7 Changing Cities

LEARNING OBJECTIVE

To study how urbanisation is a global process.

Learning outcomes

- To understand that there have been contrasting trends in urbanisation over the past 50 years in different parts of the world.
- To be able to explain how and why urbanisation has occurred at different times and rates in different parts of the world.
- To know the effects of urbanisation.

Urbanisation is a global process

What were the trends in urbanisation over the past 50 years in different parts of the world?

The trends in **urbanisation** in the past 50 years can be seen in Figure 7.1. The fastest rates have occurred in **emerging** and **developing countries**. This is shown by the increases in the figures for Africa, Asia, Latin America and the Caribbean.

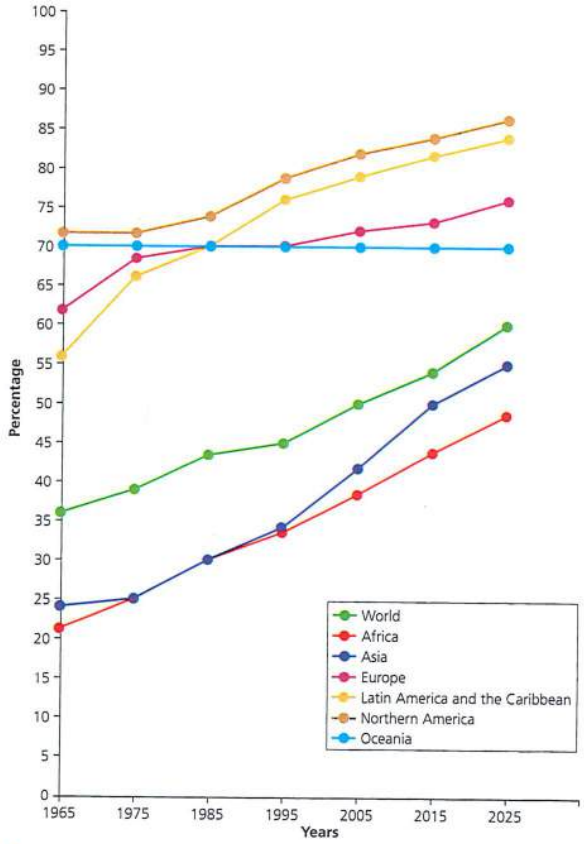


Figure 7.1 Percentage of urban population per continent in certain areas of the world.

Year	Population (billions)
1960	3
1970	3.8
1980	4.5
1990	5.3
2000	6.0
2010	6.9
2020	7.6
2030	8.4
2040	8.9
2050	9.5

Figure 7.2 World population growth (actual and predicted).

Practise your skills

Draw a line graph for the information given in Figure 7.2. Ensure that you indicate on your graph that information after the present year is a predicted.

Why has urbanisation occurred at different times and rates around the world?

Urbanisation has occurred at different times globally mainly due to the stage of development of countries.

Urbanisation in developed countries

This occurred during the nineteenth century, caused in part by the Industrial Revolution. There was a huge demand for labour in the new factories as countries industrialised, for example, in the UK. At the same time, large farming estates were enclosing land, which meant that poor villagers had less land to support themselves. People began to move in great numbers to the cities. The evidence for this can be seen in Figure 7.1, which shows that Europe and North America already had high levels of urbanisation in 1965. In the past 50 years, **developed countries** have continued to increase their urban areas, but at a much slower rate. This has been due to the pull of the cities, which often provide better facilities than rural areas, especially for younger generations. There are also more jobs available in urban areas, which encourages migration from rural areas.

Urbanisation in emerging and developing countries

This has occurred over the past 50 years. The evidence of this can be seen on Figure 7.1, which shows that both Africa and Asia have seen over a 50 per cent increase in the number of people living in urban areas. The main reason for this growth in urban population is the increase in population. Population growth has occurred because of decreasing death rates, which are a result of improved living conditions. More children survive past their first birthday and people are living longer. In rural areas there are not enough jobs to support the growing population so the young move to the cities looking for work. There has also been a large **natural increase** in the population of urban areas, partly due to the fact that many of the people who live there are of child-bearing age.

KEY TERMS

Urbanisation – the increase in the number of people living in towns and cities compared to the number of people living in the countryside.

Emerging country – a country with high and medium development (HMHD).

Developing country – a country with low human development (LHD); a poor country.

Developed country – a country with very high human development (VHHD).

Natural increase – when population numbers show a positive difference between the birth rate and the death rate.

Major city – a city with a population of at least 400,000.

Human Development Index (HDI) – a measurement of life expectancy, access to education and gross national income per capita used to assess how much progress a country has made (see http://hdr.undp.org).

Rural depopulation – the movement of people from rural to urban areas.

Effects of high rates of urbanisation

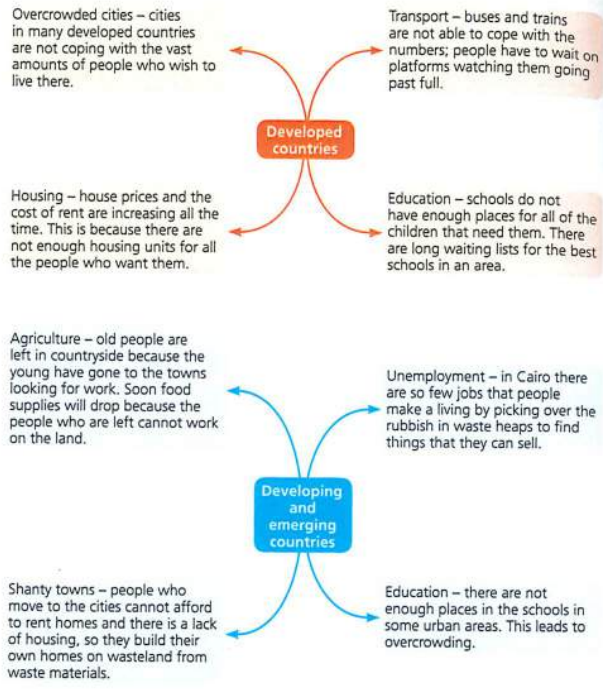


Figure 7.3 Effects of high rates of urbanisation.

Review

By the end of this section you should be able to:

- ✓understand that there are contrasting trends in urbanisation over the past 50 years in different parts of the world
- ✓explain how and why urbanisation has occurred at different times and rates in different parts of the world
- ✓describe the effects of high rates of urbanisation.

ACTIVITIES

1. Name the three continents that have had the fastest rates of urbanisation in the past 50 years.
2. State two reasons for the high growth rate in emerging countries over the past 50 years.
3. Research one emerging country and one developing country that have experienced a high growth rate of urban areas in the past 50 years. Try to make sure that they are in different continents.

Extension

Research when the industrial revolution occurred in three different developed countries.

The degree of urbanisation varies across the UK

LEARNING OBJECTIVE

To study the degree of urbanisation across the UK.

Learning outcomes

- To know the distribution of the urban population in the UK and the location of its major urban centres.
- To be able to explain the factors causing the rate and degree of urbanisation to differ between the regions of the UK.

KEY TERMS

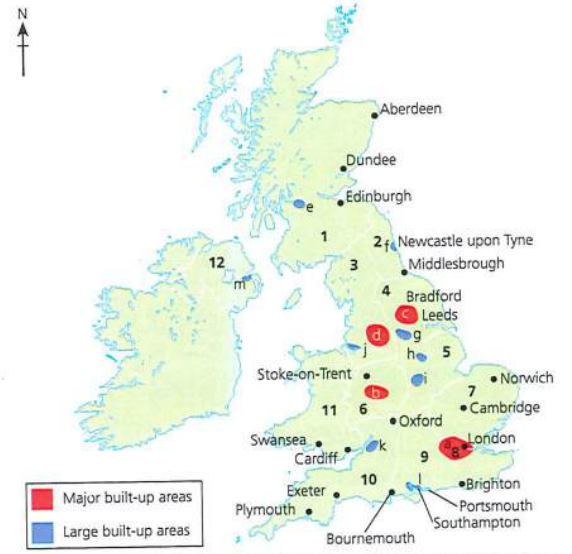
Population distribution – the pattern showing how population is spread over an area.

Density of population – the number of people in an area, usually given as people per square kilometre.

Major urban centre – an area that has a high population density and is made up of houses, industrial buildings, factories and transport routes. These areas are referred to as built-up areas.

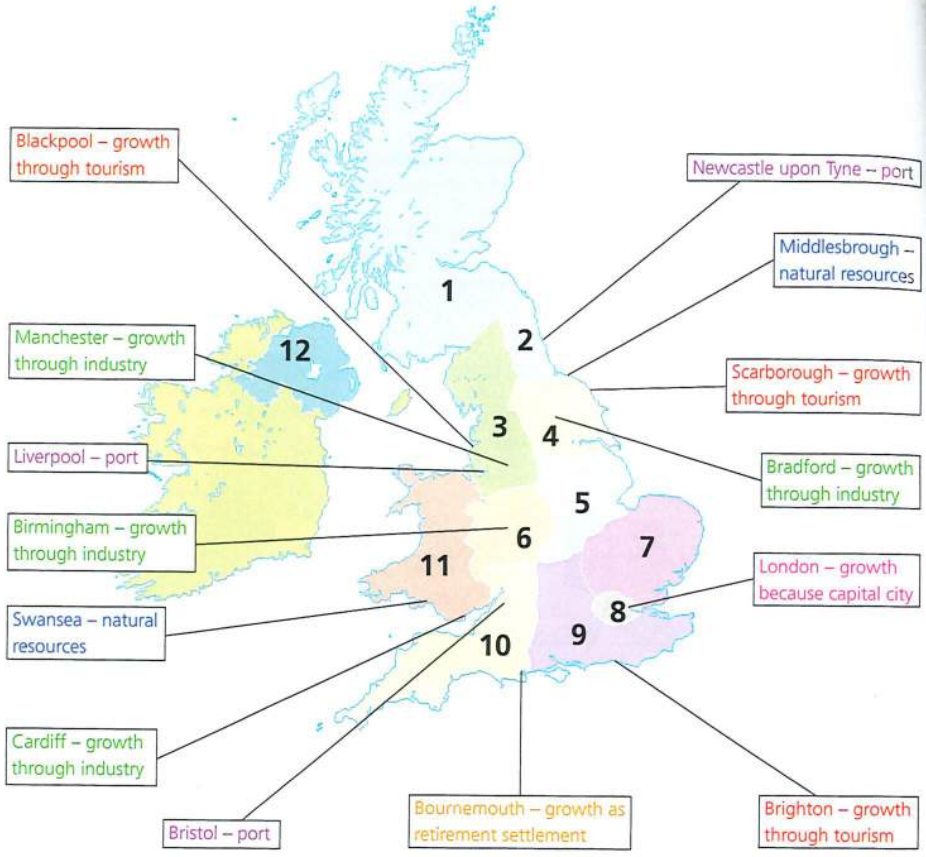
How is the urban population of the UK distributed and where are its major urban centres?

Figure 7.4 shows where the **major urban centres** (built-up areas) of the UK are located. It also provides details of the number of residents in some of these centres.



Built up areas	Letter on map	Region of the UK	Number on map	Number of residents in 2011
Greater London	a	London	8	9,800,000
West Midlands	b	West Midlands	6	2,450,000
West Yorkshire	c	Yorkshire and Humber	4	1,800,000
Greater Manchester	d	North West	3	2,550,000
Glasgow	e	Scotland	1	1,200,000
Tyneside	f	North East	2	770,000
Sheffield	g	North West	3	680,000
Nottingham	h	East Midlands	5	720,000
Leicester	i	East Midlands	5	508,000
Liverpool	j	North West	3	860,000
Bristol	k	South West	10	600,000
South Hampshire	l	South East	9	850,000
Belfast	m	Northern Ireland	12	580,000

Figure 7.4 The UK's major urban centres (built-up areas). The table includes built-up areas with a population of over 500,000.



Region of the UK	Number on map	Percentage of the population that live in urban areas, 2011
Scotland	1	82.0
North East	2	96.1
North West	3	96.3
Yorkshire and Humber	4	95.8
East Midlands	5	95.1
West Midlands	6	94.5
East of England	7	94.2
London	8	99.9
South East	9	95.1
South West	10	90.8
Wales	11	89.3
Northern Ireland	12	65.0

Figure 7.5 Regions of the UK showing factors affecting the rate of urbanisation for some key settlements.

What factors caused the rate and degree of urbanisation to differ between the regions of the UK?

Urbanisation took place in the UK over a long period of time, with villages becoming market towns serving a certain area. Towns that had particularly good communications would then develop into cities. Up until the mid-eighteenth century urbanisation took place at a similar rate and degree across all regions of the UK. However, during the second half of the eighteenth century the effect of the Enclosure Acts in the Midlands and north of England saw many people being forced off the land and moving to towns and cities in search of work. This was the start of the Industrial Revolution, which saw cities in the north of England develop rapidly. For example, Manchester's population increased six times between 1771 and 1831, and Bradford's population increased by 50 per cent every ten years between 1811 and 1851. Elsewhere cities such as Birmingham and London also saw enormous growth.

Growth occurred in the urban population of South Wales in Swansea and Cardiff during the nineteenth century because of the natural resources of coal, iron ore and limestone, which lead to the development of industries in this area.

Cities located on river estuaries grew as ports during the eighteenth and nineteenth centuries as trade with other countries developed. For example, in the seventeenth century Newcastle upon Tyne came after London and Bristol as the most important port in the UK. Bristol was the most important port in the UK for trade with the American colonies and the West Indies by the eighteenth century. Other ports, such as Middlesbrough, developed later as natural resources were found close to them.

Later in the twentieth century, urban population grew because of other factors. For example, North Sea oil deposits caused the growth of Aberdeen where it is piped ashore.

Growth of other coastal towns and cities occurred as they developed their tourist industry, for instance Blackpool and Scarborough in the north and Brighton in the south. The south coast towns more recently have developed as retirement settlements.

KEY TERMS

Region – a unit within a country.

Rate of urbanisation – the speed at which settlements are built.

Degree of urbanisation – the amount of built-up area that has developed in a region.

Enclosure Acts – a series of Acts of Parliament between 1750 and 1860 which stopped villages using the open fields and commons that they had been allowed to use for centuries. This meant that villagers could not make a living and had to move to find a better life. Many went to live in industrial towns.

Review

By the end of this section you should be able to:

- ✓ describe the distribution of the urban population in the UK and the location of its major urban centres
- ✓ explain the factors causing the rate and degree of urbanisation to differ between the regions of the UK.

ACTIVITIES

1. Use an outline map of the UK to mark on four major built-up areas and one large built-up area for five of the other regions shown on Figure 7.5.
2. Name one region of the UK which does not have a major built-up area.
3. State five reasons for the development of urban areas in the UK. Use examples in your answer.
4. Study Figure 7.2 on page 119. Calculate the percentage increase in the world's population between 1960 and 2000.
   a) 50%
   b) 75%
   c) 25%
   d) 100%
5. Define the term 'urbanisation'.
6. State one global trend in urbanisation. Use Figure 7.2 in your answer.
7. Explain one factor that causes urbanisation to occur at different rates in the UK.

Case Study – Birmingham: a major UK city

Learning objectives

- To understand the site and context of a major UK city
- To recognise the importance of its connectivity in regional and global contexts
- To know the structure of the city in terms of its functions and building age

The site and situation of Birmingham

The city of Birmingham grew up on a dry point **site** on a south-facing, sandstone ridge overlooking a crossing point of the River Rea. Before the 19th century, Birmingham was a small market town on the Birmingham plateau overshadowed by the surrounding county towns of Stafford, Worcester and Warwick. The original main road to London from the north-west crossed the Midlands via Lichfield and Coventry, not Birmingham.

Birmingham developed its own industries of jewellery, gun making and the brass trade. To create high quality goods, these industries needed skilled labour but only small amounts of raw materials in the time before canals were built to carry bulky goods.

From the 1830s, Birmingham began to spread rapidly outwards. This was when its **situation** in the centre of the Birmingham plateau and the middle of the country became so important. First canals and then railways connected Birmingham with other Midlands towns and the rest of the UK, enabling manufacturing to easily source raw materials and reach markets.

Figure 4 The motorway network around Birmingham

Activity

Study Figure 4 and use an atlas.

1 Which motorways meet at Birmingham?

2 Use your atlas to describe how Birmingham is connected to the rest of the UK by motorway. Include details of distances to well-connected cities, and any areas which are poorly connected.

3 Explain why Birmingham's good communications network is useful for industry, business and leisure.

Today Birmingham is still at the heart of the UK road and rail network (Figure 4). Birmingham is also a major global centre, based on its airport and its reputation as a conference centre.

The structure of Birmingham

Figure 5 shows the centre of Birmingham, and the **central business district** (CBD). This is one of the oldest areas of the city, dominated by department

Figure 5 Part of Birmingham city centre

stores, specialist and variety goods shops, offices, theatres and hotels. This is the heart of the city and the centre of local government. Many buildings in the CBD are quite new following redevelopment projects, such as the new Bullring shopping centre. The quality of the environment in the CBD is quite high with some open green space. Because land here is expensive the building density is high, with buildings both close together and taller than in the rest of the city.

Beyond the CBD are the 19th-century inner-city areas, which were redeveloped in the 1970s into **comprehensive development areas** (CDAs). Here the buildings are tower blocks of flats or high density terraces. There are few shops, even fewer factories and a few churches with limited open green space.

The suburbs extend beyond the inner zone and occupy a large part of the city's area. Some of the suburbs were built in Victorian times, while others were built in the 1930s, 1950s and 1960s. Some are centres of council housing (many of which have been purchased) and others were built as private estates. Here the density of buildings is low, and the land use is mainly housing with a few shops and some good quality green space.

The industrial zones of the city stand out clearly, radiating outwards from the city centre, with two important ones radiating in an easterly and north-easterly direction. Suburban industrial areas are also significant in the geography of the city, and are usually located close to a main road.

On the outskirts of the city is the urban–rural fringe. This is where town meets country. There is a mixture of land uses here, such as some housing, golf courses, business parks and airports.

Exam-style question

Explain why there are differences in the age of buildings and functions in a cross section from the centre of a major UK city to the outskirts. **(4 marks)**

Exam tip

Make sure you name the UK city and give reasons for both parts of the question.

Activity

1 Make a copy of the table below, then add details to show the differences between different parts of Birmingham.

	CBD	Inner city	Suburbs
Age of buildings			
Density of buildings			
Functions			
Land uses			
Environmental quality			

2 Study Figure 5, which shows the CBD and the area just outside it, the CBD Frame. Discuss where these two areas are in the photograph and how you can tell.

Checkpoint

Now it is time to review your understanding of the site, context and connectivity of Birmingham.

Strengthen

S1 What is the site of a place?

S2 Describe the situation of Birmingham, and why it was important in the city's growth.

S3 What were Birmingham's 19th-century industries?

Challenge

C1 Which towns were important in the area before Birmingham?

C2 Explain why inner-city parts of Birmingham were redeveloped.

C3 Why are building densities high in the CBD?

The changing city

Learning objectives

- To understand the processes of urbanisation, suburbanisation, counter-urbanisation and re-urbanisation in the context of Birmingham
- To understand the causes of national and international migration
- To know how migration has affected different parts of Birmingham

Urbanisation (18th and 19th centuries)

Urbanisation in Birmingham was based on the manufacture of jewellery, guns, buttons and brass before factory production in the 19th century led to rapid urbanisation. New estates were built in a hurry in places like Small Heath, Selly Oak and Saltley for people and their children arriving from the countryside.

Suburbanisation (1920s and 1930s)

Birmingham had to expand and in the 1920s suburbanisation saw large estates of both council houses and private houses built: mostly semi-detached houses, on large areas of land. These estates often lacked shops and clinics. However, they were laid out with wide tree-lined roads and grass verges in an attempt to maintain the quality of the environment.

Counter-urbanisation (1970s onwards)

Counter-urbanisation involves people abandoning cities in favour of areas which are more rural. In the case of Birmingham this movement was boosted by the redevelopment of the city's inner-city areas. Here five new CDAs were created by demolishing all the old 19th-century terraces and courts. The redevelopment forced people to move out either to estates on the edge of the urban area or to new towns like Redditch.

Re-urbanisation (after 1990)

More people now want to live close to the amenities the city centre offers. New apartments have been built near the canals and in converted factories across the city centre. Birmingham is in the process of giving itself a facelift by actively redeveloping parts of its CBD and inner areas. Older tower blocks have been refurbished, and new centres developed like the Mailbox (Figure 6): a mixture of shopping, leisure, offices and apartments.

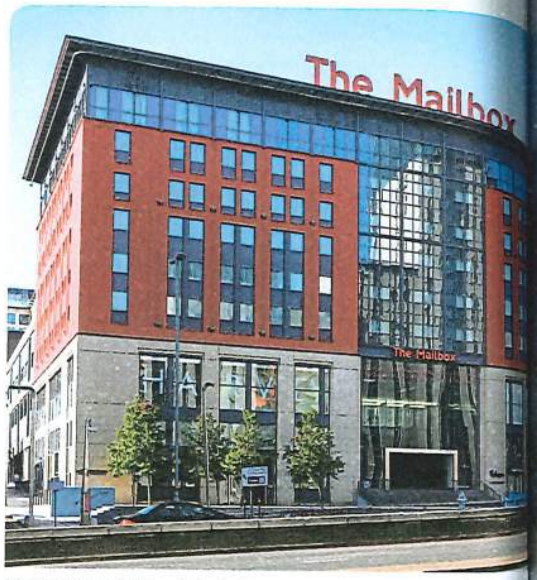


Figure 6 The Mailbox, Birmingham

Activity

1. Explain what is meant by counter-urbanisation.
2. What is meant by the re-urbanisation of cities?
3. Make lists of reasons people may wish to leave big cities, or move into city centres. Which age groups may be involved?
4. Look again at the headings on these two pages. Use them to draw a graphic of Birmingham which summarises how movements of people have changed the city. Add details such as locations and dates.

Migration

The population geography of cities like Birmingham has changed a lot over the last 50 years as a result of national and international migration.

National migration

- Migration to retire. This involves people who decide to retire to a different part of the UK such as the south-west of England.
- Search for better job prospects. This is rural-to-urban or urban-to-urban migration when people (often young) seek better job opportunities in cities like Birmingham. Of course some Birmingham people also seek jobs in London and other UK cities or abroad.
- Study. This type of migration mainly involves young people and is often temporary. Birmingham is the UK's second biggest student city, with five universities and 78,000 students aged over 18 in 2011, an increase of 63% in ten years; 10% of students are from overseas (see Topic 8, page 283).

International migration

- In the 1950s, responding to a shortage of workers the UK government encouraged immigration from former colonies in the Caribbean, India, Pakistan and Bangladesh to fill jobs that UK people no longer wanted to do in transport and industries like textiles and steel.
- Since 2000, many migrants have come from eastern Europe, especially Poland, Latvia and Estonia, seeking better jobs and living standards. The majority of the immigrants are young; 80% are aged 18–34 (Table 2).
- Flight from conflict. In the 2012–15 period, many people fled from fighting in Syria and Afghanistan and migrated to Birmingham and other UK cities.

Table 2 Top ten non-UK countries of birth, 2011

Country of birth	% of total population
Pakistan	5.2
India	2.5
Ireland	1.5
Jamaica	1.4
Bangladesh	1.3
Poland	0.9
Somalia	0.7
China	0.6
Kenya	0.4
Nigeria	0.3

The impact of migration on parts of Birmingham

The arrival of migrants in Birmingham has affected different parts of the city.

The immigrants from the 1970s sought cheap housing and found this in the older, inner-city parts of Birmingham such as Sparkhill, Sparkbrook and Aston. Here they found terrace houses which were cheap to rent and later to buy, and since then communities of people from Pakistan, India and Bangladesh have developed in these areas. There are now many shops and services, including places of worship, in these parts of the city.

Many of the more recent immigrants have often located towards the eastern side of the city quite close to the centre in areas around Bordesley. Here too there were houses which were relatively cheap to either rent or buy. Most are terrace houses with some blocks of flats and here too community centres have been built to cater for existing and new communities.

Population characteristics and de-industrialisation

Learning objectives

- To identify Birmingham's key population characteristics
- To understand the reasons for population change
- To recognise the cause of de-industrialisation

The following are some key facts about Birmingham from the 2011 census.

- Just over 1.1 million people live in the city.
- Since 2004, the population has increased by almost 100,000 (this is an average of 0.9% per year).
- This growth is caused by a rising birth rate and falling death rate, combined with migration from the UK and internationally.
- Birmingham is one of the UK's most diverse cities with 42% of its inhabitants from ethnic groups other than white.
- In the same vein, 46.1% of Birmingham residents said they were Christian, 21.8% said they were Muslim and 19.3% said they had no religion; 22% of the residents of Birmingham were born outside the UK compared with a national average of 14% for England.

Birmingham's population pyramid (Figure 7) shows age groups with more people than the national average (shaded grey) and age groups with fewer people than the national average (shaded red).

Activity

Study Table 3. Sparkbrook is an area of mainly Victorian terraced housing 2 km south east of Birmingham city centre.

a How does Sparkbrook compare with the rest of Birmingham in terms of the percentage of young and old people?

b Draw three pie graphs to show the ethnicity of Sparkbrook, Birmingham and England. Describe the differences you can see.

Table 3 Comparison of inner-city Sparkbrook with the rest of Birmingham, 2011

	Sparkbrook (inner city) (%)	Rest of Birmingham (%)	England (%)
Persons aged 0–15	30.8	22.8	18.9
Persons aged 16–64	61.0	64.3	64.8
Persons aged 65 and over	8.2	12.9	16.3
Persons born overseas	42.5	22.2	13.8
White ethnicity	12.4	57.9	85.4
Asian or Asian British ethnicity	61.4	26.6	7.8
Black or black British ethnicity	10.8	9.0	3.5
Other or multiple ethnicity	15.4	6.5	3.3

De-industrialisation in Birmingham

De-industrialisation is the decline of industries in a city. The main causes are the following.

- **Globalisation** This is the process by which cities become part of a world market. In Birmingham this meant that its industries of car and motorcycle manufacture suffered badly in the 1970s from imported vehicles from Japan and western Europe.
- **De-centralisation** The 1970s were also a time of **de-centralisation** in Birmingham when many inner-city areas were redeveloped. Factories were either closed and demolished, or they moved out of the city.
- **Technological advances** The development of new technologies associated with metal manufacture were slow to be applied to the older factories in Birmingham. As a result some firms went out of business because they did not have the new technology which often made the goods cheaper.
- **Transport developments** Part of the redevelopment of central Birmingham in the 1970s was the construction of an inner ring road. In order to build the new road, older factories, warehouses and houses had to be demolished. Some of these factories never reopened and others moved away from Birmingham.

Impacts of de-industrialisation on Birmingham

- Factories closed.
- Workers were made redundant.
- Some factories relocated to the suburbs or to new towns like Redditch.
- There was large-scale unemployment and the need to retrain many workers.
- It left many brownfield sites, with empty factories and warehouses.
- There was some large-scale **pollution** of the land where former industries such as metal smelting had taken place.

