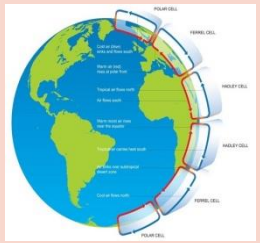
Topic 1
Global Hazards

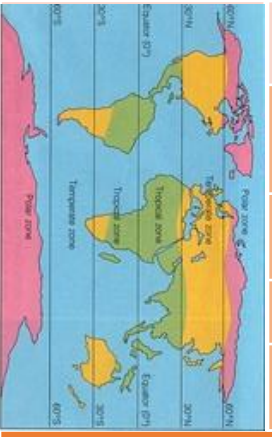
1.1ai Global pattern of air circulation

Atmospheric circulation is the large-scale movement of air by which heat is distributed on the surface of the Earth.

Hadley cell	Largest cell which extends from the Equator to between 30° to 40° north & south.
Ferrell cell	Middle cell where air flows poleward between 60° & 70° latitude.
Polar cell	Smallest & weakness cell that occurs from the poles to the Ferrell cell.



1.1ai Climate Zones

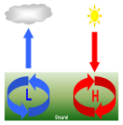


The global circulation system controls temperatures by influencing precipitation and the prevailing winds. This creates distinctive climate zones.

Temperate Climate	Mid-latitude, 50° - 60° north &south of the Equator. Here air rises and cools to form clouds and therefore frequent rainfall. e.g. UK.
Tropical Climate	Found along the Equatorial belt, this zones experiences heavy rainfall and thunderstorms. E.g. Brazil.
Polar Climate	Within the polar zones cold air sinks causing dry, icy and strong winds. E.g. Antarctica.
Desert Climate	30° north and south of the equator, sinking dry airs leads to high temperatures without conditions for rainfall. E.g. Libya.

1.1ai High and Low Pressure

High Pressure	Low Pressure
Caused by cold air sinking. Causes clear and calm weather	Caused by hot air rising. Causes stormy, cloudy weather.



1.1aiii What is wind?

Wind is the movement of air from an area of high pressure to one of low pressure.

1.1aiii Types of wind

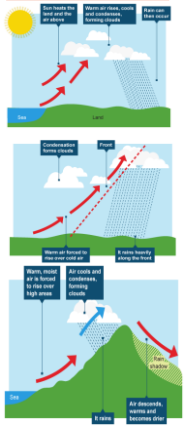
Katabatic Winds	Winds that carry air from the high ground down a slope due to gravity. e.g. Antarctic.
Trade Winds	Wind that blow from high pressure belts to low pressure belts.
Jet Streams	These are winds that are high in the atmosphere travelling at speeds of 225km/h.

1.1aiii What is precipitation?

This is when water vapour is carried by warm air that rises. As it gets higher, the air cools and the water vapour condenses to form a cloud. As water molecule collide and become heavier, the water will fall to Earth as precipitation.

1.1aiii Types of precipitation

Convectional Rainfall	When the land warms up, it heats the air enough to expand and rise. As the air rises it cools and condenses. If this process continues then rain will fall.
Frontal Rainfall	When warm air meets cool air an front is formed. As the warm air rises over the cool air, clouds are produced. Eventually steady rain is produced.
Relief Rainfall	When wind meets mountains, the warm air is forced to rise quickly and cool. This leads condensation and eventually rainfall. When the air descend however, little very rainfall falls, creating a rain shadow.

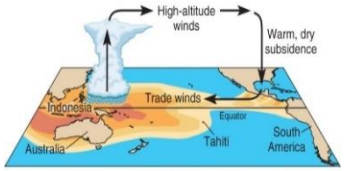


1.1aiii Distribution of Droughts

Drought can occur anywhere throughout the world but they are more frequent between the tropics of Cancer and Capricorn. Many countries in Africa suffer from severe drought, such as Ethiopia but Australia also suffer.

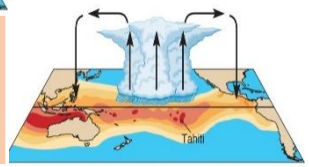
1.1avi Causes of Drought: El Nino effect

The El Nino effect is also associated with creating dry conditions.



Normally, warm ocean currents off the coast of Australia cause moist warm air to rise and condense causing storms and rain over Australia.

In an El Niño year (every 2-7 years) the cycle reverses. Cooler water off the coast of Australia reverses the wind direction leading to dry, sinking air over Australia causing hot weather and a lack of rainfall.



1.1aii Extremes in weather conditions

Wellington, New Zealand Very high wind speeds (248mkm/h) due to the surrounding mountains funnelling wind.	**Puerto Lopez** Found along the equator, high temperatures lead to rapid condensation and heavy rainfall.
The Atacama, Chile The Andes mountains block moist warm travelling any further west. This causes rainfall to the east, but a rain shallow to the west.	**Mawsynram, India** This village see a lot of rain each year (11m per yr). This is due to the reversal of air conditions/directions from sea to land. In the summer, this contributes to monsoons.

1.1aiv Changing patterns

Tropical Storms	Scientist believe that global warming is having an impact on the frequency and strength of tropical storms. This may be due to an increase in ocean temperatures.
Droughts	The severity of droughts have increase since the 1940s. This may be due to changing rainfall and evaporation patterns related to gradual climate change.

1.1aiii Distribution of Tropical Storms.

They are known by many names, including hurricanes (North America), cyclones (India) and typhoons (Japan and East Asia). They all occur in a band that lies roughly between the tropics of Cancer and Capricorn and despite varying wind speeds are ferocious storms. Some storms can form just outside of the tropics, but generally the distribution of these storms is controlled by the places where sea temperatures rise above 27°C.

1.1aiv Formation of Tropical Storms

1	The sun's heats large areas of ocean in the summer and autumn. This causes warm, moist air to rise over the particular spots
2	Once the temperature is 27°, the rising warm moist air leads to a low pressure. This eventually turns into a thunderstorm. This causes air to be sucked in from the trade winds.
3	With trade winds blowing in the opposite direction and the rotation of earth involved (Coriolis effect), the thunderstorm will eventually start to spin.
4	When the storm begins to spin faster than 74mph, a tropical storm (such as a hurricane) is officially born.
5	With the tropical storm growing in power, more cool air sinks in the centre of the storm, creating calm, clear condition called the eye of the storm.
6	When the tropical storm hit land, it loses its energy source (the warm ocean) and it begins to lose strength. Eventually it will 'blow itself out'.

1.1bi Case Study: UK Drought 2012

Causes

Less rain – 55% of normal rainfall in some areas between Apr 2010 and May 2012. Caused by unusual wind patterns coming in from dry east
Warmer temperatures – so more water evaporated from reservoirs
Humans – at home, industry and farming plus leakage from burst pipes

Effects	Management
• Farmers – could not irrigate and dry soil led to crop failures • Environment – wildfires, rivers drained • Households – hosepipe bans	• Permits for extra water granted to water companies • Hosepipe bans • Education campaigns – to get people to use less water

1.1b Case Study: Typhoon Haiyan 2013

Causes

Started as a tropical depression on 2rd November 2013 and gained strength. Became a Category 5 "super typhoon".

Effects	Management
• Almost 4,000 deaths. • 130,000 homes destroyed • Water and sewerage systems destroyed caused diseases. • Emotional grief for lost ones.	• The UN raised £190m in aid. • USA & UK sent helicopter carrier ships deliver aid remote areas. • Education on typhoon preparedness.

