GCSE Geography
Urban Issues

Key question	Content		R	A	G
A growing percentage of the world's population lives in urban areas.	The global pattern of urban change				
	Urban trends in different parts of the world including HICs and LICs				
	Factors affecting the rate of urbanisation – migration (push–pull theory), natural increase				
	The emergence of megacities.				
Urban growth creates opportunities and challenges for cities in LICs and NEEs.	A case study of a major city in an LIC or NEE to illustrate:	• the location and importance of the city, regionally, nationally and internationally			
		• causes of growth: natural increase and migration			
		• how urban growth has created opportunities:			
		• social: access to services – health and education; access to resources – water supply, energy			
		• economic: how urban industrial areas can be a stimulus for economic development			
		• how urban growth has created challenges:			
		• managing urban growth – slums, squatter settlements			
		• providing clean water, sanitation systems and energy			
		• providing access to services – health and education			
		• reducing unemployment and crime			
		• managing environmental issues – waste disposal, air and water pollution, traffic congestion.			
	An example of how urban planning is improving the quality of life for the urban poor.				
Urban change in cities in the UK leads to a variety of social, economic and environmental opportunities and challenges.	Overview of the distribution of population and the major cities in the UK. A case study of a major city in the UK to illustrate:	• the location and importance of the city in the UK and the wider world			
		• impacts of national and international migration on the growth and character of the city			
		• how urban change has created opportunities:			
		• social and economic: cultural mix, recreation and entertainment, employment, integrated transport systems			
		• environmental: urban greening			
		• how urban change has created challenges:			
		• social and economic: urban deprivation, inequalities in housing, education, health and employment			
		• environmental: dereliction, building on brownfield and greenfield sites, waste disposal			
		• the impact of urban sprawl on the rural–urban fringe, and the growth of commuter settlements.			
	An example of an urban regeneration project to show:	• reasons why the area needed regeneration			
		• the main features of the project.			
Urban sustainability requires management of resources and transport.	Features of sustainable urban living:	• water and energy conservation			
		• waste recycling			
		• creating green space.			
	How urban transport strategies are used to reduce traffic congestion.				

Urbanisation is the process where an increasing proportion of the population lives in **urban** areas (towns and cities), in comparison with **rural** areas (villages/ countryside).
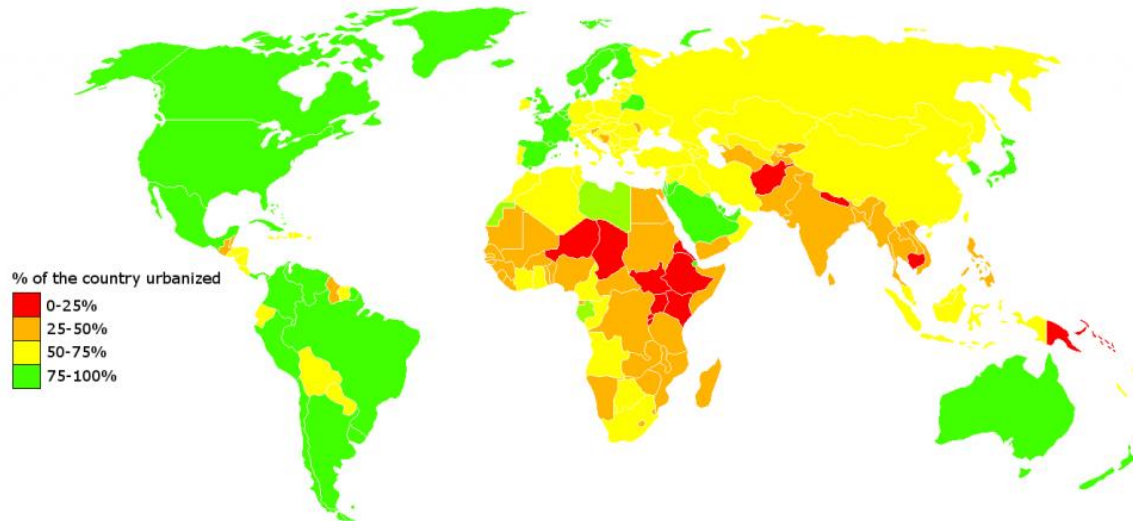
There are 2 main causes of urban growth.

1. Rural to urban migration

Large numbers of young people migrate to urban areas, Lack of education in rural areas

2. Natural increase – the difference between BR and DR

Improving quality health care, Lower Infant Mortality Rates, Use of contraceptives is increasing slowly

% of the country urbanized
- 0-25%
- 25-50%
- 50-75%
- 75-100%

Urbanisation has taken place at different times and at different speeds in different parts of the world. The UK was one of the first countries in the world to become urbanised. Across the world:

- In most of the world's richer countries, over 60% of the population live in cities
- In South and South East Asia, around 50% live in towns and cities
- All but six countries in Africa have urban populations of above 20% (Niger, Uganda, Burundi, Ethiopia, South Sudan and Malawi). The average is almost 40%.

In terms of rates of urban growth, LICs are displaying faster rates of urban growth than HICs.

Growing Urban Areas

- More than half of the world's population now live in urban areas. Cities all over the world are continuing to grow, due to rural-urban migration and natural increase.
- A **natural increase** in population occurs when there is a high proportion of young adults aged 18-35 – people at this age are most likely to have children. Furthermore, the smaller proportion of older people means that the death rate is lower. Improvements to health care, particularly in urban areas of poorer countries, can also result in a lower death rate.
- As a result, natural increase tends to be **higher in LICs** (e.g. Cambodia) and NEEs (e.g. India) where the birth rate is high and the death rate is falling or has fallen.
- **Rural-urban migration** occurs because of push and pull factors. These are the real or imagined disadvantages of living in rural areas and advantages of living in a town or city.

