

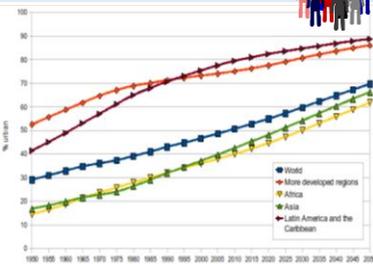
What is urbanisation?

Urbanisation is the 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 areas.



Where is Urbanisation happening?

Urbanisation is happening all over the world but in LICs and NEEs rates are much faster than HICs. This is mostly because of the rapid economic growth, which is leading to increasing life expectancies, that they are experiencing.



Causes of Urbanisation

Rural - urban migration	The movement of people from rural to urban areas.	
Push factors	Pull factors	
Factors that encourage people to move away from a place.	Factors that encourage to move people to a place.	
<ul style="list-style-type: none"> Natural disasters e.g., drought. War and Conflict. Mechanisation. Lack of opportunities. Lack of employment. 	Factors are sometimes perceived. <ul style="list-style-type: none"> More Jobs . Better education & healthcare. Increased quality of life. Following family members. 	

Natural Increase When the birth rate is greater than the death rate.

Increase in birth rate (BR) **Lower death rate (DR)**

- Migration often involves young adults. When there is a high percentage of population of child-bearing age this leads to higher birth rate.
- In the UK migrant groups have higher fertility rates.
- Lack of contraception or education about family planning.
- A higher life expectancy is due to supplies of clean water, better living conditions and diet.
- Improved medical facilities help lower infant mortality rates and raise life expectancies.

Types of Cities

Megacity An urban area with over **10 million people** living there.

More than two thirds of current megacities are located in either NEEs or LICs. The majority of megacities are located in Asia. The number of megacities are predicted to increase from 28 to 41 by 2030.

Sustainable urban living

Sustainable urban living means being able to live in cities in ways that do not pollute the environment and using resources in ways that ensure future generations can also use them. Sustainable living should ensure that all facilities necessary for people are available, and that areas are economically viable.



Water Conservation

This is about reducing the amount of water used.

- Rainwater harvesting provides water for gardens and for flushing toilets.
- Installing water meters discourages water use. Dual flushes on toilets flush less water.
- Educating people on using less water.



Creating Green Space

Creating green spaces in urban areas can improve places for people who want to live there.

- Provide natural cooler areas for people to relax in.
- Encourages people to exercise.
- Reduces the risk of flooding from surface runoff.
- Reduces airborne particulates.



Energy Conservation

Using less fossil fuels can reduce the rate of climate change.

- Promoting renewable energy sources e.g. solar panels, insulation.
- Making homes and appliances more energy efficient.
- Encouraging people to use less energy.
- Using wood in buildings instead of bricks.



Waste Recycling

More recycling means fewer resources are used. Less waste reduces the amount that eventually goes to landfill.

- This reduces waste gases (methane) and contamination of water sources.**
- Collection of household waste.
 - More local recycling facilities.
 - Greater awareness of the benefits in recycling.

Traffic management

Urban areas are busy places with many people travelling by different modes of transport. This has caused urban areas to experience traffic congestion that can lead to various problems.



Environmental problems

- Traffic increases air pollution which releases greenhouse gases that is leading to climate change.
- More roads have to be built.



Economic problems

- Congestion can make people late for work.
- Business deliveries take longer. This costs companies more money as drivers take longer to make the delivery.

Social Problems

- There is a greater risk of accidents. This is a particular problem in built up areas.
- Congestion causes frustration.
- Traffic creates particulates that can affect health e.g., asthma.

Congestion solutions

- Widen roads to allow more traffic to flow more easily and avoid congestion.
- Build ring roads and bypasses to keep traffic out of city centres.
- Introduce park and ride schemes to reduce car use.
- Encourage car-sharing schemes in work places and by allowing shared cars in special lanes.
- Have public transport, cycle lanes & bike hire schemes.
- Having congestion charges discourages drivers from entering the busy city centres.



Unit 2a Urban Issues & Challenges



Distribution of population & cities in the UK



The location of most UK cities is linked to the availability of natural resources (particularly coal), or near to the coast for imports, and the subsequent location of industry during the industrial revolution. This is because coal was the original source of power for the factories e.g. Glasgow, Newcastle, Nottingham and Cardiff.

London is a major anomaly to this trend. Instead its location on the River Thames enabled resources to be imported along the River Thames. Imports from across the British Empire were then used in industry.



Integrated transport system

This is the linking of different forms of public and private transport within a city and the surrounding area e.g., bus timetables coincide with train arrivals and departures. Trams lines associated with peak flow from park and ride locations.

Brownfield sites



A brownfield site is an area of land or that has been developed before and, because it has become derelict, can be re-used e.g. old factories in Leicester rebuilt as apartments. Brownfield sites are more expensive to develop than greenfield sites as derelict buildings must be removed first.

Traffic Management Example: London – Congestion charges

Introduced in 2003 and extended in 2007 and 2011 the London congestion charge covers an area of central London. Motorists are discouraged from driving in the zone by an £11.50 daily charge. Buses, taxis, emergency vehicles and low emission vehicles are exempt. The number of vehicles driving in the congestion zone is 10% lower than before its introduction. Evidence that the congestion charge has caused local business problems is limited.