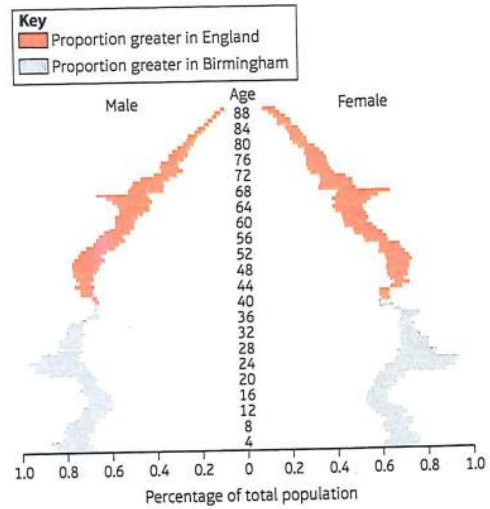


Figure 7 Birmingham's population compared with the average for England, 2011

Activity

1 Study Figure 7. In which age groups does Birmingham have more and fewer people than the national average?

2 What are the implications of the population pyramid for (a) schools and (b) the health services in Birmingham in the future?

3 Classify the causes and effects of Birmingham's de-industrialisation into local and global.

Did you know?

Birmingham's 78,000 students have an impact on the city's geography and population structure. In two areas of Selly Oak over 80% of residents are students. Students make up most of the bulge around age 20 on Birmingham's population pyramid (Figure 7).

Inequality in Birmingham

Learning objectives

- To understand the link between economic change and inequality in Birmingham
- To know how deprivation is measured and which areas are most affected
- To know the causes of deprivation and inequality

How economic change is increasing inequality

The economic structure of Birmingham has changed greatly in the last 50 years, with the decline of parts of the car industry, high unemployment and the growth of newer industries, for example in finance, IT and advanced manufacturing. As economic change has taken place it has helped to create new patterns of inequality within the city. Figure 8 shows those areas of the city which are faced with multiple deprivation. The **index of multiple deprivation** measures 38 items grouped in seven main headings. Poverty is just one of these indices, and it is important to remember that not all deprived people live in deprived areas.

Activity

Study Figures 8 and 9.

1. Describe the location of the most deprived areas in Birmingham.
2. Describe the location of the areas with least deprivation.
3. To what extent are the most deprived areas also areas with many unemployed people?

Deprivation in Birmingham

The maps show clearly some of the issues facing the different parts of the city. The inner-city areas are: very disadvantaged in terms of deprivation; areas with people who are often poor; areas with high unemployment; areas with some poorer schools; and areas with poorer health provision.

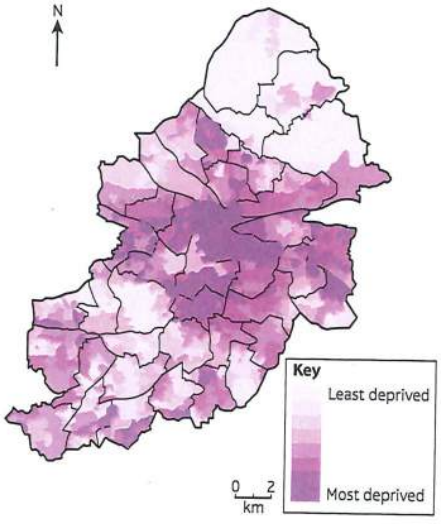


Figure 8 Birmingham wards showing areas of multiple deprivation, 2011

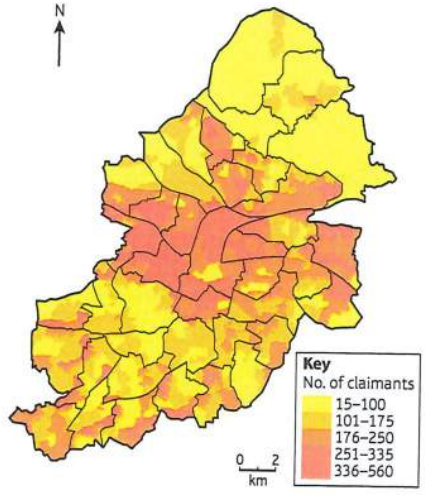


Figure 9 Out-of-work benefits claimants in Birmingham, 2014

However, it would be wrong to think that deprivation is confined to the inner-city areas of Birmingham. Some of the suburban areas, particularly towards the south and west, also have issues such as: high levels of deprivation; high unemployment; areas with people who are poor; poor living conditions; and poor schools.

Much of the deprivation is the result of the decline in manufacturing industries and the flight of industry away from both inner-city and suburban sites in Birmingham. It is often combined with older housing and obsolete buildings which are no longer suitable for newer industry. This in turn leads to a lack of investment and hence a spiral of decline.

Why is there inequality in Birmingham?

- There are few factories, providing few local jobs, with the result that people have to travel to find work and this adds to the expense.
- Many of the new jobs are only part-time or temporary and do not pay well.
- There may be some discrimination against newcomers and some racial discrimination, though this is being actively tackled and overcome.
- The large number of people arriving in a short time makes it hard to provide what is needed quickly, for example schools and health services.
- Older houses in these areas can be damp and hard to heat and this can lead to health issues.
- Many migrants are well qualified, for example as doctors, dentists and lecturers; but in the 21st century people with few qualifications find it harder to find good quality jobs.
- Economic change is so rapid that cities find it hard to keep pace, and cities like Birmingham have not had the money to do all they would wish to in order to reduce the inequality of areas.

Quality of life in Birmingham

The **quality of life** in Birmingham varies in the same way that the levels of deprivation vary. Some suburban areas of the city, such as Sutton Coldfield, remain prosperous as they have been for a long time and here the quality of life is seen as good with relatively low crime rates, high purchasing power, a wide range of shops, and low air and water pollution. Dissatisfaction with rubbish collection is moderate, as are complaints about light and noise pollution, but there are many areas of green space.

In inner-city Sparkbrook there is some deprivation but people are generally not unhappy with the quality of their lives. There is a wide range of shops selling produce from all over the world, including specialist vegetable and other shops. There are concerns over crime, or more accurately the way the media dubbed the city the gun capital of the UK. There is some concern over air pollution and rubbish collection, and there is less green space than in areas further from the city centre, but the quality of life is still seen by most people as good.

Exam-style question

Explain why economic change in a major UK city has increased inequality. **(4 marks)**

Exam tip

Make sure you define terms such as 'inequality' used in a question at the start of your answer.

Checkpoint

Now it is time to review your understanding of changes in Birmingham, together with migration, inequality and the causes of deprivation.

Strengthen

S1 What are the differences between counter-urbanisation and re-urbanisation?

S2 Why has the economic structure of Birmingham changed recently?

S3 How does the index of multiple deprivation measure deprivation?

Challenge

C1 Migrants are often young people. How does this help explain the shape of Birmingham's population pyramid?

C2 What are the links between de-industrialisation and deprivation?

C3 Explain why a good education system is important to a city like Birmingham.

Changes in retailing in Birmingham

Learning objectives

- To know about recent changes in retailing
- To understand the impact of these changes on the city
- To identify specific trends, such as out-of-town shopping areas and the growth of internet shopping

There have been changes to retailing in Birmingham over the last 40 years which have had a significant impact on different parts of the city. The CBD consists of an inner and outer **core** (Figure 10) and wider **frame**.

The inner core consists of department stores, specialist shops and office blocks. The outer core consists of smaller shops, theatres and public administration buildings such as the town hall, located there because they cannot afford to pay such high rents as the inner core shops. The frame is an area of wholesale markets which includes road and rail stations.

The CBD is constantly changing, some parts are expanding into nearby areas (this is called the **zone of assimilation**) where, for example, houses may be converted to offices. In other places the CBD is retreating where firms are closing because property is too old or cramped; this is called the **zone of discard**.

Activity

Study Figure 10.

1 What types of shop are found in the inner core?
2 Why are the functions in the outer core located away from the inner core?
3 Explain why the CBD is expanding in some areas and contracting in others.

Why has Birmingham's CBD changed?

In the early 1990s, the CBD changed as a result of de-centralisation in the city. The first wave of de-centralisation was the 19th-century movement of people away from the high-cost, noisy, polluted city centre to the suburbs. The second wave of de-centralisation saw the movement of manufacturing industry away from the city centre to the suburbs, such as Bournville in 1879.

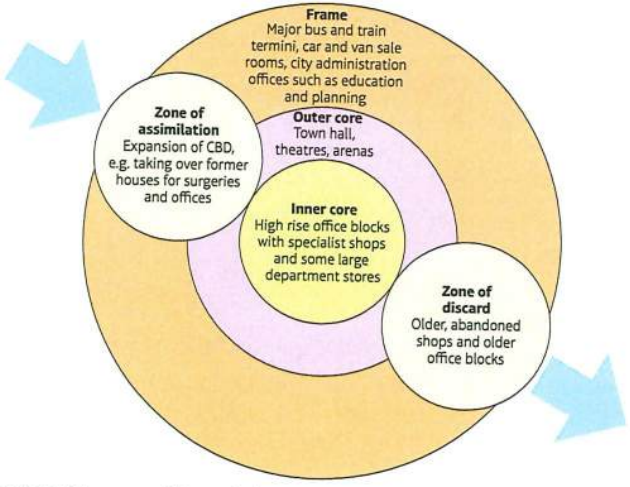


Figure 10 The core and frame of the CBD

In the 1970s, the third wave of de-centralisation was the movement of retail shops out of the city centre. New shopping centres opened in suburbs and then out-of-town shopping centres began to be developed in the 1980s, such as Merry Hill in Dudley. This was the site of a former steel works but then it became a massive new shopping centre in 1985. This created real competition for central Birmingham and between 1990 and 1995 trade in the centre declined by 12%.

The advantages of Merry Hill for retailing are:

- ability to park for free
- under-cover shops out of the weather
- pedestrianised area
- large retail shops like Debenhams and Marks and Spencer.

The fourth wave of de-centralisation saw the growth of internet shopping. More people own computers and have discovered the ease of online shopping. However, Birmingham has been able to avoid a drop in trade by further redevelopment of the city centre.

The CBD fights back

In the 1980s, Birmingham city centre realised it needed to fight back against the out-of-town developments. This was achieved through:

- a series of flagship projects which included the building of the International Convention Centre (ICC) in 1991 and the National Indoor Arena (now the Barclaycard Arena) in 1992
- pedestrianising the city centre to make a more pleasant shopping environment
- encouraging stores to have late-night opening.

As a result, trade in Birmingham city centre grew by 5% between 1995 and 1997. However, retailing in the city continued to change and develop in response to changing local and national conditions.

In 1998, the Mailbox opened in Birmingham. This former Royal Mail sorting office was converted into high-end retail shops (Harvey Nichols), restaurants and offices.

In 2003, the Bullring shopping centre (Figure 11) was reopened after a major makeover. This created a modern shopping centre with parking in an enclosed centrally heated mall.

The next phase was the redevelopment of the New Street station area which has become the new Grand Central shopping centre.

Activity

What were the main methods used by Birmingham to redevelop its central area?

Did you know?

The Bullring in Birmingham has been a centre for markets for 800 years.

Figure 11 The Bullring shopping centre, Birmingham

Checkpoint

Now it is time to review your understanding of retailing in Birmingham.

Strengthen

S1 What are the two parts of the CBD?
S2 What types of land use are found in the frame?
S3 What is the zone of assimilation?

Challenge

C1 What was the second wave of de-centralisation and how did it affect Birmingham?
C2 Why is internet shopping so popular?
C3 How has Birmingham fought back against internet shopping?

Making urban living more sustainable and improving the quality of life

Learning objectives

- To know the strategies aimed at making urban living more sustainable and improving the quality of life in Birmingham
- To understand the challenges to making urban living more sustainable
- To understand how to calculate an eco-footprint

The challenge for people in Birmingham is to make their city more sustainable. **Sustainable development** meets present needs but crucially limits consumption of resources today for the benefit of people in the future.

Recycling

UK households produce over 30 million tonnes of waste each year and much of this still goes to landfill sites. More can be recycled.

One glass bottle recycled saves enough energy to power a computer for 30 minutes.

Up to 60% of the rubbish in a dustbin could be recycled; as could 80% of most cars.

On average 16% of the money we spend on a product is packaging and that ends up as rubbish.

The recycling rate for England was 43.5% in 2013; Birmingham achieved 30.1% so clearly still has a way to go in its recycling programme.

Green transport

Birmingham has a range of buses (some powered by gas) used to reduce car transport and pollution in the city. The city has a network of bus lanes which also help to persuade more people to use them for their journeys to work. Electric vehicles were used as part of the CABLED project (Coventry and Birmingham Low Emission Demonstrators 2009–2012).

Birmingham has 571 parks covering 3500 hectares (ha, 35 km²); more than any other European city.

Activity

Study Figure 12.

1 Write some key points for a social media site which identifies how much more paper and organic matter could be recycled.
2 Write a second set of points for social media to say what actions each home could take to reduce all waste.
3 Identify which of the actions to recycle more could be carried out by individuals and which would need to be led by governments.

Figure 12 Recycling household waste

Sustainability in Birmingham

In 2010, Birmingham ranked 15th in the list of sustainable cities in the UK (Table 4).

Birmingham reduced carbon emissions in 2009/10 by 12%, that is by 745 tonnes.

Birmingham created 1000 new jobs in the Grand Central development in 2016 and each new development adds to the jobs total.

Birmingham is working hard to build new schools for its children and to improve the quality of the education offered.

There is continued investment in energy-efficient measures for housing, such as the new homes in Balsall Heath.

Table 4 Birmingham growing greener – how Birmingham has ranked against other cities in the UK (the greenest city ranked 1)

	2007	2008	2009	2010
Overall rank in sustainability	19	19	17	15
Environmental quality	19	17	5	10
Quality of life	15	14	17	19
Futureproofing	19	18	18	9

Community centre, Sparkbrook

Sustainability means thinking about the future for the community and economy, as well as the environment. In 2012, a new community centre was opened in Sparkbrook. Housing three GP practices it serves around 15,000 people, also offering local council services, a library, and providing rooms for community use and offices for start-up local enterprises. The centre has environmentally friendly features and achieved a sustainable building 'excellent' rating.

Did you know?

Birmingham has won 14 consecutive gold medals from the Chelsea Flower Show.

Activity

Study Table 4.

1 Suggest **three** reasons why Birmingham has improved its position in the list of the sustainable cities.
2 Why might the environmental quality have declined between 2009 and 2010?
3 What does futureproofing mean?

Measuring the environmental impact of Birmingham – its eco-footprint

One of the ways that we have of measuring the impact that cities have on the environment is through their ecological footprint (**eco-footprint**). The eco-footprint looks at how much land is needed to provide something with all the energy, water and materials it uses. It also calculates how much pollution is created by burning oil, coal and gas and how much land is needed to absorb the waste created by the people of the city.

Eco-footprints are expressed in terms of how much land is needed to support the lifestyle of the people. The UK average is 5.3 ha per person. The success that Birmingham has had in reducing its eco-footprint can be shown by the fact that its eco-footprint is only 4.15 ha per person.

Checkpoint

Now it is time to review your understanding of the ways in which Birmingham's sustainability and eco-footprint can be improved by different strategies.

Strengthen

S1 How does Birmingham's recycling rate compare with the UK average?
S2 By how much did Birmingham reduce its carbon emissions between 2009 and 2010?
S3 How many parks does the city have?

Challenge

C1 What is the CABLED project?
C2 What does an eco-footprint measure?
C3 How sustainable do you think Birmingham is? Why do you think that?

Affordable and energy-efficient housing

Houses are responsible for 25 per cent of the UK's carbon footprint. It is therefore important that Bristol Council does what it can to improve **energy efficiency** in housing in order to be more sustainable and to improve the quality of life for its residents.

Grants are available for loft insulation. The council is working with British Gas to ensure that all homes have a sufficient level of insulation to make them energy efficient.

All new developments need to submit a sustainable energy strategy to the planning committee before they can get planning permission. This should take into consideration the use of renewable energies to provide heat and light and the use of insulation to ensure that the property is built to the right specification to reduce heat loss.

The council realises that housing in Bristol is expensive and that many people cannot afford to buy or rent a property. They provide affordable housing where rents are 80 per cent of the local market rent and others where the rent is worked out on a national social formula. The homes are available through HomeChoice Bristol which provides contact details of a number of private housing associations as well as the council's housing scheme.

The council also runs help-to-buy schemes with shared ownership and rental schemes. They also provide sheltered housing for the elderly and retirement housing. These are all strategies that help to improve the quality of life for the people who live in Bristol.

Review

By the end of this section you should be able to:

- ✓describe the key population characteristics of Bristol and reasons for population growth or decline
- ✓describe the causes of deindustrialisation and their impacts on Bristol
- ✓explain how economic change is increasing inequality in Bristol and the differences in quality of life
- ✓explain recent changes in retailing and their impact on Bristol
- ✓describe the range of possible strategies aimed at making urban living more sustainable and improving the quality of life for the people who live in Bristol.

KEY TERMS

Energy-efficient housing – less energy is used to provide the same level of heat or power; homes are well insulated.

ACTIVITIES

1 Which wards of Bristol have:
   a) the most children
   b) the least children?
2 Which age range in Bristol has the most people?
   a) 0–15
   b) 16–24
   c) 25–49
   d) 50–64
3 Give two reasons why chocolate is no longer made at Keynsham.
4 Calculate the percentage increase in recycling in Bristol between 2004 and 2012.
5 Describe the ways in which the council has tried to stop people driving their cars to work.

Extension

Assess the strategies which are used by Bristol Council to improve the quality of life for people who live in the city.

9

The Study of a Major City, Sao Paulo, Brazil

LEARNING OBJECTIVE

To study how the site, situation and connectivity of Sao Paulo influences its functions and structure.

Learning outcomes

- To be able to describe the site, situation and connectivity of Sao Paulo in its national regional and global context.
- To understand Sao Paulo's structure in terms of its functions and the building age of different parts of the city.

The site, situation and connectivity of Sao Paulo influence its functions and structure

What is the national, regional and global context of Sao Paulo, Brazil?

The national context of Sao Paulo is where it is compared with the rest of the Brazil: Sao Paulo is in the southeast of the country. The regional context of Sao Paulo is information about how it is located compared to other countries in South America: Brazil is in the centre, east of South America with Paraguay to the west. The global context is where Brazil is in the world and how it is connected to other continents and countries: Brazil is in South America; it lies east of the Pacific Ocean and west of Africa, North America is to the north of Brazil.

Figure 9.1 The location of Sao Paulo Brazil.

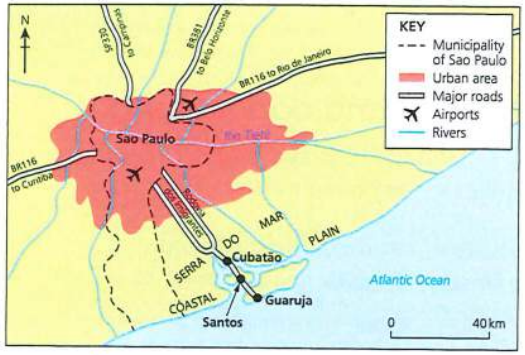


Figure 9.2 Map of Sao Paulo showing situation and connectivity.

Site

The site of Sao Paulo is a hilly plateau over which flow a number of rivers. The Sao Paulo city area is divided in two by the Anhangabaú River which now flows underground. The Tietê River still flows through the city. Other rivers in the area are the Tamanduateí and Pinheiros. The city is approximately 820 m above sea level.

Situation

In a national context, Sao Paulo is situated in the southeast of Brazil. It is 70 km inland from the Atlantic Ocean and is 350 km southwest of Rio de Janeiro and 330 km northeast of Curitiba. Brasília, the capital of Brazil, is 1,000 km north of Sao Paulo. Sao Paulo is on a plateau to the northeast of the coastal range of mountains known as the Serra do Mar. The main port in the state of Sao Paulo is called Santos; it is 70 km to the southeast.

Connectivity

Sao Paulo is well connected with the rest of Brazil with many of the roads and railways in southern Brazil converging on the city. There is a motorway (the Rodovia dos Imigrantes, see Figure 9.3) and a railway which link Sao Paulo to the port of Santos, 70 km to the southeast. The city has internal links with a subway system and overground train lines; it also has 16,000 buses. Two major international airports link it with the rest of the world.

Figure 9.3 The Rodovia dos Imigrantes.

KEY TERMS

Paulistanos – the name given to the residents of Sao Paulo.

Site – the land that the settlement is built upon.

Situation – where the settlement is compared to the physical and human features around it.

Connectivity – the way that the city is connected or linked to other settlements in the country as well as to other countries in the world.

Residential – an area used for housing

Public buildings – buildings owned by the council that serve the residents of the city, such as a library.

Sao Paulo metropolitan area – the whole of the built-up area; it includes Sao Paulo and a number of nearby cities; it has approximately 19 million inhabitants.

Sao Paulo city area – the inner built-up area of Sao Paulo, which has approximately 11 million inhabitants.

Peripheria – the outer edge of the city.

Cortiços – inner-city accommodation for the poor. Families live in one room with shared toilets and cooking facilities. Many of the buildings were previously offices blocks or the homes of the wealthy before they left the inner-city area.

Favela – homes for the poor which can be found anywhere in the city. They are made from waste materials and have no water supply, electricity or toilets.

Boulevards – wide, tree-lined streets.

What are the functions and building age of different parts of Sao Paulo's structure?

Central Business District (CBD)

Figure 9.4 Sao Paulo city centre from Congonhas Airport, five miles away.

The CBD of Sao Paulo has both business and residential functions. Many of the buildings were constructed in the nineteenth century but, during the rapid industrialisation in the twentieth century, many high-rise buildings were built both as office blocks and as homes for the wealthy. The city centre of Sao Paulo is split into Centro Velho and Centro Novo by the valley of the Anhangabaú River. Since the first half of twentieth century the Centro Velho has developed as the centre for the financial sector, home to the headquarters of both domestic and foreign banks as well as the stock exchange. The Centro Novo is more focused on shopping, hotels and cultural establishments with museums, theatres and restaurants. It has wide boulevards and many high-rise residential blocks for wealthy residents. It also contains the main railway stations.

The CBD has seen a number of changes to its functions over the past 50 years. Firstly, wealthy residents started to move out to areas in the **inner city** such as the Jardins. This is an expensive residential area to the southwest of the CBD; this was due to the lack of space and increasing traffic in the CBD. More recently, wealthy residents and some service industries have moved to the **suburbs** and urban-rural fringe. The poor have moved into the vacated residential and office buildings, usually without permission; these are known as cortiços. There has also been an increase in the number of street traders in the CBD, which the wealthy see as dangerous; the people who live in the cortiços see it as a way of earning a living.

Inner city

Around the CBD is the inner-city area. The main function of this area is residential but there is also some industry. This is where the migrants settled in the nineteenth and early twentieth centuries in areas such as Liberdade and Bela Vista. Bela Vista is the area of the city that is home to many Italian migrants; Liberdade is where the Japanese migrants settled. This area also contains industry and the first favelas were established here. Many of the favelas were removed by the council but some do remain, such as Paraisópolis, where almost 43,000 people live crammed into an area of 150 hectares.

Suburbs

The suburbs of Sao Paulo have mainly residential and commercial functions. They show great contrasts between the housing. There are many favelas in these areas but also areas of very expensive housing. The area of Morumbi, a suburb of Sao Paulo in the southwest of the city is an area of high-security housing complexes with a number of parks and shopping centres, for example, Cidade Jardim Mall. There are also good hospitals and schools. The state government headquarters and the university are also in this suburb. It also contains a large number of favelas, such as Paraisópolis, which have been built on any land that is available. The Santo Amaro suburb contains the headquarters of banks and multinational companies that have moved out of the CBD. It also contains many wealthy residential areas with schools and shopping centres such as Chacara Flora, schools, and is close to Congonhas Airport. Here too there are favelas on any land that has been left vacant.

Figure 9.5 Bela Vista, an inner-city area of Sao Paulo.

Urban-rural fringe

Many favelas sprung up in the **urban-rural fringe** in the 1980s due to the rapid population growth and lack of housing in the city. The residential usage of the urban-rural fringe has changed over the last twenty years with the development of gated communities. These are almost like mini-cities on the outskirts of Sao Paulo where wealthy residents have moved to because of the perception of a better, cleaner life on the edge of the city. Many use helicopters to commute to work in the CBD. The rich live, and many of them work, in these gated communities. See Figure 9.6 for information about Alphaville, a gated community in the northwestern part of Sao Paulo.

Gated communities

Alphaville is a gated community in the rural-urban fringe of Sao Paulo. It is surrounded by high walls and patrolled by over 1,000 armed guards. It has approximately 34,000 residents and over 2,300 businesses focused on the tertiary sector of industry. It has its own shopping centre, entertainment venues, restaurants, hospital, schools and leisure facilities.

Figure 9.6 Alphaville, a gated community in Sao Paulo's rural-urban fringe.

ACTIVITIES

1. Copy out and complete the following sentence. A function of the CBD in Sao Paulo is ..... .
2. What is the difference between the site and situation of a settlement?
3. Describe the site of Sao Paulo.
4. What is the age and function of the settlements on the urban-rural fringe?

Extension

Create a fact file on Brazil. Include information such as the birth rate, death rate, gross national income, life expectancy, literacy rates and internet users.

Review

By the end of this section you should be able to:

- ✓describe the site, situation and connectivity of Sao Paulo in a national, regional and global context
- ✓understand Sao Paulo's structure in terms of its functions and building age.

The character of Sao Paulo is influenced by its fast rate of growth

LEARNING OBJECTIVE

To study how the character of Sao Paulo is influenced by its fast rate of growth.

Learning outcomes

- To understand the reasons for past and present trends in population growth.
- To be able to explain the causes of national and international migration and the impact on different parts of Sao Paulo.
- To be able to explain how the growth of Sao Paulo is accompanied by increasing inequality and the reasons for differences in the quality of life of its residents.

KEY TERMS

Push factors – the reasons why people want to leave rural areas.

Pull factors –the reasons why people are attracted to a city.

Rural to urban migration – the movement of people from the countryside to towns and cities.

National migration – the permanent movement (for at least one year) of people from one area of a country to another.

International migration – the movement of people from one country to another with the intention of staying there for at least a year.

What are the reasons for the past and present trends in Sao Paulo's population growth?

There are a number of reasons for the rapid growth of Sao Paulo: national and international migration, high rates of natural increase, economic investment and growth.

National and international migration

Sao Paulo has experienced **national migration**, especially from the northeast of Brazil. These migrants were attracted by the fast economic growth of the city and the promise of jobs. Much of the city of Sao Paulo was built by migrants from the northeastern states of Brazil. However, the rate of migration has decreased since the beginning of the twenty-first century.

Sao Paulo has also experienced many flows of **international migration** during the nineteenth and twentieth centuries. Even today, ten people move to Sao Paulo every hour. The first settlers were Portuguese but the main ethnic group in the city now is Italians. There are European, Arab, Asian, African, Jewish, Latin American and North American people living in Sao Paulo, all drawn to the city by the high rates of economic growth that it experienced in the 1950s and 1960s. Now one-fifth of the city's population is foreign and, of that number, half of the people are Italian.

