Geography – Knowledge Organisers

Paper 1
Global Geographical Issues

- *Hazardous Earth*
- *Development Dynamics*
- *Challenges of an Urbanising World*

Paper 2
UK Geographical Issues

- *The UK's evolving physical landscape*
- *The UK's evolving human landscape*
- *Geographical investigations*

Paper 3
People and Environment Issues – Making Geographical Decisions

- *People and the Biosphere*
- *Forests Under Threat*
- *Consuming Resources*

Paper 3
People and the Biosphere

1. Definition:

The **biosphere** is the part of our planet where all living organisms exist. It is divided into **biomes** based on their climate and plant and animal species e.g. rainforest, taiga, polar, desert
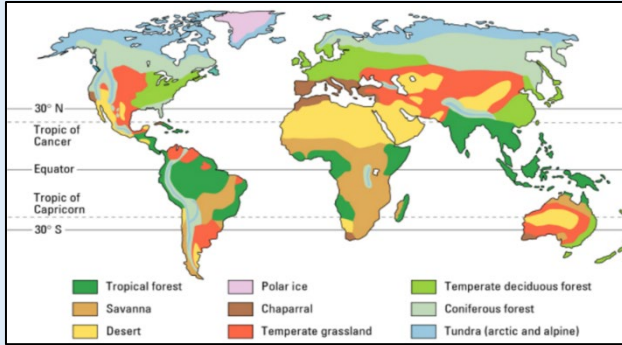
2. Global factors influencing biomes:

Latitude which refers to the distance from the equator, is the main reason why biomes are found in different locations and have different characteristics. Latitude influences a location's **climate** and climate influences plant and animal growth / survival:
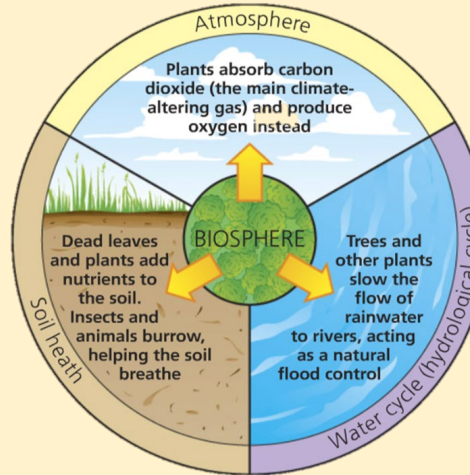
Temperature	• **Solar radiation** varies along different lines of latitude. • Temperatures generally increase the closer an area is to the equator, where solar radiation is more concentrated, due to the curvature of the earth,. • Further from the equator = colder as solar radiation becomes more **diffused** (spread out).
Rainfall	• **Precipitation** typically decreases away from the equator. • Temperature affects **evaporation** / how much moisture air can hold (hot air rises, cools
Sunlight hours	• Sunshine hours and intensity affect **photosynthesis** and therefore plant growth.

The relationship between temperature, rainfall and sunlight hours influence biome type. (e.g high rainfall, warm temperatures and sunshine = forest biome. In areas of very cold seasons = grasslands replace them)

3. Local abiotic factors influencing biomes:
Although climate influences biomes, within each there can be variations due to small scale changes:
- **Altitude**- For every 100m you climb the temperature drops by 1.
- **Soil**- acidic in an area it is less likely to have a large diversity of plants and therefore animals living there
- **Water availability** – Amount of water influences the type / amount of vegetation e.g drier conditions = less plants / more drought resistant

4. Regulating services – how does the biosphere keep out planet healthy?

5. Goods and services

| Provisional Goods: Products that can be obtained **commercially**: • Food: fish, game, crops • Timber / fuel wood	Supporting Services: These keep the **ecosystem** healthy • **Nutrient cycle** • **Photosynthesis**
Regulating Services: Services that keep the planet healthy • **Storing carbon,** and emitting oxygen • Preventing flooding • Soil formation to help with plant growth	Cultural Services: The benefits brought to people either visiting or living in the **ecosystem** • Recreation and tourism • Education and science

6. Why is there an increasing demand for natural resources?
- Larger population = great demand for food / water with large areas of forest cleared for farmland
- Increased income (**affluence**) as countries industrialise = more energy resources. People tend to buy more consumer goods and therefore energy is needed in the productions of these too.
- Large towns and cities have grown (**urban sprawling**) = the destruction of natural environments.

7. Theories on supply vs demand:

Malthus' theory:
- Population growth happens faster
- Resource growth happens slower
- Population would eventually outstrip resources
- **Malthusian crisis** = famine / war / disease would spread.
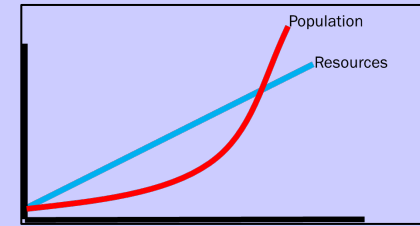
Boserup's theory:
- When faced with resource depletion, people would invent a solution
e.g. Fertilisers / pesticides / farming equipment / GM crops
- Saying: 'necessity being the mother of invention'
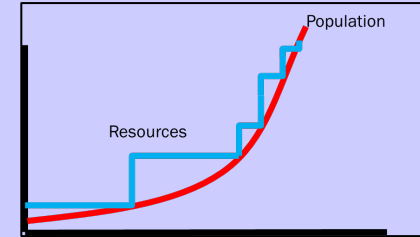
Key Terms:

| Biosphere	The living surface layer of the Earth -
Biome / ecosystem	A biome is a large area characterised by its vegetation, soil, climate, and wildlife. An ecosystem is a smaller version of this.
Latitude	Distance from the equator
Climate	The average temperature and precipitation of an area
Solar radiation	Energy released by the sun
Evaporation & precipitation	The process of turning from liquid into vapour – warm air rising. Precipitation = rain.
Photosynthesis	process by which plants use sunlight, water, and carbon dioxide to create oxygen and energy
Abiotic	Non-living parts of a biome i.e soil, water
Biotic	living parts i.e plants (**flora**) and animals (**fauna**).
Commercial	used for businesses (making money)

Rainforests

1. Rainforest location & climate

The rainforest is located around the equator – between the tropic of Cancer and Capricorn.

Climate:

- **High average temp** all years round (over 25 degrees) – due to being located near the equator = most concentrated solar radiation
- **High rainfall** - due to warm air rising, cooling, condensing, creating rain.

Monthly rainfall / Monthly temperature graph (Jan–Dez)

2.
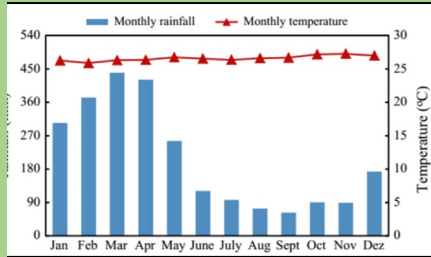
Plant adaptations:	Animal adaptations:
Leaves have **waxy surfaces** - prevents algae growing which could block sunlight and stop photosynthesis	Three-Toe Sloth – **claws** allow them to hang on branches & gather food from the canopy layer. **Green algae grows in their fur** to help camouflage from their predators
Buttress Roots - **Massive roots** provide extra stability, as the trees have shallow roots but can grow over 30m tall in the canopy layer!	Toucans - Large, **powerful beaks** to break open nuts. **Loud calls** because it is easier to hear potential mates than see them in the dense canopy.

4. Deforestation is a direct threat to the rainforest

Causes:

1. Cattle ranches (60%) Small-scale, **subsistence agriculture** (33%)
2. Fires, mining, **urbanisation**, road construction, dams (3%)
3. Large-scale commercial agriculture (1%) *(* % - Amazon forest)*
4. *Poverty-Many people in poverty who live in or near rainforests rely on the wood for fuel and heat*

Impacts:

- **Soil erosion**-without trees nutrients are in the soil either blown away by the wind or washed away when there is rain.
- **Water Cycle**- increased flooding and poorer water quality.
- **Loss of Biodiversity**-It is estimated that about 50 to 100 species of animals are being lost each day due to destruction of habitats

**The future:** Deforestation in the Amazon has slowed since 2004 because:

- The Brazilian government have started to protect areas of the rainforest from logging and cattle ranching
- The 2008 recession (credit crunch) meant that there was less demand for products from the rainforest as people had less disposable income

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Paper 3
Forests under threat

Subsistence agriculture	growing crops and raising livestock only for one's own use, without any extra for trade
Urbanisation	Growth of town and cities
Poverty	State of being extremely poor
Nutrient cycles	The cycle of nutrients moving around a biome
Biodiversity	The number of different plant and animal species
Diffused	Spread out
Litter	Fallen leaves

3. Nutrient cycles:

Circles = stores of nutrients
Arrows = transfers of nutrients

Rainforests   Taiga
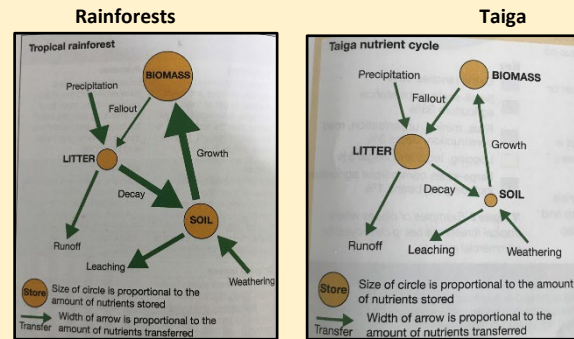
| Large growth arrow = perfect growth conditions	Small growth arrow = cold and reduced sunlight hours
Large biomass store = lots of vegetation	Small soil store = lack of nutrients entering the soil
Small litter store = high decay arrow = warm and wet results in bacteria transferring nutrients from litter to the soil.	Large litter store = decay is very slow due to cold conditions – slows bacteria growth

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Taiga

1. Taiga location & climate

The taiga is located mostly found in the Northern Hemisphere, between 50° and 70° latitude covering large areas of Russia and Canada.

Climate:

- Short, wet summers of 3 months where temps rise to 20°C - due to being located away from equator = **diffused** solar radiation
- Long cold, wet winters
- Precipitation is low, below 20mm for 5 months

2.
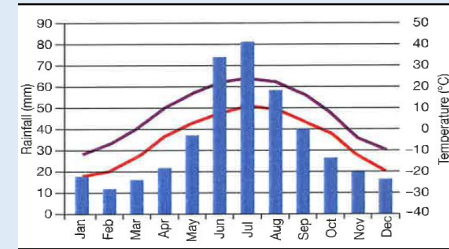
Plant adaptations:	Animal adaptations:
Needle-like leaves are protected by a waxy coating preventing frost damage. When these fall, they create a layer of needles on the floor, which are acidic preventing other plants growing.	Mammals: (Bears, wolves, moose) Have **thick, oily fur** to help retain body heat and provide waterproofing. Some animals also hibernate as food is hard to find during the winter months.
Tree **roots are shallow**, but wide in order to help stabilise the trees and avoid the frozen ground below (permafrost).	Birds: Most **birds migrate** during the winter months because of the cold and lack of food.

4. Deforestation is a direct threat to the taiga

Causes:

1. Legal and illegal logging – supply timber (China)
2. Tar Sands – extracting oil from beneath forest (Canada)
3. HEP (hydro-electric power) – Canada

Impacts:

- Amur tiger close to extinction- disrupt food chain
- Roads, pipelines and open pit mines can disrupt and displace many wildlife species that depend on large intact landscapes
- Fragmented forests, means animals cannot move around safely which can impact breeding.
- People have rerouted streams and rivers giving a change in fish migration

The future: Deforestation in the Taiga is the highest compare to any other forest biome with Canada and Russia accounting for 40% of all deforestation between 2000-2013.