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. Some developments are now being allowed on green belt. This is controversial.



Urban Regeneration

The investment in the revival of old, urban areas by either improving what is there or clearing it away and rebuilding e.g., development of Highcross Shopping Centre on old industrial land, or the conversion of old factories into accommodation.



Urban Change in a Major UK City: Bristol Case Study



Location and Background	City's Importance
<p>Bristol is a city in South West England with an estimated population of 449,300 in 2016.</p> <ul style="list-style-type: none"> Bristol lies between the historic cities of Bath to the south-east and Gloucester to the north-east. The city has borders with Somerset and Gloucestershire. It is England's sixth most populous city, and the most populous city in Southern England after London. Bristol was ranked as Britain's most sustainable city 	<ul style="list-style-type: none"> Industry: the largest concentration of silicon chip manufacture outside California Tourism: the UK's eighth most popular city for foreign visitors. Education: two universities Religion: two cathedrals - Bristol (Anglican) and Clifton (Roman Catholic) Culture and entertainment: several theatres and music venues, including the famous Bristol Old Vic theatre. Home to Aardman, the animators who created Wallace and Gromit.

Migration to Bristol	City's Opportunities
<ul style="list-style-type: none"> Between 1851 and 1891 Bristol's population doubled as people arrived looking for work. In recent years migration from abroad has accounted for about half of Bristol's population growth. This has included large numbers from EU countries, in particular Poland and Spain. Migrant workers are employed in a wide range of sectors: hospitality, retail, manufacturing, health, construction and transport. Compared to elsewhere in the UK, a higher proportion of migrants coming to Bristol intend to stay permanently. 	<p>Social: Bristol's youthful population means that there is a vibrant underground music scene. There is also a growing leisure and retail industry, including the development of Cabot Circus and Cribbs Causeway retail areas. Including the regeneration of the harbour side, transforming previous warehouses and workshops</p> <p>Economic: The major change in Bristol's industry has been the growing number of people employed by high-tech companies. There are 50 micro-electronic and silicon design businesses in the Bristol area. Bristol is home to global companies such as Aardman Animations, Hewlett-packard and Toshiba</p> <p>Environmental: In 2015 Bristol became the first UK city to be awarded the status of European Green Capital. There is a plan to achieve the following by 2020, transport improvements, improved energy efficiency and development of renewable energy.</p>

City Challenges	The Temple Quarter regeneration
<p>Social: Inequality in Bristol: Bristol's population, like that of most UK cities, shows great social variations between different areas. These can be measured by looking at a range of factors that affect people's lives, including housing, education and health.</p>	<p>Why did the Temple Quarter need regeneration? The Temple Quarter was very run down. It gave a bad impression to visitors, as it was the first part of the city seen by anyone driving from Wells to the south or from Bath to the south east.</p>
<p>Economic: With increasing population the government is under increased pressure to build new houses (affordable homes) and create enough employment opportunities so that there is a reducing on money being used on social measures such as benefits.</p>	<p>How has the area been regenerated?</p> <ul style="list-style-type: none"> The target is to create 4000 new jobs by 2020 There will 240000 m2 of either new or refurbished buildings, creating offices, homes, shops and the redeveloped railway station. The Bristol Arena is a new, world-class 12,000 capacity entertainment venue, due to be located on the former diesel depot site near Bristol Temple Meads station. A radical regeneration of the area around Bristol Temple Meads station and the new arena site to improve access for pedestrians and cyclists. Engine Shed is an enterprise hub providing workspace for a range of high-tech, creative and low carbon businesses. Paintworks is a 12 acre mixed-use development aimed at creative people and companies £21m scheme revealed to transform gateway to Temple Meads and new arena site
<p>Environmental: Changes in the economy of Bristol have created challenges for the city's environment, many industrial buildings that are no longer used have become derelict and demand for new homes has led to urban sprawl - new housing developments in rural areas on the edge of the city. Also the amount of waste produced per head in Bristol is 23 per cent lower than the UK average. However, the city still produces over half a million tonnes of waste per year.</p>	

Urban Change in a Major NEE City: Rio de Janeiro City Case Study



Location and Background	City's Importance
<ul style="list-style-type: none"> Rio de Janeiro is situated on Brazil's Atlantic coast. It has grown up around a large natural bay called Guanabara Bay. It is the cultural capital of Brazil, with over 50 museums, and its carnival is one of the world's biggest music and dance celebrations. 	<ul style="list-style-type: none"> Rio de Janeiro is the second largest city in Brazil. Rio has a population of 6.5 million people in the city itself and 12.5 million in the surrounding area. Rio is Brazil's second most important industrial centre, producing 5 per cent of Brazil's Gross Domestic Product A major port - main exports are coffee, sugar and iron ore. Main service industries are banking, finance and insurance. Main manufacturing industries are chemicals, pharmaceuticals, clothing, furniture and processed foods. Rio hosted matches during the 2014 World Cup and will host the 2016 Olympic Games.

