

4

Population

4.1 Natural increase as a component of population change

□ Early humankind

The first hominids appeared in Africa around 5 million years ago, on a planet that is generally accepted to be 4600 million years old. They differed from their predecessors, the apes, in that they walked on two legs and did not use their hands for weight-bearing. During most of the period of early humankind, the global population was very small, reaching perhaps some 125 000 people a million years ago. It has been estimated that 10 000 years ago, when people first began to domesticate animals

and cultivate crops, world population was no more than 5 million. Known as the Neolithic Revolution, this period of economic change significantly altered the relationship between people and their environments; but even then, the average annual growth rate was less than 0.1 per cent per year – extremely low compared with contemporary trends. This figure represents a rate of **natural increase** of one per thousand (1/1000). The rate of natural increase (or decrease) is the difference between the birth rate and the death rate. Most countries experience **natural increase** because of the excess of births over deaths.

However, as a result of technological advances, the **carrying capacity** of the land improved and population increased. By 3500 BCE, global population had reached 30 million, and by 0 CE this had risen to about 250 million (Figure 4.1).



Figure 4.1 The Great Wall of China – the history of the Great Wall goes back more than 2000 years when world population was only about 250 million

Demographers estimate that world population reached 500 million by about 1650. From this time, population grew at an increasing rate. By 1800, global population had doubled to reach 1 billion (Figure 4.2). Table 4.1 shows the time taken for each subsequent billion to be reached, with the global total reaching 6 billion in 1999. It had taken only 12 years for world population to increase from 5 billion to 6 billion – a year less than the time span required for the previous billion to be added. Global population reached 7 billion in October 2011, with another 12-year gap from the previous billion. The population in 2011 was double that in 1967. Alongside such rapid population growth has been much greater movement of population between countries, both on a short-term and long-term basis (Figure 4.3).

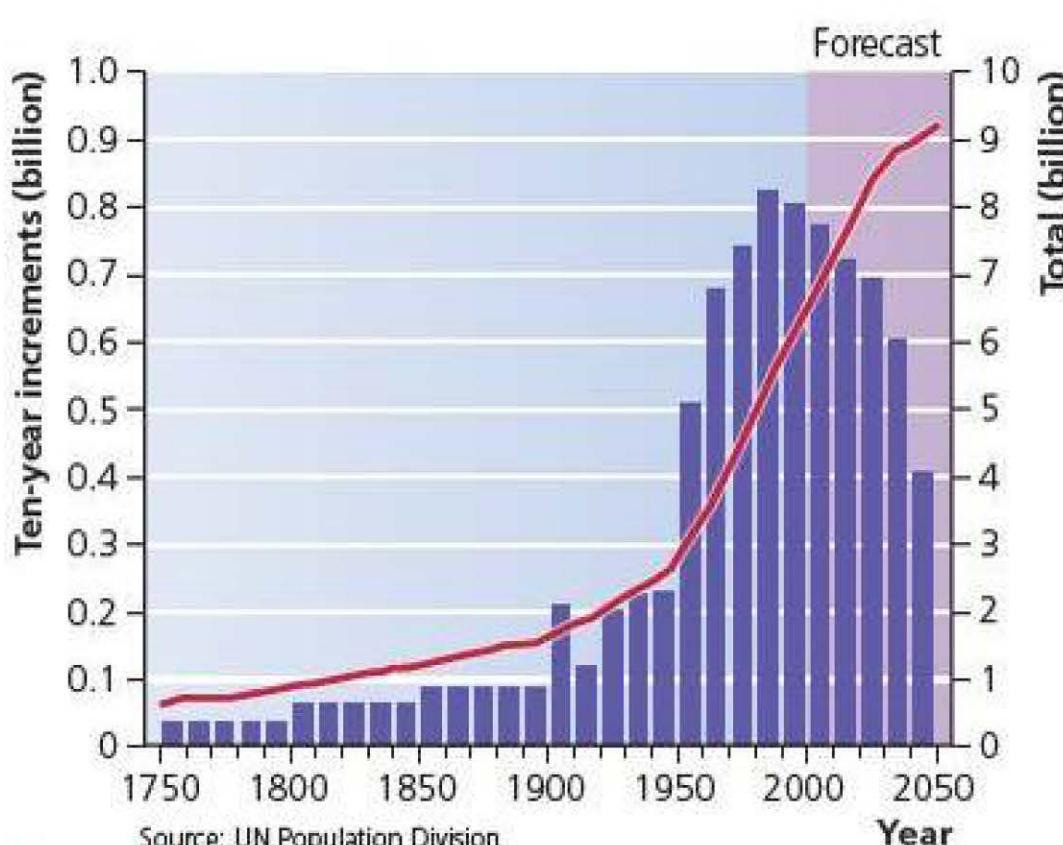


Figure 4.2 World population growth, 1750–2050

Table 4.1 World population growth by each billion

Each billion	Year	Number of years to add each billion
1st	1800	All of human history
2nd	1930	130
3rd	1960	30
4th	1974	14
5th	1987	13
6th	1999	12
7th	2011	12
8th	2024	13

Recent demographic change

Figure 4.4 shows that both total population and the rate of population growth are much higher in the **low-income countries (LICs)** than in the **high-income countries (HICs)**. However, only since the Second World War has population growth in the LICs overtaken that in the HICs. The HICs had their period of high population growth in the nineteenth and early twentieth centuries, while for the LICs and MICs high population growth has occurred since 1950.



Figure 4.3 People from many countries at the Olympic Games in London, 2012

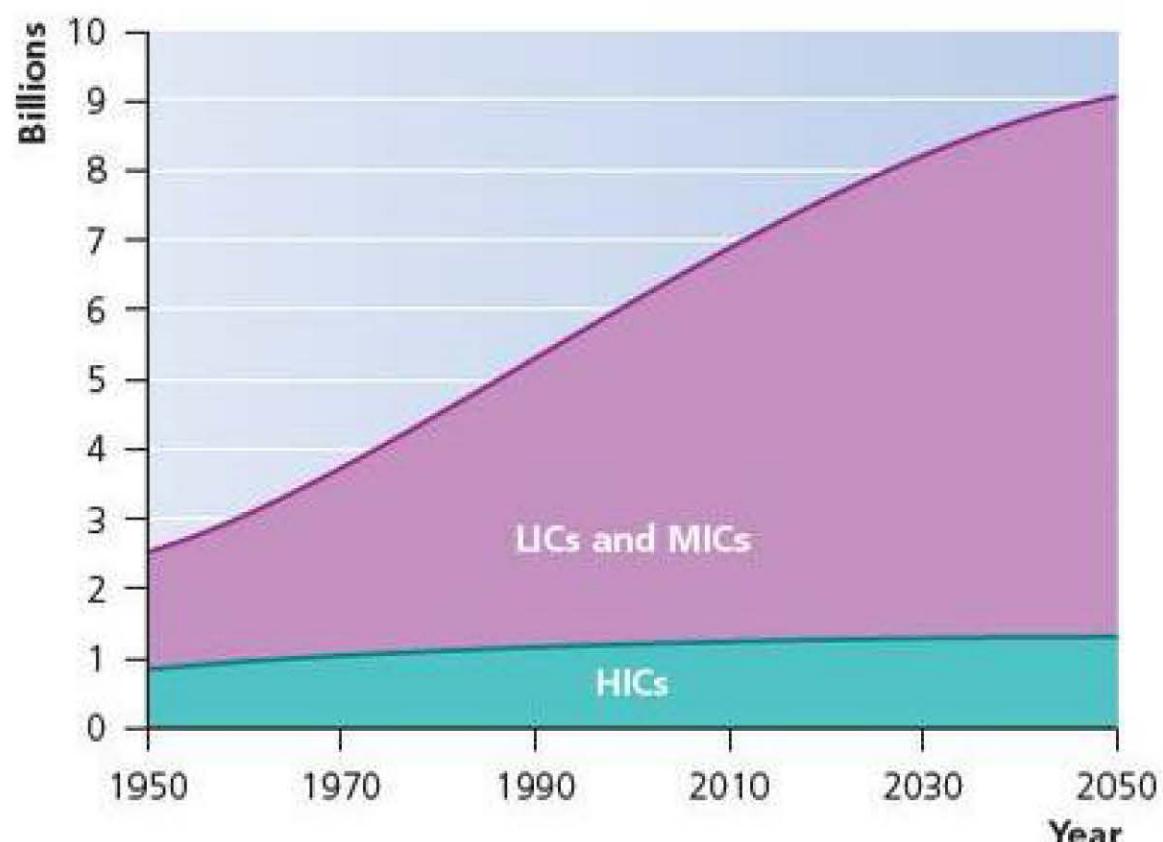
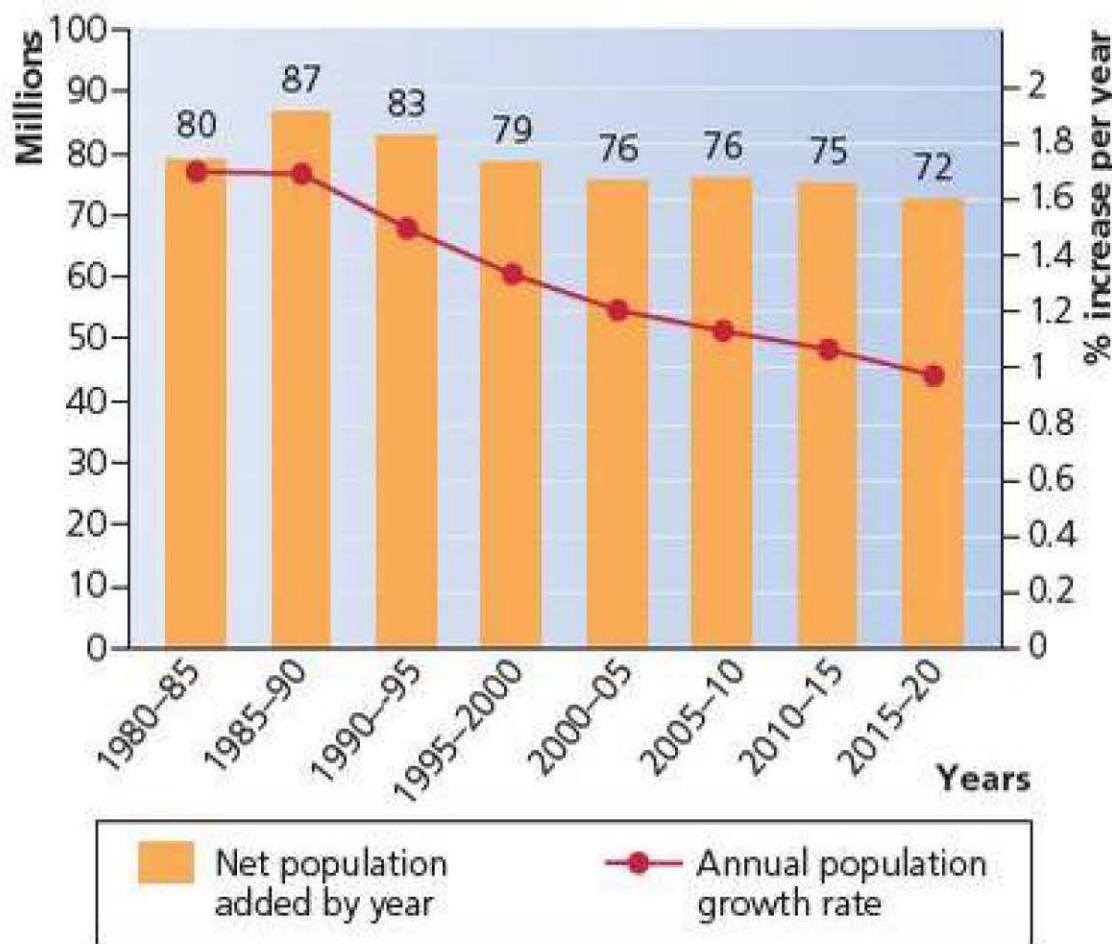