1.2ai The structure of the Earth

The Crust	Varies in thickness (5-10km beneath the ocean. Made up of serval large plates.
The Mantle	Widest layer (2900km thick). The heat and pressure means the rock is in a liquid state that is in a state of convection.
The Inner and outer Core	Hottest section (5000 degrees). Mostly made of iron and nickel and is 4x denser than the crust. Inner section is solid whereas outer layer is liquid.

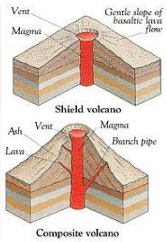
1.2ai Convection Currents

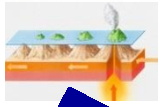
The Lithosphere is divided into tectonic plates which are moving due to convection currents in the asthenosphere.

1	Radioactive decay of some of the elements in the core and mantle generate a lot of heat.
2	When lower parts asthenosphere heat up they become **less dense** and **slowly rise**.
3	As they move towards the top they cool down, become **more dense** and **slowly sink**.
4	These **circular movements** of semi-molten rock are **convection currents**
5	Convection currents create **drag** on the base of the tectonic plates and this causes them to move.

1.2aiii Types of volcanoes

Shield	Made of basaltic rock and form gently sloping cones from layers of runny lava. Location: hot spots and constructive margins. Eruptions: gentle and predictable
Composite	Most common type found on land. Created by layers of ash and lava. Location: Destructive margins Eruptions: explosive and unpredictable due to the build of pressure within the magma chamber.
Hotspots	These happen away from any plate boundaries. They occur because a **plume of magma rises** to eat into the plate above. Where lava breaks through to the surface, **active volcanoes** can occur above the hot spot. E.g. Hawaii.





1.2b Case Study: Nepal Earthquake 2015

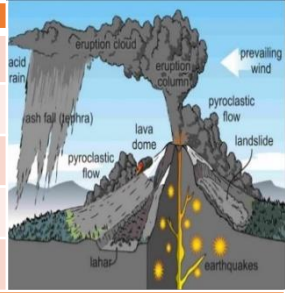
Causes
25 April; Collision Zone – Indian and Eurasian plates meeting; 7.8 Richter Scale; 15km focus (shallow depth); violent shaking under capital city Kathmandu; several large aftershocks (6.7 on 26 April 2015)

Effects (P = primary; S = secondary)
Social – 8635 killed and 19000 injured (P); schools and hospitals collapsed (P); historical and cultural buildings destroyed (P); homelessness (S)
Economic - $20bn damage (S); aid could not reach affected areas (S)
Environmental – landslides (P)

Management/Responses
Emergency – 10 tonnes of blankets; 50 tonnes of water; 22 tonnes of food; doctors; medicine; engineers
Long-term – 'cash for work' project: survivors paid to work on rebuilding homes, schools and hospitals
Sustainability – hampered by damaged infrastructure (airport and roads closed); corrupt government; child traffickers

1.2b Volcanic Hazards

Ash cloud	Small pieces of pulverised rock and glass which are thrown into the atmosphere.
Gas	Sulphur dioxide, water vapour and carbon dioxide come out of the volcano.
Lahar	A volcanic mudflow which usually runs down a valley side on the volcano.
Pyroclastic flow	A fast moving current of super-heated gas and ash (1000ºC). They travel at 450mph.
Volcanic bomb	A thick (viscous) lava fragment that is ejected from the volcano.



1.2c Managing Volcanic Eruptions

Warning signs	Monitoring techniques
Small earthquakes are caused as magma rises up.	Seismometers are used to detect earthquakes.
Temperatures around the volcano rise as activity increases.	Thermal imaging and satellite cameras can be used to detect heat around a volcano.
When a volcano is close to erupting it starts to release gases.	Gas samples may be taken and chemical sensors used to measure sulphur levels.
Preparation	
Creating an exclusion zone around the volcano.	Being ready and able to evacuate residents.
Having an emergency supply of basic provisions, such as food	Trained emergency services and a good communication system.

1.2c Earthquake Management

PREDICTING

Methods include:
- Satellite surveying (tracks changes in the earth's surface)
- Laser reflector (surveys movement across fault lines)
- Radon gas sensor (radon gas is released when plates move so this finds that)
- Seismometer
- Water table level (water levels fluctuate before an earthquake).
- Scientists also use seismic records to predict when the next event will occur.

PROTECTION

You can't stop earthquakes, so earthquake-prone regions follow these three methods to reduce potential damage:
- Building earthquake-resistant buildings
- Raising public awareness
- Improving earthquake prediction

1.2aiii Types of Plate Margins

Destructive Plate Margin

When the denser plate subducts beneath the other, friction causes it to melt and become molten magma. The magma forces its ways up to the surface to form a volcano. This margin is also responsible for devastating earthquakes.

Constructive Plate Margin

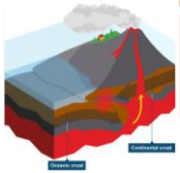
Here two plates are moving apart causing new magma to reach the surface through the gap. Volcanoes formed along this crack cause a submarine mountain range such as those in the Mid Atlantic Ridge.

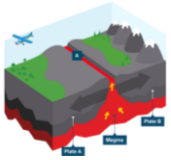
Conservative Plate Margin

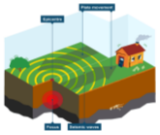
A conservative plate boundary occurs where plates slide past each other in opposite directions, or in the same direction but at different speeds. This is responsible for earthquakes such as the ones that happening along the San Andreas Fault, USA.

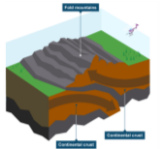
Collision Zones

Collision zones form when two continental plates collide. Neither plate is forced under the other, and so both are forced up and form fold mountains. These zones are responsible for shallow earthquakes in the Himalayas.









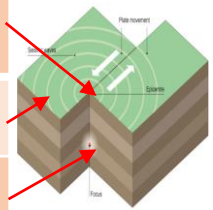
1.2aiii Causes of Earthquakes

Earthquakes are caused when two plates become locked causing friction to build up. From this stress, the pressure will eventually be released, triggering the plates to move into a new position. This movement causes energy in the form of seismic waves, to travel from the focus towards and the epicentre. As a result, the crust vibrates triggering an earthquake.

The point directly above the focus, where the seismic waves reach first, is called the **EPICENTRE**.

SEISMIC WAVES (energy waves) travel out from the focus.

The point at which pressure is released is called the **FOCUS**.



Depth of Earthquake

Shallow Focus	Deep Focus
-Usually small and common. -Seismic waves spread and damage wide area.	-Occur on destructive margins. -Damage is localised as seismic waves travel vertically.

1.2aiii How do we measure earthquakes?

Mercalli Scale	Richter Scale
• Measures how much damage is caused, based on observations, not scientific instruments. • Base from 'Instrument' and 'Weak' to 'Extreme' and 'Cataclysmic'. • Limitations is that its subjective due to it being based on perception.	• Is a scientific measurement based on the energy released. • Measured by seismometers using measurement from 1 – 10 • Logarithmic – each point up the scale is 10 times greater than the one before.

1.2c Earthquake proof buildings ideas

1. Counter-weights to the roof to help balance any swaying.	2. Roof made from reinforced cement concrete.
3. Foundations made from reinforced steel pillars, bail-bearings or rubber.	4. Windows fitted with shatter-proof glass to reduce breakage.
5. Lightweight materials that cause minimal damage if fallen during an earthquake.	6. Ensure gas pipes have an automatic shut off to prevent risk of fire.

