GCSE GEOGRAPHY

CHALLENGES IN THE HUMAN ENVIRONMENT

UNIT 2 – URBAN ISSUES AND CHALLENGES

YEAR 9 2018-21

Student Name: _____

Class: _____

Specification Key Ideas:

Key Idea:	Oxford text book:
A growing percentage of the world's population lives in urban areas.	P148-151
Urban growth creates opportunities and challenges for cities in LICs and NEEs.	P152-163
Urban change in cities in the UK leads to a variety of social, economic and environmental opportunities and challenges.	P164-185
Urban sustainability requires management of resources and transport.	P186-191

Scheme of Work:

Lesson	Learning intention:	Student booklet:
1	Urbanisation	P8-10
2	Megacities	P10-12
3	INTERVENTION LESSON	P12
4	Introduction to Rio	P12-14
5	Social challenges in Rio	P14-15
6	Economic challenges in Rio	P15-17
7	Environmental challenges in Rio	P18
8	Solving environmental challenges in Rio	P18-19
9	Squatter Settlements in Rio	P19-20
10	Improving Squatter settlements in Rio	P20-22
11	INTERVENTION LESSON	P22
12	Cities in the UK	P22-23
13	Introduction to Bristol	P23-24
14	Economic opportunities in Bristol	P24-25
15	Case studies: Economic opportunities in Bristol	P26-27
16	Changes to Bristol's environment	P27-29
17	Environmental challenges in Bristol	P29-31
18	New housing in Bristol	P31-32
19	Creating a clean environment in Bristol - waste	P33-34

20	Creating a clean environment in Bristol – air	P35-36
21	INTERVENTION LESSON	P36
22	Social inequalities in Bristol	P36-38
23	Social opportunities in Bristol	P38-41
24	Temple Quarter regeneration	P41-46
25	INTERVENTION LESSON	P46
26	Freiburg & traffic management	P46-48
27	Urban sustainability	P48-51
28	Revision	P51
29	Assessment	P51
30	Assessment review	P51

AQA GCSE GEOGRAPHY(8035)

3.2 Challenges in the human environment

This unit is concerned with human processes, systems and outcomes and how these change both spatially and temporally. They are studied in a variety of places and at a range of scales and must include places in various states of development, such as higher income countries (HICs), lower income countries (LICs) and newly emerging economies (NEEs).

The aims of this unit are to develop an understanding of the factors that produce a diverse variety of human environments; the dynamic nature of these environments that change over time and place; the need for sustainable management; and the areas of current and future challenge and opportunity for these environments.

3.2.1 Section A: Urban issues and challenges

In this section, students are required to study all the themes.

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.

GLOSSARY

13. The Urban World

Key term	Definition
Air pollution	harmful emissions, or other substances, that enter Earth's atmosphere
Economic opportunities	chances for people to improve their standard of living through employment
Favela	a squatter settlement in a Brazilian city
Formal economy	the type of employment where people receive a regular wage, pay tax, and have certain rights such as paid holidays and sick leave
Global city	urban area with an important role in the global economy
Inequalities	differences between people, in terms of factors such as; poverty, wealth, wellbeing, employment opportunities, housing, education etc.
Informal economy	employment outside the official knowledge of the government
Land use	the way in which land is used, or has been modified or managed by people
Megacities	an urban area with a total population of more than ten million people
Migration	when people move from one area to another
Natural increase	birth rate minus the death rate of a population
Pollution	the presence of chemicals, noise, dirt or other substances which have harmful or poisonous effects on an environment
Pull factors	the attractions and opportunities of a place that encourage people to move there
Push factors	the negative aspects of a place that encourage people to move away
Quality of life	how good a person's life is, measured by such things of housing and environment, access to education, healthcare, how secure people feel and how happy they are with their lifestyle
Rural–urban migration	when people move from rural to urban areas
Sanitation	measures designed to protect public health, such as providing clean water and disposing of sewage and waste

Service industries	the economic activities that provide various services – commercial, professional, social, entertainment and personal
Site and service scheme	where a local authority provides land and services for residents to build homes
Squatter settlement	an area of (often illegal) poor-quality housing, lacking in services like water supply, sewerage and electricity
Traffic congestion	when there is too great a volume of traffic for roads to cope with, and traffic slows to a crawl
Urban growth	the increase in the area covered by cities
Urbanisation	when an increasing percentage of a country's population live in towns and cities

14: Urban change in the UK.

Key term	Definition
Aerospace industry	the production and manufacturing of aircraft, as well as the electronic systems such as those for communications and navigation
Atmospheric pollution	the contamination of the Earth's atmosphere by harmful or poisonous substances
Brownfield site	land that has been used, abandoned and now awaits reuse; often found in urban areas
Dereliction	abandoned buildings and wasteland
Enterprise zone	a scheme supported by the government to encourage new businesses and new jobs in areas where there were no pre-existing businesses
Gentrification	when a decaying area is modernised and improved, the cost of living there increases and the original inhabitants are forced out
Green belt	the area of countryside around the edge of a city with strict planning controls to stop houses being built
Greenfield site	a plot of land, often in a rural or on the edge of an urban area that has not been built on before
High-tech industry	high-technology such as computer software and engineering manufacture
Integrated transport system	different forms of transport are linked together to make it easy to transfer from one to another

Migration	when people move from one area to another
Population density	the average number of people living in a place, per square kilometre
Quaternary sector	employment sector that includes jobs in hi-tech industries, research, information technology and the media
Regeneration	improving run down areas by improving the housing and the environment
Rural-urban fringe	a zone of transition between a built-up area and the countryside, where there is often competition for land use
Social deprivation	the extent to which an individual (or an area) lacks services and adequate housing, income or employment
Social opportunities	the chances available to improve quality of life, i.e. access to education, health care, etc.
Tertiary sector	employment sector that includes service industries, such as health care, offices, financial services and retailing
Traditional industries	industries such as coal mining, engineering and manufacturing
Urban greening	process of increasing and preserving open space in urban areas, i.e. public parks and gardens
Urban regeneration	reversing the urban decline by modernising or redeveloping, aiming to improve the local economy
Urban sprawl	unplanned growth of urban areas into the surrounding rural areas
Waste recycling	process of extracting and reusing useful substances found in waste

15: Sustainable urban development.

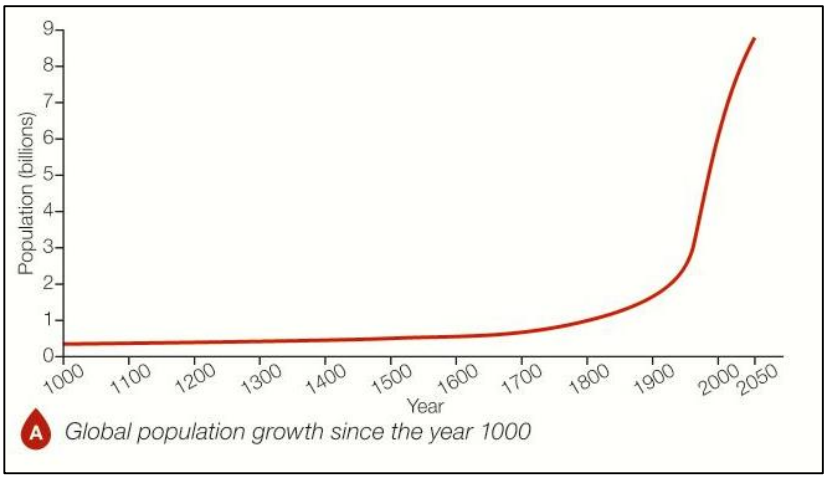
Key term	Definition
Economic planning	ensuring that people are provided with employment
Environmental planning	ensuring that resources are not wasted and the environment is protected for future generations
Green roofs	roofs of buildings covered by vegetation that are often used to harvest rainwater
Green space	an unbuilt area that provides a natural and free recreational space, as well as a habitat for wildlife
Integrated Transport System (ITS)	different forms of transport are linked together to make it easy to transfer from one to another
Renewable energy sources	a resource that cannot be exhausted, i.e. wind, solar and tidal

	energy
Social planning	ensuring that people's social needs are met, such as affordable housing
Solar energy	sun's energy exploited by solar panels, collectors or cells to heat water or air or to generate electricity
Sustainable energy supply	energy that can potentially be used well into the future without harming future generations
Sustainable water supply	meeting the present-day need for safe, reliable and affordable water without reducing supply for future generations
Urban sustainability	a city organised so as to create; minimal damage to the environment, a sound economic base, a fair allocation of resources, secure jobs, a strong sense of community and with local people involved in decision making

Notes:

Lesson 1 – Urbanisation

What is urbanisation and how does it vary globally?

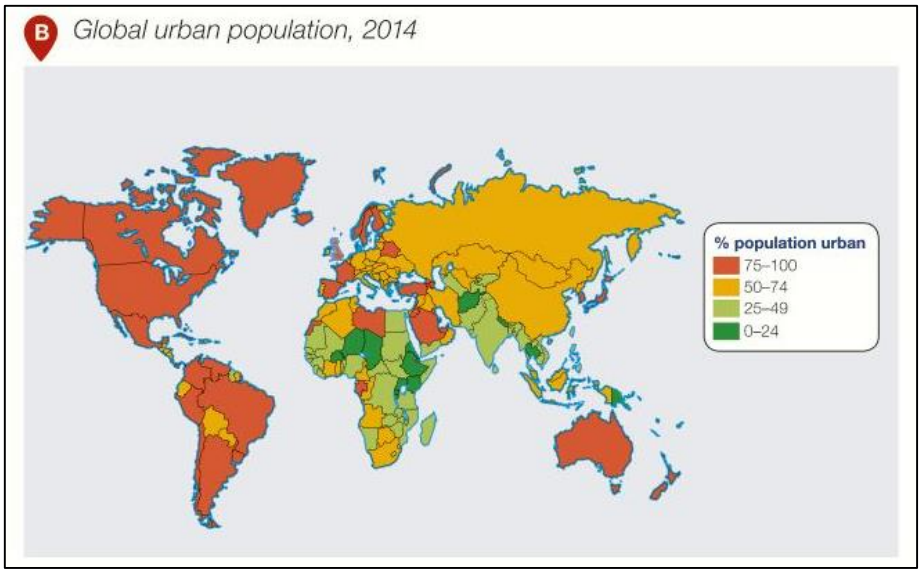


A *Global population growth since the year 1000*

Urbanisation is the growing proportion (%) of people who live in towns & cities – due to natural increase and migration.

Urban growth is the increase in area covered by cities.

The UK was one of the first countries to become urbanised.



B *Global urban population, 2014*

In most richer countries over 60% of people live in cities. In south & south-east Asia around 50% live in cities. All but 6 countries in Africa have urban populations of over 20% - the average is almost 40%.

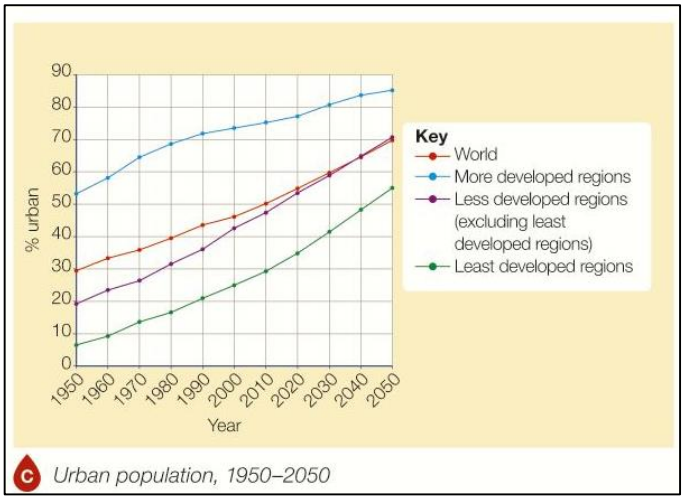
Maths skills

1 Complete a copy of the table by filling in the missing values.

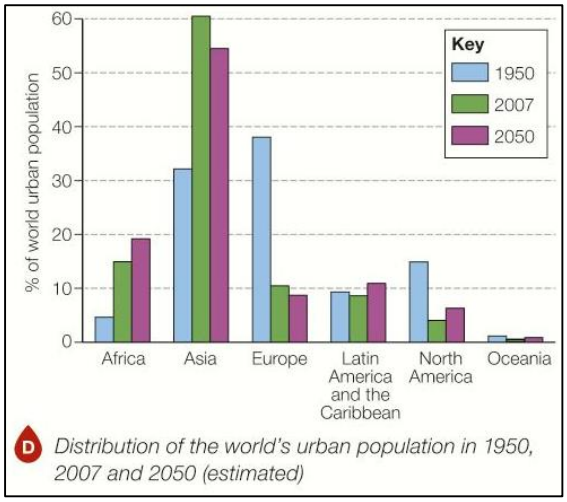
2 Use bar graph **D** to state which continent will have the biggest change in its share of world urban population by 2050.

Type of country	Country	% urban population, 1950	% urban population, 2050 (estimated)	% change in urban population 1950–2050
HIC	United Kingdom	79		+9
NEE	Nigeria		75	+65
LIC	Botswana	3	81	

Urban populations are growing at different rates in different parts of the world.



C Urban population, 1950–2050



D Distribution of the world's urban population in 1950, 2007 and 2050 (estimated)

The global distribution of urban population has changed over time. The largest growth by 2050 will take place in India, China & Nigeria. 37% of the projected global growth in urban population will take place in these 3 countries.

The growth of megacities

There are 2 main reasons why cities grow:

- Natural increase
- Rural-urban migration

Natural Increase:

High % of adults aged 18-35yrs → more children born (high birth rate).
Low % of older adults → lower death rate (also better health care).
More births and more people surviving…
NI can be higher in LICs (Low Income Countries) and NEEs (Newly Emerging Economies).

Rural-urban migration:

'Push' factors

People want to leave the countryside because:

- farming is hard 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
- there are few doctors or hospitals
- schools provide only a very basic education
- rural areas are isolated due to poor roads.

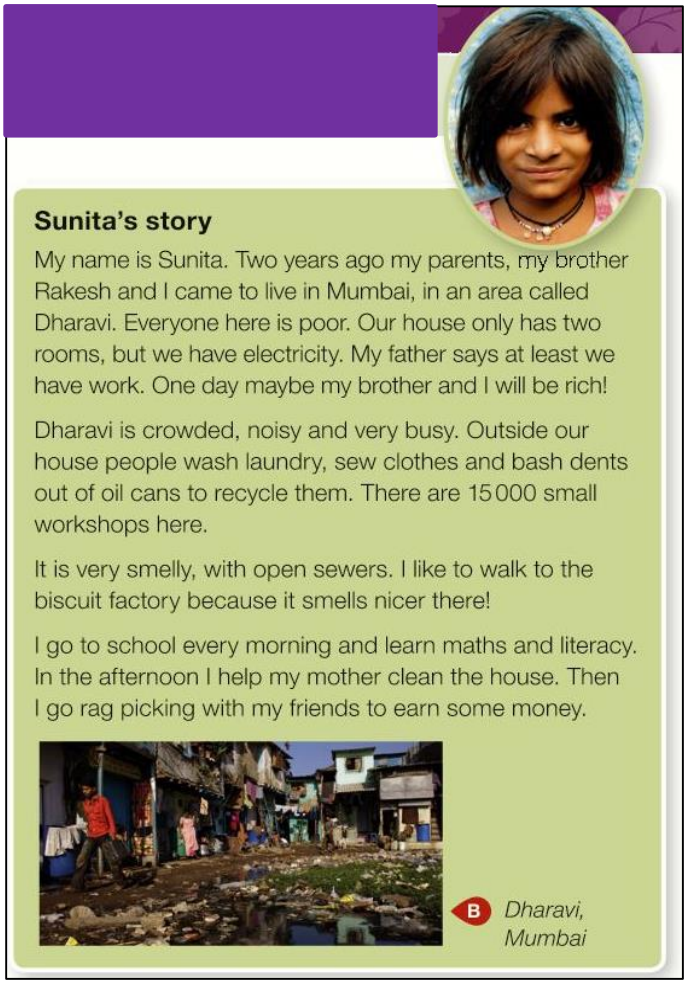
'Pull' factors

People are attracted to the city because:

- there are more well-paid jobs
- a higher standard of living is possible
- they have friends and family already living there
- there is a better chance of getting an education
- public transport is better
- a range of entertainments are available
- there are better medical facilities.

