

## PAPER 2: HUMAN GEOGRAPHY

### Section A: Urban Issues and Challenges (17-21)

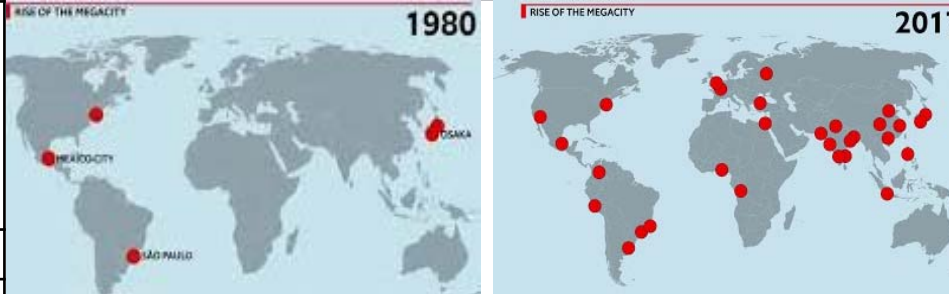
- *Case study of a major city in the UK: London*
- *An example of an urban regeneration project: Lower Lea Valley*
- *Case study of a major city in a LIC or NEE: Rio de Janeiro*
- *An example of how urban planning improves the quality of life for the urban poor: Favela Bairro Project*

### Section B: The Changing Economic World (22-26)

- *An example of how tourism can reduce the development gap: Jamaica*
- *A case study of an LIC or NEE: Nigeria*
- *A case study of an HIC: the UK*
- *An example of how modern industries can be environmentally sustainable: Nissan*

### Section C: The Challenge of Resource Management (27-29)

- *Example of a large scale agricultural development: Thanet Earth*
- *Example of a local scheme in an LIC or NEE to increase food sustainably: Makueni food and water security programme*

<b>Urbanisation is.....</b>  More specifically.....  By 2050.....	<b>The increase in people living in towns and cities</b>  In 1950 33% of the world's population lived in urban areas, whereas in 2015 55% of the world's population lived in urban areas.  It is predicted 70% will be living in urban areas.		
<b>Urban growth</b>	<b>The increase in land covered by cities</b>	<b>Three are currently 34 megacities in the world.</b>	
Urban growth is caused by.....	Natural increase and rural to urban migration.	Most megacities are located... More specifically.....	In LICs and NEEs 65% of all megacities are located in LICs and NEEs.
A <b>megacity</b> is...	An urban area with over 10 million people living in it. For example Mumbai, Tokyo and Mexico City.	Urban growth is happening more in LICs/NEEs due to.... More specifically.....	Industrialisation  As a country develops their economy changes from agriculture (primary) to manufacturing (secondary) and services (tertiary). This occurs during the industrial revolution. Most of the secondary and tertiary jobs are in towns and cities. When this occurs, lots of people move from rural to urban areas = rapid urbanisation. HICs went through their industrial revolution a long time ago, whereas LICs and NEEs are going through their industrial revolution now. As a result more people in LICs and NEEs are currently moving to urban areas.
<b>Natural increase</b> is.....	If a country has a higher birth rate than death rate, the population will naturally increase. This type of population is often found in stages 2 and 3 of the DTM where there is a high number of young adults (18-35 years) who are having lots of children and few older people who are dying due to improved healthcare. Therefore urban growth is common in NEEs.	Urban growth is happening more in LICs/NEEs due to.... More specifically.....	LICs and NEEs are in stages 2 and 3 of the demographic transition model. In these stages there is a high birth rate and lower death rate = more people are born than are die = the population naturally increases. In HICs there is a low death rate and even lower birth rate = the population is declining.
<b>Rural to urban migration</b> is...	The movement of people from the countryside to cities. It is caused by push factors (pushing people out of rural areas) and pull factors (pulling people to cities).		
Push factors are....	Factors that push people out of an area. Negative factors that make people want to leave an area.		
Pull factors are....	Factors that pull people out of an area. Negative factors that make people want to leave an area.	Urban growth is happening more slowly in HICs due to... More specifically.....	Counter-urbanisation.  In HICs, people are deciding to leave cities and live in the surrounding countryside to get a better quality of life (less pollution, quieter, more space). They can commute to work due to improved transportation.
Rural to urban migration push factors make people want to leave rural areas. Examples include.....	<ul style="list-style-type: none"> <li>Farming is hard and poorly paid</li> <li>Increased use of machinery in farming = less people needed to work = unemployment</li> <li>Dry land in rural areas caused by desertification = land cannot be farmed</li> <li>Fewer doctors, hospitals, schools and transportation routes</li> </ul>		
Rural to urban migration pull factors make people want to move to urban areas. Examples include.....	<ul style="list-style-type: none"> <li>More highly skilled, better paid jobs</li> <li>Range of entertainment opportunities</li> <li>More and better doctors and hospitals</li> <li>More schools and better education</li> <li>Better transportation routes/public transport</li> </ul>		
		<b>Case studies:</b>	<b>Rio de Janeiro and London</b>

**RIO DE JANEIRO** is located in Guanabara Bay, on the south-east coast of Brazil. It lies next to the Atlantic Ocean. It is the cultural capital of Brazil and 2<sup>nd</sup> largest city, with a population of 12.5 million.



It is globally important due to:

- Industrial businesses – produces 5% of Brazil's GDP.
- Financial centre – banking, finance and insurance.
- It hosted the 2014 World Cup, 2016 Olympics and annually the Rio Carnival.

These factors have attracted a multicultural population, with people from all over the world moving to Rio to live: *South Korea, China, UK, USA, Portugal, Argentina and Bolivia.*

Urban growth in Rio de Janeiro has created many **social** and **economic** opportunities:

Opportunity	Evidence in Rio
<b>JOBS</b>	<ul style="list-style-type: none"> <li>Rio provides &gt;6% of all jobs in Brazil.</li> <li>Rio is home to many manufacturing industries, (pharmaceuticals, clothing, furniture and processed foods) and service industries (banking, insurance).</li> <li>As Rio grows there are many jobs in construction</li> </ul>
<b>BUSINESS OPPORTUNITIES</b>	<ul style="list-style-type: none"> <li>The growth of urban industrial areas can increase economic development. It will attract businesses to the area.</li> </ul>
<b>EDUCATION</b>	<ul style="list-style-type: none"> <li>Rio provide grants to poor families to encourage children to attend school.</li> <li>Rio have many volunteers who help in schools.</li> <li>There are adult classes to help adults gain skills = better jobs</li> </ul>
<b>SERVICES</b>	<ul style="list-style-type: none"> <li>Rio has a new nuclear generator and hydro-electric power station = more energy produced.</li> <li>60km of new electricity lines = better access to energy</li> <li>By 2014, 95% of Rio had access to a mains water supply. This was due to 7 new water treatment plants and 300km of new water pipes being laid.</li> <li>12 new sewage works have been built and 5km of sewage pipes installed in badly polluted areas.</li> </ul>
<b>HEALTHCARE</b>	<ul style="list-style-type: none"> <li>Some areas in Brazil (Barra de Tijuana) have a life expectancy of 80 years old. Brazil (as a country) has an average life expectancy of 63 years.</li> <li>Medical staff go into favelas and offer emergency medication to people's homes.</li> </ul>
<b>ENTERTAINMENT</b>	<ul style="list-style-type: none"> <li>One of the world's top tourist destinations - The Statue of Christ the Redeemer, stunning natural surroundings and entertainment.</li> </ul>
<b>TRANSPORT</b>	<ul style="list-style-type: none"> <li>It has two major airports and five shipping ports</li> <li>Public transport, toll roads and one way systems to control traffic</li> </ul>

Urban growth in Rio has also created many **social, economic & environmental** challenges

Challenge	Evidence in Rio
<b>Lack of healthcare</b>	In 2013 only 55% of the city had a local family health clinic.
<b>Lack of education</b>	Not enough schools, teachers or funding for education.
<b>Lack of water supply</b>	Around 12% of Rio does not have access to running water.
<b>Lack of energy</b>	Due to illegal tapping onto electricity lines = blackouts.
<b>Unemployment and informal sector jobs</b>	Many people are unemployed or work in the informal sector (e.g. street vendor), which are poorly paid, no contract, no taxes paid.
<b>Air pollution</b>	caused by too many cars and growth of factories = 5000 deaths per year.
<b>Water pollution</b>	caused by sewage running into rivers (200 tonnes/day) and industrial waste from factories and oil spills.
<b>Waste pollution</b>	a lack of waste disposal = rubbish on streets.
<b>Creation of squatter settlements (favelas)</b>	<p><b>These are illegal settlements on the outskirts of cities</b></p> <p><b>Characteristics:</b></p> <ul style="list-style-type: none"> <li>Poorly built homes using basic materials</li> <li>Houses built on steep slopes = landslides (e.g. 2010: 224 killed and 13,000 lost their homes) and limited road access</li> <li>30% no electricity, 50% no sewage system and 12% no running water.</li> <li>20% are unemployed. Those who are, are employed in informal sector</li> <li>Drug gangs are common &amp; police is rare (murder rate is 20 per 1000 ppl)</li> <li>Infant mortality rate: 50 per 1000 people due to high population densities (37,000 per km<sup>2</sup>), lack of waste disposal, spread of disease and lack of health care.</li> </ul>