Push and Pull Factors

Push Factors	Pull factors
People want to leave the countryside because: • Farming is hard labour and poorly paid • Desertification and soil erosion make farming difficult • Drought and other climate hazards reduce crop yields • Farming is often at subsistence level, producing only enough food for the family, leaving nothing to sell. • Poor harvests may lead to malnutrition or famine • Few doctors or hospitals • Schools only provide a very basic education • Rural areas are isolated due to poor roads.	People are attracted to the city because: • There are more well-paid jobs • A higher standard of living is possible • Friends and family may already live there • Better chance of getting a decent education • Better public transport • Range of entertainments are available

Urban growth has led to the development of **Megacities** with a population of over 10 million.

Slow-growing	Growing	Rapid-growing
Where? South East Asia, Europe and North America	**Where?** South America and South East Asia	**Where?** South/South East Asia and Africa
Features: Population at 70%+ urban. No squatter settlements	**Features**: Population at 40-50% urban. Under 20% in squatter settlements	**Features:** Population under 50% urban. Over 20% in squatter settlements
Examples: Osaka-Kobe, Tokyo, Moscow, Los Angeles	**Examples**: Beijing, Rio de Janeiro, Shanghai, Mexico City	**Examples**: Jakarta, Lagos, Mumbai, Manila

How many people live in the UK?

The population of the UK has steadily grown since 1900 and is likely to continue growing into the mid 21st century. The total population in 2015 was 64.6 million. The process of urbanisation began in the 19th century the in UK - industrialisation began which needed workers.

The population density of the UK is 260 people per km squared - the South East is the most densely populated part of the UK

How is the population distributed?

The UK population is unevenly distributed, with 82% living in urban areas one of the most urbanised countries in the world.. One in four of those live in London and the south east. In contrast, many highland regions of Scotland and Wales are very sparsely populated. These are upland areas that are remote and can experience harsh climatic conditions.

The UK's urban areas

The distribution of the UK's major cities and most densely populated areas reflect its industrial past. This was shaped by the Industrial Revolution in the 18th century. There was a development of heavy industries and concentration of population near supplies of coal and raw materials such as iron ore. For example:

- The central lowlands of Scotland (Glasgow)
- North east England (Newcastle and Sunderland)
- Lancashire (Manchester)
- West Yorkshire (Leeds and Sheffield)
- South Wales (Cardiff and Swansea)

London developed because of its position as the capital of the UK with associated political and administrative functions. From being the capital of a large empire, it became a global city and a financial centre. Belfast, Cardiff and Edinburgh grew because of their function as capital cities of Northern Ireland, Wales and Scotland.

The UK's second city, Birmingham, grew mainly as a centre of industrial innovation due to its key position in the centre of the country. The UK's position as an important trading nation explains the growth of port cities such as London, Liverpool and Bristol.

How might this distribution change?

There are key factors affecting the distribution of the UK's population:

- There has been a general drift toward south east England and London – one of the world's financial, business and cultural centres
- Since 1997, annual inward migration to the UK has been greater than outward migration. Between 2009 and 2014, this increased the population by an average of 243,000 each year. Immigrants general settle in larger cities where there are more job opportunities.
- There has recently been a movement from urban to rural areas. The UK has an increasing proportion of older people; many choosing to retire to live on the coast or in the countryside.

Annual growth 2012-2014, %
- -1.1 - 0.0
- 0.0 - 0.3
- 0.3 - 0.7
- 0.7 - 1.1
- 1.1 - 1.5
- 1.5 - 2.4
- 2.4 - 4.0

Population
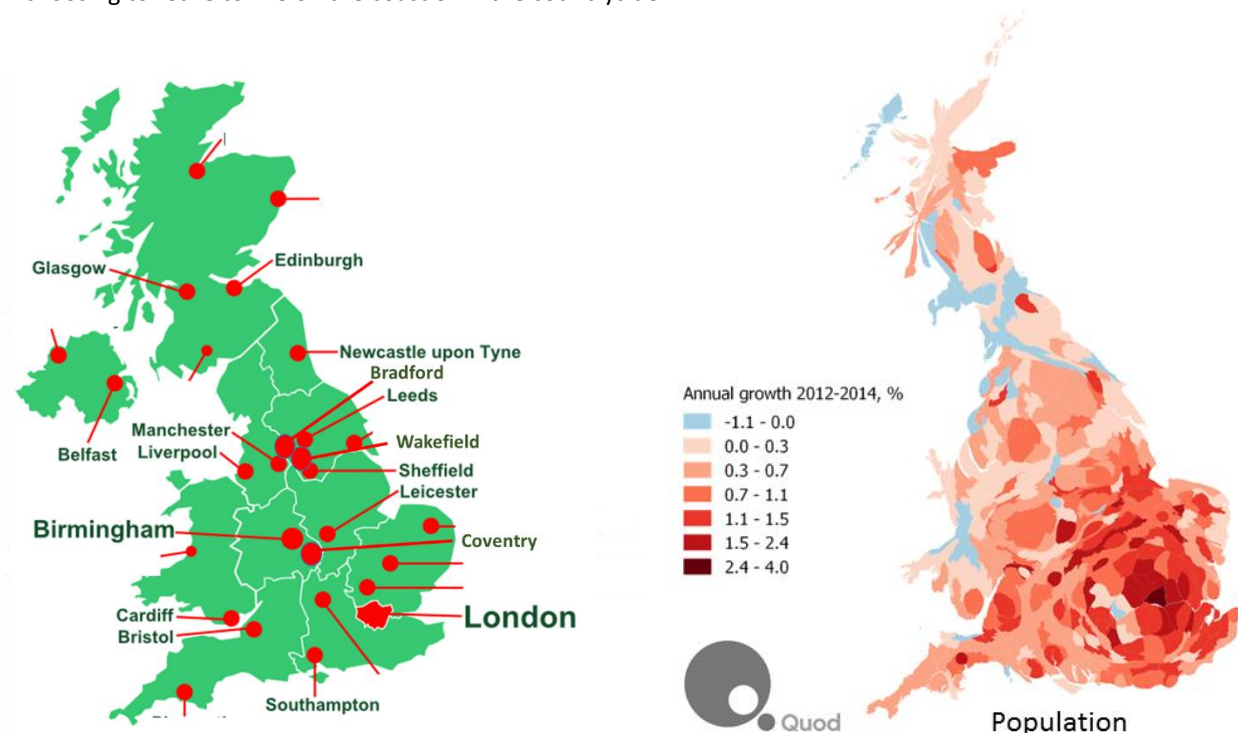
Sheffield – Urban opportunities
- Sheffield is located in South Yorkshire, east of the Pennines, the valleys of the River Don, Over 33 million people are within 4.5 hours drive, excellent links to the rest of the UK through its rail and road networks.
- There are more than 250 parks, woodlands and gardens in the city, with an often quoted estimated 2 million trees, the highest ratio of trees to people of any city in Europe, a third of the city lies within the Peak District National Park
- Sheffield's population 563,749, natural increase in the population, increase in the level of international migration, Clear bulge in the population in the 20-24 age group - large student population at its two universities.

