

Geography GCSE Revision Guide



Paper

2:

The

Human Environment

Topic areas included in this paper:

- **Changing Cities**
(including the Sao Paulo and Liverpool case studies)
- **Global Development**
(including the India case study)
- **Resource Management and Energy Resource Management**
(including the Germany and China case studies)

NOTE — Question 5 is an optional question on Water Resource Management. **DO NOT ANSWER THIS QUESTION**

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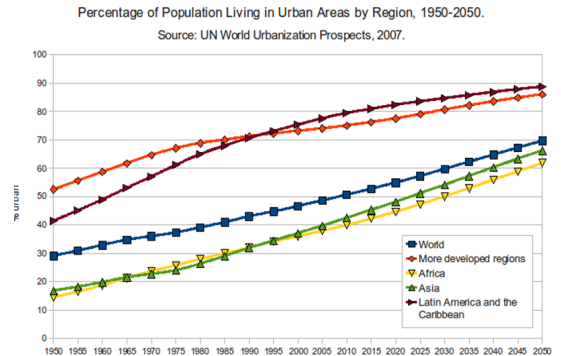
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Section A – Changing cities

4.1 Urbanisation is a global process

Global trends in urbanisation

The rates of urbanisation are increasing throughout the world.
 The rates of urbanisation are increasing faster in developing countries, than in the developed countries.
 The developing countries rates of urbanisation are still increasing, however at a slower rate.
 Urbanisation rates are highest in the more developed regions.



Developed countries causes and effects of urbanisation

Causes

There are more job opportunities in urban areas as businesses locate here.
 Transport links (train and road networks) are much better in urban areas, making movement around the area much easier.
 There are a greater variety of education facilities in urban areas, and very few in the rural areas.
 There is easy access to hospitals in urban areas, and these are much more spread out in rural locations.
 There is greater government investment in the urban areas, meaning better services such as access to clean water, electricity, internet etc.
 There are more police based in urban areas, creating a safer environment.

Effect

There will be a shortage of housing, causing house prices to increase in the urban areas.
 There is greater pressure put on services, such as schools, healthcare and police.
 There is growing tension between the urban residents and new comers to the area.
 The increased number of cars means that congestion is a problem in the urban area, also creating air pollution.
 Noise and light pollution is created from the growing urban population.
 The growth of the urban area means that natural land is lost to be built upon.
 There will be higher unemployment rates in the urban area due to the greater competition for jobs.

Developing or emerging countries causes and effect of urbanisation

Causes

There are more job opportunities in urban areas as businesses locate here.
 Due to mechanisation there has been a decrease in jobs in agriculture, forcing people to urban areas in search of jobs.
 Transport links (train and road networks) are much better in urban areas, making movement around the area much easier.
 There are a greater variety of education facilities in urban areas, and very few in the rural areas.
 There is easy access to hospitals in urban areas, and these are much more spread out in rural locations.
 There is greater government investment in the urban areas, meaning better services such as access to clean water, electricity, internet etc.
 There are more police based in urban areas, creating a safer environment.

Effect

Overcrowding will occur in the urban areas as the population increases.
 There will be a shortage of housing, causing house prices to increase in the urban areas.
 Slum towns may develop as there is not enough housing to accommodate the growing population.
 There is greater pressure put on services, such as schools, healthcare and police.
 The increased number of cars means that congestion is a problem in the urban area, also creating air pollution.
 Noise and light pollution is created from the growing urban population.
 The growth of the urban area means that natural land is lost to be built upon.
 There will be higher unemployment rates in the urban area due to the greater competition for jobs.

Section A – Changing cities

4.2 The degree of urbanisation varies across the UK

Distribution of urban population across the UK

The map shows the distribution of major urban areas in the UK.

The largest population is in London, with almost 10 million residents. This is followed by Birmingham (West Midlands) and Manchester (Greater Manchester), with 2.5 million residents.

These areas have grown for a range of reasons, such as 1) port developments for trade (e.g. Liverpool), 2) the location of natural resources (e.g. Aberdeen close to North Sea oil deposits), 3) due to the tourist industry (e.g. Brighton), or 4) due to the industrial revolution and location of industry (e.g. Manchester)



Factors affecting urbanisation rates across the UK

Physical factors

Land to the north of the UK (like the Grampian Mountains) and west of the UK (like central Wales) is mainly higher, **mountainous land**, therefore it is harder to build settlements and rates of urbanisation are low.

Urbanisation rates are high in **coastal locations**, due to trade links from here. Liverpool, Bristol and Glasgow are located near the Atlantic Ocean. Historically this was also helpful when Britain was part of the Atlantic Slave trade.

Economic factors

London is a **world class financial centre** (Canary Wharf) attracting major banking industries from around the world. This also attracts skilled workers who want to work within the banking industry.

The **Government choose to invest** in certain areas, which therefore encourage urbanisation into those areas. E.g. Liverpool docklands regeneration has attracted many businesses and people to Liverpool.

Historical factors

During the **industrial revolution** in the 19th century, **coalfield towns grew**, such as that in Swansea, in South Wales. These areas continued to grow due to the fact that coal was available and city features were set up.

Rivers historically provided a supply of fresh water and also make good ports. This led to urbanisation in these areas. (e.g. Liverpool located on the river Mersey or London located on the river Thames).

Social factors

Internet access and mobile phone accessibility is poor in remote areas of the UK, such as the Scottish Highlands. Therefore many people choose to locate in urban areas, like Liverpool, where these **social resources** are much better

Good educational resources (e.g. universities) attract people to locate in the major urban areas. Liverpool has 4 major universities attracting people to locate here.

Section A – Changing cities

4.3 The context of the chosen UK city influences its functions and structure

Site, situation and connectivity of the chosen UK city—Liverpool

Liverpool is located in North West England, built on flat land (ease of building on). It has a coastline with the Irish Sea to the west (historically due to trade). It is located on the River Mersey (historic water source), dividing Liverpool and the Wirral. It is Located 30km to the west of Manchester and south of Preston and Blackpool.

Liverpool is a well connected city:

- Port for trading across the world (historically slave triangle).
- National train station (Lime Street), connecting Liverpool to the rest of the UK.
- International Airport connecting with the rest of the UK.
- Major motorways (M57, M58, M62, M56).



Chosen UK city, Liverpool, structure (Central Business District (CBD), inner city, suburbs, urban-rural fringe)

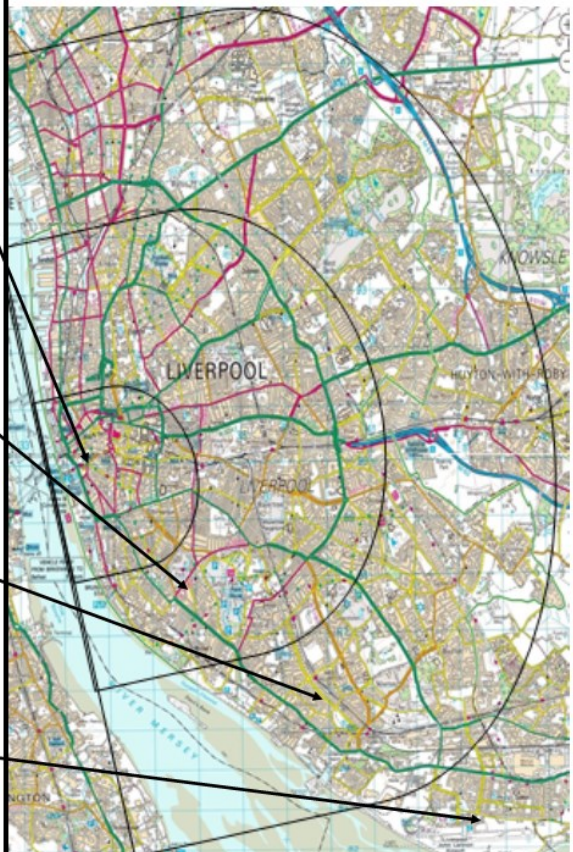
There are 4 main parts of every city:

CBD (Central Business district) - The middle of the city has a very high density of buildings and the oldest and tallest buildings. It has the most important shops, businesses, buildings (e.g. hospital, cathedral, museums etc) and facilities. The land here is very expensive. It is also where main roads and train lines converge (meet), with major bus and train stations located here.

Inner city - The function of the area is residential and light industry. There is high density terraced housing in this area. The housing is old. There is very little green space, and most houses do not have a garden or off road parking facilities. These houses were historically built so that workers could live close to their place of work in the CBD

Suburbs - Housing is a much lower density and mainly consists of semi detached or larger detached homes. Most have gardens and off road parking. Often there are open spaces (parks), schools and hospitals. This area is newer built and the land is often cheaper as it is further away from the city, but with transport links leading into the city from these areas. Historically the suburbs grew as transport facilities improved (e.g. greater car ownership or improved public transport)

Urban-rural fringe - This refers to the outskirts of the city. Much of this area is green belt land, which means it is protected from development and building here, creating a countryside environment. There are some new housing estates build here as the population increases in size and demand for housing increases. Also out of town shopping centres can often be approved to locate here



Section A – Changing cities

4.4 The chosen UK city is being changed by movements of people, employment and services

Causes of national and international migration into Liverpool, and the impact on different parts of the chosen UK city

Causes

- Recent regeneration projects have taken place in Liverpool (Albert Dock and L1) make the area an attractive location with a range of services (shops, modern accommodation etc.).
- Liverpool attracts businesses due to good transport links and a large number of educated people in the city; therefore there are good job opportunities in Liverpool.
- Liverpool has very good transport links across the city, with bus services, train services, and ferry services. It also has a range of bikes that can be hired across the city .
- Liverpool has very good transport links with other countries across the world; international transport links by John Lennon Airport, and the Liverpool docks.
- Liverpool has 4 good universities within the city attracting younger people for further education.
- Liverpool is a multicultural city, receiving the European Capital of Culture award in 2007. This mean that a range of cultural shops, services and facilities have been set up across the city, attracting further migrants.

Effects

- There will be increased pressure on the healthcare across the city, in hospitals (e.g. the royal Liverpool Hospital) GP surgeries and dentists.
- There will be increased demands for shops/services in Liverpool, which would increase employment opportunities for residents.
- Some of the earning of migrants is sent back to their host country to support family members, taking money out of the local economy.
- Economic migrants into Liverpool create a large pool of labour, supporting economic growth within the city.
- There will be increased diversity of cultures within the city. For example Liverpool has a China Town , and celebrates festivals for a variety of cultures around the world.
- There are tensions between the migrants and the existing residents due to a language barrier or intolerance towards different customs and beliefs.
- House prices will rise as demand increases for housing within the city. This could lead to a shortage of housing and people forced to live in sub standard housing.
- Migrant children will need to be accommodated in schools, putting pressure on schools and teachers to cater for students who may not speak English.
- Segregated areas have developed across the city, where groups of migrants will live together, away from the majority of society. This can heighten tensions between groups.
- Retiree migrants into Liverpool have increased the number of age related services in certain areas, such as Formby (such as golf clubs and bingo halls). The money spend by the retirees is known as the 'grey pound'.
- The age structure of Liverpool has changed, with an increasing population aged between 20-35. Shops and services within the city centre have become largely focused towards these groups (e.g. bars, clothing shops etc) .
- There is a greater ethnic mix, and areas such as Toxteth (an ethnic enclave) has a high proportion of ethnic minorities and so now contains a mosque, Chinese shops and Indian clothing shops.
- Large, high density flats have been built in the city, such as that along Scotland Road, to accommodate the growing population.
- Council tax in the city has had to increase to support the growing pressure on services, due to an increased population in Liverpool.

