# Coasts

**Background:**

1. Coastlines are dynamic changing landscapes, which are affected by the action of the waves.
2. Waves can have differing features; these features can influence the processes and landforms which may develop along our coastlines. ***(A)***
3. Destructive waves can erode the coastline. ***(B)***
4. Through erosion a number of distinctive coastal features can form. ***(D, E, F)***
5. Further processes act on the coastline, leading to material being transported along the coastline. ***(C)***
6. This material will eventually be deposited leading to the formation of landforms such as spits. ***(G)***
7. Coastal erosion can impact the landscape and the lives of people living in areas of coastal erosion.
8. Different strategies are used to reduce erosion. ***(H)***
9. Often these strategies can be controversial. ***(I)***

| **A.** | **Wave features *(5)*** |
|---|---|
| Swash | Movement of a wave up the beach. The direction is dependent upon the wind direction. |
| Backwash | Movement of a wave back down the beach, this happens at $90^0$. |
| Constructive wave | Have a strong swash and weak backwash; they cause deposition. |
| Destructive wave | Have a weak swash and strong back wash; they cause erosion. |
| Fetch | The distance a wave has travelled. |

| **B.** | **Types of erosion *(4)*** |
|---|---|
| Hydraulic action | Waves compress pockets of air in cracks in a cliff, causing the crack to widen, breaking off rock. |
| Abrasion | Eroded material is hurled or scrapes against the cliff, breaking off rock. |
| Attrition | Eroded material in the sea, hit into each other breaking down into smaller pieces. |
| Solution | The water dissolves certain types of rocks e.g. limestone. |

| **C.** | **Other coastal processes *(4)*** |
|---|---|
| Transportation | The movement of sediment. |
| Deposition | When waves drop the sediment, they are transporting, either due to a loss of energy or change in direction of coastline. |
| Longshore drift | The movement of sediment along the coastline in a zig-zag motion, due to the wind & swash occurring at an angle to the beach. |
| Weathering | Breaking down of rocks by physical and chemical processes. |

| **D.** | **Headlands and bays *(3)*** |
|---|---|
| Geology | Different rock types e.g. resistant rock such as granite, and less resistant rock such as clay. |
| Headland | Resistant rock which is not easily eroded so sticks out to sea. |
| Bay | Soft rock which is easily eroded so retreats to form a bay. |

| **E.** | **Wave cut platforms *(2)*** |
|---|---|
| Wave cut notch | These form at the foot of a cliff due to erosion. This undercuts the cliff above leaving it unsupported. |
| Wave cut platform | When the unsupported cliff collapses, the process repeats and the cliff retreats leaving a sloping wave cut platform. |

| **F.** | **Caves stacks and arches *(3)*** |
|---|---|
| Crack | A weakness in the headland is eroded by hydraulic pressure, forming a cave. |
| Cave | This is eroded further, until the cave erodes all the way through the headland forming an arch. |
| Arch | The roof of the arch has no support, so collapses to form a stack. |

| **G.** | **Spits *(3)*** |
|---|---|
| Change in coastline | Leads to material transported by longshore drift being deposited into the sea, forming a spit. |
| Hooked ends | Form on a spit due to a change in the direction of the prevailing wind. |
| Salt marsh | An area of salty marshland found behind a spit, which has dried out as the sea can no longer reach this area. |

| **H.** | **Coastal management *(2)*** |
|---|---|
| Hard engineering | Human-made structures that help to deal with coastal erosion, such as:<br>1. **Sea walls,** which reflect the waves energy back out to sea.<br>2. **Groynes,** which trap longshore drift. |
| Soft engineering | Adaptations to work with nature, such as:<br>**Managed retreat**, allowing the coast to erode and moving people away. |

| **I.** | **Case study example: Holderness coast, Mappleton** |
|---|---|
| Where? | The fastest eroding coastline in Europe, in east Yorkshire. |

| **Reasons to protect *(2)*** | **Management strategies *(2)*** | **Success *(2)*** |
|---|---|---|
| 1. Rocks are made of soft rock (till), eroding at 2m per year.<br>2. The B1242 runs through Mappleton and would be expensive to re-route. | 1. Rock groyne put in place to trap sediment being transported by longshore drift, creating a wider beach to absorb the power of the waves.<br>2. Rip-rap has been placed in front of the cliffs to absorb the wave energy. | 1. Good – erosion in front of Mappleton has reduced, so the road has been saved.<br>2. Bad - beaches further south have been starved of sediment so erosion has increased e.g. at Great Cowden. |