Background
• 19th century- Steel City, decline in heavy steel and engineering industries since the 1960s
• Due to increasing competition from imports, it has seen a decline in heavy steel and engineering industries since the 1960s, which has forced the sector to lay off the majority of the local employment.
• 21st century - specialist steel-making, two universities, NHS, and national and local government highest employer
• In 2008, **Sheffield** ranked among the top 10 UK cities as a business location and aims to regenerate itself as a modern technology and sports based city.
• Sheffield is famous for: two football teams, the Institute of Sport, Meadowhall shopping centre, two universities and being the 'greenest' city in the UK.

Migration - Migration is the movement of people from one place to another.
Internal migration is when people migrate within the same country or region - for example, moving from London to Sheffield.
International migration is when people migrate from one country to another - for example, moving from Australia to the UK.
19.2% of Sheffield's population is of black or minority ethnic origin. The largest group is of Pakistani origin and makes up 4%.

Advantages	Disadvantages
Economic growth can be sustained because immigrants bring energy and innovation and workers.	Having workers willing to work for relatively low pay may allow employers to ignore productivity, training and innovation. Migrants may be exploited.
Job vacancies and skills gaps can be filled e.g. services for the ageing population like care workers.	Unemployment may rise if there are unrestricted numbers of immigrants.
The pension gap can be filled by the financial contributions of new young workers who pay taxes to the government	*Increases in population can put pressure on public services like schools and healthcare.*
Failing schools (and those with falling numbers) can be transformed.	*Immigrants may not integrate into the local community, causing conflict and friction with local people.*
Host countries are enriched by cultural diversity; food, music, art.	*Large movements of people lead to more security monitoring.*

Urban greening - The process of increasing and preserving open space such as public parks and gardens in urban areas.
- trees produce oxygen and help reduce global warming by absorbing carbon dioxide.
- reduce the risk of flooding by slowing down the rate at which rainwater drains into water courses.
- open provide a habitat for urban species; plants, wildlife and insects
- People enjoy open spaces for recreation and leisure – walking cycling, picnics etc

Urban Changes: Opportunities and Challenges
1. During the Industrial Revolution there was growth of manufacturing industries and rapid urbanisation.
2. This was followed by industrial decline — many industries relocated overseas or to the rural-urban fringe.
3. Lots of people moved to the suburbs, and the inner city areas and CBDs declined.
4. Regeneration projects have helped to make city centres more attractive again.
These changes have created various opportunities and challenges:

1) **Immigrant communities** were attracted by low cost inner city housing. Many UK cities are now very multicultural — offering a range of food and festivals, e.g. the Notting Hill Carnival in London.
2) **Redevelopment** presents opportunities for new investment. Hotels, restaurants and entertainment venues can be upgraded to make the city centre more attractive.
3) **CBDs have been redeveloped** with offices and entertainment facilities — creating employment opportunities in, for example, finance, tourism and the creative industries.
4) Cities dealing with congestion problems and high numbers of commuters coming into CBD have developed **innovative transport solutions.**
5) The importance of green space in cities is being increasingly recognised by planners. **Parks, gardens and open spaces** are being incorporated into regenerated areas of UK cities.

Sheffield - Urban challenges

1) **Industrial decline** in cites caused a decrease in wealth. People moved away, leaving derelict buildings that became a target for crime, and areas in many inner cities became deprived. **Sheffield Steel industry**
2) Deprived areas are linked to **poor access to health care, education and job opportunities** compared to other areas — these inequalities can lead to social unrest.
3) **Derelict land** in inner cities provides brownfield sites (sites that have previously been developed), which can be used for new development. However, high demand for housing means that new estates also sprawl onto rural greenfield sites (land which has remained free from development).
4) **The rural-urban fringe** is under pressure from the development of business parks and large shopping centres — the land here is attractive because of good transport links and its lower cost. **Meadowlhall was built in 1990**.

