plunge pool.
6. Undercutting continues and the waterfall migrates backwards. This process happens all over again

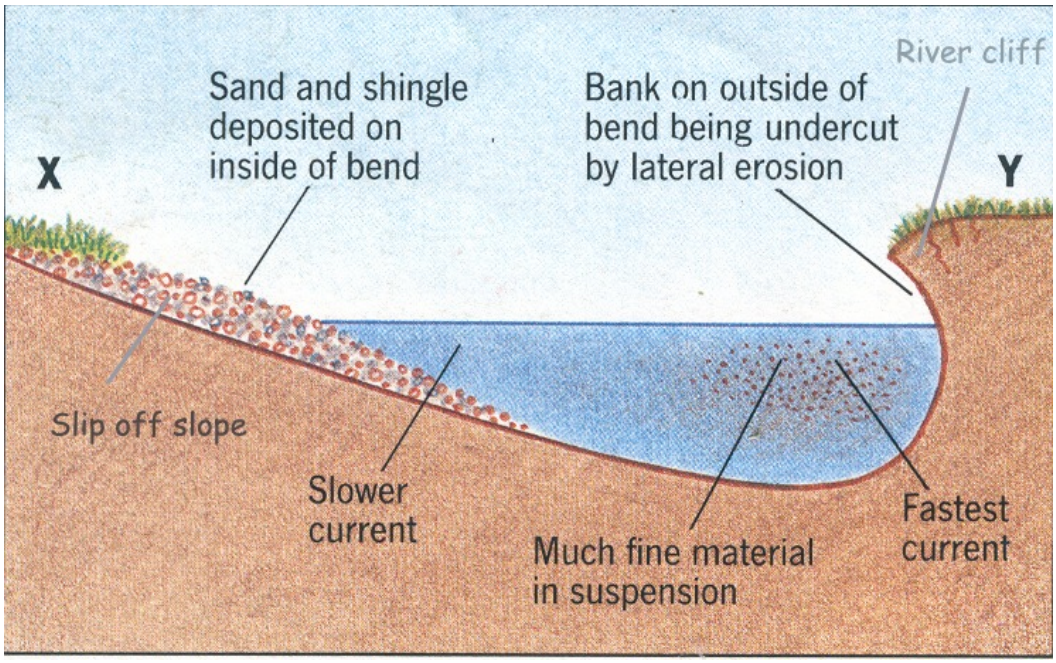
Middle course features

Meanders

In the middle course the river has more energy and a high volume of water. The gradient here is gentle and lateral (sideways) erosion has widened the river channel. The river channel has also deepened.

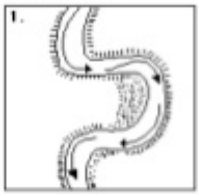
- As rivers get nearer their mouth they flow in increasingly wide, gentle sided valleys.
- The channel increases in size to hold the extra water which the river has to receive from its tributaries.
- As the river gets bigger it can carry larger amounts of material. This material will be small in size as the larger rocks will have been broken up on their way from the mountains.
- Much of the material will be carried in suspension and will erode the river banks by Abrasion.
- The river flows fastest on the outside bend. This means there is more energy so erosion occurs
- The river flows slowest on the inside bend. This means there is less energy so deposition occurs

Meander



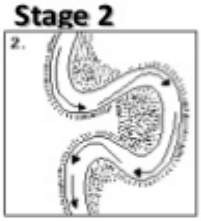
Ox-bow Lakes

Stage 1



-When rivers flow over flatter land, they develop large bends called **meanders**.
-As the river gets bigger, it can carry larger amounts of material in **suspension**, which will erode the river banks by **corrasion**.
- the river is now eroding **sideways** into its banks rather than downwards into its bed, a process called **lateral erosion**.

Stage 2

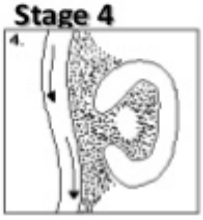


-On the **inside** of the bend there is much less water, making the river **shallow** and **slow-flowing**.
-Due to **erosion** on the **outside** of the bend and **deposition** on the **inside**, the shape of a meander will change over a period of time. Erosion narrows the neck of the land within the meander

Stage 3

-In time, and usually during a **flood**, the river will cut right through the neck.
-The river will take the new, shorter route

Stage 4



- With the fastest current in the centre of the river, deposition occurs next to the banks. Eventually, deposition will block off the old meander to leave an **ox-bow lake**.

Causes of flooding

- **A steep-sided channel** - a river channel surrounded by steep slopes causes fast *surface run-off*.
- **A lack of vegetation or woodland** - trees and plants intercept precipitation (i.e. they catch or drink water). If there is little vegetation in the drainage basin then surface run-off will be high.
- A *drainage basin*, consisting of mainly *impermeable* rock - this will mean that water cannot **percolate** through the rock layer, and so will run faster over the surface.
- **A drainage basin in an urban area** - these consist largely of impermeable concrete, which encourages overland flow. Drains and sewers take water quickly and directly to the river channel. Houses with sloping roofs further increase the amount of run-off.