A Push and pull factors

- Caused by push & pull factors
- Advantages of living in an urban area
- Disadvantages of living in a rural area



Sunita's story

My name is Sunita. Two years ago my parents, my brother Rakesh and I came to live in Mumbai, in an area called Dharavi. Everyone here is poor. Our house only has two rooms, but we have electricity. My father says at least we have work. One day maybe my brother and I will be rich!

Dharavi is crowded, noisy and very busy. Outside our house people wash laundry, sew clothes and bash dents out of oil cans to recycle them. There are 15 000 small workshops here.

It is very smelly, with open sewers. I like to walk to the biscuit factory because it smells nicer there!

I go to school every morning and learn maths and literacy. In the afternoon I help my mother clean the house. Then I go rag picking with my friends to earn some money.

B *Dharavi, Mumbai*

Lesson 2 – Megacities

What is a megacity and where are they located?

A megacity has a population of over 10 million people. In 2015 there were 28 of these. The United Nations predict there will be 50 by 2050.

There are 3 types of megacity:

Slow-growing

Where?
South East Asia, Europe and North America

Features
Population at 70%+ urban
No squatter settlements

Examples
Osaka-Kobe
Tokyo
Moscow
Los Angeles

Growing

Where?
South America and South East Asia

Features
Population 40–50% urban
Under 20% in squatter settlement

Examples
Beijing
Rio de Janeiro
Shanghai
Mexico City

Rapid-growing

Where?
South/South East Asia and Africa

Features
Population under 50% urban
Over 20% in squatter settlements

Examples
Jakarta
Lagos
Mumbai
Manila

The distribution of megacities in 2014 and 2030 (projected):

The world's 12 largest cities (2014):

Rank	City	Population	Population density per km²	Country
1	Shanghai	24,256,800	3,826	China
2	Karachi	23,500,000	6,663	Pakistan
3	Beijing	21,516,000	1,311	China
4	Delhi	16,787,941	11,320	India
5	Lagos	16,060,303	18,206	Nigeria
6	Tianjin	15,200,000	1,293	China
7	Istanbul	14,160,467	2,593	Turkey
8	Tokyo	13,297,629	6,075	Japan
9	Guangzhou	13,080,500	1,759	China
10	Mumbai	12,478,447	20,680	India
11	Moscow	12,197,596	4,859	Russia
12	São Paulo	11,895,893	7,821	Brazil

Rank	City	Country	Continent
1	Shanghai	China	Asia
2	Karachi	Pakistan	Asia
3	Beijing	China	Asia
4	Delhi	India	Asia
5	Lagos	Nigeria	Africa
6	Tianjin	China	Asia
7	Istanbul	Turkey	Europe/Asia
8	Tokyo	Japan	Asia
9	Guangzhou	China	Asia
10	Mumbai	India	Asia
11	Moscow	Russia	Europe
12	São Paulo	Brazil	South America

Lesson 3 – INTERVENTION LESSON

Lesson 4 - Introduction to Rio

Rio = a global city: important global industrial & financial centre, a major regional, national & international centre for many important companies and industries, 5 ports & 3 airports.

How and why has Rio grown?

- Rio is the second largest city in Brazil after Sao Paulo.
- 2014 population 6.5 million plus 12.5 million in surrounding area (London 8 million).
- Rio has grown rapidly in the last 50 years – major industrial, admin, commercial and tourist centre.
- This economic success attracts migrants from within Brazil and from abroad.
- Origins of migrants: Amazon Basin, South America (Argentina & Bolivia), South Korea & China (business opportunities), Portugal (former colony & share language) and USA & UK (skilled workers in industry).

Land uses in Rio

Rio is a city that has grown between mountains and the coastline.
It has large squatter settlements called favelas.
Rio is divided into 4 main zones – Centro (centre), South, West and North zones.
These are Rio's main industrial and commercial areas.

North Zone

South Zone

West Zone

Centro Zone

Rio has mountains, coast and large **squatter settlements** (page 160). The city is divided into four main zones: Centro (centre), South Zone, West Zone and North Zone (map **C**). These are Rio's main industrial and commercial areas.

North Zone

- The city's main industrial and port area.
- The city's International Airport and Maracanã soccer stadium are here.
- An area of low-quality housing and favelas.
- The location of the Tijuca National Park.

West Zone

- Barra da Tijuca has changed from a lower-class area into a wealthy coastal suburb with luxury apartments, shopping malls, recreational and tourist facilities.
- The industrial area of Campo Grande has low-quality housing around the steelworks.
- The main Olympic stadiums and competitor village for 2016 are located here (photo **D**).

C *Rio's main zones*

Centro

- The oldest part of the city, with many historic buildings.
- The city's CBD and main shopping area.
- The financial centre with the headquarters of Petrobras and CVBB, Brazil's largest oil and mining companies.

South Zone

- Developed after tunnels were cut through the mountains.
- Rio's main tourist hotels and beaches such as Copacabana and Ipanema (photo **B**).
- Wealthy area dominated by luxury flats: it has the wealthiest district in the whole of South America.
- Overlooked by Rocinha, the largest favela in South America (page 160).

D *The new Olympic stadium*

Lesson 5 – Social Challenges in Rio

Social challenges facing Rio

Rio faces many challenges in providing important services for its rapidly-growing population:

Health care Education Water supply Energy

Different parts of Rio vary greatly, even if they are close to each other –this causes inequality.

Health care

Challenges

In 2013 only 55 per cent 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	Pregnant females getting medical care	Average life expectancy
Cidada de Deus	West	21 per 1 000	60%	45
Barra de Tijuca	South	6 per 1 000	100%	80
Rio de Janeiro (as a whole)		19 per 1 000	74%	63

B *Comparing health in two contrasting districts with Rio as a whole*

A *Copacabana Beach with a squatter settlement (favela) on the hillside above*

Solutions

One example of how the authorities have tried to improve health care is the favela of Santa Marta. Set on a steep hillside, with a population of 8000, it has few roads and the main means of access is an overcrowded cable car. It is 13 km to the nearest hospital. Medical staff took a health kit into people's homes, and were able to detect twenty different diseases and treat them. As a result, infant mortality has fallen and life expectancy increased.

Education

Challenges

Education in Brazil is compulsory for children aged 6–14. In Rio only half of all children continue their education beyond the age of 14. Many drop out of school and some get involved in drug trafficking.

The level of school enrolment in Rio is low. The main reasons for this are:

- a shortage of nearby schools
- a lack of money and a need to work
- a shortage of teachers
- low pay for teachers
- poor training for teachers.

Solutions

The authorities have tried to improve access to education by:

- encouraging local people to volunteer to help in school
- giving school grants to poor families to help meet the cost of keeping their children in school
- making money available to pay for free lessons in volleyball, football, swimming and squash in Rocinha favela
- opening a private university in Rocinha favela.

Water supply

Challenges

Around 12 per cent of Rio's population did not have access to running water. It is estimated that 37 per cent of water is lost through leaky pipes, fraud and illegal access. The situation has become worse in recent years.

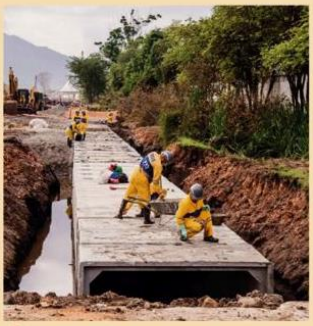
Drought-hit Rio braces for Carnival water shortages

S E Brazil is experiencing its worst drought for 80 years

Paraibuna and Santa Branca reservoirs are declared empty

Water to take priority over energy: less water to be taken from the River Paraiba do Sol for electricity generation

C *Newspaper headlines from 2015*



D *Improved water supply to Olympic Park in West Zone*

Solutions

Most of the work has been on improving the quantity or quality of the water in the favelas and in the Olympic Park (photo **D**). Seven new treatment plants were built between 1998 and 2014, and over 300 km of pipes were laid. By 2014, 95 per cent of the population had a mains water supply.

Energy

Challenges

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 poorer parts of Rio de Janeiro get their electricity by illegally tapping into the main supply, which is risky and unsafe (photo **E**).

E *Illegal electricity connections in a favela*

Solutions

The electricity supply to Rio has been improved by:

- installing 60 km of new power lines
- building a new nuclear generator
- developing the new Simplício hydro-electric complex which will increase Rio's supply of electricity by 30 per cent. It took 6 years to build and cost over US$ 2 billion.

Lesson 6 – Economic Challenges in Rio

Economic Growth in Rio

- Rio's urban industrial areas have grown.
- This has boosted the city's economy – taxes, wages, multiplier effect.

- Economic development lead to improvements in Rio's infrastructure – roads, transport services and environment.
- The government has a policy to improve Rio's favelas – improving the quality of life for millions of people.
- Economic success has attracted large companies to Rio from other parts of Brazil & South America as well as from abroad.
- The formal economy has grown creating economic opportunities.

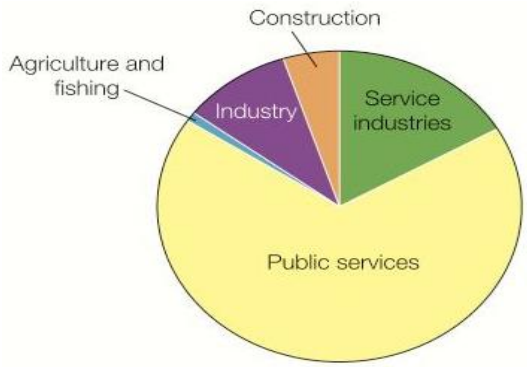
A One of Rio's largest steelworks, at Volta Redonda

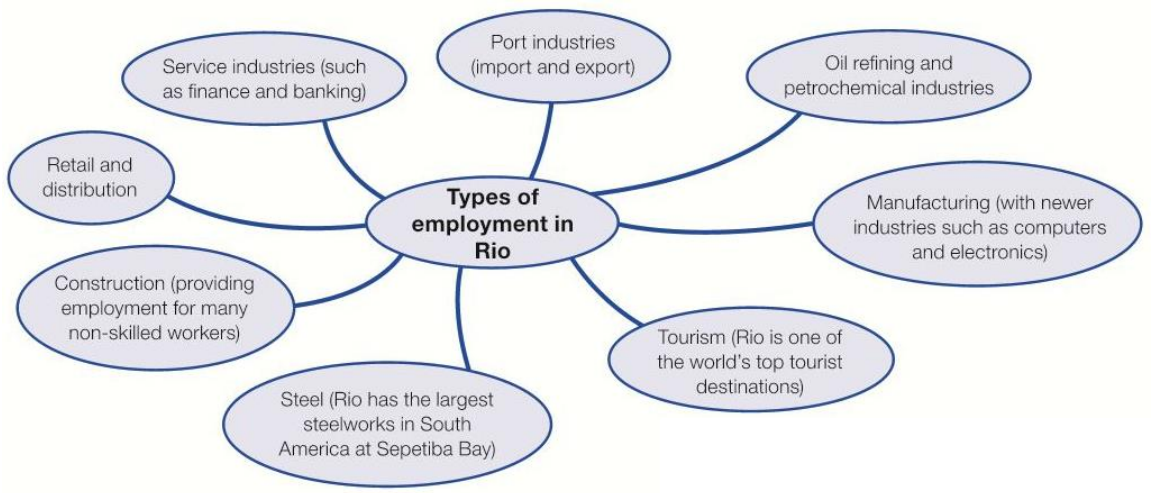
Rio is Brazil's second most industrial centre after Sao Paulo.

These factors have helped Rio grow:

- Large population (workers & market)
- Financial sector (funds for development)
- Port facilities (trade links)
- Industrial areas (sites for development)

Employment Structure in Rio





Unemployment in Rio

- Brazil's economy was hit by a deep recession in 2015
- Unemployment increased to an average of 16% in Rio (Brazil 11.2%)

- People protested about high taxes, poor education & health care provision
- Despite lots of job opportunities in Rio; unemployment causes wide contrasts in wealth
- Richest 1% earns 12% of total income
- Poorest 50% earns 13% of total income

Rio's unemployment rates

District	Zone	Unemployment rate
Barra da Tijuca	South	2%
Complexo do Alemão	North	Estimated 37%

Unemployment rates in Rio's favelas are over 20%. Most people work in the informal sector. They can earn less than £60 per month. They don't have formal contracts, or insurance cover or unemployment benefit. They don't pay tax to the government

Select the correct examples of informal jobs from the list below:
street vendors teacher driver shop owner maid labourer factory worker

Dealing with unemployment in Rio

What is being done about 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.

Courses are available for 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.

WHY?

Crime in Rio

IMPACT?

Police have taken control of crime-dominated Complexo do Alemao and 30 smaller favelas.