Inequality - Inequality is differences in poverty and wealth but also includes differences in the well-being of people, and access to jobs, housing, education and services like healthcare. Access to open space, safety and security are also included.
Deprivation - Where a person's quality of life falls below a level that is thought to be acceptable by the government of a country.
Deprived areas - Places where economic, social and environmental conditions are very poor. Lack of material benefits considered to be basic necessities in a society
Relationship between urban deprivation, inequalities in housing, education, health and employment

- The most deprived areas in Sheffield are to the East. Wards include: Manor Castle (where the Park Hill Flats are), Firth Park and Darnall.
- The least deprive areas in Sheffield are to the West. Wards include: Broomhill, Ecclesall and Dove& Totley.

Health
- Life expectancy is lower in the East. Therefore the highest deprivation results in early deaths.

Housing
- The majority of households living in the private housing are home owners, but 16% rent from a private landlord.
- Most people who rent live in the East.

Employment
- When the steel industries closed in the 1980's, unemployment was high in Sheffield.
- Since then, there has been a focus on getting people jobs. The unemployment rate has now fallen.

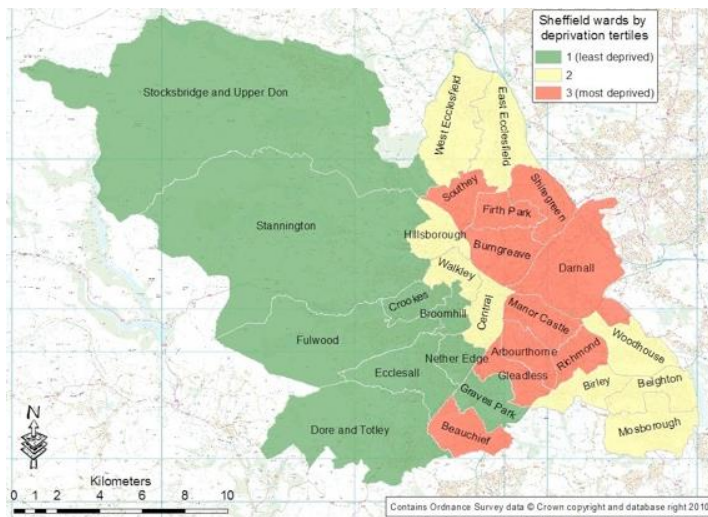However, there are a large number on young people unemployed.

Urban sprawl - The unplanned growth of urban areas into the surrounding countryside
Rural – Urban Fringe - the transition zone where urban and rural areas meet, <u>mixture of land uses such as</u> housing, recreation (Graves park), golf courses (Birley wood), business parks (Stockbridge). Less crime, peace and quiet, flat land, cheap land, less pollution, access to countryside, near motorway.
Commuter settlement - residents live in the settlement but work elsewhere, little commercial or industrial activity themselves except a few services for residents

Redevelopment - Renovation and improvement of run down areas.
1. **Bridges** - cleared 7 acre brownfield site on Penistone Road, located in the top 18% most deprived local authorities in the UK, disused for 20 years, create at least 200 jobs, shops and restaurants.
2. **Manor**, in the east of Sheffield, Gleeson Homes to build 103 two, three and four bedroom family homes, brownfield land owned by Sheffield City Council, with 156 jobs created during construction, jobs for people living within two miles will be prioritised, offering support to make house buying more affordable through schemes which help people save for deposits and fees

Brownfield sites	Greenfield sites
There is a need for more housing in urban areas, brownfield sites can be developed to increase housing availability.	Land is cheaper at the edge of a city
Sites in urban areas are close to urban services so have access to public transport, less need for cars.	Land is cheaper to build on because it does not need to be cleared before building on
Sites are available as industry has declined	Edge of the city means excellent links to motorways or airports for businesses locating there.
Derelict sites are unattractive and dangerous and are improved when they are re-developed.	*Public transport is not easy to access so more cars are needed*
Building can be more expensive because land has to be cleared first.	*Urban sprawl is increased meaning loss of countryside*
	Habitats are lost e.g. fields, hedgerows, woodlands
Industrial land may need to be decontaminated to make it safe.	*Journey times to the city are longer, resulting in more air pollution*

Sheffield redevelopment project

Regeneration: changes to an area designed to bring about <u>lasting</u> improvement to the economic, physical, social and environmental conditions of a place

In the 1950s and 1960s the Government knocked down the poor quality terraces and replaced them with tower blocks. The 'famous' Park Hill flats of Sheffield are the result of such post war urban redevelopment.

In 1998 the Park Hill estate was given protected status as a listed building and the council spent millions of pounds doing it up. Today a flagship development project encouraging people to move back into the CBD

Social	Economic	Environmental
By the 1980s, there were burnt-out cars, boarded-up pubs, rubbish and graffiti. It became popular with muggers due to the number of passageways and poor lighting. The Streets in the Sky became a great escape route. It became a 'no-go area' at night because it was so dangerous. It became associated with drug use and family breakdown The flats had poor noise insulation	Sheffield's steel industry collapsed. This was the city's biggest income provider and employer. In 1984 unemployment in Sheffield was 15% Properties were neglected and the area was named 'San Quentin' by the residents after the famous US jail	Flats were infested with cockroaches The flats became an eyesore

What happened to the development?
- Redeveloping the area was tricky as the flats were no longer all owned by the council. The ground was polluted by waste from iron and streel making so massive investment was needed before redevelopment could take place
- It was controversially given Grade II listing status in 1998 making it the largest listed building in Europe
- A long process of regeneration began, led by the developer Urban Splash, who were given the estate for free in 2004