GCSE Human Geography Fieldwork Knowledge Organiser

Question Investigated:

How successful has urban regeneration in Birmingham been?

Key Words

Urban = Towns/cities/suburbs. Mainly tertiary employment. Very developed = houses, commercial buildings, roads, bridges, and railways.

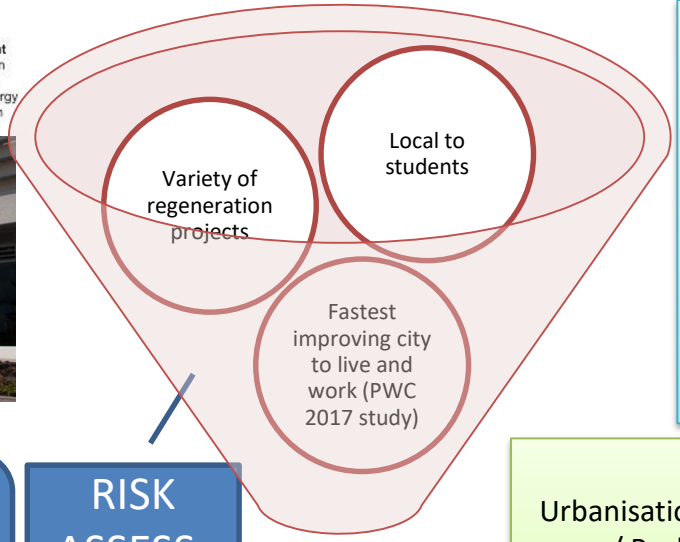
Regeneration = improving an area that has been experiencing a period of decline. In Birmingham the decline was bought about by deindustrialisation.

Successful – socially / economically/ environmentally / sustainable?

Birmingham = West Midlands, central England, 1.1m population, grew as part of Ind Rev, famous for network of canals, access to M6 and new HS2 train line

New Library = public library situated on the west side of the city centre at Centenary Square, beside the Birmingham Rep and Baskerville House

Millennium Point = multi-use meeting complex, situated in the developing Eastside of the city centre near the BCU in the 'Knowledge Quarter'



Why Birmingham?

Evaluation

- Increased understanding of urban regeneration?
- Appropriate methods and equipment? Expertise?
- Accurate, valid and reliable conclusions from methods?
- Where could we investigate next to extend the project?

Questionnaire Sampling
Random – random people asked at the two locations

RISK ASSESS-MENT!!!

Keywords

Urbanisation / World City / TNC / Urban Function / Push / Pull / Migration / Green Belt / Suburbanisation / Regeneration / Re-Urbanisation / International Migration / Natural Increase / Diversity / Ethnicity / Inequality / Deprivation

Data Collection techniques (methodology)

EXPERT SPEAKER – town planner from council
FIELDSKETCH / PHOTO – to assess land use in the area now and compare to past/future
QUALITY OF LIFE SURVEY – for local people who use the area (social success)
ENVIRONMENTAL QUALITY SURVEY – bipolar analysis (-3 to +3), measures SEE sustainability, traffic, green space, buildings etc
SUSTAINABILITY SCORECARD – score of 0-10 based on criteria
QUESTIONNAIRES – assessed public's view of regeneration

Conclusions

Socially Successful? So far – library has brought benefits but limited opening hours. MP is beneficial for people (bit not necessarily local)

Economically Successful? Regeneration has brought infrastructure improvements and HS2 2ill help in future. Jobs have been created in Q sector

Environmentally Successful? Library encourages public transport and cycle users, but limited green space. MP is located out of town but has more green space

Sustainability scorecard for _____

Building density	SCORE
High densities > 50 per hectare e.g. flats	10
Medium densities 25-50 per ha e.g. terraces, townhouses or mixture	5
Low densities < 25 per hectare e.g. mostly detached houses	0
Building materials	**SCORE**
Low embodied energy materials such as timber laminate/frame	10
Mixture of materials with glass, steel and brick visible	5
High embodied energy materials such as bricks and mortar	0
Energy and water use	**SCORE**
Meters on each dwelling; use of renewable sources (e.g. PV cells) common; water recycled	10
Some metering; some renewable energy sources or Combined Heat Power source for community	5
No signs of metering or renewable energy sources	0
Sustainable transport	**SCORE**
Bicycle routes safe and plentiful; safe and well-lit paths; public transport readily available	10
Opportunities to walk, cycle and use public transport available	5
Dangerous roads discourage cyclists and pedestrians. Little public transport provision.	0
Landscaping	**SCORE**
Plentiful trees, shrubs and greenery	10
Some planting visible	5
Very isolated, low value greenery	0
Social mix	**SCORE**
Housing caters for range of social classes and stages of life cycle (families, retired, young single)	10
A range of housing types provided, including private and social	5
Narrow range of housing with others excluded (gated community)	0
Recreation	**SCORE**
Varied and plentiful amenities e.g. local parks, youth centre	10
Some local amenities but some groups not catered for	5
Few or no local amenities	0

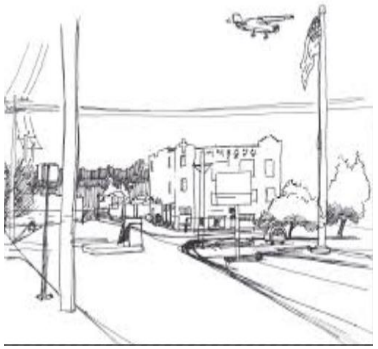
Number of stories	SCORE
Medium to high rise flats (>5 stories) only	10
Town houses 3-4 stories or mixture	5
1/2 story bungalows and houses only	0
Glazing	**SCORE**
Double or triple glazing evident; south facing windows larger	10
Some use of double glazing or south facing windows larger	5
Single glazing with no use of aspect to reduce heat loss	0
Recycling	**SCORE**
Easy access to waste recycling locally; all homes able to recycle and compost	10
Some recycling from homes; some local recycling points	5
Poor access to recycling facilities	0
Private car use	**SCORE**
Effective restriction on car parking and use e.g. congestion charge, parking permits	10
Some restriction on car parking and use	5
Car parking freely provided for every dwelling	0
Air pollution	**SCORE**
No pollution – high air quality	10
Some pollution apparent – medium air quality	5
Major pollution problem – low air quality	0
Economic opportunities	**SCORE**
Wide variety of job opportunities available locally	10
Reasonable variety ~~of job~~ opportunities available locally	5
Few or narrow range of opportunities locally	0
Inclusion	**SCORE**
Disabled parking and access provided throughout	10
Some disabled access visible	5
Challenging area for disabled people	0

Total Score /140 = _____

Environmental Quality - *Area*_____

General description of the area:

	0	1	2	3	4	5	
Buildings							
High density (many properties within a small space)							Low density (few properties, lots of space)
Badly designed / ugly							Well designed / pleasing to the eye
No maintenance / no evidence of improvements							Evidence of maintenance / improvements
Extensive vandalism / graffiti							No vandalism / graffiti evident
Total Score - Buildings							
Traffic							
Parking is difficult - Many vechicles parked on road							Parking in garages or driveways.
Air smells heavily of traffic fumes							No smell of car fumes
High noise volume from traffic							No traffic noise
Dangerous for people							Safe for people
Total Score - Traffic							
Open Space and Gardens							
No garden / open space – door opens to street							Large gardens or open space outside house
Garden / open space in poor condition							Garden / open space in good condition
No greenery visible							Trees / shrubs / greenery visible
No public parks							Public parks easily accessible
Total Open Space Score							
General Quality							
Much litter							No litter
Paths poorly maintained / broken paving etc.							Paths well maintained
Area is undesirable							Area is desirable
Unwelcoming feel							welcoming feel
Total Score - General Quality							
Total Environmental Quality Score							