Rainforests

5. Climate change is an <u>indirect threat</u> to the rainforest biome

Current Impacts of Climate Change
- Plants are flowering earlier
- Bird migration patterns are changing
- Arctic tundra is warming rapidly
- Biomes shifting towards poles by 6km/10yrs
- Unprecedented species extinctions

Positive feedback cycle in rainforests as a result of climate change:
1. Rainforests suffer from drought due to climate change
2. Trees die as they cannot adapt to the change in temperature
3. The ability of rainforests to absorb CO2 (a greenhouse gas) is reduced and instead the dead and decaying or burning trees due to forest fires emit (give off) CO2
4. This will increase temperatures further and so the vicious cycle continues.

6. Large scale, global management methods:

- **CITES-** Aims to prevent the trade of endangered species of plants and animals

Successes	Failures
• Works well for species which are considered high profile and draw attention. E.g. Snow Leopard. • Success in reducing the ivory trade and halting the decline of the African Elephant	• Many LIC's cannot afford setting up & monitoring • Incomes disrupted by stopping the trade of plants and animals. This easily causes tensions between the poachers and the authorities.

- REDD – A United Nations project to stop deforestation and slow global warming

Successes	Failures
• It can be cheap in comparison to other climate change prevention activities • Industrialised countries offset their own emissions by funding projects to converse forests in developing countries	• Offsetting is an easy way for developed countries to appear to reduce CO2 pollution, without actually reducing it.

8. Management challenges in the future:

- Population growth = pressure to deforest areas
- Urban areas, industry growth could result in the forest being destroyed
- Small-scale methods may not provide sufficient income and result in countries returning to large-scale deforestation in order to increase profits.

Paper 3
Forests under threat

Key terms:

Positive feedback cycle	A natural process that occurs in a continuous loop which worsens the effects of a small disturbance
Offsetting	Paying for others to reduce emissions or absorb CO2 to compensate for your own emissions.
Conservation	Protecting Earth's natural resources
Society	People
Economy	Businesses / money
Indigenous people	Original groups of an area / region
Carbon sink	Natural store of carbon (e.g trees)

7. How can forests be managed sustainably:

Forests need to exist long into the future & consider the natural environment, society, and economy and try to strike a balance.

Case Study-COSTA RICA
In he 20th century Costa Rica lost approx. 80% of its rainforest to deforestation.
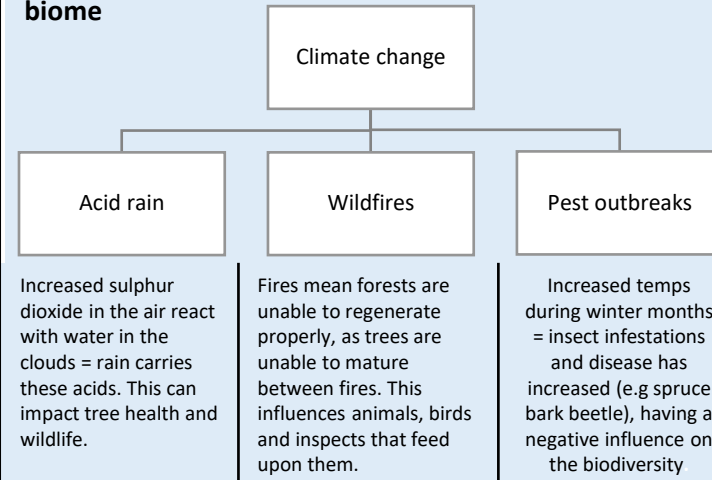
ECOTOURISM - Rainforest made into a national park. Small scale groups paying to see the rainforest. Local people generating income from visitors results in a **socio-economic advantage** . This also conserves the rainforest's natural wildlife and ecosystems long term; furthermore promoting an **environment advantage.**

SUSTAINABLE FARMING-Instead of clearing the area for crops, farmers are encouraged to allow the natural vegetation to grow onto the farm land. This provides locals with a constant food supply as well as trading opportunities to generate income without the damaging the natural forest.

MANAGED LOGGING- Instead of cutting trees down, locals and large-scale companies are encouraged to seek out fallen or dead trees amongst the forest to prevent living trees being cut down. They use buffalo to remove the trees to prevent the creation of roads.

Taiga

5. Climate change is an <u>indirect threat</u> to the Taiga biome

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            Climate change
    ┌───────────┼───────────┐
 Acid rain   Wildfires   Pest outbreaks
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Increased sulphur dioxide in the air react with water in the clouds = rain carries these acids. This can impact tree health and wildlife.

Fires mean forests are unable to regenerate properly, as trees are unable to mature between fires. This influences animals, birds and inspects that feed upon them.

Increased temps during winter months = insect infestations and disease has increased (e.g spruce bark beetle), having a negative influence on the biodiversity

6. Large scale, global management methods:

1. 1964 Wilderness Act. Government owned land untouched by human activity. In this 4.6% of USA land area: motorised transport, logging, mining, road building are all banned
2. National parks: large-scale areas, where building, development and exploitation are illegal. Governments provide a budget, employ rangers to keep the area under protection.
3. RAMSAR and World Heritage Sites – these are types of conservation status given to areas of global importance to provide extra protection from hunting, development or pollution

However, despite this protection – managing the threats of global warming, illegal deforestation, mining and hunting is difficult.

8. Management challenges in the future:
Differing view points on how the Taiga should be managed that could result in conflict:

Conserve the taiga	Exploit the taiga
In favour: Environmentalists, indigenous groups and scientists	In favour: Businesses, local government and some residents
Reasons: They are important to many indigenous people The chance of landslide increased significantly in place of deforestation The forests are vital global carbon sinks to help combat global warming	Reasons: Big business opportunity Russia employ over 2 million people & Canada 500,000 Resources can boost national GDP

1. Classifying Energy Resources

A **resource** is anything that is useful

Classification of resources by how long they last

1. FINITE
- **Non-renewable** resources will run out e.g. coal or oil

2. INFINITE
- **Renewable** resources renew naturally e.g. solar and wind power
- **Recyclable** resources can be re-used eg uranium for nuclear power

Another way of classifying resources is by type of resource
1. **Natural or biological resources** eg forests or amount of fertile land
2. **Human resources**: Skills of individuals e.g. Doctors, engineers
3. **Material or capital resources**: money, buildings, machines
4. **Mineral resources** e.g. coal, oil, iron ore

2. Impacts of Energy Production

Exploiting (using) energy resources can damage:
1. Pollution eg oil spills **Ecuador**
2. Landscape scarring eg abandoned open-cast coal mines **USA (Kayford Mountain)**
3. Deforestation for coal and HEP **(Amazon Rainforest)**

3. Patterns of Energy Consumption and Production

The **demand for energy resources is growing** because:
1. The World population is increasing
2. There are more **affluent** people **(middle class)** especially in **emerging economies** such as India and China who want more goods and use more energy for their lifestyles

As a result the level of damage caused to the environment is increasing

Production of **energy** varies around the World (see map 1) and depends on:
1. Availability (are the resources located in the country, is it the correct **geology**)
2. Technological development

Consumption of **energy per capita** (per person) varies around the World and depends on the level of development – more developed countries use more energy as the middle class buy more cars, TVs etc (see map 2). Eg The USA has 5% of the World's population but uses 25% of the World's energy. Africa as the least developed continent still has a high demand for traditional fuels eg wood.
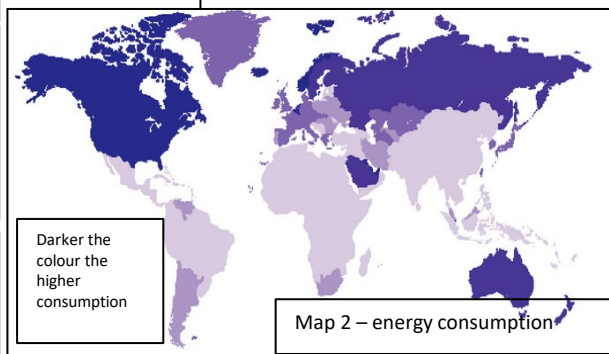
The greatest increase in **demand / consumption** is India and China as the number of middle class people in these countries grows

International relations will influence energy supply and therefore price e.g. Iraq war 2001 increased oil prices as the Iraq is an oil producing country
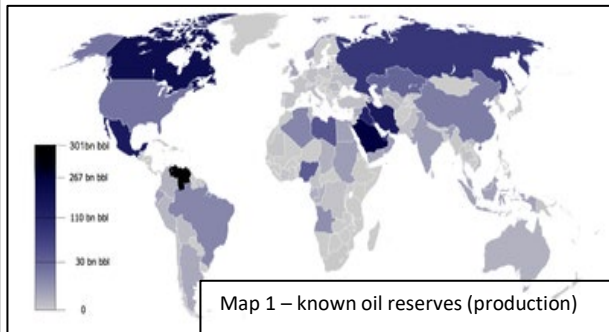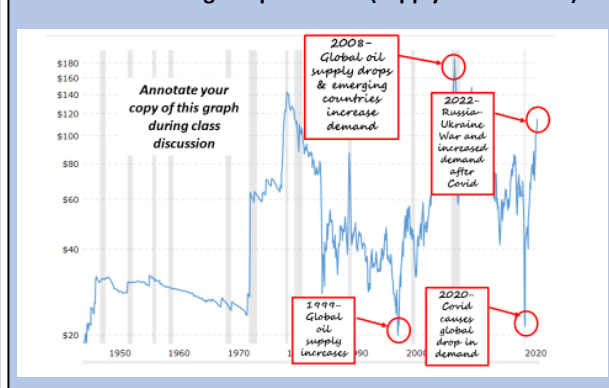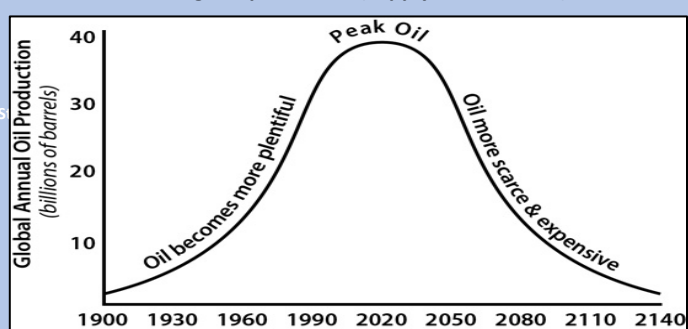

Map 1 – known oil reserves (production)

Darker the colour the higher consumption

Map 2 – energy consumption

4. Factors affecting the price of oil (supply and demand)

Annotate your copy of this graph during class discussion

2008– Global oil supply drops & emerging countries increase demand

2022– Russia-Ukraine War and increased demand after Covid

1999– Global oil supply increases

2020– Covid causes global drop in demand

4. Factors affecting the price of oil (supply and demand) cont'd

Peak Oil is the point when the maximum rate of crude oil extraction is reached, after which the rate of extraction will begin to decline and the price will rise.