**URBAN PLANNING: improving quality of life in favelas.**

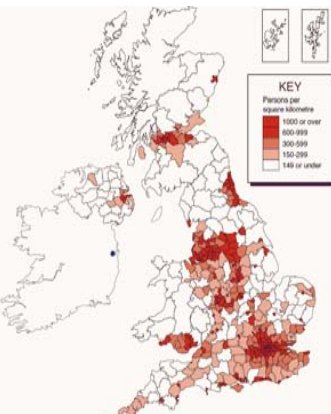
**Favela Bairro Project** is a site and service scheme that improves quality of life in Complexo de Alemão (favela in north Rio).

- Roads have been improved and paved
- Improved access to water pipes and sanitation
- Hillsides strengthened to prevent landslides
- New healthcare, leisure and education facilities
- Cable car has been installed that connects favela to centre of Ipanema (central Rio). Favela residents given free return daily ticket.
- 100% mortgages provided for locals to buy homes
- A Pacifying Police Unit (UPP) was set up = less crime



**Successful because: access/mobility is better = access to jobs in city centre, improved healthcare, education, access to services, 100% mortgages = more people can buy homes, less crime, fewer landslides.**

**Unsuccessful because: new infrastructure not maintained and residents did not have skills to fix it, area improved = increase in demand to live there = increase in rent = poorest had to move, budget of US\$1 billion could not help all favelas.**

Population Distribution	The way something is spread out over an area.	Choropleth map showing the UK's population distribution:		
Industrialisation	Growth of secondary manufacturing		There is a dense population.... There is a sparse population..... This is because....	In the south east. More specifically 32% live in the south east. In the north of England, Scotland and Wales. It is warmer, <i>less rainfall, flatter land in the SE. In central Scotland and Wales its is colder, more rainfall and mountainous.</i>
De-industrialisation	Decline of secondary manufacturing		How many people live in urban areas?	82%
Post industrial economy	Economy is mainly tertiary and quaternary industries		People live in urban areas because of job opportunities. More specifically..... This is because.....	Most secondary, tertiary and quaternary jobs are located in urban areas. ➤ Industrialisation in 18 <sup>th</sup> and 19 <sup>th</sup> centuries = factories opened in urban areas = urbanisation. ➤ 1950s: de-industrialisation = growth of tertiary and quaternary jobs which are located in urban areas.
Brownfield site	Land that has previously been built on		People live in urban areas due to social opportunities. More specifically.....	➤ More entertainment options (restaurants, theatre, cinemas, shopping), better healthcare, education, housing...etc.
Greenfield site	Land that has never previously been built on			
International Migration	The movement of people across countries.	CASE STUDY: LONDON		
Urban Growth	The increase in land covered by urban areas.	Population in 2015 Predicted population in 2030	8.6 million 10 million	
Urban Sprawl	Unplanned growth of urban areas into the surrounding rural area	Demographic of population	Young people in their 20s & 30s. Many immigrants travel to London to work and live.	
Urban Greening	Increasing the amount of green space in a city.	Positive impacts of immigration	Culture (food (Brixton village), music (BBC Asian radio), festivals (Brixton Splash, Notting Hill carnival), new religious sites, hard working workforce.	
Social Inequalities	Some areas have more opportunities than others.	Negative impacts of immigration	Language barrier, segregation of groups of people (e.g. Brixton = Caribbean, Elephant & Castle = Latino), lack of housing, schools, healthcare and services.	
Rural-urban Fringe	The area on the edge of a city, where it meets the countryside.	EXAMPLE OF REGENERATION: LOWER LEA VALLEY – OLYMPIC PARK		
Green Belt	Protected land at the rural-urban fringe where building is restricted.	Location	East London, along the River Lea (a tributary of the River Thames)	
Dereliction	Areas that are abandoned and become run down	Why did the area go into decline?	It grew as an industrial area in the 18 <sup>th</sup> and 19 <sup>th</sup> century. The closing of the ports, increase in manufacturing abroad and growth of tertiary and quaternary industries = many factories closed and people moved away. The area became rundown, abandoned and derelict.	
Urban Regeneration	The reversal of urban decline through redevelopment, aiming to improve the local economy	What happened in 2007	In 2007 London won the bid for the 2012 Olympics and choose the Lower Lea Valley as the site for the Olympic Park. Therefore the area became an example of an urban regeneration project.	
Social Deprivation	When a person or area is deprived of services and amenities.	Social improvements of the development	<ul style="list-style-type: none"><li>• East village = 2800 new homes with 8000 more planned by 2030 and a new school for 1800 students</li><li>• Westfield Stratford – shopping centre</li><li>• Sport venues – velopark (cycling) and aquatics centre (swimming), Olympic stadium (home to West Ham)</li><li>• New transport links</li></ul>	
		Economic improvements of the development	<ul style="list-style-type: none"><li>• New businesses and jobs: East Village (35 businesses - shops, cafes, bars, gym), Here East (creative and media businesses with 5000 jobs), International Quarter (offices employing 25,000 people) and Westfield (10,000 jobs)</li></ul>	
		Environmental improvements of the development	<ul style="list-style-type: none"><li>• Queen Elizabeth Park - &gt;100 hectares of open space.</li><li>• East Village – 10 hectares of parks and open space.</li></ul>	

**LONDON** is located in the south-east of England. It was created during the Roman era due to the River Thames providing ports for trade. It grew during the industrial revolution (18<sup>th</sup> and 19<sup>th</sup> centuries) as factories opened up in the city = more people moved to London for jobs.

- **National importance:** UK's capital, UK's largest city, UK's wealthiest city, many jobs, tourism, world class universities (Kings College London, UCL, LSE), iconic buildings and architecture.
- **International importance:** it is one of the two most important financial centres in the world (with New York), many large international companies have their headquarters in London and tourism.

### OPPORTUNITIES IN LONDON

#### SOCIAL OPPORTUNITIES

- **Culture:** museums (*The Natural History Museum, The National Gallery*), Buckingham Palace, Houses of Parliament
- **Entertainment:** theatres (*The National at South Bank, West End*), cinemas (*vue/odeon Leicester Square*)
- **Music:** O2 Arena, Hammersmith Apollo
- **Sport:** football (*Wembley*), tennis (*Wimbledon*), rugby (*Twickenham*)
- **Restaurants:** lots of cuisines.
- **Festivals:** Notting Hill Carnival, Brixton Splash
- **Integrated transport system:** different forms of public transport are linked to make it easier for people to get around London more quickly. (Waterloo station connects trains, tube, buses and cycle routes)

#### ECONOMIC OPPORTUNITIES

- JOB:** in 2012, there were 5 million jobs in London. In 2010, London's share of the UK's GDP was £274 billion.
- Average wage: £34,473/year (£12,000 more than the UK average)
  - **Tertiary:** finance, real estate, law, accountancy, advertising, market research, management consultancy. London is responsible for 46% of the UK's total GDP from the financial and insurance industries.
  - **Quaternary:** Old street has been nicknamed 'Silicon Roundabout'.

#### ENVIRONMENTAL OPPORTUNITIES

- INTEGRATED TRANSPORT SYSTEM = EASIER TO USE PUBLIC TRANSPORT = LESS CARS = LESS POLLUTION.**
- London has created an integrated transport system that links different forms of public transport = makes it easier to use (Waterloo station connects trains, tube, buses and cycle routes).
  - Creation of the cycle superhighways – new cycle lanes (not on roads = safer)
- URBAN GREENING: LONDON HAS INCREASED AND PRESERVED OPEN GREEN SPACES. 47% of London is green space.**
- There are 700 roof gardens in London
  - Central London parks: *Regents Park, Hyde Park, Green Park*
  - Local parks: *Brockwell Park, Archbishops Park*
- Benefits of green spaces: *trees produce oxygen, reduce the risk of flooding, provide habitats for wildlife and provide spaces for recreational use (healthy).*
- Strategies to protect our green space: connecting green areas to make them more accessible, creating new green spaces (e.g. Garden Bridge)

### CHALLENGES IN LONDON

#### DERELICT AREAS



During the industrial revolution (industrialisation), many factories opened in urban areas = people moved to urban areas for new jobs = urban growth. However, in the 1950s de-industrialisation occurred because:

- The boats got too big for the docks = docks closed down.
- Factories moved abroad due to cheap labour.