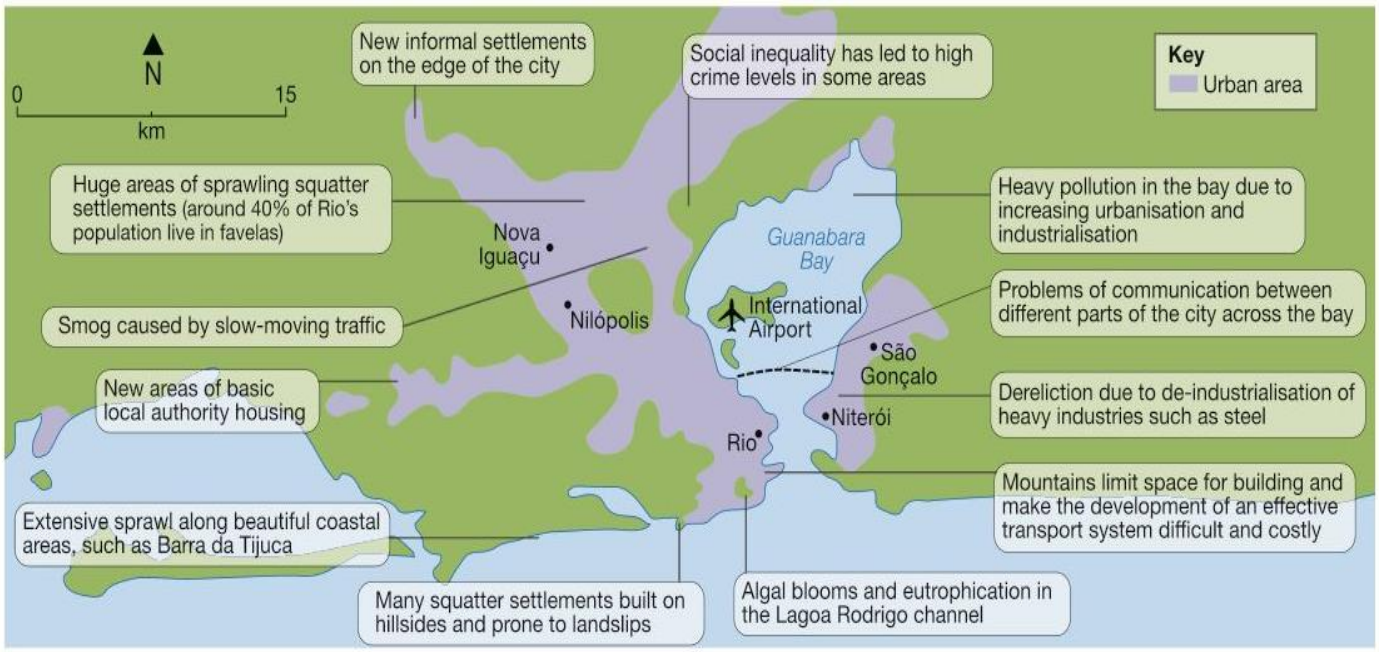
In 2013 Pacifying Police Units were set up to reclaim favelas from drug dealers.

Police seem to have targeted favelas near the Olympic sites. People living there feel this is an attack on their freedom. The police argue that lower crime rates, increased property values and growing tourism are positive results of their fight against crime.

Lesson 7 – Rio's Environmental Challenges

What are Rio's environmental challenges?

Rio faces several environmental challenges caused by the physical geography of the city as well as human activities.



Lesson 8 – Dealing with Rio's Environmental Challenges

Air pollution in Rio

Air pollution

Air pollution is estimated to cause 5000 deaths per year in Rio. The city is often covered with brown *smog*. This happens because:

- heavy traffic and congestion on roads causes build-up of exhaust fumes.
- mist from the Atlantic mixes with vehicle exhaust fumes and pollutants from factory chimneys

Traffic congestion

Rio is the most congested city in South America (photo **C**). Traffic congestion increases stress and pollution levels and wastes time for commuters and businesses.

- Steep mountains – roads can only be built on coastal lowland. Main transport routes become very congested.
- Tunnels through the mountains are needed to connect different areas of the city.
- The number of cars in Rio has grown by over 40 per cent in the last decade.
- High crime levels mean that many people prefer to travel by car.

Solutions

Improvements have been aimed at reducing traffic congestion (map **B**) and improving air quality:

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

B *Improvements to Rio's transport system*

Water pollution in Rio

Water pollution

Guanabara Bay is highly polluted, causing a major threat to wildlife. Commercial fishing has declined by 90 per cent in the last 20 years. There is a danger that pollution could affect Ipamena and Copacabana Beaches which would damage tourism and the local economy. The authorities have promised to clean up the bay in time for the Olympics but there will still be problems.

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 Petrobras oil refinery
- ships empty their fuel tanks in the bay because there are no facilities to dispose of the fuel properly.

Solutions

Overseas aid has been used to reduce the amount of sewage being released into the bay.

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

Waste pollution in Rio

Waste pollution

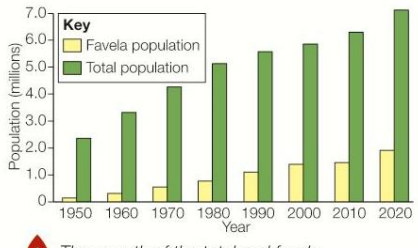
The worst waste problems are in the favelas. Many are built on steep slopes and have few proper roads, making access difficult for waste collection lorries. Most waste is therefore dumped and pollutes the water system. This causes diseases like cholera and encourages rats.

Solutions

A power plant has been set up near the University of Rio using methane gas (biogas) from rotting rubbish. It consumes 30 tonnes of rubbish a day and produces enough electricity for 1000 homes.

Lesson 9 – Squatter Settlements in Rio

Why have favelas grown in Rio?



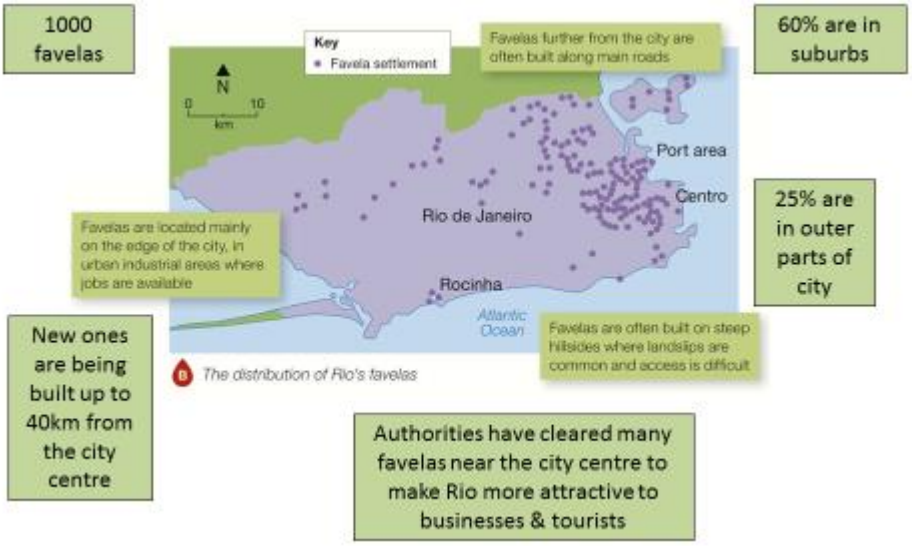
A *The growth of the total and favela populations of Rio, 1950–2020*

Squatter settlements in Brazil are called ‘favelas’. They are illegal settlements where people have built homes on land that they do not own.

The favelas are areas of great social deprivation. Many Brazilians have migrated from poorer parts of Brazil, such as the arid north-east and Amazonia, to Rio in hope of finding a better life.

Many are young adults so the birth rates are higher in the favelas than in other wealthier parts of the city.

Where are Rio's favelas located?

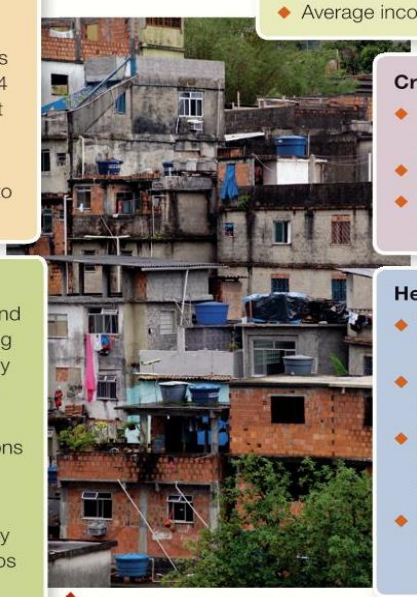


B The distribution of Rio's favelas

The challenges of squatter settlements

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.

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.

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.

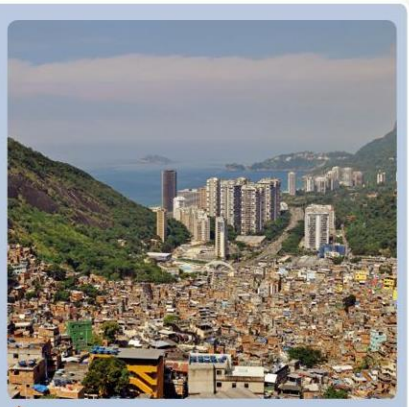
Health
- There are population densities of 37 000 per km^2.
- Infant mortality rates are as high as 50 per 1000.
- Waste cannot be disposed of and builds up in the street, increasing the danger of disease.
- Burning rubbish often sets fire to the wooden houses. Smoke is harmful to health.

D A favela on a Rio hillside

Rocinha

Rocinha is the largest favela in Rio. It had a population of 75 000 in the 2010 census but that is now likely to be three times higher. The favela is built on a very steep hillside overlooking the wealthy areas of Copacabana and Ipanema where many of its inhabitants work. More regular work allows improvements to be carried out by the people themselves as well as those done by the local authorities.

As a result of improvements, the favela now has:
- 90 per cent of houses built with brick and with electricity, running water and sewage systems
- many houses with TVs and fridges
- its own newspapers and radio station
- retail facilities including food, clothes and video rental shops, bars, travel agent and MacDonald's
- schools, health facilities and a private university.


C Rocinha favela overlooking the South Zone beach area

Lesson 10 – Improving the Favelas

Case study: Rocinha

How are the favelas being improved?

Until 1980 the authorities in Rio did not recognise the existence of the favelas – they weren't even shown on maps!
They were often knocked down and people forced into public housing.
In the mid-80's city planners decided to upgrade the favelas and provide essential services.
Since Rio was awarded the 2016 Summer Olympics some favelas have been destroyed to make space for the Olympic facilities.

Favela Bairro Project

Favela Bairro Project – improving life in the favelas

This is a *site and service scheme*, where the local authority provides land and services for residents to build homes. For example, Complexo do Alemão is a group of favelas in Rio's North Zone with more than 60,000 people. Here, the local authority have been responsible for many new improvements (figure **B**).

- Paved and formally named roads
- Access to a water supply and drainage system for improved **sanitation**.
- Hillsides secured to prevent landslides, or people relocated where necessary
- Building of new health, leisure and education facilities

B *Improvements in Complexo do Alemão*

- Installation of a cable car system across the Complexo do Alemão hillsides – inhabitants are given one free return ticket a day
- Access to credit to allow inhabitants to buy materials to improve their homes
- 100 per cent mortgages available for people to buy their homes
- A Pacifying Police Unit (UPP) set up, with police patrolling the community to help reduce crime

Has the Favela Bairro Project been a success or failure?

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, it has not been a complete success, and there are still problems:

- the budget of US$1 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 is needed to improve literacy and employment
- rents rise in the improved favelas and the poorest inhabitants are even worse off.

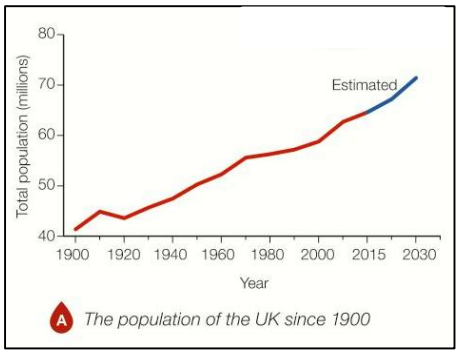
The impact of the 2016 Olympics on the favelas

Some favelas have been demolished to make way for developments for the Olympics.
About 1000 people have lost their homes to make way for a new road.
There were plans to demolish about 3000 houses ahead of the games.
Campo Grande is a small town in the west zone – 90 minute drive from the city centre.
800 new houses have been built for people made homeless by the developments.
The houses are better than the previous favelas.

Residents say it lacks a sense of community, has no shops, no play areas and is a long way from the city centre.
Favelas near the Olympic Park have been redeveloped and upgraded.
Many residents have found jobs building the Olympic facilities.

Lesson 11 – INTERVENTION LESSON

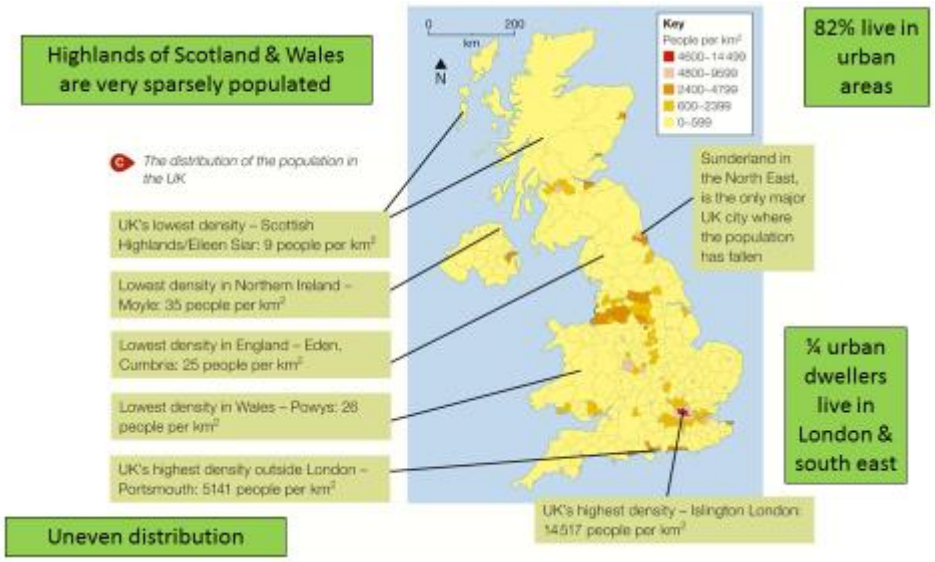
Lesson 12 – Cities in the UK

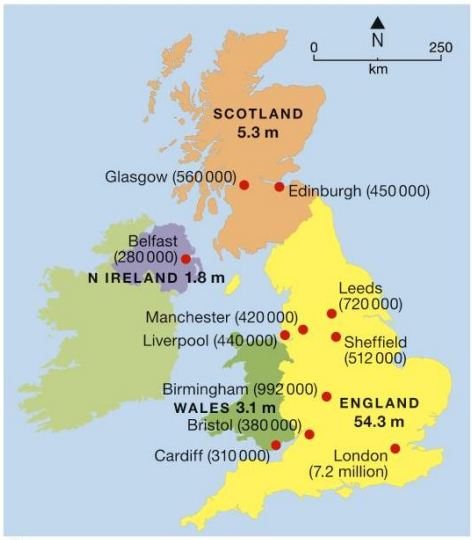


A The population of the UK since 1900

2015 Total population = 64.6million

How is the population of the UK distributed?





B The population of the UK and its major cities, 2015

The UK's urban areas

The distribution of the UK's major cities is linked to our industrial past. Cities developed in areas where raw materials were found and heavy industry developed during the Industrial Revolution.

E.g. Lancashire (Manchester, Bolton & Preston)
West Yorkshire (Leeds & Sheffield)
South Wales (Cardiff & Swansea)

London grew due to being the capital city and then becoming a globally important financial & business centre. Belfast, Cardiff & Edinburgh also grew as capital cities. Bristol grew due to its successful port.