The approach of **Peak Oil** has encouraged countries to look at ways of reducing the use of fossil fuels. There are environmental reasons eg global warming, why countries are also looking for ways to reduce the use of **fossil fuels**

5. Unconventional fossil fuels

As a result of the rising demand for **fossil fuels** and changes in technology to allow extraction from unconventional sources of oil eg tar sands oil is being extracted from:
1. More extreme environments eg Arctic, deep sea
2. More sensitive environments eg Alberta Tar Sands

The extraction of oil from the **Alberta tar sands in Canada** has had both positives and negatives

| Positives	Negatives
• Increased jobs in Canada • Increased wealth for Canada • This wealth can be spent on education, health etc	• Removal of trees **(deforestation)** from an undamaged environment • Pollution - toxic sludge is discharged into giant "tailing" ponds • Increase in greenhouse gas emissions • Increase water use • Landscape scarring

6. Reducing our reliance on Fossil Fuels

A **carbon footprint** is the amount of CO_2 released into the atmosphere by an individual, business or country. The biggest carbon footprint is from the USA (5 Earths) and the smallest Bangladesh (0.4 Earths). Ways to reduce the demand for carbon based energy:

Large scale - Alternative (renewable) energy sources:
- **Solar** – more suitable to areas with a high number of sunshine hours eg southern Spain
- **Wind** – need to be located in windy areas eg uplands. Several groups object as these are often beautiful sites. The problem can be solved by locating the wind turbines out at sea (offshore)
- **Waves & tide** – suitable for countries where most people live in coastal areas. Very expensive.
- **HEP** – particularly beneficial in many developing countries with large rivers. Many people object to the large amount of land that can be flooded as dams are built. May have negative impact on the wildlife in rivers
- **Nuclear** - many people object due to safety fears

All of the above do not use fossil fuels and therefore do not add CO_2 to the atmosphere and contribute to global warming. Could they form part of the future **energy mix** for countries around the world?

2003 World Consumption Cartogram
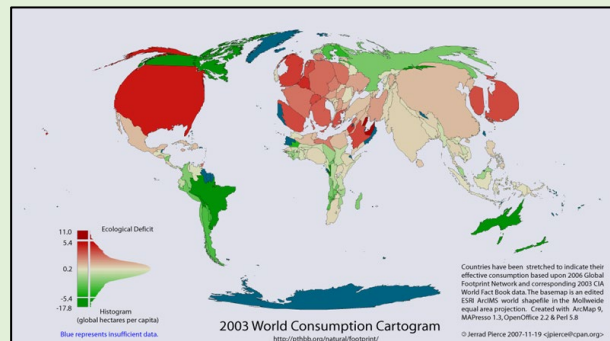
Medium scale - Energy efficient transport:
- **London's cycle hire scheme** provides 6000 bikes for hire at 400 docking stations around London so people do not have to use cars
- **New London hybrid buses** are 40% more fuel efficient and produce 40% less CO2 than the older buses
- **The congestion charge** makes vehicles pay to enter into the centre of London between certain times of the day. This reduces the amount of cars on the roads, therefore reducing emissions.

- **Solar panels** works best in areas with a lot of sunshine
- **Double or triple glazing** reduces heat loss and therefore less energy is required
- **Reusing** lowers the need for new products to be made and therefore less energy is used
- **Recycling** lowers the need for primary products to be mined so reduces the amount of energy used
- **Shopping locally or growing your own** reduces how far our food travels so less fuel is used

All of the above reduce the amount of fossil fuels used and therefore add less CO_2 to the atmosphere and contribute less to global warming

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Paper 3
Consuming Energy Resources

7. What will happen in the future?

If CO_2 rises by this amount (*****) it will lead to global warming in excess of 2°C which will lead to:
1. Ice caps melting and coastal flooding
2. More extreme weather eg droughts, heat waves and powerful storms
3. Reduction in farming output due to unreliable weather
4. Changes to ecosystems leading to animal extinctions
5. **Tipping points** (where global warming triggers increasingly rapid cycles of environmental change e.g. global warming=forest fires=CO2 released=global warming)
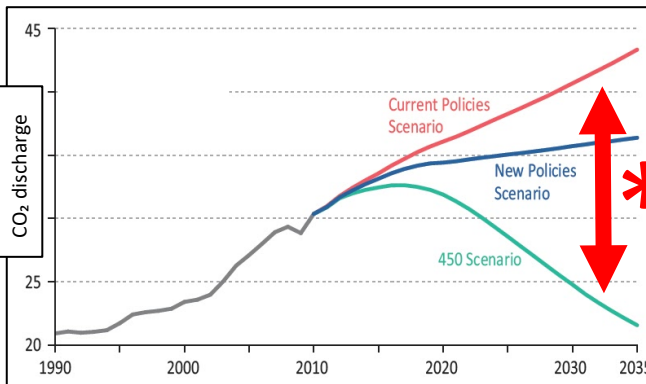

7. What will happen in the future? Cont'd

There are two possible approaches to future energy use:
1. **Business as usual (current policies scenario)** –the world continues to rely on fossil fuels and global warming will get worse.
2. **Sustainable future** – More countries adopt alternative (renewable) energy supplies in order to reduce CO2 emissions as a way of slowing climate change. These are known as the **New Policies Scenario** and the **450 Scenario**

New Policies scenario – reduces the amount of CO_2 released into the atmosphere keeping the maximum rise in global temperatures to 4°C . Scientists believe this is too high and that if the temperature rises by this amount there will be severe negative impacts on people and the environment

450 scenario – reduces the amount of CO_2 released into the atmosphere keeping the maximum rise in global temperatures to 2°C – the maximum temperature rise scientists believe the Earth can sustain without severe negative on people and the environment

As countries become more developed and people become more affluent this tends to increase their concern for the environment as shown in the model below known as 'Kuznet's Curve)
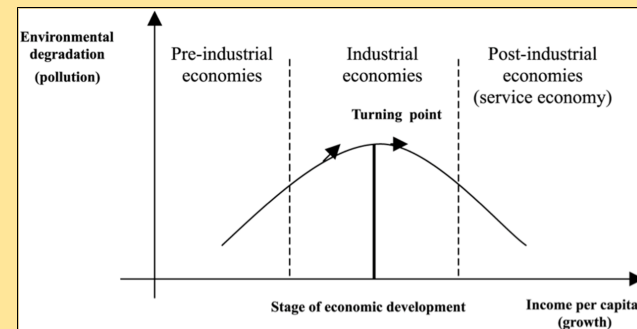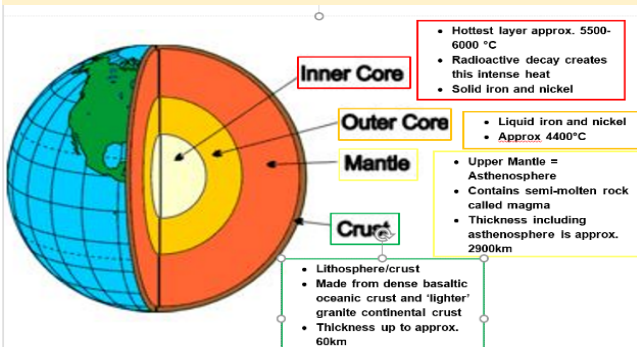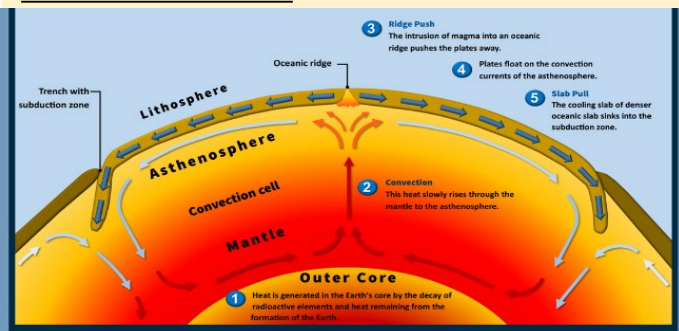

Source: Panayotou (1993)

Key Terms:

Finite/non-renewable	An energy resource that will run out e.g. fossil fuels (oil, coal and natural gas)
Infinite/renewable	An energy resource that will not run out e.g. solar, wind, tidal, HEP
Recyclable	An energy resource that can be reused eg uranium for nuclear power
Unconventional fossil fuels	Fossil fuels that are extracted via unusual or controversial methods e.g. Tar Sands in Alberta, Canada
International relations	The interaction of governments of different countries that concern globally important issues that can impact energy supply e.g. war (Russia and Ukraine)
Energy mix	The combination of different energy sources e.g. solar, fossil fuels, wind that together provide the energy required by the population of a country
Peak oil	**Peak Oil** is the point when the maximum rate of crude oil extraction is reached, after which the rate of extraction will begin to decline and the price will rise.
Affluence	How wealthy a person or group of people are i.e. the rising affluence of Chinese citizens
Energy consumption	The amount of energy being used to meet people's needs

Paper 1
Hazardous Earth- Tectonic Hazards

1.Structure of the Earth

Inner Core
- Hottest layer approx. 5500-6000 °C
- Radioactive decay creates this intense heat
- Solid iron and nickel

Outer Core
- Liquid iron and nickel
- Approx 4400°C

Mantle
- Upper Mantle = Asthenosphere
- Contains semi-molten rock called magma
- Thickness including asthenosphere is approx. 2900km

Crust
- Lithosphere/crust
- Made from dense basaltic oceanic crust and 'lighter' granite continental crust
- Thickness up to approx. 60km

2.Convection Currents

- **3 Ridge Push**: The intrusion of magma into an oceanic ridge pushes the plates away.
- **4** Plates float on the convection currents of the asthenosphere.
- **5 Slab Pull**: The cooling slab of denser oceanic slab sinks into the subduction zone.
- **2 Convection**: This heat slowly rises through the mantle to the asthenosphere.
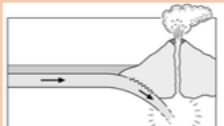- **1**: Heat is generated in the Earth's core by the decay of radioactive elements and heat remaining from the formation of the Earth.

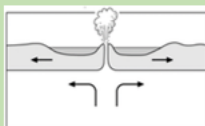- Convection currents move tectonic plates which causes continental drift.
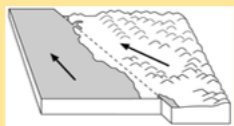
2. Plate Boundaries

Convergent

- ❑ oceanic plate forced underneath continental plate (subduction)
- ❑ powerful earthquakes and volcanic eruptions
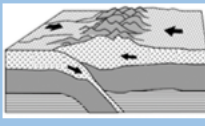
Divergent

- ❑ oceanic plates moving apart
- ❑ gentle earthquakes and volcanic eruptions

Conservative

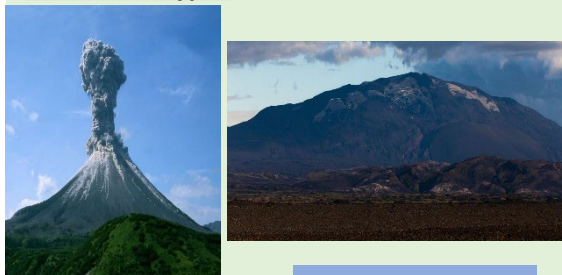- ❑ two plates moving alongside each other
- ❑ powerful earthquakes, no volcanoes

Collision

- ❑ continental plates moving towards one another
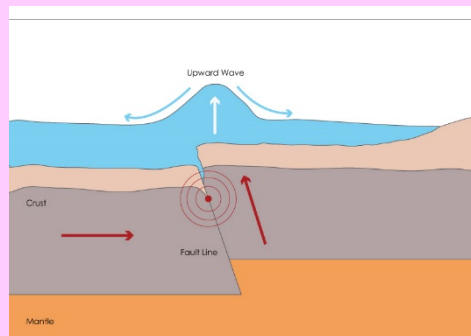- ❑ powerful earthquakes and fold mountains

3. Volcano Types

Composite (cone shape) volcano:-
- Andesitic Lava
- Most explosive eruptions
- Pyroclastic flow
- Lava bombs
- Ash clouds

Shield volcano:-
- Basaltic Lava
- Less explosive eruptions
- Lava flow

4. Tsunami Formation

- Oceanic plate moves towards continental plate because of convection currents
- Oceanic plate (denser) sub-ducts under continental
- Builds up tension
- Tension releases=earthquake- the continental plate springs up displacing the ocean above
- This creates a series of tsunami waves that move out from the **epicentre** in both directions