Heavy rainfall over a period of time causes the soils, which usually **infiltrate** the water, to become **saturated**. This increases **surface run off** to the river and causes a greater volume of water to be in the river= a flood.

Urbanisation means that there is no **infiltration** of the **precipitation** into the soils. This increases **surface run off** which again leads to a greater volume of water entering the river at the same time.

Deforestation of trees causes a reduction of **interception** where the trees leaves catch the **precipitation** before it reaches the ground. This leads to greater rates of **infiltration**, more **saturation** of soils and an increase in **surface run off** to the river, causing it to flood.

Ground baked hard means that the precipitation cannot infiltrate the ground as the water is not able to enter the soils due to the ground being baked hard like concrete. This often happens in areas where the climate is hot and dry for long periods of time.

Steep gradients mean that the rain water is not able to infiltrate and therefore runs quickly into the river.

Saturated soils means that the **saturation levels** in the soils cannot hold any more water. This means that **the volume of water builds** up on the surface. If the water is not able to go anywhere it floods the area. Sometimes the water runs into the river. This means the volume in the river is great, the river floods.

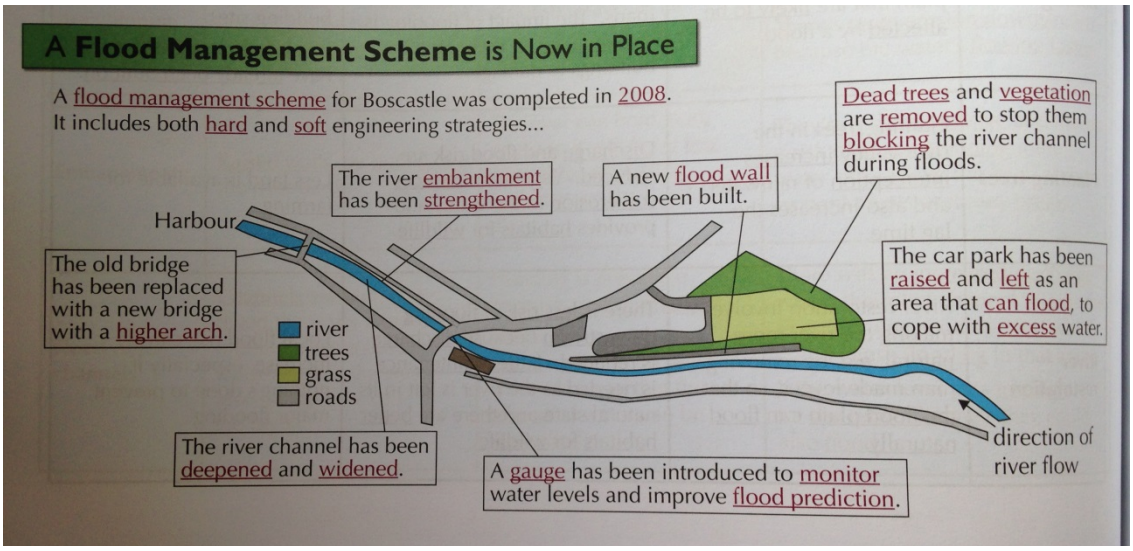
Flooding in a HIC (Boscastle, 2004)

Causes of flooding in Boscastle:

- Over 60 mm of rainfall (typically a month's rainfall) fell in two hours.
- The ground was already saturated due to the previous two weeks of above average rainfall.
- The drainage basin has many steep slopes, and has areas of impermeable slate causing rapid surface run-off.
- Boscastle is at the confluence (where tributaries meet) of three rivers - Valency, Jordan, and Paradise. A large quantity of water all arrived within a short space of time causing the rivers to overflow.
- The flooding coincided with a high tide, making the impact worse.

Social	Economic	Environmental
Over 115 of cars swept away. Cars, vans and caravans were washed into the sea.	20 business destroyed – 90% of Boscastle's income comes from tourism e.g. Museum of Witchcraft	Thousands of tonnes of mud was left in the village
Many people trapped in buildings.	There were vast numbers of subsequent insurance claims.	
A number of people were injured but no fatalities, partly due to the rapid response of the emergency services.	90% of Boscastle's local economy relies on tourism. After the flood, the number of tourists dropped considerably.	
Homes, businesses and cars belonging to more than 1,000 people were swept away.		

Responses to Boscastle flooding:



Effects of flooding in an LIC (Mozambique, 2000)

The Mozambique floods of 2000 show that what happens in one country can very often affect another.

The flooding was triggered by exceptionally heavy rain in South Africa, lasting for five weeks in early 2000. Botswana was particularly badly hit, receiving 75 per cent of its yearly rainfall in three days. On 22 February, Cyclone Eline hit, bringing more heavy rainfall. The rain from Botswana and other Southern African countries ran into the Limpopo, Zambezi and other rivers which flow through Mozambique to the sea. These rivers eventually burst their banks, causing severe flooding in Mozambique.