Section A – Changing cities

4.5 Globalisation and economic change create challenges for the chosen UK city that require long-term solutions

The sequence of urbanisation, suburbanisation, counter urbanisation and re-urbanisation processes for the chosen UK city, Liverpool.

Urbanisation

In 1648 Liverpool began to be used as a port. It grew as a city because of its location. It is located on the mouth of the River Mersey which allowed large ships to dock here. It also was close to the Atlantic Ocean for trade with the USA. Liverpool grew in population and status during the slave trade in the 18th and early 19th century rivalling London for business and wealth. After the slave trade Liverpool continued to be a wealthy city due to the industrial revolution and its good transport links (the Manchester Canal—later being connected to Leeds and the railway line). The main trade it was involved in was the cotton trade. This attracted people and businesses to the city

Suburbanisation

Large estates were built in Liverpool (both council and private housing) these were built on the outskirts of the city. They were often bigger houses with gardens (rather than paved yards in terraced housing) the estates often had a well structured layout with wide tree lined roads, green spaces such as parks, and less congested roads. This resulted in many people moving out of the inner city to the suburbs. E.g. The Speke estate built in 1945

Counter-urbanisation

From 1970 onwards the population of Liverpool started to decline. People began to move out of the city to areas such Cheshire and the Wirral where they could get bigger houses with more land for a cheaper price than in Liverpool. This was helped by improved transport links and communication links allowing people to still access or communicate with the city. This in general was the upper and upper middle classes that moved. This meant that the city went into population decline.

Re-urbanisation

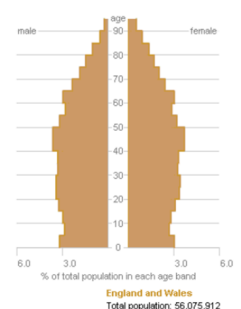
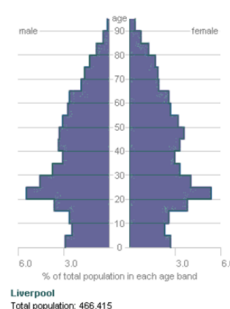
This has begun to happen recently in Liverpool. Since Liverpool was given the Capital of Culture in 2007 the city centre has been redeveloped. They have developed the Albert Dock into luxurious apartments and a retail area. They have also built the L1 shopping area and built lots of new city centre housing which has attracted many people to move back into the city centre, in particular young professionals.

Population characteristics of chosen UK city, Liverpool

There is a smaller population aged 65-80 years in Liverpool. This shows that there are few retirees that choose to stay in Liverpool when compared to the UK average.

There is a larger population aged 20-30 years. This shows that Liverpool has a larger young adult population than the UK average.

There is a smaller population aged 0-10 years. This shows that people in Liverpool are having less children than the UK average. This could be due to counter-urbanisation or suburbanisation for those having families.



Section A – Changing cities

4.5 Globalisation and economic change create challenges for the chosen UK city that require long-term solutions

Causes of deindustrialisation on the chosen UK city, Liverpool.

Deindustrialisation is the closure of the manufacturing and secondary industry within an area. The main causes of this are outlined below:

Cheap labour	Many countries abroad will have workers that are prepared to work for a much lower wage than in the UK, particularly in developing countries like China and India. This encourages industries to leave the UK and to locate in these developing countries, as they try to maximise their profits.
Development in transport links	Improvements in cargo ships, road, rail and aeroplane communications means that goods can be easily and cheaply made away from a UK city location, and then transported into the UK by boat or plane.
Decentralisation	The land is often very expensive in UK cities. Many industries now choose to move their factories or industries out of the centre of the city, to either out of town locations or abroad, where land and running costs may be cheaper.
Globalisation	This is the process of the world seemingly becoming a smaller place. It is now easy to communicate with, and travel to different parts of the world; much easier than ever before. It is helped by technology advances, communication advances and transport advances.
Government incentives abroad	Governments abroad, particularly in developing countries, will offer incentives (financial or infrastructure) to companies to locate in their country and provide employment opportunities to their people. Things like cheap electricity or financial payments will encourage the location of industries abroad.
Cheaper land costs	In less developed parts of the world, or less urbanised parts of the UK, land costs are lower, which means businesses will choose to locate their factories in these areas.
Development in technology	Improvements in a wide range of technologies, such as transport, telephones, the internet, and other communications, mean that it is easier and cheaper to produce goods abroad.

Impacts of deindustrialisation on the chosen UK city, Liverpool.

Examples of deindustrialisation

Cammell Lairds ship building company closed down in the 1990's. A company which employed over 40,000 people in its peak, as it was cheaper to do this abroad.

Car manufacturing - in 2016 Jaguar Land Rover in Liverpool lost over 130 jobs due to cost and the ease of transporting from abroad in China.

Closure of the Albert Dock - in 1971 the Albert Dock was used for the final time, completing the decline of the docking industry in Liverpool.

Impacts

- Derelict buildings and factories create visual pollution (e.g. Tobacco factory on Dock Road).
- Outward migration of people in search of jobs elsewhere, causing population decline.
- Higher unemployment rates within the city.
- There will be a loss of community cohesion and community spirit, as people leave the area.
- Other businesses will be affected by the loss of the industry (e.g. transport companies used locally).
- There is decreased road congestion and therefore less air pollution in the area.
- Increased pressure on the welfare system to support those unemployed.
- There will be growing inequality within the area, between the rich and the poor.
- The local economy will suffer due to a lack of money or investment in the area.

Section A – Changing cities

4.5 Globalisation and economic change create challenges for the chosen UK city that require long-term solutions

Recent changes in retailing and their impact on the chosen UK city, Liverpool

In the early to mid 1900's Department stores and major retailing shops were opened in the CBD and attracted customers from all over the city. Bold street was one of the main shopping areas in Liverpool. Lewis' was opened in Liverpool in 1856. The CBD was where you could find most shops in Liverpool, only smaller shops such as bakers and butchers would be found locally. The pattern occurred due to limited transport links, and lack of technology for people to keep food fresh, so people needed to buy food on a daily basis. This remained the main pattern of shopping for many years.

In the 1960s suburbanisation and counter-urbanisation occurred in Liverpool, and many other cities across the UK. As a result of this small retail areas started to open in the Suburbs of the city, close to the population living here. There was space for parking and they could easily build shops on the large, flat greenfield sites. As transport links improved it was easier for people to move to these areas. Examples include Aintree Retail Park. This saw a decline in the number of people visiting the CBD to shop and lead to businesses closing, jobs lost, and derelict/vacant buildings being left. The Lewis' chain was once a corner stone of the Liverpool retail city centre, and failed to adapt to the change. It went into administration in 2002 (finally closing in 2010).

Liverpool was named the capital of culture in 2008. This led to massive investment in the city from the European Union. The Liverpool ONE shopping centre was built attracting lots of new business this led to the re-centralisation of the CBD. The L1 retail centre, was to encourage people to shop again in the CBD. This has improved the environmental quality of the CBD in Liverpool and created job opportunities here. Old buildings and disused land was regenerated into modern retail facilities. The number of people coming into the city centre for their shopping facilities increased significantly.

More recently internet shopping has become more popular. Online shopping is convenient as it can be carried out from home or from a mobile phone. It also allows for 24 hour shopping, outside of the normal business working hours. Delivery to your door means that you do not have to leave your home. This has led to a reduction in shopping in both the CBD and the out of town retail areas, leading to shop closures and so the loss of jobs.

Strategies aimed at making urban living more sustainable and improving quality of life for the chosen UK city, Liverpool

Waste management/recycling

Liverpool council gives 3 different coloured bins to households across the city and collects waste on alternative weeks to encourage recycling. There are also three large recycling sites around the city (Bootle, Huyton and Kirkby). These areas allow people to dispose of excess waste in a sustainable manner. Recycle bins are also placed around the city centre next to public bins in an attempt to encourage people to recycle and reduce the amount of waste in the city going to landfill



Employment

Liverpool council have launched a scheme, with Liverpool Mutual Homes (LMH), to provide employment training to residents (e.g. CV writing and interview support). Liverpool council has also approved planning permission for over 10 major housing estates across the city, providing jobs for plumbers, carpenters, electricians etc. Liverpool council has helped to finance the regenerate of Liverpool City Centre, attracting many businesses into the region, and so providing job opportunities in the area. As a result unemployment in Liverpool has fallen by almost 1% in the last 7 years to 5.3%. In 2018, a report found that Liverpool residents have £1400 of disposable income each month, a significant amount

Transport

Liverpool city council is trying to encourage the use of public transport, walking and cycling, and aims to discourage the use of cars, which increase congestion, pollution and the chances of accidents. Liverpool has regenerated public transport services (new Arriva electric buses and train station renovation, like at Lime Street Station) to encourage the use of public transport There are city bikes to rent in Liverpool for £1 per hour, encourages the use of bikes over cars in the city. Many areas around the city centre have been pedestrianised to encourage walking.



Section A – Changing cities

4.6 The context of the chosen developing country or emerging country city influences its functions and structure

Site, situation and connectivity of the chosen city – Sao Paulo

- In Brazil in South America
- Close to the coastline with the Atlantic Ocean
- Hilly plateau – large flat area on a hill
- On the side of a number of rivers (e.g. River Tiete)
- 70km inland from the Atlantic Ocean, separated by the Serra do Mar mountain range
- 350km South west of Rio de Janeiro
- Southeast of Brazil, north of Curitiba
- High land (approx. 820m above sea level)
- Two major international airports
- Underground subway system
- 5 motorways leading from Sao Paulo to the rest of Brazil



The chosen city's (Sao Paulo) structure (Central Business District (CBD), inner city, suburbs, urban-rural fringe) in terms of its functions and building age.

CBD

- This area is similar to that in a developed country, with the location of major businesses, tourist facilities, shops of offices located here. Many transport links are concentrated here.
- This area is the oldest part of the city with very little green space and high density buildings, although very few residential buildings.

High Cost Housing

- There is often a spine from this area to the edge of the city. This is along a transport route, allowing the wealthy to have easy access to the CBD and out of the city.
- This area contains luxury flats, detached houses and high quality living conditions. It also contains gated communities (areas fenced off from people who do not live there).

Periferia

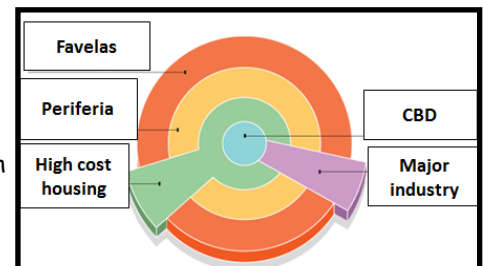
- This area contains poor-medium quality permanent housing. This area has basic facilities and amenities. It may have been build as a result of low cost government help schemes.
- This area is further away from the city, with poor transport links , but some permanent roads.