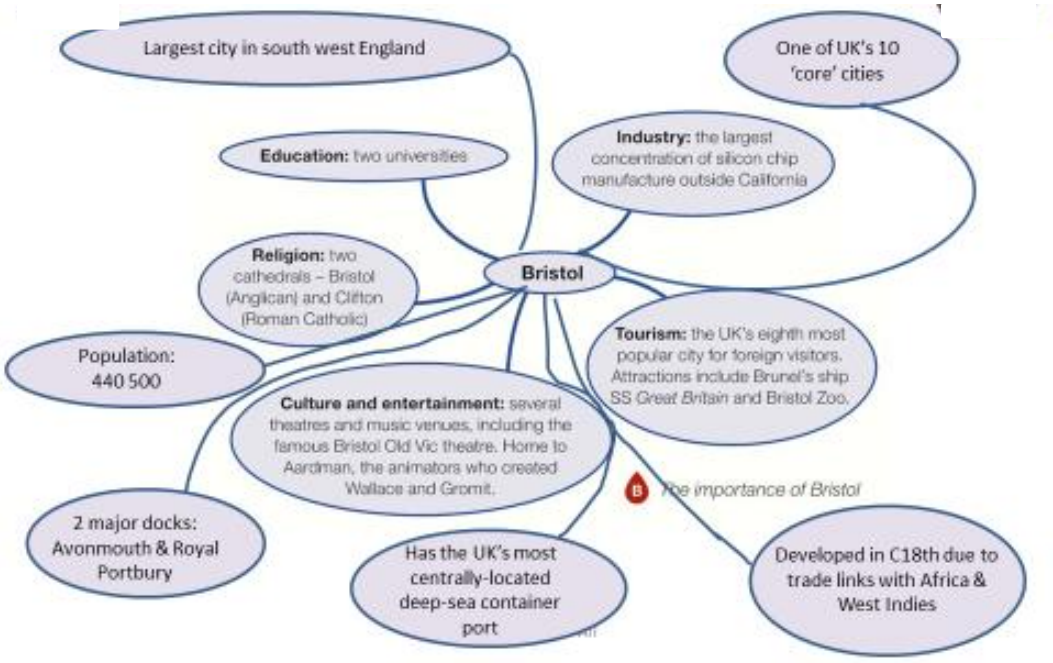
Changes to the UK's population distribution

There is a general movement of people to the south east of England & London. Net migration has

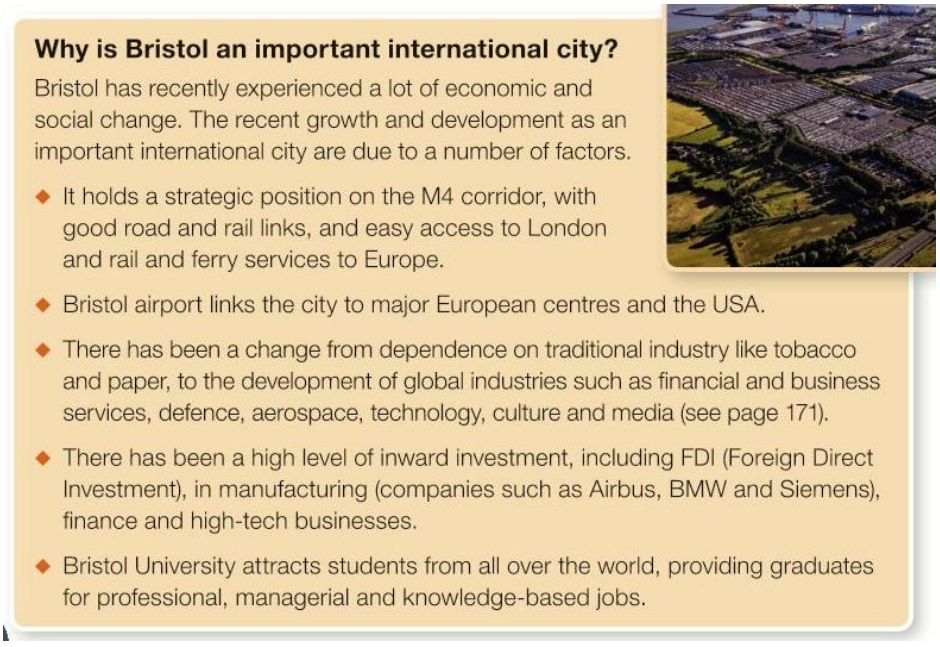
increased annually since 1997 and migrants tend to locate in cities where there are more job opportunities. Growth in urban-rural migration as many elderly retire to the coast or country.

Lesson 13 – Introduction to Bristol

What makes Bristol a major UK city?



Why Bristol is an important international city?



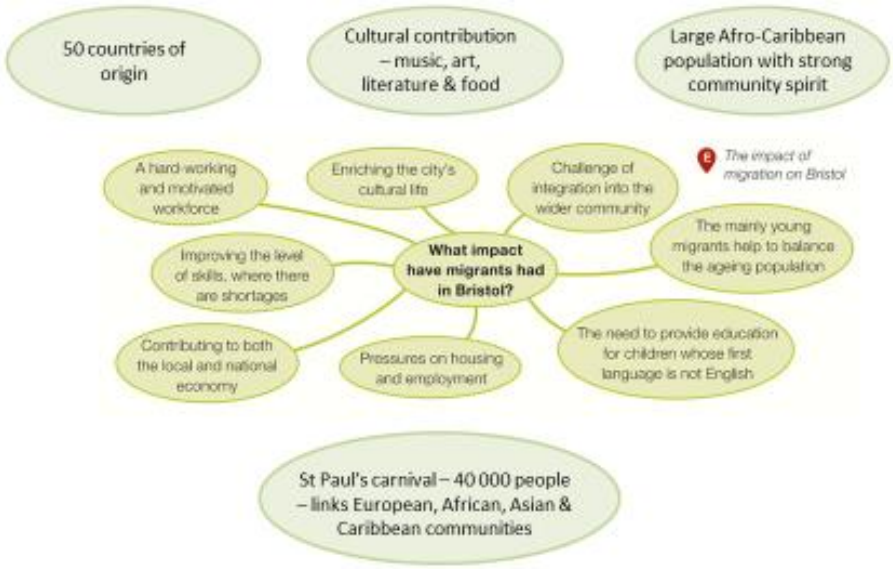
Why is Bristol an important international city?

Bristol has recently experienced a lot of economic and social change. The recent growth and development as an important international city are due to a number of factors.

- It holds a strategic position on the M4 corridor, with good road and rail links, and easy access to London and rail and ferry services to Europe.
- Bristol airport links the city to major European centres and the USA.
- There has been a change from dependence on traditional industry like tobacco and paper, to the development of global industries such as financial and business services, defence, aerospace, technology, culture and media (see page 171).
- There has been a high level of inward investment, including FDI (Foreign Direct Investment), in manufacturing (companies such as Airbus, BMW and Siemens), finance and high-tech businesses.
- Bristol University attracts students from all over the world, providing graduates for professional, managerial and knowledge-based jobs.

The impact of migration on Bristol

Migration has had a major impact on Bristol's population both in the past and now. Between 1851-1891 the population doubled as migrants arrived looking for work. Recently half of Bristol's population growth is due to international migration. Many skilled workers arrive from EU countries such as Poland & Spain. Migrants work in hospitality, retail, manufacturing, health, construction & transport – a wide range of sectors. Many migrants intend to remain in Bristol permanently.



Origins of migrants to Bristol (2011 Census):

Lesson 14 – Economic opportunities in Bristol.

How has Bristol's industry changed?

Traditional industry:

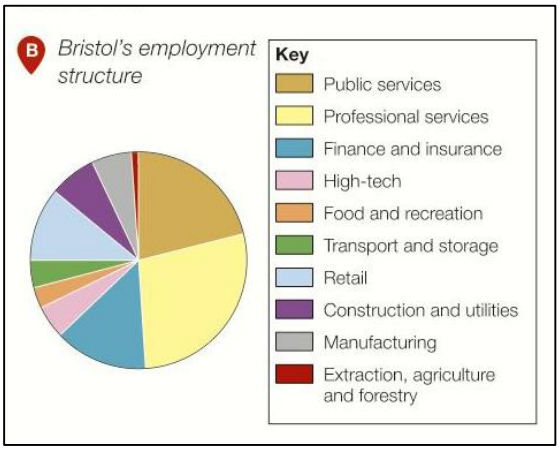
- Based on port
- Imported West Indian tobacco to make cigarettes
- Imported wine from Bordeaux to make sherry

A *Warehouses converted into flats along Bristol's harbour front*

Modern industry:

- Major developments on tertiary (service) industries and quaternary (high-tech) industries
- 2015 unemployment rate was lower than national average
- Higher employment growth than UK rate
- 30% jobs are in financial services

City centre port closed → empty warehouses → flats & new industry



Why have high-tech industries developed in Bristol?

Growing number of people employed by high-tech companies. 50 micro-electronic and silicon design businesses in the Bristol area. This is the largest concentration outside

Origin:	Number of migrants
Poland	6 415
Somalia	4 947
India	3 809
Jamaica	3 279
Ireland	2 900
Pakistan	2 770
Germany	2 329

California's Silicon Valley (where companies like Apple are based). Bristol is home to global companies such as Aardman Animations, Hewlett Packard & Toshiba. Also many other smaller firms working in robotics, 3D printing & other advanced technologies. Chinese telecommunications giant Huawei has invested in the city too.

Pull factors for high-tech industries:

- Government grant £100 million – Super Connected City – broadband download speeds of at least 80Mbps
- Close links between city council & the university
- Educated & skilled workforce
- Advanced research at the university
- Different industries working collaboratively in research & development (R&D)
- Clean & non-polluted environment

Super-Connected Cities Programme

The Government has made up to £150 million available to support UK cities to develop the digital infrastructure capability to remain internationally competitive and attractive for investors, business and visitors.

Through the Super-Connected Cities Programme across 22 UK cities, the Government has provided:

- Broadband Connection Vouchers to thousands of small and medium sized businesses to improve digital connectivity
- public Wi-Fi in over 1,000 public buildings including museums, libraries and community centres, across city centres and in over 1,200 buses, trams and trains
- digital projects increasing broadband capacity and supporting business growth in some of our leading cities

The 22 Super-Connected Cities are:

- Birmingham, Bristol, Brighton and Hove, Cambridge, Coventry, Derby, Leeds and Bradford (joint proposal), London, Manchester, Newcastle, Oxford, Portsmouth, Salford and York in England
- Aberdeen, Edinburgh and Perth in Scotland
- Cardiff and Newport in Wales
- Belfast and Derry/Londonderry in Northern Ireland

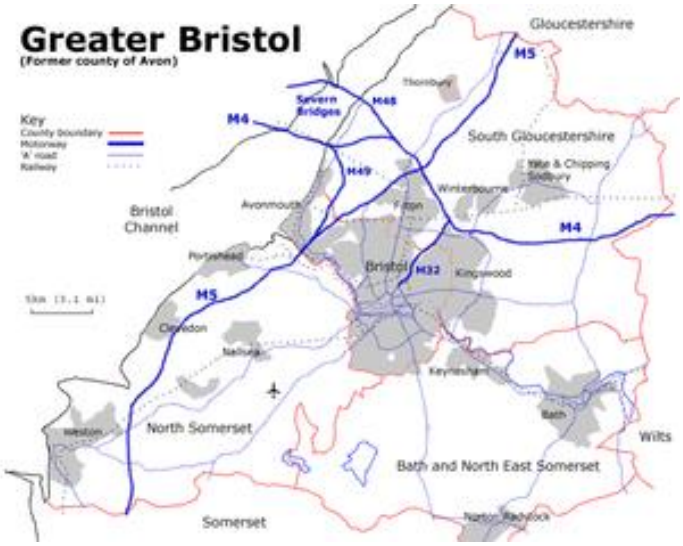
Lesson 15 – Case Studies of Economic Opportunities in Bristol

Case study: Aardman Animations

- Based in Bristol
- Set up in 1972
- Famous for films using stop-motion clay animation techniques (Wallace & Gromit)
- Now uses computer animation too
- Oscar winners and numerous other awards

Case study: Defence Procurement Agency

- Government policy to decentralise agencies away from London
- The MOD Procurement Agency (DPA) employs over 10 000 people
- Built new HQ on greenfield site in 1996 at Filton
- Known as MoD Abbey Wood
- Supplies army, air force and navy with everything needed from boots to aircraft carriers
- The building project involved over 130,000 m^2 of buildings including offices, restaurants, library, sports facilities, training rooms, auditoria and conference rooms, support facilities and a crèche, together with landscaping and external works on a 98-acre (400,000 m^2) site.
- It was designed with a feel of connecting “neighbourhoods" and is surrounded by an artificial lake for security.
- As the number employed increased, there was a need for more housing
- This has added to Bristol’s urban sprawl
- A new town was built called **Bradley Stoke** to house over 21 000 people
- When built it was Europe’s largest private housing development
- At first there were concerns about the lack of facilities, with no town centre and only a Tesco supermarket
- Now this has improved with Willow Brook shopping centre, a leisure centre, 6 primary schools and a secondary school



Case study: Aerospace Industry

- 14 of the 15 main global aircraft companies are found in the Bristol region
- Includes Rolls-Royce, Airbus & GKN Aerospace
- Supply chains have developed in the region to supply these high-tech companies
- Filton Enterprise Area is a new hub for cutting-edge aviation technology
- It produces aircraft parts and electronic systems for communication & navigation
- 100 year tradition for the aircraft industry in Bristol – supported by world-class aerospace courses at local enterprises

Lesson 16 – Changes to Bristol's environment

How are changes affecting Bristol's environment?

2015 Bristol became the first UK city to be awarded status of European Green Capital

Bristol plans to achieve the following by 2020:

•Transport improvements

•Improved energy efficiency

•Development of renewable energy

Bristol plans to increase jobs in low-carbon industries from 9 000 to 17 000 by 2030.

The city's green economy had recent annual growth rate of 4.7%.

In the first year as European Green Capital:

- 175 businesses created a ‘green’ action plan
- Major events – international festival on leadership in green technology, international competition to develop mobile apps & environmental awareness games
- First 100 electric car charging points installed
- Every primary pupil planted a tree to improve the city’s green coverage

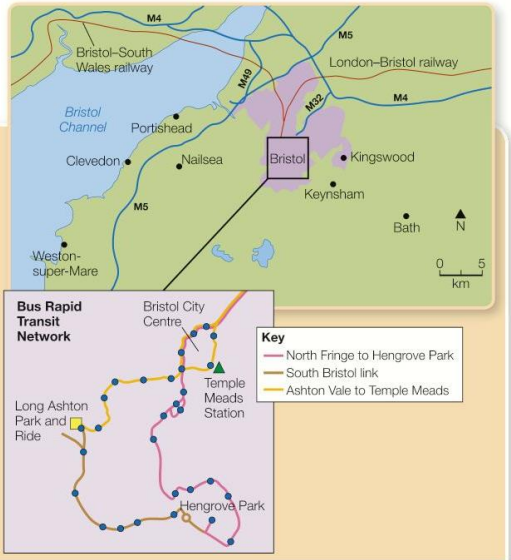
BBC news review

Integrated transport system in Bristol

An integrated transport system for Bristol

In 2012 Bristol was the second most congested city in the UK. A journey during rush hours takes 31 per cent longer than at other times of the day. Bristol has a higher percentage of people walking and cycling than any other UK city (57 per cent). It aims to double the number of cyclists by 2020.

The key to the city’s plans is the development of an integrated transport system (ITS), linking different forms of public transport within the city and the surrounding areas (map **B**).