# Population

**Background:**

1. The world's population is not spread evenly. ***(A)***
2. There are many factors that influence where we live. These factors have caused some places to be densely populated, whilst others are sparsely populated. ***(B)***
3. Total population is constantly changing, both within countries and world-wide. ***(C)***
4. We can look at changes in population by comparing past and predicted population structures. ***(D)***
5. The level of development within a country may influence its population structure. However, as countries develop economically, these structures will change. ***(E)***
6. In many developed countries the population is ageing. This process brings many impacts. ***(F)***
7. Migration is also an important population process world-wide and is one of the biggest drivers of population change. ***(G, H)***

| **A.** | **Population distribution *(4)*** |
|---|---|
| Population density | The number of people who live within 1km$^2$. |
| Population distribution | How people are spread out over an area. |
| Densely populated | Places which contain many people per km$^2$. |
| Sparsely populated | Places which contain few people per km$^2$. |

| **B.** | **Factors influencing population** |
|---|---|
| Physical *(4)* | 1. The relief of the land (flat or steep).<br>2. Natural resource availability.<br>3. Climate.<br>4. Fertility of the soil. |
| Human *(3)* | 1. Transport links.<br>2. The availability of jobs.<br>3. The availability of local services e.g. hospitals, education. |

| **C.** | **Population change *(5)*** |
|---|---|
| Birth rate | The number of births per 1000. |
| Death rate | The number of deaths per 1000. |
| Natural increase | The difference between birth and death rates. |
| Population explosion | A sudden rapid rise in the number of people. |
| Demographic transition model | A model which shows the changes a population is likely to go through over time. |

| **E.** | **Population structure differences** |
|---|---|
| Developing countries *(2)* | 1. High birth rates, so a large young dependent population.<br>2. A lower life expectancy, so a small elderly dependent population. |
| Developed countries *(2)* | 1. A declining birth rate, so a small young dependent population.<br>2. A rising life expectancy, so a large elderly dependent population. |

| **F.** | **An ageing population *(4)*** |
|---|---|
| Life expectancy | The average age you are expected to live to in a country. |
| ***Possible*** problems *(3)* | 1. Pressure on the NHS, waiting times could increase.<br>2. The government may have to support the funding of pensions.<br>3. Government investment into more care homes and carers might be costly. |
| ***Possible*** benefits *(2)* | 1. Grandparents can help look after their grandchildren, reducing the cost of childcare for parents.<br>2. Some elderly have more disposable income so spend more in shops. |
| Solutions *(3)* | 1. Increase the retirement age.<br>2. Raise taxes.<br>3. Offer incentives for couples to have children e.g. longer maternity pay. |

| **D.** | **Population structure *(4)*** |
|---|---|
| Population structure | The number/ proportion of people in each age range, for each gender. |
| Population pyramid | A graph showing population structure, by age and sex. |
| Economically active | Those people who work, receive a wage and pay tax. |
| Dependent population | Those who rely on the economically active for support e.g. the young and elderly. |

| **G.** | **Migration *(5)*** |
|---|---|
| Economic migrant | A person who leaves one area or country to go to another, to seek better job opportunities. |
| Push factor | Things that make people want to leave an area. |
| Pull factor | Things that attract people to live in an area. |
| Host country | The destination country for a migrant. |
| Source country | The home country of a migrant. |

| **H.** | **Impacts of migration** |
|---|---|
| Positives for the source *(2)* | 1. Money sent home (remittances) can support families.<br>2. Potential for increased trade between host country and source country. |
| Negatives for the source *(2)* | 1. Fewer economically active citizens.<br>2. Less tax, as fewer working people in the country. |
| Positives for the host *(2)* | 1. Migrants can work in jobs that are difficult to fill, therefore contribute tax.<br>2. New shops and restaurants open, which is positive for the economy. |
| Negatives for host *(1)* | 1. Potential pressure on public services e.g. health care. |