Push factors	Pull factors
In Brazil, 31 per cent of rural households have no land. They have to rent land or find work as labourers and, as farms become more mechanised, there is the risk of losing their jobs. There is little to keep people in rural areas so they move to the cities in search of work.	Infant mortality is lower in the favelas of Sao Paulo, where it is 82 per 1,000, than in the rural areas, where it is 175 per 1,000.
In the 1950s and 1960s there was a shortage of labour in Sao Paulo due to rapid economic growth of 226 per cent. Advertising campaigns were run in the rural areas to attract workers to the city.	Word sent back to the villages by successful migrants makes life in the cities seem much better than it actually is.
Bahia in northern Brazil is very poor and periodically suffers from drought. It has been estimated that 3.2 million people in the state of Bahia suffer from chronic malnutrition.	The rural dwellers have high expectations of a better quality of life in the city. There are more schools and doctors as the government puts more money into services for urban areas.
Land in rural areas has been taken from the subsistence farmers who were renting it from large landowners. These landowners now want to use the land to grow cash crops such as coffee and orange juice. Just eighteen landowners control an area six times the size of Belgium.	Migration from rural areas has slowed down in Brazil, although there is still migration between urban areas for better job prospects and higher education.

Figure 9.7 Reasons for national migration

High rates of natural increase

The growth in population in Sao Paulo over the past twenty years has been caused by a high natural increase in population. The birth rate is still high in some parts of the city and the death rate has declined with improvements in health care, diet and housing conditions. The growth rate has, however, started to slow down, from 5 per cent in 1975 to 1.3 per cent in 2013.

The causes of national and international migration

The causes of national and international migration are dealt with in Chapter 8 on page 124.

What is the impact of national and international migration on different parts of Sao Paulo?

There is a great variety of ethnic groups in Sao Paulo, which makes it a very culturally diverse place to live. The different ethnic groups can be found all over the city but certain areas are known for certain ethnic populations. For example, Bela Vista is a mixed ethnic neighbourhood with people from Portuguese, African-Brazilian, Spanish, German and English descent but, since the early twentieth century, it has been known for its large community of Italians. The neighbourhood of Liberdade has the largest Japanese community in the world outside of Japan. Since 1974 the entrance to the area has been through a *torii*, or large Japanese arch (see Figure 9.9). Today Liberdade is also home to many Chinese and Korean migrants.

Year	Population (millions)
1950	2.5
1960	4
1970	7.5
1980	12
1990	15
2000	16.5
2010	19
2020	22

Figure 9.8 Sao Paulo metropolitan area population, 1950–2020.

Practise your skills

1. Draw a line graph for the data in Figure 9.8.
2. Why is a line graph the most appropriate form of display for this data?

Figure 9.9 Japanese *torii* on the Rua Galvao Bueno in Liberdade.

The large number of migrants has caused a young age structure which in turn has resulted in the high birth rate. The large number of migrants has also put pressure on housing and other services such as hospitals. In Sao Paulo many of the migrants live in the favelas or corticos which have developed since the 1980s. Twenty per cent of the residents of Sao Paulo now live in this kind of housing due to acute housing shortages.

Ethnicity	Population in Sao Paulo
Italian	6 million
Portuguese	3 million
African	1.7 million
Arabic	1 million
Japanese	665,000
German	400,000
French	250,000
Greek	150,000
Chinese	120,000
Bolivian	60,000
Korean	50,000
Jewish	40,000

Figure 9.11 Sao Paulo metropolitan area: population by ethnic groups, 2010.

Figure 9.10 Corticos and favelas in Sao Paulo.

Why is the growth of Sao Paulo accompanied by increasing differences in the quality of life of its residents?

Sao Paulo is a relatively wealthy city in comparison with other cities in Brazil but poverty, unemployment and inequalities in the quality of life are still huge problems. The process of deindustrialisation, which occurred in Bristol in the twentieth century, has been happening in Sao Paulo since the 1980s causing a bigger gap between the rich and the poor in the city. This has caused an increase in the unemployment rate, which is at its highest for many years.

In 2002 a report by the Sao Paulo city administration measured each district's quality of life using the United Nations Human Development Index. It found that Moema, the city's richest district, had a higher standard of living than Portugal, whereas the poorest district, Marsilac, is poorer than Sierra Leone. This inequality in wealth is partly due to the rate at which the city has grown. The growth of the population has been so rapid that the city has been unable to build sufficient housing for all the people. Therefore, the people who have jobs or have been in the city for a longer period of time tend to be the ones that are better off.

Many wealthy **Paulistanos** now live on the outskirts of the city with the centre of the city being taken over by the poor. The rich move around the city by helicopter – there are more than 200 helipads in Sao Paulo whereas Los Angeles has 70. In the city centre, older homes and factories have been turned into cortiços where whole families share one room which may have no electricity or plumbing. It is estimated that 600,000 people now live in the corticis. Unlike cities in the developed world, the rich and poor sometimes live next to each other, separated by walls and other security measures as shown in Figure 9.12.

In 2003 the inequalities in housing in Sao Paulo led to the occupation of abandoned high-rise blocks by 4,000 homeless people in protest against the way that the government seems to ignore homelessness.

Figure 9.12 Extremes of wealth and poverty in Sao Paulo, Paraisópolis favela and Morumbi.

ACTIVITIES

1. International migration is caused by wars. Is this statement true or false? Give a reason for your answer.
2. What are the causes of national migration in Brazil?
3. Name one area of Sao Paulo that has a concentration of a particular migrant group.
4. Why did economic growth cause the population of Sao Paulo to increase?
5. Why has the growth of Sao Paulo caused differences in the quality of life for its residents?

Extension

1. Why did many people migrate from the northeast of Brazil to Sao Paulo?
2. Why does having a high migrant population increase the birth rate?

Review

By the end of this section you should be able to:

- ✓understand the reasons for past and present trends in population growth
- ✓explain the causes of national and international migration and the impact on different parts of Sao Paulo
- ✓explain how the growth of Sao Paulo is accompanied by increasing inequality and the reasons for differences in the quality of life of its residents.

Rapid growth within Sao Paulo results in a number of challenges that need to be managed

LEARNING OBJECTIVE

To study how rapid growth within Sao Paulo results in a number of challenges that need to be managed.

Learning outcomes

- To understand the effects of Sao Paulo's rapid urbanisation.
- To be able to describe the advantages and disadvantages of both bottom-up and top-down projects to solving Sao Paulo's problems and improving the quality of life for its people.
- To be able to explain the role of government policies in improving the quality of life (social, economic and environmental) in Sao Paulo.

KEY TERMS

Top-down approaches – this is when the government improves an area and expects people to move into the housing they have provided. Sometimes the government borrows large sums of money from other countries to pay for the scheme.

Bottom-up approaches – these are self-help schemes. The residents of an area are in charge of what happens. They are usually given monetary help and advice on how to improve their houses.

What are the effects of rapid urbanisation?

Rapid urbanisation in Sao Paulo did not cause the problems of inequality, but it did make them much worse. At present it is estimated that twenty per cent of the population live in favelas, and that 70 per cent of the housing in the city's area is substandard.

Favelas
At the beginning of the twentieth century Sao Paulo was socially divided between the affluent who lived in the central districts and the poor who were concentrated on the floodplains of the rivers and along the railway lines. At this time Sao Paulo did not really have favelas. These started to develop in the 1930s as the city started to experience population growth. Rapid industrialisation in the1980s caused the growth of favelas across the city due to acute housing shortages. The areas did not have proper sewerage systems – much of the sewerage runs down the streets into the rivers. People access water from stand pipes which serve hundreds of people.

Effects of rapid urbanisation

Unemployment
Sao Paulo could not provide jobs for all of its migrants, which led to high unemployment rates of 19% in 1998; it had reduced to 11% in 2012.

Traffic congestion and pollution
The residents of Sao Paulo own 6.2 million cars and there are 16,000 buses on the road.
At times there can be hundreds of kilometres of gridlocked roads.
So many vehicles on the roads causes pollution.

Figure 9.13 Effects of rapid urbanisation

What are the advantages and disadvantages of top-down and bottom-up approaches to solving Sao Paulo's problems?

Top-down projects are those that are instigated by the government. In some cases the government almost imposed new housing on the inhabitants of an area.

Cingapura Housing Project

This was implemented by the municipality of Sao Paulo between 1995 and 2001. The scheme was supposed to build 100,000 new homes but, in the end, only 14,000 were built. The project removed some favelas to clear land for new homes while the favela inhabitants lived in barrack-like accommodation. The new homes were built in blocks about ten storeys high. The favela residents were then expected to pay a rent of about US$26 a month for their new apartment.

Advantages:

- The new housing had clean water supply and proper sanitation.
- The new housing was built on the same land as the favelas, so people did not have to leave the area they knew.
- Leisure areas were included in the developments.

Disadvantages:

- Many favela owners have never paid rent and can't afford to.
- Favelas were demolished to build the new blocks.
- There was no provision for small businesses.
- The type of accommodation is forced on the inhabitants who have no say in what is being built.
- The living space in each apartment was very small.

Bottom-up projects are when the community are in charge of what happens. The government often provides money for the people who live in the favelas to improve their own homes. This became the policy in Sao Paulo from 2000 onwards.

Self-help scheme in Santo Andre

The scheme got together a number of different organisations to work together to improve the infrastructure and services of the area. Some of the improvements include:

- Community health projects have made health care more available.
- Literacy courses have been made available for adults.
- Recreational facilities have been made available.
- Many of the favelas have been upgraded, see Figure 9.15.
- Credit facilities have been made available to small-scale entrepreneurs so that they can expand their businesses.

Advantages:

- The community are included in the decisions that are made.
- The housing in the area will be the same type of housing but will be more substantial and will have services.
- The improvements are not just housing but help further with improving the quality of life of people in the area.

Figure 9.14 Cingapura scheme homes.

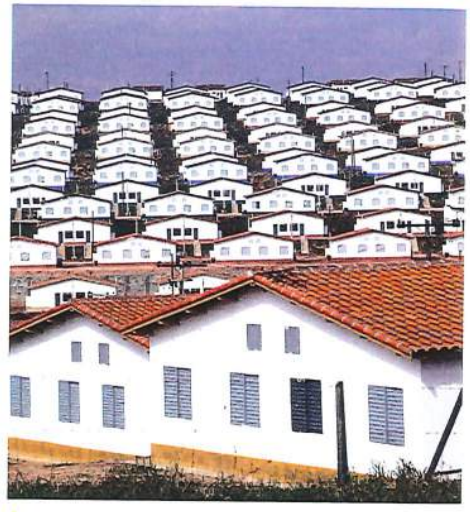


Figure 9.15 Self-help housing in Sao Paulo.

Disadvantages:

- The schemes take a long time to instigated.
- With so many different people involved it is hard to get agreement on how the money available should be spent.
- It is difficult to get people to accept help with the literacy programmes.

Self-help schemes in Monte Azul and Favela Jardim Jacqueline

During the 1980s the inhabitants of some of the favelas started their own self-help (bottom-up) schemes.

Favela Monte Azul is next to a polluted stream (see Figure 9.17). It is home to 3,800 people living in 400 huts that stretch up the hillside from the stream. It is situated in the southern suburbs of Sao Paulo. The self-help scheme was started by Ute Craemer, a German teacher. Its first project was to clean up the stream to provide fresh water through pipelines and to provide sanitation. In 1985, a wooden clinic was built; it was soon rebuilt as a three-storey brick house. The scheme now organises day nurseries, schools, workshops and a bakery. It has 120 volunteer helpers.

Favela Jardim Jacqueline is situated next to one of Sao Paulo's wealthiest areas (see Figure 9.18) yet its residents still experience severe cases of malnutrition. In 1994, 190 families a month were receiving baskets of food organised by a committee of nine people who begged for food and money to get the project started. The committee then turned to building a day-care centre for the favela's children who otherwise roam the streets. It is hoped that it will eventually employ eighteen staff and look after 240 children.

What is the role of government policies in improving the quality of life in Sao Paulo?

The government of has attempted to improve the quality of life for the people who live in Sao Paulo by a number of ways.

- A government bank (BNH) has funded housing projects and provided low-interest loans to lower- and middle-income people to help them to buy a home.
- A scheme which built houses for teachers and other people who worked for the government.
- A scheme to build government-owned housing which also funded self-help projects (*mutirões*) to upgrade housing in the favelas.

Other ways that the government has tried to improve the quality of life include providing an underground train system, the Metrô. It was built in the 1960s and opened in 1974.

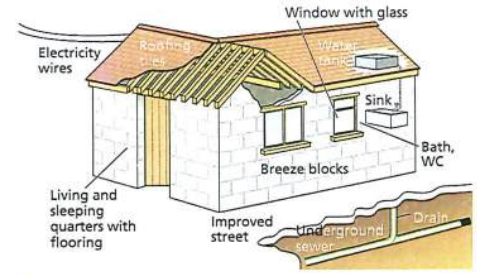


Figure 9.16 A self-help home.

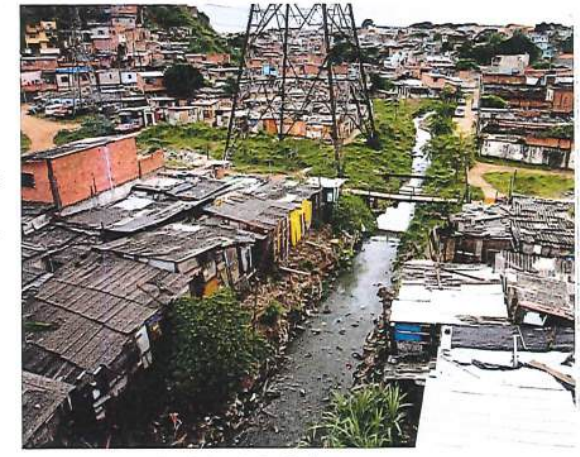


Figure 9.17 A polluted river in Sao Paulo.

Figure 9.18 Jardins (gardens) in Sao Paulo.

The system cuts down on traffic congestion and pollution. There are now six lines and 65 stations carrying three million passengers a day. It is a cheap and efficient way for people to move around the city but it is very crowded. Further extensions are planned.

The city has also instigated busways (similar to bus lanes in the UK) in an attempt to deal with traffic problems. Buses have sole use of these lanes but they do not cover the whole city yet – in some places buses have to merge with the other traffic, slowing the journey down.

Figure 9.19 The 9 de Julho Busway in Sao Paulo.

Review

By the end of this section you should be able to:

- ✓understand the effects of Sao Paulo's rapid urbanisation
- ✓describe the advantages and disadvantages of both bottom-up and top-down approaches to solving Sao Paulo's problems and improving the quality of life for its people
- ✓explain the role of government policies in improving the quality of life in Sao Paulo.

ACTIVITIES

1. State two ways in which the Sao Paulo Metrô improves the quality of life for people who live in the city.
2. What are the advantages and disadvantages of the self-help schemes of the 1980s?
3. Assess the different approaches to the housing problem in Sao Paulo.

Examination-style questions

1 a) Study Figure 7.1. State which area of the world had the greatest increase in urban area between 1965 and 2015. (1 mark)
b) Define the term urbanisation. (1 mark)
c) State **two** effects of rapid urbanisation in developing or emerging countries. (2 marks)

2 Study Figure 8.3. It shows the CBD of Bristol.
a) Define the term CBD. (1 mark)
b) Identify **two** pieces of evidence that show that buildings in the CBD were built at different times. (2 marks)
c) Suggest **three** functions of the CBD. (3 marks)

3 Suggest **two** possible impacts on a city if there is a large increase in migration. (2 marks)

4 Explain how transport in developed world cities can be made more sustainable. (3 marks)

5 Study Figure 9.2.
a) State in which direction you would travel from Santos to Sao Paulo. (1 mark)
b) Suggest **two** reasons why a city developed in this location. (4 marks)

6 Study Figure 9.8.
a) State how many more people live in Sao Paulo in 2010 than in 1960. (1 mark)
b) Calculate the percentage increase in population between 1980 and 1990.
A 12% B 20% C 25% D 15% (1 mark)

7 Evaluate the role of government policies in improving the quality of life for people who live in Sao Paulo. (8 marks)

Total: 30 marks

10 Global Development

LEARNING OBJECTIVE

To study how definitions of development vary, as do attempts to measure it.

Learning outcome

- To know contrasting ways of defining development using economic criteria and broader social and political measures.
- To understand that different factors contribute to the human development of a country: economic, social, technological and cultural, as well as food and water security.
- To know how development is measured in different ways: gross domestic product (GDP) per capita, the Human Development Index (HDI), measures of inequality and indices of political corruption.

KEY TERMS

Development – an improvement in the quality of life for the population of a country.

Primary sector – extractive industries such as farming, fishing, forestry and mining. Developing countries have high numbers of people employed in this sector.

Secondary sector – manufacturing industries; the number of people employed in this sector increases as a country develops.

Tertiary sector – service industries and jobs such as teaching; few people are employed in this sector in a developing country.

Quaternary sector – financial services and telecommunications.

Development gap – the difference between the parts of the world that have wealth and the parts that do not.

North–South divide – a virtual socioeconomic and political line on the globe which separates the developed and wealthy countries in the 'North' from the poorer developing countries in the 'South'.

Definitions of development vary, as do attempts to measure it

There are contrasting ways of defining development, using economic criteria and broader social and political measures

There are a number of different ways to define development. It can relate to economic, social, political or even cultural changes.

Economic development	An increase in a country's wealth. This could be an increase in people working in the secondary sector and a decrease in the numbers of people working in the primary sector. It could be indicated by a greater use of natural resources, for instance, energy use per head of population increases.
Social development	A number of changes that have a direct impact on the population's quality of life. This could include improved levels of literacy through greater access to education, better housing conditions and more doctors.
Political development	Freedom for the people to have a greater say in who governs their country.
Cultural development	This could involve better equality for women and better race relations.

Figure 10.1 Four types of development.

What factors contribute to the human development of a country?

The development of a country is affected by a number of factors including economic, social, cultural, technological, as well as food and water security.

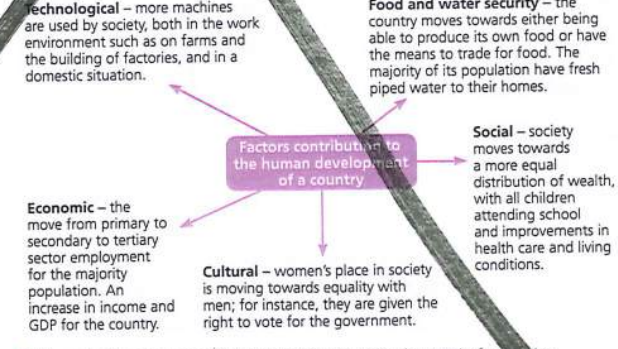


Figure 10.2 Factors contributing to the human development of a country.

The system cuts down on traffic congestion and pollution. There are now six lines and 65 stations carrying three million passengers a day. It is a cheap and efficient way for people to move around the city but it is very crowded. Further extensions are planned.

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10 Global Development

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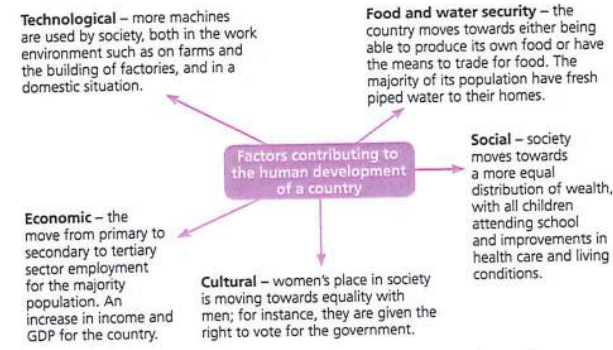


Figure 10.2 Factors contributing to the human development of a country.

Development is measured in different ways

The following are all ways that the development of a country can be measured.

- **Gross domestic product (GDP)**: the value of all the goods and services produced in a country during a year, in US dollars. Per capita means that the figure is divided by the number of people who live in the country to give an average per person.
- **Human Development Index (HDI)**: this is a comparative measure of different aspects of life between countries. The measures used are life expectancy, education and standards of living (see http://hdr.undp.org).
- **Measures of inequality**: these are ways of measuring how equal people are within a country or between countries. This is often a measurement of the wealth or health care of people in a country or between countries.
- **Corruption Perceptions Index**: This is the perceived corruption in governments and the public sector. It is a perception because corruption is hidden and therefore difficult to measure. It means that government officials are using development for their own betterment rather than the betterment of the country. In the 2014 index, 100 is the perfect score so these countries have very 'clean' public sectors; 0 indicates a very corrupt public sector (see Figure 10.3). For example, Zimbabwe, currently governed by Robert Mugabe, is perceived to be very corrupt: Zimbabwe scores 21 and is ranked 157 out of 177 countries.

RANK	COUNTRY/TERRITORY	SCORE
1	Denmark	92
2	New Zealand	91
3	Finland	89
4	Sweden	87
5	Norway	86
6	Switzerland	86
7	Singapore	84
8	Netherlands	83
9	Luxembourg	82
10	Canada	81
11	Australia	80
12	Germany	79
13	Iceland	79
14	United Kingdom	78
15	Belgium	76
16	Japan	76
17	Barbados	74
17	Hong Kong	74
17	Ireland	74
17	United States	74
21	Chile	73
21	Uruguay	73
23	Austria	72
24	Bahamas	71
25	United Arab Emirates	70
	Estonia	69
	France	69
	Qatar	69
	Saint Vincent and the Grenadines	67
	Bhutan	65
	Botswana	63
	Cyprus	63
	Portugal	63
	Puerto Rico	63
	Poland	61
	Taiwan	61
	Israel	60
	Spain	60
	Dominica	58
	Lithuania	58
	Slovenia	58
	Cape Verde	57
	Korea (South)	55
	Latvia	55
	Malta	55
	Seychelles	55
	Costa Rica	54
	Hungary	54
	Mauritius	54
	Georgia	52
	Malaysia	52
	Samoa	52
	Czech Republic	51
	Slovakia	50
	Bahrain	49
	Jordan	49
	Lesotho	49
	Namibia	49
	Rwanda	49
	Saudi Arabia	49
	Croatia	48
	Ghana	48
	Cuba	46
	Oman	45
	The FYR of Macedonia	45
	Turkey	45
	Kuwait	44
	South Africa	44
	Brazil	43
	Bulgaria	43
	Greece	43
	Italy	43
	Romania	43
	Senegal	43
	Swaziland	43
	Montenegro	42
	Sao Tome and Principe	42
	Serbia	41
	Tunisia	40
	Benin	39
	Bosnia and Herzegovina	39
	El Salvador	39
	Mongolia	39
	Morocco	39
	Burkina Faso	38
	India	38
	Jamaica	38
	Peru	38
	Philippines	38
	Sri Lanka	38
	Thailand	38
	Trinidad and Tobago	38
	Zambia	38
	Armenia	37
	Colombia	37
	Egypt	37
	Gabon	37
	Liberia	37
	Panama	37
	Algeria	36
	China	36
	Suriname	36
	Bolivia	35
	Mexico	35
	Moldova	35
	Niger	35
	Argentina	34
	Djibouti	34
	Indonesia	34
	Albania	33
	Ecuador	33
	Ethiopia	33
	Kosovo	33
	Malawi	33
	Côte d'Ivoire	32
	Dominican Republic	32
	Guatemala	32
	Mali	32
	Belarus	31
	Mozambique	31
	Sierra Leone	31
	Tanzania	31
	Vietnam	31
	Guyana	30
	Mauritania	30
	Azerbaijan	29
	Gambia	29
	Honduras	29
	Kazakhstan	29
	Nepal	29
	Pakistan	29
	Togo	29
	Madagascar	28
	Nicaragua	28
	Timor-Leste	28
	Cameroon	27
	Iran	27
	Kyrgyzstan	27
	Lebanon	27
	Nigeria	27
	Russia	27
	Comoros	26
	Uganda	26
	Ukraine	26
	Bangladesh	25
	Guinea	25
	Kenya	25
	Laos	25
	Papua New Guinea	25
	Central African Republic	24
	Paraguay	24
	Congo Republic	23
	Tajikistan	23
	Chad	22
	Democratic Republic of the Congo	22
	Cambodia	21
	Myanmar	21
	Zimbabwe	21
	Burundi	20
	Syria	20
	Angola	19
	Guinea-Bissau	19
	Haiti	19
	Venezuela	19
	Yemen	19
	Eritrea	18
	Libya	18
	Uzbekistan	18
	Turkmenistan	17
	Iraq	16
	South Sudan	15
	Afghanistan	12
	Sudan	11
	Korea (North)	8
	Somalia	8

Figure 10.3 Corruption Perceptions Index, 2014. Source: Transparency International.

Review

By the end of this section you should be able to:

- ✓ define development using economic criteria and broader social and political measures
- ✓ understand factors that contribute to the human development of a country
- ✓ describe how development is measured in different ways.

ACTIVITIES

1. Give two different definitions of development.
2. Describe three factors that contribute to the development of a country.
3. Describe two ways in which development can be measured.
4. Research which three countries are perceived to be the most corrupt countries in the world using the website of Transparency International (www.transparency.org).

Extension

Comment on the statement: 'Cultural development could include greater equality for women.'

The level of development varies globally

The global pattern of development and its unevenness between and within countries, including the UK

LEARNING OBJECTIVE

To study how the level of development varies globally.

Learning outcomes

- To be able to describe the global pattern of development and its unevenness between and within countries, including the UK.
- To understand the factors which have led to spatial variations in the level of development globally and within the UK.

The maps in Figures 10.5 and 10.6 on page 154 show the difference between using HDI and GNP to measure development. Some countries are placed in the top percentage in one index but not in the other. For example, Sweden and France are in the top group for GNI but do not rank at the top for HDI.

When individual countries are considered, most have areas which are richer than other areas. This is also true in towns and cities. For example, the Bronx in New York has very poor areas but many people consider New York to be a wealthy city with a high HDI. Using broad country figures (as the two maps in Figures 10.5 and 10.6 do) hides a lot of problems within countries.

Using the UK as an example, the country is split between the north and the south. Figure 10.4 clearly shows this, with the income in the south and east being far higher than that in Yorkshire and Lancashire. This still hides the true picture however, because not all of the people who live in the south and east earn a high income. This makes their apparent poverty all the more striking. This is the same in all countries and cities throughout the world.

KEY TERMS

Gross national income (product) – the value of all the goods and services produced in a country and from its exports during a year, in US dollars.

Mineral – a solid, naturally occurring non-living substance, such as coal or diamonds.

Fossil fuels – a naturally occurring fuel such as coal, oil and natural gas (methane) formed from the remains of dead organisms over millions of years.

Tectonic activity – the movement of the Earth's plates.

Spatial variations – differences in something on the Earth's surface, for example, differences in wealth in a country.

Practise your skills

1. Compare the maps shown in Figures 10.5 and 10.6.
2. Describe the pattern of human development shown in Figure 10.5:
   - Start with a general comment about the most developed and the least developed, and where they are in the world.
   - Mention specific countries in each of your categories.
   - Add some data detail.