As a result many factories closed down and people moved away from the area = many inner city areas, such as the London Docklands, became abandoned, run-down and deprived.

#### SOCIAL INEQUALITY

Some areas in London are more deprived than others. This is known as **social inequality**. It is due to a lack of investment from the government. It can have a number of knock on effects, affecting exam results, employment, income, health...etc.

Measure of deprivation	Kensington & Chelsea	Newham
Male life expectancy	83.7	75.7
Female life expectancy	87.8	79.8
Unemployment	3.9%	9.4%
Pupils achieving five + good GCSE grades	80%	62%
Households with joint income < £15,000	9%	26%
Households with joint income > £60,000	26%	7%

#### URBAN SPRAWL

Many people want to live in urban areas due to better jobs, higher incomes, more entertainment options, education...etc. Unfortunately, there are not enough houses for the demand. London's population is growing by 100,000 people per year, however only 20,000 new homes are being built

There are two options of where to build new homes:

1. Building on **brownfield sites**: redeveloping derelict land in city centres.
  - *Reduces urban sprawl and habitat loss, more public transport = less cars = less pollution*
  - *More expensive*
2. Building on **greenfield sites**: building new homes on land that has never been built on before. Usually on the outskirts of urban areas (**rural-urban fringe**). This results in urban sprawl. Urban sprawl is the unplanned growth of urban areas into the surrounding rural areas.
  - *Cheaper, more space, cleaner air,*
  - *Green land and habitats are lost and more cars are used due to less public transport = pollution*

To protect greenfield sites on the edges of urban areas, London has created a **green belt**, on which there are very strict planning controls to prevent further urban sprawl.

#### POLLUTION

##### Air pollution

London suffers from significant air pollution. The main cause is cars and heating systems in homes. Long term exposure to air pollution causes 4000 premature deaths a year in London.

- *Solution: improvements to public transport (creation of cycle superhighway, integrated transport system, Boris bikes, oyster card).*

##### Waste pollution

¼ of London's waste goes to landfills = environmental problems (production of methane and water and ground pollution).

- *Solution: increase or recycling and using waste to produce energy (biogas)*



### SUSTAINABLE URBAN PLANNING

Sustainable cities are cities that meet the needs of the people who live in them today, without meaning that future generations do not have their needs met. Basically it means behaving in a way that does not irreversibly damage the environment or use up resources faster than they can be replaced. There are many things that cities can do to be more sustainable.

#### FREIBERG: A SUSTAINABLE CITY

Freiburg is located in the south-west of Germany. In 1970 is set a goal to become a sustainable city.

#### TRAFFIC MANAGEMENT STRATEGIES

	EXAMPLES IN FREIBURG		
<p><b>Increase the production of water</b></p> <p><b>Prevent overuse of water</b></p>	<p><b>Collecting and recycling water:</b></p> <ul style="list-style-type: none"> <li>Water harvesting systems collect rainwater to reuse.</li> <li>Water from the River Dreisam is used in Freiburg.</li> </ul> <p><b>Prevent overuse of water:</b></p> <ul style="list-style-type: none"> <li>Dual flush toilets are used that use less water to flush.</li> <li>Water meters remind residents how much water they are using = people use less water.</li> </ul>	<p>Traffic congestion can lead to a number of problems: <i>air pollution, health problems (e.g. asthma), accidents, increased journey times, noise and visual pollution, loss of habitats, cost of fuel...etc.</i></p> <p>Therefore <b>traffic management strategies</b> are used to reduce the risk of traffic congestion.</p>	
		<p><b>Cycle routes</b></p> <p>Lanes along main roads where people cycle, with some new cycle paths that exclude cars (cycle superhighways). There are many benefits of cycling.</p> <ul style="list-style-type: none"> <li>Increase exercise, improve health, reduce air pollution, reduce stress, reduce congestion.</li> </ul> <p>The number of people cycling in London has increased from 1% to 15% in the past 50 years. To encourage more people to cycle London has: <i>made 20mph speed limits, created cycle superhighways (separate lanes for cyclists so they don't need to cycle on main roads), Boris bikes (cycle hire scheme).</i></p>	
<p><b>Increasing the production of energy from renewable sources.</b></p> <p><b>Prevent the overuse of energy</b></p>	<p>Freiburg plans to be 100% powered by renewable energy by 2050. This will require many residents to half their current use of energy.</p> <p><b>Renewable energies</b></p> <ul style="list-style-type: none"> <li>It is one of the sunniest cities in Germany so solar power is used. There are approximately 400 solar panels installations in the city, including at the railway station and football stadium. These produce 10 million kilowatts of electricity per year. <i>Freiburg's solar valley employs 1000 people in solar technology, in the production of solar panels, developing solar technology, such as solar cooling technology.</i></li> <li>Other renewable energies that Freiburg uses include biomass and biogas.</li> </ul> <p><b>Prevent overuse of energy:</b></p> <ul style="list-style-type: none"> <li>The government provide incentives to encourage people to become more energy efficient, by allowing homeowners to sell any excess energy to the national grid.</li> </ul>	<p><b>Bus</b></p> <p>Buses have been improved to make journeys shorter &amp; more enjoyable = more people to use public transport.</p> <ul style="list-style-type: none"> <li>2600 hybrid buses are used in London (reduce emissions by 30-40%)</li> <li>Information boards used at &gt;2500 bus stops that tell customers when the next bus is due – makes it easier for passengers.</li> <li>New bus routes and more buses used at peak hours.</li> <li>Buses have priority = quicker journey times.</li> </ul>	
		<p><b>Park &amp; ride</b></p> <p>People park their car in free car parks on the outskirts of the city and then take the bus into the city centre. One bus with 40 passengers causes less congestion than 20 cars with 2 people in each</p> <p>They have social, economic and environmental impacts: <i>Less cars in the city = less congestion = less pollution (air, visual, noise), less time wasted in traffic, less accidents, less space needed in the city centre for car parks.</i></p> <p>London has 55 park and ride car parks on the outskirts of the city (e.g. Stanmore (450 spaces) and High Barnett (155 spaces).</p>	
<p><b>Increase the number of green spaces.</b></p> <p>➤ Green spaces provide clean air, habitats and prevent flooding during intense rainfall. They also create a relaxing space for people and encourage exercise.</p>	<ul style="list-style-type: none"> <li>Afforestation – 75% of the deforested trees are re-grown every year.</li> <li>River Dreisam provides natural habitats for animals and vegetation.</li> <li>44,000 trees have been planted in the city = 40% of the city is forested. Of these areas, 56% are nature conservation areas.</li> <li>In the Riselfeld District, 78 hectares are built on and 240 hectares are open space.</li> </ul>	<p><b>Integrated transport system</b></p> <p>A system that links different forms of public transport to make journeys easier = more people use public transport = less cars = less congestion and pollution.</p> <p>Passengers are able to use oyster cards and bank cards to pay for journeys on all forms of public transport = easy to use = more people use it. <i>e.g. Waterloo station connects trains, tube, buses, cycle routes to each other.</i></p>	
		<p><b>Congestion charge</b></p> <p>motorists pay £11.50 to drive the centre of London. This means more people are likely going to use public transport as it is cheaper. It dramatically reduced the number of cars in London (by 21% in just 3 years). It has also reduced accidents, pollution and shortened journey times.</p>	