Figure 4.4 Population growth in LICs and MICs and HICs, 1950–2050

The highest ever global population growth rate was reached in the early to mid-1960s when population growth in the LICs and MICs peaked at 2.4 per cent a year. At this time, the term 'population explosion' was widely used to describe this rapid population growth, but by the late 1990s the rate of population growth was down to 1.8 per cent. However, even though the rate of growth has been falling for three decades, **population momentum** meant that the numbers being added each year did not peak until the late 1980s (Figure 4.5).

The demographic transformation, which took a century to complete in HICs, has occurred in a generation in some LICs and MICs. Fertility has dropped further and faster than most demographers foresaw 20 or 30 years ago. The exception is in Africa, where in over 20 countries families of at least five children are the norm and population growth is still around 2.5 per cent – this is a very high rate of natural increase.



Source: IGCSE Geography, P. Guinness & G. Nagle (Hodder Education, 2009) p.2

Figure 4.5 Population increase and growth rate in five-year periods, 1980–2020

Table 4.2 shows the global population change in 2014. With 143.3 million births and 56.8 million deaths, global population increased by 86.6 million in 2014. Table 4.3 shows the ten most populous countries in the world in 2014 and the forecast for the top ten in 2050. Between them, China and India accounted for an astonishing 36.8 per cent of the world's population in 2014.

Table 4.2 World population clock, 2014

	World	HICs	LICs
Population	7238184000	1248958000	5989225000
Births per	143341000	13794000	129547000
	392714	37792	354923
	273	26	246
Deaths per	56759000	12328000	44432000
	155505	33775	121730
	108	23	85
Natural Increase (births – deaths/10) per	86581000	1466000	85115000
	237209	4017	233193
	165	3	162
Infant deaths per	5507000	72000	5435000
	15087	197	14890
	10	0.1	10

Source: 2014 World Population Data Sheet
Population Reference Bureau

Table 4.3 Ten most populous countries in the world, 2014 and 2050

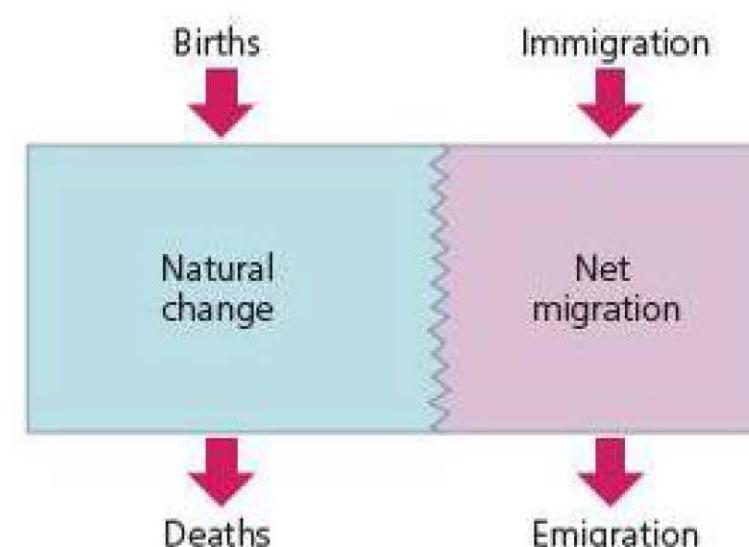
2014		2050 (projected)	
Country	Population (millions)	Country	Population (millions)
China	1364	India	1657
India	1296	China	1312
United States	318	Nigeria	396
Indonesia	251	United States	395
Brazil	203	Indonesia	365
Pakistan	194	Pakistan	348
Nigeria	177	Brazil	226
Bangladesh	158	Bangladesh	202
Russia	144	Democratic Republic of the Congo	194
Japan	127	Ethiopia	165

□ The components of population change

Figure 4.6 illustrates the components of population change for world regions and smaller areas. In terms of the planet as a whole, natural change accounts for all population increase. Natural change is the balance between births and deaths, while **net migration** is the difference between immigration and emigration. The corrugated divide on Figure 4.6 indicates that the relative contributions of natural change and net migration can vary over time within a particular country, as well as between countries at any one point in time. The model is a simple graphical alternative to the population equation:

$$P = (B - D) \pm M$$

where P = population, B = births, D = deaths and M = migration.



Source: Advanced Geography: Concepts & Cases, P. Guinness & G. Nagle (Hodder Education, 1999) p.17

Figure 4.6 Input–output model of population change

Natural change can be stated in absolute or relative terms. Absolute natural change gives the actual change in population as a result of the difference between the number of births and deaths, for example 200000. Relative natural change is expressed as a rate per thousand, for example 3/1000. Table 4.4 shows natural change by world region for 2014.

Table 4.4 Birth rate, death rate and rate of natural change by world region, 2014

Region	Birth rate (per 1000)	Death rate (per 1000)	Rate of natural Increase (%)
World	20	8	1.2
HICs	11	10	0.1
LICs, MICs	22	7	1.5
Africa	36	10	2.6
Asia	18	7	1.1
Latin America/ Caribbean	18	6	1.2
North America	12	8	0.4
Oceania	18	7	1.1
Europe	11	11	0

Source: Population Reference Bureau, 2014 World Population Data Sheet

Section 4.1 Activities

- 1 Define the term *natural increase*.
- 2 Describe the change in world population since 1750 illustrated by Figure 4.2.
- 3 Describe and explain the trends shown in Figure 4.5.
- 4 Discuss the global variations in birth rate, death rate and rate of natural change shown in Table 4.4.