	Agreement		No opinion / undecided	Disagreement	
	strong +2	slight +1	0	slight -1	strong -2
1 This community is a good one to live in					
2 Regeneration such as Bullring, Library, Millennium Point has brought lots of jobs for people here?					
3 Regeneration brings other benefits for people here, such as education and tourism					
4 Birmingham has brought a better environment for people here					
5 The redevelopment really benefits local people in this area					
6 The new facilities will really benefit local people in this area					
7 Birmingham looks much better now that the redevelopments have taken place					

Total score = _____ **out of 20**

Sex: Male / Female

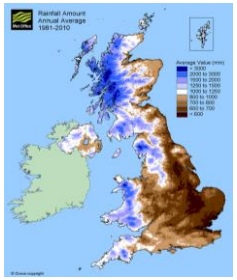
Now may I ask your age group? 0-15 16-29 30-44 45-59 60-74 75 and over

Summary of Results

	MP 2016	MP 2017	MP Notes	Lib 2016	Lib 2017	Library Notes
Quality of Life (/100)	66	85	Area is free from crime and graffiti but lack of access to public transport	60	77	Close to local shops and enmities (e.g. pubs) and but narrow variety of housing types
Sust'y Scorecard (/140)	95	110	High density buildings and green space. But little public transport provision and narrow economic opportunities	60	80	Sustainable energy use, bike spaces, inclusive (free) but noisy and limited greenery
Q'aire (/14)	13	9.5	Beneficial for education and tourism but doesn't benefit local people so much	9	9	Good community to live in and provides education benefits. But some people thought the building was ugly.
EQS (/28)	+19	+15	Lots of green space and location is in good condition, but increased road traffic due to out of town location	+7	+7	Building design is env sustainable, public is safe away from road, but building works were going on outside (more regeneration) which negatively affected score

7.1ai: UK Physical Characteristics: relief

- Most mountains are located in the **north** and **west**, such as Wales and Scotland.
- These areas have **few roads** and **settlements** but beautiful scenery – Sparsely populated.
- **South** and **east** of the UK is **flat** with a few hilly areas.
- These areas are suited for **settlements**, **roads** and **railways** – Densely populated.
- Rivers flow from mountainous areas down to the sea.



7.1 ai: (physical) Rainfall Patterns

- **Highest rainfall is in the north** and **west** where average rainfall is **2500mm**.
- **Lowest rainfall** is in the **south** and **east** with average rainfall of **500 – 625mm**.

7.1 ai: (physical) UK Relief Rainfall

Most UK rainfall is caused by **prevailing wind** blowing from the southwest over the ocean.	When air carrying moisture reaches upland areas, it is **forced to rise** to produce **relief rainfall**.	Air descends the other side of the upland area and warms. Moisture evaporates**, so less rain falls,** this is called the **rain shadow**.

7.1 ai: (physical) Water stress in the UK

Water stress is when areas have limited water supply.

Problems	Solutions
*Most rainfall occurs in **North & West** but least rainfall in **South & East**. *South & East UK are more populated and therefore have **High demands but low supply** *Demand involve domestic, industrial & agricultural uses.	*Water can be **transferred** from the wetter west to drier east by **pipelines** or rivers. *Construct **new reservoirs** in the east to capture/store more water. *Greater **water conservation**.

7.1 ai: Land use in the UK

Land use varies throughout the UK. However our land is always changing. Nonetheless, the vast majority of the UK is farmland.

UK mountain areas have rough pastures and moorlands. The climate is harsh and soil is poor for crops

Arable farmland dominates because of the warm, sunny and dry climate. Crops such as cereals and vegetables are found in the South and East.

Coniferous woodlands are found in northern England, Wales and Scotland. There areas have poor soils and are remote.

Grassland areas are found in the west. It is ideal for cattle and sheep because of the mild and wet climate.

Grasses	**44%**
Arable	**20%**
Urban	**12%**
Forest	**13%**
Water	**1%**
Mtns	**7%**
Other	**3%**

Urban areas are growing. This outward growth or sprawling is caused by population growth.

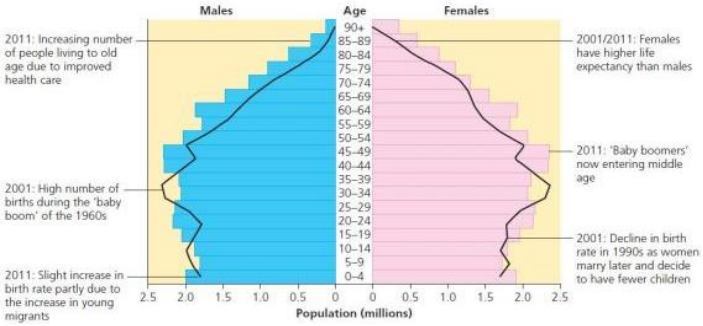
Topic 7

UK in the 21st Century

7.1 bi: Population in the UK

The UK population is 65 million and still rising. It is predicted to reach 70 million by 2030.

Reasons for growth	Future of growth
Natural increase – the difference between deaths and births. **Net migration** – the difference between immigration to the UK and emigration from the UK. **Life expectancy** – the average age someone will live up to.	The UK's **population pyramid** shows that the country's birth rate is fairly low and death rate is also low meaning there are more elderly people. **Population pyramids** are useful to help plan for the future.



7.1 ai [H] UK Population Distribution

Low Population/Sparsely

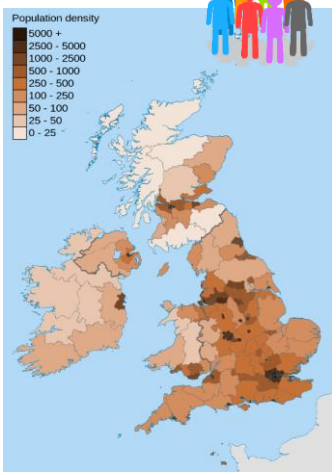
Much of Northern Scotland
Reason: **mountainous landscape** and **difficult climate**.

High population/ densely

Rest of the UK (exc London & cities)
Reason**: good relief**, **moderate climate** and **good transport** routes.

Very High/Densely

SE England, in cities eg London
Reason: **employment**, **shops** and **entertainment**. [PULL factors]



7.1 ai: Factors affecting population density (Hum & Phys)

Moderate climate.	**Remote and poor communications.**	**Opportunities for work**
A presence of raw materials.	**Steep and mountainous.**	**Fertile and suitable for farming.**
Poor quality of soil.	**Plentiful supplies of water.**	**Flat land for farming.**

7.1 ai: [H] UK Housing Shortage

Problem and Reasons

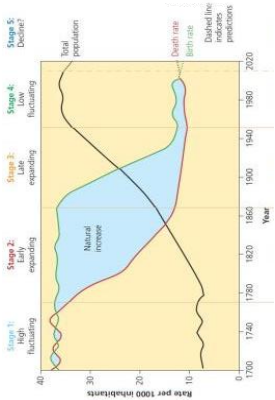
- The UK **population is rising** and therefore **more houses are needed**.
- UK needs to build **240,000 homes a year**, but only half that are built.
- As a result, **house prices are rising** and becoming too expensive.