5. Earthquake Case Studies

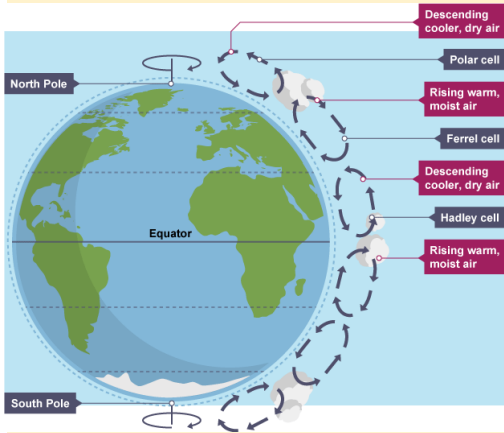| Kathmandu, Nepal 2015	Christchurch, New Zealand, 2011
• 7.8 magnitude • Convergent boundary (continental and continental plates coming together) • Avalanches and landslides • 8,583 death toll • 18,000 injured • 2.8 million people displaced • 80% of structural buildings in some towns and villages collapsed. • Estimated cost was around US$5-10billion. • 750,000 infected with Cholera due to contaminated water sources • Deaths occurred after the earthquake as the severe winter weather affected those who were homeless.	**6.3 magnitude** • Convergent boundary (continental and oceanic plates coming together) • Aftershocks and liquefaction (solid ground turning to liquid due to the seismic shaking) • 181 killed • 2,000 injured • 60,000 displaced • $40 billion economic impact • Christchurch could no longer host Rugby World Cup matches so lost the benefits, e.g. tourism and income, they would bring • Schools had to share classrooms because of the damage to other school buildings

Key Terms:

Vulnerability	Factors that make a country more likely to be at risk from a hazard
Primary Impact	Impacts that occur as the hazard is happening- immediate
Secondary Impact	Happens days, weeks, years after the hazard and can be a consequence of a primary impact
Response	how countries react to a hazard
Prediction	Knowing when a hazard might occur
Social	impacts people
Economic	-impacts money/jobs
Environmental	-impacts environment (water sources, animals, plants)

Paper 1 Hazardous Earth-Climatic Hazards

1. Global atmospheric circulation

Descending cooler, dry air
Polar cell
North Pole
Rising warm, moist air
Ferrel cell
Descending cooler, dry air
Hadley cell
Equator
Rising warm, moist air
South Pole

- Solar radiation most direct at the equator,
- Leads to high temperatures and large amounts of evaporation.
- Warm rising moist air causes low pressure system- when it condenses to bring rain.
- The air splits and moves N/S- this cold air is more dense so sinks=high pressure environment of drier weather.

2. Tropical Storm Location + Formation

- Sea temperature over 27°C
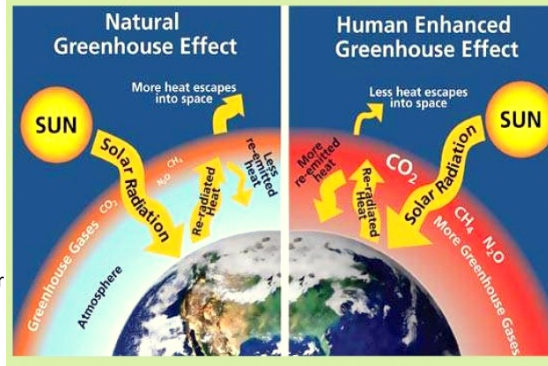- Tropical storm routes
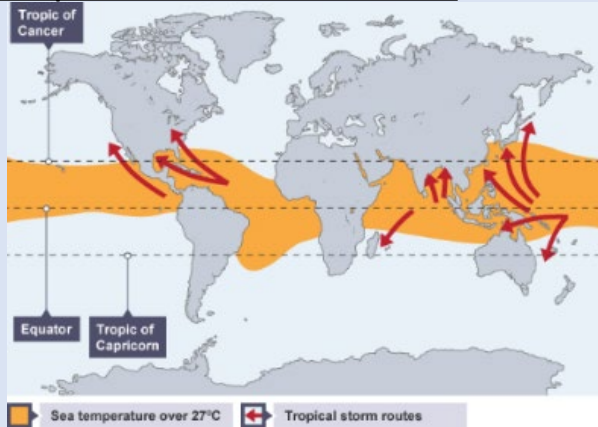
- High sea surface temperature-26 degrees Celsius.
- Warm air rising
- Thunderstorm cluster *(big gathering of clouds)*.
- Light winds high in the atmosphere (wind shear).
- The rotation of the earth – *Coriolis force*

3. Natural causes of climate change

- **Sun Spots- Climate warming and cooling**
- **Asteroid Collisions- Climate cooling**
- **Volcanic Eruption- Climate cooling**
- **Milankovitch cycles/orbital changes-climate warming+ cooling**

4. Human causes of climate change

Natural Greenhouse Effect
Human Enhanced Greenhouse Effect

- **Burning fossil fuels, transport, cattle farming**

Key Terms:

Latitude	the measurement of distance north or south of the Equator.
Climate Change	Climate change refers to long-term shifts in temperatures and weather patterns (can be human or natural causes)
Natural Hazard	Natural hazards are extreme natural events that can cause loss of life, extreme damage to property and disrupt human activities

5. Evidence of humans accelerating climate change

- Graphs showing difference in global temperatures over time and sea surface temperatures which is evidence of humans accelerating climate change.

6. Climatic Case Studies

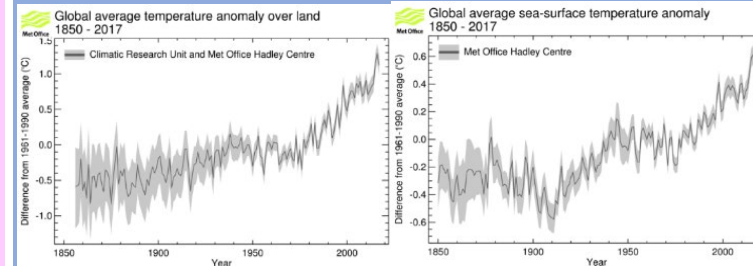| Hurricane Katrina, USA, 2005 Saffir-Simpson Category 5 storm	Typhoon Haiyan, Philippines, 2013 Saffir-Simpson Category 5 storm
VULNERABILITY? The USA is a developed country New Orleans has an average population density of 1,965 people per square mile The coastline where Katrina struck is on average only 1-2 feet above sea level	**VULNERABILITY?** The Philippines is a developing country The Philippines has a very high average population density of 115,124 people per square mile. Some of the islands in the Philippines are only 3 feet above sea level.
IMPACTS? 1,833 deaths 800,000 homes were destroyed. 11,600 homeless The economic damage $125 billion USD	**IMPACTS?** 10,000 deaths 1.2 million homes were damaged or destroyed. 4 million homeless Economic damage $14 Billion USD
MANAGEMENT? Sophisticated satellite technology so citizens evacuated quickly. Evacuations to the New Orleans Superdome but many were trapped in squalid conditions for Levees failed to keep the storm surge contained =widespread flooding Government provided $62 billion aid package and ordered 7,200 National Guard troops to the region	**MANAGEMENT?** Evacuation centres Extra planes scheduled to evacuate survivors to the capital Manila Hourly updates on the radio-although many ignored this NO storm surge barriers Foreign aid and donations from charities such as The Red Cross

Paper 1 Development of an emerging country - India

Site and situation	Global context
Continent: Asia	India is an 'Emerging Country'
Bordering countries include: Nepal, Pakistan,	Set to become the second largest economy in the world by 2050
Indian ocean and Arabian Sea	Largest democracy in the world
Deep sea port and flat land	population is 1.2 billion

2. India's economic growth

India's economy has grown hugely over time mainly due to…

GLOBALISATION!

In 1991 India went through **'economic liberalisation'** which means that the country open its doors to trade. This 'globalised' India and it started to trade with other countries via port cities such as Mumbai. **TNC's** such as Apple and BT also started to invest (**Foreign Direct Investment-FDI**).

India – Average GDP Growth

Sources: CEIC; RBA

3. Economic growth has also impacted the population structure in India:

Lower death rates due to

- Better healthcare
- Better access to food and water resources
- Higher standards of living

Lower fertility rates due to

- Women having children later as they can work more
- Girls having greater education and accessing better jobs.

Rapid economic growth

India 1985   778.851.000   India 2005   1.144.326.000

Male   Female   Male   Female

More people living longer.

Less younger age groups.

4. Rapid development has led to different regions having a greater difference in there socio-economic characteristics.

MAHARASHTRA	BIHAR
Mumbai in Maharashtra is located on the coast. Most trade occurs via container ship from it's port. Therefore, Mumbai is a big hub for trade and has benefitted hugely economically. The city and region has seen rapid **urbanisation** and growth. As a result education and healthcare services are better.	**Bihar** is landlocked. Therefore. no global trade happens here. This limits Bihar's income. Therefore it has a weaker economy than Maharashtra. As a result Bihar's healthcare and education services are of poor quality.

5. Impacts on the environment and human health

Urban smog & air pollution

Habitat loss

Water pollution

Increased flood & drought risk (global warming)

7. Could India become a global superpower like the USA?

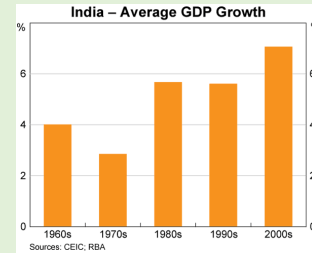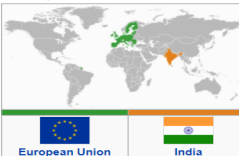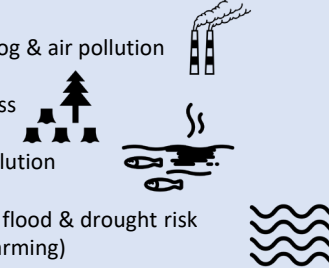| Factors to become a superpower	What could prevent India becoming a superpower
• Huge population of potential consumers. • Youthful population • Key hi-tech industries such as IT • Educated, English speaking workers • Innovative **TNC's** E.g.Tata Motors	• Aging infrastructure which will cost a lot of money to update • 80% of Indian's still live on less than $2 per day • Lack of their own energy resources e.g. coal, oil, gas and renewables

6. India's changing geopolitical relationship with the EU

As well as a strong trading relationship due to a 'free-trade deal' India and the EU work together on the following issues:
- Climate change
- Counter-terrorism
- Cyber-security

India is increasingly influential with the EU and as part of the United Nations (UN) and other **international organisations.**

European Union–India relations

European Union   India

Key terms

Site – the location of a country.
Situation – the physical geography of a location (e.g. in a valley, coastal etc.)
Socio-economic – factors that are either social (to do with peoples lives) or economic (to do with money)
Urbanisation – the growth of populations in cities (urban areas) often due to migration from rural areas
TNC's – Transnational Companies – international / global businesses that operate in different global regions
FDI - Foreign Direct Investment – money invested in a country from foreign TNC's or governments

Paper 1
Challenges of an Urbanising World

1. Trends (patterns) in urbanisation

- In the past, cities in HICs experienced the highest levels of growth (e.g. in Europe and North America)
- Today, urban populations are still increasing rapidly – but mainly in LICs and emerging countries
- In 2007, more people lived in urban than rural areas for the first time in history
- Asia and Africa are the continents experiencing the highest levels of urbanisation
- By 2050, the world's urban population is expected to reach 68% (around 2 in 3 people).
- In 1975, 6 out of 10 of the world's **megacities** were in HICs - predicted to fall to 2 out of 10 in 2025

CURRENT AND FUTURE MEGACITIES
2015 - 2030

Current megacities
- 2015 population
- 2030 population

Future megacities
- 2015 population
- 2030 population

2. Urban economies:

	Mumbai	London
Types of jobs	Mostly manufacturing (secondary) jobs, with growing service sector. Many jobs in **informal economy**	Mostly services (tertiary) and high-tech/IT (quaternary) jobs. Jobs mainly in formal economy
Examples	Making pots, trainers, clothes	Banking, insurance, retail
Pay	Lower paid	Higher paid
Health and safety	Tends to be poorer and laws not properly enforced	Strong health and safety laws and well enforced
Working conditions	Long hours and sometimes poor working environment. For example, cramped workshops.	Can be long working hours but working condition tend to be good. Paid holidays, pensions and sick pay.