Table 4.5 Variations in total fertility rate and the percentage of women using contraception by world region, 2014

Region	Total fertility rate	% of women using contraception (all methods)
World	2.5	63
HICs	1.6	70
MICs, LICs	2.6	61
Africa	4.7	34
Asia	2.2	66
Latin America/ Caribbean	2.2	73
North America	1.8	77
Oceania	2.4	62
Europe	1.6	70

Source: Population Reference Bureau, 2014 World Population Data Sheet

The factors affecting fertility can be grouped into four main categories:

- **Demographic** – Other population factors, particularly mortality rates, influence fertility. Where infant mortality is high, it is usual for many children to die before reaching adult life. In such societies, parents often have many children to compensate for these expected deaths.
- **Social/Cultural** – In some societies, particularly in Africa, tradition demands high rates of reproduction. Here, the opinion of women in the reproductive years may have little influence weighed against intense cultural expectations. Education, especially female literacy, is the key to lower fertility (Figure 4.8). With education comes a knowledge of birth control, greater social awareness, more opportunity for employment and a wider choice of action generally. In some countries, religion is an important factor. For example, the Muslim and Roman Catholic religions oppose artificial birth control. Most countries that have population policies have been trying to reduce their fertility by investing in birth-control programmes. Within LICs, it is usually the poorest neighbourhoods that have the highest fertility, due mainly to a combination of high infant mortality and low educational opportunities for women.
- **Economic** – In many LICs, children are seen as an economic asset because of the work they do and also because of the support they are expected to give their parents in old age. In HICs, the general perception is reversed and the cost of the child-dependency years is a major factor in the decision to begin or extend a family. Economic growth allows greater spending on health, housing, nutrition and education, which is important in lowering mortality and in turn reducing fertility. Also, the nature of employment can have an impact on fertility. Many companies, particularly in HICs, do not want to lose valuable female workers and therefore may provide workplace childcare and offer the opportunity of flexible working time.

□ The factors affecting levels of fertility

Fertility varies widely around the world. According to the 2014 World Population Data Sheet, the **crude birth rate**, the most basic measure of fertility, varied from a high of 50/1000 in Niger to a low of 6/1000 in Monaco. The word 'crude' means that the birth rate applies to the total population, taking no account of gender and age. The crude birth rate is heavily influenced by the age structure of a population. The crucial factor is the percentage of young women of reproductive age, as these women produce most children.

For more accurate measures of fertility, the 'fertility rate' and the 'total fertility rate' are used. The **fertility rate** is the number of live births per 1000 women aged 15–49 years in a given year. The **total fertility rate** is the average number of children that would be born alive to a woman (or group of women) during her lifetime, if she were to pass through her childbearing years conforming to the age-specific fertility rates of a given year. The total fertility rate varies from a high of 7.6 in Niger to a low of 1.1 in Taiwan. Table 4.5 shows the variations in total fertility rate by world region, alongside data for the percentage of women using contraception for each region. The latter is a major factor influencing fertility. Figure 4.7 shows in detail how the fertility rate varies by country around the world.

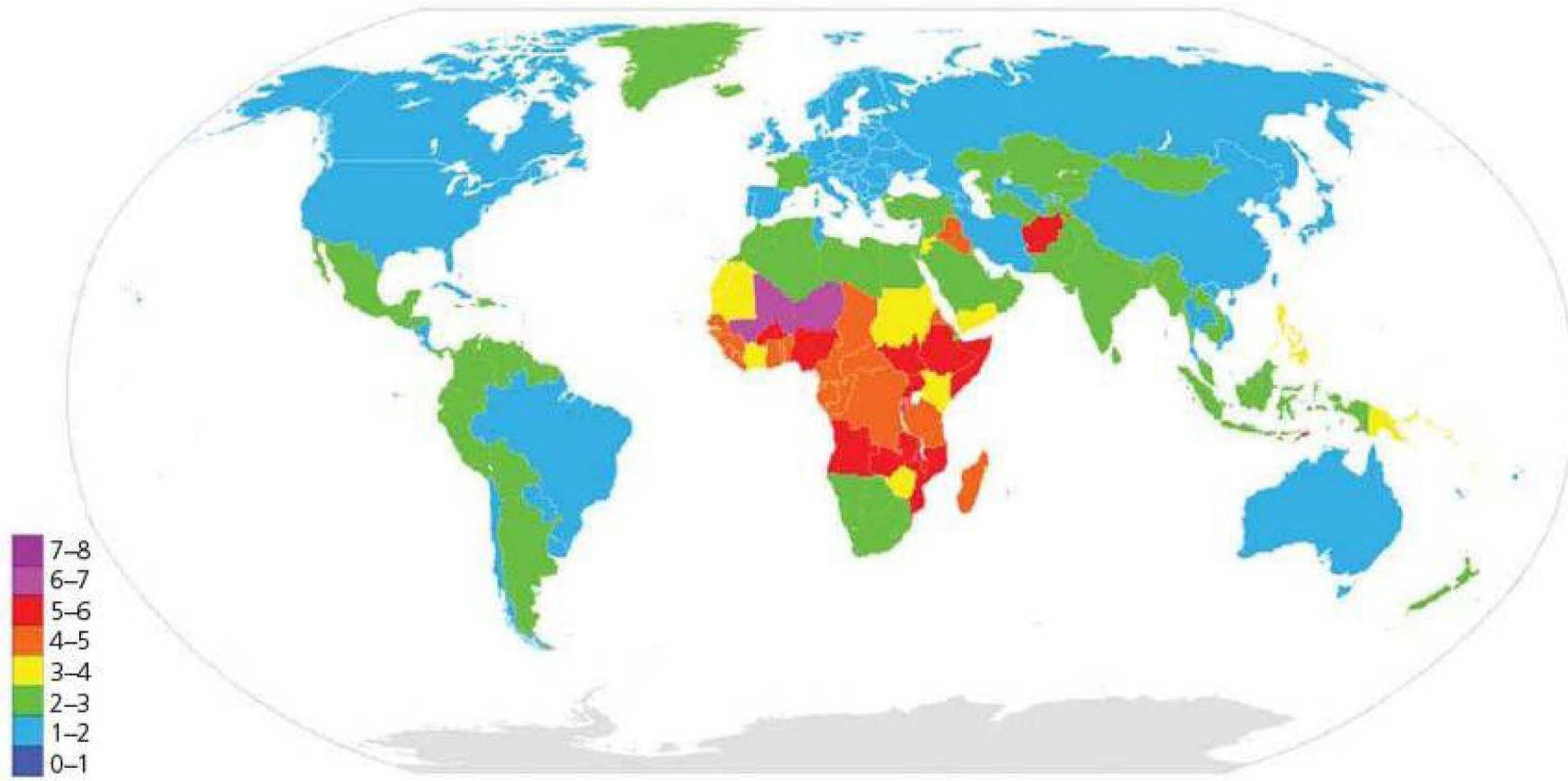


Figure 4.7 Total fertility rate by country, 2014

■ **Political** – There are many examples in the last century of governments attempting to change the rate of population growth for economic and strategic reasons. During the late 1930s, Germany, Italy and Japan all offered inducements and concessions to those with large families. In more recent years, Malaysia has adopted a similar policy. However, today, most governments that are interventionist in terms of fertility still want to reduce population growth.



Figure 4.8 The average age of marriage in a country is an important factor affecting fertility

Fertility can also be affected by general health factors such as being overweight or underweight, and using tobacco or alcohol. Being exposed to environmental hazards such as radiation, toxic chemicals or microwave emissions may reduce a woman's fertility.

The factors given above do not affect fertility directly; they influence another set of variables that determine the rate and level of childbearing. Figure 4.9 shows these 'intermediate variables'. These factors operate in every country, but their relative importance can vary from one country to another.

Fecundity

- Ability to have a physical relationship
- Ability to conceive
- Ability to carry a pregnancy to term

Sexual unions*

- The formation and dissolution of unions
- Age at first physical relationship
- Proportion of women who are married or in a union
- Time spent outside a union (separated, divorced or widowed, for example)
- Frequency of physical relationship
- Sexual abstinence (religious or cultural customs, for example)
- Temporary separations (military service, for example)

Birth control

- Use of contraceptives
- Contraceptive sterilisation
- Induced abortion

*Includes marriage as well as long-term and casual relationships

Figure 4.9 The intermediate variables that affect fertility

Fertility decline

A study by the United Nations published in 2010 predicted that global population would peak at 10.1 billion in 2100, after reaching 9.3 billion by the middle of this century.

The global peak population has been continually revised downwards in recent decades. This is in sharp contrast to warnings in earlier decades of a population 'explosion'. The main reason for the slowdown in population growth is that fertility levels in most parts of the world have fallen faster than was previously expected.

In the second half of the 1960s, after a quarter-century of increasing growth, the rate of world population growth began to slow down. Since then, some LICs and MICs have seen the speediest falls in fertility ever known and thus earlier population projections did not materialise.

A fertility rate of 2.1 children per woman is **replacement level fertility**, below which populations eventually start falling. According to the 2014 World Population Data Sheet, there are almost 90 countries with total fertility rates at or below 2.1. This number is likely to increase. The movement to replacement level fertility is undoubtedly one of the most dramatic social changes in history, enabling many more women to work and children to be educated.



Figure 4.10 Lunch break at a school in Indonesia – increasing female literacy is an important factor in reducing fertility

Section 4.1 Activities

- 1 a** Define the terms *fertility rate* and *total fertility rate*.
b Why is the fertility rate a better measure of fertility than the crude birth rate?
- 2 a** Describe and explain the differences in fertility by world region shown in Table 4.5.
b Describe and attempt to explain the more detailed pattern of global fertility shown by Figure 4.7

- 3** How can **a** government policies and **b** religious philosophy influence fertility?
- 4** Why is replacement-level fertility an important concept?
- 5** Discuss the importance of three of the intermediate variables shown in Figure 4.9.