Migration to Rio de Janeiro	City's Opportunities
<p>Rio has grown rapidly in the last 50 years to become a major industrial, administrative, commercial and tourist centre. These economic activities have attracted many migrants from Brazil and other countries to swell the population of the city. As a result Rio has a racially mixed population.</p> <p>Migrants have come to Rio from many different places.</p> <ul style="list-style-type: none"> From other parts of Brazil such as the Amazon Basin. From other countries in South America, such as Argentina and Bolivia. More recent migrants have come from South Korea and China seeking new business opportunities. The common language still attracts migrants from Portugal, Brazil's former colonial power. Rio's industry attracts skilled workers from the USA and UK. 	<p>Social: Standards of These are opportunities that help people in some way or other, Rio offers many opportunities to people via access to various public and private services; e.g.. education, water supply, healthcare and energy.</p> <p>Economic: The major pull factor of a city like Rio, is the opportunity for employment. Most people around the globe want the chance to work, earn a living and provide a decent life for themselves and their families. The city now provides more than 6 per cent of all employment in Brazil.</p> <p>Environmental: Huge investment in sewage works to remove waste from Guanabara Bay and public transport systems e.g.. expansion of the Metro, use of toll roads and one way systems</p>

City Challenges	Urban planning to improve QoL for urban poor
<p>Social:</p> <ul style="list-style-type: none"> In 2013 only 55% of the city had a local family health clinic. In Rio, only half of children continue their education beyond the age of 14. Many drop out of school and end up being involved in drug trafficking. There is a lack of schools across the city and a lack of money earned by parents – all meaning the % of school attendance is low. <p>Economic:</p> <ul style="list-style-type: none"> Unemployment rates in the favelas are over 20%. Most people work in the informal economy – this means work is often irregular and they do not pay any tax. 	<p>A variety of schemes have been introduced improve socio-economic and environmental conditions.</p> <p>Self-help schemes - Rocinha, Bairro Project The authorities in Rio have set up self-help schemes, providing local residents with grants, loans or the materials needed to construct permanent accommodation. This includes breeze blocks and cement, standpipes will likely be provided for sanitation. The local residents provide the labour. The money saved can be spent on providing basic amenities such as electricity and water. Some residents may collectively begin to build health centres, schools etc.</p>
<p>Environmental:</p> <ul style="list-style-type: none"> Traffic congestion increases stress, pollution levels and wastes time for commuters. Guanabara Bay is highly polluted, over 200 tonnes of raw sewage pours in to the bay each day. Many favelas have no waste or recycling schemes and so waste is dumped on the streets and flows in to the rivers. 	<p>Site and Service: A more formal method of improvement. Land is identified and infrastructure is laid in advance of the settlement so that water sanitation and electricity are properly supplied to individual plots. People then build homes using whatever materials they can afford at the time. Site and service schemes give people the chance to rent or buy a piece of land. The land is connected to the city by transport links and has access to essential services (e.g.. water). People build their own homes using money from a low-interest loan</p>

Measuring Development

Development measures how economically, socially, culturally or technologically advanced a country is. It suggests: advancement, evolution, expansion, growth, improvement, increase, maturity, progress, changes for the better.

Development Indicators

GNI	Gross National Income (Money earned by residents of a country including money earned abroad).
HDI	Human Development Index. Calculated using life expectancy, education, and per capita income.
Infant mortality	How many children per 1000 die before they are 1.
Literacy rate	The % of adults that read and write acceptably.

You must know advantages and disadvantages of each of these measures.

Classifying the World's Development



- An HIC has a GNI per capita of over \$12,000.
- A NEE has an economy that is rapidly progressing.
- A LIC has a GNI per capita of below \$800.

In the 1980's, Dr Brandt classified the world into the rich north and the poor south. He drew this line called the Brandt Line or the North-South Divide. However, over time countries in the south began to develop e.g. Singapore and China, and the line became outdated.

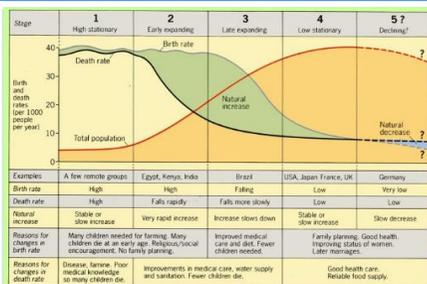
Key terms

Standard of living refers to the economic level of a person's daily life. **Quality of life** is a social measure of well being.

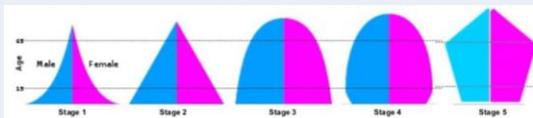


Measuring Population

The demographic transition model shows how a country's population changes as it becomes more developed, from subsistence farming cultures (LICs) to HICs.



Population pyramids change over time too – from having a lot of babies (a wide base), to good healthcare and more elderly people (a wide top).



Factors Causing Uneven Development

Physical Environment



- Soil erosion, desertification, climate (and climate change), overgrazing and infertile soils affect farming.
- Areas without fertile land, natural resources, water and energy suffer.
- Natural hazards make little progress with development e.g. Haiti.

Health



- Diseases can make people too weak to work or go to school.
- 80% of all developing world disease is water-related. 2 million die a year.
- LIC's are unable to invest in good quality health care

Trade



- Trade blocs favour member states.
- Primary products sold by LICs are sold for cheap prices that can fluctuate. HICs make more expensive products so earn more.
- Poor infrastructure or conflict means some people cannot sell their goods at all.