- Planning permission for new houses leads to **local opposition**.
- **Green belt areas** prevents urban areas becoming bigger.
- The **price of lands keeps rising** due to demand.

Demographic Transition Model (DTM)

As countries experience economic development they also go through stages of population transition. The DTM describes this change and shows the UK in stage 4.

1	Birth rates high and death rates fluctuates.
2	Birth rate high but death rate is falling rapidly. Natural change increases.
3	Birth rate and death rate falling rapidly. Natural change is rapid.
4	Birth rate and death rate is low and fluctuating. Little Natural changes.
5	Birth rate is falling and death rate is rising slightly. Natural change falls.



7.1 bii: UK Ageing Population

Distribution of Ageing Population

Around 18% of the population are over 65. The distribution of older people is high in coastal areas, especially in east and south-west England. However, it is lower in Northern Ireland and Scotland and generally in big cities.

Causes

- Large number of people were born after the WW2 and are now moving into old age – **Baby boomers.**
- **Improved healthcare** and new treatments to prolong life.
- Greater awareness of the benefits of a **good diet and exercise**.

Effects

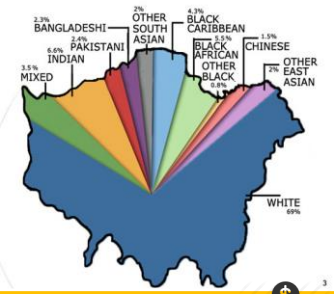
- **Healthcare cost are very high** and will increase with increasing ageing population.
- **Shortage of places in care homes**, many of which are becoming **increasingly expensive**.
- Many older people join clubs and spend on travel therefore helping to boost the economy – **the grey pound**.

Response

- **Government pension bonds** to encourage older people to save money for the future.
- Pensioners receive **support in care, transport and heating** allowance to make life more comfortable.
- **Allowing more immigration** will provide the demand needed of a younger workforce needed for the economy.

7.1 biii: Ethnic Diversity in the UK

- **13%** of the population in the UK where **born in another country**.
- In **London**, this value is appx **38%**. This has increased between 2001 and the present day.
- The change was driven by an increase in **white non-British**, **Black African** and **Asian** people.



7.1ci: UK's Changing Economy

- **UK has one of the largest economies in the world.**
- **Heavy manufacturing industries declined (1970s+) due to competition from overseas (TNCs in EDCs and China)**
- **Now the UK is moving into the service industry such as finances, technology and media.**

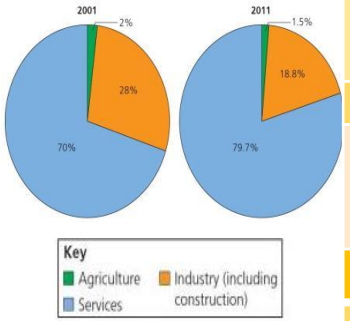
Political Changes

- Between **1997-2007**, the **UK economy grew strongly** & **unemployment decreased**. This was due to increase investment in **education & technology**.
- In **2008** the UK entered a **recession** and **unemployment increased**. Recession ended in **2009.** Now strong focus on **decreasing the national debt. Impact of BREXIT tbc**

7.1ci: UK's Employment Sector

Key changes since 2001

- The **quaternary industry** has **increased**, whilst **secondary** has **decreased**.
- Number of people employed in **primary** and **tertiary industry** has **stayed the steady**.
- Big increase in **professional** and **technical jobs**.
- Employment in **manufacturing** has **decreased** the most due to **cheap labour abroad**.



7.1ci: UK Working Hours

- In **2011** the **average number of hours** worked in the UK was **42.7**.
- This figure is **the 3rd highest figure** within the **EU.**
- **Fathers now work fewer hours** [so can look after children].
- Number of **mothers in fulltime work has increased**.

7.1 cii: UK's Core Economic Hubs

An economic hub is a central point or area associated with economic success and innovation. Many of these economic hubs are located near universities. Below is a selection of economic hubs throughout the UK.

Belfast Titanic Quarter
Film studio, offices and education based on the old shipyard.

Salford
Media industry including BBC and ITV. Manufacturing of chemicals.

Bristol
Creative and digital industries. Key services such as law and finance.

Aberdeen
Centre for the North Sea oil and gas industry, now developing as a research and development hub.

Silicon Glen
High-tech industries based in key Scottish cities. They focus on electronics and software.

Silicon Fen
High tech research hubs associated with Cambridge University.

7.1 cii: Case Study: UK Economic Hub - London

With a population of 8.6 million, London is the economic hub for the UK, and has a global economic influence as well. It is a key location for trade and financial markets with many headquarters of major banks and other businesses located there.

Change Over Time	Significance to the UK
• Key trade conducted through its **docklands have declined**. • New investment in communication infrastructure and transport links such as **Crossrail**. • London has become a **major world city** with a **key financial industry** in the City of London & Canary Wharf.	• London has **13% of the UK's population** and **produces 22%** of the **country's wealth**. • London **ranks higher** than other UK cities for **economic performance**. • Many **start-up companies** in **media** and **hi-tech industries**, along with **well established companies** such as Amazon and Facebook.

7.2a: The UK's Role in the World

The UK may be a small island state, but it does play a significant role in the wider world. It is part of several key international organisations including the World Bank (deciding where £ should go), the EU (trade), NATO, the UN and G7.

NATO	UN	G7
A group of **28 countries** who **work militarily and politically** to resolve conflict as a last resort.	Is made up of **193 member states** with the aim of **maintaining peace** and **resolving issues**. UK is also part of the **Security Council**.	Involves **seven** of the **wealthiest western countries** to discuss relevant **issues** and come to **economic agreements**.

7.2a: Case Study: UK role in Resolving Conflict in Middle East

Basic Background

* 9/11: a series of four terrorist attacks on USA by the Islamic terrorist group al-Qaeda, whose actions were supported by Saddam Hussein
* 4 passenger planes hijacked and flown into the
* Twin Towers of the World Trade Centre
*2996 people killed inc 67 Brits, 6000 injured
* $10 billion damage to infrastructure'

UK Involvement

The UK, as part of NATO, **sent troops to Iraq,** to remove the government from control & ↓ terror threat. Soldiers stay to keep Islamic extremists away. The World Bank (UK is a member) gave $1.2 billion of aid to assist innocent victims. UK DFID **gave £534 million towards the reconstruction of Iraq. UK charities like Oxfam & ActionAid** send aid too.

7.2bi: UK Media Exports

The UK exports many different types of media products such as **films, TV, music, books & comp games**.
Exporting media is key to the UK economy as it **employs 1.7 million** people and **generates £70 billion**.
Example: Skyfall earned £103 million at the UK box office alone

UK's Media's influences

Most exports are in English, meaning it **develops** other's **understanding of our language**. Our culture, music and buildings are featured = generates business &/or tourism = ££ . Many people around the world **copy fashion** & **styles** seen in UK media.

7:2bii: Multicultural UK

The UK is a multicultural country due to many ethnic minorities moving here from India, Pakistan, Caribbean and parts of Africa. These groups have shared their culture and have influenced the UK in many ways.