In addition, the loss of grassland and draining of marshland for farms contributed to more rapid surface run-off.

Social	Economic	Environmental
Approximately 800 people dead	20,000 cattle lost	1,400km2 of farm land affected by the flood waters
Large number of people were made homeless	Economy of country destroyed as heavily reliant upon agriculture	
250,000 people displaced from homes	Infrastructure (especially transport including bridges) has been destroyed	
Lack of food from agriculture meant malnutrition became widespread		
Spreading of disease – pools of stagnant water were ideal breading grounds for mosquitoes spreading malaria		
Disease spread from contaminated water supplies		

Responses to flooding in Mozambique:

Reduce flood risk	Manage effects
River flow monitoring stations funded by the EU were built to give people warning about the floods, but the size of the floods washed these away so no warning was given to people. There is no major flood prevention scheme or hard engineering in place because Mozambique can not afford it	International aid from charities like the Red Cross and MEDC governments. US and UK army helped to rescue people in helicopters. Huge refugee camps were set up for the homeless, but conditions in camps were poor – no sanitation, little food and lack of medical supplies etc Poor infrastructure (lack of roads etc) made it difficult to transport supplies.

Remember

The big question at the end of each topic requires the P E E L structure!

Point – What is the point you are making?

Evidence – Give specific evidence that you have learnt relating to the point that you are making

Explain – Why is your point important? Think to yourself – "So what?"

Link – Use your connectives here. What is the question asking you? Discuss means you need a balanced argument so tell me something that differs from your point. Explain means you need detail – how are you going to link this to your next paragraph? Compare and/or contrast means that the link should be about a different case study related back to your point.

Also…

Read the question – if it asks for specific categorisation or Economic/ Social/ Environmental for example you must make it clear that you are referring to that specifically.

Sentence starters to consider:

Economically…

Socially…

Environmentally…

Describe = Say what you see – pick key information out from what you are describing

Explain = PEEL needed. Use evidence. Remember your case studies.

Discuss = you need a balanced argument here. Advantages and Disadvantages

Ice

Cold Environments

Polar - These are the most extreme cold environments. In winter temperatures often drop as low as -50°C! Despite the snowy image of these polar environments, they are very dry – with relatively low amounts of precipitation (snow). There are also extensive areas of ice.

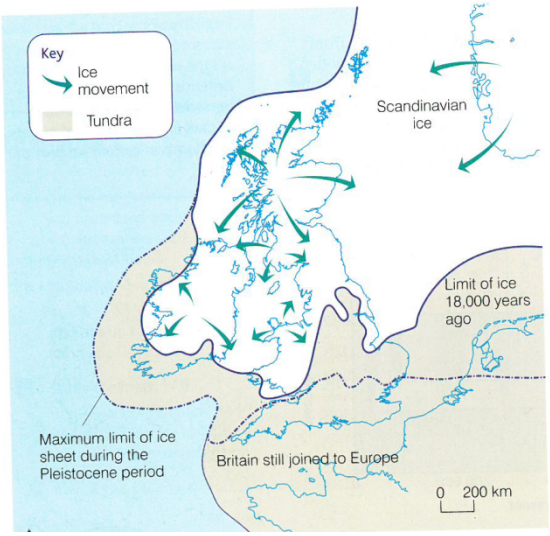
Alpine - These are mountainous areas that experience cold winters with heavy snow. Because of the high altitude, the temperature can drop to -10°C or less. The extreme cold winter is replaced in the summer with warmer weather, where the temperatures can even exceed 20°C. They are located above the tree line.

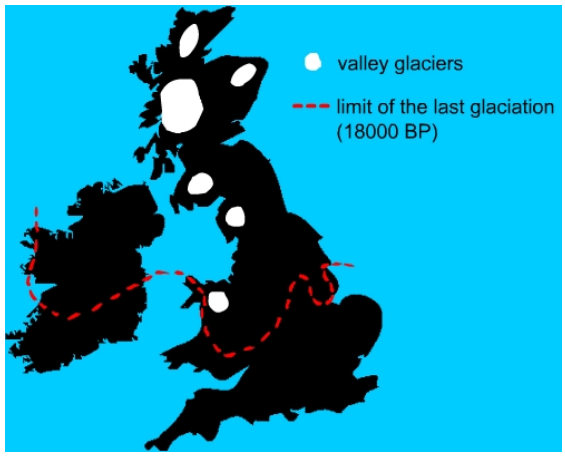
Periglacial - This means 'edge' of glacial. Periglacial environments are found on the fringes of polar or glacial environments. Periglacial areas experience permanently frozen ground (permafrost).During their brief warmer summers, the ground surface layers thaws – enabling hardy plants to grow. Periglacial environments are not permanently covered by ice.