History



- Colonialism: Many countries in Asia, South America and Africa have spent a lot of time and money on civil wars and political struggles for power since being made separate from European superpowers.
- Many LICs haven't had time to develop fully.

Unit 2b



The Changing Economic World

Solutions to Uneven Development

TNC investment

Aid

Industrial Development

Intermediate Technology

Fair Trade

Debt Relief

Microfinance loans

Tourism



Tourism in Jamaica

Background: Jamaica is one of the largest islands in the West Indies. Its population is 2.7 million. Its economy is based upon a range of minerals, agricultural products

Attractions: The country has become a popular tourist destination, offering beautiful beaches, a warm sunny climate and rich cultural heritage. Jamaica enjoys good international air communications and is a hub for cruise ships.

Positive Impacts

- Tourism counts for 24% of Jamaica's GDP.
- 200,000 jobs are directly created by tourism.
- Total income from tourism is \$2 billion dollars each year, not including taxes.
- Tourism has led to high levels of investment in infrastructure.

Negative Impacts

- Social: Although quality of life has been improved this has often been uneven with large numbers of the population in poor housing and limited food supplies.
- Environmental: Tourism generates footpath erosion and excessive waste including harmful emissions.

Sustainable Tourism



Sustainable tourism aims to support local communities socially and economically whilst causing no harm to the environment e.g. small scale lodge developments employing local people and using local foods in Jamaica.

UK Links

Ports

- The UK's port industry is the biggest in Europe due to our large coastline.
- There are 120 ports in the UK. Dover is the largest and Teesport is the 3rd biggest.
- 12 million people and 700,000 freight lorries travel from Dover a year.



Air

- Heathrow is the UK's busiest airport with 1 plane taking off every 45 seconds.
- 300,000 people are employed in UK aviation.
- As well as large international airports small centres e.g. Cambridge airfield allow internal flights.



Roads

- The first motorway the UK was opened in 1958.
- By 2008 there were 2,200 miles of motorways allowing rapid movement around the country.
- The A1 is the longest road in the UK and connects London and the north-east.



UK Global Links

Political



Commonwealth

- In 1922 Britain ruled over an empire of 458 million people (about 20% of the world's population and 53 countries).
- Many expats (Brits who live abroad) live in these ex-colonies.
- Many of these ex colonies are part of the Commonwealth, choosing to keep close ties.

EU

- The UK joined the EU in 1973 with the aim of becoming part of the common market and improving trade between countries.
- The UK opted to leave in 2016. Brexit negotiations are ongoing and outcomes are unsure.
- About 50% of exports and imports are to the EU.

Other links

- The UK is a member of the G8, a group of 8 countries whose leaders meet to discuss important issues.
- The UK is a member of NATO (North Atlantic Treaty Organisation) a group of European countries and the USA. Leaders meet to keep peace.
- The UK is a member of the UN Security Council in which 15 countries meet to keep peace.

Trade



- 50% of the UK's exports go to EU countries, and 50% went to non-EU countries such as the USA and China. The USA takes the most.
- A lot of trade is now finance and communications following deindustrialisation.

Transport

- More than 750,000 international flights depart from the UK annually to 400 airports in 114 countries.
- Heathrow is the 4th busiest airport in the world.
- Eurotunnel links Britain to Europe.

Culture



- Spoken English has helped create strong links with countries.
- British exams can be sat abroad; recognised for their quality.
- UK TV productions have a global audience.
- We are a culture of immigration leading to a unique and multicultural society.

Technology

- The UK is a centre for submarine internet cables connecting the whole world.
- 18 million British businesses run from home.



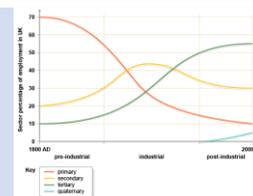


History and Landscape

- Nigeria is a country in West Africa. Nigeria borders Benin, Niger, Chad and Cameroon. It is almost due south of the UK, just one hour ahead of Greenwich Mean Time.
- At latitude 4°14', Nigeria extends from the Gulf of Guinea in the south to the Sahel in the north.
- It has a tropical climate with variable rainy and dry seasons in different parts of the country. It is hot and wet most of the year in the south, but inland there is a long, dry season.
- Nigeria has one of the fastest-growing economies in Africa, and had the highest GDP in the continent and the third largest manufacturing sector. With a population of more than 182 million people, it has the largest population of any African country.



Industrialisation took place in the UK during the 1800s. Most early manufacturing industry took place in areas with coal fields which provided energy. This was a break of bulk location, reducing transport costs.



De-industrialisation is the decline in secondary (manufacturing) industries, and the subsequent growth in tertiary and quaternary employment.

The UK has experienced de-industrialisation changing into a post-industrial economy; with more tertiary & quaternary industries. Secondary industries has moved to cheaper countries e.g. China.

Industry in the North East of England was characterised by heavy industry, including coal mines, iron and steel industry and ship building and petrochemicals. As raw materials were used up, and it became cheaper to produce steel and ships abroad, these heavy industries fell into decline.