□ The factors affecting mortality

Like crude birth rate, **crude death rate** is a very generalised measure of mortality. It is heavily influenced by the age structure of a population. For example, the crude death rate for the UK is 9/1000, compared with 6/1000 in Brazil. Yet life expectancy at birth in the UK is 81 years, compared with 75 years in Brazil. Brazil has a much younger population than the UK, but the average **quality of life** is significantly higher in the latter.

In 2014, the crude death rate varied around the world, from a high of 21/1000 in Lesotho to a low of 1/1000 in Qatar and the UAE. Table 4.6 shows variations by world region, and also includes data for infant mortality and life expectancy at birth. The **infant mortality rate** and **life expectancy** are much more accurate measures of mortality. The infant mortality rate is an age-specific rate; that is, it applies to one particular year of age.

Table 4.6 Death rate, infant mortality rate and life expectancy at birth by world region, 2014

Region	Crude death rate (per 1000)	Infant mortality rate (per 1000)	Life expectancy at birth (years)
World	8	38	71
HICs	10	5	79
MICs, LICs	7	42	69
Africa	10	62	59
Asia	7	34	71
Latin America/Caribbean	6	18	75
North America	8	5	79
Oceania	7	21	77
Europe	11	6	78

Source: Population Reference Bureau, 2014 World Population Data Sheet

The causes of death vary significantly between the HICs and LICs (Figure 4.11; see also Figure 4.12). In LICs, infectious and parasitic diseases account for over 40 per cent of all deaths. They are also a major cause of

disability and social and economic upheaval. In contrast, in HICs these diseases have a relatively low impact. In these countries, heart disease and cancer are the big killers. Epidemiology is the study of diseases. As countries develop, the ranking of major diseases tends to change from infectious to degenerative. This change is known as the 'epidemiological transition'.

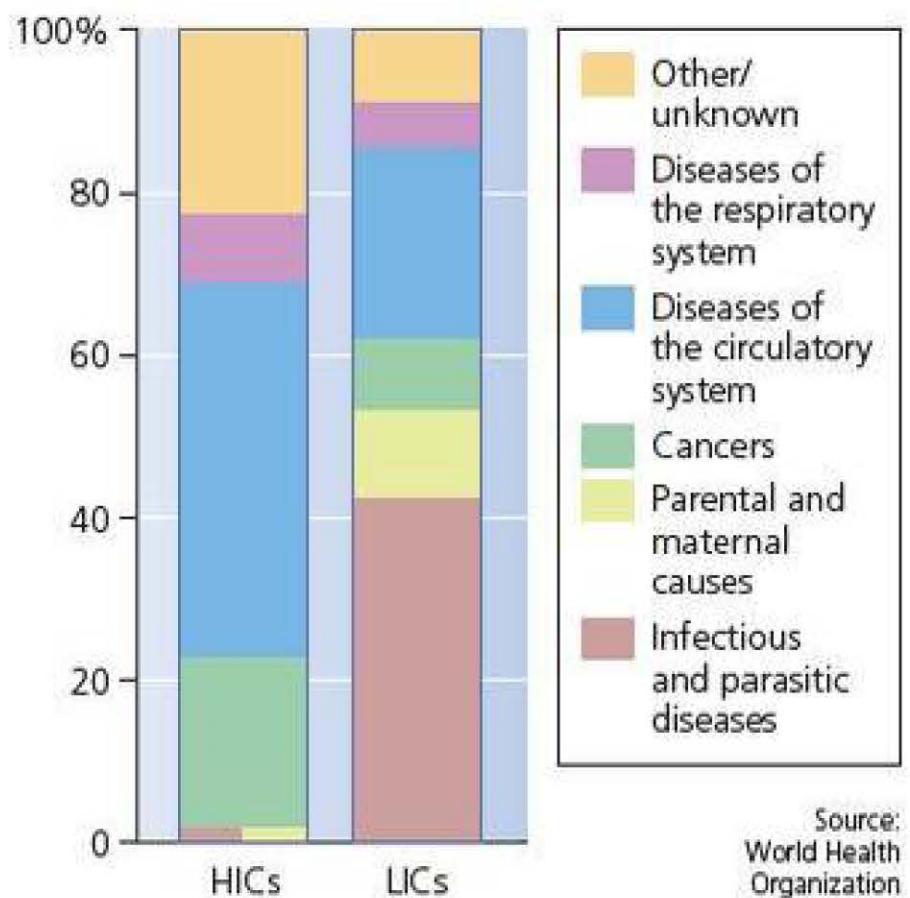


Figure 4.11 Contrasts in the causes of death between HICs and LICs



Figure 4.12 Drinking and dangerous driving warning to motorists in Mongolia – a significant cause of death among young men

Apart from the challenges of the physical environment in many LICs, a range of social and economic factors contribute to the high rates of infectious diseases. These include:

- poverty
- poor access to healthcare
- antibiotic resistance
- evolving human migration patterns
- new infectious agents.

When people live in overcrowded and insanitary conditions, communicable diseases such as tuberculosis

and cholera can spread rapidly. Limited access to healthcare and medicines means that otherwise treatable conditions such as malaria and tuberculosis are often fatal to poor people. Poor nutrition and deficient immune systems are also key risk factors involved in many deaths from conditions such as lower respiratory infections, tuberculosis and measles.

Within most individual countries, variations in mortality occur due to:

- social class
- ethnicity
- place of residence
- occupation
- age structure of the population.

As Table 4.6 shows, there is a huge contrast in infant mortality by world region. Africa has the highest rate (62/1000), and North America (5/1000) the lowest rate. The variation among individual countries is even greater. In 2014, the highest infant mortality rates were in the Central African Republic (116/1000) and Congo D.R. (109/1000). In contrast, the lowest rate was in Hong Kong (1.7/1000). The infant mortality rate is frequently considered to be the most sensitive indicator of socio-economic progress, being heavily influenced by fundamental improvements in the quality of life, such as improvements in water supply, better nutrition and improved healthcare. Once children survive the crucial first year, their life chances improve substantially. Infant mortality in today's rich countries has changed considerably over time. In 1900, infant mortality in the USA was 120/1000. In 2013, it was down to 5.4/1000.

Table 4.6 shows that the lowest average life expectancy by world region is in Africa (59 years), with the highest average figure in northern America (79 years). Rates of life expectancy at birth have converged significantly between HICs and LICs during the last 50 years or so, in spite of a widening wealth gap. These increases in life expectancy have to a certain extent offset the widening disparity between per person incomes in HICs and LICs. However, it must not be forgotten that the ravages of AIDS in particular have caused recent decreases in life expectancy in some countries in Sub-Saharan Africa. It is likely that the life expectancy gap between HICs and LICs will continue to narrow in the future.

Section 4.1 Activities

- 1 Define the terms **a crude death rate**, **b infant mortality rate** and **c life expectancy**.
- 2 Why is crude death rate a very limited measure of mortality?
- 3 Using Figure 4.11, describe and explain the contrast in the causes of death between HICs and LICs.
- 4 To what extent does infant mortality vary around the world?
- 5 Discuss the main reasons for such large variations in infant mortality.
- 6 Describe the global variations in life expectancy.

The interpretation of age/sex structure diagrams

The most studied aspects of **population structure** are age and gender (Figure 4.13). Other aspects of population structure that can be studied include race, language, religion and social/occupational groups.