Glacial - These are environments specifically associated with glaciers. While some enormous glaciers are found in polar environments, most of the world's actively moving glaciers are found high up in alpine mountain regions. The heavy winter snowfall in these regions provides the ice to feed the glaciers. Then, in the summer, meltwater lubricates the glaciers – helping them to move like giant conveyor belts down the alpine valleys.

Extent of Ice in the UK

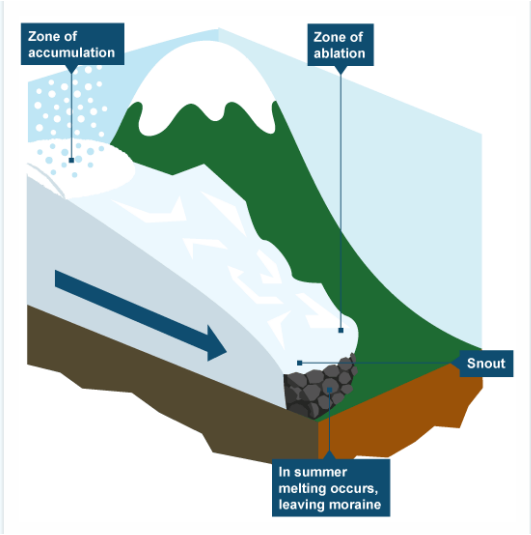
18,000 years ago ice covered about 30 per cent of the land in the world. In Britain, ice covered land as far as the Bristol Channel. During the last ice age the temperature remained below 0°C which allowed the ice to remain on the land all year.





Glacial Budget

Glaciers develop over many years in places where snow has fallen but not melted. Snow is compacted and turns to ice. The weight of the ice means that it starts to slip down mountain sides over time.

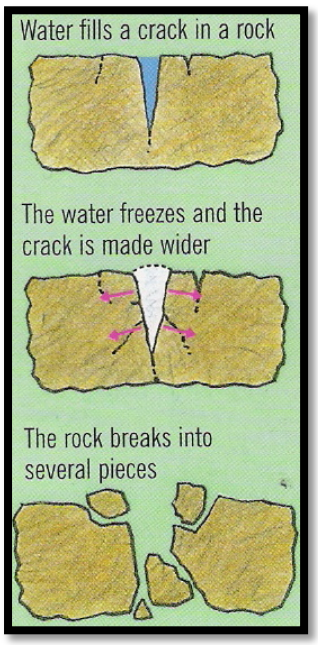


A glacier is a system. There is a **zone of accumulation** where snow is added. This is normally at the start of a glacier in a highland area. As more and more snow falls, it is compacted so the bottom layers become ice.

Ice moves downhill due to the force of gravity.

Near the end, or **snout**, of the glacier ice may melt. This is the **zone of ablation** and is more likely to occur in warm summer months.

Weathering Processes



Freeze-thaw weathering is where water gets into cracks in the rocks. When temperatures drop below 0°C (usually at night), the water freezes and expands by 9%, putting pressure on the rock and causing the crack to widen. The ice then thaws, releasing the pressure. If this process is repeated it can make bits of the rock fall off forming scree.

Glacial Processes of erosion

1. **Plucking** - occurs when rocks and stones become frozen to the base or sides of the glacier and are plucked from the ground or rock face as the glacier moves. It leaves behind a jagged landscape.
2. **Abrasion** - occurs when rocks and stones become embedded in the base and sides of the glacier. These are then rubbed against the bedrock (at the bottom of the glacier) and rock faces (at the sides of the glacier) as the glacier moves. This causes the wearing away of the landscape as the

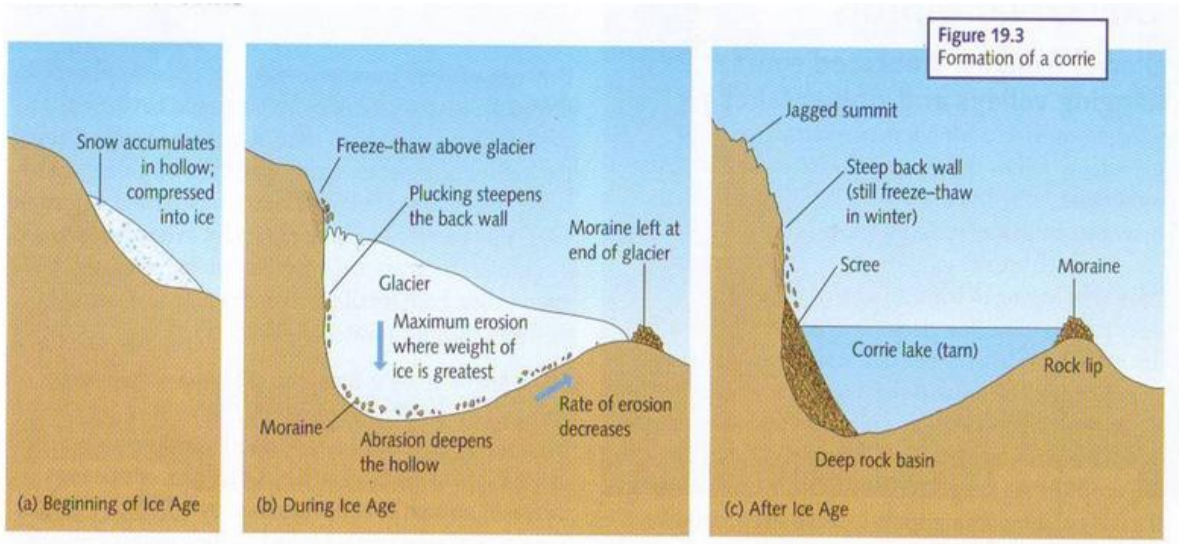
glacier behaves like sandpaper. It leaves behind smooth polished surfaces which may have scratches in them called striations. Striations are carved out by angular debris embedded in the base of the glacier