Major industry

- This is the location of many factories and major industries. They are located in a straight line away from the CBD, along a transport route (major motorway or train lines).
- As transport links in LEDCs are not as good in MEDCs, industries locate close to the transport routes; this allows for easy access to the CBD, residential areas, and out of the city.

Favelas

- This is the area furthest away from the city. It is often the newest part of the city and contains very poor quality, often self-built housing. There are very few facilities or amenities here.
- This area is also known as a slum. And these spontaneous settlements are found in steep hillsides, or wasteland around the city. E.g. Paraisopolis, where 43,000 people live in 150 hectares of land.

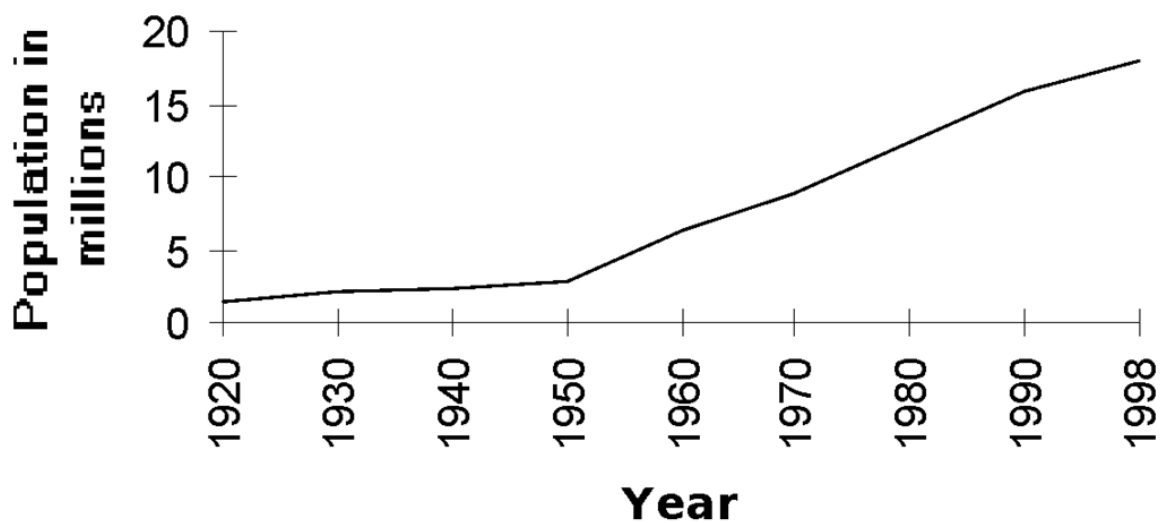


Section A – Changing cities

4.7 The character of the chosen developing country or emerging country city is influenced by its fast rate of growth

Reasons for past and present trends in population growth in Sao Paulo

Population of Sao Paulo



Push Factors (pushing people away from rural areas of Brazil)

- In Brazil, 31% of rural households have no land, so they have to rent land which is less secure.
- In rural Brazil, the farms are becoming more mechanised, meaning less need for workers on the land.
- Bahia, and other similar areas in northern Brazil, is very poor and periodically suffers from drought due to the climate here.
- Literacy rates in rural areas of Brazil are very poor (some areas less than 50%), due to poor provision of schools
- Rural areas have a lack of infrastructure, including clean water supplies, electricity and sewage.

Pull Factors (pulling people towards Sao Paulo)

- Infant mortality in the favelas of Sao Paulo is 82 per 1,000. This is high, but in the rural areas it is even higher at 175 per 1000.
- Migrants send messages back to rural villages about life in the city and how good life was there.
- There are many schools, hospitals and doctors in Sao Paulo.
- Sao Paulo has lots of local, national and international transport links.
- The Brazilian government invests a lot of money into services in urban areas of Brazil like Sao Paulo.
- Sao Paulo is the location of major industries and services in Brazil, offering a range of job opportunities.

Section A – Changing cities

4.7 The character of the chosen developing country or emerging country city is influenced by its fast rate of growth

Causes of national and international migration and the impact on different parts of the chosen city

Population structure

- Migration of young adults means that there is a large young population. This means there is an abundance of people of working age in Sao Paulo.
- Different communities have sprung up around the city, where certain ethnic groups live together in small enclaves. Liberdade is the largest Japanese community outside Japan.

Economic issues

- Sao Paulo is rapidly growing economically as businesses locate here to use/exploit the large workforce.
- Sao Paulo can not provide jobs for all of its migrants. There are high levels of unemployment in the city. 19% in 1998; although it has reduced to 11% in 2012.
- As unemployment is high, there are large numbers of people who work in the informal sector (illegal work), such as prostitution or other street work.
- The drive to industrialisation brings with it inevitable problems, especially as legislation to protect the environment is often non-existent or rarely enforced.

Traffic

- 6.2 million cars are owned by residents of Sao Paulo and there are 16,000 buses on the road, creating congestion.
- Overpopulation & poor road structures leads to grid-locked roads and high pollution levels.



Services

- The shanty town services are non-existent or incapable of maintaining a basic standard of living. The lack of basic services like a clean water supply, rubbish collection and sewerage disposal mean that the risks of disease are very high.
- Hospital, schools and housing services have got a huge amount of pressure on them.

Housing

- Squatter settlements started to be built along rivers and railways in the 1930s. In the 1980s squatter settlements grew in the outskirts of the city.
- Favelas have poorly constructed houses, poor sewage systems and little access to clean water, leading to widespread disease.
- Greater demand for housing means that there is a shortage of affordable housing across the city.



Environment

- The large population creates a great amount of waste, which is often dumped into local rivers, polluting water sources.
- Large scale deforestation has taken place as the city grows outwards.
- Large scale industries and factories create air pollution across the city.



Section A – Changing cities

4.8 Rapid growth, within the chosen developing country or emerging country city, results in a number of challenges that need to be managed

Advantages and disadvantages of both bottom-up and top-down approaches to solving the chosen city's problems and improving the quality of life or its people.

Top down approaches means... this is when the government takes control and responsibility for the improvements that take place in an area. It is usually a large scale and costly project.

Bottom up approaches means... this is when local residents of an area implement changes to an area (self help schemes). This is usually a small scale project and is relatively cheap.

Top down approaches (examples)	Bottom up approaches (examples)
<p>Investment into new metro links and toll roads across the city to reduce traffic congestion.</p> <p>Government grants available to financially support families who want to send their children to school.</p> <p>Since 2004, 12 new sewage works have been built to deal with the large amounts of sewage waste and reduce water pollution.</p>	<p>Literacy courses (or other educational course) available at local community centre run by charity group.</p> <p>A nursery run by volunteers in Santa Andre has been set up to allow parents to work.</p> <p>Building a small water pump within the favelas has allowed for clean water access for those who are most vulnerable.</p>

Top down approach – Cingapura Housing project

<p>The government of Sao Paulo implemented this scheme between 1995 and 2000. The scheme was supposed to build 100,000 new homes but in the end only 14,000 were built. The project removed some favelas to clear the land for the new homes while the favela inhabitants lived in barrack-like accommodation. The new homes were built in blocks about 10 stories high. The favela residents pay a rent of about \$26 a month for their new apartment.</p>	
Advantages	Disadvantages
<ul style="list-style-type: none"> The new housing has clean water supplies and proper sanitation. The new housing was built on the same land as the favelas, so many people did not have to leave the area they knew. The new housing was originally funded by the government, so no up-front costs had to be paid by the local people. Government experts were brought in to build the large scale housing facilities to a very good standard 	<ul style="list-style-type: none"> Many favela owners have never paid rent and can't afford to pay the \$26 a month. Favelas were demolished to build new blocks, destroying homes. Only housing was provided. No jobs were provided, no services were provided and there was no provision for small businesses. The type of accommodation is forced on the inhabitants who have no say in what is being built. The temporary accommodation was poor quality - tent/marque conditions.

Section A – Changing cities

4.8 Rapid growth, within the chosen developing country or emerging country city, results in a number of challenges that need to be managed

Advantages and disadvantages of both bottom-up and top-down approaches to solving the chosen city's problems and improving the quality of life or its people.

Bottom up approach – Santo Andre Day Nursery

Within Santo Andre a day nursery has been set up and is run by 18 staff (some paid and some volunteers). They look after 240 children who would otherwise be on the streets of the favela. Here they care for the children, feed the children, and also provide a basic education to the young children to improve their life chances.

Advantages	Disadvantages
<ul style="list-style-type: none">• The community are included in the decisions that are made, ensuring that their needs have been met.• The running of the day care centre provides employment opportunities to people in the area.• The improvements are not just helping the children, but the quality of life of people in the area, as it allows parents to work and improve their household income	<ul style="list-style-type: none">• The schemes take a long time to be instigated and it is only a small scale project, as it needs to be funded by local charity groups or businesses.• With so many different people involved in the decision making process it is hard to get agreements on how the money available should be spent.• The scheme requires constant funding from local groups and charities.

Section B – Global Development

5.1 Definitions of development vary as do attempts to measure it

Definitions of development

Development is all about measuring how advanced a country is. It can be defined and broken down into a number of different aspects:

Economic development	This is an increase in a country's wealth. This could be a change in job type from primary sector jobs to secondary or tertiary type jobs
Social development	This is about the improvements in quality of life (e.g. lower death rate, better literacy rates)
Political development	Freedom for the people to have a greater say in who governs their country
Cultural development	This is about better equality between different ethnic groups, or sex's
Technological	This is about the increased use of machinery (e.g. tractors in farming), computers, electricity access, internet access
Water/food security	This is about the population having access to clean water supplies and the ability for a country to supply its population with food

Measuring Development

The level of development of a country can be measured in a number of ways (social, economic and political measures):

Economic measures/indicators

- Gross Domestic Product per capita (GDP)
- Gross National Income per capita (GNI)
- Unemployment rates

Social measures/indicators

- Life expectancy at birth
- Literacy rates
- Average number of years in education
- Gender equality

Political measures/indicators

- Corruption perception Index

The Human Development Index is often used.

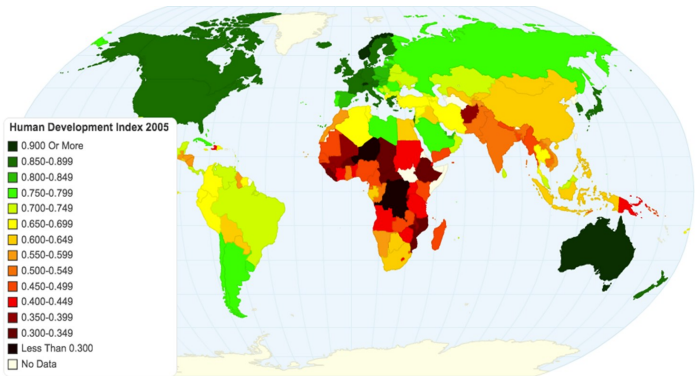
-It combines different indicators (GNI, life expectancy, average years in education).