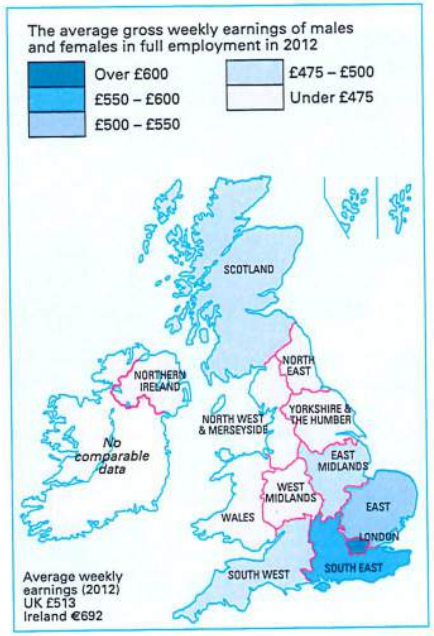
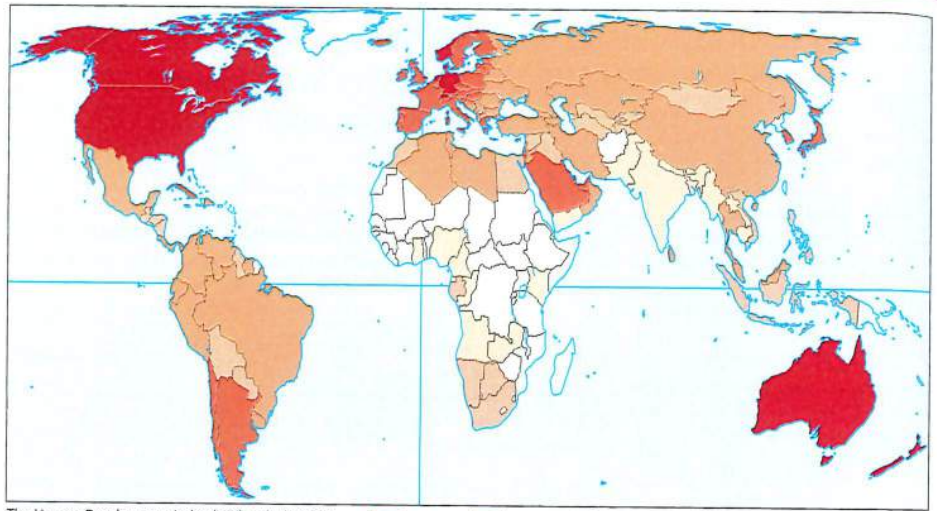


Figure 10.4 UK income.

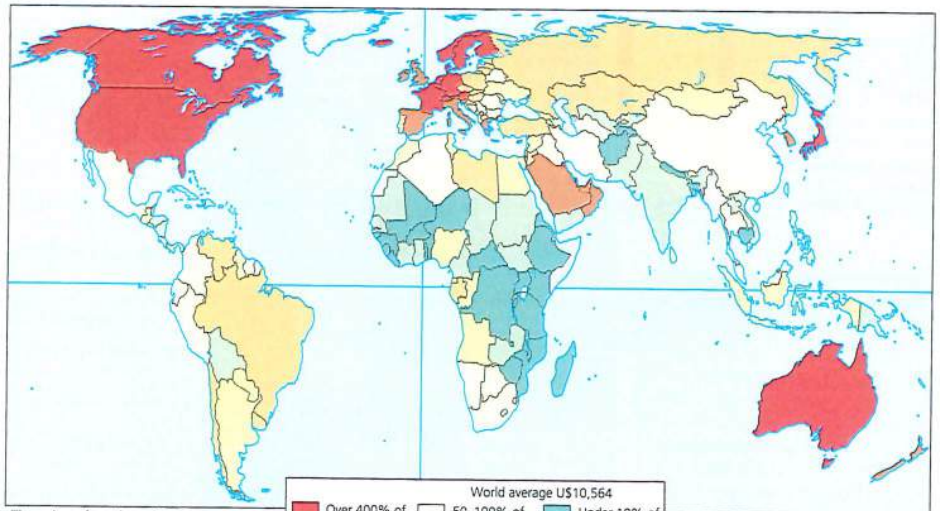


The Human Development Index (HDI), calculated by the UN Development Programme (UNDP), gives a value to countries using indicators of life expectancy, education and standards of living in 2013. Higher values show more developed countries.

Over 0.9
0.8–0.9
0.7–0.8
0.6–0.7
0.5–0.6
Under 0.5
No data

Highest values		Lowest values	
Norway	0.944	Central Africa	0.341
Australia	0.933	Congo (DR)	0.338
Switzerland	0.917	Niger	0.337
		UK	0.892

Figure 10.5 Human Development Index.



The value of total production divided by the population (the Gross National Income per capita, in 2013).

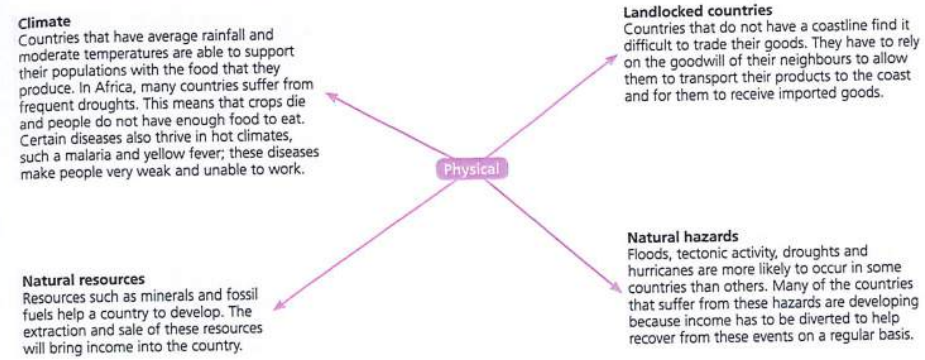
World average US$10,564

Over 400% of world average
200–400% of world average
100–200% of world average
50–100% of world average
25–50% of world average
10–25% of world average
Under 10% of world average
No data

Wealthiest countries		Poorest countries	
Norway	$102,610	Malawi	$270
Qatar	$85,550	Burundi	$280
Switz.	$80,950	Central Africa	$320
		UK	$39,110

Figure 10.6 Gross national income (product).

Factors that have led to spatial variations in the level of development globally



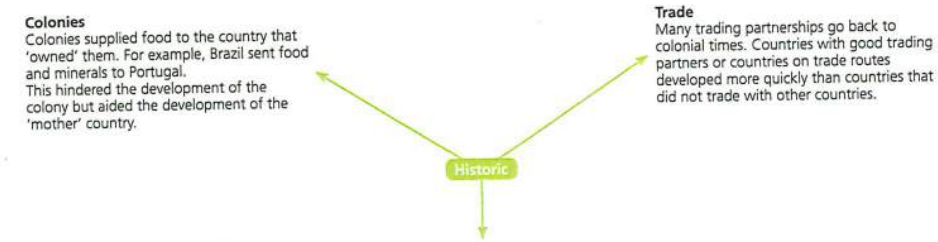
Climate
Countries that have average rainfall and moderate temperatures are able to support their populations with the food that they produce. In Africa, many countries suffer from frequent droughts. This means that crops die and people do not have enough food to eat. Certain diseases also thrive in hot climates, such a malaria and yellow fever; these diseases make people very weak and unable to work.

Landlocked countries
Countries that do not have a coastline find it difficult to trade their goods. They have to rely on the goodwill of their neighbours to allow them to transport their products to the coast and for them to receive imported goods.

Natural resources
Resources such as minerals and fossil fuels help a country to develop. The extraction and sale of these resources will bring income into the country.

Natural hazards
Floods, tectonic activity, droughts and hurricanes are more likely to occur in some countries than others. Many of the countries that suffer from these hazards are developing because income has to be diverted to help recover from these events on a regular basis.

Figure 10.7 Physical factors.

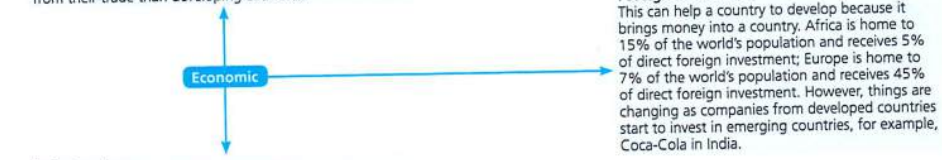


Colonies
Colonies supplied food to the country that 'owned' them. For example, Brazil sent food and minerals to Portugal.
This hindered the development of the colony but aided the development of the 'mother' country.

Trade
Many trading partnerships go back to colonial times. Countries with good trading partners or countries on trade routes developed more quickly than countries that did not trade with other countries.

Politics
Countries with stable governments developed more quickly. If countries are at war or are suffering from civil wars, their income is spent on military weapons rather than on development. Also, development can be halted if a country is corrupt as the money may be spent on an affluent lifestyle for the elite group of people who rule the country.

Figure 10.8 Historic factors.



World trade
The developing countries sell primary products to developed countries. Manufactured goods are worth more money than primary products so developed countries earn more from their trade than developing countries.

Foreign investment
This can help a country to develop because it brings money into a country. Africa is home to 15% of the world's population and receives 5% of direct foreign investment; Europe is home to 7% of the world's population and receives 45% of direct foreign investment. However, things are changing as companies from developed countries start to invest in emerging countries, for example, Coca-Cola in India.

Infrastructure
The country's roads, railways and facilities, such as electricity. Developed countries have a good infrastructure and therefore companies want to invest in them because they know their goods will be produced and moved quickly.

Figure 10.9 Economic factors.

Factors that have led to spatial variations in the level of development within the UK

The factors mentioned above can also be applied to the different areas of the UK to explain the difference in development and wealth within the country. The table in Figure 10.10 gives some of the reasons for the UK's uneven development (see also Chapter 7, pages 118–123).

Reason		Development outcome
Physical	Relief	The south of the UK is flatter; this aids development as urban areas can be easily built upon. The north and west are more mountainous, making urban areas and communication routes more difficult to build.
	Climate	The south and east of the UK have a better climate than the rest of the country with less rainfall. This makes it a pleasanter areas to live in.
	Natural resources	The Midlands and North and South Wales started to develop with the discovery of natural resources; in the first instance this was the mining of coal.
	Position	The south and east of the country are closer to the communication links to Europe. This makes companies want to locate in this area.
Historical	Politics	The seat of the government is in London, in the South East. This made it a highly desirable location for business in the past as they were close to where decisions were being made and found out about them quickly.
	Colonies	Although ships sailed for the colonies from ports on the west of the country, all of the decisions were taken in London on the east of the country.
Economics	Infrastructure	The infrastructure in the London area is the best in the country. All roads lead to the centre of London. Companies who located there would be able to trade with the rest of the country easily.
	Foreign investment	Most foreign investment into the UK is in London although the government has tried to encourage foreign firms to invest elsewhere, for example Honda in Swindon.

Figure 10.10 Reasons for the UK's uneven development.

Review

By the end of this section you should be able to:

- ✓describe the global pattern of development and its unevenness between and within countries, including the UK
- ✓understand the factors that have led to spatial variations in the level of development globally and within the UK.

ACTIVITIES

1. Study Figure 10.5 and Figure 10.6. Name two countries that are in the top percentages of the world's earnings but not in the top categories for the HDI.
2. List the physical factors that have hampered the development of some countries.
3. Describe three reasons for the UK's uneven development.

Extension

What is the development gap?

Uneven global development has had a range of consequences

LEARNING OBJECTIVE

To study how uneven global development has had a range of consequences.

Learning outcomes

- To be able to describe the impact of uneven development on the quality of life in different parts of the world.

KEY TERMS

Literacy – the ability to read and write.

Employment structure – the numbers of people employed in each sector of industry.

Anomaly – something that is outside the norm.

The impact of uneven development on the quality of life in different parts of the world

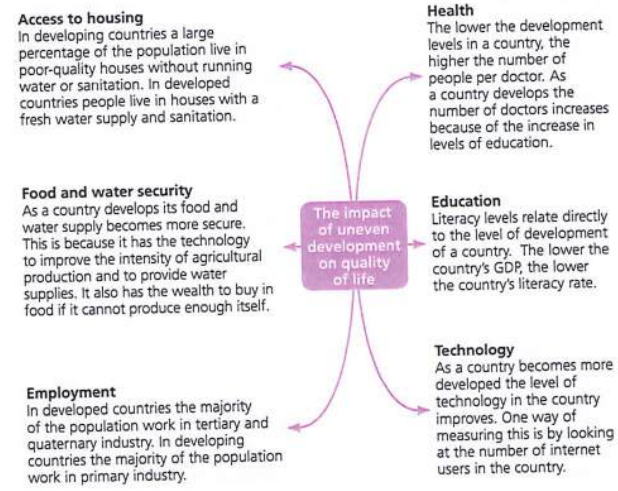


Figure 10.11 The impact of uneven development.

	Literacy rate, 2015	Doctors per 1,000 people, 2010	Internet use per 100 people, 2013	Primary sector employment, 2012	Secondary sector employment, 2012	Tertiary and quaternary sector employment, 2012
Brazil	92	1.8	52	16	13	71
China	96	1.8	46	34	30	36
Namibia	82	0.4	14	16	23	61
Tanzania	68	0.8	4	70	5	25
Bhutan	65	0.1	30	56	22	22
USA	99	2.4	84	1	20	79
UK	99	2.7	90	1	15	84
Norway	99	4.2	95	2	20	78

Figure 10.12 Social and economic data for selected countries.

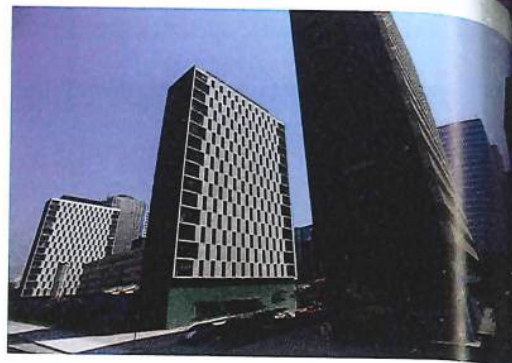



Figure 10.13 Access to housing.

Practise your skills

1. Select one developed country, one developing country and one emerging country from the table in Figure 10.12. Draw pie charts of their employment structure.
2. Justify your choice of developed country, developing country and emerging country based on just employment information.

Review

By the end of this section you should be able to:

✓describe the impact of uneven development on the quality of life in different parts of the world: access to housing, health care, education, employment, technology, and food and water security.

ACTIVITIES

Study the data in Figure 10.12.

1. Which country has the highest number of doctors per person?
2. Which country has a high internet user rate compared to its literacy rate?
3. In your opinion, which of the housing environments in Figure 10.13 has access to a fresh water supply and sanitation? Give reasons for your answer.

Extension

1. Which country in Figure 10.12 has the best health care? Give a reason for your answer.
2. Study the information in Figure 10.12. Based on the information in this, section state two anomalies in the data. Justify your opinion.

Strategies that have been used to try to address uneven development

LEARNING OBJECTIVE

To study the range of strategies that have been used to try to address uneven development.

Learning outcomes

- To be able to describe the range of international strategies that attempt to reduce uneven development.
- To know the difference between top-down and bottom-up development projects, and their advantages and limitations in the promotion of development.

International strategies that attempt to reduce uneven development

International development aid has long been recognised as the way to help developing nations to grow out of poverty, but how should this aid be given? In 1970, the world's richest nations agreed to give 0.7 per cent of their **gross national income** (GNI) as official international development aid, annually. Since this time, wealthy nations have given millions of dollars each year, but few have achieved this target. Figure 10.14 shows the amount of aid given by countries in 2013 in US dollars and as a percentage of their GNI.

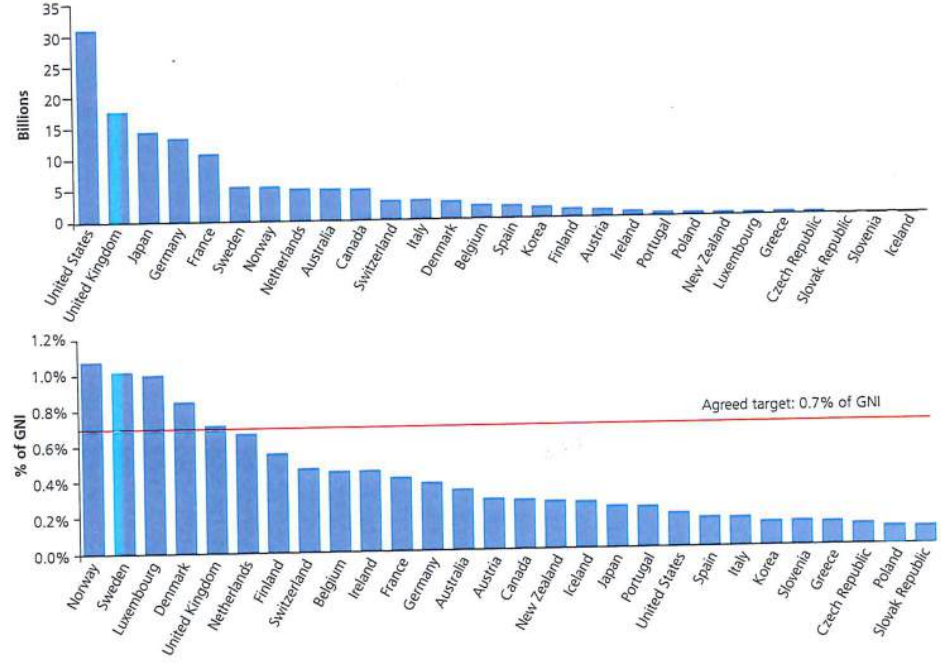
KEY TERMS

Appropriate technology – technology that is suitable for the skill level of the country it is in.

Top-down projects – development programmes that are initiated and run by the government.

Bottom-up projects – development programmes that are run by local community groups.

Figure 10.14 Aid given in 2013.



International aid

International aid can be given in a number of different ways.

Bilateral aid

The first aid that was made available to countries was after the Second World War. This was aid from USA to Europe to help rebuild its cities after the intense bombing that had taken place. This aid is known as bilateral aid and is given from one government to another government, usually with attached agreements, such as the recipient country has to give building projects to the donor country. An example of this is the money that India has loaned to Bhutan to build hydroelectric power schemes. India has provided the engineers and the technology and will get the electricity that is produced at a cheaper rate than the local people.

Multilateral aid

This is when developed countries give money to international organisations such as the **World Bank** or the United Nations. These organisations then redistribute the money in the form of loans to poorer countries.

Official and voluntary aid

Governments such as the UK and USA provide money that charity organisations can bid for to develop aid projects in different parts of the world. For example, the website in Figure 10.15 shows the UK government's international development funding that charities can apply for. One of the funds, UK Aid Match, matches the money raised by charities pound for pound.

Voluntary aid

This is the money raised from donations and charities. Organisations such as Oxfam and Save the Children raise money through fund raising events, private donations and charity shops. This money usually funds **bottom-up projects**.

Inter-governmental agreements

These are agreements between developed world nations to work together to provide aid for developing countries. One of these agreements is with the EU. The EU delivers aid in different ways, one of which is sector support. As an example, the EU provides funds to develop education directly to the education department of the partner country, not to the government for them to use without direction from the EU. In other words, the EU will know what its money is being used to improve.

The development of emerging countries such as Brazil, China and India has seen these countries become major **donor countries** of aid. This is known as the South-South development co-operation, which has 30 countries that are donor members. They help develop countries that are not as well off as they are. One of the biggest donors is China, although much of the aid given by China does have strings attached, which means that China usually makes demands for something in return for the money.

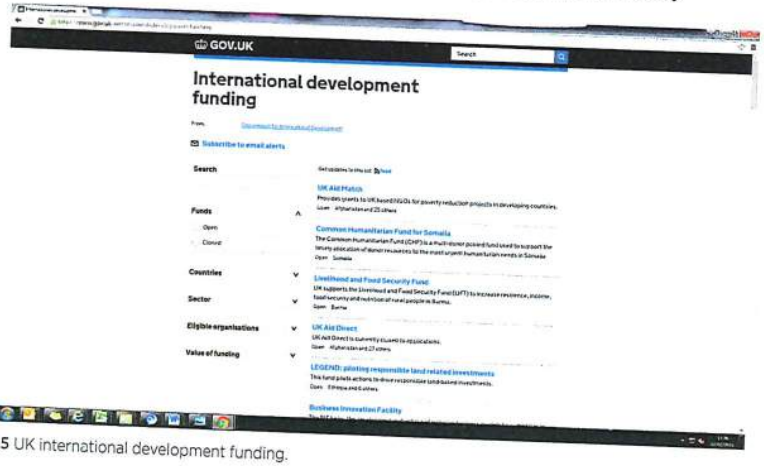


Figure 10.15 UK international development funding.

The advantages and limitations of top-down and bottom-up development projects

Top-down schemes

This is development on a large scale: the government of a country will borrow money from organisations such as the World Bank in order to finance a large-scale scheme to benefit the whole country, such as the Three Gorges Dam in China. All decisions relating to the scheme are made by the government and the external groups involved. The local community have no say it what happens, although they are the people who will be most affected by the scheme.

Bottom-up projects

This is development on a small scale. They are schemes that are planned and controlled by local communities to help their local area. They are not expensive because they are smaller and use **appropriate technology**. Local people fund the schemes themselves or with help from aid groups.

Advantages	Disadvantages (limitations)
The country will develop more quickly because of the size of the projects.	The country will go into debt. In some cases these debts have never been paid off.
The scheme is run by the government so it is likely to achieve its development objectives.	The debt may have conditions attached to it which mean that the country is under external influences for many years.
In some cases, for example large HEP schemes, it is the only way to raise the capital due to the size of the project.	The end product is usually expensive to maintain.
It is a way of helping the large urban populations of a country, but often at the expense of the rural areas.	Much of the building work is done by machines or foreign companies so local jobs are not created.
	Local people have no say in what happens. In many cases they have lost land.

Figure 10.16 The advantages and limitations of top-down projects.

China builds biggest dam in the world!

The Three Gorges Dam on the Yangtze River in Sandouping, China is the biggest hydroelectric power station ever built. At full capacity it can produce 22,500 megawatts to supply the large cities in the area. The dam has had a major impact on development in South West China. It has improved trade, allowing container ships further down the river; it controls flooding, so agricultural production has improved; and, of course, it provides clean, 'cheap' electricity to thousands of people. There were limitations to the dam: 1.4 million people were moved from their ancestral homes. It cost the country US$22 billion and led to the extinction of the Yangtze river dolphin.

Figure 10.17 Three Gorges Dam – a top-down project.

Advantages	Disadvantages (limitations)
The scheme is run by the local people so is likely to achieve its development objectives.	The country will develop more slowly because of the size of the project.
The end product is usually cheap to maintain.	It does not help the majority of the population who live in urban areas.
It is a way of helping the rural poor.	
Local people decide what happens to their community.	
Appropriate technology is used.	

Figure 10.18 The advantages and limitations of bottom-up projects.

Micro-hydro projects help rural communities

Practical Aid is a charity that works with people in rural areas in developing countries to provide them with appropriate technology to improve their quality of life. One of their schemes is a micro-hydro project. This is a small-scale way of providing energy for rural communities from falling water such as steep mountain rivers. The scheme will generate up to 500 kilowatts of power and should last for over twenty years. The micro-hydro plants are owned and operated by the communities they serve with maintenance carried out by skilled members of the community. So, the scheme provides energy and employment. Any excess energy is stored in rechargeable batteries for villages that are further away from the scheme so they can also have power for workshop machines and domestic lighting. The scheme has little impact on the environment because there is no dam being built. It also cuts down the need for wood for fuel.

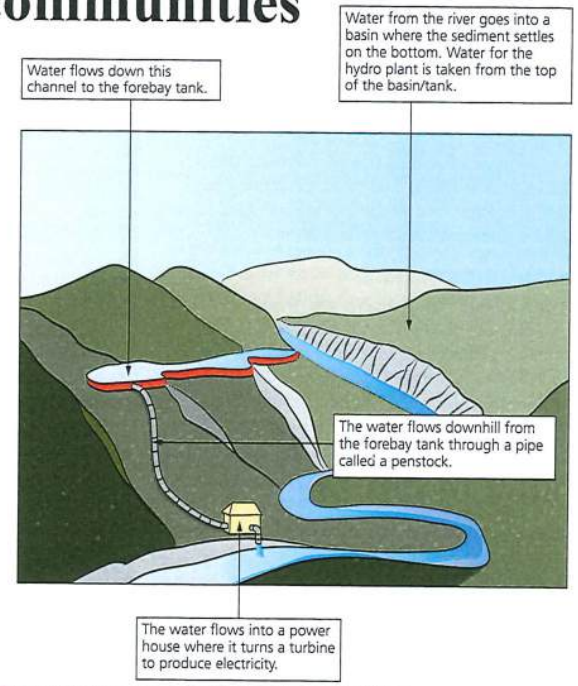


Figure 10.19 Micro-hydro scheme – a bottom-up project.

Review

By the end of this section you should be able to:

- ✓describe the range of international strategies (international aid and inter-governmental agreements) that attempt to reduce uneven development
- ✓know the difference between top-down and bottom-up development projects, and their advantages and limitations in the promotion of development.

ACTIVITIES

1. Give the names of three different charities that provide aid. State their mission statement.
2. What is bilateral aid?
3. Describe an example of voluntary aid. It could be something that you have done to raise money for an aid charity.
4. Explain the advantages and limitations of top-down development projects.

Extension

1. Why would governments give aid with certain conditions attached?
2. Discuss the pros and cons of top-down and bottom-up projects.

The level of development of Tanzania is influenced by its location and context in the world

LEARNING OBJECTIVE

To study how the level of development of Tanzania is influenced by its location and context in the world.

Learning outcomes

- To know the location and position of Tanzania in its region and globally.
- To understand the broad political, social, cultural and environmental context of Tanzania in its region and globally.
- To explain the unevenness of development within Tanzania and reasons why development does not take place at the same rate across all regions.

What is the location and position of Tanzania in its region and globally?

Tanzania is in eastern Africa. It has borders with Kenya and Uganda in the north; Rwanda, Burundi and the Democratic Republic of the Congo to the west; and Zambia, Malawi and Mozambique to the south. Figure 10.20 shows where Tanzania is in its region and globally.

The broad political, social, cultural and environmental context of Tanzania in its region and globally

Tanzania is the thirteenth largest country in Africa. It has 800 km of coastline and contains Africa's highest mountain, Kilimanjaro. It is mountainous and densely forested in the northeast. Central Tanzania is a large plateau with plains and arable lands while the eastern shore is hot and humid. Three of Africa's great lakes are partly in Tanzania: Lake Victoria, Lake Nyasa and Lake Tanganyika. It has sixteen national parks as well as many game and forest reserves; 38 per cent of its land area is set aside in conservation areas.