3. Urban decline in Detroit, USA

**1950s:** GM Motors creates thousands of jobs – Detroit's population is 1.85 million

1960-2000: Rising oil prices and cheaper/more efficient cars being produced overseas (e.g. in Japan) led to reduced demand, closure of factories (**deindustrialisation**) and unemployment. Wealthier (mainly white) residents move away (**counter-urbanisation**).

By 2015: 62,000 homes sold because of debts and total population stands at 673,000

4. Urban growth (hyper-urbanisation) in Mumbai, India

- Mumbai is a port city, so trade via containership is easy.
- As a result, large transnational companies (TNCs) set up businesses/factories (FDI – foreign direct investment)
- This creates jobs, so people move in vast numbers rom rural areas and from abroad seeking employment.
- The size of the city grows rapidly to accommodate all the new people. This is often seen in the form of vast slums such as Dharavi which sprawl outwards from central Mumbai

5. Causes of urbanisation
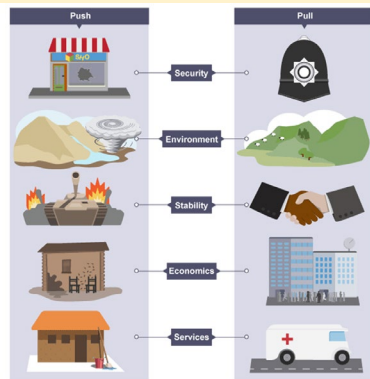
Push factors are reasons why people leave rural areas (countryside)

Pull factors are things which attract people to urban areas (cities)

6. Urban land use

1 – CBD (Central Business District):
- **Commercial**
- Buildings are taller and higher density
- Land is most expensive
- Strong transport links – most accessible part of the city

3 - Suburbs:
- **Residential**
- Land is cheaper – further away from commercial areas
- Semi-detached and detached houses which have gardens/garages

2 - Inner city:
- **Industrial** and **residential**
- Terraced housing built for factory workers
- Industries needed space so built away from CBD
- Ongoing **deindustrialisation** and **gentrification**

4 - Rural-urban fringe:
- **Residential**
- Larger housing, golf courses and allotments
- Some out-of-town retail parks
- Surrounded by the green belt (land that has never been built on)

Key Terms:

urbanisation	an increase in the proportion of people living in towns and cities
megacity	a city with more than 10 million inhabitants
world city/urban primacy	megacities which have a disproportionate role in world affairs (e.g. London, New York)
hyper-urbanisation	especially rapid growth of cities
informal economy	jobs for which people do not receive a salary, contract or agreed working conditions
deindustrialisation	the decline of industry, often leading to economic decline and unemployment
counter-urbanisation	when people move out of the city
regeneration	reversing economic and social decline
commercial	used for businesses (making money)
industrial	used for industries (factories)
residential	used for private housing for local people
gentrification	When an influx of wealthier residents to a poor area results in regeneration and rising property prices

Paper 1
Challenges of an Urbanising World: Mumbai Megacity: Case Study

1. Site and situation
- India's biggest city and main commercial hub, and 4th biggest city in the world
- Situated in Maharashtra (India's richest state)
- Low-lying city, vulnerable to flooding and monsoon rains
- Estimated population of 16 million – although entire metropolitan area has a population of about 25 million

Connectivity
- On a deep-water estuary, Mumbai is India's second-largest container port
- Mumbai's location on India's east coast allows trade with Europe (via the Suez Canal)
- Mumbai is 9 hours by air from UK airports. Most Indian cities are within 2 hours flight time

2. Mumbai's structure

CBD:
- Not in the centre of the city
- Located near the harbour tip
- **High-quality housing:**
- Occupies the best coastal sites along the waterfronts
- Close to the CBD
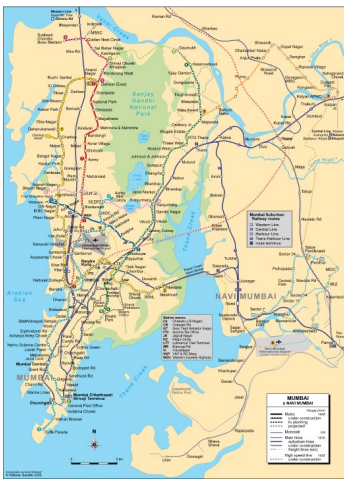- Shopping malls, restaurants, high-rise residential complexes, private schools and hospitals

Slums:
- Poorest 60% of people live in informal housing (townships/s)
- Most squatter shacks are on the outskirts, far from jobs in the centre. But some long established ones
- 40,000+ people live on Mumbai's streets

Navi Mumbai:
- Planned township developed out of town to ease congestion in metropolitan Mumbai
- Aimed at the middle class who can't afford homes in central Mumbai
- Transport infrastructure, college, new companies and residential complexes with shopping malls and entertainment

In Mumbai, **industry (factories)** is often concentrated along main roads.

3. Causes of population growth in Mumbai
- **Rural-urban migration**: People move to India's cities in search of jobs, education and higher incomes (**pull factors**)
- **Natural increase:** Migrants tend to be in their 20s and 30s, and they settle and start families. Mumbai's natural increase is around 1.4% per year

4. Opportunities and challenges

Opportunities	Challenges
Economic More availability of secondary and tertiary (formal) employment for migrants	*Economic* Large informal employment sector limits tax income for government to invest in development
Social Improved access to education and employment	*Social* Unsustainable pressure on housing, services and sanitation and increased inequality
Environmental	*Environmental* Increased water and air pollution

Key Terms:

|	
site	where a settlement is located (e.g. on a deep--water estuary)
situation	location in relation to other places (e.g. on the Indian Ocean coastline)
connectivity	how a place is connected with other places
pull factors	are things which attract people to urban areas (cities)
rural-urban migration	the movement of people from countryside (rural areas) to cities (urban areas)
natural increase	when the birth rate is higher than the death rate, resulting in population growth
sustainability	using natural resources responsibly so that the environment, local people and future are protected

chawls
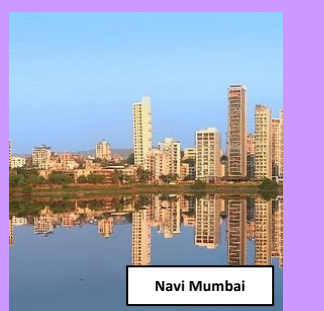
Navi Mumbai

5. Sustainable strategies (projects) to improve quality of life

Strategy	Aims	Successes ☺	Challenges ☹
Vision Mumbai (top-down)	• Demolish slums and provide cheaper housing • Improve water, sanitation and health care • Improve rail, bus, road and transport • Boost economic growth	• 72 new trains introduced which improved commute times • Train station platforms were raised to prevent people falling into gaps between the train and platform • 45,000 slum homes demolished and replaced with new flats with sewage and water systems	• Communities who lived side by side in slums for years have been split • Many would prefer slums to be improved rather than demolished • Rents in the new flats cost more • Much informal business was also destroyed in the process of demolishing homes which affects employment • Vision Mumbai is struggling to keep up with the growth of slums
LSS (bottom-up)	• Set up to control the spread of leprosy in slums	• In 30 years LSS has treated 28000 people for leprosy in the slums and 75% of them have been cured • People are educated on the causes and treatment of leprosy for free • The stigma of leprosy is slowly reducing as people understand the disease more-this reduces social exclusion	• The nature of LSS work is small scale and therefore has not yet had a city wide impact in Mumbai

Paper 2
UKs Evolving Physical Landscape - Coasts

1. Geology (rock type)
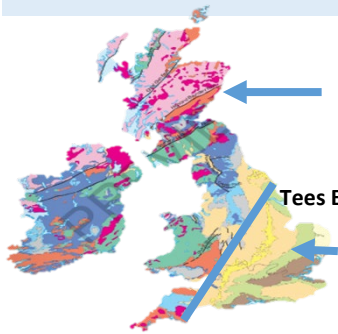
North West - Mountainous **topography**, hard geology / igneous and metamorphic rock eg granite. Colder, wetter and windier. Glacial U shaped valleys.

Tees Exe line

South East – Lowland **topography** softer geology / sedimentary rock eg sandstone, clays. Warmer and dryer.

3. How do waves erode the coastline?

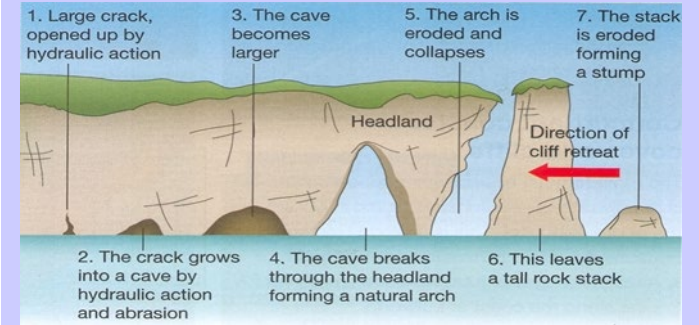|		
Attrition	• Small rocks that the waves are carrying, collide in to one another. • The rocks break up, becoming smaller and rounder.	
Abrasion	• Rocks that the wave is carrying are thrown against the coastline. • This wears away at the coastline overtime.	
Hydraulic Action	• Large waves break against the cliff. The cliff will often have faults/cracks in. • The water is forced into these faults/cracks in the cliff, which causes immense pressure. • When this pressure is released, it produces a force that makes the crack larger.	
Solution	• Sea water has lots of different chemicals in, causing the rock to dissolve. This occurs most frequently with limestone.	

2. How humans impact the physical environment – Dartmoor

Agriculture (farming) – **Deforestation** to allow for grazing animals
Mining – Dry river beds where rivers had been diverted for mining purposes but are no longer in use
Settlement – The remains of circular bronze age housing

4. Different wave types

Destructive Waves:
• Strong winds, powerful waves and cause coastal erosion.
• They are tall and steep.
• The backwash is stronger than the swash, so material is carried out to sea.

Constructive Waves:
• Light winds, not powerful and cause deposition, rather than erosion.
• Stronger swash, so material is carried up the beach and deposited.