# Tectonics

**Background:**

1. The Earth's structure is made up of layers. ***(A)***
2. The characteristics of these layers' fuels tectonic plate theory and the resulting hazards which occur along plate boundaries. ***(B)***
3. There are four different plate boundaries, each with their own characterises and resulting hazards. ***(C)***
4. Volcanoes can be found along constructive and destructive boundaries, although the volcanoes found at these boundaries are different. ***(D)***
5. Earthquakes take place along all the boundaries but are often most significant at conservative boundaries. Earthquakes have key features and are measured using the Richter scale. ***(E)***
6. People continue to live in tectonic areas several reasons. ***(F)***
7. Some of these reasons relate to how we monitor, protect and plan for such hazards. ***(G)***
8. However, the impacts of these hazards can still be significant, although they can vary based upon different factors. ***(H, F)***

| **A.** | **The layers of the Earth *(3)*** |
|---|---|
| Crust | The thin outer layer of the Earth |
| Mantle | Middle layer of the Earth, between the crust and the core, approx. 2900km thick. |
| Core | The centre and hottest layer of the Earth, broken into the inner (solid) and outer core. |

| **B.** | **Theory *(4)*** |
|---|---|
| Plate boundaries | The place where plates meet. |
| Convection currents | Currents in the Earth's mantle which rise from the Earth's core and are strong enough to move tectonic plates. |
| Oceanic crust | The part of the Earth's crust under the oceans, usually 6-8km thick |
| Continental crust | The part of the Earth's crust which contains land and is 30-50km thick. |

| **C.** | **Different plate boundaries *(4)*** |
|---|---|
| Constructive | Where tectonic plates move apart, and new land is created. |
| Destructive | Where two plates come together, and the oceanic plate is subducted, leading to violent volcanic eruptions. |
| Conservative | Where tectonic plates move alongside, or past each other. |
| Collision | Where continental plates move towards each other, forming mountains. |

| **D.** | **Volcanoes *(3)*** |
|---|---|
| Shield volcano | A gently sloping volcano formed by runny lava, usually at a constructive boundary. |
| Composite volcano | A steep volcano formed by alternating layers of lava and ash, on destructive boundaries. |
| Pyroclastic flow | Torrent of hot ash, rock, gas and steam from a volcano. |

| **E.** | **Earthquakes *(4)*** |
|---|---|
| Epicentre | The point on the Earth's surface directly above the focus of an earthquake. |
| Focus | The source of an earthquake beneath the Earth's surface. |
| Seismic waves | Fast waves of energy generated from the focus of an earthquake. |
| Richter scale | A scale used to measure the strength of an earthquake. |

| **F.** | **Living in the tectonic danger zone** |
|---|---|
| Volcanoes *(4)* | 1. Jobs in tourism.<br>2. Geothermal energy created.<br>3. Ash makes the ground fertile, which is good for farming.<br>4. Diamonds and gold from previous eruptions can be mined. |
| Earthquakes *(3)* | 1. Friends and family live in the area.<br>2. It has not happened in such a long time, so people take the risk.<br>3. Employment in the area. |

| **G.** | **Volcanoes** | **Earthquakes** |
|---|---|---|
| Monitoring *(2)* | 1. The shape may change.<br>2. Increase in gases given off e.g. sulphur dioxide. | 1. Irregular tremors measured.<br>2. Radon gas levels increase as rocks crack. |
| Protect | Lava diversion channels. | Earthquake proof buildings. |
| Planning *(2)* | 1. Evacuation.<br>2. Emergency services trained. | 1. Earthquake drills.<br>2. Emergency services on-call. |

| **H.** | **Effects of tectonic hazards *(2)*** |
|---|---|
| Primary effects | Direct impacts of an event e.g. people die, injured, or buildings collapse. |
| Secondary effects | The indirect impacts of an event, usually occurring in the weeks, hours, months after the event e.g. the outbreak of disease from contaminated water. |

| **I.** | **Examples** |
|---|---|
| ***Developing***<br>Haiti<br>Port Au Prince | 1. 318,000 died.<br>2. 1.5 million homeless.<br>3. Cholera outbreak killed 8,000. |
| ***Developed***<br>New Zealand<br>Christchurch | 1. 181 died.<br>2. 80% of the city without electricity.<br>3. The Rugby World Cup was cancelled.<br>4. Schools closed for 2 weeks. |