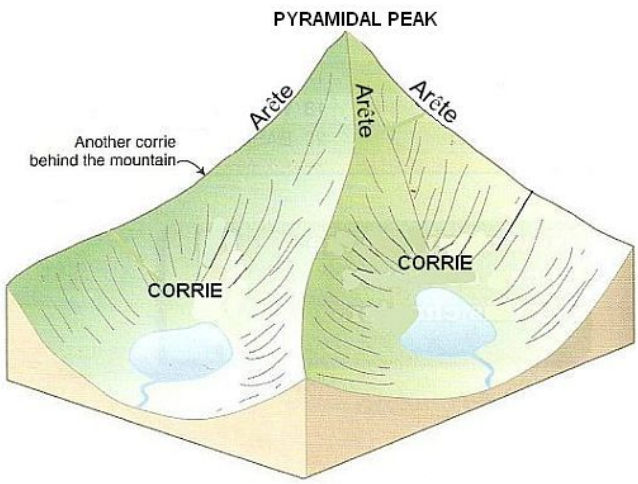
Features of Erosion

Corries, also known as cirques and cwms, are large hollowed-out depressions found on the upper slopes of glaciated valleys. They are characterised by a steep back wall and a raised 'lip' at the front. A corrie may contain a lake called a tarn.

How is a corrie formed?

Snow accumulates in a sheltered hollow on a hillside, this tends to be the north facing slope in the northern hemisphere. Snow-related processes (nivation), such as freeze-thaw weathering, enlarges the hollow enabling more snow to collect. Gradually the snow turns to ice and a small corrie glacier is formed. A steep back wall is formed by the process of plucking whereby pieces of rock are frozen to the base of the glacier and ripped out as the glacier moves through rotational slip. The glacier abrades an over-deepened hollow through the process of abrasion whereby the rocks in the bottom of the glacier rub against the bedrock known as the sandpaper effect. Reduced erosion at the front of the corrie due to the ice being thinner and less erosive forms a raised lip.