The ICI plant in Middlesbrough closed making 30,000 people redundant. The Easington colliery (coal mine) closed in 1993 making 1400 people in a town of 5,000 unemployed. A lack of transferable skills made it hard for these people to find jobs.

De-industrialisation has many socio-economic impacts.

High unemployment leads to the decline of services in affected areas. Reliance on benefits leads to a decline in housing quality. Life expectancy in de-industrialised areas is lower than the national average. Average GCSE grades are also lower in these areas.

Modern industrial developments in the UK

For years the UK thrived due to its secondary industries. However it is now a post industrial economy; one where most manufacturing jobs have been replaced by jobs in the service industries. A new sector that is growing rapidly is the quaternary industry. Quaternary jobs are those that involve highly skilled people who carry out research, provide information and give advice e.g. financial advisers, research scientists.



Located to the north-east of Cambridge the site is home to over 1,500 IT and bio-technology (quaternary) companies. Location factors include closeness to a major junction of the A14 which provides rapid access to the M11, and thereafter Heathrow and London. It is on cheaper land at the edge of the city. This land is flat and there is room for expansion. The proximity to Cambridge University promotes strong working relationships and access to the best University graduates.

Toyota, Burnaston

1.5 million cars are manufactured in the UK by 7 large TNCs. Toyota are attempting to become more sustainable in a number of ways.
 - They have installed 17,000 solar panels and introduced more efficient practices. They aim to reach zero carbon emissions at the plant by 2050.
 - They are reducing water use, using rainwater harvesting methods and ensuring that all water used is purified before being returned to the environment.

The North-South Divide



Most areas affected by de-industrialisation are in the north and west of the UK. The areas of industrial growth tend to be in the south and west. The divide has led to social and economic differences. Unemployment in the north east is 5.5% higher than the south east. Average pay is £4,000 higher in the south and life expectancy is 2.5 years longer. In attempt to reduce the differences between the north and south governments have supported a number of schemes.

HS2 / HS3

HS2 and 3 are High Speed rail links that will run from London to Birmingham, and then on to Manchester and Leeds. Benefits - reduced travel times to the north will encourage the location of industry in the north. 100,000 jobs will be created. Problems - The scheme will cost over £50 billion, lead to 600 homes being demolished, and 150 nature sites being affected.

Roads

£6 billion will be invested in northern roads to reduce congestion. Benefit - This will encourage industrial location as it will reduce the cost associated with longer transport times. Problem - We should be discouraging road use.

Other UK Transport Improvements

London Gateway

Only 30 miles from Central London. It should handle 3.5 million containers per year. Benefit: It will reduce the need for over 2,000 lorries to collect and deliver from Southampton port.

Heathrow Expansion

Heathrow is operating at full capacity with 480,000 flights each year. A third runway, costing £20 billion will allow more flights. Benefit - Encourage more industry to locate in the UK. Problems - Cost, noise pollution and one village demolished.

Changes in Employment Structure

- Since 1999 there have been major changes in the country's industrial structure.
- Employment in agriculture (primary sector) has fallen, due to increasing use of farm machinery and better pay and conditions in other sectors of the economy.
- Industrialisation and economic growth (secondary sector) under a stable government has increased employment in oil production, manufacturing and industries such as construction, motor manufacturing, sugar refining and pharmaceuticals.
- The growth of communications, retail and finance in the service (tertiary) sector.

Industry

- Today, manufacturing accounts for 10 per cent of Nigeria's GDP.
- It is currently growing faster than the telecommunications, oil and gas or agricultural sectors. Among goods produced are, processed foods, leather items, textiles, soaps and detergents.
- With its growing home market, relatively cheap labour force and improving infrastructure, the manufacturing sector seems likely to increase in the future and become even more diverse.

TNCs in Nigeria: SHELL



- Shell is one of the world's largest oil companies with its headquarters in the Netherlands since the discovery of oil in 1958. Shell is Nigeria's oldest energy company, and has a long term and continuing commitment to the country, its people and the economy.
- In 2014 Shell produced an average of 739,000 barrels of oil equivalent per day and 150 million standard cubic feet of gas per day. Nigeria depends on the oil and gas industry for approximately 90% of export income and 75% of overall government revenue.

Social issues:

- + Provide jobs, often at higher wage levels than average in the local economy.
- Exploitation of the workers with low wages

Economic issues:

- + Bring new investment into the country's economy.
- Take profits out of the country back to the HIC.

Environmental issues:

- Can cause environmental damage and deplete natural resources.
- Frequent oil flares send toxic fumes into the air.



Aid to Nigeria

- In 2014 the World Bank approved a US\$500 million to fund development projects and provide long-term loans to businesses. This helps reduce the over-dependence on oil exports.
- Aid from the USA helps to educate and protect people against the spread of AIDS/HIV.
- The UK Department for International Development has funded a health and HIV programme, providing health education in rural areas.
- The USAID funded Community Care in Nigeria project provides support packages for orphans and vulnerable children.
- The NGO Nets for Life provides education on malaria prevention and distributes anti-mosquito nets to many households

Impacts of Development in Nigeria

- Improvements in quality of life (see table).
- Regional inequality leads to rural to urban migration.
- This leads to rapid population growth (300,000 per year) in Lagos, which leads to the growth of slum settlements.
- 60% of Nigeria's population still live in poverty, which highlights the countries economic divide.