-It then gives the country a score between 0 and 1 to show how developed the country is.

Section B – Global Development

5.2 The level of development varies globally

Global pattern of development



Factors affecting the global pattern of development

- Many **landlocked countries** have developed more slowly than coastal nations who can freely and easily trade with other countries around the world to generate money.
- Lower development is seen in countries that suffer from **multiple natural hazards**, such as Haiti who suffer from severe earthquakes and hurricanes, affecting the development of the country.
- Countries that have **prioritised investment in education and health** have developed at a much faster rate than countries that do not invest in this as heavily.
- Areas within a country in which **national governments** are based often develop at a much faster rate, as this area attracts public and private investment.
- Many countries that were once part of **colonies** (such as India being part of the British colony) were exploited for their natural resources. This therefore restricted their ability to develop.
- Countries that owe large amounts of money to the world bank, or more developed nations, often struggle to develop, due to the need to make large amounts of **debt** repayments.
- Countries that have **extreme climates** (too hot or too cold) are often much less developed in comparison to those with moderate climates as people, businesses, and investment is not attracted to these areas.
- Areas that are **mountainous**, like the Scottish highlands do not develop as quickly as urban areas, due to poor services, communications, transport and accessibility.
- Areas that have a **higher rates of employment** and income develop faster, due to more money being invested and reinvested in the local economy.
- Countries involved in **wars or conflicts** are often less developed as much of their money is invested in defence and military, rather than investing in improving the quality of life for people in the country.
- **Resources**, such as minerals, metal and fossil fuels help a country to develop because the extraction and sale of these resources will bring income into the country (e.g. oil in the North sea helping Aberdeen and the UK to develop).
- **Foreign investment** into countries from major businesses (FDI) helps that country or region to develop.
- Countries with **trading links** with a large number of countries around the world have developed much more quickly, as they can buy and sell goods globally with ease.

Section B – Global Development

5.2 The level of development varies globally

UK pattern of development and factors affecting UK pattern of development

Physical

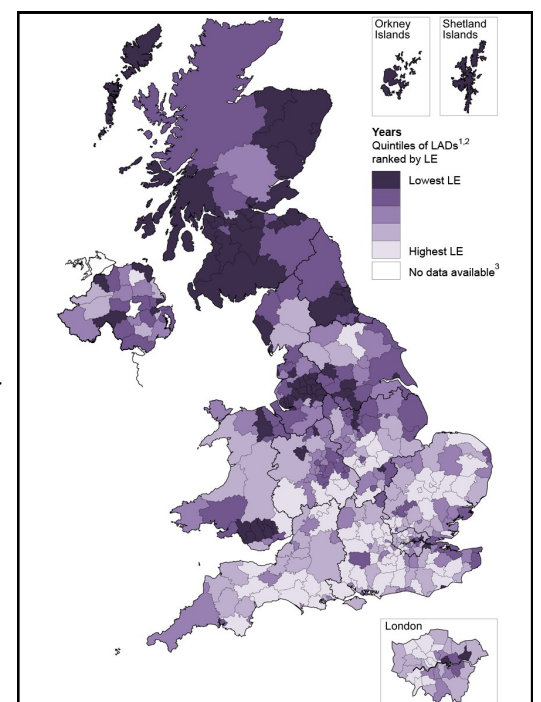
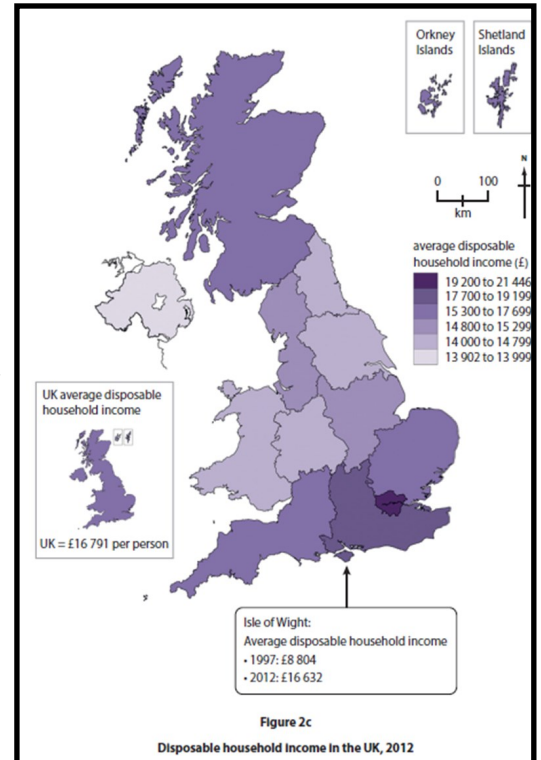
- **Relief** — The south of the UK is flatter; this aids development as urban areas can be easily built. The north and west are more mountainous, making urban areas and communication routes more difficult to build.
- **Climate** — The south and east of the UK have a better climate than the rest of the country, with warmer conditions and less rainfall. This makes it a more pleasant area for people and businesses to locate.
- **Natural resources** — Areas of the UK have developed much more quickly due to the discovery of natural resources in these areas. For example the discovery of oil in the North sea led to the rapid development of Aberdeen.
- **Position** — The south and the east of the country are closer to Europe, making access to the European market easy. This makes companies want to locate in this area.

Historical

- **Politics** — The seat of government is in London in the south east. This made it a highly desirable location for businesses in the past as they were close to where decisions were being made and found out about them quickly.
- **Colonies** — Coastal cities developed rapidly due to their location. They were able to benefit from trade with other countries that were once British colonies. For example, Liverpool developed rapidly as a result of its port and overseas trade, generating income and investment into the area.

Economic

- **Infrastructure** — Investment in infrastructure in an area attracts people and businesses. The infrastructure in London is the best in the country. All roads lead to the centre of London. Companies who located there would be able to trade with the rest of the country, and Europe, easily.
- **Foreign investment** — In the UK most foreign investment is in London, creating rapid development in the capital, compared to other areas of the UK (foreign investment means jobs for local people, money for local/national government, investment in the local infrastructure).
- **Deindustrialisation** — manufacturing industries will close down causing high levels of unemployment, low average household incomes and increased poverty
- **Industry** — Certain areas of the UK will have specialised employment opportunities. For example London has a specialised financial sector, whereas, Newcastle has a specialised unskilled, manual labour base.



Section B – Global Development

5.3 Uneven global development has had a range of consequences. 5.4 A range of strategies has been used to try to address uneven development

Impacts of uneven development

1. There will be more international migration, as people move globally from developing areas, to wealthier more developed areas.
2. Overcrowding takes place in major cities due to migration causing additional pressure on healthcare, education, food/water security, housing etc.
3. There is a lack of social opportunity in developing regions (children in poorer areas get stuck in poverty, with little chance of working their way out of the poverty cycle)
4. Inequality, in terms of development, can lead to political instability - civil wars and riots may occur from those in poverty against the wealthy in society.
5. It forces billions of people to live in poverty, without access to safe water, education, inadequate food supplies and unsafe shelters.
6. Developing countries depend upon financial aid from more developed countries. This leads to greater debt and therefore less spending available within the country.
7. There is often a 'brain drain' from within the developing countries as educated migrants leave in search of a better life.
8. Poorly funded or inaccessible healthcare means that people will die in developing countries from preventable diseases.
9. Some developing countries have no compulsory education system, meaning that children in less developed areas can not access education.
10. Differing access to safe drinking water can lead to water borne diseases in less developed areas of the world.
11. Subsistence farming takes place in less developed regions, meaning that food security is poor; whereas in the more developed areas there is greater food security.
12. There are differences in access to technology (e.g. varying access to the internet or computers), which can further affect development rates.
13. A lack of employment opportunities in developing regions may force people to work in conditions that are very harsh or force them into informal (illegal) employment, such as prostitution.



Attempts to reduce uneven development

Fair Trade	This is an organisation that agrees to pay producers of goods (usually farmers) a guaranteed and fair price for their goods, which can include tea, coffee, sugar etc. This enables investment into the local areas and the producers/farmers in the developing countries can then reinvest the money they receive into farming, or they can use the money to improve their standard of living.
HIPC	The Heavily Indebted Poor Countries (HIPC) initiative was established in 1996 by the world bank. The initiative meant that the debt of poorer countries would be wiped, as long as they spent the savings on education and healthcare in the country.
Financial Aid	International financial aid can be given to less developed countries in a range of ways. This is when money is given to the country to help it to develop. Sometimes the aid is given from one country to another, known as 'bilateral aid'. Sometimes money is given from international organisations, like the UN or the world bank, this is known as 'multilateral aid'. Sometimes the aid that is given is donations from charities, this is known as 'voluntary aid'.
Trade Barriers/ Blocks	A trade barrier is an obstacle that prevents countries from trading on a global market. For example there are no trading barriers for countries within the EU to trade with each other. However, when buying goods from outside of the EU there may be a trade barrier. This makes the goods more expensive. To help less developed countries develop, trade barriers can be removed. This allows the less developed countries to access the global market. They can therefore sell more of their goods and generate more money for the country.

Section B – Global Development

5.5 The level of development of the chosen developing or emerging country is influenced by its location and context in the world

Location of India

- India is the seventh largest country in the world.
- It is part of Asia.
- It has a coastline with the India Ocean to the south, Bay of Bengal to the east and the Arabian sea to the west.
- India has a land border with Pakistan, China, Bangladesh, Nepal, Bhutan, Myanmar.
- The population is estimated to be 1.27 billion people and is set to overtake China as the most populous country in the next 10 years.
- India's climate varies from tropical in the south, to temperate in the north.
- India experiences a monsoon season of very heavy rain and wind which are vital for water supply and farming but does sometimes cause devastating flooding.
- India is divided into 29 states—the largest being Rajasthan and the smallest is Goa



Political, social, cultural and environmental context of India

Political context	<ul style="list-style-type: none"> • India was once part of the British Commonwealth (it was once owned and controlled by Britain). • India is part of the United Nations and the World Trade Organisation (these are major political groups that make global political decisions). • India's Central Government is located in the capital of the country (Delhi).
Social context	<ul style="list-style-type: none"> • India has a youthful population. The birth rate is high in the country, resulting in a large amount of the population being aged under 20. • India has a very large population of about 1.3 billion people (compared 65 million in the UK). • Over 20 million people of Indian origin are located in over 100 countries around the world.
Cultural context	<ul style="list-style-type: none"> • In Indian culture, there is a caste 'class system'. A persons caste is determined by their parents. People at the bottom of this class system do the most menial and poorly paid jobs. • India has the third highest Muslim population in the world. • India does not have a national religion, however most (80%) of the population are Hindu.
Environmental context	<ul style="list-style-type: none"> • India experiences more monsoons than any other country around the world (a weather condition bringing heavy rainfall). This is vital as a water supply in India. • The climate of India varies, from tropical climates in the south, to temperate climates in the north. • In the most northern part of India is the Himalayas Mountain Range. This expands across India into Nepal and China.