# Ecosystems

**Background:**

1. An ecosystem is a community of things that are linked together to make up a type of environment. ***(A, B)***
2. An ecosystem contains biotic (living) and abiotic (non-living) parts. ***(B)***
3. The climate of an ecosystem is very important as it influences what you will find there. ***(C)***
4. The main world biomes can be found in specific parts of the world, they have very different climatic conditions & features. ***(C, D)***
5. The rainforest biome has some distinctive features. ***(F)***
6. However, deforestation is a major challenge facing rainforests worldwide. ***(E)***
7. The deserts worldwide also have some key characteristics. ***(G)***
8. The Sahara Desert is a place with opportunities for people, but there are also challenges which need to be overcome. ***(H)***

| **A.** | **Classification of ecosystem *(4)*** |
|---|---|
| Ecosystem | A community of things linked together in an environment. |
| Biome | An ecosystem on a large scale that covers parts of continents and whole countries. |
| Habitat | A place where plants and animals live. Example: a pond, or hedgerow. |
| Biodiversity | The amount of variety of life there is in a place. |

| **B.** | **Features of an ecosystem *(3)*** |
|---|---|
| Biotic | The living parts of an ecosystem. Examples: plants, animals, humans. |
| Abiotic | The non-living parts of an ecosystem. Examples: soil, climate, river. |
| Food chain | A diagram that shows what is eating what in an ecosystem. |

| **C.** | **Climatic features *(4)*** |
|---|---|
| Climate graph | A graph showing rainfall and temperature in a place over a whole year. |
| Precipitation | Any form of water falling from the sky. |
| Convectional rainfall | Rain that is produced when warm air rises, cools and condenses, forming clouds and then rainfall. |
| High pressure | Areas where air is sinking, this air has little moisture, thus condensation can not happen. |

| **F.** | **Rainforest features *(3)*** |
|---|---|
| Rainforest layers | Forest floor, understorey, canopy, emergent layer. |
| Nutrient cycle | Nutrients move from living things to litter and the soil in a continuous cycle, keeping both plants and soil healthy. |
| Drip tip leaves | A plant adaptation that lets excess water drip off leaves quickly. |

| **G.** | **Desert characteristics *(4)*** |
|---|---|
| Diurnal range | Differences between the highest day and lowest nighttime temperature. |
| Nocturnal | Animals only come out at night. |
| Cactus | Long root systems to get as much water as possible from dry ground. |
| Camel | Webbed feet to help walk in sand. |

| **D.** | **Major global biomes *(4)*** |
|---|---|
| Tundra *(2)* | 1. Found at the far north and south of the planet.<br>2. A cold ecosystem, little rainfall. |
| Hot desert *(2)* | 1. Found along the Tropic of Cancer and the Tropic of Capricorn.<br>2. Hot environments with little rain. |
| Tropical rainforest *(2)* | 1. Found in places along the Equator.<br>2. Hot and humid environments with huge amounts of rainfall. |
| Temperate forest *(2)* | 1. The main biome of the UK and other places along the same lines of latitude.<br>2. Warm summers, mild winters. No extremes of temperature, rainfall. |

| **E.** | **Deforestation in the rainforest *(6)*** |
|---|---|
| Deforestation | The cutting down and removal of forest. This happens due to many factors. |
| Logging | Cutting down trees to sell the wood for a profit, sometimes this is done illegally. |
| Cattle ranching | Removing trees from a large part of the rainforest and keeping cows on the land. These are sold for meat. |
| Slash and burn | A type of farming where you cut down a small area of trees, burn the vegetation and then grow crops on this land. |
| Soil erosion | When the soil in an area loses its minerals (water or wind erosion) so that it becomes difficult to grow crops there. |
| Indigenous tribes | A group of people who live traditional lives in places (like the rainforest). |

| **H.** | **Opportunities and challenges for development in the Sahara desert** |
|---|---|
| Where? | The Sahara is found in Northern Africa. |

| **Opportunities *(2)*** | **Challenges *(2)*** |
|---|---|
| 1. In Algeria, oil extraction accounts for 60% of the GDP.<br>2. Farming in Egypt happens because the Aswan Dam provides water all year round to grow crops, providing an income for farmers. | 1. Extreme temperatures can cause illness or death because of dehydration.<br>2. Water is scarce and so farming can be unreliable meaning an unreliable income for farmers. |