An ITS connects different methods of transport, making journeys smoother. The aim is to encourage people to switch from using cars to public transport. This makes transport more sustainable, as well as reducing traffic congestion. The Rapid Transit Network (map **B**) consists of three bus routes linking the main Temple Meads railway station with the city’s Park and Ride sites. Construction on the network started in early 2015. The first services will start operating in late 2016.

As part of its transport developments, Bristol is planning many new rail improvements. These include the electrification of the line to London. Electrification will mean greener transport, more reliable journeys and improved connections across southern England and South Wales.

Queen Square, Bristol

Bristol BRT simulation

Urban Greening in Bristol

More than a third of Bristol is open space & over 90% of people live within 350m or parkland & waterways. 8 nature reserves & 300 parks. Queen Square is a former dual carriageway transformed into an open space with cycle routes.

Green initiatives in Bristol:

- Sites of Nature Conservation Interest (SNCI) to be raised to top conservation condition by 2026
- 27% of city to be part of a wildlife network
- Objectives set for wildlife in non-natural habitats e.g. cemeteries
- 30% city to be covered with trees

New housing development at Portbury Wharf allowed on condition that neighbouring area was made into a nature reserve. The areas of open water & meadow provide important habitat for wildlife, plants & birds.

Portbury Wharf Nature Reserve primary school video

Lesson 17 – Environmental challenges in Bristol

Bristol's environmental challenges

- Bristol's economy & industry has changed
- Disused industrial buildings have become derelict
- Demand for new homes → new housing on edge of city → urban sprawl
- Most run-down areas are in the inner city and old industrial areas
- The old port has many abandoned warehouses

Stokes Croft

- Inner city area of high density C19th housing for industrial workers
- Notorious for derelict housing & abandoned properties
- Empty houses take over by squatters
- Area suffered from riots and antisocial behaviour

Stokes Croft improvements:

- Bristol City Council obtained lottery grants to improve the poor economic activity & environmental decay
- Activists & artists wanted to revitalise the area through community action & public art

- Now well known for its music, independent shops, nightclubs & graffiti art
- Locals have protested against possible 'gentrification' of the area → area would become too expensive for locals to live there

Bristol Harbourside – good or bad?

- Bristol's docks declined as new large cargo ships were too big to travel up the River Avon to the docks.
- Several industries closed (i.e. tobacco factories) and left large listed buildings un-used.
- Regeneration of area has taken 40 years.
- Buildings now used for residential, culture & leisure.

Co-operation between council, landowners – inc. British Gas & British Rail – private developers & South West Regional Development Agency.

RGS info S-cool

Good:

- Redevelopment of a very run-down area
- Preservation of several listed buildings
- People still live in the city centre to city does not have 'dead heart' in the evenings
- Much needed housing provided
- Use of brownfield site
- Creation of employment opportunities

Bad:

- Not all locals like the architecture of the new developments
- Flats are too expensive for local people on council's housing waiting list
- New jobs don't match some skilled workers

Lesson 18 – New Housing in Bristol

Urban growth → urban sprawl?

Urban growth:

- Growing population in C20th
- Migrant workers
- Demolition of slum housing
- WW2 heavy bombing destroyed 3200 houses and damaged 1800
- Increased demand for new housing for students, retired couples & families

- 1955 estimated 43 families per week moved into brand new homes on new estates on the edge of the city i.e. Hartcliffe
- City council owned many new homes
- Private houses also built
- Bristol's boundaries extended outwards
- Most growth to north west of the city
- Bradley Stoke (new town) extended the city to the north

Successful brownfield site redevelopments: Temple Meads, Templegate, Harbourside & Finzels Reach

Reduce urban sprawl – use brownfield sites:

- Between 2006-2013 94% of new housing developments were on brownfield sites
- By 2016 over 30 000 new homes are planned on brownfield sites
- Nearly 8000 homes could be built on 89 identified brownfield sites (i.e. former pubs, offices & factories)
- Planned brownfield sites are high density (210 houses per ha) compared to greenfield sites (60 houses per ha)

Case study brownfield site: Finzels Reach

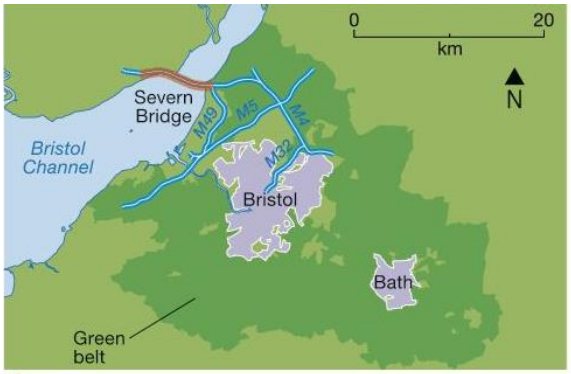
- 2 hectare brownfield site near the CBD
- Derelict sugar refinery & old brewery buildings

Finzels Reach website

The outside of the old industrial buildings have been kept but the interiors have been redeveloped

High density development with variety of uses: Office space Shops 400 apartments

The Bristol & Bath greenbelt



The green belt around Bristol

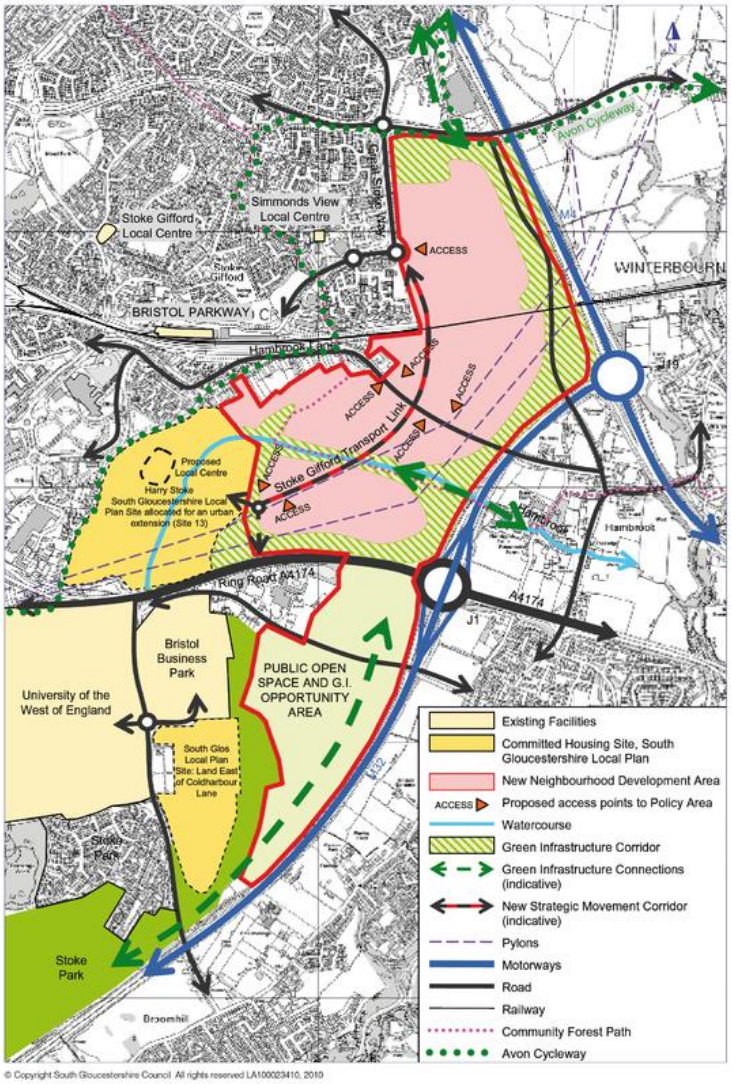
The greenbelt was set up to prevent urban sprawl and stop Bristol & Bath merging.
Only 5% of the greenbelt is controlled by Bristol city council, the rest is under the control of the 3 nearby councils. Local people are against building on green belt land.

However, the national shortage of new houses means that the government is encouraging the use of greenfield sites now. Bristol attracts many commuters and nearby settlements, such as Clevedon, have grown.

Case study: Harry Stoke greenfield development
South Gloucestershire council controls the greenbelt north of Bristol. They have allowed housing developments over a number of years including the new town of Bradley Stoke.

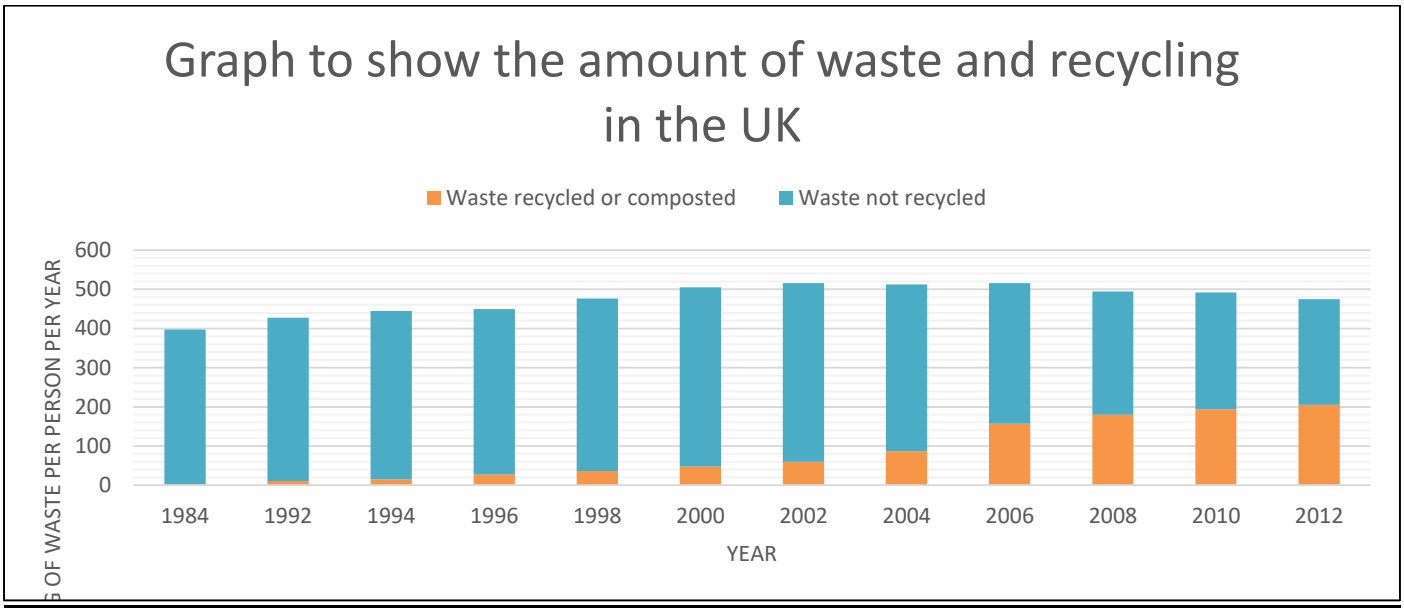
Recently they allowed a new development of 1200 homes at Harry Stoke with 2000 more homes planned for 2016-17.

Local people objected to Harry Stoke:
* increased congestion, traffic noise & poor air quality
* impact on ecology & loss of habitats (especially Great Crested Newts – protected species)
* loss of open space & informal recreation areas
*impact on existing community services & facilities
* effect on local flood risk



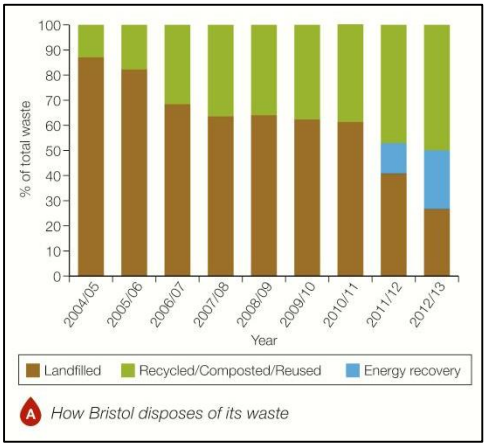
Lesson 19 – Creating a clean environment in Bristol – Waste

UK Waste Statistics



What is Bristol's waste disposal problem?

The amount of waste produced per head in Bristol is 23% **lower than the UK average**. However the city still **produces over ½ million tonnes of waste** per year. It is one of the worst cities in terms of how much **food waste** is produces.



Maths Skills:

2. What was the % of waste sent to landfill in 2004/05 and 2012/13?

3. What % of waste was used for energy recovery in 2011/12?

4. Describe the trends in waste disposal from 2004 to 2013.

How is Bristol reducing the environmental impact of waste disposal?

Bristol has adopted a range of strategies:

- **Reduce** amount of waste sent to **landfill**
- **Reduce** amount of **waste generated** by household by 15%
- **Increased** waste **recycling** to 50%

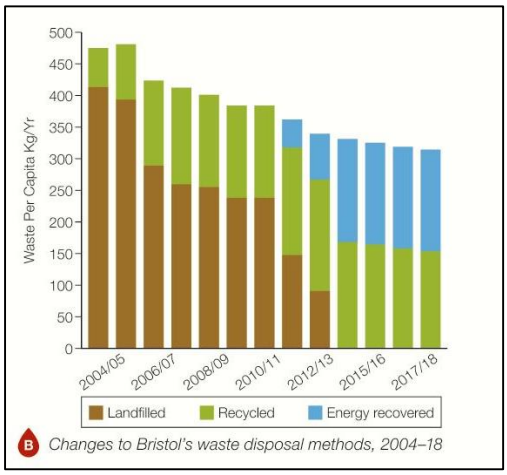
Bristol's **population has grown** by 9% since 2000 – however the amount of household **waste has reduced** by 18% in the same period. This is mainly due to **increased recycling**.

How have Bristol increased recycling?