<b>Development</b>	The process of change for the better	<b>REDUCING THE DEVELOPMENT GAP</b>		
<b>Development Indicator</b>	A measure of development (e.g. birth rate, death rate, infant mortality rate, literacy rate)	<b>Aid</b>	A country receives help (money, food, skills, technology). It can be long term or responding to an emergency.	<i>Oxfam's Goat Aid: families are given a goat. It produces milk which can be sold, it's manure can be used as fertiliser, goats bred easily = kids can be sold or eaten.</i>
<b>Gross National Income</b>	Total income of a country (including money earned overseas).	<b>Debt Relief</b>	HICs reduce the amount of money LICs/NEEs have to pay back = money can be used to develop country (education, water, sanitation).	<i>In 2006, the International Monetary Fund cancelled the debt owed by the poorest 19 LICs.</i>
<b>Gross Domestic Product</b>	Total income of a country (excluding money earned overseas).	<b>Investment</b>	Countries & TNCs open factories/offices in LICs due to cheap labour. It helps LICs with employment, income and accessing resources.	<i>Shell and KFC in Nigeria. Also more than 2000 Chinese companies invest billions in Africa.</i>
<b>Human Development Index</b>	Used by the UN to determine development. It uses literacy rate, GDP, life expectancy and number of years in school.	<b>Microfinance Loans</b>	Very small loans given to locals in LICs to start small businesses. They help the economy to grow and employment rates to rise.	<i>Practical Action helped build an earth dam near Adis Nifas (Ethiopia) = a reservoir was created = farmland was irrigated in the dry season = crops could be grown.</i>
<b>Why is it important to use more than one indicator?</b>	<ul style="list-style-type: none"> <li>➤ Averages are not always reliable. GDP/capita – not everyone earns the same.</li> <li>➤ Anomalies could give inaccurate results</li> <li>➤ HICs sometimes have a high death rate as their population is elderly.</li> </ul>	<b>Intermediate Technology</b>	Countries and NGOs develop simple, easy to learn, cheap technology to help improve LIC businesses.	<i>Practical Action helped build an earth dam near Adis Nifas (Ethiopia) = a reservoir was created = farmland was irrigated in the dry season = crops could be grown.</i>

### CAUSES OF THE DEVELOPMENT GAP

<b>A lack of education</b> increases the gap...	People do not develop skills = low paid job = their children get a poor education...etc.	<b>Fair Trade</b>	<ul style="list-style-type: none"> <li>Ensures farmers get a fair price for their crops</li> <li>Invests money in local communities.</li> </ul>	Joins up small scale farms to form co-operatives = farmers save money as they are buying and selling products in larger amounts
<b>Poor trade</b> increases the development gap because...	LICs sell cheap primary goods and buy expensive secondary goods, whereas HICs sell expensive secondary goods and buy cheap primary goods. HICs also have better trade links.	<b>Tourism</b> Jamaica is located in the Caribbean. It suffers from slow development, debt and unemployment. Tourism is one of the main sources of income, with over 1.9 million visitors/yr. People visit Jamaica due to its tropical climate, sandy beaches, exotic wildlife, oceans and for adventure (deep sea diving). Tourists have a good and bad impact.		
<b>Extreme climates</b> increase the gap...	Crops cannot be grown = LICs have fewer goods to export (agriculture is the main source of income in LICs)			
<b>Landlocked countries</b> increase the gap...	They cannot trade as easily as they do not have a coastline.			
<b>Colonialism</b> increased the development gap because...	In 1900s, many colonized countries gained independence. This was followed by corruption and civil wars as groups tried to gain power. Countries/companies do not want to trade with countries experiencing corruption or civil war. Also the governments didn't spend money on the things that matter (food/water/education) as they were corrupt.	<ul style="list-style-type: none"> <li>✓ 24% of its GDP is from tourism (\$2 billion per yr)</li> <li>✓ Higher income = more tax to spend on services</li> <li>✓ 200,000 jobs</li> <li>✓ It has improved Jamaica's infrastructure.</li> </ul>		
		<ul style="list-style-type: none"> <li>❖ Most of the profits go abroad</li> <li>❖ Tourists harm ecosystems – coral reefs are damaged and pollution from development.</li> <li>❖ Jobs are seasonal</li> </ul>		

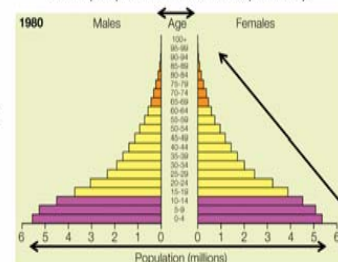
### IMPACTS/EFFECTS OF THE DEVELOPMENT GAP

<b>Difference in wealth</b>	The USA's share of global wealth is 35%. Africa's share of global wealth is just 1%.
<b>Difference in health</b>	There is a higher death rate and lower life expectancy in LICs : 40% children die before 15 yrs and only 20% live past 70 years.
<b>Migration – people move from one place to another.</b>	People leave voluntarily (e.g. for a job or family) or are forced (war). An economic migrant is someone who chooses to leave. A refugee is someone who is forced to leave.

### Population Pyramids

The population is divided up into 5 year gaps. It tells you the number of men/women alive in each 5 year gap. It shows a snapshot of the population at the time it was created.

The width of the bars at top tell us how many older people there are: life expectancy.

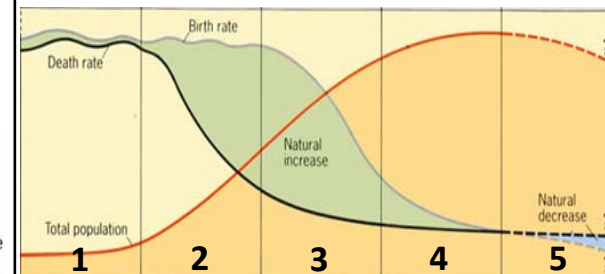


The width of the bars at the base tell us how many young people there are: birth rate and infant mortality.

If the bars get smaller quickly, many people are dying = high death rate.

If the bars stay the same size, now many people are dying = low death rate.

### Demographic Transition Model



Traditional rainforest tribes	Afghanistan, Ethiopia	India, China, Brazil	UK, France, USA	Japan, Italy, Germany
<b>High birth rate</b> <ul style="list-style-type: none"> <li>Lack of birth control</li> <li>Women marry young</li> <li>Children needed to work on land</li> </ul> <b>High death rate</b> <ul style="list-style-type: none"> <li>Disease</li> <li>Famine</li> <li>Lack of clean water</li> <li>Lack of medical care</li> </ul>	<b>High birth rate</b> <ul style="list-style-type: none"> <li>Same as in stage 1</li> </ul> <b>Decreasing death rate</b> <ul style="list-style-type: none"> <li>Improved medical care</li> <li>Cleaner water</li> <li>More and better food</li> <li>Improved sanitation</li> </ul>	<b>Decreasing birth rate</b> <ul style="list-style-type: none"> <li>Birth control more available</li> <li>Fewer children die</li> <li>Women stay in education longer and marry later</li> </ul> <b>Slowly decreasing death rate</b> <ul style="list-style-type: none"> <li>Same as stage 2</li> </ul>	<b>Low birth rate</b> <ul style="list-style-type: none"> <li>Birth control widely used</li> </ul> <b>Low death rate</b> <ul style="list-style-type: none"> <li>Continued improvement to medical care, sanitation and food/clean water availability</li> </ul>	<b>Very low birth rate</b> <ul style="list-style-type: none"> <li>Status of women and equal rights. Women have fewer children and far later in life.</li> </ul> <b>Slightly increasing death rate</b> <ul style="list-style-type: none"> <li>There are more old people = more deaths.</li> </ul>

**NIGERIA IS A NEWLY EMERGING ECONOMY.**

Location	North of the equator in west Africa. It borders four countries (Chad, Cameroon, Niger and Benin). The Atlantic Ocean is found along its southern coastline. Its two largest cities are Abuja and Lagos.
Population	182 million. Since 1990 the number of people living in cities has increased to over 87 million people.
Nigeria is considered important because...	<ol style="list-style-type: none"> <li>1. It has the fastest growing economy in Africa. In 2014 it became the world's 21<sup>st</sup> largest economy.</li> <li>2. It has the highest agricultural output in Africa, employing 70% of the population.</li> <li>3. It supplies 2.7% of the world's oil, making it the 12<sup>th</sup> largest producer.</li> <li>4. Political global links, working with the UN within peacekeeping.</li> <li>5. It is a role model for other African countries who hope to develop.</li> </ol>

**NIGERIA'S ECONOMY**

What does Nigeria import?	Telephones, cars, rice and wheat to China, EU, USA, India, Japan
What does Nigeria export?	Oil, agriculture – rubber, cocoa, cotton to EU, USA, China, India, Indonesia, Brazil
What does Nigeria's economy look like?	Most people work in the primary sector, however the secondary and tertiary sectors are rapidly growing.
Why has Nigeria's economy changed?	<ul style="list-style-type: none"> <li>• Increased used of farm machinery and better pay/better working conditions in manufacturing industries = decline in primary sector.</li> <li>• A more stable government = rise in investment from HICs = rise in secondary manufacturing.</li> <li>• Improved trade links and increased number of people who speak English = increase in telecommunications, finance (tertiary sectors).</li> </ul>
Multiplier effect	When one change = more changes.
How has Nigeria's economic change benefitted Nigeria?	<ul style="list-style-type: none"> <li>• Better and more regular wages = more disposable income = more money spent in local businesses = improved local economy.</li> <li>• Increase in employment and wages = increase in taxes = government has more money to develop healthcare, education, access to food.</li> <li>• Successful factories = increase in foreign investments who want to open factories in Nigeria = more jobs = further economic growth.</li> </ul>

**Nigeria's context**

Social	<ul style="list-style-type: none"> <li>➢ Multi-ethnic – there are many groups of people who identify with different cultures and traditions (e.g. Yoruba, Hausa and Fulani, Igbo)</li> <li>➢ Multi-faith – there are many religious groups (e.g. Christianity, Islam and traditional African religions).</li> </ul> <p>This social diversity has often resulted in conflicts between different groups.</p>
Political	Prior to 1960 Nigeria was a British colony. In 1960 it gained independence. Until 1970 there were power struggles and civil wars as groups tried to gain power. Since 1999 it has had a stable government = lots of foreign investment.
Environmental	<p><b>North:</b> savannah and semi-desert. In the savannah lots of farming occurs (cattle, cotton, millet). Drier in the north.</p> <p><b>South:</b> rainforest. High rainfall and temperatures. Crops – rubber, cocoa, oil palm. It suffers from the tsetse fly so not many cattle.</p>
Cultural	Rich culture with famous authors (Wole Soyinka), footballers, musicians (Fela Kuti) and film industry (Nollywood).