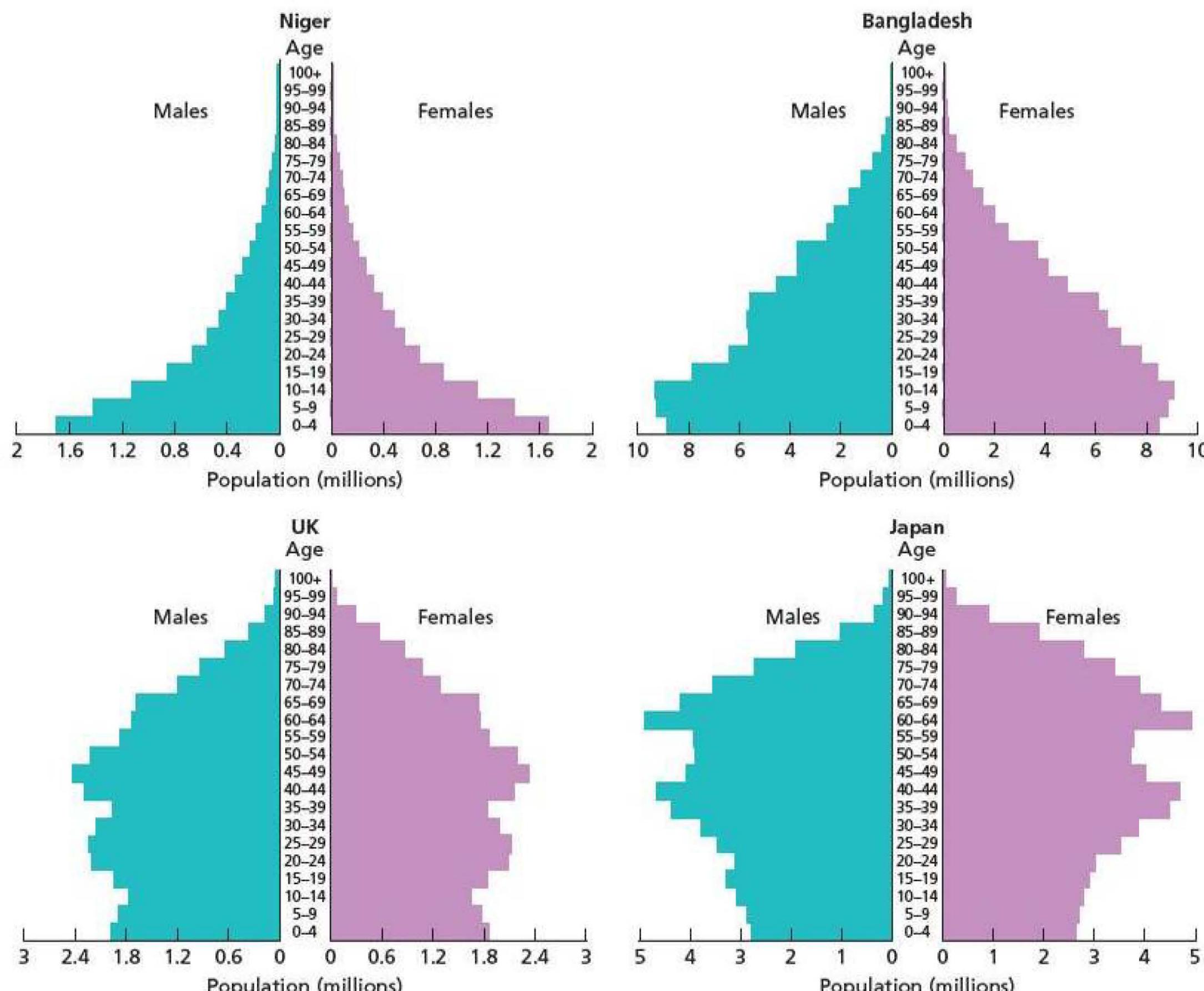


Figure 4.13 Young children outside a ger in central Asia

Age and gender structures are conventionally illustrated by the use of **age/sex structure diagrams**. Diagrams can be used to portray either absolute or relative data. Absolute data show the figures in thousands or millions, while relative data show the numbers involved in percentages. The latter is most frequently used as it allows for easier comparison of countries of different population sizes. Each bar represents a five-year age-group, apart from the uppermost bar, which illustrates the population of a certain age and older, such as 85 or 100. The male population is represented to the left of the vertical axis, with females to the right.

Age/sex structure diagrams change significantly in shape as a country progresses through demographic transition (Figure 4.14).

- The wide base in Niger's diagram reflects extremely high fertility. The birth rate in Niger is 50/1000, the highest in the world. The marked decrease in width of each successive bar indicates relatively high mortality and limited life expectancy. The death rate at 11/1000 is high,



Source: IGCSE Geography 2nd edition, P. Guinness & G. Nagle (Hodder Education, 2014), p.27

Figure 4.14 Four age/sex structure diagrams

particularly considering how young the population is. The infant mortality rate has fallen steeply in recent decades to 54/1000. Life expectancy in Niger is 58 years; 50 per cent of the population is under 15, with only 3 per cent aged 65 or more. Niger is in stage 2 of demographic transition.

- The base of the second age/sex diagram, showing the population structure of Bangladesh, is narrower than that of Niger, reflecting a considerable fall in fertility after decades of government-promoted birth-control programmes. The reduced width of the youngest two bars compared with the 10–14 bar is evidence of recent falls in fertility. The birth rate is currently 20/1000. Falling mortality and lengthening life expectancy is reflected in the relatively wide bars in the teenage and young adult age groups. The death rate at 6/1000 is almost half that of Niger. The infant mortality rate is 33/1000. Life expectancy in Bangladesh is 70 years; 29 per cent of the population is under 15, while 5 per cent is 65 or over. Bangladesh is an example of a country in stage 3 of demographic transition.
- In the diagram for the UK, much lower fertility still is illustrated by narrowing of the base. The birth rate in the UK is only 12/1000. The reduced narrowing of each successive bar indicates a further decline in mortality and greater life expectancy compared with Bangladesh. The death rate in the UK is 9/1000, with an infant mortality rate of 3.9/1000. Life expectancy is 81 years; 18 per cent of the population is under 15, while 17 per cent is 65 or over. The UK is in stage 4 of demographic transition.
- The final diagram (Japan) has a distinctly inverted base, reflecting the lowest fertility of all four countries. The birth rate is 8/1000. The width of the rest of the diagram is a consequence of the lowest mortality and highest life expectancy of all four countries. The death rate is 10/1000, with infant mortality at 1.9/1000. Life expectancy is 83 years. Japan has only 13 per cent of its population under 15, with 26 per cent at 65 or over. With the birth rate lower than the death rate, Japan has entered stage 5 of demographic transition.

Figure 4.15 provides some useful tips for understanding age/sex structure diagrams. A good starting point is to divide the diagram into three sections:

- the young dependent population
- the economically active population
- the elderly dependent population.

Section 4.1 Activities

- 1 What do you understand by the terms **a** population structure and **b** age/sex structure diagram?
- 2 **a** Describe and explain the differences between the four diagrams shown in Figure 4.14.
- b** Produce a table to show all the statistical data given for the four countries. Keep the same order of countries as in the text. For how many of the data sets is there a clear trend?

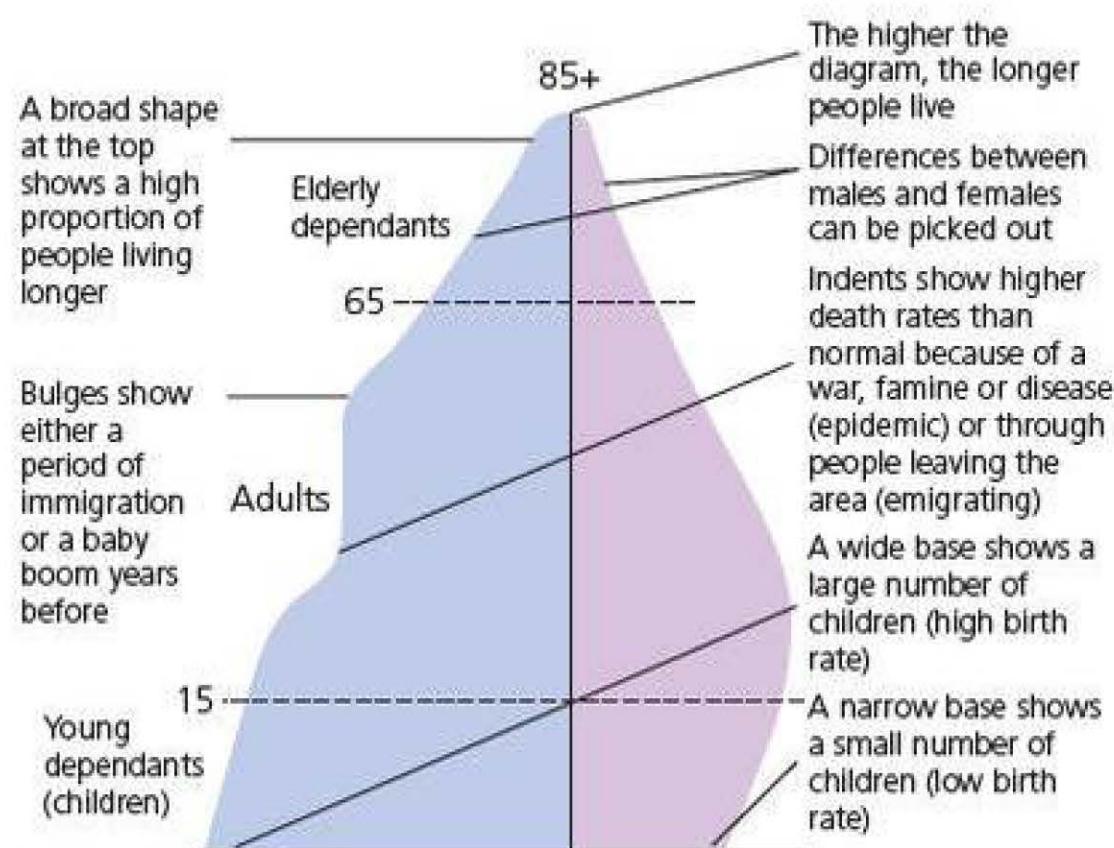


Figure 4.15 An annotated age/sex structure diagram

□ Population structure: differences within countries

In countries where there is strong rural-to-urban migration, the population structures of the areas affected can be markedly different. These differences show up clearly on age/sex diagrams. Out-migration from rural areas is age-selective, with single young adults and young adults with children dominating this process. Thus, the bars for these age groups in rural areas affected by out-migration will indicate fewer people than expected in these age groups. In contrast, the diagrams for urban areas attracting migrants will show age-selective in-migration, with substantially more people in these age groups than expected. Such migrations may also be sex-selective. If this is the case, it should be apparent on the diagrams.