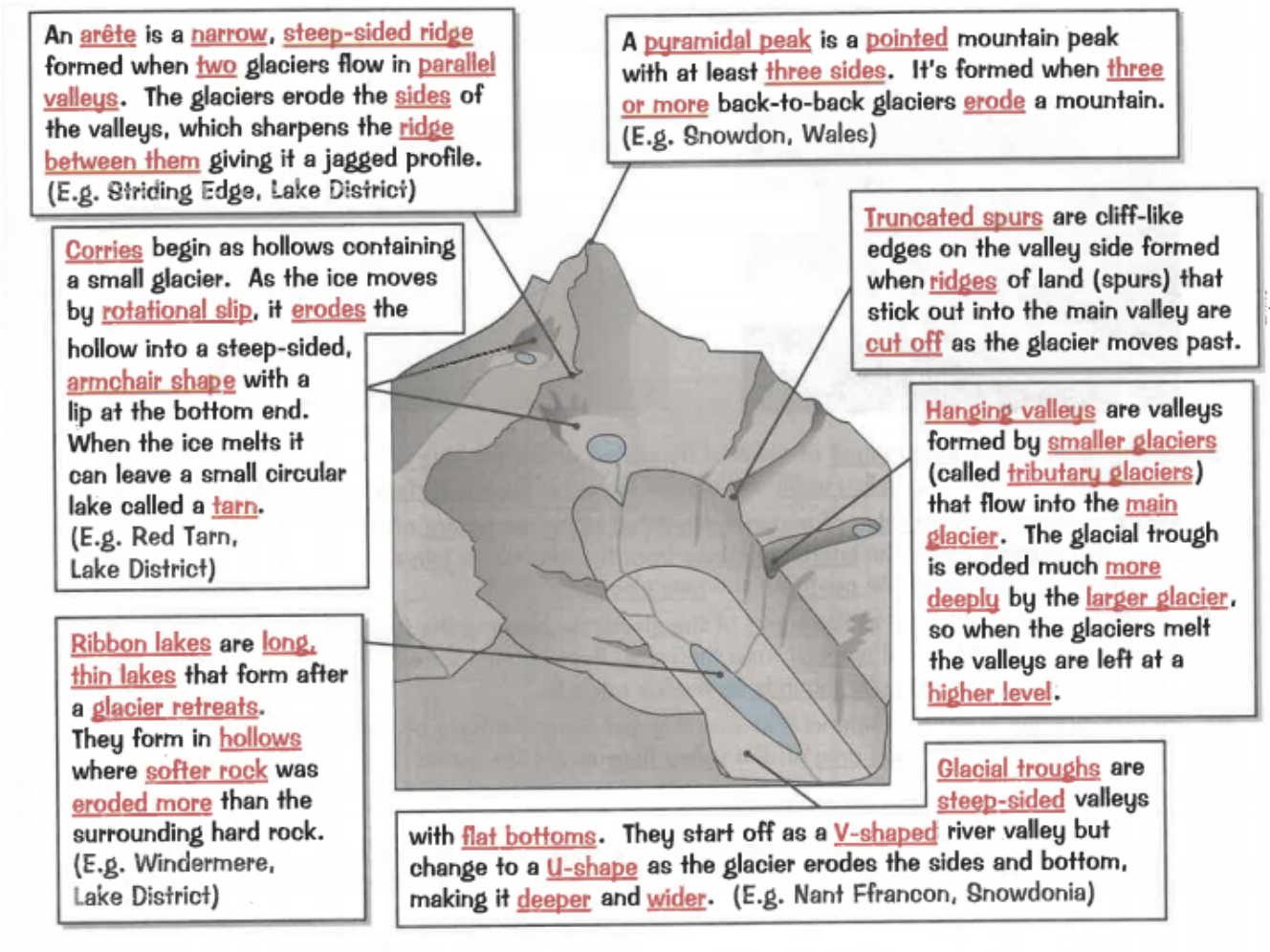


Arête - An arête is as **knife-edged ridge** often found at the back of a corrie or separating two glaciated valleys. They are often extremely **narrow** and popular with hill walkers, although strong winds can make them dangerous. An arête is formed **when two corries form back to back**.

Pyramidal peak - If **three or more corries** have formed a mountain, erosion may lead to the formation of a single peak – called a pyramidal peak.

Glacial Valley Landforms (glacial trough)

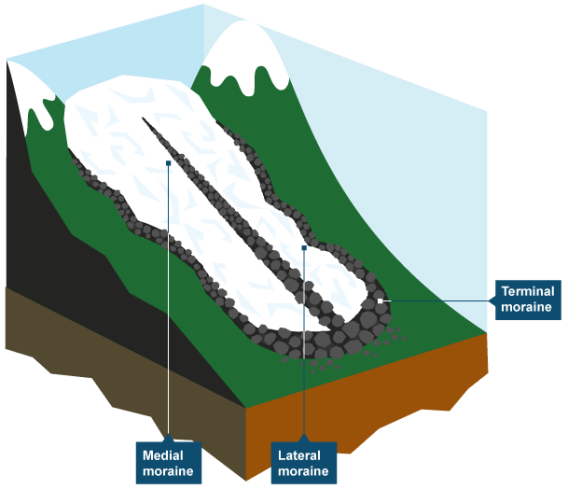
Glaciers cut distinctive U-shaped valleys with a flat floor and steep sides. The glacier widens, steepens, deepens and smoothes V-shaped river valleys, eg Great Langdale Valley in the Lake District.



Glacial Features of deposition

Moraines

When ice starts to melt or retreat it leaves behind the rocks and sediment it has been carrying. This is called **moraine**. There are different types of moraine, as shown in the diagram.