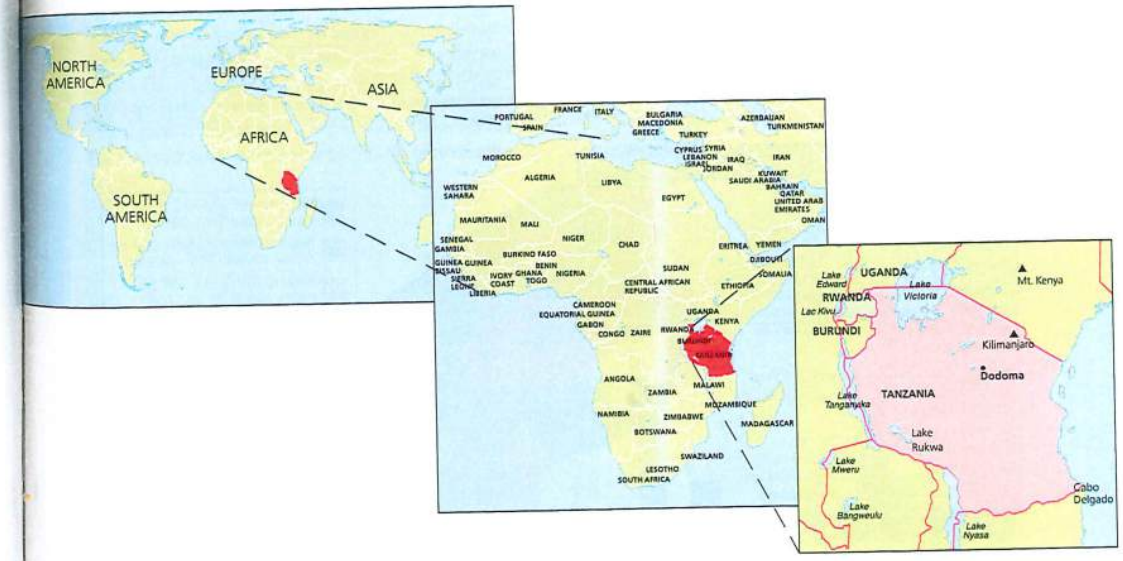


Figure 10.20 The physical geography of Tanzania and its location in Africa and the world.

It has a population of 50 million and is one of the poorest countries in the world. Approximately 90 per cent of Tanzania's poor people live in rural areas. The population is unevenly distributed; most live on the northern border or eastern coast while the remainder of the country is sparsely populated. The country has two main languages: English and Swahili. English is used in schools because this is the language of the textbooks but Swahili is the official language of the country.

The former capital Dar es Salaam has most of the government offices. It is the largest city and port and is the country's wealthiest area. Dodoma, sited in the middle of the country, became Tanzania's new capital in 1996 in an attempt to try to improve the standard of living in that area. On the United Nations' Human Development Index (HDI) in 2013 Tanzania was 152 out of 187 countries. It is estimated that one-third of the population live below the basic needs poverty line. The reduction in poverty is slow and Tanzania did not meet its target to halve it by 2015.

The country was a German colony from 1885 until the end of the First World War, when it came under British rule. It was then known as Tanganika with the Zanzibar Archipelago under separate colonial jurisdiction. When they became independent in the early 1960s, they joined to form the Republic of Tanzania.

In 1967 the government of the country realised that the country's wealth was leaking to other countries that had investments in Tanzania. It adopted a **socialist** political and economic approach, and nationalised all the banks and large industries. The government started to develop rural communities and subsidised services such as health and education. It formed an alliance with China to build infrastructure, including the 1,860 km TAZARA Railway from Dar es Salaam to Zambia. From 1980 the regime financed itself by borrowing from the International Monetary Fund and underwent some reforms. Since then the national economy has grown and poverty has been reduced. The first multi-party elections were held in 1995 when Benjamin Mkapa was elected president. The country returned to a free market economy and foreign investment was encouraged. Tanzania is now trying to develop through building infrastructure and continues to try to reduce poverty; it remains one of the poorest countries in the world.

Development within Tanzania is uneven: why does development take place at different rates in different regions?

The development of Tanzania has not been even across the country. This is shown in Figure 10.21, which shows the uneven GDP per capita in the country. The general reasons for uneven development are dealt with early in this chapter. In the case of Tanzania, the fastest rates of development have taken place around Dar es Salaam, which used to be the capital city and still is the main port. People can get employment in industries related to the port. In other parts of the country people rely on agriculture to earn their living.

KEY TERMS

Nationalised – to convert to a business or industry from private to government ownership.

Socialism – a political model based on the belief that a country's people should own its means of production and regulate its political power.

Free market economy – free competition between producers; prices are determined by supply and demand.

Core and periphery – the core of a country contains the most wealth while the periphery contains less wealth and, on some occasions, most of the population.

Human Development Index (HDI) – a measurement of life expectancy, access to education and gross national income per capita used to assess how much progress a country has made (see http://hdr.undp.org).

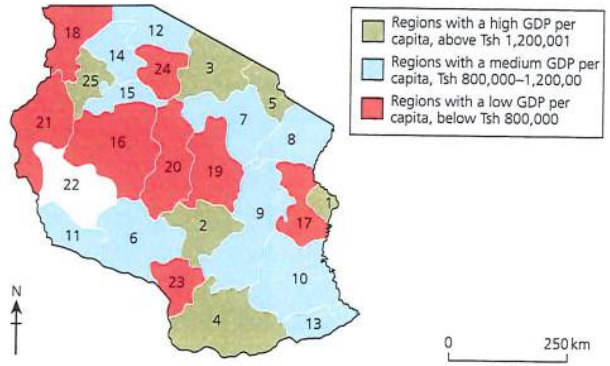


Figure 10.21 A choropleth map showing the GDP per capita for the regions of Tanzania (Tanzanian shillings).

Number on map	Region	GDP per capita (in 1000s of Tsh)	HDI
1	Dar es Salaam	1,750	0.71
2	Iringa	1,425	0.69
3	Arusha	1,250	0.72
4	Ruvuma	1,210	0.67
5	Kilimanjaro	1,205	0.71
6	Mbeya	1,100	0.66
7	Manyara	1,000	0.63
8	Tanga	1,000	0.66
9	Morogora	990	0.62
10	Lindi	980	0.62
11	Rukwa	980	0.57
12	Mara	960	0.62
13	Mtwara	940	0.62
14	Mwanza	900	0.61
15	Shinyanga	820	0.54
16	Taboro	750	0.52
17	Pwani	740	0.54
18	Kagera	700	0.49
19	Dodoma	650	0.48
20	Singida	610	0.47
21	Kigoma	600	0.42
22	Katavi	No data	0.57
23	Njombe	600	0.69
24	Simiyu	610	0.55
25	Geita	1,500	0.55

Figure 10.22 GDP per capita and HDI data for Tanzania's regions.

Review

By the end of this section you should be able to:

- ✓describe the location and position of Tanzania in its region and globally
- ✓understand the broad political, social, cultural and environmental context of Tanzania in its region and globally
- ✓explain the unevenness of development within Tanzania and reasons why development does not take place at the same rate across all regions.

ACTIVITIES

1. Which is the official language of Tanzania?
   English Swahili German
2. How many countries border Tanzania?
3. Where is Africa's highest mountain?
4. Which is Tanzania's richest region?
5. On Figure 10.23, what is meant by the terms 'improved water' and 'adequate sanitation'?

Extension

1. Compare the state of development in different regions of Tanzania.
2. Why is the region closest to Dar es Salaam in the lowest group for GDP per capita whereas Dar es Salaam is in the highest group?

Practise your skills

Figure 10.21 is a choropleth map of Tanzania's GDP for each of its regions.

- Describe the information shown in Figure 10.21.
- Draw your own choropleth map for HDI for Tanzania's regions.

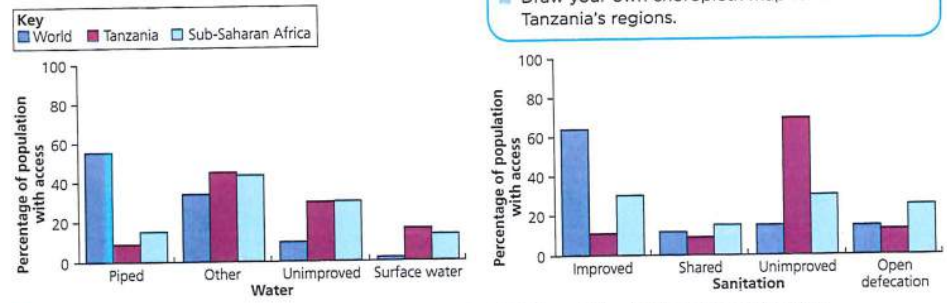


Figure 10.23 Access to water supply and sanitation in Tanzania, Sub-Saharan Africa, 2010 and the world in 2012.

The interactions of economic, social and demographic processes influence the development of Tanzania

LEARNING OBJECTIVE

To study the interactions of economic, social and demographic processes and how the influence the development of Tanzania.

Learning outcomes

- To know the positive and negative impacts of changes that have occurred in Tanzania's sectors of employment.
- To understand the characteristics of international trade and aid, and Tanzania's involvement in both.
- To explain the changing balance between public investment and private investment in Tanzania.
- To explain the changes in population structure and life expectancy that have occurred in the past 30 years in Tanzania.
- To know the changing social factors in Tanzania.

KEY TERMS

Transnational corporations (TNCs) – large companies that have their headquarters in one country and branches all over the world.

Public investment – money put into businesses by the government.

Private investment – money put into businesses by private financial backers.

The positive and negative impacts of changes to employment sectors on Tanzania's economy

There has been a growth in Tanzania's informal sector in both rural and urban areas by approximately 105 per cent between 2000 and 2006. This is not good for the economy as informal sector traders pay no taxes to the government.

Sector	Positive impacts	Negative impacts
Primary	Aid has been given to farming communities to try to introduce irrigation techniques which use appropriate technology. This should improve crop production to aid development. Mining of natural resources has brought much needed foreign investment into the country. The recent discovery of gas and oil will also help to provide much needed foreign investment in the future.	The agricultural sector's methods of production are out of date. For example, Tanzania uses an average of 9 kg of fertiliser per hectare whereas Malawi, at a similar stage of development, uses 27 kg and China used 279 kg. The sector is still dependent on the weather; dry years mean low crop yields. Agriculture as a share of GDP fell from 29% in 2001 to 24% in 2010. Improving productivity in this sector is crucial to the development of the country.
Secondary	This sector's share of GDP increased from 18% in 2001 to 22% in 2012. This will provide extra money for the economy.	Manufacturing's share of GDP is fairly constant with a slow growth rate. It is concentrated on a few goods which are of low value. Only 5% of employed people work in this area. This sector needs to develop the production of other goods through foreign investment to provide employment for people who are low on skills.
Tertiary	The service sector continues to grow with the development of a small middle class. Its growth rate was 8% between 2001 and 2012. With more people in higher paid jobs the country should receive more taxes to help it develop. There has been a growth in employment in education with the expansion of primary school education to all children. There has also been an increase in health care workers, providing employment for people who acquire the skills.	If the country is to develop, the service sector needs to continue to grow. Many of the jobs in the tertiary sector require a level of skill that will only be acquired through increased access to education.
Quaternary	The communications and financial services sector are the fastest growing in the economy, with a growth rate of 15% between 2003 and 2012.	This sector requires a highly skilled workforce, which required high wages. It does not provide employment for the low-skilled Tanzanian workforce. Its impact on the overall reduction of poverty is low.

Figure 10.24 Tanzania's economy by sector.

The characteristics of international trade and aid, and Tanzania's involvement in both

International trade

In 2012 its top-three export trading partners were South Africa, Switzerland and China, with exports worth US$5.5 billion. Imports totalled US$11.7 billion. The main import trading partners were Switzerland, China and the United Arab Emirates. This meant the country had a negative balance of trade because its imports cost more than its exports.

The country has strong telecommunications and banking sectors, and its tourism industry continues to grow. It contributed 12.7 per cent of Tanzania's GDP and employed 11 per cent of the workforce in 2012. However, the economy is still based on agriculture, which makes up 24.5 per cent of GDP and 85 per cent of exports.

Industry and construction are growing, providing 22.2 per cent of GDP in 2013. This includes mining, manufacturing, electricity, gas and water supply. The country has started to extract diamonds, tanzanite and gold to export. The coal extracted in Tanzania is used domestically.

International aid

Tanzania is the second-largest aid recipient in Sub-Saharan Africa, after Ethiopia. They received a combined total of US$26.85 billion in aid between 1990 and 2010. The main donors of aid to Tanzania are the USA and the UK, who gave US$793 and US$307 million dollars, respectively, in 2013. Other countries that give substantial amounts are Japan, Canada, Germany and Norway. Figure 10.27 on page 168 shows the main donors to Tanzania and the changes that have occurred since 2009.

Aid has been given to support the general budget of the country, but also to fund education, health care provision, water supply and sanitation (see Figure 10.28 on page 168).

KEY TERMS

Donor countries – countries that give aid.

Informal sector – people who set up informal businesses such as selling products on the street; they do not pay taxes or rent proper business premises.

Balance of trade – the difference between a country's imports and exports.

International Monetary Fund (IMF) – financial institution set up in 1945 to promote international trade. It pools funds from 188 member nations who can then make withdrawals when their economy is in difficulty.

World Bank – an international financial institution that provides loans to developing countries.

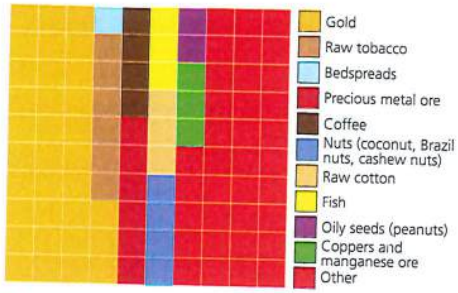


Figure 10.25 Tanzania's major exports, 2012.

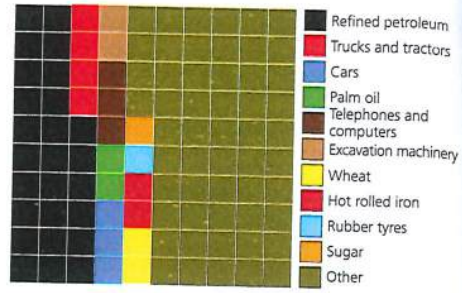


Figure 10.26 Tanzania's major imports, 2012.

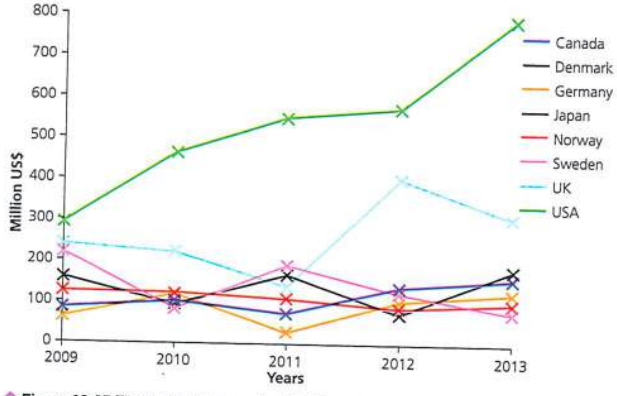


Figure 10.27 The largest donors of aid to Tanzania, 2009–13.

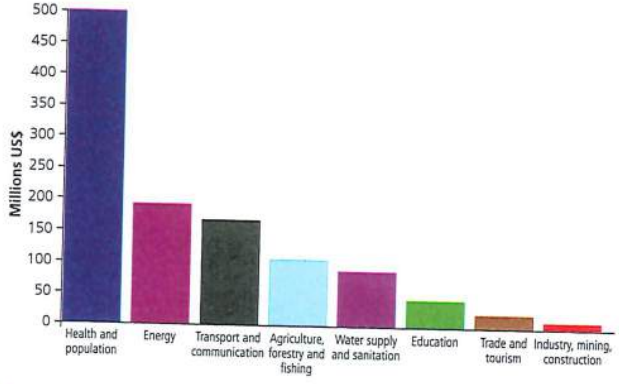


Figure 10.28 The largest receivers of aid in the Tanzanian economy, 2013.

The changing balance between public and private investment in Tanzania

Over the past 30 years Tanzania has changed from a socialist to a market-driven economy. The government still owns some of the telecommunications, banking, energy and mining companies but it has encouraged foreign **private investment** in these areas. For example, foreign-owned commercial banks now own 48 per cent of the financial services in Tanzania. This has caused streamlining in the banking services and interest rates have come down. All land in Tanzania is owned by the government and people can rent it for 99 years. Foreign investors would like to buy land but the government is reluctant to sell. This is partly due to the natural resources that lie underground. Large **TNCs** are now responsible for the mining of **minerals** in the country such as gold, copper and silver. This is due to the government's law reforms, which made it easier to invest in the country. Domestic companies make up ten per cent of the mining industry. The recently discovered oil and gas fields are also being developed by foreign companies and are increasing the amount of private investment in the country.

In the past the **IMF**, World Bank and other donors have provided funds to improve the transport infrastructure (rail and ports) in the country. More recently, the government is trying to increase competition in the provision of infrastructure, such as electricity provision, to try and improve the service received. They are also trying to get private investment from domestic companies and TNCs in railways and water supply. Many of the regions of Tanzania have brochures on the internet to inform foreign investors about the great investment opportunities that are available in their regions.

Changes in population structure and life expectancy over the past 30 years in Tanzania

The total population of Tanzania was just over 51 million in 2015, see Figure 10.29. Approximately 70 per cent of the population still lives in rural areas. A large proportion of the population, approximately half, is under the age of 15. This is a large increase over the past 30 years due to the high birth rate, see Figure 10.31.

Life expectancy is improving but is still relatively low. It is very similar to countries at the same level of development. Malaria and diarrhoea are still some of the main reasons for death in the country among children, although the death rate is declining due to an improvement in health care financed by donor countries.

Year	Life expectancy (years)
1985	51
1990	50
1995	50
2000	50
2005	55
2010	59
2015	62

Figure 10.30 Life expectancy Tanzania, 1985 to 2015.

Practise your skills

Draw a line graph for the information given in Figure 10.30.

Current population	51,327,763
Male population (50%)	25,646,418
Female population (50%)	25,681,345
Births this year	1,005,881
Births today	1,906
Deaths this year	372,583
Deaths today	706
Net migration this year	-16,333
Net migration today	-31
Population growth this year	616,965
Population growth today	1,169

Figure 10.29 A population time clock for Tanzania, 24 August 2015.

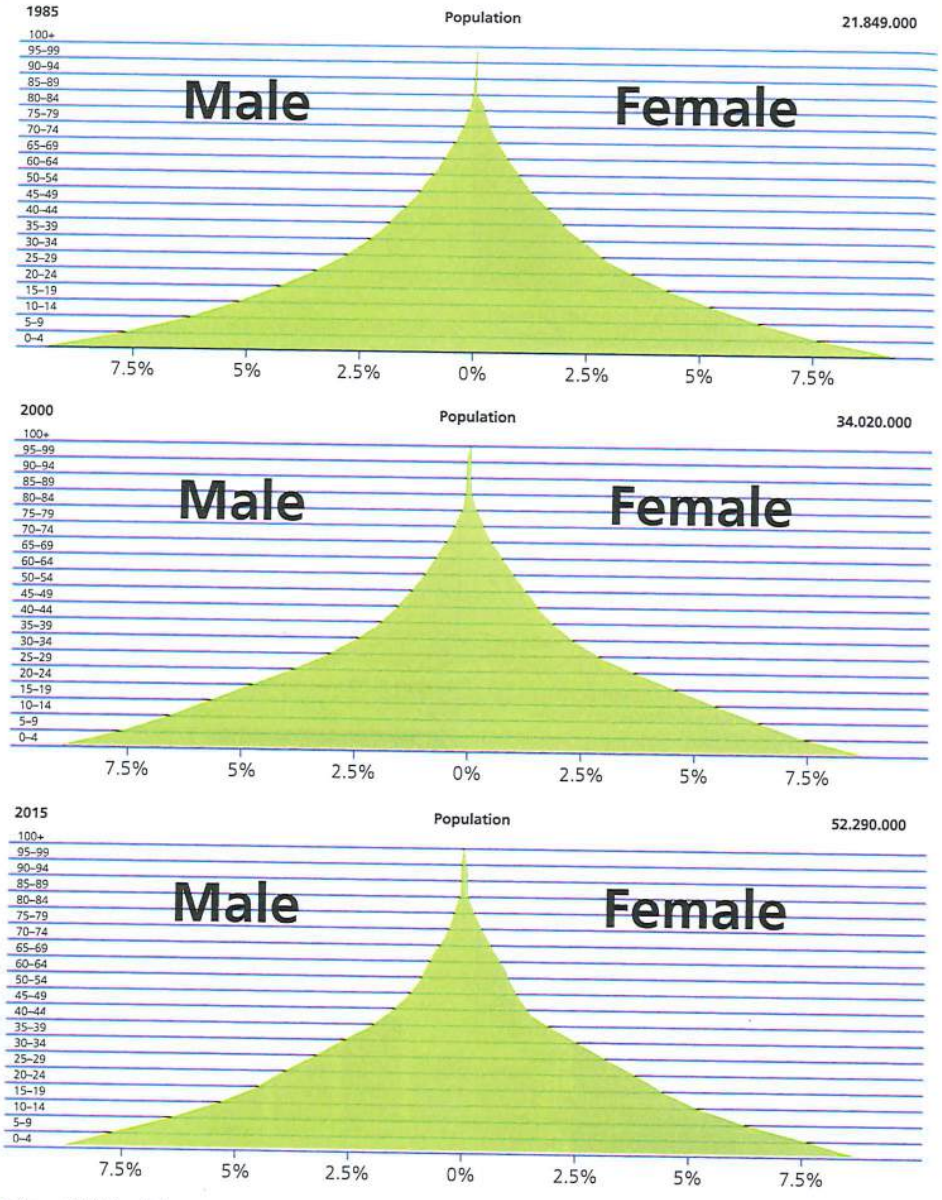


Figure 10.31 Population pyramids for Tanzania in 1985, 2000 and 2015.

Changing social factors in Tanzania

Tanzania has seen a growth in inequality which started to develop with the rich becoming richer and the poor sinking more into poverty. However, the government is trying to address this problem and has achieved one of its goals: the provision of primary education for all.

Inequality and growing middle classes

The economy of Tanzania is growing but the growth is driven by an increase in productivity, not employment. Therefore, a large and increasing number of people are unemployed or underemployed and are failing to improve their lives. If the country is to improve the quality of life of the whole population, it needs to improve employment opportunities and to improve agricultural production. Many young people are moving to urban areas but cannot find work; they work in the informal sector instead, which means that they are still living below the poverty line.

In urban areas of Tanzania a small but growing middle class is developing. Approximately ten per cent of the population, this group is growing both in size and in its demands. They have a lot of political influence and are demanding things such as imported goods, cheaper electricity and better urban services and infrastructure. The government is trying to meet these demands because it does not want to these affluent people to leave the country; however, a strengthening middle class could lead to even greater inequality in Tanzanian society.

Education

Primary education in Tanzania is compulsory but attendance rates are approximately 80 per cent because it is very difficult to enforce school attendance in rural areas. Figure 10.32 shows the rise in literacy levels in the country since 1988.

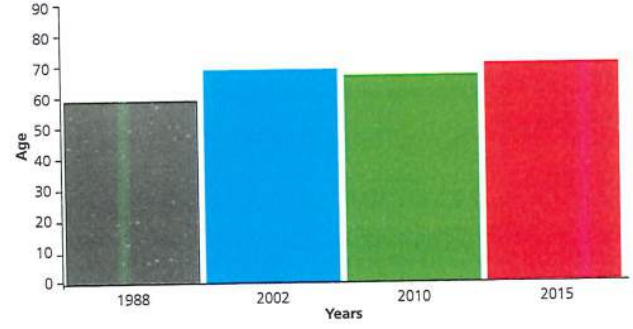


Figure 10.32 Literacy rate for Tanzania for selected years.

Review

By the end of this section you should be able to:

- ✓describe the positive and negative impacts of changes that have occurred in the different sectors (primary, secondary, tertiary and quaternary) of Tanzania's economy
- ✓understand the characteristics of international trade and aid and Tanzania's involvement in both
- ✓explain the changing balance between public investment (by government) and private investment (by TNCs and smaller businesses) for Tanzania
- ✓explain the changes in population structure and life expectancy that have occurred in the past 30 years in Tanzania
- ✓know the changing social factors (increased inequality, growing middle class and improved education) in Tanzania.

ACTIVITIES

1. Study Figure 10.25.
   a) Which good is Tanzania's largest export?
   b) Which goods both supply four per cent of Tanzania's exports?
2. Who owns the land in Tanzania?
3. What is the informal sector of industry?
4. Suggest two reasons why children in rural areas do not attend school.

Extension

Between 1995 and 2000, life expectancy in Tanzania was stable. Since 2000 it has improved greatly. Suggest reasons for these differences.

The impact of changing geopolitics and technology on Tanzania

LEARNING OBJECTIVE

To study the impact of changing geopolitics and technology on Tanzania.

Learning outcomes

- To know how geopolitical relationships with other countries affect Tanzania's development: foreign policy, defence, military pacts, territorial disputes.
- To understand how technology and connectivity support development in different parts of Tanzania and its different groups of people.

KEY TERMS

Geopolitical – the influence of factors such as geography and economics on the politics and foreign policy of a state.

Refugee – a person who has been forced to leave their country in order to escape war, persecution or natural disaster.

The affect of geopolitical relationships on Tanzania's development

Foreign policy and military pacts

A country's foreign policy can be costly depending on the disputes it becomes involved in. Tanzania has never suffered from a civil war but it has been involved in other countries' disputes through foreign policy decisions that, on some occasions, have been costly. For example, the anti-Amin forces in Uganda in 1978 cost the country approximately US$500 million. In the past Tanzania has hosted refugees from neighbouring countries including Mozambique, Burundi and Rwanda, usually in partnership with the United Nations. This again can be a very costly endeavour if a country pays for the refugee camps itself; Tanzania had help from the United Nations.

Tanzania has always had good relationships with its neighbours. In recent years it has held peace talks to try to end the conflict in Burundi. It also supported the Lusaka Agreement to try to end the conflict in the Democratic Republic of the Congo. It has economic pacts with Uganda and Kenya, and is part of the Southern African Development Community.

Defence

The country has a small army, navy and air force. There are 25,000 regular personnel and 80,000 reserves. Their main work is being part of United Nations' peace-keeping missions to countries such as Lebanon and Sudan.

Tanzania has national service but it is only compulsory for people who want to work in government jobs or go to university. It lasts for anything up to two years. People can also volunteer to join the army for three years.

Territorial disputes

Tanzania has always been on good terms with its neighbours; however, there is an ongoing dispute with Malawi over the ownership of Lake Nyasa. The lake covers 30,000 sq km and, according to Malawi, was given to Malawi in the 1980 Heligoland–Zanzibar Treaty between Germany and the UK. Tanzania argues that the boundary between the two countries is in the middle of the lake. This means that Tanzania owns half of the lake and Malawi the other half. The dispute has been going on for years but was restarted in 2012 when Malawi gave a British company the right for oil exploration in the lake; the dispute has not been solved to date.

How does technology and connectivity support development in Tanzania and for different groups of people in the country?

The government of Tanzania has invested money to produce an ICT network for the whole country. The coverage of the network can be seen in Figure 10.33.

It will provide the necessary fibre cables for other network providers, such as mobile phone companies and broadband suppliers, to supply people in their homes. The network links to the cables come up from the sea bed in Dar es Salaam. It is hoped that the network will also link landlocked countries such as Uganda and Malawi to superfast fibre optic broadband.

Mobile usage in Tanzania has increased greatly over the last decade, with nearly 60 per cent of the population having mobile phones and many of them using the internet via their mobiles.

The use of the internet generally is lower, with about ten per cent of the population being connected, but the government sees connectivity as one of the main drivers of development and is ensuring that the infrastructure is in place.

Figure 10.33 Tanzania's broadband network.

Review

By the end of this section you should be able to:

- ✓describe how geopolitical relationships with other countries have had an impact on Tanzania's development: foreign policy, defence, military pacts, territorial disputes
- ✓understand how technology and connectivity support development in different parts of Tanzania and for different groups of people.