# Weather and climate

**Background:**

1. Weather and climate are different, however both are influenced, measured and described by a few factors. ***(A)***
2. The climatic conditions of an area are determined by several factors. ***(B)***
3. There are four distinct climatic zones in the UK, which are determined by the direction of the prevailing wind. ***(C)***
4. Precipitation is caused when warm air rises. There are three ways that this can happen. ***(B, D)***
5. High pressure air systems bring warm, settled weather conditions. ***(E)***
6. Low pressure air systems bring wet, changeable weather conditions. ***(F)***
7. Tropical storms (an example of a low pressure climatic hazard) need certain conditions to form. ***(G)***
8. Hurricane Katrina is a famous tropical storm that affected the USA in 2005. ***(H)***

| **A.** | **Weather and climate *(5)*** |
|---|---|
| Weather | The day-to-day conditions of the atmosphere which change quickly. |
| Climate | The average weather conditions over longer periods of time. |
| Precipitation | Any form of water falling from the sky. |
| Humidity | The amount of moisture in the air. |
| Air pressure | The force exerted onto the Earth's surface by the weight of the air. |

| **B.** | **Factors affecting weather and climate *(4)*** |
|---|---|
| Latitude | Higher latitudes are colder. Lower latitudes (nearer the equator) are hotter. |
| Winds | Wind can bring different weather conditions depending on where it comes from. |
| Altitude | Higher areas get more rainfall and are colder than low land. |
| Urban areas | Can be 2.2°C warmer than the surrounding rural areas. |

| **C.** | **The UK's air masses *(4)*** |
|---|---|
| Tropical maritime | Wind from the south-west brings wet weather, with warm temperatures in the summer, but mild in the winter. |
| Tropical continental | Wind from the south-east brings dry weather with hot temperatures in the summer, but mild in the winter. |
| Polar continental | Wind from the north-east brings dry weather with cold temperatures in the summer, and often freezing conditions in the winter. |
| Polar maritime | Wind from the north-west brings wet weather with cold temperatures. |

| **D.** | **The types of precipitation *(3)*** |
|---|---|
| Convectional | Produced when warm air rises, cools and condenses, forming clouds and then rainfall. |
| Frontal | Warm air meets cold air and rises because it is less dense. It cools, condenses forming clouds, then precipitation. |
| Relief | Warm air is forced to rise as it meets a hill or mountain. It cools at high altitude, condenses and forms clouds, then precipitation. |

| **E.** | **High pressure systems** | |
|---|---|---|
| How is the air moving? | Areas where air is sinking, this air has little moisture. | |
| **Conditions *(3)*** | **Positive impacts *(2)*** | **Negative impacts *(2)*** |
| 1. Calm weather with a cloudless sky.<br>2. Hot weather in summer, cold weather in winter.<br>3. Morning frost is common. | 1. Lots of sunlight means farmers can grow more crops.<br>2. Increase in tourism, which boosts the local economy. | 1. Places such as Spain and Portugal are at high risk of forest fires during prolonged dry periods.<br>2. Can cause fog in the winter, which can lead to traffic accidents. |

| **F.** | **Low pressure systems** | |
|---|---|---|
| How is the air moving? | Air is rising, it cools and condenses causing high levels of precipitation. | |
| **Conditions *(3)*** | **Positive impacts *(2)*** | **Negative impacts *(3)*** |
| 1. Unsettled weather which can change quickly.<br>2. High winds and high cloud cover.<br>3. Precipitation occurs as rising air cools and condenses. | 1. Rainfall refills stores of water, such as reservoirs.<br>2. Wind farms will generate more energy. | 1. Low pressure systems can cause large, destructive storms.<br>2. Bad weather can harm the tourist industry as tourists are put off.<br>3. Areas can be flooded. |

| **G.** | **Causes of tropical storms *(3)*** |
|---|---|
| High temperatures | Oceans have to be 26.5°C or higher. |
| Weather system | A low pressure system means air rushes in and causes high winds. |
| Deep ocean | Warm water is the power source for a tropical storm and should be 60 metres deep or more. |

| **H.** | **Case study example: Hurricane Katrina 2005** | |
|---|---|---|
| Where? | New Orleans, south coast of the USA. | |
| **Effects *(3)*** | | **Responses *(2)*** |
| 1. 1,836 died.<br>2. 10,000 people homeless.<br>3. Floods were up to 3 metres deep in places. | | 1. $105 billion was spent on rebuilding.<br>2. 10,000 people evacuated to the Superdome for shelter. |