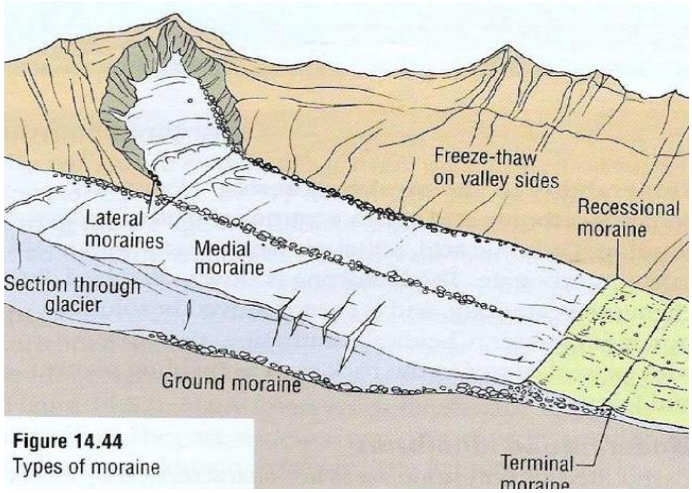


Figure 14.44
Types of moraine

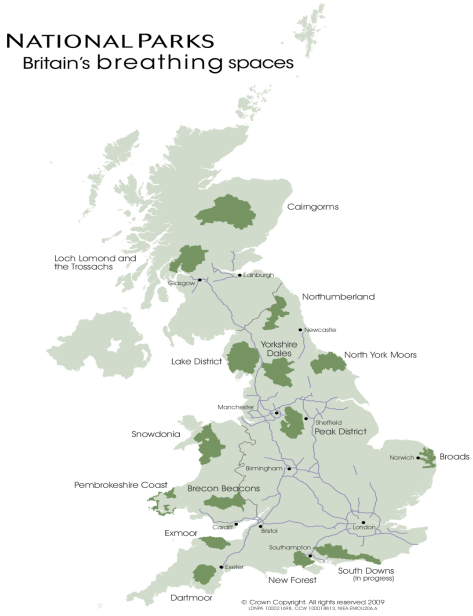
Lateral moraine – forms at the edge of the glacier. It is mostly scree material that has fallen off the valley side due to freeze-thaw weathering.

Medial moraine – when a tributary glacier joins the main glacier two lateral moraines will merge to produce a single line of sediment that runs down the centre of the main glacier.

Terminal moraine – Huge amounts of material piles up at the snout of the glacier, and is pushed by the glacier through the process of bulldozing. It represents the furthest extent of the glaciers advance.

Ground moraine – material dragged underneath the glacier left behind when the ice melts – often forms uneven hilly ground.

The Lake District



The Lake District in the north-west England (see map) became a National Park in 1951. It is famous for its mountains, hills (fells) and lakes. The mountains were carved by giant glaciers during the Ice Age, creating jagged peaks and wide valleys.

The Lake District is a honeypot site; this is a location attracting large numbers of tourists who, due to their numbers, place pressure on the environment and people.

Reasons why people visit the Lake District:

Physical attractions	Human attractions
Lakes like Windermere and Ullswater offer water sports, cruising and fishing.	The landscape has inspired writers and poets, such as William Wordsworth (now a museum).
Mountain landscapes with peaks like Hellvellyn and Scafell Pike are popular for walking and mountain biking.	Beatrix Potter, author of the Peter Rabbit stories, lived close to Lake Windermere. Her home, Hill Top, is now a National Trust attraction.
Adventure activities include abseiling, gorge scrambling and rock climbing.	Scenic towns and villages, such as Ambleside and Grasmere, are very popular. Other tourist attractions include monuments like Muncaster Castle at Ravenglass.

Impacts of Tourism:

Social	Economic	Environmental
Services provided for the use of tourists - eg leisure facilities - also benefit local people.	Tourism provides employment and income for local people (shops, hotels and other services)	The main 'honeypot' sites and footpaths show signs of overcrowding – footpath erosion, litter, damage to verges by cars.
House prices in the area can rise due to a demand for second homes	New businesses like adventure tourism provide jobs for local people.	Pollution (oil, fumes) from vehicles and boats can damage ecosystems.
Over 89% of visitors arrive by car. Roads are narrow and winding and congestion is a major issue causing conflict.	In 2014, tourists spent nearly £1000 million in the Lake District. This supports hotels, shops and restaurants.	Large numbers of hikers cause footpath erosion, which is expensive to repair. They can also damage farmland by trampling crops. Dogs can disturb sheep and cattle.
Jobs in tourism is mostly seasonal, poorly paid and unreliable	Traffic congestion slows down business communications.	

Management of Tourism:

Managing traffic congestion:

Public transport has been improved and subsidised, for example the **'Langdale Rambler' bus service**. Visitors are encouraged to use the buses instead of bringing their cars into the national park.

Restricted parking zones have been set up in some villages, for example in Elterwater. The car park on the edge of the village has been expanded and parking on grass verges and near houses has been restricted.

Managing high house prices:

In 2012, planning permission was granted for **134 affordable homes** and 141 houses that only local people can buy (to prevent them being bought as second homes).

Managing footpath erosion:

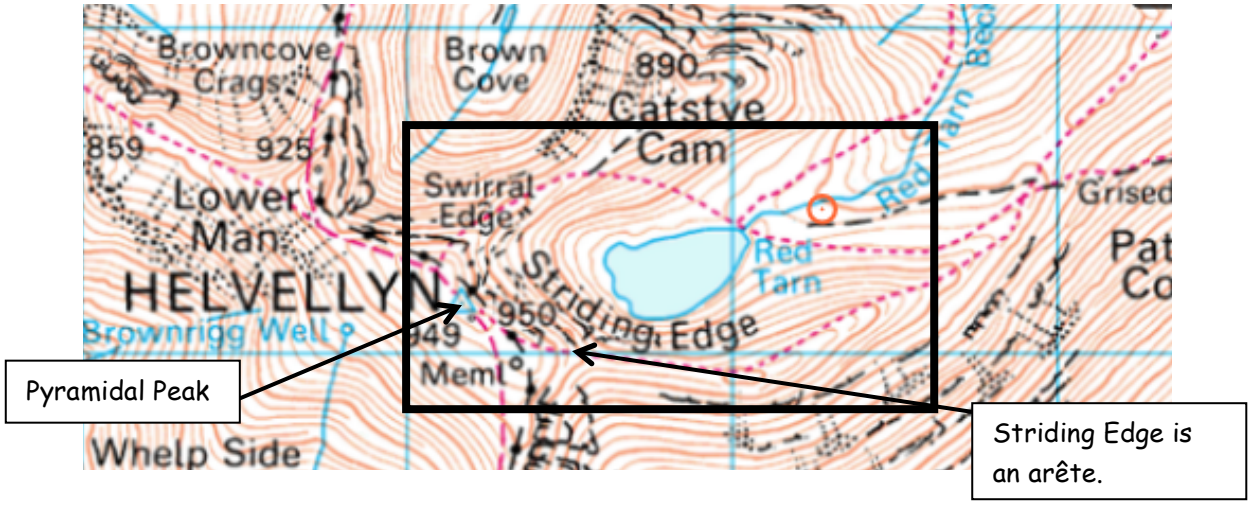
The National Trust and other conservation groups have undertaken **footpath maintenance**. Some paths have been rebuilt or access restricted to reduce the effects on paths and vegetation. **'Fix the Fells'** maintain and repair mountain paths, they're supported by organisations like the National Trust.

Managing Noise, erosion & pollution from water sports:

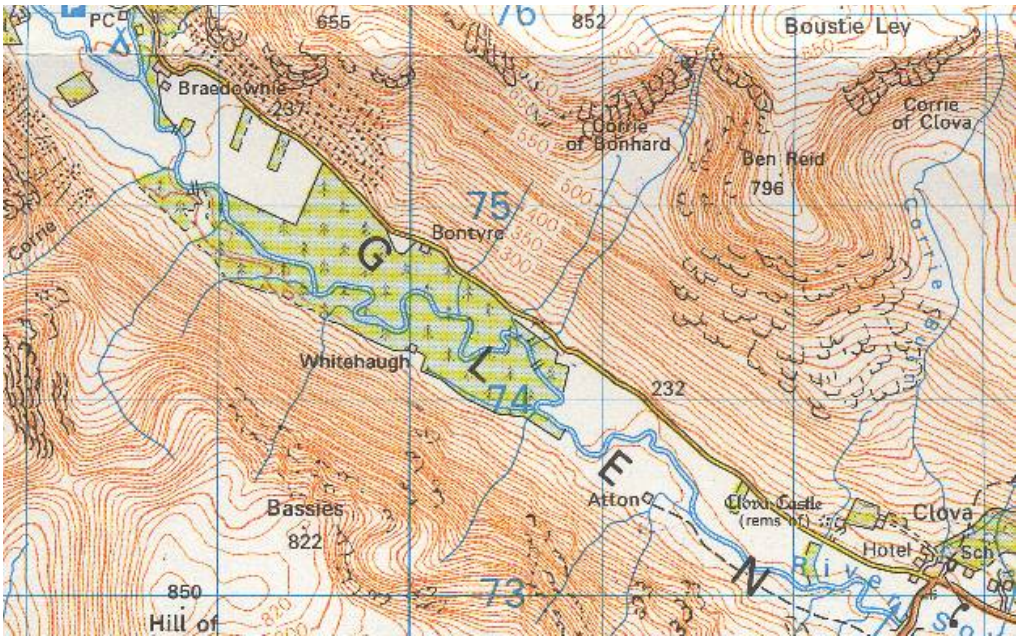
Zoning schemes mean that some water sports are only allowed in certain areas of some lakes. **A 10 mph speed limit** was introduced on Windermere in March 2005. The lake had become congested with powerboats and water skiers and noise from the speedboats was spoiling the lake for other users such as swimmers and canoeists.

Raising awareness of conservation issues for visitors with posters and leaflets at tourist information and visitor centres.

Identifying glacial landforms on OS Maps



- Since a corrie is an 'armchair-shaped' hollow look for contour lines in a horseshoe shape.
- Tarns may also be found in the horseshoe (e.g. Red Tarn).
- Names might also be labelled on the map (corrie, cirque, cwm).
- A pyramidal peak has tightly packed contour lines that curve away from a central high point.



- Glacial troughs are flat valleys with very steep sides. There are no contour lines on the bottom of the valley but they're tightly packed on the sides.
- Many glacial troughs have ribbon lakes in them. Look for a flat valley with steep sides surrounding a long straight lake.

Connectives

Adding	Sequencing	Emphasising	Comparing
and	next	above all	equally
also	then	in particular	in the same way
as well as	first, second,	**especially**	similarly
moreover	third, ...	significantly	likewise
too	finally	indeed	as with
	meanwhile	notably	like
	eventually		
	after, before		

Cause & Effect	Qualifying	Illustrating	Contrasting
because	**however**	for example	whereas
so	although	such as	instead of
therefore	unless	for instance	alternatively
thus	except	as revealed by	otherwise
consequently	if	in the case of	unlike
	as long as		on the other hand