What is it like today?
- A quarter of the properties in the new development are 'affordable' homes, the rest are private housing
- The development includes a high street and village green
- The flats have been covered in coloured glass
- Prices for the new 2 bedroom flats start at £147,000 – far above the average for similar properties in Sheffield

Positives	Negatives
The flats are no longer an eye sore but are a landmark that is a famous part of the city. The 'no go' view that people held of the area in the past has largely gone and the completed flats are occupied. Park Hill has become a <u>high profile venue</u> in Sheffield. In September 2015 there was a music festival that included the largest community meal in Sheffield. Park Hill has become popular with the <u>business community</u>, especially the growing creative and digital sectors. There are now 200 businesses on the site.	The cost of the regenerated flats has been criticised, asking prices start at £90,000 per one-bedroomed flat. This is unaffordable for local people who are poorly paid or unemployed, Lots of the original residents wish to return to Park Hill but there have not been enough social flats for rent to accommodate them – *less than a third of the block will be run by a housing association.* People who used to live in Park Hill cannot afford to live there now. The flats are not being regenerated as quickly as planned. Although people have moved in to the completed flats, areas of the development are still boarded up or covered in public art.

Urban sustainability

Energy conservation
1. Using more renewable sources of electricity e.g. solar and wind.
2. Running fuel-efficient public transport systems that also cause less pollution.
3. Have integrated transport systems that reduce traffic congestion

Water conservation -Collecting and recycling water instead of piping it in from reservoirs in the countryside. This is 'grey water'.

Waste recycling - refuse and general waste from your bins, plastics, metals, food wastes; Waste water from cleaning, dishwashers, washing machines; Waste Water from toilets; waste recycling, The UK dumps about half of its municipal rubbish into landfill sites

Waste management
- households- sort their recycling into different bin collections which occur on different days
- council - what can be recycled and what can't be recycled from the general waste at the recycling centres
- incineration - Materials that can be burnt creates electricity for the city
- landfill - Material that can't be recycled or incinerated

Creating green space.

The presence of official **green spaces provide**
1. A **carbon sink** for urban areas (plants take in CO_2 during photosynthesis)
2. **Habitats** for local wildlife
3. A range of **recreational opportunities** e.g. parks, playing fields,

BedZED – South London, households use 2,579 kWh of electricity per year which is 45% lower than the average in surrounding area. On average, households use 3,526 kWh of heating per year – 81% less than the average in Sutton. Carbon emissions from energy use in the home are reduced by 72% compared to similar homes built at the time

Integrated transport systems - when different transport methods connect together
- journeys will be smoother
- public transport will be more appealing to encourage people to use their cars less.
- Transport will be sustainable
- less congestion on the roads.

Road network - Barnsley, Doncaster, Rotherham and Sheffield, M1, A1(M), M18 and M180. Trans-Pennine road links A57 Snake Pass and A616/ A628 Woodhead Pass.

Park and Ride - linked to the tram network, 1672 parking spaces for cars across the 7 P&R sites in Sheffield.

Cycle lanes – aim 10 per cent of travel to be made by bike by 2025 and 25 per cent by 2050. 7 new cycle lanes

'Boris Bikes' – ByCycle ran by Sheffield university

FreeBee Buses - runs around the city centre, Monday to Saturday every seven minutes. Students, commuters, shoppers and visitors

Trams - network connects the suburbs with the city centre and with Meadowhall, public transport interchanges built, 15 million passengers

Tram trains- Sheffield and Rotherham, designed to run on both the Stagecoach Supertram system and the national rail network.

Airports – Doncaster Sheffield robin hood airport. Direct train route to Manchester, east midland and Bradford within 1 hour

Importance – links to other city regions, important for economic activities (eg logistics industry - fast, reliable, efficient transport links), Finance and banking and advanced manufacturing are supported by efficient transport links to head offices, Customers are often abroad or elsewhere in the UK e.g. Boeing's Advanced Manufacturing Research Centre at Sheffield University or the proposed Rolls Royce and Nuclear Research facilities which will be located at the proposed Advanced Manufacturing Park at Waverley.

NEE – Brazil – Rio de Janeiro

What is Rio like?
- Rio de Janeiro is situated on Brazil's Atlantic coastline at 23˚S and 43˚W. It has grown up around a large natural bay called Guanabara Bay.
- Until 1960, Rio was the capital city of Brazil – it is now Brasilia. It is the cultural capital of Brazil, with over 50 museums, and its famous annual carnival is one of the world's biggest music and dance celebrations. It ii a UNESCO World Heritage Site. The staging of the 2014 football World Cup and 2016 Olympics have increased its global importance.
- Rio has become a "global city" because of its importance in the global economy as an industrial and financial centre.
- It is a major regional, national and international centre for man important companies and industries. It is also an important hub – with 5 ports and 3 airports

How and why has Rio de Janeiro grown?
Rio de Janeiro is the 2nd largest city in Brazil (the largest is Sao Paulo). In 2014, Rio had a population of 6.5 million people in the city itself and 12.5 million in the surrounding area (the population of Greater London is about 8 million).Rio has grown rapidly in the last 50 years to become a major industrial, administrative, commercial and tourist centre. These economic activities have attracted many migrants from Brazil and other countries to swell the population of the city.