Section B – Global Development

5.5 The level of development of the chosen developing or emerging country is influenced by its location and context in the world

Uneven development in India



The state of Bihar is located in the north eastern part of India and is known as a less developed periphery (rural)

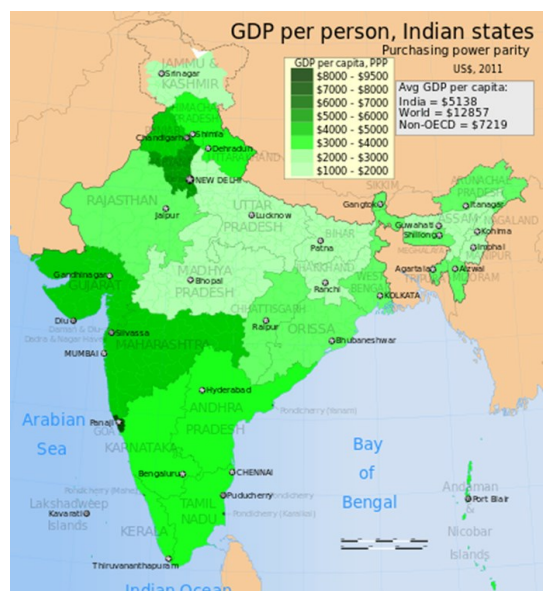
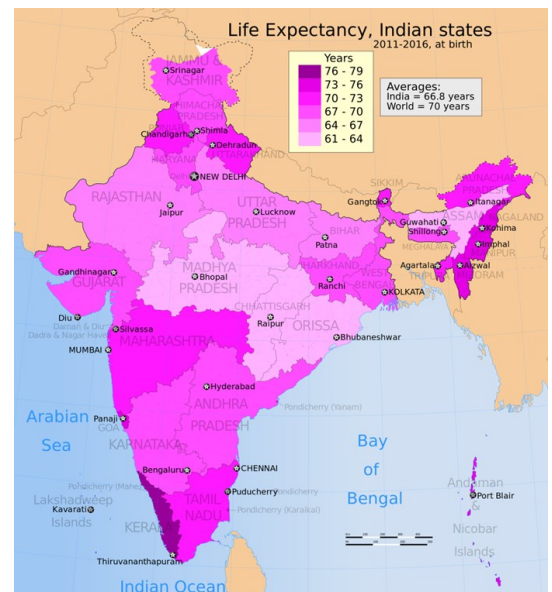
The city of Mumbai is located on the west coast of India and is known as one of the developed core regions of India (urban)

Human Factors

- **Foreign Direct Investment** - In Mumbai there has been a great deal of investment from foreign companies, from companies like Bank of America and Volkswagen. They are attracted here by the large amounts of cheap workers, and the location is close to the political hub of the country. This creates jobs and therefore boosts the local economy and area.
- **Government investment** - government investment (spending on things like education and healthcare) varies across India. With limited resources the government invests heavily into urban areas like Delhi where most people live and the government is located, and rural areas receive much less money.
- **Colonisation** - India was once under British control so the British invested heavily in parts of India, particularly ports, like Marmangoa (in Goa), which helped to develop the infrastructure (roads, houses, water etc.) in the area.

Physical Factors

- **Coastal location** - Coastal areas, such as Chennai and Mumbai have developed rapidly due to its coastal location and the ease of transport abroad (imports and exports). This attracts further investment (FDI) from companies around the world.
- **Relief of land** - In the most Northern parts of India, such as Bihar and Kashmir, the land is mountainous, resulting in difficulties in communication, transport and the building of settlements; ultimately holding back development.
- **Climate** - Monsoon rainfall hits India's coastal areas such as areas around the Bay of Bengal, causing excessive rainfall and sometimes serious flooding. These natural hazards can affect the development of these areas.



Section B – Global Development

5.6 The interactions of economic, social and demographic processes influence the development of the chosen developing or emerging country

India's changing economy

Decline in primary sector jobs

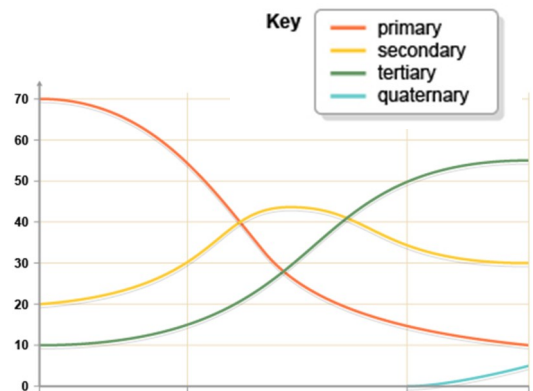
+ Less people working in the primary industry (particularly agriculture) means that the economy is less dependant on the weather; and less laborious jobs, putting less strain on people.
 - Leads to migration into urban areas in search of jobs, putting pressure on resources/services; rural communities split up as people leave the areas in search of jobs.

Growth in the secondary sector jobs

+ Improved wages, for low skilled people, compared to the primary sector; FDI generates more money (investment) from foreign companies (TNCs) which can be used for infrastructure improvement
 - Increased air pollution due to burning of fossil fuels; workers are exploited for long hours, poor pay and poor working conditions.

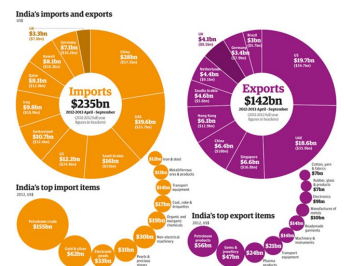
Growth in the tertiary/quaternary sector jobs

+ Higher paid jobs improving standard of living (and more tax available for Gov. to invest into the country); the growth in these sectors require infrastructure to be improved (better electricity, internet, roads etc.), improving the local area for the local people.
 - Jobs are aimed at skilled/educated workers, leaving a large number of unskilled workers unemployed; these jobs are usually located in urban areas, developing the core faster than the periphery.



International trade in India

Increased trade with other countries around the world has had positive and negative impacts for India:



Positive

It can introduce new products to the market in India and abroad.

Jobs are created as manufacturing businesses grow in India.

Accessing the global market can lead to rapid economic growth within India.

Government can gain greater revenue from tax on businesses and workers, reinvesting into India infrastructure, education and healthcare.

Imports can help countries to access best technologies available and best products and services in the world.

negative

A large number of desperate workers are exploited for their low labour costs.

Exporting depleting resources like crude oil, or other minerals will lose valuable resources which can never be replenished.

Exporting products are subject to quality standards. Any bad quality products which are exported will affect the countries reputation.

Foreign goods are taking over from domestic Indian goods, so Indian domestic manufactures may lose their business and this may cause the total collapse of local industry(ies).

Section B – Global Development

5.6 The interactions of economic, social and demographic processes influence the development of the chosen developing or emerging country

International aid for India

Multilateral aid	This aid is given from international organisations e.g. United Nations, the World Bank.
Voluntary aid	This is aid usually in the form of charity e.g. Oxfam providing funds.
Bilateral aid	This is aid when one country/government gives money and resources to another country/government.
Short term or emergency aid	This is when aid, such as financial, food or medical help is given for relief, needed immediately after a disaster such as a tropical cyclone or drought.

Arguments for giving aid to India

Emergency Aid helps to save lives, rebuild housing and livelihoods after a disaster. Aid money can be used for the provision of medical training, medicines and equipment can improve health and standards of living. Projects that develop clean water and sanitation provisions can lead to improved health and living standards. Aid for agriculture can help increase food production and so improve quality and quantity of food. Aid investment in industrial/economic development can create jobs and improve transport infrastructure. Aid can support countries in developing and accessing their natural resources to improve their economic income.

Arguments against giving aid to India

Aid can increase dependency of developing countries on donor countries. Sometimes aid is not a gift, but a loan, and poor countries may struggle to repay this. Aid may not reach the people who need it most. Corruption may lead to local politicians using aid for own means or for political gain. Aid can also be used to put political or economic pressure on the receiving country. The country may end up owing a donor country 'a favour'. Infrastructure projects may be focused on urban areas and so end up not favouring people in greatest need. Aid may end up benefiting employers more than employees. It may be a condition of the investment that the projects are run by foreign companies or that a proportion of the resources or profits will be sent abroad.

Private investment by TNC's into India

Examples of TNCs in India	•Coca-Cola, Toyota, Volvo and Hyundai, ASDA (call centre), BT (call centre) and Virgin Media (call centre).
Reasons why TNC's locate in India	•The Indian population generally speaks good English and labour costs are lower in India; Low labour costs = higher profits. •Poor workers' rights, poor health and safety and less strict environment laws encourage investment. •India encourages TNC's to invest in their country by offering lower tax rates and financial incentives. E.g. Indian States have offered subsidised water, land and tax breaks to Coca Cola.
Positive impacts of TNC's in India	•TNC's locating in India create jobs for local people, increasing the disposable income of the population, and so having a positive multiplier effect. •TNC's help to train their employees, providing them with skills to use in future jobs. •The country's infrastructure (e.g. transport links, electricity lines, internet etc.) are improved by the government for the TNCs, or by the TNC. This benefits the local communities. •TNC's pay tax, and their employees pay tax to the government. Increased tax contributions can then be spent on education, healthcare and infrastructure improvements in the area. This creates the positive multiplier effect (PME). •Coca-Cola has invested over \$2 billion in India since 2011, employing an estimated 25,000 people directly and over 1 million people indirectly. •Due to Coca-Cola locating in India the government has been able to invest more money into local social services, such as slum improvement projects in Mumbai.
Negative impacts of TNC's in India	•Water and air pollution becomes an issue because local pollution controls/laws are either weak or ignored. •One of the most reported threats associated with Coca-Cola is that the company is depleting groundwater supplies across the region. Local farmers have reported having to dig down nearly 250 feet for water which once stood at only 50 feet. •Poor working conditions and lower safety standards are allowed in developing countries, forcing working to work in unsafe locations. (In 2016, 13 employees were killed in a factory fire caused by unsafe working conditions) •TNC's offer low wages to employees in sweat shop conditions •As Coca-Cola is a US based TNC, much of the profits is taken out of India and are reinvested in the US. •80% of workers for Coke in India are casual labour and temporary and not protected by labour laws (unions, paid leave, compensation for injuries).

Section B – Global Development

5.6 The interactions of economic, social and demographic processes influence the development of the chosen developing or emerging country

Changes in population structure in India

Population size

The population in India has grown rapidly recently and is currently about 1.2 billion people.

Birth rates

The birth rates in India have been decreasing in India due to...

- Access to contraception
- Increased family planning services
- Increased cost of children
- Lower infant mortality rate
- Women pursuing careers rather than having children.
- Increased education

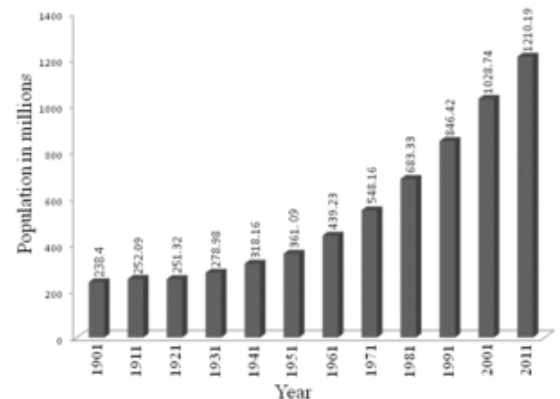
Death rates

The death rates in India have been decreasing in India due to...