**Links with the wider world – Nigeria is linked with a number of African and global groups.**

Commonwealth	It has equal status with all countries in the commonwealth, including the UK
African Union	Economic planning and peacekeeping group with Niger, Chad, Benin and Cameroon. It provides troops.
United Nations (the UN)	In 2013 Nigeria was the 5 <sup>th</sup> largest contributor of troops for peacekeeping.
ECOWAS	Economic Community of West African States is a trading group
CEN-SAD	Community of Sahel-Saharan States is a trading group.

**TRANSNATIONAL CORPORATIONS IN NIGERIA HAVE INCREASED DUE TO GLOBALISATION.**

Globalisation	The increase in links between countries, made easier by improved communications (internet, smart phones) and transport (airplanes, ships).
Transnational corporations (TNCs)	A company that has offices/factories in several countries. There are around 40 TNCs in Nigeria, such as KFC, Unilever and Shell Oil.
Example of TNC in Nigeria	Shell Oil is an Anglo-Dutch company with its headquarters in the Netherlands. It has been extracting oil from the Niger delta since 1958.
Advantages	<ul style="list-style-type: none"> <li>• Jobs. Shell provides 65,000 jobs and a further 250,000 jobs in related industries (e.g. companies who make parts for the oil rigs)</li> <li>• People have more money to spend in local shops = boosts local economy.</li> <li>• Country earns money from increased exported goods and increased taxes.</li> <li>• TNCs often invest in the local infrastructure and education.</li> </ul>
Disadvantages	<ul style="list-style-type: none"> <li>• Working conditions/wages are bad.</li> <li>• Oil spills = water pollution = reducing crop production and fishing yields.</li> <li>• Much of the profits generated goes abroad to the country where the TNC has their headquarters.</li> <li>• Oil Theft and sabotage are big problems in the Niger delta.</li> </ul>



### Negative environmental impacts of rapid economic development

<b>Industrial Growth – increase in factories and industrial plants. More specifically.....</b>	An increase in factories and industrial plants due to industrialisation. As a result.....	<ul style="list-style-type: none"> <li>Water pollution caused by chemical waste from factories in Kaduna, Kano and Lagos.</li> <li>Air pollution caused by factories releasing harmful gases into the atmosphere.</li> </ul>
<b>Growth of oil extraction. More specifically.....</b>	TNCs, such as Shell Oil, drill for oil in the Niger Delta. It is Nigeria's main source of income. As a result.....	<ul style="list-style-type: none"> <li>Oil spills in Niger Delta = fires, air pollution, acid rain, water pollution...etc. For example <b>Bodo Oil Spill (2008-9)</b> Leaks in a pipeline = 11 million gallons of crude oil to spill over the land. Farmers and fishermen lost their livelihoods. In 2015 Shell agreed to pay £55 million in compensation to be spent on health clinics and schools.</li> </ul>
<b>Urban Growth. More specifically.....</b>	Increase of people moving to urban areas due to growth of secondary industries (factories) <i>industrialisation</i> . As a result.....	<ul style="list-style-type: none"> <li>Not enough houses = squatter settlements are formed.</li> <li>Not enough services or waste disposal = unhygienic rubbish on ground.</li> <li>Not enough roads = traffic congestion and pollution.</li> </ul>
<b>Growth of commercial farming. More specifically.....</b>	Large farms are created to grow crops to export. This is the main source of employment in Nigeria. As a result.....	<ul style="list-style-type: none"> <li>70-80% of Nigeria's forests have been deforested = many species have disappeared (<i>cheetahs and giraffes and nearly 500 types of plants</i>)</li> <li>Farming has caused land erosion and groundwater pollution due to harmful chemicals leaking into soil and river channels.</li> </ul>

### To what extent has development in Nigeria improved quality of life?

<b>On the one hand:</b> <b>Social benefits:</b> <ul style="list-style-type: none"> <li>Better paid jobs in manufacturing and service industries = more disposable income = more money spent on schooling, homes, food, clothes...etc.</li> <li>More taxes = more money spent on services (clean water, sanitation, electricity), infrastructure, health care = better transport, longer life expectancy, lower death rate...etc.</li> </ul> <b>More specifically, the HDI shows.....</b> <p>A steady increase since 2005 and it is expected to continue.</p> <ul style="list-style-type: none"> <li>2000 Nigeria was among the <i>least developed nations</i> in terms of wealth and education, where in 2011, Nigeria had one of the highest HDI improvements in the world over the last decade.</li> </ul>		<b>Aid in Nigeria</b>	
		<b>Types of aid</b>	<ul style="list-style-type: none"> <li>Emergency aid: aid given immediately after a disaster or war (e.g. food, shelter, medical supplies)</li> <li>Developmental long-term aid: aims at improving quality of life over a longer time (e.g. WaterAid, schools, roads, electrical supplies)</li> </ul>
		<b>Aid can be given by....</b>	<ul style="list-style-type: none"> <li>Rich individuals, charities and non-governmental organisations (NGOs) (e.g. Oxfam, WaterAid)</li> <li>Governmental aid from countries (e.g. UK, USA) and International Organisations (e.g. World Bank, International Development Agency (IDA))</li> </ul>
		<b>Why does Nigeria need aid?</b>	<ul style="list-style-type: none"> <li>60% of Nigerians (100 million) live on less than \$1/day (£0.63p/day).</li> <li>Nigerians live with limited access to clean water, sanitation and electricity.</li> <li>Birth rates and infant mortality rates are high and life expectancy is low.</li> </ul>
<b>On the other hand:</b> <b>Social issues:</b> <p>60% of Nigerians (100 million) live on less than 1\$/day, with limited access to clean water, sanitation or reliable electricity.</p> <b>Environmental issues:</b> <p>See above (air and water pollution, deforestation, oil spills...etc.)</p>		<b>This is due to...</b>	<ul style="list-style-type: none"> <li>Corruption by individuals or the government = money is diverted by the government to other projects (e.g. the military or navy)</li> <li>People give aid but insist on where it is spent. This is not always in the best interest of the people.</li> </ul>
<b>Conclusion:</b> <b>Overall I believe.....</b> <p>Economic development in Nigeria has benefitted the country.</p> <b>Most importantly.....</b> <p>The key problems, such as high death rates and a lack of services are being improved due to higher wages = higher taxes = more money to spend on healthcare and infrastructure.</p> <b>Additionally.....</b> <p>Higher wages have meant Nigerians are able to spend more money on their children's education and improve access to food and clean water.</p> <b>Although.....</b> <p>Over 100 million Nigerians live with limited access to services, <i>without</i> the recent investment more people would be suffering today. Having said this there is still more work to be done:</p> <ul style="list-style-type: none"> <li>Nigeria must have a consistently stable government to increase foreign investment.</li> <li>Nigeria must gain peace between religious and ethnic groups to avoid conflict</li> <li>Nigeria must impose sanctions to avoid future oil spills in the Niger Delta.</li> </ul>		<b>Examples of Aid in Nigeria:</b>	
		<b>The World Bank</b>	Gave \$500 million to fund long term business loans in 2014.
		<b>Nets for Life</b>	Provide education and mosquito nets to help prevent malaria.
		<b>UK</b>	Provide a health and HIV programmes, providing health education in rural areas.
		<b>USA</b>	Provide education and protection against the spread of HIV/AIDS.
		<b>Aduwan Centre</b>	<p>In 2010, northern Nigeria, ActionAid and the World Bank, built a new health clinic. This supported people by:</p> <ul style="list-style-type: none"> <li>Local women were trained to educate mothers about the importance of immunising their children against polio and other diseases. <i>Develops skills and knowledge, long term, helps important problem, involves local community</i></li> <li>Tests for HIV and immunises children against polio. <i>Helps important problem.</i></li> </ul>