5. Discordant and Concordant coastlines - Dorset

Discordant Coastline:
• Bands of differing rock run perpendicular to the coastline.
• Along this coastline, a mixture of clay (less resistant), chalk and limestone (resistant) run perpendicular the coastline
• Headlands and Bay are the common landforms

Concordant Coastline:
• Bands of rock run parallel to the coastline. Along this coastline, limestone (resistant rock) runs along the entire length of the coast creating coves

6. Erosional landforms – arches, stacks and stumps

Freeze Thaw	Water enters cracks, freezes and expands breaking up rocks
Chemical Weathering	Carbonic acid in rain dissolves rock eg limestone
Biological weathering	Roots of plants and trees grow into cracks and split rock open

Key Terms:

| Mass Movement	Rocks and soil move down slopes under the influence of gravity
Relief	The changing height of the lands surface
Topography	The changing shape of the lands surface
Igneous	A rock formed from hot molten lava
Sedimentary	A rock that is formed from the deposition of sediment and compressed into a solid
Metamorphic	A rock that has been transformed under intense heat or pressure
Storm Surge	Intense low pressure and strong onshore winds cause a rapid rise in sea and consequently coastal flooding.
Cost Benefit Analysis	Where the benefits of a coastal defence scheme are compared with the cost. Do the benefits out weight the costs ?
Terminal groyne syndrome	Where groynes prevent LSD transporting sediment along the coast causing beaches further down the coast being eroded
Salt marsh	Salt tolerant plants growing on mud flats

7. Transportation – Long shore drift

- Waves approach the beach at an angle.
- Material is moved up the beach at an angle (**swash**), returning perpendicular to the coast (**backwash**).
- Along the south coast of the UK, the prevailing wind is from the South West, moving material from west to east.
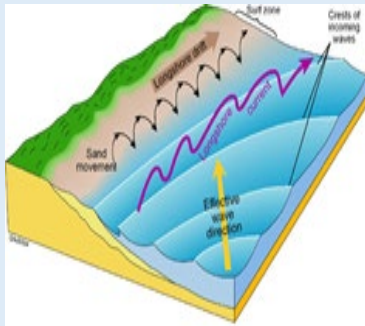
8. Depositional Landforms – Spits and Bars

- A **spit** is a narrow ridge of sand or shingle, that stretches out from the coastline, into a gap in the coastline.
- A spit forms due to longshore drift.
- Sediment moves along the coastline until a change in coastline occurs.
- This results in material being deposited.
- This builds up overtime until the spit extends out further into the gap.
- **Saltmarshes** begin to form being the spit due to it being enclosed. A spit may begin to curve due to wind and waves from other directions.
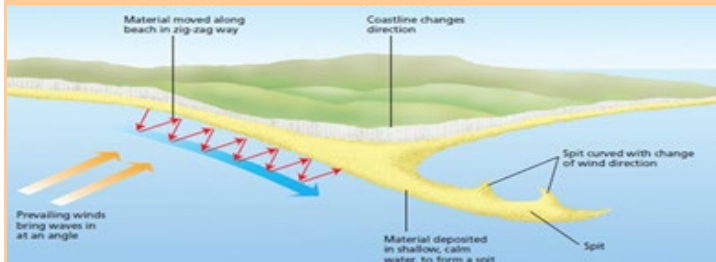
- A **bar** is a ridge of sand or material that extends across a bay or river mouth, creating an enclosed water body.
- A bar forms in the same way as a spit. Behind the bar, fresh or slightly salty water becomes contained to form a lagoon. In the image below, a bar extends across the river mouth, with a **lagoon** behind.

Bar

Lagoon

9. The Holderness Coast – Case study

- The Holderness Coast in north-east Yorkshire is rapidly eroding.
- It's Geology is primarily **boulder clay** which is easily eroded.
- At Mappleton a rock groyne was built to protect the main road which was at risk of eroding away
- **Cost Benefit Analysis** meant it was cheaper to build a groyne than move the road
- This caused '**terminal groyne syndrome**'(beach starvation) further along the coast
- Settlements like Cowden further along the coast experienced a rapid increase in erosion rates, farmland and housing was lost to the sea as a result
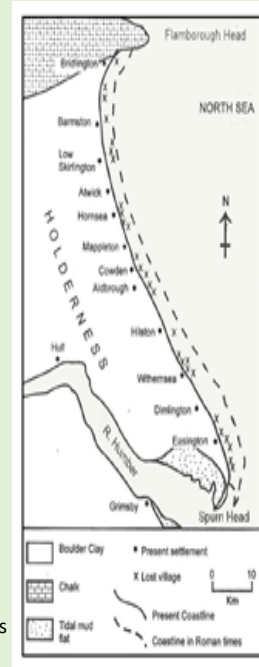
10. How can we protect our coastline?

- Managing the coastline sustainably involves a process called integrated Coastal Zone Management (ICZM).

No Intervention 'Do Nothing'	No investment in flood defences.
Hold The Line	Maintain the existing coastline with defenses.
Managed Retreat	Allow the shoreline to change naturally, but manage this process and the impacts.
Advance The Line	Build new defences on the seaward side.

11. What challenges do coastal landscapes present?

Rising Sea Levels:
- Sea level in the English Channel is expected to rise by 15cm by 2030 due to global warming.
- A warmer climate causes water to expand, and ice sheets and glaciers to melt.

Winter Storms:
- In December 2013, the UK was hit by a series of low pressure systems
- Bringing heavy rainfall and extremely strong winds.
- The south east of England was worst hit, with 7m **storm surges.**
- Two people lost their lives, 1400 homes were flooded. Insurers estimated the damage to cost £100 million

12. Evaluating coastal defence strategies

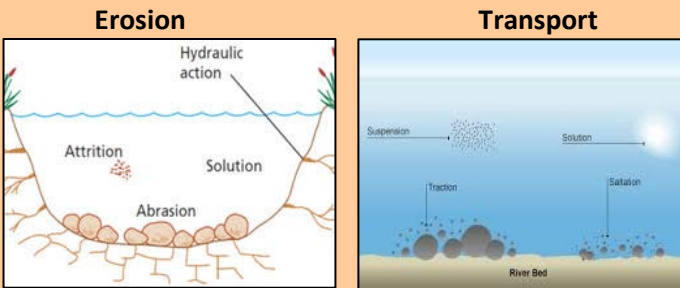|		
Sea walls	• Made of resistant concrete that deflects energy. • Long term	• Expensive and unattractive. • Restricts access.
Groynes	• Maintains a wide beach and attracts tourists	• High cost of maintenance. • Beach starvation (terminal groyne syndrome) further along the coastline
Beach replenishment	• Looks natural • Attracts tourists • Cheap	• Material is easily eroded. • Needs constant replenishment.
Slope stabilisation	• Prevents mass movement, • Safer for people using the beach.	• Difficult to install and is very expensive.

Paper 2
UKs Evolving Physical Landscape – Rivers

1. River landscapes – Riven Severn

Upper	Middle	Lower
Upland area Narrow river Large angular load Slow flowing water Vertical erosion Waterfalls Rapids V shape valleys	Flatter land Wider river Sub-rounded load Fast flowing Lateral erosion Meanders Oxbow lakes	Lowland area Wider river Small round load Faster flowing Deposition Levees Flood plain Estuary

(green)	Erosional landforms
(orange)	Depositional landforms

How does the river's characteristics change along its course

	Increase/ decrease	Reason
Gradient	⬇	Height of land decreases towards the sea
Width	⬆	Lateral erosion causes the sides of the river to get wider
Discharge	⬆	Smaller tributaries add water to the main channel
Velocity	⬆	As load becomes smaller, there is less friction on the river bed
Sediment size	⬇	Sediment knocks together (abrasion) to reduce size

2. River processes

Erosion

Transport

6. Key terms

| Erosion	Wearing away of sediment in river banks and beds
Deposition	The dropping of sediment when the river looses energy
Load	Amount of sediment the river carries
Angular	Sediment with sharp edges
Vertical erosion	Wearing away downwards (eroding the river bed)
Lateral erosion	Wearing away sideways (eroding the river banks)
Discharge	Total volume of water flowing through a channel at any given point
Velocity	The speed of the river
Tributary	Smaller channels entering the main river
Confluence	Where two rivers meet
Antecedent conditions	Conditions before the storm (very dry / or very wet)

3. Floods - Causes
1. Large storm
2. Saturated ground
3. Snow melt
4. Storm surge
5. Urbanisation
6. Deforestation

Risk of floods is increasing due to:
- Increased frequency of storms (global warming)
- Land-use change – increased demand

4. Storm hydrographs - tells you the amount of discharge (measured in cumecs) in a river after a rainfall event
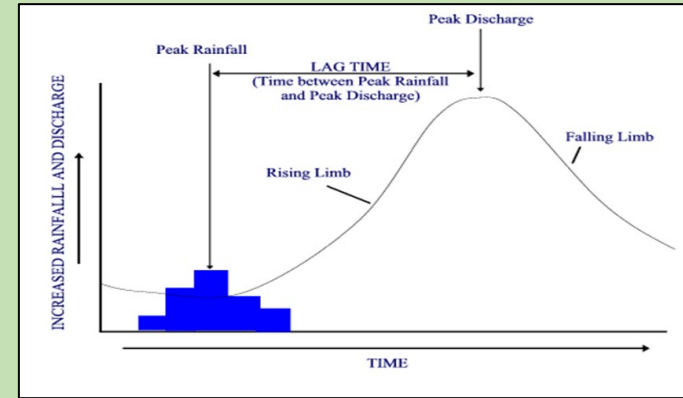
Physical factors that affect lag time	Human factors that affect lag time
1. Steepness of slope 2. Rock type 3. Amount of vegetation 4. Level of urbanisation 5. Antecedent conditions	1. Urbanisation 2. Changes in land use 3. Deforestation

5. Tewkesbury, Gloucestershire Flood 2007 - case study

Causes - Physical	Causes - human
1. Flood plain, low lying and flat land 2. Confluence of two rivers 3. Drainage basin has steeper mountainous land 4. Geology is impermeable clay 5. 3 times normal rainfall between May and July	1. No permanent flood defences 2. Town growth - more impermeable surfaces

Responses to the Tewkesbury flood

Hard solutions	Soft solutions
1. Levees 2. Dredging 3. Flood Relief Channels 4. Flood walls	1. Spillways 2. Restrict planning permission 3. Afforestation

Paper 2
UK's Evolving Human landscape

1. The differences between urban core and rural periphery areas in the UK

Rural Periphery	Urban Core
Lower population density	Higher population density
Older populations	Younger populations
Lower incomes	Higher incomes
Higher transport costs	Lower transport costs

2. The UK and EU governments have tried to reduce the differences between urban and rural areas in the UK.

HS2   LEVELLING UP   Enterprise Zones

Investment in transport such as HS2 to better connect peripheral areas because businesses are more likely to invest in well connected places; tourists numbers may increase too.	Regional development involves public money being spent in deprived regions such as northern England to improve infrastructure, public services, and to attract businesses.	Enterprise Zones aim to attract businesses though cheaper taxes, good internet and transport links, grants (money) and relaxed planning permission.

4. Decline in primary and secondary sectors and rise in tertiary and quaternary sectors has altered economic and employment structures in the UK.

Deindustrialisation has resulted in some places in the UK, particularly in northern England, becoming more deprived with higher unemployment and lower wages. Conversely, the south and South East have experienced rapid economic growth from a rise in tertiary and quaternary Jobs.

3. National & international migration have altered the population geography of the UK.

1. **Post war immigration** from ex-colonies like Australia / India was encouraged by the government's immigration policy as we lacked the labour to rebuild post war Britain.
2. The UK was **once a member of the European Union** and the free movement of people was allowed between European countries, resulting in more immigration to the UK. Further countries joined the EU in 2004, such as Poland, resulting in Eastern Europeans moving to the UK.
3. 2016 Britain voted to leave the EU **(BREXIT),** resulting in a decline in immigration from EU countries and an increase in immigration from non-EU countries including former colonies.

Immigrants are often young and move to urban core areas looking for jobs. The UK's population has grown as a result of immigration and is more ethnically diverse.

5. How globalisation, free trade polices and privatisation has increased foreign direct investment.

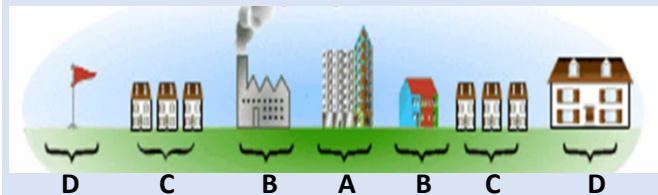| Free-trade policies	Our trade deal with the EU means companies in the UK can trade freely across the EU. This attracts companies to the UK.
Privatisation	Selling of public assets like the NHS to private foreign companies, results in FDI.
Trans national corporations	Invest their money in the UK with few government restrictions to make a profit.

6. Bristol's site, situation and connectivity

Site	
	Bristol grew around a crossing point (Bristol Bridge) on the River Avon. The site allowed access via the river to the English Channel, Irish Sea and Atlantic, which promoted trade.