Fashion	Media	Food
• Many shops sell **traditional clothing**. • As these traditional clothing become **more common**, other cultures have started to wear them too. i.e. Saris • **Hair styles** from other cultures such as dreadlocks from the Jamaica.	• Many ethnic minorities have **influenced music** (i.e. dubstep) and **television** (i.e. Bollywood). • With greater influence, **greater understanding** from other ethnic groups have been established.	• Food that has originated from other countries have **become very established** (i.e. Curry and Pizza). • Many mainstream **supermarkets sell** a great range of **ingredients** and ready made **foods** from **other cultures**.

Topic 2
CHANGING CLIMATE

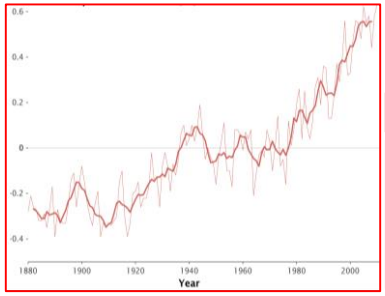
2.1 What is Climate Change?

Climate change is a large-scale, long-term shift in the planet's weather patterns or average temperatures. Earth has had tropical climates and ice ages many times in its 4.5 billion years.

2.1ai Quaternary geological period

The quaternary period is the last 2.6 million years. During this period temperatures have always fluctuated. The cold 'spikes' are the glacial periods, whereas the warm points are the interglacial periods.

Today's temperature is higher than the rest of the period. Despite alternate cold and warm moments within this period, global temperatures have increased above average in the past 100 years. This current trend is what's become know as global warming.

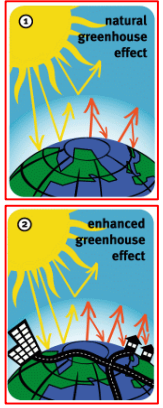


2.1biiNatural Greenhouse Effect

The Earth is kept warm by a natural process called the Greenhouse Effect. As solar radiation hits the Earth, some is reflected back into space. However, greenhouse gases help trap the sun's radiation. Without this process, the Earth would be too cold to support life as temperature would average as -18°C instead of +15°C.

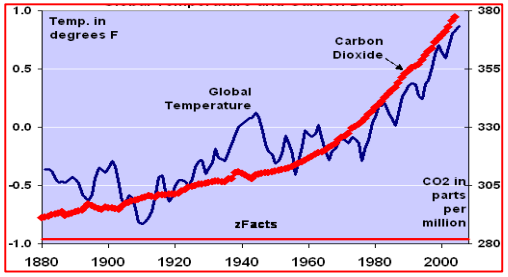
2.1bii Enhanced Greenhouse Effect

Recently, there has been an increase in humans burning fossil fuels for energy. These fuels (gas, coal and oil) emit extra greenhouse gases. This is making the Earth's atmosphere thicker, therefore trapping more solar radiation but causing less to be reflected. As a result, our Earth is becoming warmer.



2.1aii Linking CO_2 and Global temperatures

The rate of carbon dioxide and increase in global temperatures is strong. Scientist agree that this increase is cause by human activity.



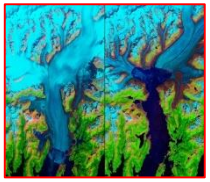
2.1aii Evidence for climate change

Earth's temperature has changed over the last 2.6 million years. Scientist know this by collecting a range of evidence that is trapped or stored in the environment around us.

Geological fossil evidence	Plants and animals fossils/remains which favour certain environmental conditions have been found in contractionary conditions, thus suggesting periods of a warmer and colder time. E.g. Mastodon in USA.
Ocean Sediment	Layers of sediment that has built up over time have provided scientist trapped oxygen isotopes. Scientist have used them to calculate and understand that atmospheric temperature have indeed changed.
Ice Cores	Ice cores are made up from different layers that each represents a different historical time. By exploring the water molecules of these cores, scientist have calculated fluctuating temperatures of the atmosphere.
Historical records	Historical records from ancient cave paintings, diaries and written observations have provide evidence of climate change through personal accounts from the people through them.

2.ci Retreat of the Columbia Glacier, Alaska

Located in southern Alaska, it flows 50km to the sea. The glaciers has been retreated by 16km and has lost half of its thickness in the last 30 years. Scientist believed this is due to global warming, which if continued will contribute towards continued sea level rises.



2.1aii Past Evidence: The Little Ice Age (1300-1870)

The Little Ice Age was a period of cooling that occurred after the Medieval Warm Period in parts of Europe and North America. Impacts included…

1. Price of grain increased and vineyards become unproductive.

2. Sea ice engulfed Iceland and the sea force around parts f the UK. Frost Fairs were held on rivers such as the River Thames.

3. People suffered from the intense cold winters as food stock were limited.

2.bii Greenhouse Gases

Most greenhouse gases occur naturally. Some greenhouse gases have greater potential to increase global warming than occurs as different gases trap and absorb different amounts of radiation.

Carbon dioxide	Accounts for 60% of the enhanced greenhouse gases. It is produced by burning fossil fuels through producing electricity, industry, cars and deforestation.
Methane	Accounts for 15% of the enhanced greenhouse gases. 25x more efficient than Carbon dioxide. Produce from landfills, rice and farm animals.
Halocarbons	Human made and makes a tidy proportion of all greenhouse gases. 15000x more efficient at trapping radiation than Carbon dioxide. Produced from air-conditioning, refrigerators and aerosols.
Nitrous Oxide	Accounts for 6% of the enhanced greenhouse effect. 250x more efficient than Carbon dioxide. Produced from fertilisers and car exhausts.

2.bii Who's responsible?

LIDCs	Countries in Africa, such as Kenya, emit low levels of carbon dioxide. This is due to these countries not being industrialised or having a population wealthy enough to consume lots of energy
EDCs	Countries such as China and India are increasingly more industrialised and therefore are emitting more carbon dioxide. These increasing population sizes and steadily increasing wealth mean more energy is being consumed.
ACs	Countries such as the USA and UK are industrialised with a wealthier population that enjoy lifestyles which required a large consumption of energy.

Not what is seems

Although China is responsible for the highest amount of carbon emission, 1.4 billion people do live there. However, per person, the USA (320 million) actually contributes far more CO_2 emissions.

2.1aii Recent Evidence for climate change.

In the past 100 years, scientists have become pretty good at collecting accurate measurements from around the world. These measurements have suggested a trend that the climate is yet again changing.

Global temperature data	Evidence collected by NASA suggests average global temperatures have increased by more than 0.6°C since 1950.
Ice sheets and glaciers	Evidence from maps and photos have shown many of the world's glaciers and ice sheets are melting. E.g. the Arctic sea ice has declined by 10% in 30 years.
Sea Level Change	Evidence from the IPCC has shown that the average global sea level has risen by 10-20cms in the past 100 years. This is due to the additional water from fresh water ice and thermal expansion of the ocean due to higher temperatures.

2.bi Evidence of natural change

Climate change has occurred in the past without human ever being present. This suggests that there are natural reasons for the climate to change.

Milankovitch cycle	Milutin Milankovitch argued that climate change was linked to the way the Earth orbits the Sun, and how it wobbles and tilts as it does it. There are three ideas that are thought to change climate. 1. **Eccentricity**: Changes in the shape of Earth's orbit. 2. **Obliquity**: Changes in how the Earth tilts on its axis. 3. **Precession**: The amount the Earth wobbles on its axis.
Sun Spots	Dark spots on the Sun are called Sun spots. They increase the amount of energy Earth receives from the Sun.
Volcanic Eruptions	Volcanoes release large amounts of dust containing gases. These can block out sunlight and results in cooler global temperatures.