- Agreed **higher targets** with contractors who handle household waste
- **Teaching children** in school the **importance of recycling** & how to recycle at home
- Introduced **specialised kerbside recycling collections** & facilities for recycling different kinds of waste
- **Technological improvements** in recycling

When recycled materials are processed it can make money:

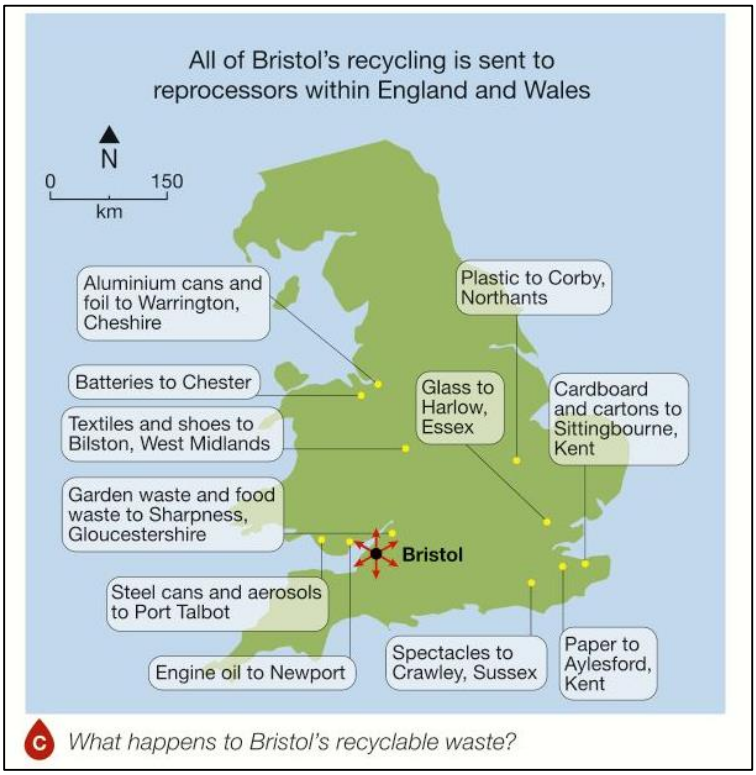
- A recycling plant can create around **4.2 million litres of diesel per year** by treating 6000 tonnes of waste plastic
- The Avonmouth waste treatment plant treats 200 000 tonnes of waste per year – non-recyclable waste is used to **generate electricity for nearly 25 000 nearby homes**



B Changes to Bristol's waste disposal methods, 2004–18

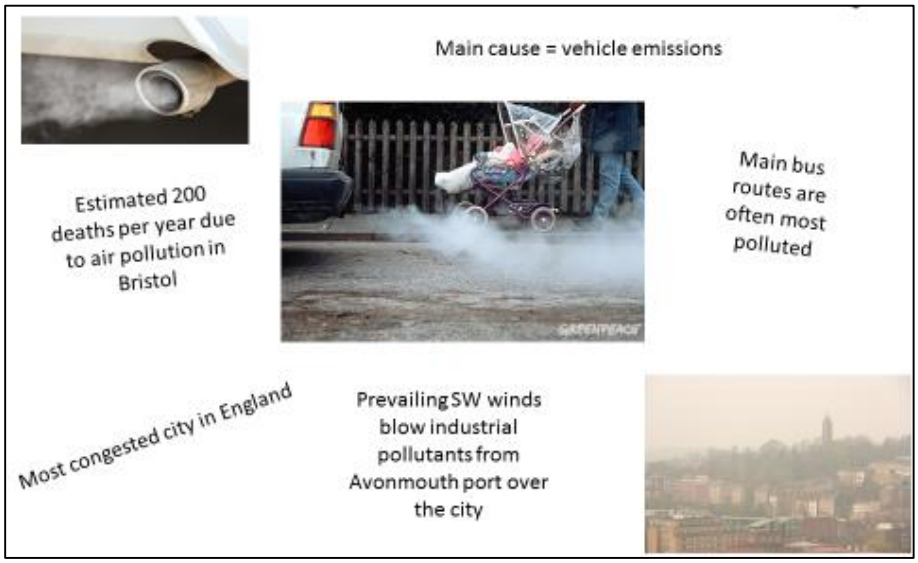
Maths Skills:

7. How was most waste disposed of in 2008?
8. What method was introduced in 2011/12?
9. Which method was due to cease in 2013/14?
10. Describe the predicted changes to Bristol's waste disposal methods in the future.

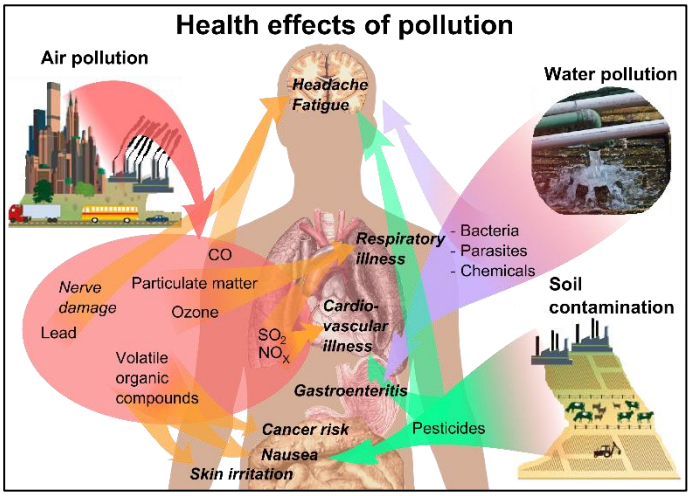


C What happens to Bristol's recyclable waste?

Lesson 20 – Creating a clean environment in Bristol – Air Quality



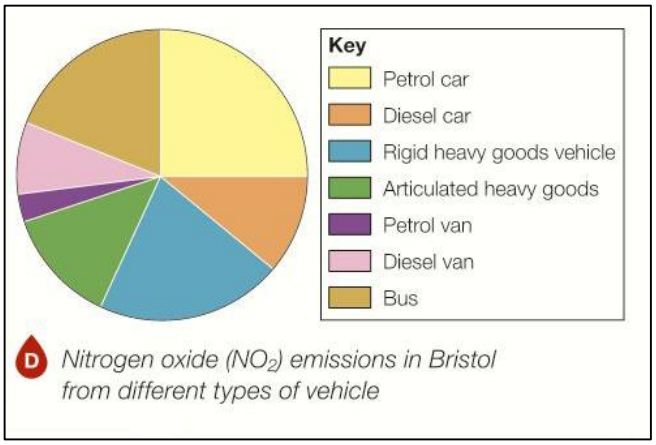
Atmospheric pollution in Bristol



Reducing air pollution in Bristol

- Whole city declared a smoke control area
- Plans to reduce speed limits on motorways & in residential areas
- Create Frome Gateway – walking & cycling route to the city centre
- Electric vehicle programme with charging points in 40 public car parks
- Smartphone app with information about public transport

Sources of air pollution in Bristol



D *Nitrogen oxide (NO_2) emissions in Bristol from different types of vehicle*

Bristol's Poo Bus– good or bad?

BBC news video **Guardian article** **Plans for more poo buses**

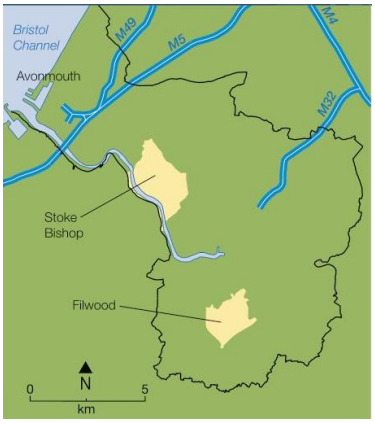
Britain's first bus powered by human & food waste
Runs between Bath & Bristol Airport
Runs on bio-methane gas produced at a sewage treatment works
Can travel up to 186 miles (300km) on one tank of gas – takes the annual waste of 5 people to produce this
Compared to conventional diesel vehicles, up to 30% less carbon dioxide is emitted

Lesson 21 – INTERVENTION LESSON

Lesson 22 – Social inequalities in Bristol

Inequality in Bristol

- Bristol's population shows **great social variations** between different areas
- Measured by looking at a range of factors that affect people's lives, including **housing, education & health**
- **Lack of investment** led to **social inequalities** between different areas



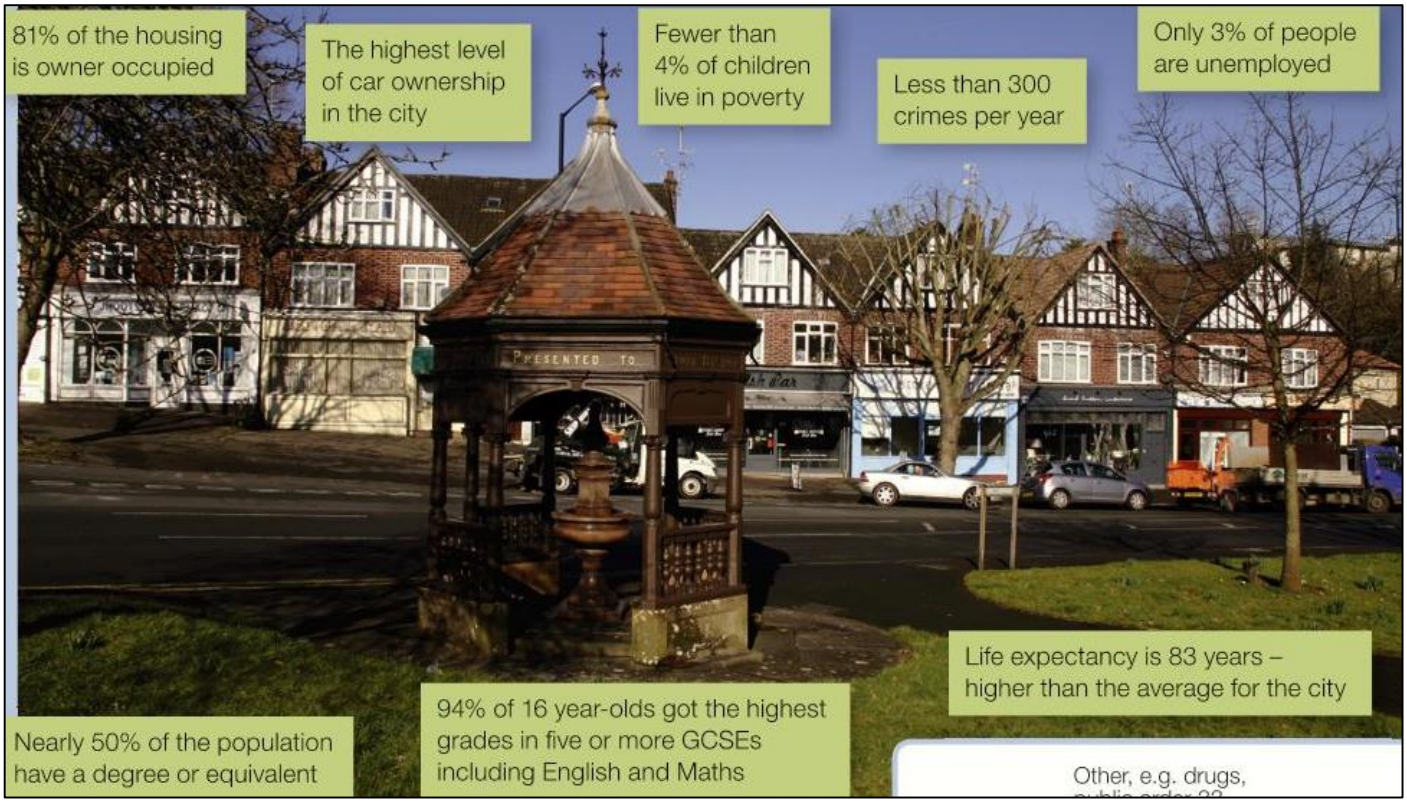
- Some areas have **high levels of social deprivation**
- 2 case studies: Filwood & Stoke Bishop

2 contrasting areas of Bristol: Stoke Bishop and Filwood

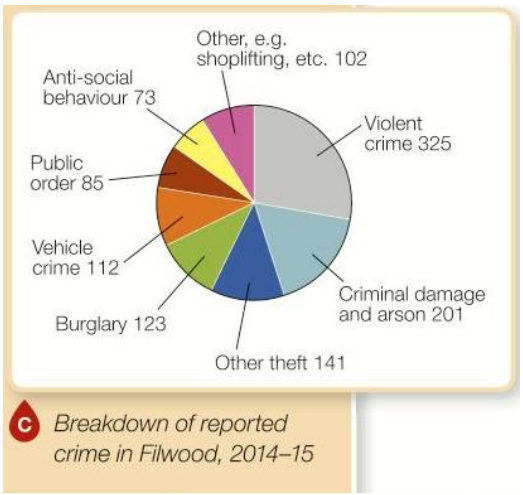
Filwood:

[Filwood profile census data 2016.pdf]

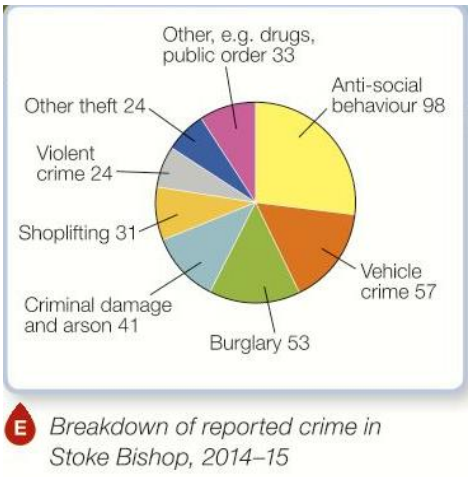
Stoke Bishop:



Comparing crime in Filwood & Stoke Bishop



C *Breakdown of reported crime in Filwood, 2014–15*

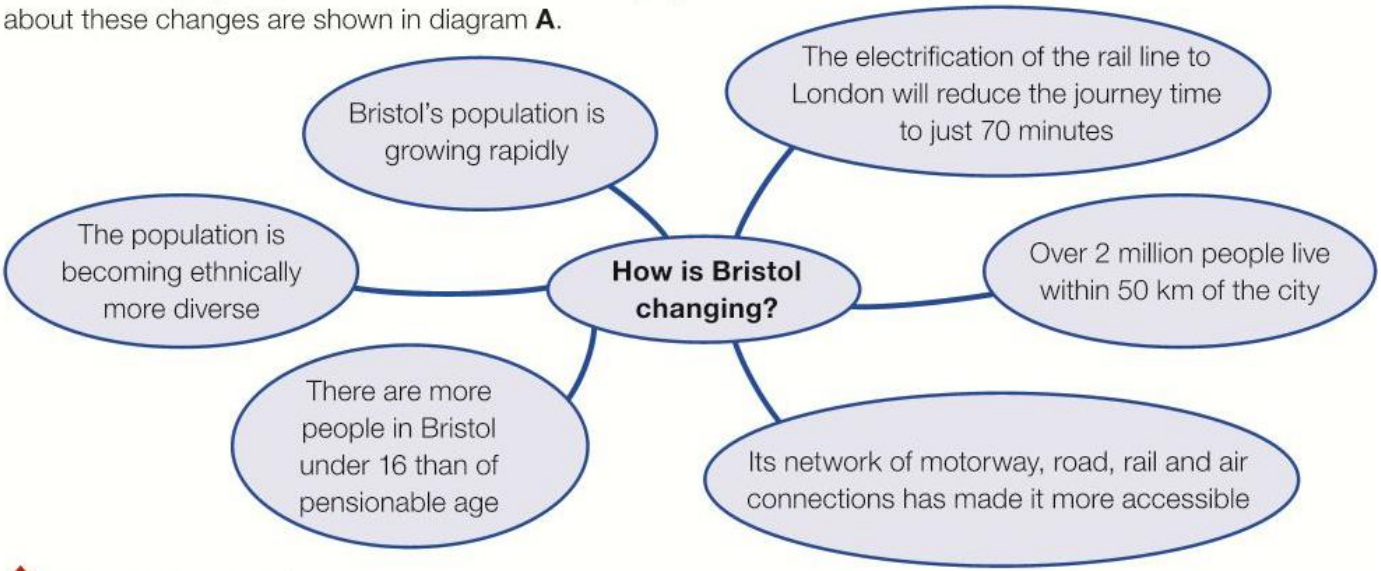


E *Breakdown of reported crime in Stoke Bishop, 2014–15*

Lesson 23 – Social Opportunities in Bristol

What changes are affecting Bristol?

Bristol is changing. Some of the factors that are bringing about these changes are shown in diagram **A**.



A *How Bristol is changing*

Some of these changes are social and others are economic.