ACTIVITIES

1. Name one country with which Tanzania has had a border dispute.
2. Tanzania has helped refugees from a number of countries. Name two of these countries and research why the people took refuge in Tanzania.
3. What has been the impact of the introduction of the ICT backbone to Tanzania?

Extension

How is the government of Tanzania hoping to use connectivity to help develop the country?

There are positive and negative impacts of rapid development for the people and environment of Tanzania

LEARNING OBJECTIVE

To study the positive and negative impacts of rapid development for the people and environment of Tanzania.

Learning outcomes

- To know the positive and negative social, economic and environmental impacts of rapid development for Tanzania and its people.
- To understand how the government and people of Tanzania are managing the impacts of its rapid development to improve quality of life and its global status.

The positive and negative social, economic and environmental impacts of rapid development for Tanzania and its people

The development of Tanzania over the past 50 years has been steady but slow. Since the 1980s, however, great efforts have been made to improve the lives of poorer Tanzanians.

How are Tanzania's government and people managing the impacts of rapid development to improve quality of life and its global status?

Tanzania has for many years received vast amounts in aid from donor countries. It has used this money to provide primary education for all and to improve the country's infrastructure. However, even in urban areas 66 per cent of the population still lack access to piped drinking water, with the figure for proper sanitation being approximately 12 per cent. Some of these problems have been caused by rapid population growth but, if the country is to develop, the government must deal with these problems.

	Positive	Negative
Social	Improvement in life expectancy. Improvement in supplies of fresh drinking water and sanitation; 62% of the population now have supplied water and sanitation. All children have access to primary schools and attendance is above 80%.	Some rural areas are not benefited from improvements at all. In 2012, 28% of the population still lived below the poverty line. Because of the rapid expansion in schools teaching standards are low; 60% of students failed the secondary school leavers' exam in 2012. Health care is still poor with approximately 40% of the jobs not filled because of a lack of health care professionals in the country.
Economic	Improvements in GDP for the country. Foreign investment in the country is improving. Strong banking, financial and telecommunication sectors.	There is still inequality between regions. There are indications that there is still a large divide between rich and poor. In 2012 the richest 20% of the population accounted for 42% of total consumption, whereas the poorest 20% consumed only 7%.
Environmental	Electricity has been introduced to rural areas using bottom-up schemes; deforestation will slow down as less wood is used for fuel. Proper irrigation schemes using appropriate technology will allow the farmers to use their land more efficiently and stop overgrazing.	Gold mining causes problems of toxins leaking into water courses. Quarries are left as scars on the landscape. Deforestation due to rises in population numbers and the use of wood fuel for domestic purposes. Deforestation leads to loss of habitats and biodiversity. Overgrazing of farms in dry years is also a problem.

Figure 10.34 Impacts of development on Tanzania.

The quality of life in Tanzania has not really improved for the majority of the population, who still live in rural areas and work in agriculture. The government is trying to help in these areas but development is slow and quality of life for the majority is not really improving. Over the next five years the government has pledged to put more money into helping the rural poor and improving the quality of life for people living in these areas by directing aid money into appropriate technology projects.

Tanzania's status in the global community is in some ways above that of its neighbours as it has never had a civil war and it has helped the UN on a number of occasions with refugees from countries that have internal problems.

On the corruption index on page 152, Tanzania is 119 out of the 174 countries listed – well below other countries at the same stage of development. However, big scandal broke out in the Energy Department in 2014. It was alleged that government officials were taking money and all aid was suspended for a number of months until the situation was sorted out.

KEY TERMS

Overgrazing – grass that is grazed so heavily that the vegetation is damaged and the ground becomes liable to erosion.

Deforestation – the cutting down and removal of all or most of the trees in a forested area.

Review

By the end of this section you should be able to:

- ✓describe the positive and negative social, economic and environmental impacts of rapid development for Tanzania and its people
- ✓understand how Tanzania's government and people are managing the impacts of its rapid development to improve quality of life and its global status.

ACTIVITIES

1. State one social and one economic negative impact of development in Tanzania.
2. Describe the positive and negative environmental impacts of development in Tanzania.
3. Explain how the government is trying to manage poverty in rural areas.

Extension

How successful has the Tanzanian government been in improving the quality of life for its population?

Examination-style questions

1. Define the term Human Development Index. (1 mark)
2. State **two** components of the HDI. (2 marks)
3. Figure 10.17 describes the Three Gorges Dam project. (2 marks)
   State which **two** statements below best describe the project.
   - A The project is based on intermediate technology.
   - B Local people are in charge of the project.
   - C The government is in charge of the project.
   - D The project has limited environment impact.
   - E A large amount of money was borrowed to pay for the project.
4. a) Define what is meant by the term 'bottom-up project'. (2 marks)
   b) Explain **one** advantage and **one** disadvantage of this type of development. (4 marks)
5. Explain changes to life expectancy in Tanzania over the last 30 years. (4 marks)
6. Describe the changes shown on Figure 10.32. (3 marks)
7. Explain the negative environmental impacts of rapid development for Tanzania. (4 marks)
8. Assess the place of technology and connectivity on the development of Tanzania. (8 marks)

Total: 30 marks

11 Resource Management

LEARNING OBJECTIVE

To study how a natural resource can be any feature or part of the environment that can be used to meet human needs.

Learning outcomes

- To know that natural resources can be defined and classified in different ways.
- To understand the ways in which people exploit environments in order to obtain water, food and energy.
- To know how environments are changed by this exploitation.

KEY TERMS

Biotic factors – the living organisms found in an area.

Abiotic factors – the physical, non-living environment, such as water, wind, oxygen.

Renewable energy – energy that comes from sources that can be reused or replenished and therefore will not run out.

Non-renewable energy – energy sources that, once they have been used, can never be used again.

Exploitation – the use of a resource in a non-sustainable way.

Overgrazing – rearing too many animals on land so that the roots of the vegetation are eaten. This means that the plants cannot regrow, leaving the soil bare.

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

Natural resources can be defined and classified in different ways

Biotic factors are all the living things that are found in an area, whereas the **abiotic** factors are all the non-living things in an area, such water, wind and oxygen. If a natural resource is **renewable** it means that it can be used again and will not run out, for example the Sun or water. If a natural resource is **non-renewable** it means that it is finite in its supply. This means that there is a limit on the supply of the resource, for example coal.

The ways in which people exploit and change environments in order to obtain water, food and energy

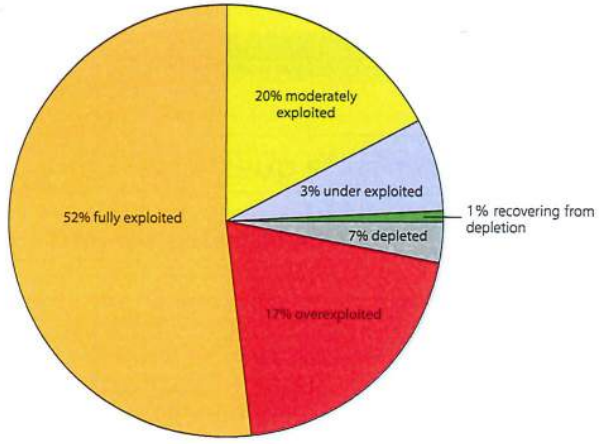


Figure 11.1 General situation of the world's fish stocks.

	Exploitation	Changes
Water	Fresh water is an essential resource that is needed for people to survive. As the number of people in the world continues to increase, the need for water will also increase. Water is used for many things including drinking, washing and producing manufactured goods. In many countries it is not these uses that exploit water but the *misuse* of water sources, for example the extraction of minerals.	Some of the water we use comes from ground water sources. In many countries, including the UK, ground water is being used faster than it can be replenished by rain. This causes problems for plants and animals, and could cause a decrease in biodiversity in certain areas. When minerals are extracted, toxic by-products can be washed into rivers causing a decrease in the water quality of the water used for human consumption in the area. In many countries rivers are used for the disposal of sewage. In some cases the sewage is untreated before being put in the river.
Food	Farming – the land has been used to produce food for thousands of years; however, with increased population numbers in many countries, farming land is being overgrazed. Over the past 40 years forests in tropical countries have been cleared to make way for farming such as cattle ranching in the Amazon and palm oil production in Malaysia. Fishing – people take fish for food from the oceans. This has led to overfishing in many areas due to the demand being so great that the fish stocks cannot replenish themselves.	If land is overgrazed the bare soil is left exposed to the weather. The rain and wind can cause the soil to be eroded and either washed or blown away. Many tropical rainforests have suffered from deforestation. The trees have been felled to make way for farming. However, the land is only fertile for a few years. It is then left to be eroded by the heavy rains that fall each day. Overfishing has lead to a reduction of biodiversity in the oceans. As the ocean is a balanced ecosystem, if some fish species are reduced it has an impact on the whole ecosystem.
Energy	The extraction of fossil fuels to produce energy can cause a number of problems. Fossil fuels such as coal, oil and natural gas have been exploited for the energy they provide. The reserves of oil and natural gas have been dramatically reduced because of this exploitation, although there are still large reserves of coal.	The extraction and production of energy from fossil fuels can cause a reduction in air quality because of the gases that it produces, such as sulphur dioxide, carbon dioxide and carbon monoxide. Burning of coal to produce energy in the UK has caused acid rain to fall in Norway and Sweden. Trees in forests have died, resulting in a reduction in biodiversity.

Figure 11.2 Changes caused by the exploitation of resources.

Figure 11.3 Deforestation in Malaysia: forest being cleared for palm oil production.

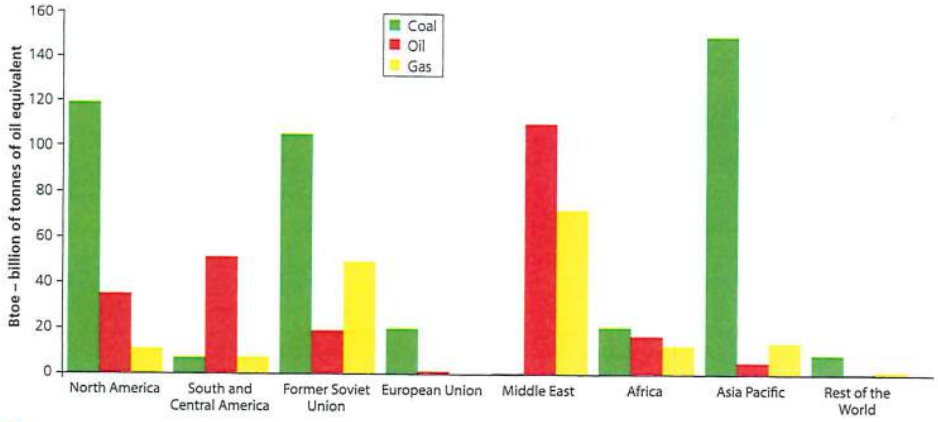


Figure 11.4 Breakdown of fossil fuel reserves per geographical region, December 2012.

Type of fossil fuel	Percentage
Gas	20
Coal	51
Oil	29

Figure 11.5 The world's reserves of fossil fuels, December 2012.

Practise your skills

Draw a pie for the information diagram in Figure 11.5.

Review

By the end of this section you should be able to:

- ✓understand that natural resources can be defined and classified in different ways
- ✓understand the ways in which people exploit environments in order to obtain water, food and energy
- ✓know how environments are changed by this exploitation.

ACTIVITIES

1 Copy and complete the following table by adding two examples of each type of natural resource. Try not to use the ones mentioned in the text.

	Abiotic	Biotic	Renewable	Non-renewable
Example 1				
Example 2				

2 What is the difference between a renewable and a non-renewable resource?

3 Study Figure 11.1. What do you think is meant by the terms 'fully exploited', 'overexploited', 'moderately exploited' and 'depleted'?

4 What is the percentage of fish stocks that are fully and overexploited?

5 Describe how people exploiting environments for food can cause deforestation.

Extension

Explain how soil erosion has been caused by world population growth.

KEY TERMS

Fossil fuel – a naturally occurring fuel such as coal, oil and natural gas (methane) formed from the remains of dead organisms over millions of years.

Natural resources – materials that are provided by the Earth that people make into something that they can use.

Distribution – how something is shared out or spread across an area.

Arable farming – growing of cereal crops.

Pastoral farming – the rearing of sheep, cattle, pigs or any other animals on a farm.

Mixed farming – a farm which has cereal crops and animals.

Onshore oilfield – oil drilled on land.

Offshore oilfield – oil drilled from under the sea.

The patterns of distribution and consumption of natural resources vary on both a global and national scale

LEARNING OBJECTIVE

To study how the patterns of distribution and consumption of natural resources varies on both a global and national scale.

Learning outcomes

- To be able to describe the global variety and distribution of natural resources.
- To be able to describe the variety and distribution of natural resources in the UK.
- To understand global patterns of usage and consumption of food, energy and water.

The global variety and distribution of natural resources

The world provides a vast quantity of different resources which people use to provide food and other useful products. The **distribution** of these resources at a global scale can be displayed using maps; the UK will be dealt with later in this chapter.

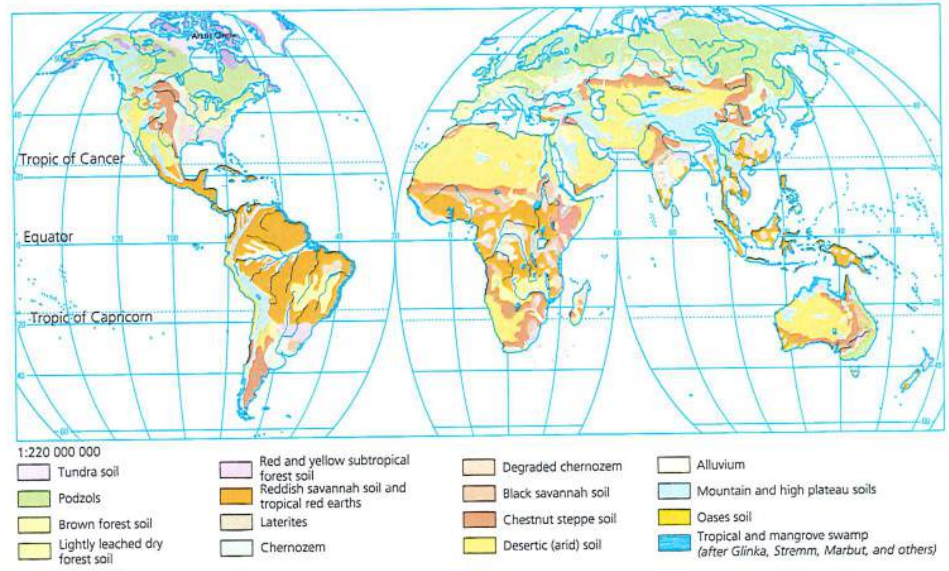
Soil and agriculture

Soil regions of the world are shown on Figure 11.6. They are in very broad sweeping bands across countries and continents. The type of soil also relates to the climate and vegetation of the area. Some soils, such as chernozems and brown forest soils, are fertile and correspond with areas of high agriculture production, whereas other soils are less fertile. Agriculture in these areas is less productive.

Forestry

Forestry on a global scale is concentrated in certain areas. Figure 11.7 shows the countries which produce at least five per cent of the world's wood production. These countries include Canada, Brazil and the USA. Most other countries have their own forestry industry but it is too small to be incorporated on to the global map.

Figure 11.6 Global soil regions.



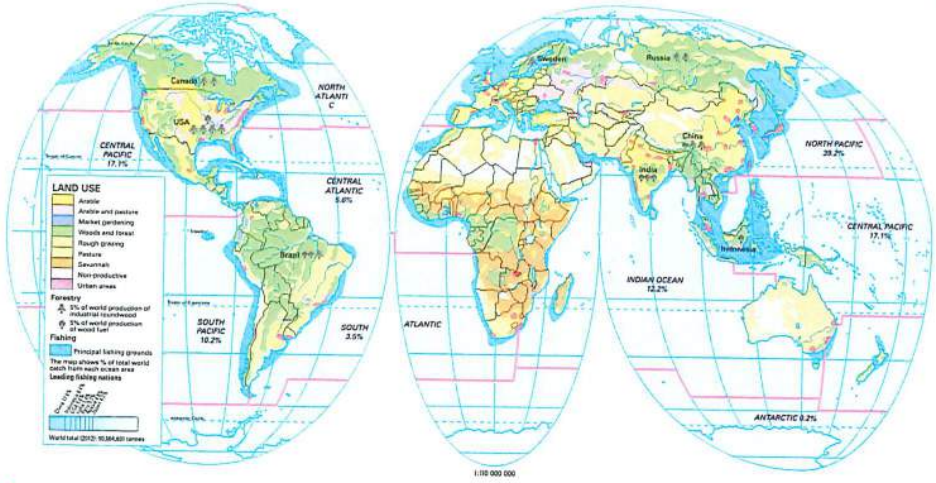


Figure 11.7 Global land use and forestry.

Fossil fuels

Fossil fuel reserves for the world are shown on Figure 11.8. The countries that have the most oil reserves are Venezuela, Saudi Arabia and Canada. The countries with the highest gas reserves are Russia, Iran and Qatar. The USA has the highest reserves of coal left in the world although Russia and China also have vast reserves.

Rock and minerals

Rocks can be igneous, sedimentary or metamorphic and are distributed around the globe. These main categories can be broken down into hundreds of different types of rocks. How these rocks form is described in Chapter 1, pages 2–7. The most common rock type on the surface of the Earth is sedimentary. This layer of rock is very thin and goes about 2 km down into the crust. Below this level the most common rocks are igneous and metamorphic, although some sedimentary rocks occur here as well.

Minerals are distributed across the world, although some are concentrated on certain continents; for example, diamonds are found in Sub-Saharan Africa, Russia and Australia but have not yet been discovered on other continents. Other minerals, such as iron ore, are distributed on all continents except Africa. The spread and availability of minerals has an impact on their price. Due to their rarity, diamonds are much more expensive than iron ore, which is much more abundant.

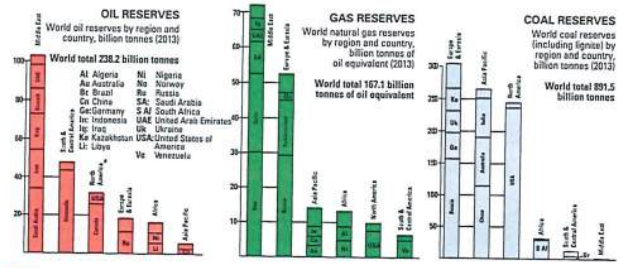


Figure 11.8 Global fossil fuel reserves.

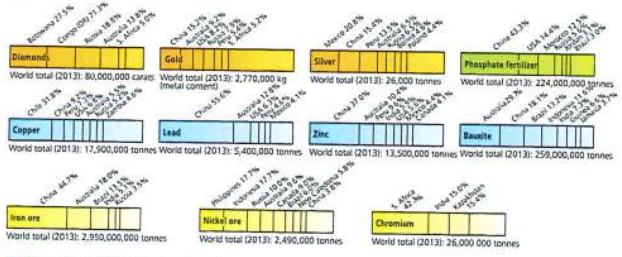


Figure 11.9 Mineral production.

Water supply

The water that is used for human consumption is from rainfall, rivers, ground sources and, in some cases now, from the sea (see Chapter 13). However, the concern is that there will not be enough water for a global population expected to reach eight billion by 2025. In some countries expensive water transfer schemes have already been built because the available water supply is not where the majority of the people live. The availability of fresh water is becoming a major concern for many countries in the world.

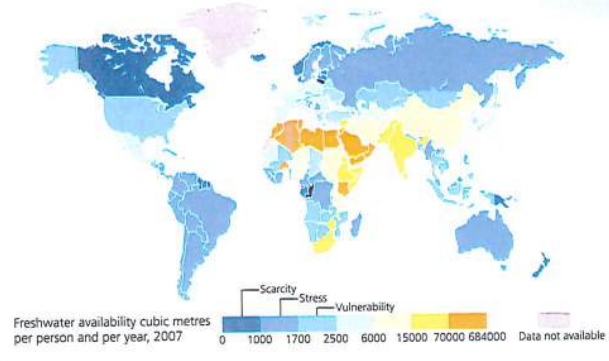


Figure 11.10 Global availability of fresh water, 2008.

The variety and distribution of natural resources in the UK

The UK has been using resources from the land and sea since early human occupation. As industrial processes developed, so did the technology to find uses for the different resources that were found within its shores.

Soil and agriculture

The UK has varied soils, many of which are very fertile. This means that farmers in the UK have a wide choice of crops or animals that they can farm. A map of the soil types can be seen in Figure 11.11. Many different kinds of **arable** and **pastoral farming** are practised, as can be seen in Figure 11.12. Some farmers have also started to grow vines and British wine is now being produced in Kent, Sussex and Devon. In Cornwall farmers have even begun to grow and make British tea.

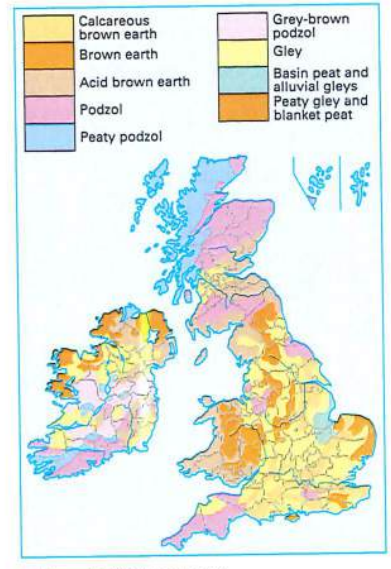


Figure 11.11 Soils of the UK.

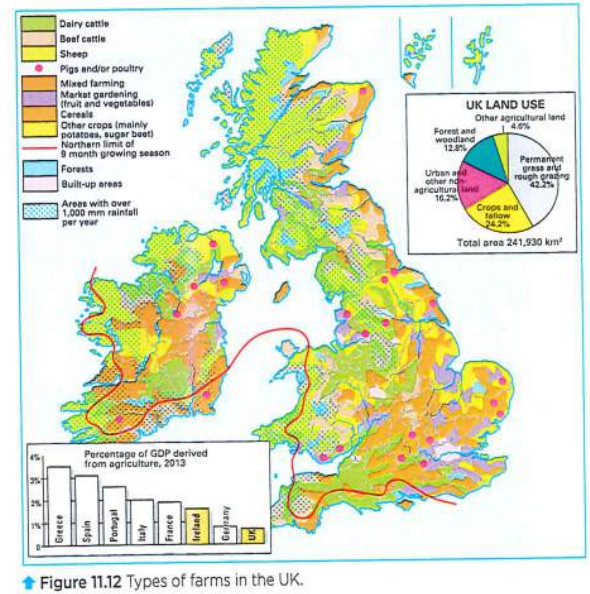


Figure 11.12 Types of farms in the UK.

Forestry

Woodlands are distributed across the UK. Some of the woods are in private ownership and others are owned by the Forestry Commission. The Forestry Commission was set up because of the vast amount of deforestation that had occurred in the UK during the First World War. The country now has a forestry industry which employs approximately 800,000 people. It makes up approximately 2.5 per cent of the British economy. Forestry is concentrated more in the north and the west of the country where the land and climate is less agreeable and therefore more difficult to farm.

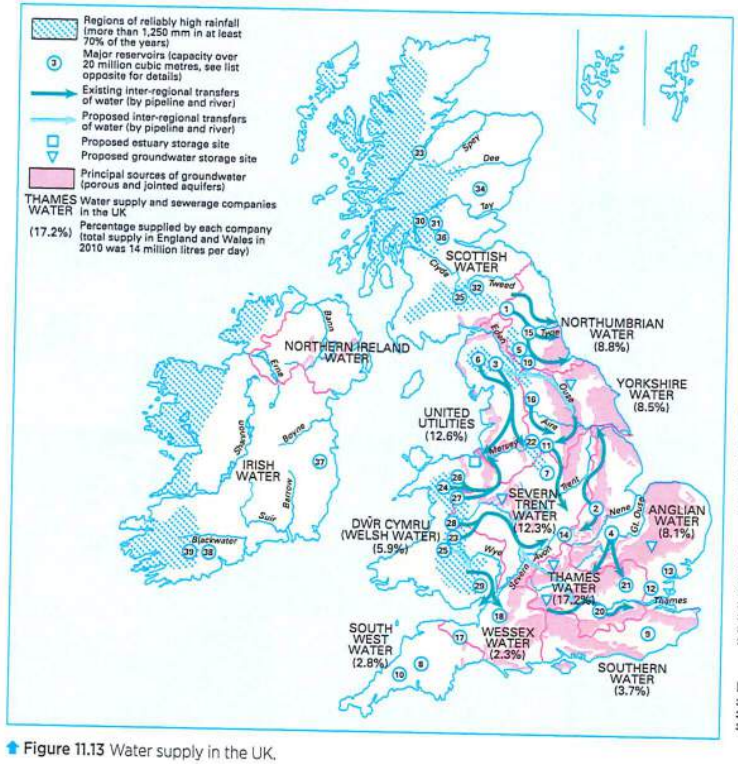
Fossil fuels

Fuels such as coal, oil and gas are all found in the UK. Coal has been mined in the country for hundreds of years and was the first source of fuel to power steam engines. The coal reserves in the UK were vast but most were a long way below ground. Coal was found in South Wales, Kent and the Midlands (Staffordshire, Yorkshire, Derbyshire, Nottinghamshire). Coal reserves were also mined in Northumberland and Durham, Scotland and Northern Ireland. Today the coal industry in the UK is very small and concentrates mainly on extracting coal from the surface, known as open-cast mining.

Oil and gas have more recently been discovered under the North Sea. The UK has one **onshore oilfield** at Wytch Farm on Poole Harbour.

Water supply

Although there is a plentiful supply of rainfall in the UK (see Chapter 13), it doesn't tend to fall in the places that have the highest concentration of population. This means that certain areas of the UK can become short of water in the summer when demand is high, especially if there has been a dry spring.



MAJOR RESERVOIRS
(with capacity in million m³)

England

1	Kielder Reservoir	198
2	Rutland Water	123
3	Haweswater	85
4	Grafham Water	59
5	Cow Green Reservoir	41
6	Thirlmere	41
7	Carsington Reservoir	36
8	Roadford Reservoir	35
9	Bewl Water Reservoir	31
10	Colliford Lake	29
11	Ladybower Reservoir	28
12	Hanningfield Reservoir	27
13	Abberton Reservoir	25
14	Draycote Water	23
15	Derwent Reservoir	22
16	Grimwith Reservoir	22
17	Wimbleball Lake	21
18	Chew Valley Lake	20
19	Baldorhead Reservoir	20
20	Thames Valley (linked reservoirs)	
21	Lea Valley (linked reservoirs)	
22	Longendale (linked reservoirs)	

Wales

23	Elan Valley	99
24	Llyn Celyn	74
25	Llyn Brianne	62
26	Llyn Brenig	60
27	Llyn Vyrnwy	60
28	Llyn Clywedog	48
29	Llandegfedd Reservoir	22

Scotland

30	Loch Lomond	86
31	Loch Katrine	64
32	Megget Reservoir	64
33	Loch Ness	26
34	Blackwater Reservoir	25
35	Daer Reservoir	23
36	Carron Valley Reservoir	21

Ireland

37	Poulaphouca Reservoir	168
38	Inishcarra Reservoir	57
39	Carrigadrohid Reservoir	33

Figure 11.13 Water supply in the UK.