Situation	
	Located in the South West of England. Bristol is a city of ½ million people that has experienced economic growth as a result of businesses (tertiary and quaternary) relocating from mainly London and the South East.

Connectivity	
	Railway line to Paddington and Bristol . The M5 connects Bristol with the South West and the North, the M4 with Wales (via the two Severn bridges) and London. Bristol's airport has seen rapid growth in the past few years and now over 7 million people use the airport each year.

7. The city's structure

D C B A B C D

A Central business district
B Inner city
C Suburbs
D Rural urban fringe

Key Terms:

Colonies - Britain once directly ruled these countries in the past.	**Immigration policy** - Government rules to either promote or restrict immigration.
Deindustrialisation - The decline and closure of primary and secondary industries.	**Quaternary jobs** - Involving information, data and research (computer programmer, data analyst)
Foreign direct investment - Companies and governments investing their money in another country.	**Urban core** - The wealthiest urban areas in a country. London is an example of an urban core.

8. Causes of national and international migration.

Three phases of international immigration into Bristol. Post war immigration from former colonies, a large number of Eastern Europeans from 2004 and more recently immigrants escaping conflict in Syria, Afghanistan and Ukraine. People have also moved from other parts of the UK to access jobs in the growing **new economy**, particularly from the North of England and South East. Impacts include:

- Rising house prices
- Greater ethnic diversity
- Increase in 18 – 30 year olds
- Strain on services like schools/hospitals
- Concentration of immigrants in certain parts of Bristol e.g. inner city Bedminster

9. Reasons for inequality and decline in Bristol

Inner city areas of Bristol such as Bedminster are a more deprived area. This is due to **deindustrialisation**. The docks and surrounding industry in the area closed due to cheaper manufacturing aboard; the docks were also too small for modern ships. This increased unemployment and therefore deprivation. **De-centralisation** has resulted in businesses relocating to the suburbs, for example, to **retail parks**.

Suburbs tend to be wealthier places with bigger newer houses, more green space and good access to a range of services. However, **e-commerce** is resulting in a decline of retail across Bristol.

10. Parts of Bristol have experienced economic and population growth
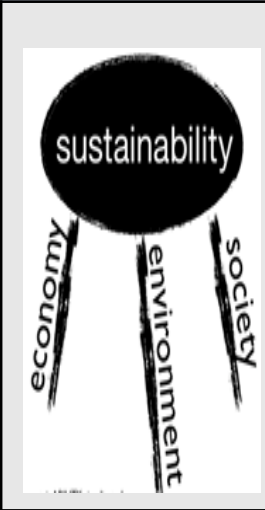
Regeneration project: The **Floating Harbour development**. The derelict docklands have been redeveloped with the aim of providing a new creative quarter for the city with leisure facilities, housing and offices. It includes, cafes, bars, cinemas, shops, restaurants. As a consequence, some TNCs like Lloyds Bank, have located there. A lot of tourists are now visiting the area too and large number of university students are renting the new accommodation leading to **studentification** of the area. The regeneration of the harbour has attracted many professionals who have been buying and renovating terraced houses in nearby inner city Bedminster; this is known as **gentrification**.

Paper 2 UK's Evolving Human landscape

11. Regeneration and rebranding of a city has positive and negative effects

Successes Floating Harbour	Failures Floating Harbour
3000 jobs created New art galleries Sports facilities Over 1 million visitors every year Modern, attractive and safe image resulting from **rebranding.**	The tertiary and quaternary jobs were not suitable for many unemployed people in Bristol Traffic congestion is still an issue

12. Strategies to make urban living in Bristol sustainable and improving people's quality of life.

In 2019 the city recycled 50% of its waste. There is a new state of the art incineration plant which can deal with 200,000 tonnes of waste each year meaning no waste will go to landfill. The incinerator provides enough electricity to run 13,000 homes.

Car sharing schemes, and investment in bus lanes.

The council has recently invested £35 million in dedicated cycle lanes with the aim of getting 1/5th of the commuters using bikes.

13. Bristol is interdependent on the surrounding rural areas.

- Increased leisure facilities and gentrified housing has encouraged people to move from rural areas around Bristol to inner city areas
- Rural areas provide food to the restaurants and cafes in Bristol
- People who live in rural areas may commute into work in Bristol
- Rural dwellers may access services like hospitals and shops in Bristol
- Urban dwellers may visit rural areas to partake in leisure activities like golf or horse-riding.

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14. Rural areas have experienced issues as a result of counter-urbanisation.

People from Bristol buy a house in a rural village thus increasing house prices

The new people commute to Bristol for work and buy things from the city shops

Consequently the village shop closes and bus services are reduced

During the day people are in Bristol at work and thus the village is dormant

As a consequence the doctor's surgery, post office etc close

15. Challenges and opportunities in a rural area - Cornwall

Challenges	Opportunities
-Decline in primary jobs and is too reliant on seasonal unemployment linked to tourism -Young people leaving Cornwall for work, education and affordable homes. Old people buy houses -Lack of services across such a large rural area; doctors, hospitals, education.	-Farms have diversified to make more money -The Eden project employs 700 people directly and 300 indirectly. Though it has increased air pollution from visitor cars -Development of all-year round tourism such as surfing.

Key Terms:

Counter-urbanisation	Movement of people out of cities to rural areas.
De-centralisation	Movement of businesses and people away from inner cities to the suburbs.
E-commerce	Selling products and services online (reason why so many shops are closing).
New economy	Shift from manufacturing to services, technology, innovation and creativity.
Rebranding	Changing the image of a place from a negative to a positive one.

Stage 1 - Setting up the enquiry

Hypothesis:
Investigate how management at Lyme Regis, Dorset affects **coastal processes** _and_ **people**

Sub-questions:
1. What coastal management is at Lyme Regis?
- Hold the line (Hard/Soft)
- Advance the line (Hard/soft)
- Strategic or managed retreat

2. What impact has the coastal management had on people?
- Positive & negative

3. What impact has the coastal management had on coastal processes?
- Erosion
- LSD / Transportation
- Deposition

Stage 2 – Primary data collection

Primary data can be quantitative or qualitative
Primary data is collected by the student using methods such as surveys, interviews, or experiments.
Primary data collected at Lyme Regis:
1. Photos
2. Beach transect/profile
3. Questionnaire data

Stage 3 – Secondary data collection

Secondary data collection - Can be quantitative or qualitative
Secondary data is collected by someone else. It includes books, maps, census data.
Secondary data collected for the Lyme Regis fieldwork:
1. Geology map from Southampton University Geography Department website
2. Newspaper articles
3. Lyme Regis population structure – 2011 UK Government census - from the Office of national statistics (ONS)
- Note - the data is from reliable sources but the 2011 census is 8 years out of date

Stage 4 - Presenting primary data

Coastal management in front of **Lyme Regis town – Front Beach**
1. The Cobb – **concrete groyne**
2. **Rock Groynes**
3. **Recurved sea wall**
4. **Beach nourishment**
5. **Cliff face realignment**
6. **Managed retreat**

It is effective as shown by the wide beach and the lack of cliff collapse

Annotated photographs – qualitative data

Coastal management in front of **The Spittles,** east of Lyme Regis is **Managed Retreat**
- The cliff is not protected.
- There is evidence of recent cliff collapse and a narrow beach.
- This can still be considered effective as it is cheap form of management and there are no valuable properties to be protected

Beach transects/profiles – quantitative data
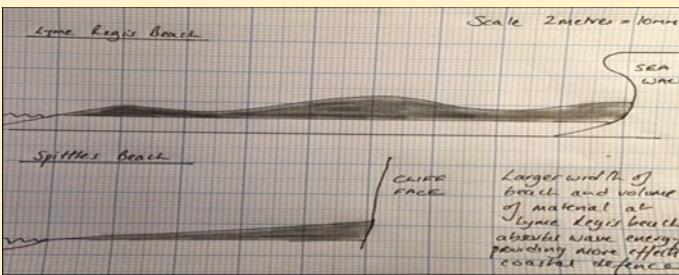
Questionnaire results - quantitative
- Bar charts
- Pie charts
- Kite diagrams
- bipolar

Presenting secondary data
- Geology map - quantitative
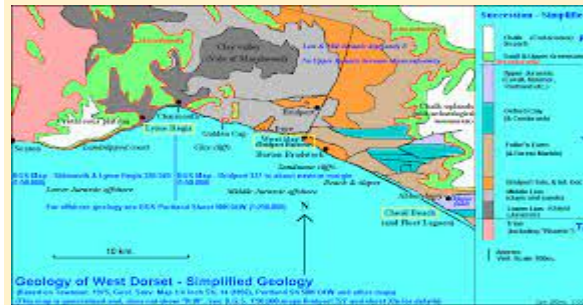
- Shoreline management plan – qualitative

Stage 4 – Presenting data - justification of presentation techniques

Annotated photos (Primary data, qualitative data)

- This is the best way to show the location of the different coastal protection techniques and compare the effectiveness of them.
- It gives a clear visual picture of the area for people unfamiliar with the sites.

Beach transects (Primary data, quantative data)

- The beach transects can be easily compared
- By presenting the transects on the same graph paper it gives a very clear indication of the effectiveness of the coastal management.
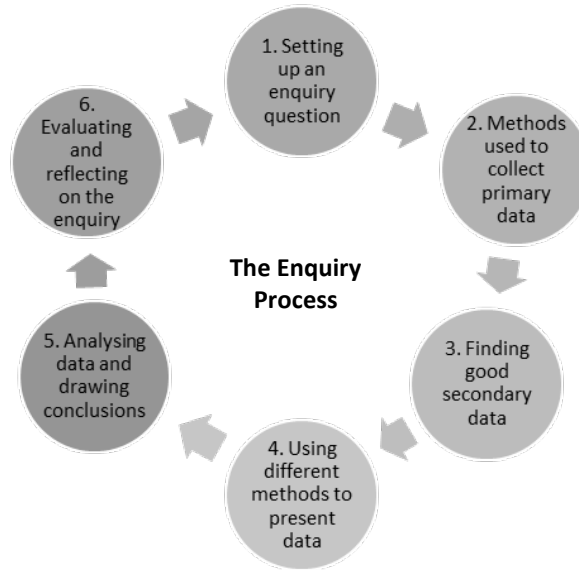- The transects could be annotated to show the different parts of the beach e.g. storm ridges

Questionnaire data (Secondary data, quantative data)

- Presented in a table as it allows comparison of different peoples' views.
- By using an excel spreadsheet it was easy to calculate percentages allowing for effective comparison between the opinions of different groups of people

Stage 6 – Evaluation – How could this study be improved if it were to be done again?

- The primary fieldwork results were weakened by the fact that only one day in June was used as a sample. The beach measurements would vary throughout the year and to be accurate the transects would have to be done at different dates throughout the year
- The same weakness applies to the questionnaires.
- In addition the questionnaires did not reflect the age structure of the Lyme Regis population and to be more accurate a stratified sample would need to be used.
- The secondary data was reliable with the small exception that the census data was from 2011 and therefore 8 years out of date

Paper 2
Lyme Regis Fieldwork

The Enquiry Process

1. Setting up an enquiry question
2. Methods used to collect primary data
3. Finding good secondary data
4. Using different methods to present data
5. Analysing data and drawing conclusions
6. Evaluating and reflecting on the enquiry

Stage 5 - Analysis and conclusion

The beach transect results showed a wider beach at **Front beach** compared to the **Spittles** Lyme Regis.