Cultural opportunities in Bristol - entertainment

- Bristol has a youthful population
- There is a vibrant music scene and many nightclubs and bars
- Colston Hall hosts concerts & entertainment by major music stars
- The Bristol Old Vic, Bristol Hippodrome & the Tobacco Factory host plays, dance, opera and musical theatre

Sport in Bristol

2 professional football teams – City & Rovers
1 professional rugby union team
HQ of Gloucestershire County Cricket
All clubs are developing their stadiums to provide a range of leisure & conference facilities & accommodation

Rovers plan to move to new stadium on the outskirts of the city – the proposed new UWE Stadium.

The stadium consent also includes an associated shop, bar, offices, banqueting facilities, gymnasium, 1,000 space car park and media study centre and forms part of the UWE Campus Masterplan (University of West England).

Shopping in Bristol

Shopping is a growing leisure activity across the UK. The city centre shopping area at Broadmead declined after the building of an out-of-town retail park at Cribbs Causeway.

Improved facilities were needed to:

reduce crime
compete with other cities
improve the environment
attract employment

Old Broadmead shopping centre

Cribbs Causeway shopping centre

Redevelopment of Broadmead

- The CBD was pedestrianised and new street furniture, floral displays and landscaping added
- CCTV installed
- Development of open street markets
- Improving public transport i.e. park & ride
- Promoting tourism to encourage greater spending by making the Old Market area a conservation area

Cabot Circus & Harbourside

<u>Cabot Circus Shopping Centre</u>
Opened Sept 2008
Cost £500 million
Shops & leisure facilities
Also offices, cinema and 250 apartments

<u>Bristol's Harbourside</u>

Part of a project to regenerate the central part of the city
Former workshops & warehouses converted into bars, nightclubs & cultural venues
Art gallery, media & arts centre, museum & At-Bristol science exhibition centre
Annual 3-day festival

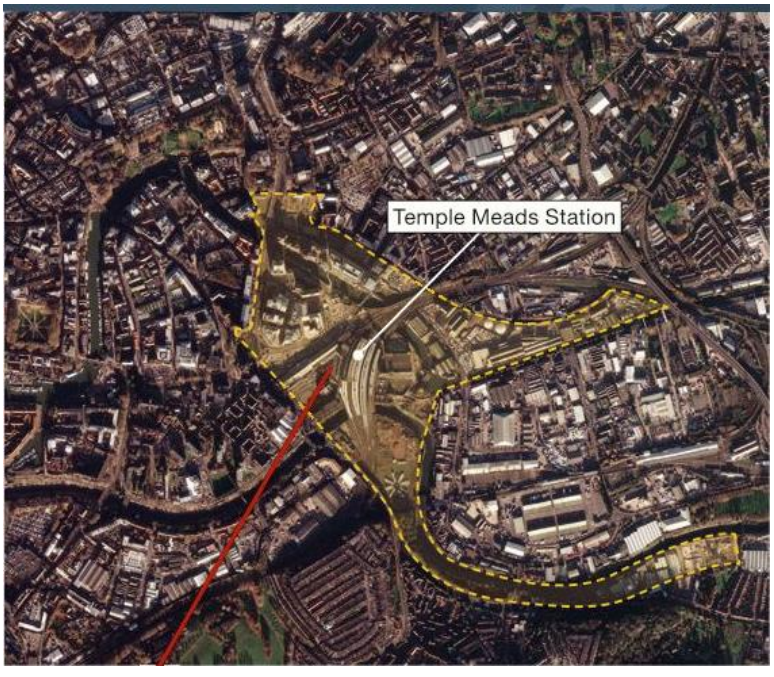
<u>Lesson 24 – Temple Quarter regeneration</u>

Why should we regenerate run-down urban areas?

Also known as brownfield sites.
Often need to clear existing buildings or land first → increased cost.
Previous industrial use might have contaminated the land → needs cleaning up → increased cost.
Advantages:

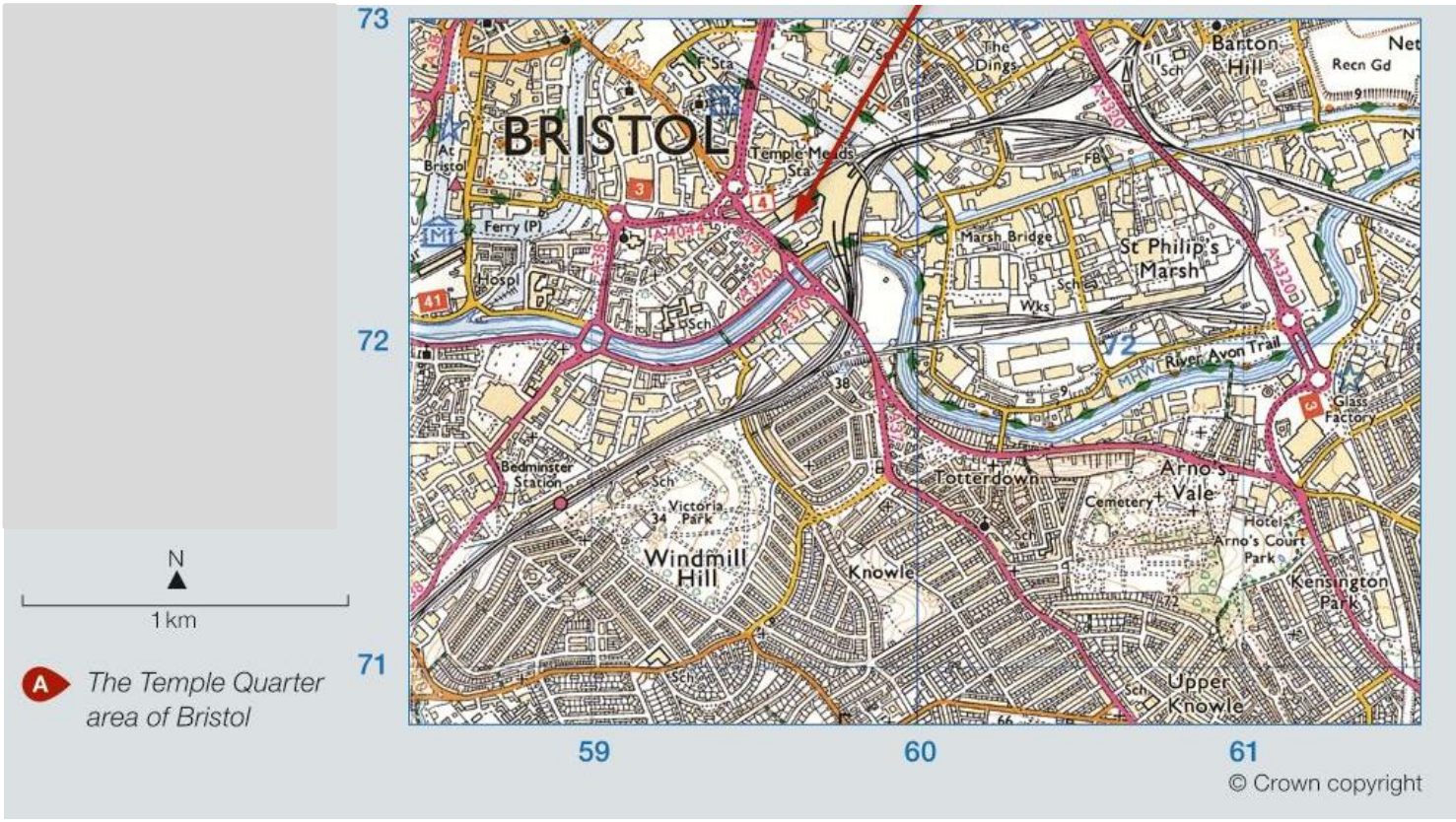
- can re-use existing buildings in lots of ways
- land is often disused or derelict
- site is already developed → reduces urban sprawl
- improves urban environment
- often in urban area so may reduce car use

The location of the



Temple Quarter

Why did the Temple Quarter need regeneration?



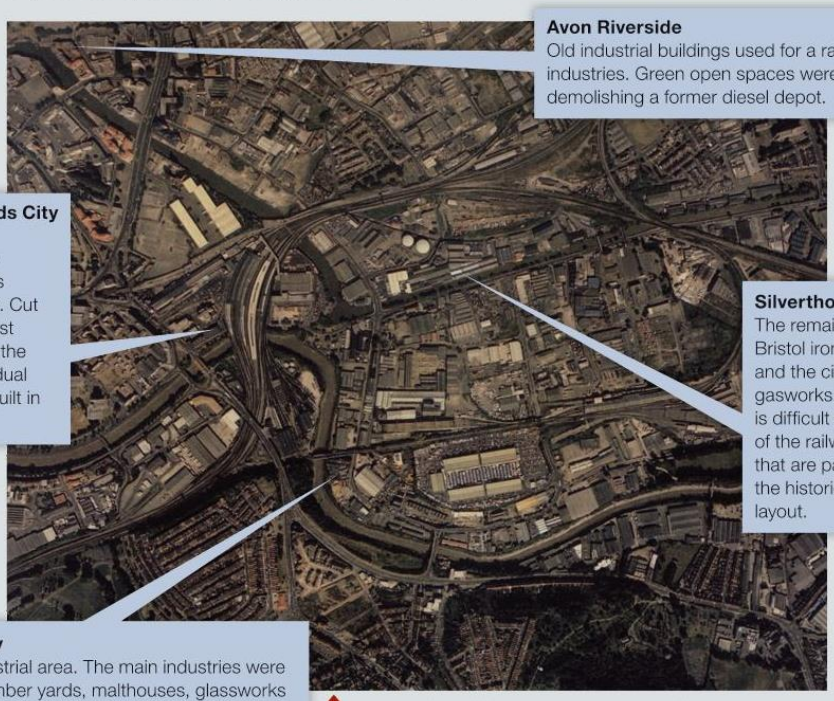
Why did the Temple Quarter need regeneration?

The Temple Quarter was very run down. It gave a bad impression to visitors, as it was the first part of the city seen by anyone driving from Wells to the south or from Bath to the south east. It is also the area that many visitors see when they first arrive at Temple Meads, the city's main railway station.

What was the area like before regeneration?

The Temple Quarter developed as an industrial area in the eighteenth century. The area was often flooded until the construction of the 'Floating Harbour' and the Feeder Canal in the nineteenth century. The water level in the harbour was no longer affected by the tide, but remained constant. This made more industrial development possible. In 1841, Brunel built the first railway station. More railway sidings were added, until eventually they covered 40 per cent of the area. In the twentieth century the remaining terraced housing was removed in the process of slum clearance.

There are four separate areas within the Temple Quarter (photo **B**).



Avon Riverside
Old industrial buildings used for a range of light industries. Green open spaces were created by demolishing a former diesel depot.

Temple Meads City Gateway
Dominated by Temple Meads railway station. Cut off from the rest of the area by the Temple Gate dual carriageway built in the 1970s.

Silverthorne Lane
The remains of the Bristol ironworks and the city's gasworks. Access is difficult because of the railway arches that are part of the historic railway layout.

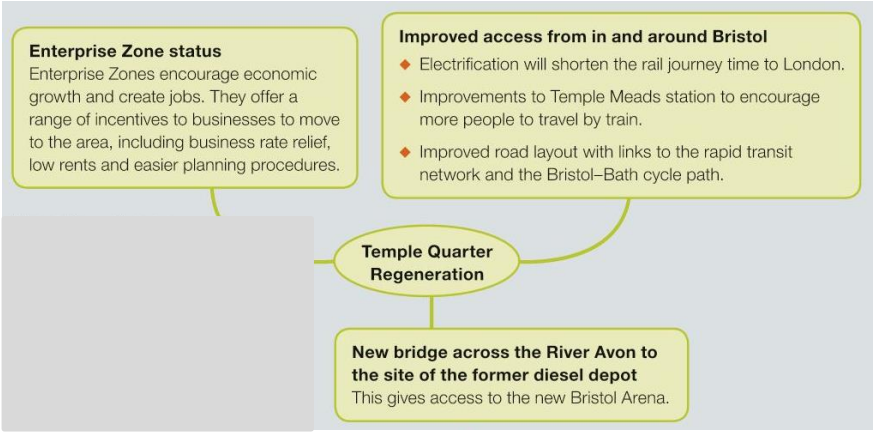
Temple Quay
A former industrial area. The main industries were ropeworks, timber yards, malthouses, glassworks and potteries.

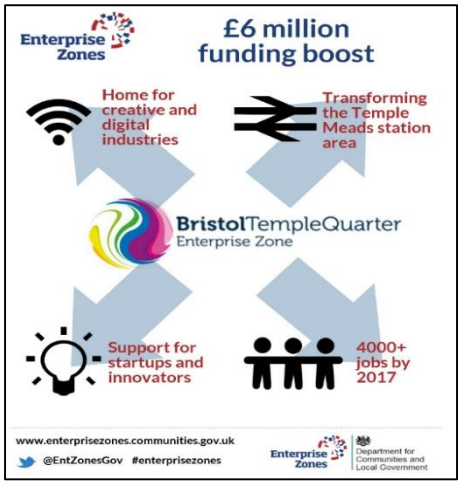
B *Aerial view of the Temple Quarter in the 1990s*

How was the Temple Quarter regenerated?

Aims: 4000 new jobs by 2020 and 17000 new jobs by 2037

240 000 m² of new or refurbished buildings – offices, homes, shops & redeveloped railway station





What is an enterprise zone?

•Enterprise zones have been set up by the government to drive local growth and create jobs.

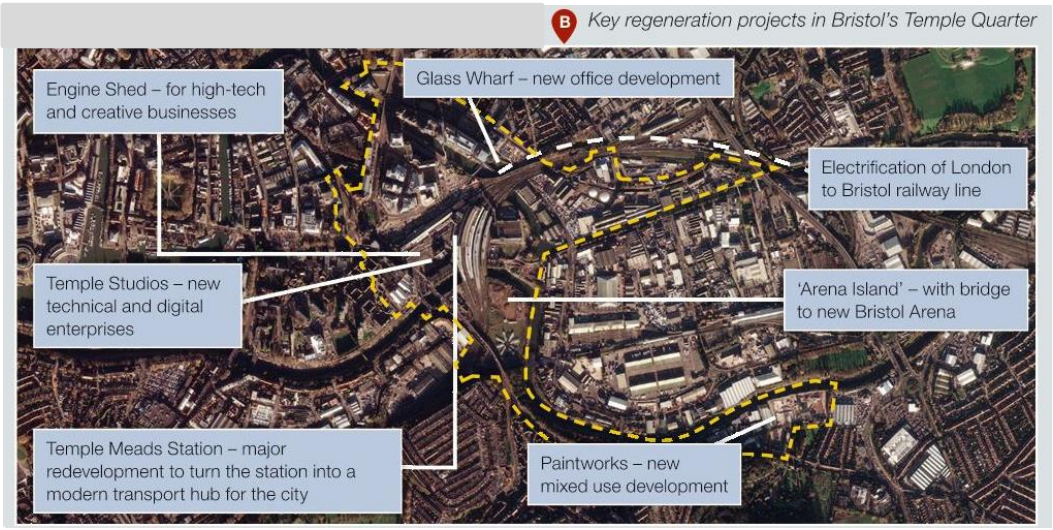
•They offer a range of incentives to businesses, such as business rates relief, simplified planning and superfast broadband.