These migrants have contributed to Rio's continuing economic development. As a result, Rio has a racially mixed population. Migrants have come to Rio from many different places:
- From other parts of Brazil e.g. the Amazon Basin
- From other South American countries e.g. Argentina and Bolivia
- More recently, from South Korea and China to seek business opportunities
- The common language still attracts migrants from Portugal – Brazil's former colonial power
- Rio's industry attracts skilled workers from the USA and UK.

- Brazil's second largest city in terms of industrial production, financial and service industries behind São Paulo.
- Main industries include chemicals, petroleum, processed foods, pharmaceuticals, textiles, clothing and furniture.
- Second largest exporting city - exports a total of $7.49billion worth of goods - crude petroleum (40%), iron and steel products (27%).
- Oil in the Campos Basin - TNCs establishing a base in Rio de Janeiro e.g. Shell and Esso.
- Its wealth is the equivalent to 5.1% of the national total - more than half of its population defined as middle-class, earning between $11,500 and $29,000 per year
- Receives 2.82 million tourists per year – highest in South America.
- Host for the 2014 World cup and the 2016 Olympic Games - increased global importance.
- Rio has a population of 6.5 million in the city itself and 12.5 million in the surrounding area making it a megacity

Industrial district - To attract industry, the state government of Rio has designated certain areas on the outskirts of the city as industrial districts where infrastructure is provided and land sales are made under special conditions. São João da Barra, covers an area of 72 km² - steel industry plants, shipbuilders, offshore support industries, cement, automotive, oil treatment plants, power plants, and metalworking plants

Migration - 65% of Rio's urban growth is a result of migration, millions of people have migrated from Brazil's rural areas to the city.

Push factors from the rural areas	Pull factors of Rio
Climate is dry with unreliable rainfall, every few years there is a drought which can lead to famine when crops fail.	Education: More children can access schools and the quality of education and school facilities is better.
There is not much investment by the government in rural areas.	Employment – there is a wide variety of jobs in the formal and informal sectors.
Standards of living are low and many people live in poverty.	
Many workers do not own the land so have no power or any reason to improve it	There is a perception that Quality of Life will be better.
Poor diet leads to malnutrition. This makes people, especially children vulnerable to disease.	Water: there is access to clean water and sanitation might be better
Health Care: few doctors, limited access to hospitals, limited medical supplies. Infant mortality in the north east, it is 64.	Access to healthcare is better.
Education: limited schooling, few careers for young; the main industry is farming.	

Issues in Rio
1. **Housing** – slums
2. **Infrastructure** – water, sanitation and energy
3. Access to **services** – health and education
4. **Unemployment** and **crime**
5. **Environmental issues** – waste, air and water pollution, traffic congestion.

Social Change in Rio

Rio de Janeiro faces many challenges in providing important services for its rapidly growing population:
- Health care
- Education
- Water supply
- Energy

These are made more difficult because of the contrasts between areas, which are often very close to each other – leading to great inequalities.

Health care
In 2013, only 55% of the city had a local family health clinic. Services for pregnant women and the elderly were very poor, especially in the West Zone.

District	Zone	Infant Mortality rate	Pregant females getting medical care	Average life expectancy
Cidada de Deas	West	21/1000	60%	45
Barra de Tijuna	South	6/1000	100%	80
Rio de Janeiro		19/1000	74%	63

Authorities have tried to improve health care in many ways; one example is in the favela of Santa Marta. Set on a steep hillside, with a population of 8,000, it has few roads and the main means of access is an overcrowded cable car. It is 13km to the nearest hospital.

In light of this, authorities organised medical staff to take health kits into peoples' homes (which were able to detect twenty different diseases and provide treatment for them). As a result, infant mortality in Santa Marta has fallen and life expectancy has increased.

Education
Education in Brazil is compulsory for schildren aged 6-14. In Rio, only half of all children continue their education beyond 4 – many drop out and get involved in drug trafficking. The level of school enrolment in Rio is low because:
- There are shortages of schools and teachers
- Families and children lack money and need to work
- Adults are not encouraged to become teachers due to a lack of decent pay and poor training.

To improve access to education, authorities have:
- Encouraged local people to volunteer as helpers in schools
- Given school grants to poor families to help meet the cost of keeping children in school
- Made money available to pay for free lessons in volleyball, football, swimming and squash in Rocinha favela
- Opened a private university in Rocinha favela.

Water supply
Around 12% of Rio's population do not have access to running water. It is estimated that 37% of water is lost through leaky pipes, fraud and illegal access. The situation has become considerably worse in recent years. Newspaper headlines on the right demonstrate this:

To improve water supply, a lot of work has been carried out on improving water quantity and quality in the favelas and Olympic Park. 7 new treatment plants were built between 1998 and 2014 – over 300km of pipes were laid. By 2014, 95% of the population had access to a mains water supply.

Energy supply
The whole city suffers frequent blackouts due to a shortage of electricity. The growing population and the demands of the forthcoming Olympics will make the situation worse. Many people living in the poor parts of Rio get their electricity by illegally tapping into the main supply – this is both risky and unsafe.

To improve electricity supply, authorities in Rio have:
- Installed 60km of new power lines
- Built a new nuclear generator
- Developed a new Sirrplicio hydro-electric complex with will increase Rio's supply of electricity by 30%. It took 6 years to build and cost over $US 2 billion

Economic growth in Rio

The growth of Rio's urban industrial areas have boosted the city's economy. Economic development has brought improvements to Rio's roads, transport, services and the environment.

Growing economic prosperity has attracted large companies to Rio from other parts of Brazil and South America, as well as from abroad. These developments have created a range of new economic opportunities in the formal economy.