Year	Life Expectancy	GNI per Capita	Fertility Rate
1990	46	\$4,260	6.6
2013	52	\$10,826	5.74

What are Resources?

Key term	Definition
Resources	Materials that have value for people. They may be needed for basic survival e.g. water, or appreciated as something that improves quality of life e.g. coffee.
Resource management	The control and monitoring of resources so they don't become depleted or exhausted.
Surplus	When there is more of a resource than is needed to meet demand.
Deficit	When there is not enough of a resource to meet demand.

Global inequalities in the supply and consumption of resources

Food

- Average UK calorie consumption is 3200 calories per person per day.
- Average calorie consumption in Mali is 2590 calories per person per day.
- Areas of greatest population growth have highest levels of undernourishment.
- Demand depends on changing diets and increasing population.
- Supply depends on climate, soil and level of technology.



Water

- Fresh water is unequally distributed.
- Water footprint is the amount of water used per day.
- Global average is 1240 litres per day
- Bangladesh is 896 litres per day, USA is 2483 litres per day.
- Water scarcity (where demand is greater than supply) can be physical e.g. reduction in rainfall or economic e.g. lack of money to enable access to water.
- 1 in 5 (more than 1.2 billion people) live in areas of water scarcity.
- 1 in 3 (2.4 billion people) have no access to clean drinking water.



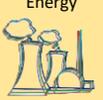
Energy

- The richest 13% of people globally use 50% of the world's energy.
- The poorest 13% of people globally use 4% of the world's energy.
- Countries import and export energy.
- Some countries do not have their own sources of energy.



The significance of food, water and energy to economic and social well being

Water food and energy are key for human wellbeing. All lead to social and economic benefits, which all increase the standard of living and quality of life.

Food	<ul style="list-style-type: none"> Calories provide energy. Availability of food depends on climate, soil and level of technology. Malnourishment leads to disease and death. In children it can lead to underperforming at school which decreases economic wellbeing in life. In adults they will be less productive (less able to work). Globally more than 1 billion people are malnourished. 2 billion are undernourished (poor diet). Obesity is an issue in some areas, mainly HICs. 
Water	<ul style="list-style-type: none"> Used for survival, washing, food production, industry. Clean, safe water enables development and allows people to break free from the cycle of poverty. Globally 2 billion people drink from contaminated water sources. Over 500,000 people a year die because of diarrhoeal diseases which is linked to contaminated water supplies. 
Energy	<ul style="list-style-type: none"> Traditionally we get energy from oil, coal and wood. Many different sources are generated by changing technology. Used for electricity production, heating, transport and for water supply (e.g. wells). Supports industrialisation and development. 

Changing demand for Energy in the UK creates opportunities and challenges

The changing energy mix

UK Energy mix in 2015 :

- Fossil fuels (65%) Coal 31%, Gas 25%, Nuclear 19%, Renewable sources 22%. In 1970 91% from fossil fuels.
- The UK has invested in renewable energy e.g. solar energy and subsidies are given by the government.

Decreasing domestic supply of oil, coal and gas.

- Reserves of North Sea oil and gas are declining.
- EU regulations on gas emissions has led to a decrease in fossil fuel use.
- Energy efficient appliances and industry mean less energy is used in homes and industry.

Economic and environmental issues linked to energy use.

- It is cheaper to import coal into the UK than to mine it.
- Nuclear Power Stations are being decommissioned and all current plants will close by 2023 – there are issues of contamination and disposal of nuclear waste.
- Economic issues – costs, jobs, set up costs, research, reliability.
- Environmental costs – ecosystems, waste, noise, emissions, pollution, radiation leaks.



Changing demand for food in the UK creates opportunities and challenges

The growing demand for high value food exports from LICs and all year demands for seasonal food and organic produce.

- Food used to be seasonally and locally sourced. Now we eat globally sourced foods all year.
- In 2013 47% of UK food was imported.
- More disposable income has led to an increased demand for greater quantities and wider choice.
- Not all foods can be grown the UK, and some foods can only be grown at certain times e.g. strawberries in July and August.
- High quality products are five times the price of similar products e.g. Madagascan vanilla, gourmet coffee.
- Positive impacts : Jobs and wages for those in LICs, more tax income leads to a better quality of life.
- Negative impacts – less land for locals to farm for themselves, high water use and exposure to chemicals (pesticides and fertilisers).
- Organic – no pesticides or fertilisers used. Since the 1990s there has been an increase in demand. Now worth £2 billion a year in the UK.

Larger carbon footprints due to the increased number of food miles travelled.

- Food can be grown more cheaply elsewhere.
- Production and transport create a carbon footprint.
- 17% of the UK's carbon footprint is due to food.
- Tomatoes have less of a carbon footprint being grown in Spain and imported to the UK than if we grew them in the UK where greenhouses would have to be heated.
- Annual food miles travelled by UK food imports is 18.8 billion miles.
- 68% of food imported to the UK is from within the EU, 32% from the rest of the world.
- UK are now encouraging buying local and having an allotment.



A trend towards agribusiness.