- This shows that the beach defences are effective - the groynes have trapped the sand creating a wide beach which is effective in reducing the energy of the waves.
- In contrast the beach at **The Spittles** is narrow and provides little protection for the cliffs. This area has rapid **cliff retreat** as a result

The questionnaire results showed that the people of Lyme Regis thought the coastal management was effective

- 96% of people thought that the coastal management was good or very good
- The vast majority of people judging the coastal management to be effective, necessary and good value for money

Conclusion: Investigate how management at Lyme Regis, Dorset affects coastal processes and people

1. What coastal management is at Lyme Regis?

- A mixture of hard & soft engineering in front of Lyme Regis town (sea wall, groynes, cliff realignment, beach nourishment) and soft engineering at The Spittles (managed retreat)

2. What impact has the coastal management had on people?

- Positive impact – it protects the tourist industry and residential properties.
- The vast majority of people are very supportive of the coastal management that has been used

3. What impact has the coastal management had on coastal processes?

- In Lyme Regis it has slowed LSD and established a wide beach.
- This wide beach reduces wave energy and has stopped cliff retreat
- At The Spittles – erosion has been allowed to continue.
- It is possible that the rate of erosion has increased due to **terminal groyne syndrome** meaning there is a very narrow beach providing minimal protection for the cliffs

Paper 2
Bristol Fieldwork

Stage 1 - Setting up an enquiry question

Enquiry question: To investigate <u>how</u> and <u>why</u> the **quality of life** varies in **Bristol** between the **Floating Harbour** and **Bedminster**.

Sub-questions:
1. What is the **quality of life** like in **Bedminster**?

2. What is the **quality of life** like in the **Floating Harbour**?

3. What are the reasons for the variations in the **quality of life**?

Two <u>wards</u> next to each other were chosen for the investigation. The **Floating Harbour** is north of the River Avon and **Bedminster** is to the south of the River Avon

Location of our two fieldwork sites
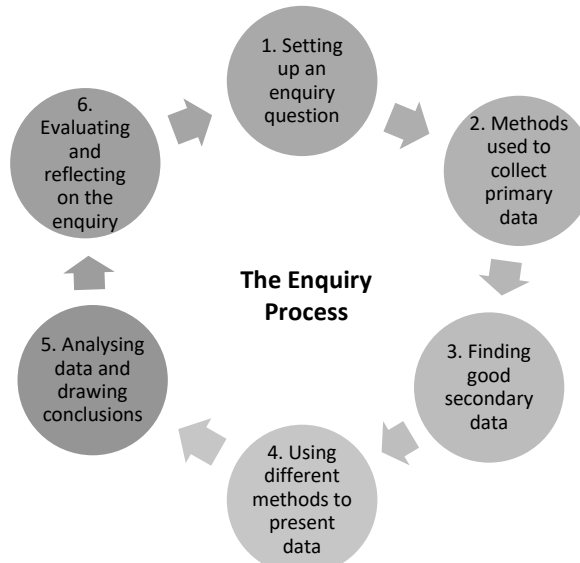Site 1: **Bedminster**
Site 2: **Floating Harbour**

Stage 2 - Primary data collection
Primary data is collected by the student
Primary data collected in Bristol:
1. Environmental Bipolar survey
2. Perceptions survey
3. Photos

The Enquiry Process

1. Setting up an enquiry question
2. Methods used to collect primary data
3. Finding good secondary data
4. Using different methods to present data
5. Analysing data and drawing conclusions
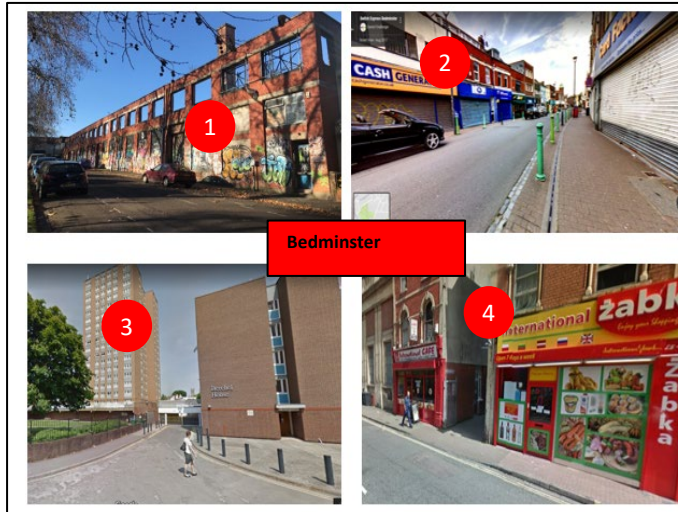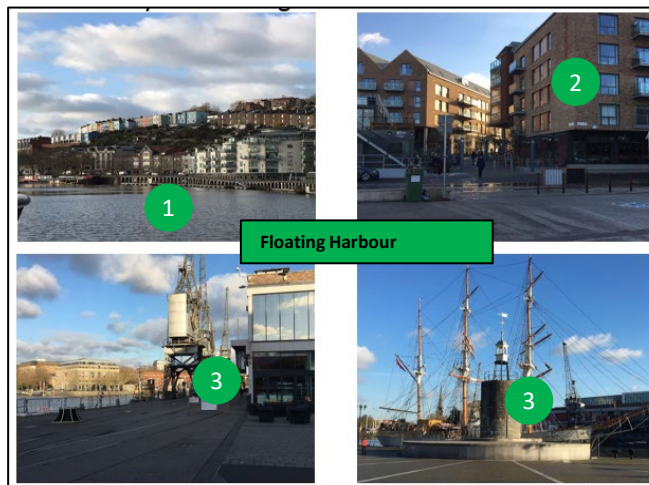6. Evaluating and reflecting on the enquiry

Stage 3 - Secondary data collection
Secondary data is collected by someone else.
Secondary data collected in Bristol:
1. **Census data** – from the Office of national statistics (ONS) via Datashine.org.uk
2. Newspaper articles

Floating Harbour

Bedminster

1. **Deindustrialisation** has led to derelict, abandoned factories which are often vandalised. These lower the **environmental quality** of the area
2. A declining high street with several empty shops and high interest loan companies show evidence of the poor **socio-economic** nature of **Bedminster**
3. In the 1960s council owned high rise flats replaced terrace housing in an attempt to improve the quality of the accommodation and open space. These are now unpopular with many residents
4. High numbers of ethnic shops show high levels of **immigration** into **Bedminster**

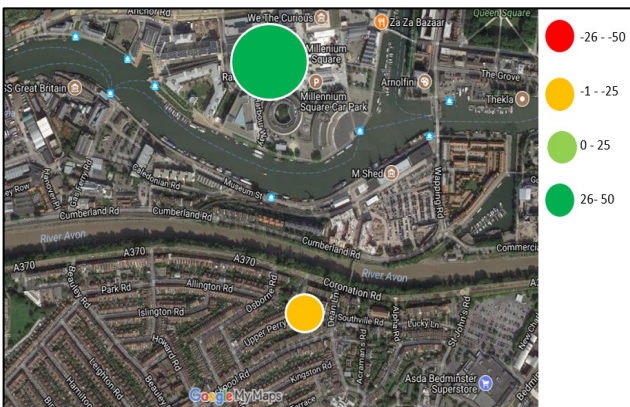## Stage 4 – presenting data - justification of presentation techniques
1. Annotated photos were used as it is the best way to show characteristics of the different areas. It gives a clear visual picture of the area for people unfamiliar with the sites.

1. The **Floating Harbour** provides an area for leisure and tourism and pleasant views
2. Old warehouses from the industrial period and new properties planned to fit in with the existing architecture are attractive to high income earners
3. Some of the old dock cranes and buildings have been kept to improve the visual appeal of the area (heritage architecture).
4. Art galleries, cafes and restaurants have been attracted to the area (**multiplier effect**).

Stage 4 - presenting data – environmental quality scores

Scores positively	+5	+3	+1	0	-1	-3	-5	Scores negatively
Cycling to encouraged			2			1		Cycling discouraged
Walking encouraged (e.g. wide pavements)			2	1				Walking made difficult
Lots of open or green spaces	2				1			No green open spaces
Lots of trees / planting			2		1			No trees
Good quality housing		2		1				Poor quality housing
Well maintained buildings	2			1				Poorly maintained buildings
No derelict buildings	2				1			Many derelict buildings
No litter			2		1			Lots of litter
No evidence of homelessness	2				1			Evidence of homelessness
A good range of jobs available			2	1				Limited range of jobs available
A good range of shops and services			2	1				Few shops and services
No traffic congestion			2	1				Congested

1 Bedminster

2 Floating Harbour 2

Bedminster total = -19

Floating Harbour total = + 35

Map legend:
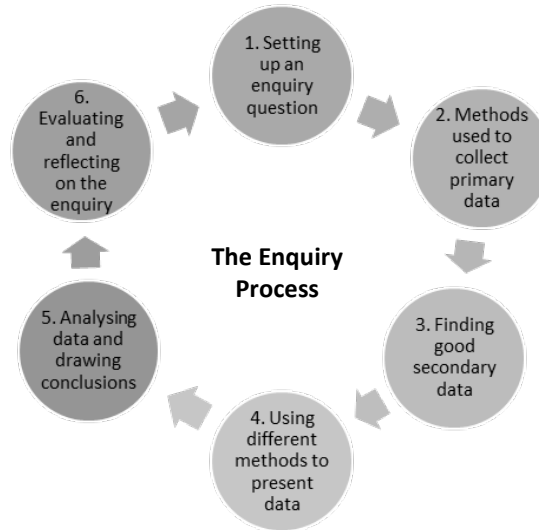- -26 - -50
- -1 - -25
- 0 - 25
- 26- 50

Stage 4 – presenting data - justification of presentation techniques
A bipolar graph of the EQS scores combined with a proportional overlay on a GIS map give a strong visual impression of the differences but also allow the individual scores to be seen

Bedminster

Floating Harbour

The Enquiry Process

1. Setting up an enquiry question
2. Methods used to collect primary data
3. Finding good secondary data
4. Using different methods to present data
5. Analysing data and drawing conclusions
6. Evaluating and reflecting on the enquiry

Stage 4 - presenting data – perception survey

Stage 4 – presenting data – secondary data (www.datashine)	Floating Harbour	Bedminster
Immigrant population (Not born within the UK)	11%	25%
Long term health problem	3%	6%
2+ A levels	51%	37%
Employment – Professional (highest paid category)	36%	27%

Stage 4 – presenting data - justification of presentation techniques
A table of the secondary datashine results allows easy comparison of the differences between Bedminster & Floating Harbour

Stage 4 – presenting data - justification of presentation techniques
A Wordle shows the most common words used to describe the areas and shows the most common words as larger. This gives a clear visual impression of the differences

Stage 5. Analysis and conclusion

Explain one way your primary data helped to answer your enquiry question (4 marks)

The environmental bipolar survey showed contrasting quality of the environment in our two sites. Point
The results showed that the Floating Harbour had an environmental quality score of +35 and Bedminster scored -19. Evidence
This indicated the Floating Harbour had experienced more investment into the area to improve the environment than Bedminster and therefore resulted in a better quality of life. Explain + link

Explain how census (secondary) data helped to answer your enquiry question (4)

The perception survey suggests that the social aspects of quality of life are poorer in Bedminster compared to the Floating Harbour Point
This is backed up by the secondary census data from Datashine which shows lower levels of educational qualification (37%) compared to the Floating Harbour (51%) Evidence
This suggests that Bedminster has suffered from a lack of investment in services such as schools possibly due to lower employment levels after deindustrialisation and therefore lower taxes to go into public spending. Therefore increasing social deprivation through a spiral of decline Explain + Link

Stage 6 – Evaluation
- The primary fieldwork results were weakened by the fact that only one day during winter was used as a sample.
- The EQS scores and perception survey were based on the views of Y11 students and therefore not reflective of the full population of Bristol.
- The data could be improved by multiple visits and asking a range of people who live in Bristol their views
+ The secondary data was reliable as it is from the Government but is based on the 2011 census and therefore out of date