Economic growth in Rio

Rio is Brazil's 2nd most important industrial centre after Sao Paulo. Its large population, financial sector, port facilities and industrial areas have contributed to Rio's rapid economic development. The city now provides more than 6% of all employment in Brazil.

Rio has one of the highest incomes per head in the country, and the city's retail and consumer sector is a major source of employment. A growing number of jobs are provided by service industries, such as finance. Oil has been discovered just off the coastline and this has encouraged the growth of oil-related industries.

The types of employment available in Rio include:

- Retail and distribution
- Service industries (e.g. finance and banking)
- Port industries (import and export)
- Oil refining and petrochemical industries
- Manufacturing (e.g. computers and electronics)
- Tourism (Rio is one of the world's top tourist destinations)
- Steel (Rio has the largest steelworks in South America at Sepetiba Bay)
- Construction (providing employment for many non skilled workers)

Unemployment rates in the favelas are over 20% (e.g. 37% in Complexo do Alemao, compared to just 2% in the affluent southern districts of the city) . Most work in the informal economy – making a living however they can. People work as street vendors, drivers, labourers, maids or in the production of sewing and handicraft work for the local street market. Work in the informal sector is poorly paid (less than £60 per month) and irregular.

Around 1/3rd of Rio's 3.5 million workers don't have a formal employment contract, and many are without any insurance cover or employment benefit. They DO NOT PAY TAXES and the government receives NO income from them.

What's being done about the high levels of unemployment?

The local government is using education to try to reduce youth unemployment. The Schools of Tomorrow programme aims to improve education for young people in the poor and violent areas of the city.

There are also practical skills-based courses. These are available to adults who have temporarily left education but want to continue their studies. Free child care is provided for teenage parents to enable them to return to education.

What about crime?

Robbery and violent crime present great challenges in Rio. Murder, kidnapping, carjacking and armed assault occur regularly. Street crime is a problem, especially at night. Powerful gangs control drug trafficking in many of the favelas. The police have taken steps to control this including:

- In 2013, Pacifying Police Units (UPPs) were established to reclaim favelas from drug dealers.
- Police have taken control of crime-dominated Complexo do Alemao and 30 other smaller favelas.

There has been criticism that the police are targeting favelas near the Olympic sites. People living in these areas think it is an attack on their freedom. But the police argue that a lower crime rate, increased property values and growing tourism are positive results of their fight against crime in the favelas.

Improving the Environment in Rio

The environmental challenges which affect the quality of life for people in Rio are caused by the physical geography of the city, as well as by human activities.

Air pollution & traffic congestion

Air pollution is estimated to cause 5,000 deaths per year in Rio. This city is often covered with brown smog. This happens because:

- Heavy traffic and congestion build up on roads, creating a build up of exhaust fumes
- Mist from the Atlantic ocean mixes with the vehicle exhaust fumes and pollutants from factory chimneys

Rio is the most congested city in South America. Traffic congestion increases stress and pollution levels. It also wastes time for commuters and businesses. Congestion occurs because:

- The presence of steep mountains – roads can only be built on coastal lowland. Main transport routes are therefore lacking in number, and become congested at peak times.
- Tunnels through the mountains are needed to connect different areas of the city. Channelling of traffic into these tunnels increases the build up of traffic.
- The number of cars in the city has grown by 40% since 2000.

High crime levels means that many people prefer to travel by car (purely for safety reasons).

To improve the issue of congestion, improvements have been aimed at reducing the number of cars on the roads to improve the local air quality:

- Expand the metro system under Guanabara Bay to South Zone and Barra da Tijuca
- New toll roads into the city centre to prevent needless journeys
- Making coast roads one-way during rush hour to improve traffic flow.

Water pollution

Guanabara Bay is highly polluted, causing a major threat to wildlife. Commercial fishing has declined by 90% in the last 20 years. There is a sanger that pollution could affect Ipemena and Copacabana Beaches, which in turn would impact on tourism and damage the local economy. There are several sources of water pollution:

- Many of the 55 rivers flowing into the bay are heavily polluted
- Rivers are polluted by run off from open sewers in the favelas
- Over 200 tonnes of raw sewage pours into the bay each day
- Over 50 tonnes of industrial waste enters the bay each day
- There have been oil spills from the Petrobas oil refinery
- Skips empty their fuel tanks in the bay because there are no facilities to dispose of the fuel properly.

To solve the problem, overseas aid has been used to reduce the amount of sewage being released into the bay. As a result:

- 12 new sewage works have been built since 2004 and a cost of $US 68 million
- Ships are fined for discharging fuel into the bay illegally
- 5km of new sewage pipes have been installed around badly polluted areas.

Waste pollution

The worst waste problems are in the favelas. Many are built on steep slopes and have few proper roads, making access difficult for waste collecting lorries. Most waste is simply dumped and ends up polluting the water system. This leads to the spread of diseases, such as cholera, and encourages the growth of rat populations.

To solve the issue, a power plant has been set up near the University of Rio which uses methane gas collected from fermenting and rotting rubbish. It consumes 30 tonnes of rubbish a day and produces electricity for 1,000 homes.

Summary of solutions to issues in Rio

Water - Seven new treatment plants were built between 1998 and 2014 and over 300km of pipes were laid. By 2014 95% of the population had a mains water supply. Only 65% of the sewage that flows into the bay is treated

Electricity - Installing 60km of new power lines, building a new nuclear generator, building the Simplício Hydroelectric Complex which will increase Rio's supply of electricity by 30%

Waste - A power plant using methane gas (biogas) from rotting rubbish, consumes 30 tonnes of rubbish a day and produces enough electricity for 1000 homes. *Catadores* are individuals who walk around the city collecting recyclable materials.