- Agribusiness is a farm run as a business with the main aim being profit.
- Agribusiness has significant impacts on the environment as they are associated with heavy use of pesticides and fertilizers leading to reduction in wildlife and eutrophication.
- East Anglia has a lot of agribusinesses.

Fracking – Opportunities and Challenges

Opportunities

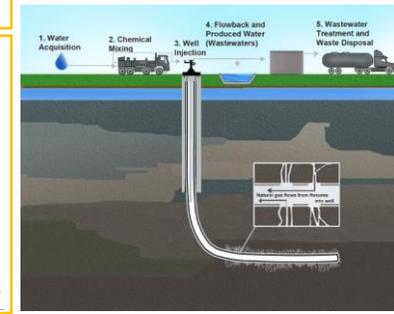
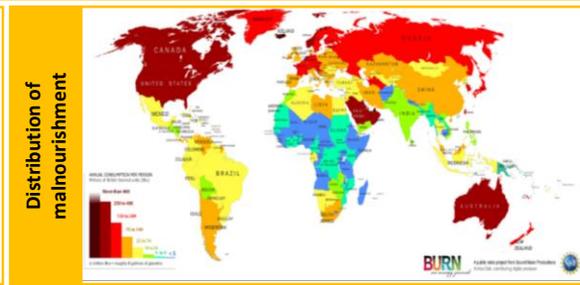
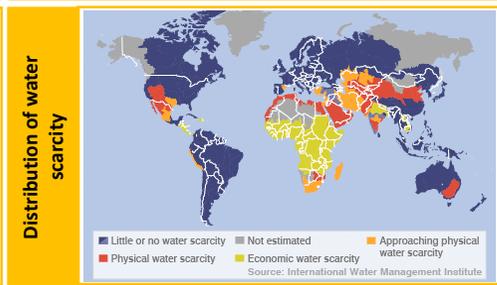
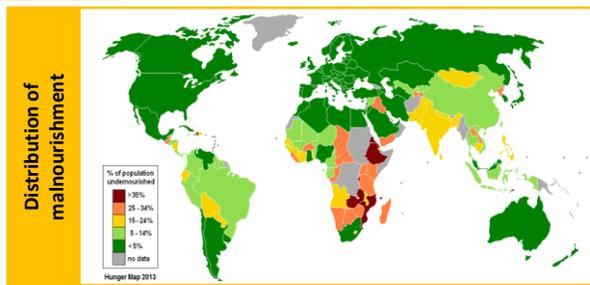
- Shale gas is readily available in UK.
- Will act as a bridging fuel until alternative technologies are developed.
- Increased cost of fuel makes fracking now affordable.

Challenges

- Contaminated water is pumped back into the ground and can affect water supplies.
- Fracking uses a lot of energy.
- 3% of gas extracted is lost to atmosphere; this is methane, a greenhouse gas.



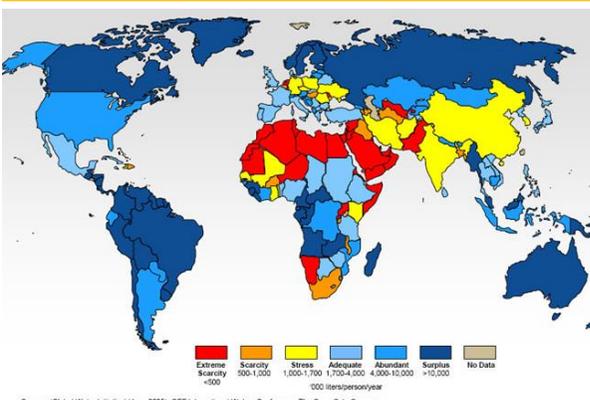
Unit 2c The Challenge of Resource Management



Resource Security

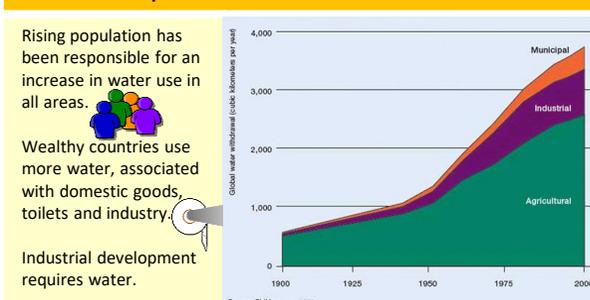
Key term	Definition
Water security	When the demand for water is lower than the supply of water there will be a surplus. This means that a location is water secure.
Water insecurity	When the demand for water is greater than the supply of water there will be a deficit. This means that the location is water insecure. This may also be referred to as water scarcity .
	Security and insecurity can be used to describe access to energy and food as well.

Global Per Capita Water Availability (2015)



Distribution	Explanation
<ul style="list-style-type: none"> North America, South America and Oceania have at least adequate supplies of water. Central Africa, northern Asia and western Europe have at least adequate supplies of water. Several countries in southern Asia suffer from water stress. Most countries with extreme scarcity are in the far north of Africa and the Middle East. 	<ul style="list-style-type: none"> Areas along the equator receive high (convective) rainfall. Areas between 45°N and 60°N receive high (frontal) rainfall and lower temperatures reduce evaporation. Extreme scarcity is associated with 30° N and S, where rainfall is low (associated with high pressure zones). Temperatures increase evaporation.