Rock and minerals

The UK has varied rock types, which have already been discussed in Chapter 1. Figure 1.7a on page 5 is a map of the location of the main UK soil types. Other major rock types in the UK are clay and limestone.

The UK has a variety of minerals. They are used in construction to build houses and roads, as well as in industry, agriculture and horticulture. In 2013, 195 million tonnes of minerals were extracted from the UK landmass, which can be broken down into the following main categories:

- construction minerals 157 million tonnes
- industrial minerals 24.6 million tonnes
- fossil fuels 13.9 million tonnes.

Another 90.1 million tonnes of minerals were also extracted from under the sea (oil, gas, sand and gravel). The British Geological Survey website has an interactive map that gives information about the location of the mineral extraction industry (www.bgs.ac.uk/mineralsuk/maps/maps.html).

Understanding global patterns of usage and consumption of food, energy and water

Food consumption

Developed countries have the highest levels of food consumption, with much of Europe being in this category. Developing countries have the lowest levels of food consumption per person, for example some countries in Sub-Saharan Africa.

Practise your skills

Study Figure 11.14. You may need an atlas to help you answer these questions.

1. Which country in Sub-Saharan Africa has a food consumption per person of 3,000–3,500 calories a day?
2. Which country in Asia has a food consumption per person of under 2,000 calories a day?
3. a) What is the food consumption per day for the UK?
   b) Is there anything surprising about this figure?
4. Name a country in Asia with a food consumption of over 3,500 calories per person per day.

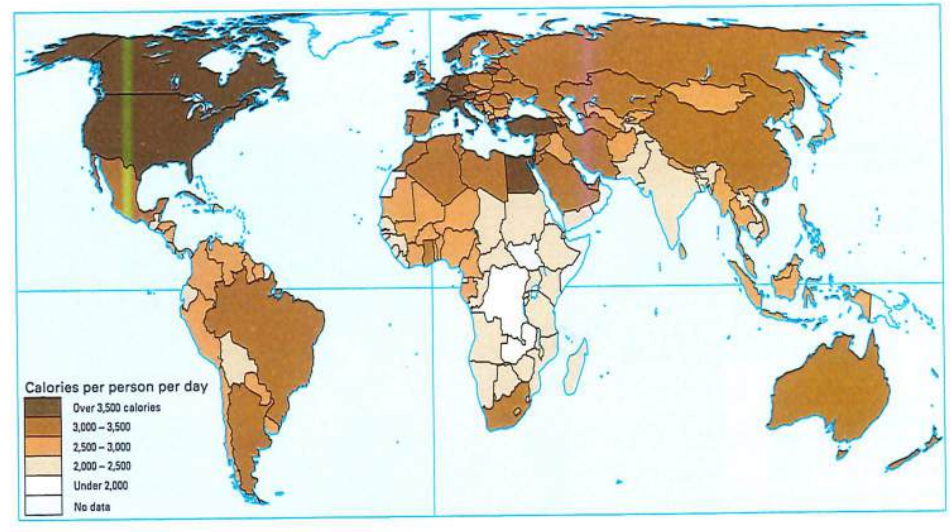


Figure 11.14 Daily food consumption, 2014.

Practise your skills

Study Figures 11.14 on page 183 and 11.15 on this page.

1. Which continent has the highest levels of energy consumption?
2. Which continent has the highest levels of food consumption?
3. Which continent has the lowest levels of energy consumption?
4. Which continent has the lowest levels of food consumption?
5. Comment on your answers to the questions above.

Energy usage

The amount of energy used by a country depends on many factors; one of these is the level of development of the country. Developed countries have a much higher demand for energy than developing countries; figures relating to this can be seen in Chapter 12. Emerging countries use large amounts of energy to power their developing industries. The demand for energy throughout the world continues to increase.

Water usage

The amount of water used varies greatly between different countries in the world. It also varies with the level of development of a country. The map in Figure 11.16 shows the amount of water that is available to be used in each country. The demand for water is dealt with in more detail in Chapter 13.

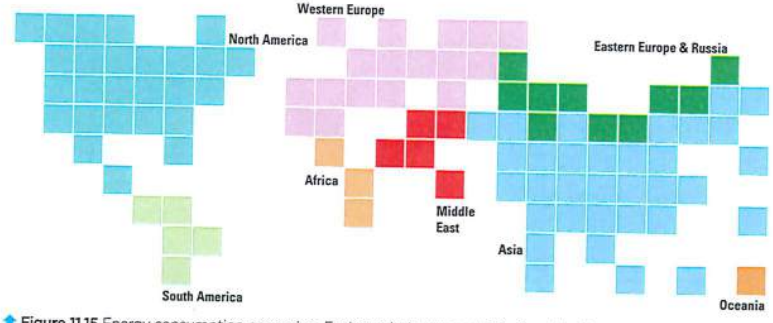


Figure 11.15 Energy consumption per region. Each symbol represents 1% of world primary energy consumption.

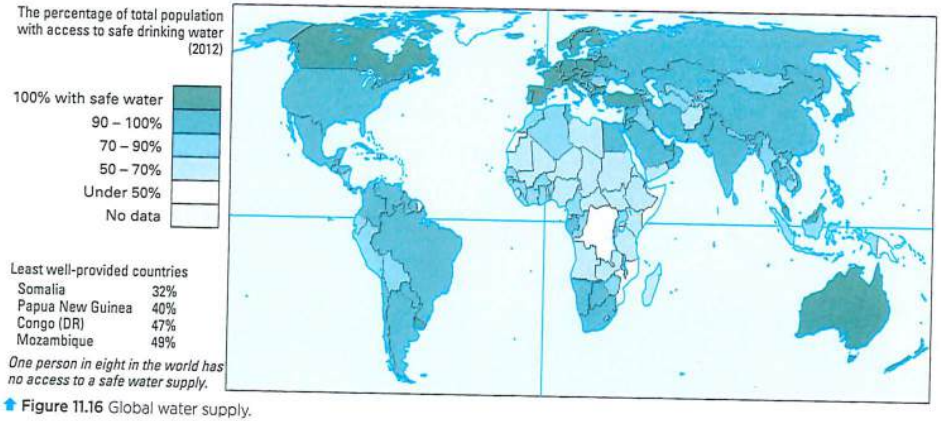


Figure 11.16 Global water supply.

Review

By the end of this section you should be able to:

- ✓describe the global variety and distribution of natural resources
- ✓describe the variety and distribution of natural resources in the UK
- ✓understand global patterns of usage and consumption of food, energy and water.

ACTIVITIES

1. Name the countries on Figure 11.7 on page 180 that have at least five per cent of the world's production of industrial roundwood.
2. Study Figure 11.6 and Figure 11.7 on pages 179–80.
   a) Copy and complete the following table by adding a type of farming for each of the soil types in the table.

	Podzol	Chestnut steppe soil	Chernozem	Mountain and high plateau
Type of land use				

   b) Which area of the UK has the most arable farms? Give a reason for your answer.

Extension

Study Figure 11.12 on page 181. Explain the pattern of farming types shown on the map. (Hint: refer to climate and relief in your answer.)

Examination-style questions

1. a) Define the term 'biotic resource'? (1 mark)
   b) Name **one** biotic resource. (1 mark)
2. State which of the following is not a fossil fuel.
   A coal B oil C wind D gas (1 mark)
3. Study Figure 11.15 on page 184. Calculate the difference between the percentage of energy consumed by North America and the percentage consumed by Africa.
   A 20% B 26% C 3% D 23% (1 mark)
4. Suggest **one** reason for this difference. (2 marks)
5. Suggest reasons why developed countries consume more energy than developing countries. (4 marks)

Total: 10 marks

13 Water Resource Management

LEARNING OBJECTIVE

To study how fresh water supply varies globally.

Learning outcomes

- To know the global distribution of fresh water.
- To understand how the availability of fresh water varies on a global, national and local scale.
- To know why some parts of the world have a water surplus and others a water deficit.
- To know how and why the supply and demand for water has changed in the past 50 years due to human intervention.

KEY TERMS

Fresh water – water that contains less than 1,000 milligrams per litre of dissolved solids, most often salt.

Physical water scarcity – term that applies to dry, arid regions where fresh water naturally occurs in low quantities.

Economic water scarcity – that applies to areas that lack the capital or human power to invest in water sources and meet local demand; water is often available for people who can pay for it but not for the poor.

Water deficit – water demand exceeds water supply.

Water surplus – when water supply exceeds water demand.

Evapotranspiration – the movement of water from the Earth, by evaporation and plant transpiration, to the atmosphere.

Fresh water supply varies globally

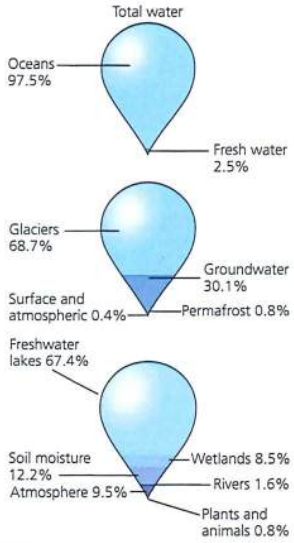


Figure 13.1 The amount of water in the world.

The availability of fresh water varies on a global, national and local scale

The availability of **fresh water** is the amount of fresh water that can be easily accessed for human consumption, whether it is for domestic, industrial or agricultural use. One way of looking at this availability is to look at how the amount of rainfall varies between regions of the world. Figure 13.2 shows that rainfall totals vary globally and nationally. This will inevitably lead to variations in the amount of fresh water available. Variations on a local level are discussed on pages 210–11 when the availability of fresh water in the UK is looked at in more detail.

Another factor that restricts the amount of fresh water available is the fact that much of the water is away from the main concentrations of population. It has been estimated that the amount of fresh water available for human consumption is between 12,500 km³ and 14,000 km³ a year.

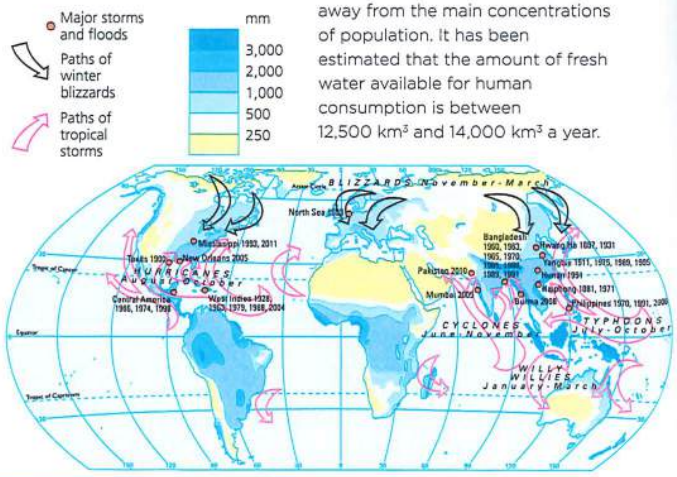


Figure 13.2 Global annual precipitation.

Why do some parts of the world have a water surplus and others a water deficit?

A number of factors affect whether a region has too much or too little water. A region can have a physical **surplus** or **deficit**. This relates to the amount of rainfall that a region receives. Another factor is the **evapotranspiration** rate. Some regions with a reasonable amount of rainfall have very high evapotranspiration rates; this means that high temperatures will quickly turn the water back into a vapour, which rises back into the atmosphere. The water does not have time to enter water sources that make it available for human consumption.

A region can have an economic surplus or deficit. This relates to whether the government of an area can afford to provide water supply to the population. In developed countries the population has access to fresh water through the water supply system. This can lead to a water deficit if the available water is not used wisely. In developing and emerging countries the fresh water supply may be in surplus because the majority of the population does not have access to it due to **economic water scarcity**. Figure 13.3 shows the areas of the world that have a water surplus and those that have a water deficit.

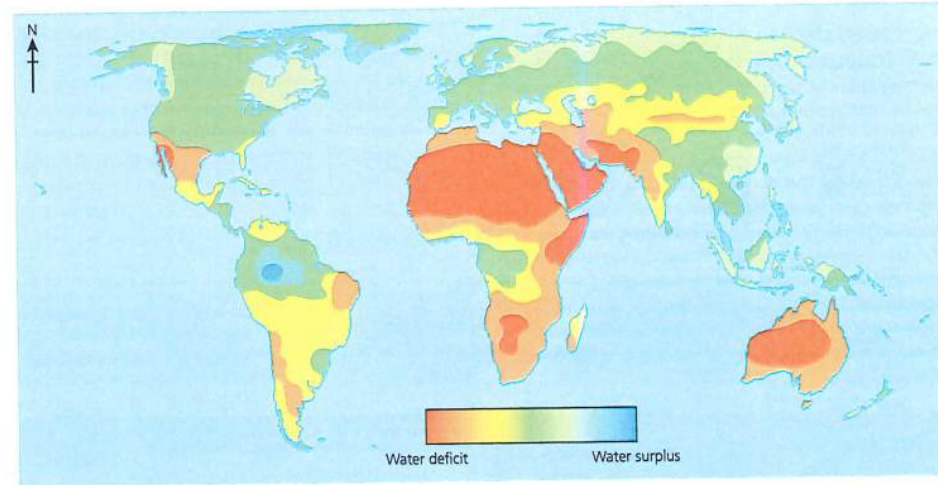


Figure 13.3 Map of water surplus and water deficit.

How and why has the supply and demand for water changed in the past 50 years due to human intervention?

Water supply

Emerging or developing countries

The supply of piped fresh drinking water to households in many emerging or developing countries has increased in the past 50 years. This has been carried out by many charitable organisations, such as Water Aid UK, who have given people the means to provide themselves with drinking water as well as by organisations such as the World Health Organization. According to their estimates, 2.3 billion people gained access to improved drinking water between 1990 and 2012. But in 2012, eleven per cent of the global population still did not have access to clean drinking water. By 2015 the figure was down to 8 per cent.

Developed countries

The supply of fresh water to households in developed countries has changed little over the past 50 years due to human interventions. Although the variations in rainfall totals have had an impact on the amount of fresh water available in some developed countries.

Water demand

There has been an increase in the demand for water globally for a number of reasons:

- an increase in manufacturing industry in developing and emerging countries
- an increase in thermal electricity generation
- an increase in domestic use
- an increase in meat production; meat production uses eight to ten times more water than cereal production
- an increase in water for irrigation
- it takes an average 3,000 litres of water to produce one person's daily food intake, and the population of the world continues to grow.

Increased demand from emerging or developing countries

As the supply of piped fresh water has improved to households in these countries, then the demand for water has also increased. This means that the country is using its fresh water which in the past it did not have access to. This could possibly create water shortages. For example, in China fresh water has been supplied to many households over the past 50 years. This has caused an increase in demand in areas of the country that has less rainfall because this is where the population lives. The Chinese have started to build large water transfer schemes to deal with the surplus of water in some areas of the country and the deficit of water in others.

Increased demand from developed countries

As developed countries have become wealthier, the demand for water has increased. This is due a number of factors:

- Technological advances: dishwashers and washing machines use much more water than washing dishes and clothes by hand. The average dishwasher uses 3,000 litres of water a year.
- Changes to personal hygiene: 50 years ago houses did not all have bathrooms; many houses now have more than one bathroom. Many people now shower or bathe every day, which has caused a large increase in demand for water.
- Sport has increased: golf, for example, uses large amounts of water to keep the course green in some parts of the world.
- Leisure has increased: the building of swimming pools in people's gardens has increased, particularly in hot countries like Spain. Many more hotels have developed around the world, all with pools to cater for tourists.

Review

By the end of this section you should be able to:

- ✓describe the global distribution of fresh water
- ✓understand how the availability of fresh water varies on a global, national and local scale
- ✓know why some parts of the world have a water surplus and other a water deficit
- ✓know how and why the supply and demand for water has changed in the past 50 years due to human intervention.

ACTIVITIES

1. Describe the global distribution of water. Use Figure 13.1 on page 204 in your answer.
2. How much fresh water is there in the world?
3. How has the supply of fresh water changed in developing and emerging countries?
4. State three reasons why the demand for water has increased in developed countries over the past 50 years.

Extension

Compare the annual precipitation map in Figure 13.2 with that of water surplus and water deficit in Figure 13.3.

Differences between the water consumption patterns of developing countries and developed countries

LEARNING OBJECTIVE

To study the differences between the water consumption patterns of developing countries and developed countries.

Learning outcomes

- To know the proportion of water used by agriculture, industry and domestically in developed countries and emerging or developing countries.
- To understand why there are differences in water usage between developed and emerging or developing countries.

KEY TERMS

Agricultural usage – water used by farmers to water their crops or animals.

Industrial usage – use of water by factories or the companies that produce energy; it also applies to water used in offices and schools.

Domestic usage – use of water by households

Practise your skills

1. Draw pie charts for the data in Figure 13.4.
2. Compare the water usage for agriculture, domestic and industry shown on Figure 13.5.

The proportion of water used by agriculture, industry and domestically in developed countries and emerging or developing countries

Use	World (%)	Developed (%)	Developing (%)
Agriculture	70	30	82
Industry	22	59	10
Domestic	8	11	8

Figure 13.4 World water usage.

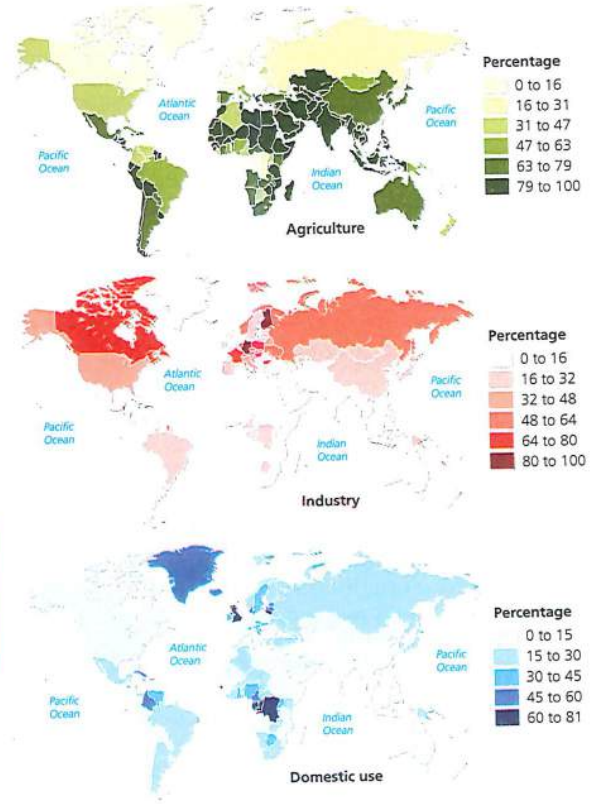


Figure 13.5 Agriculture, domestic and industry water usage in 2000.

The amount of water used for agriculture (farming), domestic and industry varies greatly around the world. These variations are shown in Figure 13.5 on page 207. In more developed countries **water usage** for industry is higher than for agriculture, whereas in developing countries the amount of water used for agriculture is higher than for domestic uses.

Region	Water used daily per person (litres)
USA	400
UK	200
United Nations (recommended minimum)	50
Nigeria	40
Ethiopia	25

Figure 13.6 Global daily water usage.

Why are there differences in water usage between developed and emerging or developing countries?

Agriculture

The amount of water used in agriculture is related to the type of farming being practised, the rainfall in the area and the state of development of the country. Developed countries where rainfall is low use **irrigation** systems, which require a lot of water. An automatic spray system can use 75 litres of water per second. They do not have the same technology in developing countries so the usage closer to 2 litres a second.

Figure 13.7 Developed world irrigation system.

Industry

Industry's use of water in developed countries is on a large scale, with companies using millions of litres of water. For example, Walkers Crisps use 700 million litres of water a year at their factory in Leicester although 42% is recycled. In developing countries the industry is more small scale with most businesses run from home or small self build units. These **cottage industries** use much less water. However, due to large multinational companies moving their production to emerging and developing countries the percentage of water usage for industry in these areas will increase rapidly. It takes 3 litres of water to produce 1 litre of Coca-Cola. Coca-Cola have 24 manufacturing plants in India, a number of which have come into conflict with local people because of their over usage of ground water sources in the area.

Figure 13.8 Developing world irrigation system.

Figure 13.9 Walkers Crisps factory, Leicester.

KEY TERMS

Irrigation – the artificial watering of land for farming.

Cottage industry – small-scale production, often in a room of a person's home.

Domestic

Domestic water is used for many different purposes in developed countries (see Figure 13.10). These include indoor uses such as showering and laundry but also kitchen appliances and outside uses such as car washing and filling swimming pools. In developing and emerging countries many people still do not have piped water to their homes, although the numbers of people who do is increasing all the time. Many people, women especially, spend many hours a day fetching water from wells and rivers. Their use of water is therefore restricted to what they can carry and its use is for cooking and personal hygiene.

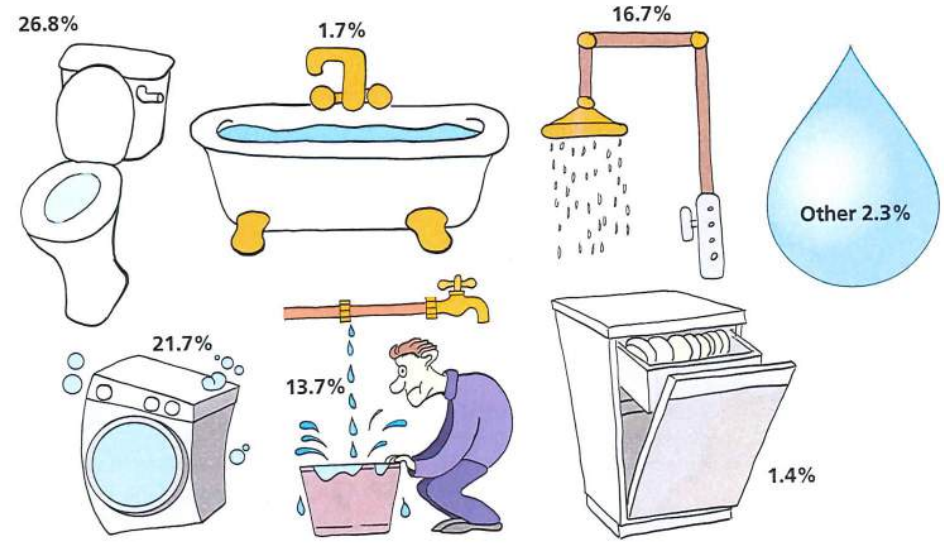


Figure 13.10 Developed countries' domestic water usage.

Review

By the end of this section you should be able to:

- ✓describe the proportion of water used by agriculture, industry and domestically in developed countries and emerging or developing countries
- ✓understand why there are differences in water usage between developed and emerging or developing countries.

ACTIVITIES

1. What is the difference between the amount of water used for agriculture in the developing world and the amount used in the developed world?
2. Explain the different amounts of domestic water used in the USA and Ethiopia.
3. Keep a water diary for a day. Make a note of every time you use water and estimate the amount that you use.
4. Keep a note of what you eat in a day. Try to find out how much water is used to produce the things that you eat.

Extension

Explain why the irrigation systems used in the developed world uses more water than the irrigation systems used in the developing world.

Countries at different levels of development have water supply problems

LEARNING OBJECTIVE

To study how countries at different levels of development have water supply problems.

Learning outcomes

- To know why the UK has water supply problems.
- To understand why emerging or developing countries have water supply problems.

Why does the UK have water supply problems?

Imbalance of the supply from rainfall and the demand from population

The rainfall received by the UK is very varied. The north and west of the country receive the highest amounts, with Keswick in the Lake District receiving on average 1,500 mm of rain a year and London in the South East only receiving 550 mm a year. This means that the supply is plentiful in the north and west. However, one-third of the population of the UK lives in the South East, which is the driest part of the UK. The least populated areas of the UK are the mountain areas in Scotland and Wales. Here the annual rainfall totals are over 1,500 mm. This means that there is an **imbalance** between the areas with a plentiful supply and the areas with the greatest demand.

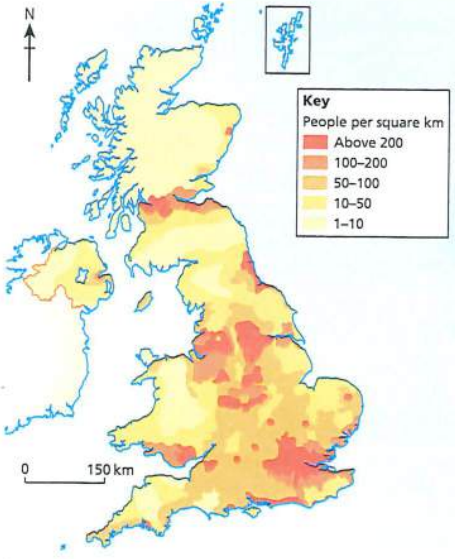


Figure 13.11 The population density of the UK.

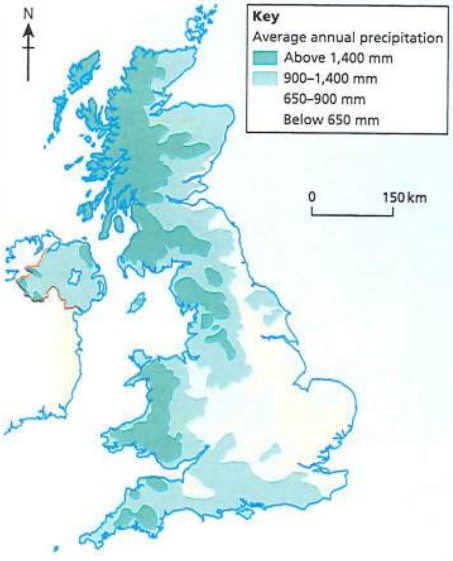


Figure 13.12 UK average annual precipitation.

KEY TERMS

Imbalance – something that is not equal.

Population density – the number of people living in a certain area of land.

Infrastructure – in this instance it refers to pipes that bring water to our homes.

Ageing infrastructure: leakage to sewage and water pipes

Many of the pipes that supply water to households and industry in the UK are over 100 years old; some of them over 150 years old. The ageing pipes do not cause a problem with the quality of the water but there is a problem with leaks. In 2009, water firms in the UK lost 3.29 billion litres of water because of leaks: this is a third of the water that was supplied. Between 2004 and 2009, Thames Water reduced leaks by replacing old pipes by 27 per cent at a cost of £1 billion. In Cambridge, the water utility is replacing 13 km of water mains a year and installing meters on the pipes so that it can detect leaks more quickly. There will always be leaks on water pipes due to the environment and the pressure of road traffic, as most of our water mains go down roads, but the number of leaks must be reduced if the UK is to have enough water supply for the future.

The sewerage system of the UK also has an ageing **infrastructure** which, in many places, is over 100 years old. Before October 2011, much of the sewerage network was owned by the people who lived in the street, possibly without them knowing this! On 1 October 2011 most of the ownership of the sewage network passed to the water companies. They are now responsible for maintaining the network and mending leaks. Sewage leaks do occur, usually when old drains collapse due to heavy road traffic. This is because they were not built to withstand the volume and weight of today's traffic.

Figure 13.13 Collapsed sewer in Southport.