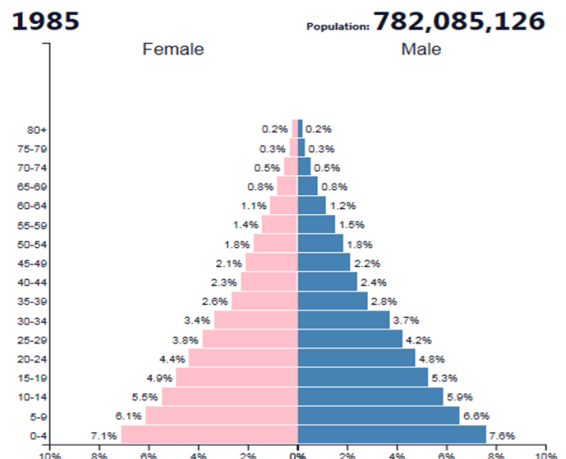
- Improved access to a balanced diet
- Improved access to clean water
- Improvements in sanitation and standard of living
- More doctors/better access to doctors
- Improvements in medicines
- Vaccines for children

Changing social characteristics

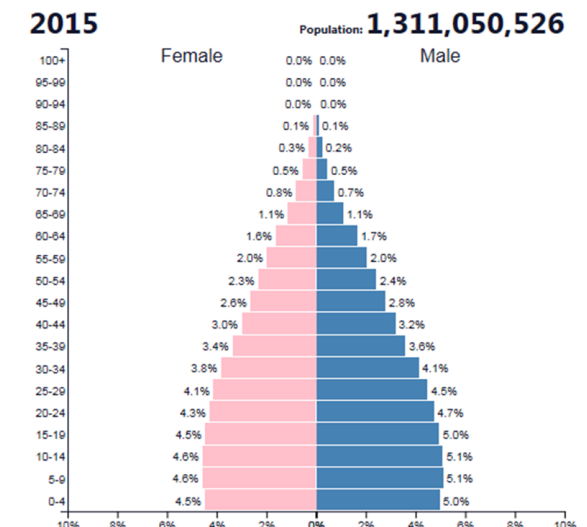
- The education system is improving and becoming more accessible for all in India.
- The healthcare system is improving and becoming more accessible for all in India.
- There is a growing middle class within India, with higher incomes and greater disposable incomes.
- There is still inequality within the country, with access to jobs, healthcare, education and services. There is inequality between rural and urban areas; and also between men and women.



India ▼ 1985



India ▼ 2015



Section B – Global Development

5.7 Changing geopolitics and technology impact on the chosen developing or emerging country

Geopolitics affecting development in India

Geopolitical Relationship	Explanation of relationship	How relationship links to development
India has a strong relationship with Canada and has a deal for Canada to provide India with 3.2 million kilos of uranium.	This is used to generate nuclear power and a move away from burning fossil fuels in the country.	This will help the country to develop as it makes the country less reliant on fossil fuels and pollution levels will also decrease in the country, improving the environmental quality within India.
India have made an agreement with China over the water supply along the Yarlung Tsangpo-Brahmaputra (YTB) River, which runs through both countries.	China wanted to build a dam for hydroelectric power and to control the flow of water. This would limit the water supply to India.	The agreement has resulted in no dam being built, and a regular water supply into India has been ensured. This means that the working population is healthier as they have a regular water supply and will not be forced to get water from other sources. It also provides much needed water for industry and agriculture in India.
India and Pakistan have disputed ownership of Kashmir, an area in Northern India and currently have shared ownership.	This has led to three wars in 1947, 1965 and 1999, costing a massive amount of money, loss of life and on going tension between the countries.	With the conflict on-going, and uncertainty in the area, development is halted. There is a lack of investment in the area from the Indian government, with the exception of investment in security forces. Less money is then spend on supporting the development of the area.
The UK and India have a warm relationship and India was owned by Britain until 1947 when it gained independence.	The large numbers of English speaking people in India has helped the country access the global market/economy and attracts foreign investment particularly for call centres.	With many English speaking companies opening call centres in India, such as HSBC bank, more jobs are created in India, more money is invested in the country and ultimately development takes place within the country.
India has signed a military pact with Russia to help grow its military and defence.	As a result the country is sending India missiles, fighter jets and is sharing expert knowledge.	With this military pact Russia and India will become trading partners and this will create economic growth within India.
India and the EU have a Free Trade Agreement (started in 2007),	This means that India can buy and sell goods easily within the European market, avoiding paying high tariffs (taxes) that other countries have to pay.	Having access to the EU free market will allow India to trade with countries around Europe, leading to economic growth in the country.

Section B – Global Development

5.7 Changing geopolitics and technology impact on the chosen developing or emerging country

Technology supporting development in India

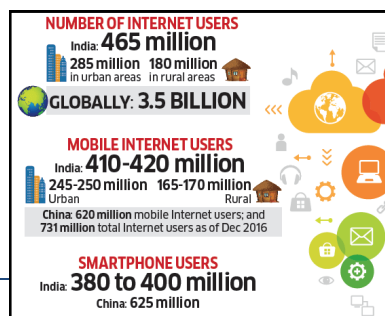
Smartphones to educate farmers

The technology project means that farmers use their mobiles to check advanced weather forecasts, to research other farming methods used by other farmers, contact vets easily by phone or video recording, accessing a larger market to buy fertilisers and seeds at a cheaper rate.



Investment to improve internet access

Major government investment has taken place into improving the internet access India. This provides better educational facilities in school, attract FDI into India, and means that products can be bought and sold from/to all over the world.



Swasthya Slate project (Health Tablet)

The Swasthya Slate Project is otherwise known as the Electronic Health Tablet. It is a portable tablet (like an Ipad) that can be used easily by healthcare professionals around India to quickly and easily complete 33 diagnostics tests. It basically takes the doctors equipment to the patients in a small device. The device is only \$800 and will be charged at \$1.25 per patient .



Connectivity supporting development in India

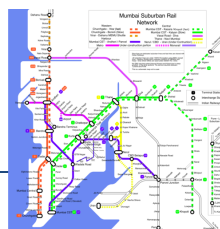
Rajasthan Rural Connectivity Project (RRCP)

Areas around rural Rajasthan are in the peripheral location and so development here is much slower than in urban locations. The RRCP is about improving roads that link the rural areas to the urban areas to make them more connected and accessible.



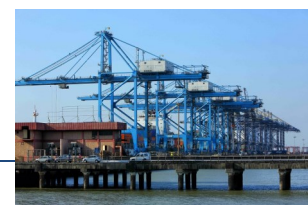
Investment in the Mumbai suburban rail network

The Indian government has invested almost \$9bn in improving and extending the rail network in and around Mumbai. This will extend the rail network to local ports, local cities, and makes the area more accessible from the suburbs; as well as improving facilities and safety across the stations.



Modernisation of 12 major India Ports

Massive investment has taken place in the modernisation of 12 large Indian ports. This makes the port accessible to all cargo ships; increased the turn-around time for these ships as large cranes can remove products and reload the ships; attracted TNCs to locate in the area.



Section B – Global Development

5.8 There are positive and negative impacts of rapid development for the people and environment of the chosen developing or emerging country

Positive and negative impacts of rapid development

Positive impacts:

- The government has been able to make improvements to infrastructure (e.g. roads, buildings, broadband), costing billions.
- TNC's are locating in India, offering jobs and higher incomes, resulting in an improving quality of life and reducing poverty.
- The average income and GDP in India has increased significantly.
- The government has been able to invest more money into renewable energy sources, reducing greenhouse gas emissions.
- Deforestation rates have declined in rural areas due to improved electricity access meaning that wood isn't needed as a fuel.
- More money for the government (from taxes of people and companies) means that there is a greater investment in healthcare, reducing the death rate from preventable diseases.
- Rapid economic growth has taken place within India, attracting large companies from around the world to locate in India's urban areas. (FDI)
- There have been reduced death rates/higher life expectancies due to better medical care.
- There is improved access to, and quality of, educational facilities, improving numeracy and literacy rates.
- Better access to water will improve the health of the working population, helping economic growth and attracting more FDI.

Negative impacts:

- The growing population means that deforestation of large areas of land is on-going, to make way for housing, industry and agriculture.
- Development has led to more industries locating in India and also more vehicles being used on the road, therefore leading to greater amounts of CO2 being released, reducing air quality and leading to climate change.
- The growing population creates a growing amount of waste, polluting drinking water supplies, particularly in the slums in urban areas (like Dharavi), leads to the spread of diseases like cholera.
- There is a clear divide between the rural and urban areas, as most of the benefits of development are seen in the urban areas.
- There is a large financial cost to deal with the costs of providing education, healthcare and policing for a growing population (due to improved healthcare).
- The growing population and growing demand for energy/electricity has led to the over extraction of raw materials, such as fossil fuels.



Section B – Global Development

5.8 There are positive and negative impacts of rapid development for the people and environment of the chosen developing or emerging country

Managing the impacts of rapid development in India

Impact of rapid development	Management strategy
The development of shanty towns (slums) as people move to large cities in search of jobs and a better life.	The Indian government has arranged for large scale slum clearance projects to take place. The Dharavi Redevelopment Project aims to demolish slum housing and to replace it with high rise flats for the 700,000 people who live there.
Large amounts of greenhouse gas emissions due to growing industry and car ownership. India is the third largest emitter of greenhouse gases in the world.	There has been a massive amount of investment in renewable energy sources (water, solar, wind, etc.) in India, such as the hydroelectric power project - Narmada Dam Project.
Increased water pollution in urban areas due to a growing population in these areas, and industry waste entering water supplies.	WaterAid, a charity, work with local rural communities and slum towns to build water wells and pumps to supply clean water to a community.
Inequality, as urban cores develop rapidly and the rural periphery develops at a much slower rate.	The rural connectivity project has ensured that there is better accessibility (roads, trains) between the rural and the urban areas. This means that people in rural areas have access to the services in the urban areas (schools, healthcare, market to sell goods).
Deforestation to make way for the growing population in urban areas, and to enable industry buildings and road networks to be built.	The Himachal Pradesh Reforestation Project is taking place to replace the land lost, helping to restore nature habitats and to slow the effect of climate change.

Top down projects

- Top-down development projects are projects led by the government or large organisations (for example, the Indian government built the hydroelectric power project - Narmada Dam Project, to provide hydroelectric power).
- These are large scale projects, which cost large amounts of money, bypass the attitudes of local people, and can affect a large amount of people.

Bottom up projects

- Bottom-up development projects are projects that are led by the local community within an area (for example, WaterAid, a charity, work with local rural communities to build water wells to supply clean water to a community).
- These are small scale projects, which do not cost a lot of money. The projects are usually designed around the needs of the people in the local area, and these locals are fully involved in the planning process for the project.