Water consumption



Water availability

- Only 3% of all the water on Earth is fresh water. The rest is saline (salt).
- Only 1% of the fresh water is readily available for use. The rest of it is stored in glaciers, and groundwater reserves.
- Fresh water is required for drinking, food production, and hygiene. In HICs it is also used for cleaning cars, watering gardens, golf courses and swimming pools,

Factors affecting water supply

Climate	<ul style="list-style-type: none"> Levels of precipitation are affected by global circulation (if air is rising or falling) and proximity (closeness) to the sea. Areas with higher rates of precipitation are likely to have a higher supply.
Geology	<ul style="list-style-type: none"> High infiltration of water (where water soaks into the soil) in places such as deserts means that water is not stored on the surfaces in lakes so is not able to be used by people easily. Percolation of water (water soaking into the bedrock) leads to water storage in permeable rock (aquifers).

Pollution of supply

	<ul style="list-style-type: none"> Waste from industry causes pollution of water supplies. This may affect places a long way from the source of pollution. HICs have laws preventing pollution of water supplies. Even if laws exist in LICs they are not always enforced. Where sanitation is poor, human waste enters rivers and lakes. This can cause a rapid spread of cholera and typhoid.
Over-abstraction	<ul style="list-style-type: none"> When water is pumped from the ground at a rate which is faster than it recharges (fills again due to precipitation percolation) the ground water level drops and wells dry up.
Limited infrastructure	<ul style="list-style-type: none"> LICs have limited money to provide the infrastructure needed for water (pumping stations and pipes). This is a particular problem in rural areas.

Poverty

	<ul style="list-style-type: none"> Nearly one billion people do not have access to clean, safe water; 1/8th of the population. If people do not have money they are not able to buy clean water or filtration systems, this means they often have to walk for miles to collect water from unsafe sources. Unclean water leads to higher rates of illness and less time available for children to go to school and adults to work. An inability to work or become educated means that people cannot afford clean water. This becomes a vicious cycle.
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Impacts of water insecurity

Water pollution	Waterborne diseases	Food production	Industrial output	Conflict
<p>Too many chemicals from agriculture and industrial waste. Lack of water prevents chemicals being flushed away. Poor quality water affects aquatic ecosystem e.g. eutrophication.</p>	<p>Chemicals, raw sewage, manufacturing waste, human and animal remains end up in the water supply. With limited flow the river can't remove it quick enough and it becomes unfit for human consumption. Dirty water leads to waterborne diseases e.g. cholera, dysentery, typhoid.</p>	<p>Most agriculture relies on irrigation to maintain high crop yields. If there is insufficient water of a high quality then crops can't be grown. Safe water is needed for livestock. Reduced yields can lead to social and economic issues.</p>	<p>Water is needed for cooling and other industrial processes. If less water is available, or the cost of water increases, the profitability of industry decreases.</p> <p>Coal, gas and nuclear power need large quantities of water. Water insecurity can affect energy supplies.</p>	<p>When water is limited it becomes a valuable commodity. International competition can lead to tension or even "water wars". Tensions are inevitable in large river basins which are shared by two or more countries e.g. India and Bangladesh share the Ganges.</p>

Strategies to increase water supply

<p>Diverting supplies - Rainwater can be used to recharge aquifers. This helps support a clean supply of water that has been filtered by percolation.</p>	<p>Dams and reservoirs - Damming a river allows water to be stored in a reservoir and controls river flow. This is a long term solution, but very expensive.</p>	<p>Water conservation - Using less water. The use of more efficient white goods and toilets reduces water use. Water meters charge for the water used.</p>	<p>Groundwater management - water can become polluted by fracking and mining. Governments can safeguard groundwater by creating protection zones.</p>
<p>Water transfer - Water from areas of surplus is transferred to areas of deficit through canals and pipes. The infrastructure required can be expensive and areas that previously had a surplus may go into deficit.</p>	<p>Desalination - saline (salt) water is taken from the sea. This passes through a desalination plant to create fresh water. Water supplies cannot run out, but it uses a lot of energy and is expensive.</p>	<p>Grey water / Water recycling - Water that has either been lightly used (e.g. shower water or sink water) or it is untreated rainwater. After filtering it can be used for toilet flushes.</p>	<p>A large scale water transfer scheme</p> <p>South-North Water Transfer Project, China</p> <p>The scheme will transfer 45 billion cubic meters of water a year from the Yangtze River in the south to the Yellow River basin in the arid (dry) north.</p> <ul style="list-style-type: none"> 53 million people in the north benefit from access to better water supplies. Agricultural yields have improved. Water can be used for industry.

A local scheme to increase sustainable water supplies

<p>WaterAid in Mali</p> <ul style="list-style-type: none"> WaterAid is an NGO that relies on charity. They provide small scale schemes, in Mali, using appropriate technology, to provide clean water, sanitation and hygiene education. 	<p>Clean water in villages:</p> <ul style="list-style-type: none"> Improves health. Improves productivity. Improves education opportunities. Reduces time used in water collection. Increases crop yields. 	<ul style="list-style-type: none"> Cost \$62 billion. 330,000 people were relocated because of the project. Water loss is high due to evaporation from open channels. Vast amounts of concrete have been used.
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