•They also offer benefits to the communities surrounding them by unlocking key development sites, consolidating infrastructure, attracting business and creating jobs.

•All business rates growth generated by the enterprise zones is kept by the relevant local enterprise partnership and local authorities for 25 years, allowing them to reinvest in local economic growth.

The **Bristol Arena** is a new, world-class 12,000 capacity entertainment venue, due to be located on Arena Island, near Bristol Temple Meads station.

It will host over 100 events a year, a mix of music, comedy, family entertainment shows and sports exhibition events.



The creation of the arena will mean that residents living in the city and surrounding areas will have a major performance venue on their doorstep and will **no longer have to travel**.

The arena development will **regenerate a derelict city centre site** and be a catalyst for development in the Zone, **creating jobs and stimulating growth**.

Over time, Arena Island will become a new destination for Bristol residents and visitors, and will contribute significantly to creating a vibrant new quarter for the city.

Due to open in 2018.

Access by a **new bridge** over the river as well as a **pedestrian & cycling bridge to 'Arena Island'**.

Area around the arena will host **outdoor events** such as an ice rink or outdoor theatre. Aims to attract people to the area even if not attending a show. **Cafes, offices & flats** to be built along routes to the arena .

Brunel's Engine Shed:

- Example of the **re-use of a listed historic building**
- £1.7 million Innovation Centre being developed in Isambard Kingdom Brunel's historic engine shed at Temple Meads station
- Home to **high-tech, creative & low-carbon sector companies**
- Adds to Bristol's importance as a major UK high-tech centre
- Includes:

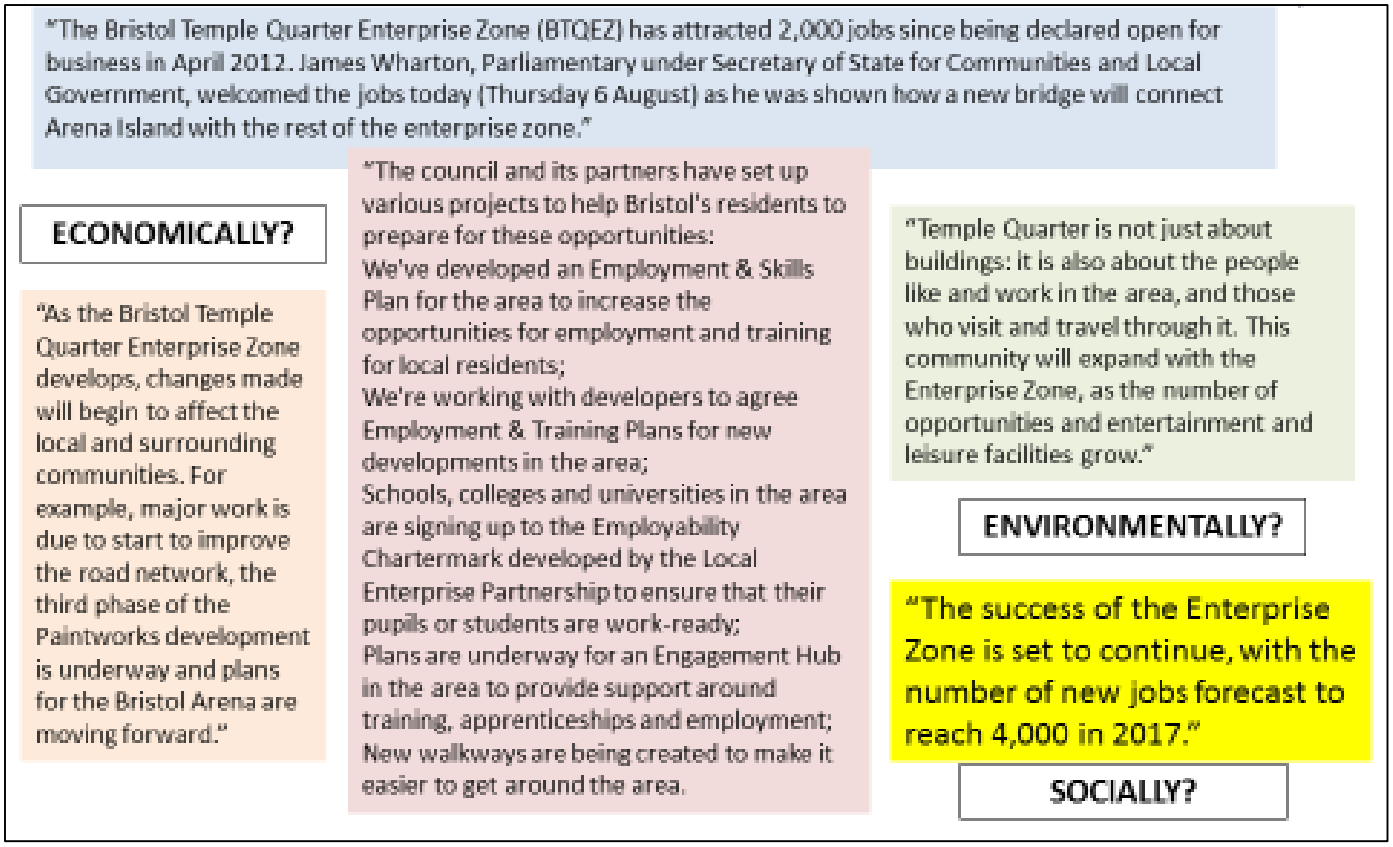
  18 micro-electronics, media & digital production companies

  further 44 companies who use the facilities

  company developing the next generation of wi-fi

  use of superfast broadband as part of the Bristol Gigabit project

Is the Temple Quarter regeneration successful?



<u>Lesson 25 - INTERVENTION LESSON</u>

<u>Lesson 26 - Freiburg & traffic management</u>

Providing sustainable energy in urban areas

Cities make great demands on energy supplies.
Burning fossil fuels generally provides this energy.
This is not a sustainable energy supply.
Pollution and climate change are growing problems.

<u>Freiburg:</u>

Strict energy policy

Energy saving ✓

Efficient technology ✓

Use renewable energy sources ✓

Providing sustainable energy in urban areas

Freiburg plans to be 100% powered by renewable energy by 2050.
They will need to halve their energy use by increasing energy efficiency in homes, offices & factories.
It is one of the sunniest cities in Germany so solar power is widely used.
There are about 400 solar panel installations in the city, including the main railway station & football stadium.

The ‘Heliotrope’ rotates to follow the sun. It is the first building in the world to capture more energy than it uses, all of which is entirely renewable, emissions free and CO_2 neutral.

- Freiburg produces 10 million kw of electricity per year from solar energy
- Homes often produce more than they need and can sell any excess
- The largest % of renewable energy is from biomass using waste wood & rapeseed oil
- Biogas is produced from organic waste
- This produces enough energy to heat Freiburg’s 3 swimming pools
- Freiburg also uses CHP – combined heat & power – which captures waste heat from electricity production to create more electricity & heat – 50% of their electricity comes from this source

CHP plant

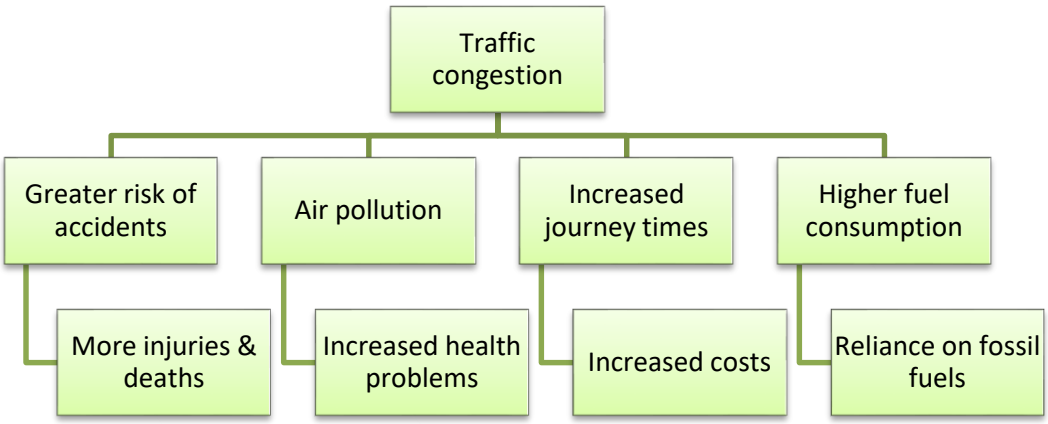
Biogas plant

Green spaces in urban areas

Providing green spaces adds to sustainability both economically and environmentally.

These areas act as the city’s ‘green lungs’ – help keep the air clean. The soils is protected & reduces run-off during heavy rain which reduces the flood risk.
Green spaces provide a natural & free recreational resource and a habitat for wildlife.

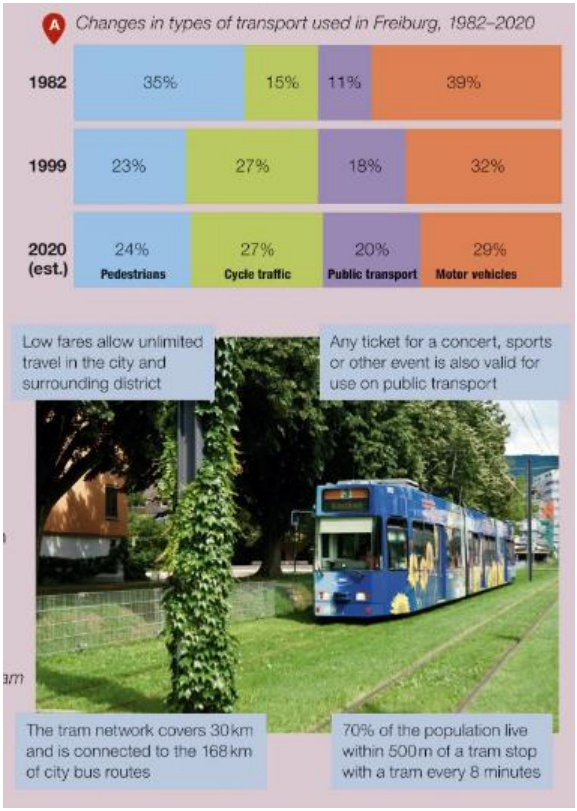
Why is there a need to reduce traffic congestion?



Tackling Traffic Congestion in Freiburg

Freiburg has an ITP – integrated Traffic Plan. The most important part of this is the tram network. It provides efficient, cheap & accessible transport. Compared to other German cities, Freiburg has a low car density (less than 500 cars per 1000 residents). There are also 400km of cycle paths and 9000 parking spaces for bikes. This includes 'bike and ride' at railway and bus stations.

<u>Success?</u>
Tram journeys have increased by over 25,000 in one year.
Car journeys have decreased by nearly 30,000 in same year.



<u>Lesson 27 - Urban sustainability</u>

City problems:

- lots of people & buildings
- competing for space,
- consuming huge quantities of energy, water & other resources
- demand for waste disposal
- traffic congestion

Solutions:

- Urban planning
- Social / economic & environmental

A *Strategies for a sustainable city*

Freiburg – a sustainable city

B *The location of Freiburg*

Population: 220,000 Area: 155km²
Location: SW Germany, edge of the Black Forest
History: many medieval buildings, bombed heavily in WW2, rebuilt following medieval street plan with narrow city centre roads

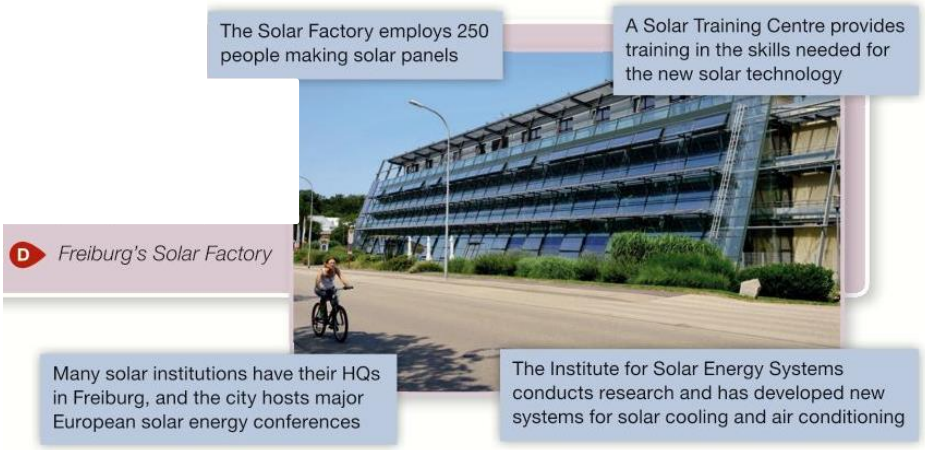
Freiburg is a city in Germany.
In 1970 they set a goal of urban sustainability
They considered environmental, social and economic concerns

Social Planning in Freiburg

Takes into account people's needs.
Important that people take part in the decisions that affect their lives – local and city level.
Need to provide affordable homes.
Possible building sites are discussed and recommendations made to the council.
Children's views are also represented.
Local people can invest in renewable energy resources e.g. one district has invested in over £5 million in 9 windmills, 8 solar energy systems (one at a football stadium), a hydro-electric plant & an energy conservation scheme at a local school.
Investors get a financial return, green energy and free football season tickets.
Financial rewards for people who compost green waste or use textile nappies.

Freiburg green city article

Economic planning in Freiburg



Need to provide employment.
Hosts many conferences on sustainability – provides jobs in hospitality & presenting at conferences.
Lots of jobs in research & manufacturing of solar technology.
More than 10 000 jobs in 1500 environmental businesses.
More than 1000 people employed in solar technology industry producing advanced solar cells & machinery to make them.

Environmental planning in Freiburg

Ensures resources are not wasted.
Protect environment for future generations.
Key strategy is to reduce waste production – more re-use & recycling.
Also try to use more brownfield sites.

Case study:
Vauban

Inner city district
Site of former army barracks
Home to 5500 people
Low-energy buildings

All existing trees kept
Green spaces between houses are play areas
Green roofs covered with vegetation store water – collected and re-used

Solar panels on roofs on one section of houses – 'solar community' – provide more energy than they use.
'Car free' – tram link to city centre, no on-street parking, lots of footpaths & cycle ways, over 70% residents do not own cars, those who do have to park on a community lot at the edge of Vauban.
600 jobs provided in the district.

Vauban article 2nd Vauban article

Sustainable water supplies

General:

People need to use as little water as possible
Collect & recycle water rather than pump it from reservoirs
Houses with roof gardens to harvest rainwater & recycle wastewater
Protect groundwater from pollution – allow rain to filter through green open spaces

Freiburg:

Waste water system collects rainwater, reuses it and lets it seep into the ground
Residents get financial incentives to use less water
Water conservation methods in Vauban include:
Collect rainwater to use indoors
Green roofs
Pervious pavements to allow rain to soak through
Unpaved tramways (as above)
Drainage wetlands

River Dreisam is managed using flood retention basins
Excess water is stored, to reduce flood risk, and can be used in the city
Basins designed to fit into scenery

Lesson 28 – Revision

Lesson 29 – Assessment

Lesson 30 – Assessment Review