# Africa

**Background:**

1. Africa is a continent with spectacular human and physical features. Some of these features have influenced Africa's population distribution. ***(A, B)***
2. Africa is home to some very large and important rivers, such as the amazing Nile. ***(C, D)***
3. Kenya is a country with amazing physical features. ***(E)***
4. Kenya has distinct climatic zones, which have influenced the activities which take place across the country. ***(F)***
5. Kenya is an important country due to its trade links with countries around the world. ***(G)***
6. Tourism is an important industry for the Kenyan economy. ***(H)***
7. The capital city of Kenya, Nairobi, is a city of opportunities and challenges. ***(I)***

| **A.** | **Africa's human and physical features *(4)*** |
|---|---|
| Human geography | Studying what people do to the Earth. |
| Physical geography | Studying what is naturally occurring on Earth. |
| Relief | The shape of the land surface and it's height above sea level. |
| Megacity | A very large city with a population of over 10 million people. |

| **B.** | **Africa's population *(4)*** |
|---|---|
| Population density | The number of people who live within 1km$^2$. |
| Population distribution | How people are spread out over an area. |
| Densely populated | Places which contain many people per km$^2$. |
| Sparsely populated | Places which contain few people per km$^2$. |

| **C.** | **The amazing Nile *(5)*** |
|---|---|
| Deposition | When a river loses energy so drops it's load. |
| River load | The material which the river is transporting. |
| Delta | Formed where layers of sediment are deposited at river mouths. |
| Distributaries | A smaller river channel created where a river splits, often to form a delta. |
| Silt | The fertile, eroded material transported by a river. |

| **D.** | **Human use of the Nile *(3)*** |
|---|---|
| Irrigation | Addition of water to farmland by artificial means. |
| Agriculture | Farming. |
| Hydro-electric power | The use of fast flowing water to turn turbines which produce electricity. |

| **E.** | **Kenya's physical features *(3)*** |
|---|---|
| Constructive margin | Where tectonic plates move apart, and new land is created. |
| Fertile | Rich in nutrients. |
| Rift Valley | Steep-sided valley formed by the sinking of land between two faults or cracks caused by plate movements. |

| **F.** | **Kenya's climate *(3)*** |
|---|---|
| Climate | The average weather conditions over longer periods of time. |
| Precipitation | Any form of water falling from the sky. |
| Altitude | Higher areas get more rainfall and are colder than low land areas. |

| **G.** | **Kenya's trade links with the world *(6)*** |
|---|---|
| Trade | The exchange of goods and materials between countries. |
| Trade deficit | Cost of imports is greater than the money obtained from exports. |
| Trade surplus | Money from exports is greater than the money made from imports. |
| Imports | Goods brought into a country. |
| Exports | Sending goods to another country for sale. |
| Colony | An area, or country, ruled by another country. |

| **H.** | **Tourism in Kenya *(3)*** |
|---|---|
| Tertiary sector | Industries which provide a service such as; teaching, accounting, health care, sales etc. |
| Coral reef | A marine ecosystem formed by the growth of coral that protects the coast from erosion and provides a habitat for marine plants and animals. |
| Mass tourism | A form of tourism that involves tens of thousands of people going to the same resort often at the same time of year. |

| **I.** | **Opportunities and challenges in Nairobi** |
|---|---|
| Where | The capital and the largest city of Kenya, situated in the south-central highlands. |

| **Opportunities *(3)*** | **Challenges *(3)*** |
|---|---|
| 1. There are many global companies in Nairobi such as Shell, General Motors, Barclays, and many others.<br>2. Nairobi has beautiful natural parks and gardens such as Uhuru Park.<br>3. Nairobi is home to the Kenyan parliament. | 1. Estimates suggest that over 1 million people live in shanty settlements such as Kibera.<br>2. In Kibera there is poor sanitation, with sewage running through the streets. Water must be purchased from pumps.<br>3. Unemployment in Kibera is estimated to be 50%. |