THE UK'S ECONOMY		Economic Sectors	
How has the UK's economy changed?	<ul style="list-style-type: none"><li>➤ 1600s: primary (farming)</li><li>➤ Late 18<sup>th</sup> century: industrialisation resulted in the rise of secondary factories (manufacturing).</li><li>➤ 1950s: de-industrialisation = decline in factories &amp; manufacturing.</li><li>➤ 1970s: post industrial economy. Most people work in tertiary and quaternary sectors.</li></ul>	Primary	Extraction of raw materials (agriculture, mining, fishing)
		Secondary	Manufacturing of raw materials (food processing, clothes, oil refinery)
		Tertiary	Selling of services and skills (education, health service, transportation)
		Quaternary	Information and research services (ICT, computing, research, consultancy)
Why did de-industrialization occur?	Factories moved abroad because: <ul style="list-style-type: none"><li>➤ It is cheaper and there are less strict environmental laws.</li><li>➤ Improved trade links (World Trade Organisation, EU) and transport links makes it easy to trade between countries.</li><li>➤ Improved communications and IT. The internet = people can store information online which can be accessed anywhere in the world = easy to have offices communicating and sharing information internationally.</li></ul>	Rural Populations in the UK - 19% of the UK's population live in rural areas. This is constantly changing.	
		South Cambridgeshire Positive impact:  Negative impact	Rising population due to counter-urbanisation (urban to rural migration), made possible by improved transport links = people are able to commute. <ul style="list-style-type: none"><li>• Increase in customers = businesses do better, schools have more students.</li><li>• Increase in congestion, petrol prices rise due to higher demand, house prices increase due to higher demand, loss of greenfield sites due to new developments.</li></ul>
		Outer Hebrides  Positive impact: Negative impact	Declining population. Their population is 27,400 and has declined by 50% since 1901. Due to outward migration – people leave to look for better paid jobs and entertainment. <ul style="list-style-type: none"><li>• Tourism opportunities as people go to outer Hebrides to walk.</li><li>• Lack of customers = shops close down, lack of students = schools close down, younger people move away = an elderly population.</li></ul>
		Improvements in transport in the UK	
The UK's Tertiary sector		ROADS	Added 100 new roads and 100 miles of new lanes They have also created <b>smart motorways</b> (e.g. M4), which have varying speed limits & extra lanes.  Positive impact: Negative impact:
How much money does the tertiary sector earn the UK?	<ul style="list-style-type: none"><li>• 1948: 46% of the UK's GDP</li><li>• Today: 79% of the UK's GDP</li></ul>	Positive impact: Negative impact:	Reduces congestion and reduces journey time. Encourages people to drive = more pollution. Extra lanes = loss of habitats.
The UK is the world's leading centre for...		Financial services (finance, insurance). This accounts for 10% of the UK's GDP and employs 2 million people.	
The UK's Quaternary sector		RAIL	Cross rail: railway from east to west London. They expect 200 million people to use it.  Positive impact: Negative impact:
How much does the quaternary sector earn?	£3 billion/year and employs 75,000 highly qualified people.	Positive impact: Negative impact:	It will reduce congestion on trains (fewer people) and make it easier for people to commute to London from further away. It will cost £14.8 billion.
Science Park	A site on which high-tech industries carry out scientific research.	Positive impact: Negative impact:	High Speed 2: rail line from London to the midlands and north. Reduces journey times, helps businesses in the north, reduce congestion on the roads. It will cost £42 billion, will cause visual/noise pollution and affect airlines as more people use the train.
Cambridge science park is located...	On the outskirts of Cambridge city. It opened in 2014 and is home to 1500 IT biotechnology companies based there.		
Advantages	<ul style="list-style-type: none"><li>• Good transport (M11 to London &amp; Stansted Airport)</li><li>• Highly skilled graduates from Cambridge University.</li><li>• Close to the city – shops, entertainment options</li><li>• Close to rural open spaces – green areas/woodland</li><li>• Edge of the city so more space and cheaper rent.</li></ul>	AIRPORTS	Plans to build a 3 <sup>rd</sup> runway at <b>Heathrow Airport</b> . Boost economy by over £200 billion, improve UK's global links, provide jobs. It will cost £18.6 billion, cause pollution (air, visual, noise) & villages will be relocated
		PORTS	London Gateway Port opened in 2013. It can accommodate the largest ships (up to 400m long and carrying 18,000 containers!) It will employ 8000 people in the port and next door logistics park. It will increase congestion in the surrounding area.
Disadvantages	<ul style="list-style-type: none"><li>• City can be overcrowded/congested</li><li>• House prices are expensive in cities</li></ul>	Positive impact: Negative impact:	

### EXAMPLE OF A MODERN INDUSTRY: NISSAN

The car industry is one of the few large-scale manufacturing industries left in the UK. More than 1.5 million new cars are made in the UK every year (Nissan, Honda, BMW).

#### How does the car industry harm the environment?

Manufacturing	<ul style="list-style-type: none"> <li>Cars are made from steel, rubber, glass, plastic...etc. Making these uses energy = pollution.</li> <li>To manufacture a car, it uses a huge amount of energy. To generate this energy, it produces a large amount of pollution.</li> </ul>
Lifetime	<p>Most cars run on petrol or diesel. Both are made from oil.</p> <ul style="list-style-type: none"> <li>Drilling and transporting oil can result in oil spills.</li> <li>Using petrol or diesel in cars causes air pollution (carbon dioxide &amp; nitrogen dioxide).</li> </ul>
Disposal	Cars usually end up on the scrapheap. Acid in the car batteries can leak into the ground and harm ecosystems.

#### How can the car industry be more sustainable?

Manufacturing	The 2003 Government's 'End of Life Vehicle' regulation requires manufacturers to recycle parts = less new materials need to be made = less energy used.
Lifetime	Electric and hybrid cars have been developed (e.g. Nissan Leaf) that use electricity to power the car till 30mph and then petrol/diesel after = less pollution. Also they are lighter and so burn less fuel when driving.
Disposal	The 2003 Government's 'End of Life Vehicle' regulation requires manufacturers to take back vehicles that are at the end of their life and dispose of them in an environmentally friendly and safe way. As a result less waste goes to the landfill.

### THE NORTH – SOUTH DIVIDE

The cultural and economic differences between the north and south of England.

Examples of the north – south divide	<ul style="list-style-type: none"> <li>North: lower standard of living, shorter life expectancy, less jobs, lower wages, lower house prices</li> <li>South: higher standard of living, longer life expectancy, more jobs, higher wages, higher house prices.</li> </ul>
Why does the divide exist?	<ul style="list-style-type: none"> <li>Lack of employment in the north due to de-industrialisation. There were more factories and coal fields in the north. When these closed down = unemployment.</li> <li>More jobs &amp; higher wages in the south due to the creation of a post industrial economy. Tertiary jobs, with high wages are in urban areas = more urban areas in the south.</li> </ul>
How are they reducing the divide?	<ul style="list-style-type: none"> <li>Better transportation to connect north with south and wider world (HS2, new ports, smart motorways) = better links for businesses.</li> <li>Investment from government and EU to improve businesses (e.g. Nissan opened car manufacturing plant near Newcastle in 1984).</li> <li>Local Enterprise Partnerships (LEPs) are created to help local businesses succeed = boost local economy. This will create new jobs, improve infrastructure and develop area)</li> </ul>