2.1ci Global impacts of climate change

The impact of rising temperatures is affecting the world socially, economically and environmentally in several potential problematic ways.

Extreme Weather	Climate is causing more unpredictable and severe weather events. This includes more frequent and powerful tropical storms; more extreme heatwaves and lasting droughts. E.g. Typhoon Haiyan 2013
Rising sea levels	Sea levels have risen by 20 cm since 1901. due to thermal expansion, melting glaciers and ice caps. Some coastal countries are now disappearing such as the Maldives in the Indian Ocean.
Food supply	Warmer temperatures and changing rainfall will make it harder to produce a reliable source of food to sustain a rising global population. E.g. In 2011, Russia banned crop exports after a incline in yield.
Plants and Animals	About a quarter of animals and plants on Earth could become extinct. With warmer temperatures and changing rainfall environments will no longer be able to provide for the world's fragile ecosystems.
Disease and Health	Warmer temperatures will increase the spread of infectious diseases like malaria. In addition, more frequent floods could cause more waterborne disease such as dysentery.
Water Supply	People need freshwater to drink but with 1 billion people predicted to not have excess to enough water by 2025 due to climate change, this might cause several social, economic and environmental problems. E.g. fishing, irrigation and sanitation.
Climate refugees	Climate refugees are people who are forced to leave their home due to the impact of climate change. This can be due to sea level rises or extreme weather conditions such as drought.

2.1ci Rising Sea Levels: Tuvalu

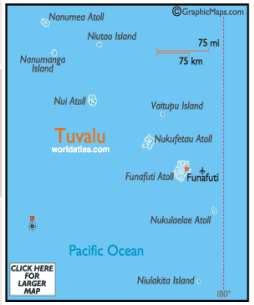
Tuvalu is a group of tiny islands in the South Pacific. Most islands are low-lying with the highest point being 4.5m above sea level. Population is 11,000 people and the economy relies mainly from exporting copra.

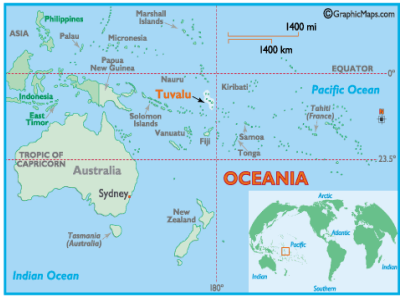
Impacts from climate change

Social	Economic	Environmental
- Water supply due to droughts becoming more common. - Wells are becoming polluted by seawater. - High tides are starting to threaten homes and roads.	- Increased levels of salinization affecting soil for agriculture. - Coastal erosion is destroying productive farmland. - Main runway threaten by flooding.	- Ocean acidification is reducing fish stocks around the island. - Warmer temperatures are destroying fragile ecosystems such as coral reefs.

Management

- Campaigning internationally for a reduction in carbon emissions.
- Migration to safer islands off the coast of New Zealand.
- Low sea walls have been constructed to prevent erosion and flooding.
- Japan supporting coral reef restoration by introducing new species to damaged reefs.





2.1ci Climate change management: Paris Agreement

Paris climate conference (2015) involved 195 countries making a legally binding global climate deal. The objective is to limit global warming to below 2°C. The aims of this objective are…

- Limit emissions to pre-industrial levels.
- Meet every 5 years to set new targets.
- Communicate plans to the public.
- Provide support to developing countries at reducing emissions.

2.1ci Extreme Weather: Brazilian Drought 2014

Brazil is a EDC in the continent of South America. Its population is 204 million. In 2014 it faced a record breaking dry season that resulted in serve drought conditions. Scientist believe that deforestation may have contributed in changing the climate.

Impacts from climate change

Social	Economic	Environmental
- Drought caused a reduction in the production of hydroelectric power. - Major cities faced water shortages.	- Shortage of water affected industrial production. - Coffee industry was severely affected due to the lack of rainfall.	- As reservoir levels dropped, levels of pollution increased. This damaged natural ecosystems and killed fish.

Management

- Introduction of water rationing and recycling more water.
- Repair leaking pipes to decrease water waste.
- Introduction of more natural gas to sustain energy demands.

2.1cii Impacts of climate change: UK

The UK's climate is also changing. It is expected to…

- **Increase in average temperature.**
- **Have warmer, but wetter winters.**
- **Have warmer and drier summers.**

However, not all the impacts to the UK will be negative, there are clear benefits for a changing climate.

2.1cii Negative impacts of climate change for the UK

Coastal Flooding

- Vulnerable low lying areas could flood homes and infrastructure.
- Increase of coastal erosion.
- Damage to the economy.

Extreme Rainfall

- Increase in extreme flash floods.
- Flood damage to homes and businesses.
- Soil contaminations on farmland.

Water Shortages

- Farmers will find it difficult to irrigate land.
- Water restrictions, with London being worst affected.

Extreme Heat

- Warmer weather can increase health problems.
- Infectious diseases such as malaria might spread.

2.1cii Positive impacts of climate change for the UK

Tourism

- More people likely to take holidays within the UK.
- The economy could be boosted: helping to create new jobs.
- More outdoor events could become common.

Environment

- New wetlands from coastal flooding could become established.
- New wildlife and plants could be drawn to the UK'.

Farming

- Agriculture productivity may increase under warmer conditions.
- Farmers could potentially grow new foods used to warmer climates.

Industry

- Heating cost will fall.
- Construction industry will be boosted by the need to build sea defences.
- New designs produced to cope with conditions.

Topic 5 Urban Futures

5.1 ai What is Urbanisation?

This is an increase in the amount of people living in urban areas such as towns or cities. In 2007, the UN announced that for the first time, more than 50 % of the world's population live in urban

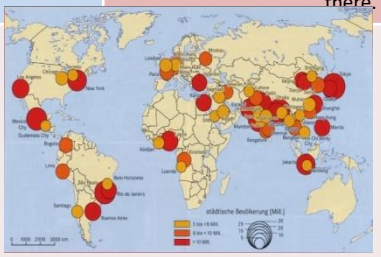
5.1 ai Urban Functions

Cities have many functions that can change over time. Initially they were for trade and exchanging ideas, but since then they have developed many other functions

Market – place where goods and services bought and sold
Employment – manufacturing or services
Administration – day to day running of city and surroundings
Residential – housing, apartments, even palaces
Entertainment/culture – sport, theatre, shopping, restaurants
Religion – places of worship for many different religions
Transport hub – destination for routes and intersections

5.1 aii Types of Cities

Megacity — An urban area which over 10 million people living there.



More that two thirds of current megacities are located in either EDCs and LIDCs). The amount of megacities are predicted to increase from 28 to 41 by 2030.

World — Cities that are centres for trade and business. They influence.

Key 'world cities' include London, New York, Tokyo and Paris. Most are located within ACs but are now gradually expanding into

5.1 bi Causes of Urbanisation

The movement of people from rural to urban areas.

Push	Pull
• Natural disasters • War and Conflict • Mechanisation • Drought	• More Jobs • Better edu & healthcare • Increased quality of life. • Following family members.

5.1 bi Consequences of Rapid Urbanisation in EDCs and LIDCs

Although there are lots of opportunities in urban areas, the rapid growth can place many pressures that causes various problems.