Sex structure

The **sex ratio** is the number of males per 100 females in a population. In 2014, the global sex ratio at birth was estimated at 107 boys to 100 girls. Male births consistently exceed female births, for a combination of biological and social reasons. For example, more couples decide to complete their family on the birth of a boy than on the birth of a girl. However, after birth the gap generally begins to narrow until eventually females outnumber males, as at every age male mortality is higher than female mortality. This process happens most rapidly in the poorest countries, where infant mortality is markedly higher among males than females. Here the gap may be closed in less than a year.

However, there are anomalies to the picture just presented. In countries where the position of women is markedly subordinate and deprived, the overall sex ratio may show an excess of males. Such countries often exhibit high mortality rates in childbirth. For example, in India there are 107 males per 100 females for the population as a whole.

A recent report published in China recorded 118 male births for every 100 female births in 2010 due to the

significant number of female foetuses aborted by parents intent on having a male child. Even within countries there can be significant differences in the sex ratio.



Figure 4.16 The women's section at a public event in India

Section 4.1 Activities

- 1 How and why might the population structures of rural and urban areas in the same country differ?
- 2 a Define the sex ratio.
b Suggest reasons why the sex ratio can differ both between and within countries.

The dependency ratio

Dependants are people who are too young or too old to work. The **dependency ratio** is the relationship between the working or economically active population and the non-working population. The formula for calculating the dependency ratio is:

$$\text{Dependency ratio} = \frac{\% \text{ population aged } 0-14\% + \% \text{ population aged } 65 \text{ and over}}{\% \text{ population aged } 15-64} \times 100$$

A dependency ratio of 60 means that for every 100 people in the economically active population there are 60 people dependent on them. The dependency ratio in HICs is usually between 50 and 75. In contrast, LICs typically have higher ratios, which may reach over 100. In LICs, children form the great majority of the dependent population. In contrast, in HICs and **MICs (middle-income countries)** there is a more equal balance between young and old dependants. Calculations of the **youth dependency ratio** and the **elderly dependency ratio** can show these contrasts more clearly.

$$\text{Youth dependency ratio} = \frac{\% \text{ population aged } 0-14}{\% \text{ population aged } 15-64} \times 100$$

$$\text{Elderly dependency ratio} = \frac{\% \text{ population aged } 65 \text{ and over}}{\% \text{ population aged } 15-64} \times 100$$

For any country or region, the dependency ratio is equal to the sum of the youth dependency ratio and the elderly dependency ratio.

The dependency ratio is important because the economically active population will in general contribute

more to the economy in income tax, VAT and corporation tax. In contrast, the dependent population tend to be bigger recipients of government funding, particularly for education, healthcare and public pensions. An increase in the dependency ratio can cause significant financial problems for governments if they do not have the financial reserves to cope with such a change.

The dependency ratio is an internationally agreed measure. Partly because of this it is a very crude indicator. For example:

- In HICs, few people leave education before the age of 18 and a significant number will go on to university and not get a job before the age of 21. In addition, while some people will retire before the age of 65, others will go on working beyond this age. Also, a significant number of people in the economically active age group do not work for various reasons, such as parents staying at home to look after children (Figure 4.17). The number of people in this situation can vary considerably from one country to another.
- In LICs, a significant proportion of children are working full or part-time before the age of 15. In some LICs, there is very high unemployment and underemployment within the economically active age group.



Figure 4.17 Early Learning Centre – this shop caters for the needs of young dependants, creating economic demand and jobs

However, despite its limitations, the dependency ratio does allow reasonable comparisons between countries (Table 4.7). It is also useful to see how individual countries change over time. Once an analysis using the dependency ratio has been made, more detailed research can look into any apparent anomalies.

Section 4.1 Activities

- 1 Define the term *dependency ratio*.
- 2 Identify two limitations of the dependency ratio.
- 3 Describe and explain the variations in the dependency ratio as a result of your calculations in completing a copy of Table 4.7.

Table 4.7 Dependency ratio calculations

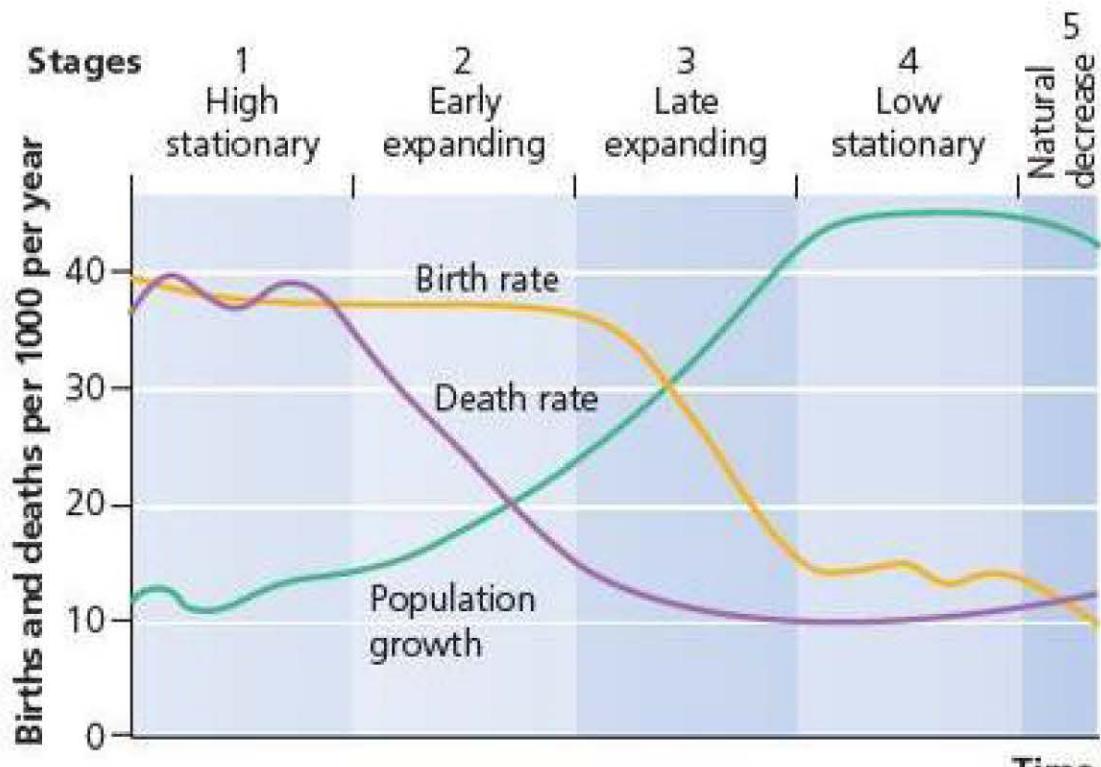
Country	% population		Dependency ratio
	<15 years	65 and over	
USA	19	14	
Japan	13	26	
Germany	13	21	
UK	18	17	
Russia	16	13	
Brazil	24	7	
India	31	5	
China	16	10	
Nigeria	44	3	
Bangladesh	29	5	
Egypt	32	6	
Bolivia	35	5	

Source: Population Reference Bureau,
2014 World Population Data Sheet

4.2 Demographic transition

Changes in birth rate and death rate over time: the demographic transition model

Birth and death rates change over time. Although the birth and death rates of no two countries have changed in exactly the same way, some broad generalisations can be made about population growth since the middle of the eighteenth century. These generalisations are illustrated by the model of **demographic transition** (Figure 4.18), which is based on the experience of north-west Europe, the first part of the world to undergo such changes as a result of the significant industrial and agrarian advances that occurred during the eighteenth and nineteenth centuries.



Source: IGCSE Geography by P. Guinness & G. Nagle (Hodder Education, 2003), p.7

Figure 4.18 Model of demographic transition

No country as a whole retains the characteristics of stage 1, which applies only to the most remote societies on Earth, such as isolated tribes in New Guinea and the Amazon who have little or no contact at all with the outside world. All the HICs of the world are now in stages 4 or 5, most having experienced all of the previous stages at different times. The poorest of the LICs (for example Bangladesh, Niger, Bolivia) are in stage 2, but are joined in this stage by a number of oil-rich Middle East nations where increasing affluence has not been accompanied by a significant fall in fertility. Most LICs that have registered significant social and economic advances are in stage 3 (for example Brazil, China, India), while some of the **newly industrialised countries (NICs)** such as South Korea and Taiwan have entered stage 4. With the passage of time, there can be little doubt that more countries will attain the demographic characteristics of the final stages of the model. The basic characteristics of each stage are as follows:

- **The high fluctuating stage (stage 1):** The crude birth rate is high and stable, while the crude death rate is high and fluctuating due to the sporadic incidence of famine, disease and war. In this stage, population growth is very slow and there may be periods of considerable decline. Infant mortality is high and life expectancy low (Figure 4.19). A high proportion of the population is under the age of 15. Society is pre-industrial, with most people living in rural areas, dependent on subsistence agriculture.