Seasonal imbalances

The UK receives most of its rainfall in the winter but the highest water demands are in the summer. The data in Figure 13.14 give average annual rainfall totals for the UK, although the exact amounts do vary with where you live in the UK, as explained earlier in this chapter. The monthly amounts show a similar pattern but there is definitely an increase in supply in the winter months of November–January. This will be when demand for water is at its lowest. The demand for water is at its highest in the summer months, especially if it is a hot summer. This can cause a problem of supply for the water companies, especially if the country has experienced a dry winter or spring, which has occurred in recent years.

There can also be variations between yearly totals, as shown in Figure 13.15. In 2005 and 2006 there were long periods when the rainfall was below average. This causes problems because levels in water storage reservoirs go down. However, 2007 was an unusually wet year which brought the levels back up again.

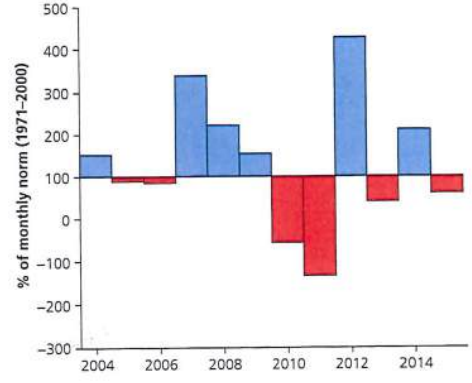


Figure 13.15 UK rainfall per year as a percentage of the norm, 2004–15.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Rainfall (mm)	83	60	64	59	62	63	68	70	58	66	91	68	812

Figure 13.14 UK average rainfall per month.

Why do emerging and developing countries have water supply problems?

Access to only untreated water

One of the main issues in the world today is the fact that many people still do not have access to clean water. This is due to the lack of piped water to households. The recent rapid development of China and India has improved access to water in these countries but many people in Africa still do not have a supply of clean, fresh water readily available.

- Between 1990 and 2012, 2.3 billion people gained access to improved drinking water.
- 748 million people still lack access to improved drinking water.

In the Amazon region, waste materials from the mining and oil extraction industries is washed into the rivers, which has polluted the indigenous tribes' river water. The pollution can cause an increased risk of cancer, abortion, headaches and nausea. This is because their drinking water now contains toxins way above the level acceptable for human consumption.

Another type of pollution is from untreated sewage. More than 80 per cent of sewage in developing countries is discharged untreated into rivers, lakes and coastal areas. The contaminated water can then cause many diseases.

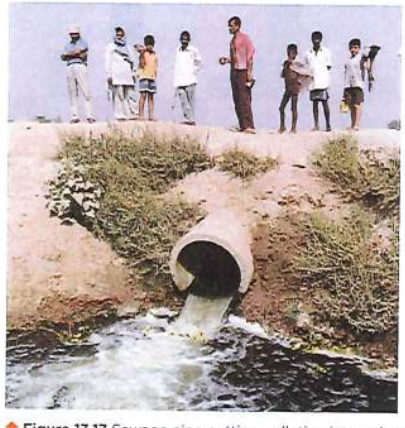


Figure 13.17 Sewage pipe putting pollution into a river near Mumbai, India.

Many diseases are related to drinking water that is not clean. The young and the old are particularly susceptible to diarrhoeal diseases, which are related to drinking dirty water, but these deaths, especially among children, decreased by nearly a million between 1990 and 2012.

Pollution of water courses

More than 840,000 people die each year from drinking water that has been polluted. Many people in emerging and developing countries still use rivers for their drinking water. The rivers are being polluted in many different ways.

Figure 13.16 Water pit contaminated with waste from mining.

Nearly 70 million people who live in Bangladesh are drinking water from wells. The water contains arsenic levels that are well above those which are recommended. This problem now affects 140 million people in 70 countries. The problem has been made worse because the ground water has not been allowed to replenish itself due to increased demand because of growing populations.

Around 70 per cent of industrial waste in developing countries is disposed of untreated into rivers where it contaminates the water. In India and Africa, many wells contain nitrate levels above the level recommended for human consumption due to intensive farming in the areas.

Low annual rainfall

Many developing and emerging countries are in parts of the world that have a low annual rainfall. This means that, as the population increases, these countries will have a physical scarcity of water. It is estimated that by 2025, 1.8 billion people will be living in countries with water scarcity. Many of these people will be in areas with low annual rainfall.

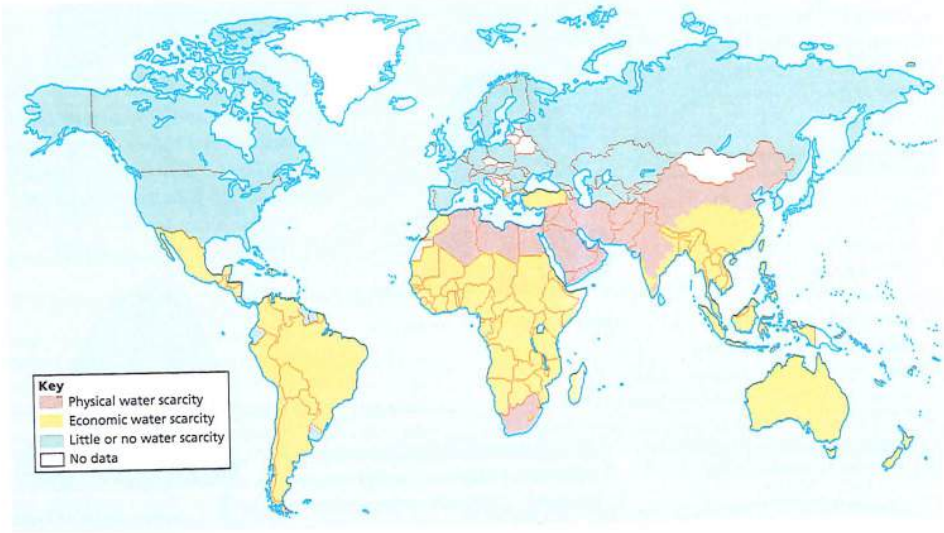


Figure 13.18 Map of world water scarcity.

Review

By the end of this section you should be able to:

- ✓ explain why the UK has water supply problems
- ✓ explain why emerging or developing countries have water supply problems.

ACTIVITIES

1 Copy and complete the following table by naming water supply problems in different parts of the world.

Water supply problems in the UK	Water supply problems in developing or emerging countries

2 Choose one of the problems in the UK and explain why it is an issue.

3 Choose one of the problems in the developing world and explain why it is an issue.

Extension

Assess where the worst water supply problems occur, in developed or in developing countries?

Meeting the demands for water resources could involve technology and interventions by different interest groups

LEARNING OBJECTIVE

To study how meeting the demands for water resources could involve technology and interventions by different interest groups.

Learning outcomes

- To know how attitudes to the exploitation and consumption of water resources vary with different stakeholders.
- To understand how technology can resolve water-resource shortages.

KEY TERMS

Desalination – the removal of minerals from salt water to make it drinkable.

Attitudes to the exploitation and consumption of water resources vary with different stakeholders

Head of Coca-Cola, India

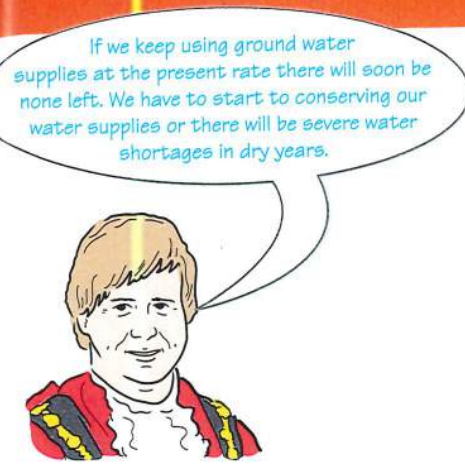
Government of India

Water Aid campaigner

Farmer in Arizona, USA

HEP producer

Figure 13.19 Different views on the exploitation and consumption of water resources.



Mayor of London

London resident

Can technology resolve water resource shortages?

Many parts of the world have a shortage of water from rainfall but technological advances have come up with a possible solution. This is **desalination**, a process whereby salt is removed from sea water to make it drinkable. The concentration of salt in sea water does differ around the world, with the salty water costing more to make it drinkable, but it can be achieved.

There are currently 16,000 desalination plants worldwide producing roughly 70 million cubic metres of fresh drinking water per day. Saudi Arabia has the most desalination plants, with the USA in second place. The biggest problem with desalination is that it takes a lot of energy to desalinate a litre of sea water. However, the plants get around this by either using their own cheap supplies of oil and gas, as is the case in the Gulf states, by using cheaper night-time electricity or, more recently, by using solar power to operate the plants.

China has seven per cent of the world's fresh water but a fifth of its population. The country is looking towards desalination to provide for its people; Beijing, for example, aims to quadruple its sea water desalination capacity over the next ten years.

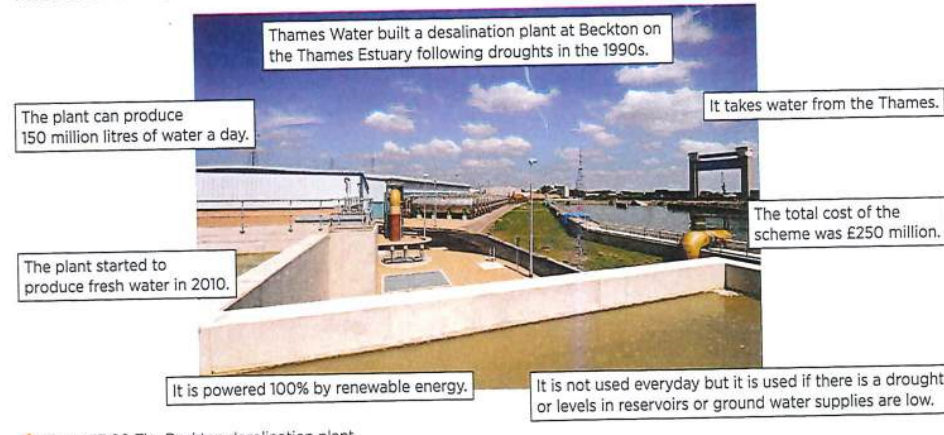


Figure 13.20 The Beckton desalination plant.

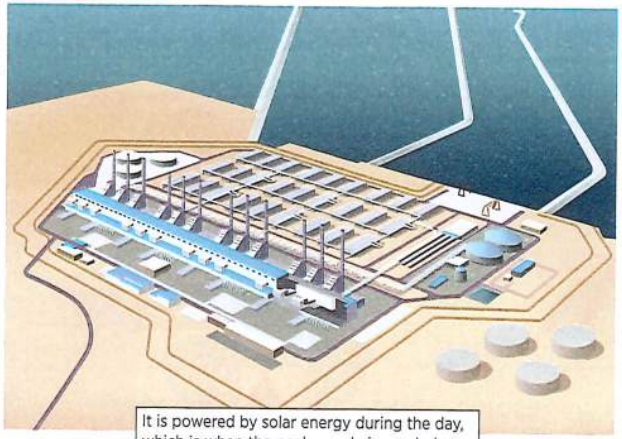


Figure 13.21 A desalination plant on the Persian Gulf, Saudi Arabia.

Review

By the end of this section you should be able to:

- ✓ describe how attitudes to the exploitation and consumption of water resources vary with different stakeholders
- ✓ understand how technology can resolve water-resource shortages.

ACTIVITIES

Look at Figure 13.19 on page 214.

1. Is the Mayor of London for or against water conservation?
2. Draw a table with two columns headed 'water exploitation' and 'water consumption'. Complete the table using the views of stakeholders in Figure 13.19.
3. What is meant by the term desalination?

Extension

'Desalination can solve water resource shortages.' Comment on this statement.

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

LEARNING OBJECTIVE

To study how management and sustainable use of water resources are required at a range of spatial scales from local to international.

Learning outcomes

- To know why water resources require sustainable management.
- To know the different views held by individuals, organisations and governments on the management and sustainable use of water resources.
- To understand how the UK, a developed country, has attempted to manage its water resources in a sustainable way.
- To understand how China, a developing country, has attempted to manage its water resources in a sustainable way.

Why do water resources require sustainable management?

The global population continues to grow at a rate of 80 million people a year. These people need food and water. A person's daily use of water can be as little as 50 litres, but it takes 3,000 litres to produce the food for that person to eat. There is a finite amount of water in the world, therefore we must manage the water we have more carefully. The sustainable management of water resources will be different depending on the level of development of the country concerned.

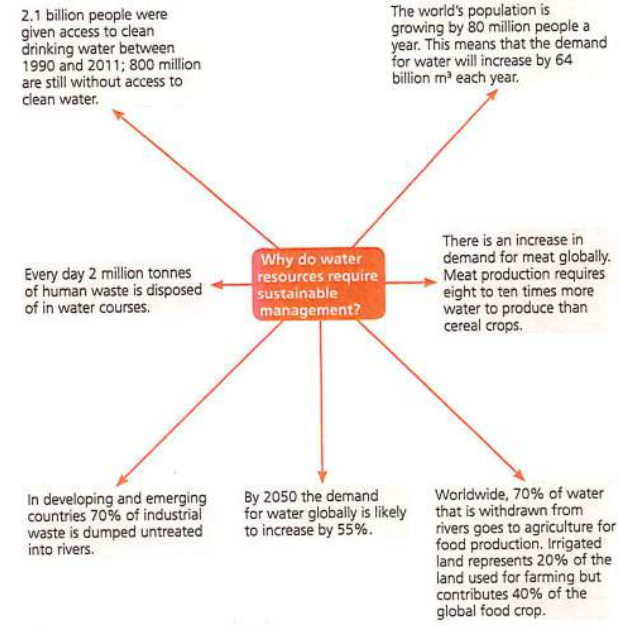


Figure 13.22 Why do water resources require sustainable management?

The different views held by individuals, organisations and governments on the management and sustainable use of water resources

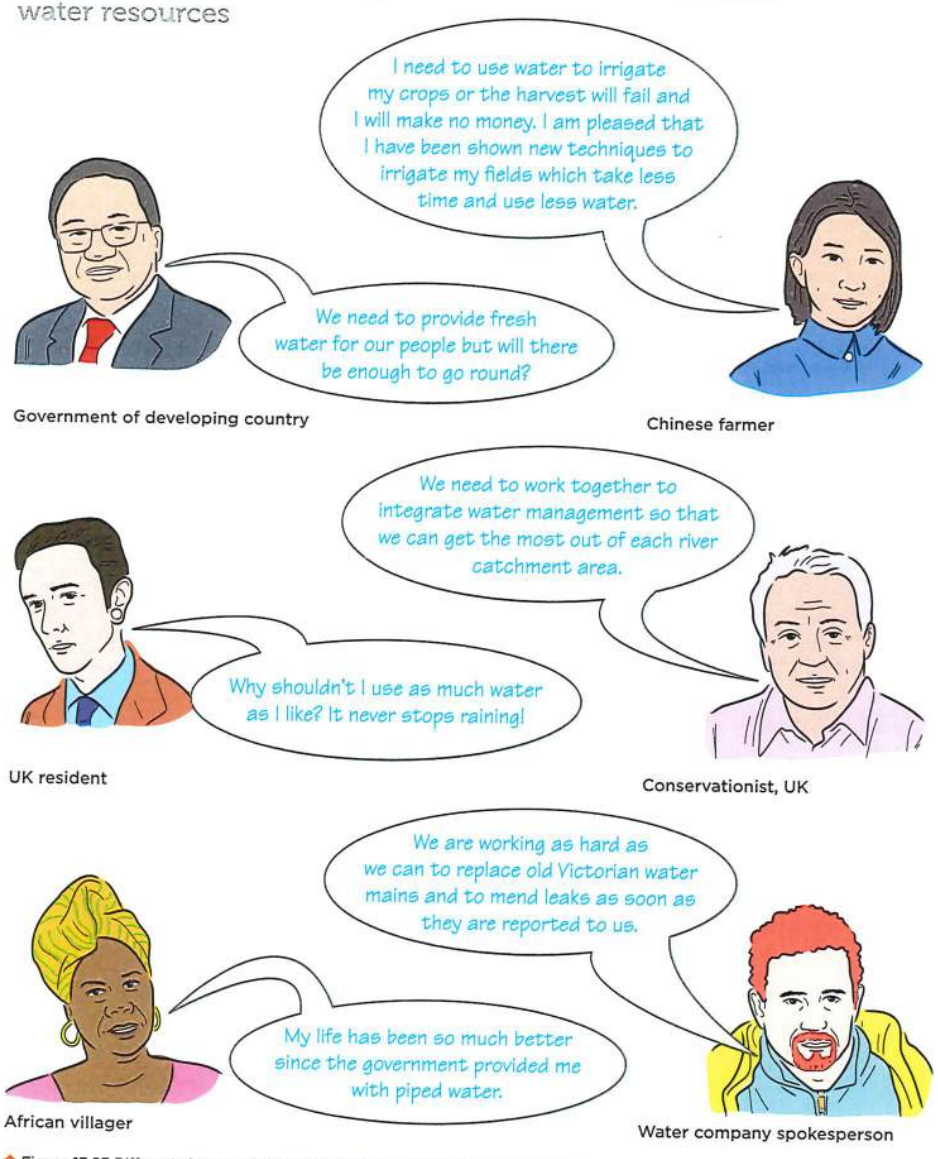


Figure 13.23 Different views on the management and sustainable use of water resources.

Located example How has the UK attempted to manage its water resources in a sustainable way?

The water companies in the UK extract approximately 16 million m³ of water a day from water sources for domestic use. The demand for water has been increasing since the 1950s; the reasons for this increase are dealt with on pages 205–6.

Year	Unmetered households (litres per day)	Metered households (litres per day)	All households (litres per day)
2000	152	134	149
2002	157	137	150
2004	154	136	149
2006	153	134	147
2008	152	130	145
2010	158	129	144

Figure 13.24 Domestic water usage.

Practise your skills

1. Draw a line graph for the information in Figure 13.24.
2. Why is a line graph the most appropriate way to display this data?

KEY TERMS

Aquifers – water-bearing rocks.

Metered households – meters measure the amount of water that a household uses and the home owner pays for the exact amount of water consumed.

Unmetered households – the water company estimates how much water the householder will use and charges for this amount.

The UK has a plentiful supply of water due to the amount of rainfall it receives. Earlier in this chapter (see page 210) we referred to the fact that the areas of the UK that receive the most rainfall are the north and west, but the areas with the highest population are the south and east. This is the challenge for the UK government and is one of the reasons why water resources need to be managed in a sustainable way.

For many years water has been transferred around the UK from areas that receive plenty of rainfall to areas with high populations. For example, the Elan Valley has supplied water for Birmingham since the early 1900s. Further and larger water transfer schemes would cost a lot to build and pumping water around the country would be very expensive. Water is also obtained from **aquifers** in the ground, which are water-bearing rocks. Over the past 30 years this supply has not been replenished as fast as it is being used by water companies. This is causing problems such as rivers running dry and ecosystems suffering.

There is also the uncertainty of climate change, which could bring more rainfall or could mean more droughts. As nothing is certain, decisions have been taken to encourage changes to the way that we view water.

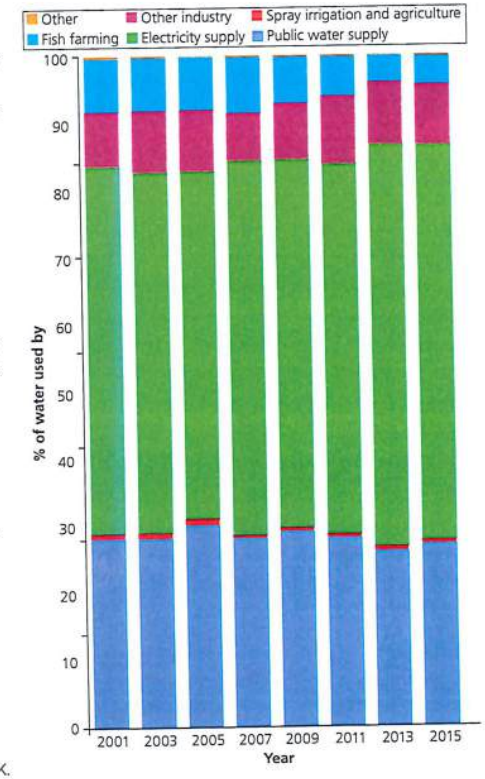


Figure 13.25 The uses of fresh water in the UK.

Solutions to the water shortage problem

The government has initiated a number of policies to attempt to manage the UK's water resources sustainably to ensure that there is enough for future generations.

Figure 13.26 The Elan Valley reservoirs.

- Government has passed policies that ensure that water companies manage water sustainably. They have to produce 25-year plans which show their sustainable management of water sources.
- The government has set efficiency targets for water supply companies; their progress will be monitored each year by the government. Each company will have to develop plans to meet these targets.
- Many websites are available to help people to save water in their homes, some sponsored by the government.
- The government has begun to lower the licences granted to water companies for water extraction to allow ground water supplies to be replenished.
- A new scheme is to involve more people in the management of river catchment areas. This will focus on the management of land and water extraction in a sustainable way. Pilot schemes were set up by Defra in 2011 in certain areas of the country. The Environment Agency, the Rivers Trust, the Wildlife Trust and the water industry will come together to formulate plans for the management of the catchment area to give all stakeholders a say in the management of the water resource.

Since the government set targets on the water companies in the 1990s:

- leakage is down by 35 per cent
- between 2005 and 2010 water and sewerage companies in England and Wales laid, renewed or relined approximately 20,000 km of water mains.

Located example How has China attempted to manage its water resources in a sustainable way?

China has a serious water shortage problem. Over 400 Chinese cities are facing water shortages, with 136 experiencing severe shortages of water.

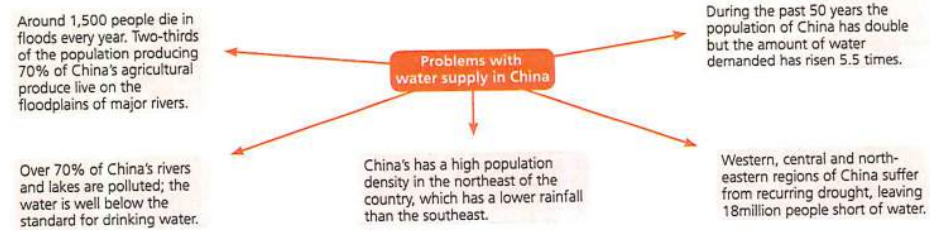


Figure 13.27 Problems with water supply in China.

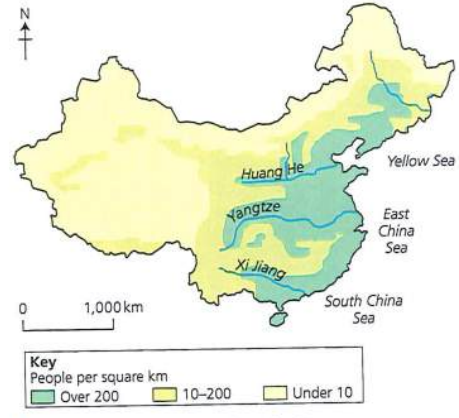


Figure 13.28 China's population density.

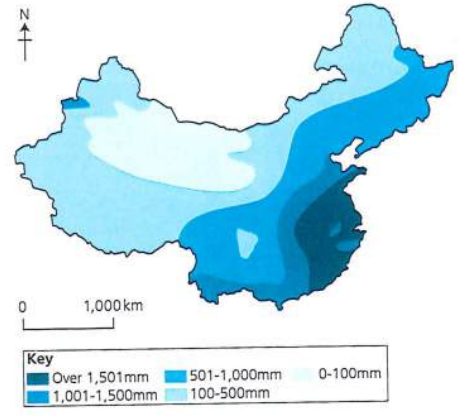


Figure 13.29 China's rainfall.

Solutions to the water shortage problem

The government of China has initiated a number of policies to manage the water resources available sustainably to ensure that there is enough for their population and for future generations.

- Between 2010 and 2012 the Chinese government carried out a water census. It felt that without knowledge of the water situation it could not plan for the future. Around 800,000 surveyors were trained and sent around the country to find out how much water was being used in rural and urban areas. They also reported on the condition of lakes and rivers, and on any water conservation projects that were occurring.
- Desalination plants are being built on China's coastline to provide water for cities in the north and east at a cost of £2.1 billion. The desalination plants will triple the amount of water available for human use by 2020.

- Water is being redirected from China's wetter south to the north of the country which has a physical scarcity of water. The first section of the South-to-North Water Diversion Project opened in 2015 delivering water along the Beijing–Hangzhou Grand Canal from the Yangtze River in Jiangsu province to Shandong.
- Projects are being carried out in rural China by charities to cut the amount of water used to produce food. They work with local farmers to introduce improved irrigation methods that will save 65 per cent of total annual water consumption and improve crop production.
- The government has introduced a water-saving campaign using Olympic athletes to go into schools to teach the children the importance of saving water. They went into 1,000 primary schools in Beijing giving out leaflets and encouraged the children to post water-saving tips around the school.
- Beijing has a water conservancy museum which aims to show people how much water they use in their daily life. The hope is that it will heighten people's awareness of water and they will use less.
- In Shanghai 50 wells have been dug 240 m deep beneath large residential areas and universities. The water from these wells will be used when there are acute water shortages in the city. The city is also building new water treatment plants and reservoirs.
- China has also spent money on improving its reservoirs. By the end of 2015 over 50,000 reservoirs had been reinforced and their water quality improved.

Review

By the end of this section you should be able to:

- ✓explain why water resources require sustainable management
- ✓describe the different views held by individuals, organisations and governments on the management and sustainable use of water resources
- ✓understand how the UK has attempted to manage its water resources in a sustainable way
- ✓understand how China has attempted to manage its water resources in a sustainable way.

ACTIVITIES

1. Which households use the most water, metered or unmetered?
2. Give a reason for your answer to question 1.
3. Which large city in the Midlands does the Elan Valley reservoir supply with water?
4. In groups of four, imagine that you are either for or against the sustainable management of water. Devise a short play that highlights the arguments for or against the sustainable use of water.
5. Visit the following website. Create a poster giving advice on how to save water: www.how-to-save-water.co.uk

Extension

There is a debate about the use of meters to measure water usage. Do you think that water meters are a good idea? Give reasons for your answer.

Examination-style questions

1 Study Figure 13.25 on page 219.
  a) State the percentage of total usage of water used by public water supply in 2002. (1 mark)
  b) State in which year the most water was used for electricity supply. (1 mark)
  c) Calculate the difference in percentage water usage between electricity supply and public water supply in 2009. (1 mark)
2 Explain **one** reason for the increase in water demand per person in the past 50 years. (2 marks)
3 Suggest reasons for the changes to domestic water usage shown in Figure 13.25. (3 marks)
4 Explain the views of **two** different stakeholders, one in favour of the exploitation of water resources and the other one against it. (4 marks)
5 Assess how successful China has been in solving its water supply problems. (12 marks)

Total: 24 marks

Part 3 Geographical Investigations

In the following chapters, you will study the content you need for Component 3: Geographical Investigations.

Topic 7 Geographical Investigations: Fieldwork

In this topic you will study **Chapter 14:** an overview of investigating physical and human landscapes.

Topic 8 Geographical Investigations: UK Challenge

In this topic you will study **Chapter 15:** an overview of the physical and human characteristics of the UK.