Section C – Resource Management

6.1 A natural resource is any feature or part of the environment that can be used to meet human needs

Definitions of natural resources

Biotic resource	A part of the environment that is living (or capable of reproduction)
Non renewable resource	This is a resource that, when used, can not be remade
Natural resource	Any feature or part of the environment that can be used to meet human needs
Renewable resource	This is a resource that is inexhaustible, and is naturally replenished
Abiotic resource	Part of the earths biosphere that is a non-living component
Carbon footprint	A measure of all the greenhouse gases an individual produces

Human exploitation of environments

Causes of overfishing	<ul style="list-style-type: none"> •Growing population means a greater demand for food and therefore for fish. •The sale of fish can generate money, so more fish = more money for the fishermen. •Improvements in technology means that more fish can be caught at one time (e.g. trawling). •The ocean is generally an unregulated area, making fishing laws very weak and allowing overfishing to take place.
Impact of overfishing	<ul style="list-style-type: none"> •Reducing the amount of fish means predators have less food, having a knock on effect on the food chain. •There may be an increase in animals lower down the food chain, as their predators have largely been removed. •A decline in fish stocks in one area, could then lead to exploitation of other areas of the sea/ocean. •More extreme cases of overfishing could lead to the extinction of marine animals. •As overfishing takes place, ships and boats pollute the water with oil and other chemicals.
Causes of fossil fuel extraction	<ul style="list-style-type: none"> •Rapid industrialisation (growth of industry) in countries increases means that significant amounts of energy are needed. •Increasing wealth leads to greater demand for cars which require oil for fuel. •Increased wealth leads to a greater demand to technology, which require energy (fossil fuels). •Globalisation has lead to the growth in overseas travel, meaning oil is needed for fuel.
Impact of fossil fuel extraction	<ul style="list-style-type: none"> •Wildlife habitats disrupted by the noise for vehicles and machinery. •Wildlife habitats are removed by deforestation to allow access to the fossil fuels. •Marine ecosystems are affected by oil spills at sea or on the land. •Increased light pollution at night, because the machinery/gas flares that are part of the oil industry. •Increased congestion in the area from lorries, machinery and containers vehicles.
Causes of deforestation	<ul style="list-style-type: none"> •Increased demand for land for farming. •Increased demand for timber/fuelwood due to a growing population. •Clear of land for mineral extraction/mining/housing. •Growth of illegal logging, particularly in developing countries where incomes are low. •Growing population/urbanisation. •Road building.
Impact of deforestation	<ul style="list-style-type: none"> •Reduced biodiversity. •Producers killed, having knock on effects on food chains. •Reduction in decaying leaves on the floor, reducing soil fertility. •Increased flooding due to lack of interception and increased surface run-off. •Increased soil erosion because there is less protection from the trees. •Increased global warming. •Increased risk of drought.

Section C – Resource Management

6.2 The patterns of the distribution and consumption of natural resources varies on a global and a national scale

Global distribution of natural resources

- The location of global **agriculture** and **forests** are very closely linked to the influence of latitude and climate. Areas with higher precipitation and hot/warm climates have large amounts of forests and agriculture (e.g. Italy, UK etc). Areas with low precipitation levels create arid soils unsuitable to sustain plant life, or agriculture (e.g. The Sahara Desert).
- The worlds **forests** are concentrated in specific locations, for example the location of rainforests (equator) and temperate forests (60° latitude). The location of the forests on a global scale is dictated by climate. Forests are concentrated in areas that receive a large amount of rainfall, and receive permanent, or seasonal, warm weather.
- Some **rare resources**, such as **gold** and **diamonds** are found in areas such as sub-Saharan Africa, Russia and Australia, but not in other continents. Large amount of **metals** are found within China, such as lead and zinc. **Fossil fuels**, such as oil and coal, are found all over the world. The largest reserves of oil are in Venezuela, Saudi Arabia and Canada. (The majority of the worlds oil reserves are located in the Middle east).
- Global **water** supplies are very much dictated by climate. Areas with large annual amounts of precipitation have larger water supplies (e.g. Norway or UK). Global water supplies are also very much dictated by levels of development. More developed countries have the ability to transfer (by pipes) and store large amounts of water (such as in reservoirs). E.g. The Hoover Dam, USA.

UK distribution of natural resources

- Across the UK there are a range of reservoirs spread out to ensure that there is a good supply of **clean water** throughout the country; notably in central wales (Elan Valley reservoir) and the Lake District (Haweswater reservoir), where rainfall levels are high. This is due to the west side of the UK receiving a much higher rainfall than the east. This can sometimes create a water surplus in the west and deficit in the east.
- The distribution of **fertile soil** also determines the location of agriculture across the UK. The South East of the UK and East-Anglia have very fertile soils, so farming of crops takes place here.
- With regards to **energy resources**, coal resources used to be found all over the UK, notably south Wales, Scotland and northern England, but coal resources are close to becoming exhausted. There are, however, still large oil and gas reserves under the North Sea.
- The UK also contains a range of **rocks and minerals**. Sedimentary rocks are generally found in the south east of England; metamorphic rock in central Wales, Scotland and some in the south west of England. Igneous rocks are generally found in Scotland, with some in north England.
- **Forests** dominate large areas of the UK, notably in Central Wales and the west coast of Scotland, where forests have been protected by the Forestry Commission.

Section C – Resource Management

6.2 The patterns of the distribution and consumption of natural resources varies on a global and a national scale

Global patterns of usage and consumption of food, energy and water.

Food consumption	Water consumption	Energy consumption
<p><i>The developed countries have the highest levels of food consumption, whereas developing countries have the lowest levels of food intake. This is due to:</i></p> <ul style="list-style-type: none"> - Higher affluence in the developed countries to be able to afford foods and for foods to be imported. - The population tend to have a more wasteful attitude towards food (e.g. cooking excessive amounts, throwing away foods) - More developed countries may have a more moderate climate, making agriculture more successful and so access to food much easier. - Improvement in farming technology in developed countries means that food yields can be increased creating more food for consumption. - Political instability in developing countries can affect food access, transportation and production 	<p><i>The % access to clean water varies between country and is strongly linked to development. Developed countries have a much greater access to clean water and a greater usage of water than less developed countries:</i></p> <ul style="list-style-type: none"> - This is often due to large amounts of labour saving devices that require water (e.g. dishwasher and washing machines). - In more developed region leisure activities, such as golf courses and swimming pools also require large amounts of water. - Hygiene is also much better in more developed countries as people will shower/bath every day using excessive amounts of water. - In agriculture in developed countries crops are often watered using simple and slow irrigation systems, whereas in developed countries large scale sprinklers are used, with can distribute up to 75 times more water. - Although industry is growing in developing countries, the scale of the industry is still much smaller than in developed countries. Therefore this uses less water. 	<p><i>The amount of energy used by a country is very strongly linked to development and wealth. Developed countries have a much greater consumption for energy, than the developing regions, although the gap is narrowing.</i></p> <ul style="list-style-type: none"> - Greater affluence is the driving force behind energy consumption. As populations have more money they can afford to have energy using technology (e.g. TV, computers etc.) and afford the energy costs - Wasteful attitude in developing countries mean that energy is wasted unnecessarily (e.g. leaving light on, TV on standby etc), which increases consumption rates. - Developed countries have more technology and greater access to technology; that require energy to work. - Increased population sizes, combined with the affluence and technology means that more energy is consumed. - Car ownership is growing in developed countries, with most households owning at least 1 car, and a growing population owning 2 or more cars.

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6.3 Renewable and non-renewable energy resources can be developed

Advantages and disadvantages of renewable energy

Energy	Example	Positive impacts	Negative impact
Hydro-electric Power	Three Gorges Dam, China	<ul style="list-style-type: none"> - The energy created by the dam is clean and non-polluting. - The water supplied behind the dam creates a reliable water supply for areas located nearby. - The reservoirs can be used for recreational activities (such as water sports). 	<ul style="list-style-type: none"> - The reservoir that is created behind the dam can destroy large areas of land including homes and natural habitats of animals. - Large scale dams are very expensive to build and require skilled individuals and technology. - When built, this can stop the migration of fish up and down the river.
Wind power	Burbo Bank Wind Farm, Liverpool	<ul style="list-style-type: none"> - The large turbines can be placed out at sea, therefore reducing visual and noise pollution. - When built they are relatively cheap to maintain. - The turbine uses the wind to turn it, therefore it does not produce/emit greenhouse gases. 	<ul style="list-style-type: none"> - Many people find the turbines to be visually polluting and visually intrusive. - There needs to be a reasonably strong wind for the turbines to work. - The turbine spinning can kill migrating birds.
Solar power	Gobi Desert, China	<ul style="list-style-type: none"> - The running costs are very cheap, creating a cheap source of energy - The panels used do not produce/emit greenhouse gases. - The panels can be placed on houses, so they do not take up much space and home owners have their own energy source. 	<ul style="list-style-type: none"> - When used on a large scale, they take up large areas of land. - Many people find the solar panels to be visually polluting and visually intrusive. - Manufacturing the solar panels is expensive and can lead to the release of chemicals, such as mercury, lead and cadmium.

Advantages and disadvantages of non-renewable energy

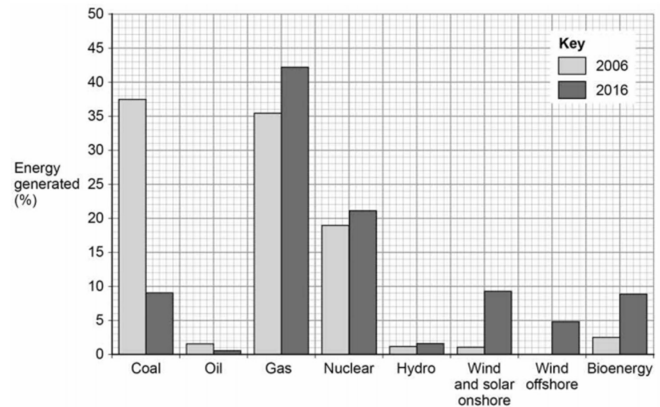
Energy	Example	Positive impacts	Negative impact
Coal	Open cast coal mining in Australia	<ul style="list-style-type: none"> - Burning the coal is an efficient way of generating lots of energy. - Mining for coal is a cheap and easy method, and there are still lots of coal resources around the world. 	<ul style="list-style-type: none"> - Harmful greenhouse gases are released into the atmosphere when coal is burned. - The open cast mines destroy environments, ecosystems and natural habitats.
Oil	Oil extraction in the north sea, UK	<ul style="list-style-type: none"> - The oil industry provides millions of jobs worldwide. In Canada alone it provides over half a million jobs. - Oil is relatively easy to extract and efficient to use to create energy. 	<ul style="list-style-type: none"> - Broken pipelines often lead to large scale spillages, exposing humans and animals to harmful chemicals. - Using and refining the oil leads to the release of carbon dioxide and other greenhouse gases.
Natural gas	Natural gas extraction in the north sea, UK	<ul style="list-style-type: none"> - It is lighter than air, so therefore simply dissipates when there is a leakage, rather than destroying the local area. - Natural gas is made from methane, therefore there are less carbon emissions than burning oil or coal. 	<ul style="list-style-type: none"> - Harmful greenhouse gases are released into the atmosphere when the natural gas is burned. - Chemicals have to be used to extract natural gas, which can contaminate/pollute groundwater supplies.
Uranium	61 major nuclear power plants in USA	<ul style="list-style-type: none"> - Produces much less CO₂ than any of the types of fossil fuel. - Although the initial cost to build the power plant is very expensive, it is relatively cheap to operate and can produce a constant energy supply. 	<ul style="list-style-type: none"> - The power stations are extremely expensive to build and involve great amounts of modern technology. - The uranium used is very dangerous, and any nuclear leaks can damage the local environment for humans, animals and vegetation.