Social Consequences

- Little official housing available.
- Infrastructure struggles to support growing population.
- Increase in crime rates.

Environmental Consequences

- Rubbish may not be collected.
- Sewage and toxic waste pollutes river environments.

Economic Consequences

- May not be enough jobs – increased unemployment.
- Informal sector increases
- Little access to education

5.1 biii Counter-Urbanisation in ACs

This is the movement of people from city centres to the outskirts.

Push	Pull
• Overcrowding and pollution. • Unemployment increases. • Deindustrialisation of centre. • Traffic congestion increases CO^2.	• Green spaces & family friendly. • New modern housing estates. • Improved public transport. • Rents cheaper on outskirts.

5.1 biii Suburbanisation

This is the movement of people from city centres to the outskirts.

Push	Pull
• Overcrowding and pollution. • Unemployment increases. • Deindustrialisation of centre. • Traffic congestion.	• Green spaces & family friendly. • New modern housing estates. • Improved public transport. • Rents cheaper on outskirts.

5.1 biii Consequences of Suburbanisation

Environmental Consequences	Economic Consequences	Social Consequences
•New housing damages countryside and habitats. •Increase of cars adds air pollution.	•People leaves centres and they become deserted. •Unemployment increases, which leads to poverty.	•Offices and businesses are abandoned. •Economic and ethnic segregation.

5.1 bi Rapid Urbanisation: Life in Lagos, Nigeria

Background

Lagos is a port on the coast of Nigeria. Recently the city has experienced rapid population growth with 3.4 million extra people coming it home between 2000 and 2010.

Effects of Urbanisation – growth of slums

Social	Economic	Environmental
• Many live without electricity. • High diseases rate and life expectancy low.	• High rate of corruption to officials. • Business is limited due to poor infrastructure.	• Large scale traffic issues. • Slums such as Makoko are heavily polluted with poor sanitation.

Management

- Authorities removed many dwellings in slums such as Makoko.
- A loan of $200 from the World Bank to improve drainage and solid waste.
- New ideas such as the 'floating homes and school' have been suggested

5.1 biii Re-urbanisation in ACs

This is the movement of people back into urban areas.

Push	Pull
• Lack of jobs in rural and suburban areas. • Less leisure and entertainment in rural areas. • Counter-urbanisation may have increased house prices.	• Redevelopment of brownfield sites with improved housing. • Young people are attracted to the Universities. • People are attracted to entertainment facilities available.

5.1 biii Consequences of Re-urbanisation

Social Consequences

- Shops and services benefit from the additional residents.
- Increase in tension between new and older residents.
- House prices in redeveloped areas increase.
- Schools benefit from the increase of students.
- More jobs and less employment within the area.

Env'l Consequences	Economic Consequences
•Redevelopment of brownfield sites improves old industrial and polluted areas •Decreases pressures on greenfield areas. •Could destroy urban wildlife.	•New shops and services will improve local economy. •Jobs available may not be accessible to original residents. •Urban tourism may increase.

5.1 bii Informal Housing and Slums

This is housing/towns built on land which does not belong to those who are building it. This may be on land that is unsuitable due to its surroundings and are very hazardous. Over 1bn people live in slums.

5.1 bii Internal Growth

Internal growth occurs when urban areas experience rapid rates of population growth. This comes as a result of a large amount of arrival of people in cities, who after finding a job, house and partner will have children. This occurs mostly in LIDCs.

5.1 biii Greenbelt Area

This is a zone of land surrounding a city where new building is strictly controlled to try to prevent cities growing too much and too fast.

5.1 biii Conurbanisation

A conurbation is a region comprising a number of cities, large towns, and other urban areas that, through population growth have merged to form one continuous urban or industrially developed area.

For example: West Midlands conurbation includes Birmingham, Wolverhampton,, Walsall and Dudley

5.2 ab AC: Challenges & Opportunities for Cities: BIRMINGHAM Case Study

Location and Background

Birmingham is a city and metropolitan borough in the West Midlands, England. It is the largest and most populous city outside of London, with a population of 1.1m people.

City's Importance

- Has the fastest rate of job growth in the country.
- Third largest manufacturing centre in the UK, especially for clothing.
- Contains four independent universities.
- After London the most important financial centre in the UK.
- Has major transport links that connect effectively to the UK and the world.

Migration to Birmingham

In 1700 Birmingham was a small market town of 10k people and grew to 500k after Ind Rev. Rural-urban migration, where people were attracted by metalworking and engineering jobs, led to rapid population growth in 20th century, turning it into a multicultural city.

- In the 1950s/60s, most immigrants came from south Asia and the West Indies
- Since 2000 more people have come from Eastern Europe, Middle East and Africa.
- 2011 – only 53% were White British

The Brummie Way of Life

- The city benefits by the diversity and many different cultures.
- The population benefits from many companies and shops locating there.
- The Bullring is shopping centre at the heart of the city and reopened in 2003
- Good entrainment centres and night life.

City Challenges

Urban inequality
- Wealth – Sutton Four Oaks - suburbs
- Deprivation – Sparkbrook – inner city
- Unemployment – more in inner city, linked to education, child poverty and low income

Housing
- Wealthier able to buy at highest prices, so move to least deprived areas
- Low income families forced to live in deprived areas – renting from council or landlords, worsening the inequality

The Bullring (redeveloped 2003) was not the only regeneration project in Birmingham.
- Library of Birmingham - 2013
- Brindleyplace – area by the canals containing the NIA and ICC
- Millennium Point – in the 'Knowledge' Quarter
- HS II – opening 2026
- New Street Rail Station – with added shopping centre

5.2 ab EDC: Challenges & Opportunities for Cities: RIO DE JANEIRO Case Study

Location and Background

Rio is a coastal city situated in the South East region of Brazil within the continent of South America. It is the second most populated city in the country (6.5 million) after Sao Paulo.

City's Importance

- Has the second largest GDP in Brazil
- It is the headquarters for many of Brazil's main companies, particularly with Oil & Gas.
- Sugar Loaf mountain is one of the seven wonders of the world.
- One of the most visited places in the Southern Hemisphere.
- Hosted the 2014 World Cup and 2016 Summer Olympics.

Migration to Rio De Janeiro

The city began when Portuguese settlers with slaves arrived in 1502. Since then, Rio has become home to various ethnic groups.

However, more recently, millions of people have migrated from rural areas that have suffered from drought, lack of services and unemployment to Rio. People do this to search for a better quality of life.

This expanding population has resulted in the rapid urbanisation of Rio de Janeiro.

Rio's way of Life

- Recent sporting events have improved the city's infrastructure and some service.
- The city has a thriving tourism industry with high class resorts along the famous beaches.
- The Rio Carnival is an important cultural event for traditional dancing and music.
- Standards of living are gradually improving.

City Challenges

- Shanty towns called Favelas are established around the city, typically on unfavourable land, such as hills.
- There are a severe shortage of housing, schools and healthcare centres available.
- The city suffers from a high crime rate that includes gun/gang violence and drugs.
- The rapid urbanisation causes dangerous levels of pollution and traffic congestion.
- Large scale social inequality, is creating tensions between the rich and poor.

- The authorities have provided basic materials to improves peoples homes with safe electricity and sewage pipes.
- Government has demolished houses and created new estates.
- Community policing has been established, along with a tougher stance on gangs with military backed police.
- Greater investment in new road and rail network to reduce pollution and increase connections between rich and poor areas.