Traffic congestion - Expansion of the metro system under Guanabara Bay, to the South Zone and Barra da Tijuca, new toll roads into the city centre to reduce congestion, making coast roads one-way during rush hours to improve traffic flow

Health - Family Health Strategy, community health agents assigned to approximately 150 households, visit each household within their area at least once per month, medical kits into the houses, diseases and treat them - infant mortality has fallen and life expectancy has risen.

Education - Local people are encouraged to volunteer in local schools, free lessons in volleyball, football, swimming and squash in Rocinha favela, Opening a private university in Rocinha favela, Charities like Project favela offer children football training in return for school attendance and good school achievement reports.

Employment - The local government is using education to try to reduce youth unemployment and improve the skills of local people to help them find jobs, Schools of Tomorrow programme improve education in the poor and violent areas of the city, courses available for adults who have left education, free child care is provided for teenage parents to enable them to return to education.

Crime - Pacifying Police Units (PPU) established to reclaim favelas from drug dealers, police have taken control of crime dominated favelas. A UPP was established in Rochina in Sept 2012 - reduction in the number of violent crimes and deaths

Squatter Settlements

Favelas - squatter settlements, illegal settlements, residents have built on land that they did not own, these are areas of great social deprivation. (eg Roćinha, Population: 75 000+)

Why have favelas grown?

People leave Amazonia and the drought-hit Caatinga in the north east in the hope of finding a better lift in the city. Many are young adults so the birth rates are higher than in the more prosperous parts of the city.

Where are the favelas found?

There are up to 1000 favelas in greater Rio:

- 60% are in the suburbs
- 25% are in the outer parts of the city
- Some are being built up to 40kn from the city centre

The authorities have cleared many of those near the city centre to make the city more attractive to businesses and tourists.

Rocinha

Rocihna is the largest favela in Rio. It had a population of 75,000 in the 2010 census – today's population is likely to be 3 times that. The favela is built on a very steep hillside overlooking the wealthy areas of Copacabana and Ipanema where many of its residents work. More regular work allows improvements to be carried out by the people themselves, as well as those done by the local authorities. Such improvements include:

- 90% of houses are built with bricks and feature electricity, running water and sewage systems
- Many houses have TVs and fridges, The favela has its own newspapers and radio station
- Retail facilities including food, clothes and video rental stores, bars, travel agents and even a McDonalds!
- Schools, health facilities and a private university.

Construction
- Houses are poorly constructed, as they were built illegally with basic materials such as iron, broken bricks and plastic sheets.
- Many favelas are built on steep slopes and heavy rain from storms can cause landslides. In 2010, 224 people were killed and 13 000 lost their homes when houses were swept away.
- There is limited road access due to the steepness of the slopes.

Services
- In the non-improved favelas, around 12% of homes do not have running water, over 30% have no electricity and around 50% have no sewage connections.
- Many homes use illegal connections to electricity pylons.
- Sewers are often open drains.
- Drinking water is often obtained by tapping into a city water main. Taps are often at the bottom of steep slopes and require several trips each day to fetch water.

Unemployment
- Unemployment rates are as high as 20%.
- Much employment is poorly paid with irregular jobs in the informal sector.
- Average incomes may be less than £75 a month.

Crime
- There is a high murder rate of 20 per 1000 people in many favelas.
- Drug gangs dominate many favelas.
- Many inhabitants distrust the police because of violence and corruption.

Health
- There are population densities of 37 000 per km².
- Infant mortality rates are as high as 50 per 1000.
- Waste cannot be disposed of and builds up in the street, increasing the danger of disease.
- Burning rubbish often sets fire to the wooden houses. Smoke is harmful to health.
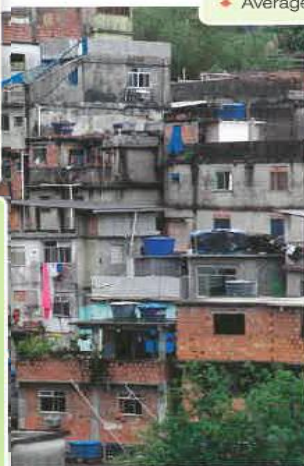
The Favela Bairro Project

Until 1980 the authorities did not acknowledge the existence of favelas. Rather than destroy the favelas and squeeze their large populations into public housing the city decided to upgrade them and provide essential services.

'self help' scheme, - the local authority gave the land legally to the favela residents and then provided materials they could use to improve their homes and environment themselves. City authorities set aside £200 million to improve 60 of the 600 favelas. For example, Complexo de Alemao is a favela in the north of Rio with 26,000 residents. The local authority has been responsible for many improvements:

1. Residents provide the labour.
2. The local authority provided some residents with materials and tools to construct permanent housing e.g. breeze blocks and cement replaced wooden buildings.
3. Low-interest loans were also used to help people fund these changes.
4. People were given legal ownership of the land they live on.
5. Streets were widened, pavements were laid
6. The money saved on labour was spent on providing basic amenities such as electricity, water and improving sanitation.
7. Other facilities like schools, health clinics and recreational areas were provided by the local authority.

The quality of life, mobility and employment prospects of the inhabitants of the favelas have improved because of the developments made possible by the project. It has been recognised as a model by the UN and been used in other Brazilian cities. However, there are still a number of problems with the scheme:

- The budget of $US1 billion may not cover every favela
- The newly-built infrastructure is not being maintained
- Residents lack the skills and resources to make repairs
- More training in needed to improve literacy and employment

Rents rise in the improved favelas and the poorest inhabitant are even worse off.