### HOW IS THE UK LINKED WITH THE WIDER WORLD?

<p><b>Commonwealth</b></p> <p>The British Empire once covered 1/3<sup>rd</sup> of the world. During the late 20<sup>th</sup> century, most countries gained independence = the creation of the COMMONWEALTH: a group of 53 countries, including India and Canada.</p> <p><b>How does this link the UK with the wider world?</b></p> <ul style="list-style-type: none"> <li>Countries meet every 2 years to discuss current issues.</li> <li>The UK trades with other Commonwealth countries.</li> <li>Many people of British descent now live in Australia and Canada.</li> <li>The Commonwealth Games is held every 4 years.</li> <li>All countries share common values, such as democracy and human rights.</li> </ul>	<p><b>European Union</b></p> <p>In 1973 the UK joined the European Union. The EU allows the free movement of people, goods and services between the member countries. It is an important trading group with a total of 28 countries, such as France, Italy, Spain, Germany and Belgium.</p> <ol style="list-style-type: none"> <li>Financial support for farmers. In 2015, £18 million was used to support dairy farmers in the UK.</li> <li>Since the early 20<sup>th</sup> century, 10 Eastern European countries have joined the EU. Since, many people from these countries have migrated to the UK looking for better paid work.</li> <li>The UK support poorer members by paying more money into the EU.</li> </ol>
<p><b>Transport</b></p> <ul style="list-style-type: none"> <li>Airports connect the UK with many countries: <i>Canada, USA, South Africa, Singapore and India.</i></li> <li>The Channel Tunnel is a railway line that connects the UK &amp; mainland Europe.</li> </ul> <p><b>Communication</b></p> <p>The internet is the biggest contributor to the UK connecting with other countries. It has had a huge impact on businesses and our economy.</p> <ul style="list-style-type: none"> <li>In 2013, on average 183 billion e-mails were sent and received each day. This is 2.1 million every second.</li> <li>In 2014 90% of people in the UK used the internet, compared to just 27% in 2000.</li> </ul>	<p><b>How does this affect the UK?</b></p> <p><b>Trade within the EU</b></p> <p>Most of the UK's trading partners are within the EU. This is because:</p> <ul style="list-style-type: none"> <li>The UK is part of the EU, which encourages trade between EU countries.</li> <li>EU countries are closer to the UK and therefore it's easy to transport goods</li> <li>European countries are wealthy, which means they can afford more expensive goods.</li> </ul> <p>The top countries the UK exports to: USA, Germany, Netherlands, France, Switzerland</p> <p>The top countries the UK imports from: USA, Germany, Netherlands, France and China.</p>

## WORLD'S ESSENTIAL RESOURCES

**Food**

Food is important because it affects your health. The World Health Organisation says we need 2000-2400 calories per day to be healthy. If you do not have sufficient food you become malnourished or suffer from undernutrition.

- Food surplus: North America, Europe, Australia, Russia, UK, USA
- Food deficit: Africa (e.g. Chad, Congo, Ethiopia)

**Water**

Water is important as we need it for our health and for economic development (agriculture, manufacturing, cleaning, drinking).

- Water surplus: areas where there is high rainfall and water storage (aquifers/reservoirs). E.g. USA, Canada, Europe, Russia
- Water deficit: areas where there is low rainfall and a lack of water storage. E.g. Africa, Brazil, Argentina, Australia, China.

**Energy**

Energy is important because it is used to build homes, heat homes, power machinery, make food...etc. It is also traded between countries and so helps a country develop.

HICs consume (use) far more energy than LICs and NEEs.

- LICs – use very little energy (few machines, lack of processed foods, few families use power in their homes).
- NEEs – use more energy (increase in factories = increased use of machines = more energy used).
- HICs – use the most energy (lots of energy used in industries and homes, people eat a lot of processed foods).

**FOOD in the UK**
**40% OF FOOD IN THE UK IS IMPORTED.**
**Why?**

- Food is cheaper to make food in LICs.
- Demand for exotic foods (mangoes, bananas)
- Demand for seasonal foods all year round.
- Some foods cannot be grown in the UK.

**Problem:**

Increase in food miles (distance travelled by food to our plate) = increase in carbon footprint (the amount of CO2 a country produces).

**SOLUTION**
**Organic Farming**

Small scale farming that produce local, seasonal food without the use of chemicals.

- Uses natural predators instead of pesticides
- Crop rotation is used instead of fertilisers
- Grows seasonal food locally.

**Disadvantage**

It is usually more expensive because yields are low (less food is produced) and more people are employed, due to lack of machinery used. This means they need to charge a lot to make a profit.

**Agribusiness**

Large scale intensive farms that use lots of machinery and chemicals to increase food production.

- Hedges are cut down = large fields
- Machinery (combine harvester, tractors)
- Fertilizers used to add nutrients to the soil
- Technology – GM crops, hydroponics, high yielding varieties

**Advantage**

More food can be produced = less needs to be imported. Use of machinery = fewer people employed = cheap food.

**Disadvantage**

It can harm the ecosystem due to use of chemicals = water pollution.

**WATER in the UK**
**Water surplus**

Areas with high rainfall and low population (*Wales & Scotland*)

**Water deficit**

Low rainfall and high population (*south east England and parts of central England*).

**Water transfer scheme**

Water is moved from areas of surplus to areas of deficit. The government proposed a UK wide water grid in 2006, however it was not built due to high costs and impact on ecosystems. Some water transfer schemes do exist.

The demand for water in the UK has increased in recent years. In fact households use 70% more water. This is because:

- More wealth = more household appliances that use water
- Population increase & people wash more often

**HOWEVER ONLY 27% OF WATER IN THE UK IS CLASSIFIED AS CLEAN.**
**Causes**

- Fertilizers in farming go into rivers
- Chemical waste from factories pollutes rivers
- Sewage is pumped into the sea
- Oil from cars and boats goes into rivers/sea

**Impacts**

- Waste from factories = toxic water = harm wildlife & humans
- Fertilizers get into water = growth of algae = lack of oxygen and light in the pond = wildlife die (eutrophication)
- Bacteria from sewage plants = diseases in river

**Management**

- UK has strict laws to control waste production and disposal
- Chlorine added to water to remove bacteria.
- Water treatment plants remove bacteria, algae and chemicals
- Sewage systems are improved (e.g. the Tideway project in London)

**ENERGY in the UK**

*The UK's energy mix is...*

- 52.6% fossil fuels, 21% nuclear energy,
- 24.7 renewable energies

*Fossil fuels will be used less because...*

- 75% of oil and gas reserves are gone
- 100% of coalfields are closed down
- The EU fines companies who release too many greenhouse gases

*Renewable energies will be used more because...*

The government has been investing in these sources.

*Fossil fuels will continue to be used because...*

- Coal is cheap to import
- New nuclear stations and renewable energy infrastructure is expensive

**Economic and Environmental impact of each energy type**
**Fossil Fuels**

- Ec. Coal must now be imported from South Africa.
- Ec. Fossil fuels release greenhouse gases = global warming. The impacts of global warming are expensive to fix
- En. Greenhouse gases = global warming.
- En. Coal mines need land to be cleared = loss of habitats
- En. Waste from mines = visual and noise pollution


**Renewable Energies**

- Ec. New infrastructure is expensive to build
- Ec. They are unreliable
- En. Wind turbines and solar panels = visual and noise pollution and affect ecosystems.

**Nuclear Power**

- Ec. Nuclear power stations are expensive to build (£18 billion)
- Ec. Radioactive waste must be carefully stored = expensive.
- En. Warm water waste can harm local ecosystems
- En. Radioactive leaks harm people and wildlife (e.g. cancer)