Figure 4.19 A graveyard dating from the eighteenth century in the UK – inscriptions show that life expectancy at that time was very low



Figure 4.20 Children on horses in Mongolia – a country in stage 3 of demographic transition

- **The early expanding stage (stage 2):** The death rate declines significantly. The birth rate remains at its previous level as the social norms governing fertility take time to change. As the gap between the two vital rates widens, the **rate of natural change** increases to a peak at the end of this stage. Infant mortality falls and life expectancy increases. The proportion of the population under 15 increases. Although the reasons for the decline in mortality vary somewhat in intensity and sequence from one country to another, the essential causal factors are: better nutrition; improved public health, particularly in terms of clean water supply and efficient sewerage systems; and medical advance. Considerable rural-to-urban migration occurs during this stage. However, for LICs in recent decades urbanisation has often not been accompanied by the industrialisation that was characteristic of the HICs during the nineteenth century.
- **The late expanding stage (stage 3):** After a period of time, social norms adjust to the lower level of mortality and the birth rate begins to decline. Urbanisation generally slows and average age increases. Life expectancy continues to increase and infant mortality to decrease. Countries in this stage usually experience lower death rates than nations in the final stage, due to their relatively young population structures (Figure 4.20).
- **The low fluctuating stage (stage 4):** Both birth and death rates are low. The former is generally slightly higher, fluctuating somewhat due to changing economic

conditions. Population growth is slow. Death rates rise slightly as the average age of the population increases. However, life expectancy still improves as age-specific mortality rates continue to fall.

- **The natural decrease stage (stage 5):** In an increasing number of countries, the birth rate has fallen below the death rate, resulting in **natural decrease**. In the absence of net migration inflows, these populations are declining. Most countries in this stage are in eastern or southern Europe.

□ Criticisms of the model

Critics of the demographic transition model see it as too Eurocentric as it was based on the experience of Western Europe. It is therefore not necessarily relevant to the experience of other countries. Critics argue that many LICs may not follow the sequence set out in the model. It has also been criticised for its failure to take into account changes due to migration.

The model presumes that all countries will eventually pass through all stages of the transition, just as the HICs have done. Because these countries have achieved economic success and enjoy generally high standards of living, completion of the demographic transition has come to be associated with socio-economic progress. This raises two major questions:

- Can LICs today hope to achieve either the demographic transition or the economic progress enjoyed by the HICs

- that passed through the transition at a different time and under different circumstances?
- Is the socio-economic change experienced by HICs a prerequisite or a consequence of demographic transition?

Demographic transition in LICs

There are a number of important differences in the way that LICs have undergone population change compared with the experiences of most HICs. In LICs:

- Birth rates in stages 1 and 2 were generally higher. About a dozen African countries currently have birth rates of 45/1000 or over. Twenty years ago, many more African countries were in this situation.
- The death rate fell much more steeply and for different reasons. For example, the rapid introduction of Western medicine, particularly in the form of inoculation against major diseases, has had a huge impact in reducing mortality. However, AIDS has caused the death rate to rise significantly in some countries, particularly in Sub-Saharan Africa.
- Some countries had much larger base populations and thus the impact of high growth in stage 2 and the early part of stage 3 has been far greater. No countries that are now classed as HICs had populations anywhere near the size of India and China when they entered stage 2 of demographic transition.
- For those countries in stage 3, the fall in fertility has also been steeper. This has been due mainly to the relatively widespread availability of modern contraception with high levels of reliability.
- The relationship between population change and economic development has been much more tenuous.

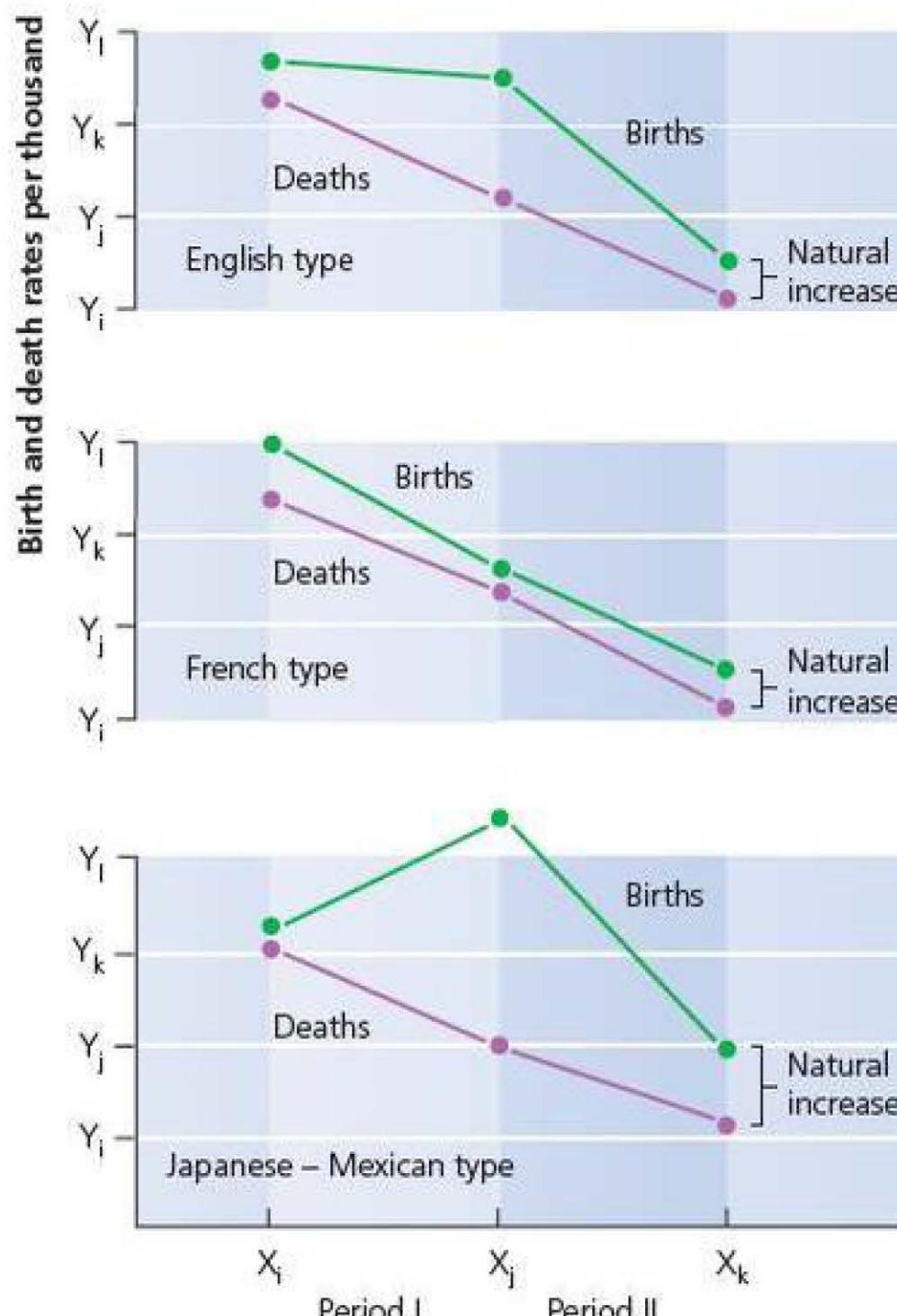
Different models of demographic transition

Although most countries followed the classical or UK model of demographic transition illustrated above, some countries did not. The Czech demographer Pavlik recognised two alternative types of population change, shown in Figure 4.21. In France, the birth rate fell at about the same time as the death rate and there was no intermediate period of high natural increase. In Japan and Mexico, the birth rate actually increased in stage 2 due mainly to the improved health of women in the reproductive age range.

Changes in demographic indices over time

Fertility and mortality

Figure 4.22 illustrates change in birth and death rates in England and Wales between 1700 and 2000. The birth and death rates in stages 1, 2 and 3 broadly correspond to those in many poorer societies today. For example, infant mortality in England fell from 200/1000 in 1770 to just over 100/1000 in



Source: Advanced Geography: Concepts & Cases, P. Guinness & G. Nagle (Hodder Education, 1999), p.3

Figure 4.21 Types of demographic transition

Section 4.2 Activities

- What is a geographical model (such as the model of demographic transition)?
- Explain the reasons for declining mortality in stage 2 of demographic transition.
- Why does it take some time before the fall in fertility follows the fall in mortality (stage 3)?
- Suggest why the birth rate is lower than the death rate in some countries (stage 5).
- Discuss the merits and limitations of the model of demographic transition.
- Why has the death rate in MICs and LICs fallen much more steeply over the last 50 years, compared with the fall in the death rate in earlier times in HICs?

1870. Today, the average infant mortality for the developing world as a whole is 50/1000. Only the very poorest countries in the world today have infant mortality rates over 100/1000. Infant mortality is regarded as a key measure of socio-economic development. Figure 4.22 identifies a range of important factors that influenced birth and death rates in England and Wales during the time period concerned.