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6.4 To meet demand, countries use energy resources in Different proportions. This is called the energy mix

UK energy mix

- The UK energy mix refers to the different energy sources that are used to produce enough energy for the UK population.
- As can be seen on the graph, the main energy source for the UK is natural gas (approx. 42%), nuclear energy (approx. 21%), followed by coal, and renewable energy sources, and then coal.



Factors affecting global energy mixes

Population size

- Some countries, particularly those that are developing or emerging, have a rapidly growing population size, such as India. This leads to a rapid growth in demand for energy resources. Therefore, these countries often must use whatever energy resource is available and cheap - regardless of sustainability.
- Countries with less of a population do not need as much energy, and so can rely on less energy sources. For example, Iceland only have a population of 300,000 so the demand for energy is very low.

Government policy

- Different pressure groups can put pressure on changes to government policy, particularly in developed countries. This can influence the proportion of an energy resource used. This will usually have the knock-on effect of reducing the amount of energy produced by non renewable resources.
- The UK government is trying to meet the target of 15% of energy to be generated from renewables by 2020 under the EU Renewable Energy Directive (EU law). This will reduce the UK reliance on fossil fuels.

Location/availability of resources

- The location of non-renewable energy resources will have a large impact on a country's energy mix. For example, the UK can access coal, oil and natural gas from within the country, meaning that the energy mix is dominated by these fossil fuels.
- The geographical position of a country may provide it with opportunities for the development of renewable energy resources, which will have a large impact on a country's energy mix. For example coastal countries can invest into offshore wind farms, and those located on tectonic boundaries, such as Iceland, can invest in geothermal energy.

Economic/technological development

- Some countries may want to increase the proportion of renewables - but may not have the wealth and/or technology available to do so; this means that they have to develop those resources that are the easiest/cheapest - but these may not always be the most sustainable.
- Many of the more modern forms of non renewable energy require advanced technology to put in place, and an initial high cost. For example offshore wind turbines can cost up to £3 million each to put in place. This means that more developed countries with greater wealth will have a greater use of renewable energy.

Section C – Resource Management

6.5 There is increasing demand for energy that is being met by renewable and non-renewable resources

Changing global demand and supply for energy

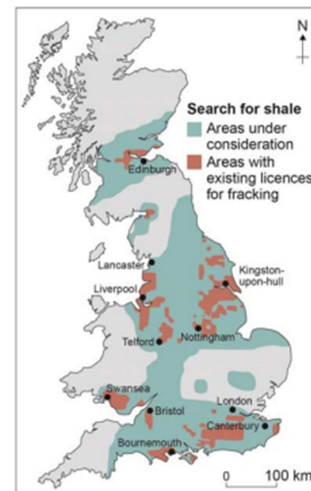
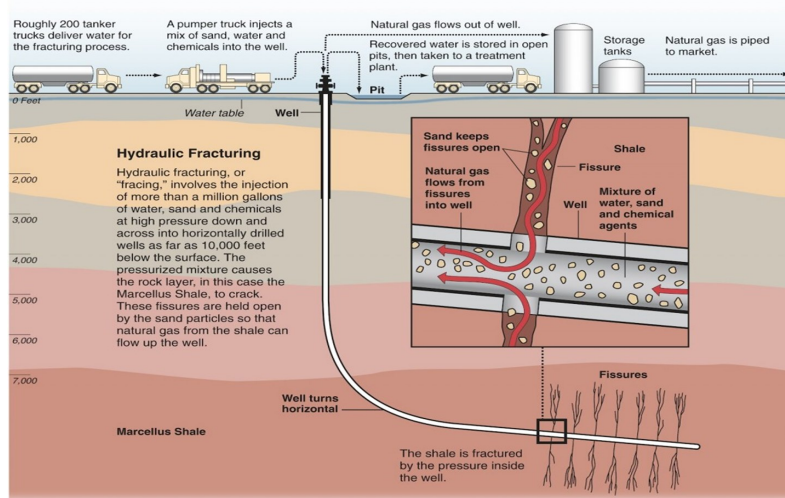
There is an ever increasing demand for energy. This is due to three main reasons:

- Population growth — as there are more people, the demand for energy increases. 100 years ago there were approx. 2 billion people on earth; now there are over 7 billion.
- Increased wealth — as affluence increases, people can afford more technology that requires energy (e.g. car ownership, central heating, TV).
- Technological advancements — over the past 100 years there have been major advances in technology which requires energy (e.g. smartphones, TV's, hair-dryers etc.).

There has been a changing supply in energy over the past 100 years. This is due to :

- Increased wealth — as affluence increases, the world is able to pay for the research, design and manufacture of a wide range of energy resources (e.g. nuclear power, solar power etc.).
- Technological advancements — new technologies have opened up new types of energy sources, such as wind, solar and HEP.
- Technological advancements — new technologies to discover and extract reserves of fossil fuels (e.g. fracking), means that oil, gas and coal has continued to dominate energy supplies.

How fracking can resolve energy resource shortages.



Advantages of fracking

- Fracking will allow us to reach large amounts of previously inaccessible gas.
- It will allow us to rely less on foreign imports of gas.
- Thousands of jobs will be created.
- There is minimal impact above ground as wells spread horizontally below ground from one above-ground site.
- Reduces the cost of energy as it doesn't need to be imported.
- Renewable energy sources do not currently meet the demand of energy needs.

Disadvantages of fracking

- Fracking uses vast amounts of water, causing conflicts within the local area.
- There are concerns that fracking increases the number of earth tremors (earthquakes).
- Fracking can cause land to move and homes to subside, lowering house prices
- Fracking will continue our reliance on fossil fuels, preventing us from reducing CO₂.
- Chemicals used in the process could contaminate groundwater supplies.
- Sites require numerous HGVs - this leads to congestion on narrow country roads and a decrease in local air quality .
- Fracking is a very expensive option, so the cost will be passed on to the consumers.

Section C – Resource Management

6.6 Meeting the demands for energy resources can involve interventions by different interest groups

Why renewable and non-renewable energy resources require sustainable management.

- Energy resources need to be managed carefully as...
 - Non renewable energy is finite and so will eventually run out.
 - Non renewable energy resources emit carbon dioxide, which is a greenhouse gas causing climate change.
 - Global populations are increasing rapidly and current energy supplies will not be able to meet the needs of the population.
 - Renewable energy sources are not currently efficient enough to meet energy needs.

Attitudes to the exploitation, consumption and management of energy

- Different groups of people will have different attitudes towards the use of certain energy resources. These people are known as stakeholders.
- Stakeholders may include; local government, national government, Greenpeace, environmentalists, landowners, local residents, local water authorities, oil/gas companies etc.

	Attitude to resource exploitation
Individuals	<ul style="list-style-type: none"> • Some individuals believe that the initial cost of renewable energy (e.g. solar panels on roofs) is too expensive to put in place. • Some individuals, especially in developed countries with a better education, are aware of the impacts of a high carbon footprint, so want to be more sustainable. • People living close to renewable energy sources, such as wind farms, are against their use due to visual and noise pollution. • Local landowners can often generate money by renting out their land to the government for wind farms to be built, so are in favour of this. • Workers in the oil industry do not want to lose their jobs, so want to continue extracting oil.
Organisations	<ul style="list-style-type: none"> • Groups like Greenpeace and Friends of the Earth encourage the use of renewable energy to reduce our carbon footprint, in order to minimise human impact upon the environment. • Companies, like McDonalds, promote themselves as a 'sustainable company' to give them a positive image (e.g. McDonalds reuses the cooking oil from restaurants to use as biofuel in lorry's). • Smaller companies are sometimes unable to afford more sustainable/renewable options, so are forced to use cheaper alternatives. • Large oil extraction companies, like BP or Shell, want to maintain the use of oil and natural gas as they have a financial interest in its use.
Government	<ul style="list-style-type: none"> • The government will invest in renewable energy sources to meet UN or EU targets. This is mainly the governments in more developed countries. • Large amounts of taxes are generated for the government from the use of oil, which can then be reinvested into the country. • Governments have to subsidise the cost of renewable energy resources, so the use of fossil fuels is cheaper for the government in the short term. • Some countries have large amounts of energy resources (e.g. Qatar has oil reserves), which the country wants to export to generate money for the government.

Section C – Resource Management

6.7 Management and sustainable use of energy resources are required at a range of spatial scales from local to international

How one developed country has attempted to manage its energy resources in a sustainable way.

- Germany is a developed country located in central Europe.
- Germany use a large amount of energy for transport, industry and households.
- Historically there has been a reliance upon fossil fuels and non renewable energy sources. In 1970 approx. 98% of energy was from non renewable sources. In 2030 this is predicted to be only 66%.
- More recently, there has been a great deal of investment into more sustainable, renewable energy sources, including solar, wind and HEP. They have also increased their spending on research and development of renewable energy sources.
- The government has also introduced a number of policies to encourage a less wasteful attitude towards energy.

- Germany has closed nuclear and coal power plants to reduce greenhouse gas emissions (all nuclear power to be closed by 2022).
- The German government has invested in large solar power farms. The Bavaria Solar Park is 62 acres large and uses 60,000 panels.
- The German government have invested in offshore wind farms, producing 8% of Germany's total energy.
- Germany offer financial grants for households to purchase solar panels (the government pay 25% of the overall cost).
- The German government have given a €1bn subsidy to boost sales of electric cars, therefore reducing the need for non renewable energy.
- The government has 'feed-in tariffs' that pay producers of renewable energy for any additional electricity they produce.
- Germany are on target to reduce their greenhouse gas emissions by 80% by 2050 (from the 1990 level).

How one emerging country or developing country has attempted to manage its energy resources in a sustainable way.

- China is an emerging country located in Asia.
- China is the largest producer of CO₂ in the world and was responsible for 29% of the worlds CO₂ emissions in 2014. This has led to high levels of pollution throughout the country.
- China burns more coal than USA, Europe and Japan combined.
- With a growing population, China's energy demand has risen and is set to continue to rise.
- In 2006 the Chinese government set up the China Renewable Energy Law, in order to develop renewable energy sources in the country.
- These include HEP (Three Gorges Dam), Solar power (Gobi Desert), and wind power (Gansu)



The Three Gorges Dam cost \$30 billion to build and took 10 years to build. It led to the flooding of 600km² of land and forced 1.4 million people to leave their homes.

The power station takes up 10km² of the Gobi desert and will produce enough energy to power 1 million homes. The Gobi desert contains animals such as the golden eagle and the Jerboa.

The Gansu wind farm consists of over 7000 wind turbines and has cost \$17 billion. It has already affected local birds, such as the Chukar, but does produce the same amount of energy as a large nuclear power station