Food consumption	<p>Where food is eaten. High food consumption in HICs (<i>USA, Canada, UK, France</i>) and low food consumption: LICs (<i>many African countries</i>)</p> <p>Future development and population growth will affect food consumption patterns.</p> <ul style="list-style-type: none"> <li>• Countries with increasing populations need more food for the extra people.</li> <li>• As a country develops, people start to eat more meat and processed foods.</li> </ul>	STRATEGIES TO INCREASE FOOD SUPPLY	
Food security	<p>A population has access to safe, affordable, nutritious food to maintain a healthy and active life.</p>	<p><b>The Green Revolution</b> started in the 1960s. It aimed to increase food supply by using pesticides, Fertilizers and high yielding varieties of seeds. <b>Unfortunately global population grew faster = not enough food produced.</b></p> <p><b>The New Green Revolution</b> was later introduced, which aimed to increase food production at the same rate as population rise through using:</p> <ul style="list-style-type: none"> <li>✓ <b>GM crops, irrigation, crop rotation and appropriate technologies</b> (strategies that are appropriate to where they are being used) →</li> </ul>	
Food insecurity	<p>When a population does not have access to enough safe, affordable and nutritious food.</p>	<p><b>Hydroponics</b></p> <p><b>Aeroponics</b></p>	<p>Plants are grown in a nutrient rich water.</p> <p>Plants are suspended in the air and their roots are sprayed with a fine mist of water and nutrients</p>
Undernourishment	<p>A poor diet with a lack of nutrients and vitamin</p>	<p><b>Advantages</b></p>  <p><b>Disadvantages</b></p>	
CAUSES OF FOOD SURPLUS/FOOD DEFICIT			
WATER SUPPLY (physical)	<ul style="list-style-type: none"> <li>• Reliable rainfall = food surplus as there is enough water to grow crops.</li> <li>• Lack of rain (droughts), too much rain (floods) = food deficit as crops are destroyed.</li> </ul>	<p><b>Biotechnology</b></p> <p>Plants are genetically modified (GM) to make them resistant.</p> <ul style="list-style-type: none"> <li>• <i>Resistant to pests, diseases, salty soils, droughts...etc.</i></li> <li>• <i>Increase the vitamins in the crops or increase the food's shelf life.</i></li> </ul> <p><b>Advantages</b></p> <ul style="list-style-type: none"> <li>✓ The use of GM maize in the Philippines has increased yields by 24%. Increased yields = more products are sold = higher income = people can buy more food.</li> </ul>	
TEMPERATURE (physical)	<ul style="list-style-type: none"> <li>• Extreme temperatures = deficit as crops cannot grow.</li> <li>• Mild temperatures = surplus as crops easily grow.</li> </ul>	<p><b>Disadvantages</b></p> <ul style="list-style-type: none"> <li>• It requires expert knowledge/skills and can be expensive, therefore less suitable in LICs</li> <li>• Some consumers say the food doesn't taste as good as traditional farming.</li> </ul>	
PESTS & DISEASES (physical)	<ul style="list-style-type: none"> <li>• LICs crops are destroyed by more pests and diseases due to their warm climates and lack of pesticides and GM crops = food deficit.</li> <li>• HICs use GM crops and pesticides = less crops die = food surplus.</li> </ul>	<p><b>Irrigation</b></p> <p>Irrigation is the artificial watering of land. It means that crops always have enough water to grow = increase in crop yields (more crops produced).</p> <ul style="list-style-type: none"> <li>• Large scale reservoir and dams. Water from the reservoir is used to irrigate the crops.</li> <li>• Flood irrigation – the whole field is flooded. Some people do not like it because it can cause waterlogging and uses a lot of water.</li> <li>• Sprinkler – a sprinkler sprays water over fields.</li> <li>• Drip irrigation – crops are watered just where the plants' roots are. Water flows through a pipe that had holes in it, every point there is a root. It means water is not overused.</li> </ul>	
POVERTY (human)	<ul style="list-style-type: none"> <li>• LICs cannot afford seeds, technology, irrigation, fertilizer = food deficit.</li> <li>• HICs can afford seeds, technology, irrigation, fertilizers, GM crops = food surplus</li> </ul>	<p>Irrigation can cause salinity – when irrigated water evaporates, leaving behind the salts and minerals on the soils and crops.</p>	
CONFLICT (human)	<p>War = food deficit because:</p> <ul style="list-style-type: none"> <li>• Farmers are fighting/not farming.</li> <li>• Political corruption = aid doesn't reach most vulnerable.</li> <li>• Food is used as a weapon and kept from most vulnerable.</li> </ul>		
IMPACTS OF FOOD SURPLUS/FOOD DEFICIT			
FAMINE & UNDERNUTRITION	<p><b>Famine: the widespread shortage of food.</b></p> <p><b>Undernutrition: the lack of a balanced diet (not enough minerals/vitamins).</b></p> <p><i>The UN estimates that 258,000 people died in Somalia due to food insecurity during 2010-12 famine. At the worst point, 30,000 people died each month.</i></p>		
RISING FOOD PRICES	<ul style="list-style-type: none"> <li>• Shortage of food = increase in demand of food = increase in price of food.</li> <li>• In LICs the shortage of food can cause the price of basic foods (e.g. rice/maize) to become too expensive.</li> </ul>		
FOOD RIOTS AND SOCIAL UNREST	<p>Shortage of food = conflict as people fight over food.</p> <p><i>In 2011, a food riot in Algeria lasted 5 days and killed 4 people. It was because the cost of cooking oil and flour doubled.</i></p>		
SOIL EROSION	<p>Soil erosion is when the top layer of fertile soil is removed by wind or water.</p> <p>It is caused by overgrazing, over-cultivation, deforestation and farming on marginal land</p>		



### STRATEGIES TO INCREASE FOOD SUPPLY SUSTAINABLY (increase food supply without harming the environment)

#### Organic Farming / Permaculture

- ✓ No chemicals are used.
- ✓ Rainwater is collected and recycled using water harvesting tanks.
- ✓ Natural predators are used instead of pesticides.
- ✓ Soil is kept fertile using manure/compost instead of fertilizers.
- ❖ *It is more expensive than mass produced food.*

#### Urban Farming

- Gardens are created on unused land in urban areas (allotments). These gardens are used to grow food.
- ✓ Economic – people can sell their produce.
  - ✓ Environmental – food does not travel far & brownfield sites are used.
  - ❖ *It is small scale. Not a lot of food is produced.*

#### Seasonal Food

- Food is only grown in the season it naturally grows in (e.g. strawberries in the summer and apples in the autumn).
- ✓ Food miles are reduced as food does not travel as far = fewer carbon emissions (reduced carbon footprint).
  - ✓ Boosts local economy as local food is brought.
  - ✓ Less energy is used to grow the food (no additional heat or light is needed).
  - ❖ *There is still a demand for exotic food and seasonal food all year.*

#### Reduce Food Waste

- If less food is thrown away, less food needs to be grown as less is wasted.

#### Promote Sustainably sourced food

- ✓ Buy meat from small scale (free range and organic) that use less energy
- ❖ *Do not buy meat from large scale intensive farms that use chemicals, lots of energy (in heating large indoor spaces) and produce lots of greenhouse gases.*
- ✓ Buy fish from fish farms that do not use chemicals, that use a pole and line, that use divers to catch shellfish, that only take the fish/shellfish they need, that meet EU requirements to only fish a certain amount.
- ❖ *Do not buy fish from large scale intensive fish farms that use chemicals, large nets (that catch all species rather than what they want) or that use seabed dredging to collect shellfish. This process lifts up the entire of the seafloor = ecosystems destroyed.*

### THANET EARTH: A LARGE SCALE AGRICULTURAL DEVELOPMENT

Thanet Earth is located in east Kent, in the south east of England.

#### What?

- **5 greenhouses** grow seasonal food all year using **hydroponics**.
- Large lights give **artificial sunlight** = longer growing seasons = crops can be grown all year round.
- **Rainwater is collected** into 7 onsite reservoirs for irrigation
- Each greenhouse has its own power station providing its heat & lighting. The energy produced is sold and the waste produced (*carbon dioxide and heat*) is recycled. It is pumped back into the greenhouses to help the plants grow.

#### ADVANTAGES

- 500 jobs.
- More food grown in UK, therefore less food imported = better food security.
- Less imported food = less food miles = less carbon emissions.
- Natural predators are used = less chemicals (pesticides) used.
- Hydroponics system reduces waste. The exact amount of water, nutrients, fertilisers are used.

#### DISADVANTAGES

- A large area of green farmland was built on = habitats lost/ecosystem disrupted.
- Money goes to large companies rather than local communities.
- Greenhouses use artificial lights = very bright = visual pollution.
- Energy is used to power the greenhouses, package the food and transport it to the supermarkets = release of greenhouse gases.

### THE MAKUENI FOOD & WATER SECURITY PROGRAMME: A LOCAL SCHEME IN AN LIC/NIC TO INCREASE FOOD SUPPLY SUSTAINABLY

#### Where?

Makueni is located in south Kenya (east Africa), 200km south east from Nairobi. I has a population size of 885,000 and receives 500mm of rain per year. They grow crops to feed their population (maize, sweet potatoes, millet), however due to a lack of rainfall, poverty, pests and lack of technology they cannot have food insecurity.

#### What?

**In April, 2004, the charity 'Just a Drop' joined forces with the African Sand Dam Foundation and:**

- Built a water harvesting tank on the roof of the school
- Built a sand dam.

#### What is a sand dam?



*A concrete wall is built across a river channel. During Kenya's rainy season, rain rushes down the slopes and picks up lots of sand/sediment. The concrete wall stops the water as it flows down the river. The energy of the river reduces = deposition of sand. Over the rainy season, more and more sediment is deposited, until eventually the river behind the dam is filled with sand. The sand is porous/permeable and so allows water to pass through. Eventually the sand river is full of water and acts as a aquifer. It benefits the community as they have access to water for drinking, irrigation, cleaning. Also none of the water is lost due to evaporation in the hot climate. It is sustainable because it is cheap, easy and does not require skills.*

#### How did it help?

- ✓ Crop yields increased as there was a reliable water supply.
- ✓ Waterborne diseases decreased as the sand filtered the water.
- ✓ Less time was wasted collecting water from far away streams = more time to study/work.
- ✓ Children at the schools in Makueni (e.g. Kanyenyoni Primary School (463 students) have access to a clean and safe water supply.