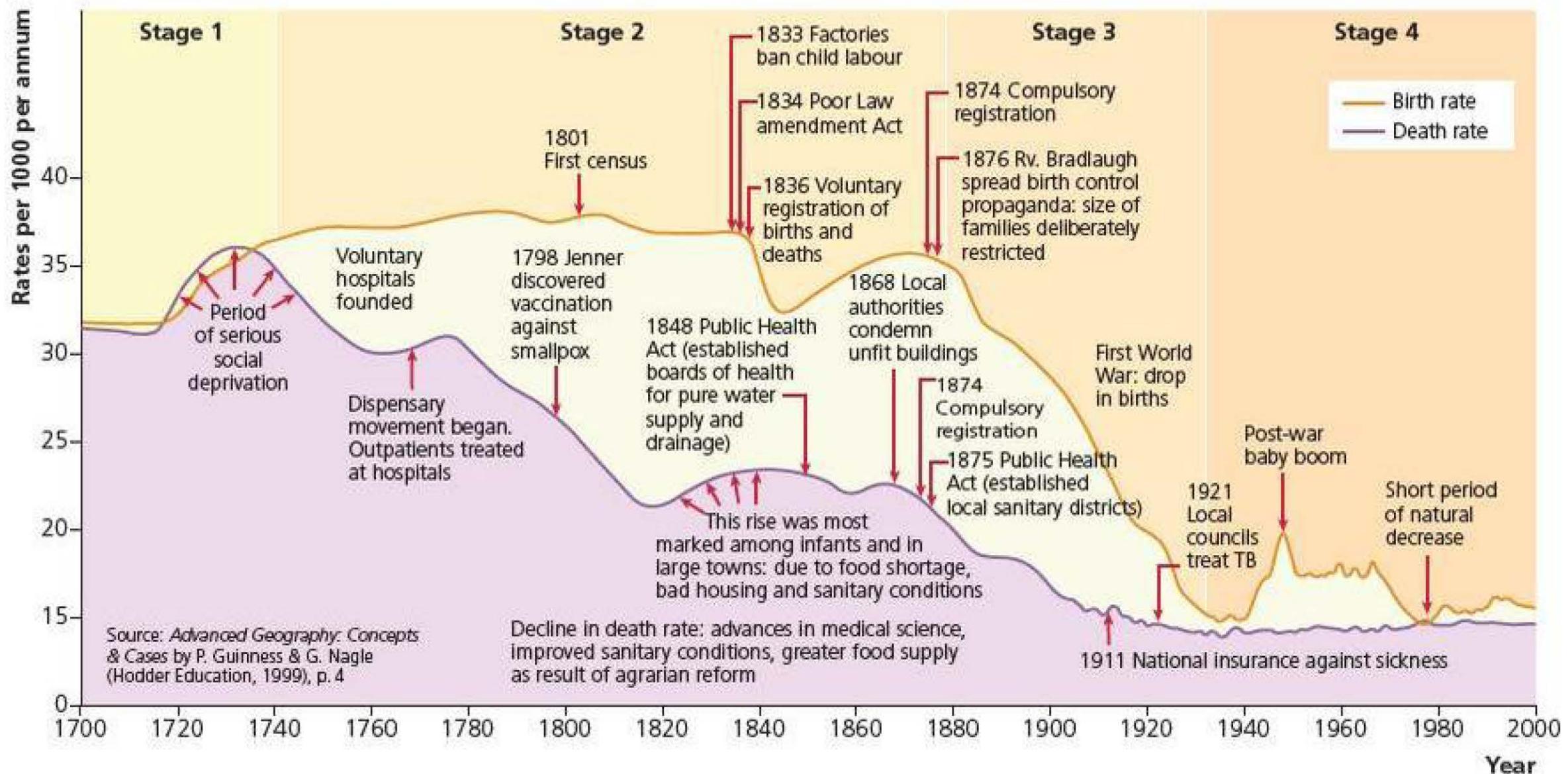


Figure 4.22 England and Wales – changes in birth and death rates, 1700–2000

□ Issues of ageing populations

Different patterns of population growth can bring both benefits and problems to the countries concerned. This is particularly the case when countries have a very high percentage of either young or old people in their populations.

According to the United Nations, 'Population ageing is unprecedented, without parallel in human history and the twenty-first century will witness even more rapid ageing than did the century just past.' In western Europe in 1800, less than 25 per cent of men would live to the age of 60. Today, more than 90 per cent do.

The world's population is ageing significantly. **Ageing of population** (demographic ageing) is a rise in the median age of a population. It occurs when fertility declines while life expectancy remains constant or increases.

The following factors have been highlighted by the United Nations:

- The global average for life expectancy increased from 46 years in 1950 to 71 in 2014. It is projected to reach 76 years by 2050.
- In LICs, the population aged 60 years and over is expected to quadruple between 2000 and 2050.
- In HICs, the number of older people was greater than that of children for the first time in 1998. By 2050, older people in HICs will outnumber children by more than two to one.
- The population aged 80 years and over numbered 69 million in 2000. This was the fastest-growing section of the global population, which is projected to increase to 375 million by 2050.

The progressive demographic ageing of the older population itself – globally, the average annual growth rate of people aged 80 and over (3.8 per cent) is twice as high as the growth of population 60 and over (1.9 per cent).

- Europe is the 'oldest' region in the world, but Japan is the oldest nation with a median age of 45 years.
- Africa is the 'youngest' region in the world, with the proportion of children (under 15) accounting for 41 per cent of the population today. However, this is expected to decline to 28 per cent by 2050. In contrast, the proportion of older people is projected to increase from 5 per cent to 10 per cent over the same time period.

Table 4.8 shows that 8 per cent of the world's population are aged 65 years and over. On a continental scale, this varies from only 4 per cent in Africa to 17 per cent in Europe. Population projections show that the world population in the age group 65 years and over will rise to 10 per cent in 2025, and to 16 per cent by 2050.

Table 4.8 The percentage of total population aged 65 years and over, 2014

Region	Population aged 65 and over (%)
World	8
Africa	4
North America	14
Latin America/Caribbean	7
Asia	7
Europe	17
Oceania	11

Source: Population Reference Bureau, 2014 World Population Data Sheet

The problem of demographic ageing has been a concern of HICs for some time, but it is now also beginning to alarm MICs and LICs. Although ageing has begun later in MICs and LICs, it is progressing at a faster rate. This follows the pattern of previous demographic change, such as declining mortality and falling fertility, where change in MICs and LICs was much faster than that previously experienced by HICs.

Demographic ageing will put healthcare systems, public pensions and government budgets in general under increasing pressure (Figure 4.23). Four per cent of the USA's population was 65 years of age and older in 1900. By 1995, this had risen to 12.8 per cent and by 2030 it is likely that one in five Americans will be senior citizens. The fastest-growing segment of the population is the so-called 'oldest-old': those who are 85 years or more. It is this age group that is most likely to need expensive residential care. The situation is similar in other HICs.



Figure 4.23 An elderly woman – demographic ageing is a worldwide phenomenon

Some countries have made relatively good pension provision by investing wisely over a long period of time. However, others have more or less adopted a pay-as-you-go system, as the elderly dependent population rises. It is this latter group who will be faced with the biggest problems in the future.

For much of the post-1950 period, the dominant demographic problem has been generally perceived as the 'population explosion', a result of very high fertility in LICs. However, greater concern is now being expressed about demographic ageing in many countries where difficult decisions about the reallocation of resources are having

to be made. At present, very few countries are generous in looking after their elderly. Poverty amongst the elderly is a considerable problem, but technological advance might provide a solution by improving living standards for everyone. If not, other less popular solutions, such as increased taxation, will have to be examined.

However, some demographers argue that there needs to be a certain rethinking of age and ageing, with older people adopting healthier and more adventurous lifestyles than people of the same age only one or two generations ago. Sayings such as '50 is the new 40' have become fairly commonplace. It is argued that we should not just think of chronological age, but also of prospective age – the remaining years of life expectancy people have (Table 4.9).

Table 4.9 Remaining life expectancy among French women, 1952 and 2005

Year	Years lived	Remaining life expectancy (years)
1952	30	44.7
2005	30	54.4

Source: Population Bulletin Vol.63 No.4 2008

It is of course easy to underestimate the positive aspects of ageing:

- Many older people make a big contribution to childcare by looking after their grandchildren.
- Large numbers of older people work as volunteers, for example in charity shops.

Section 4.2 Activities

- 1 Describe the variations shown in Table 4.8.
- 2 Why is a large elderly dependent population generally viewed as a problem?
- 3 Discuss the possible benefits of a large elderly population.
- 4 Briefly explain the data shown in Table 4.9.

Case Study: Population ageing in Japan

Japan has the most rapidly ageing population in the history of the world:

- 33 per cent of Japan's people are over the age of 60.
- Japan has the world's oldest population, with a median age of 46 years.
- The country's population peaked between 2005 and 2010 at 128 million (Figure 4.24). The most extreme population projection predicts a decline of 50 million by the end of this century.
- Fertility has declined substantially and the total fertility rate is an extremely low 1.4.
- No other country has a lower percentage of its population under 15 (13 per cent).

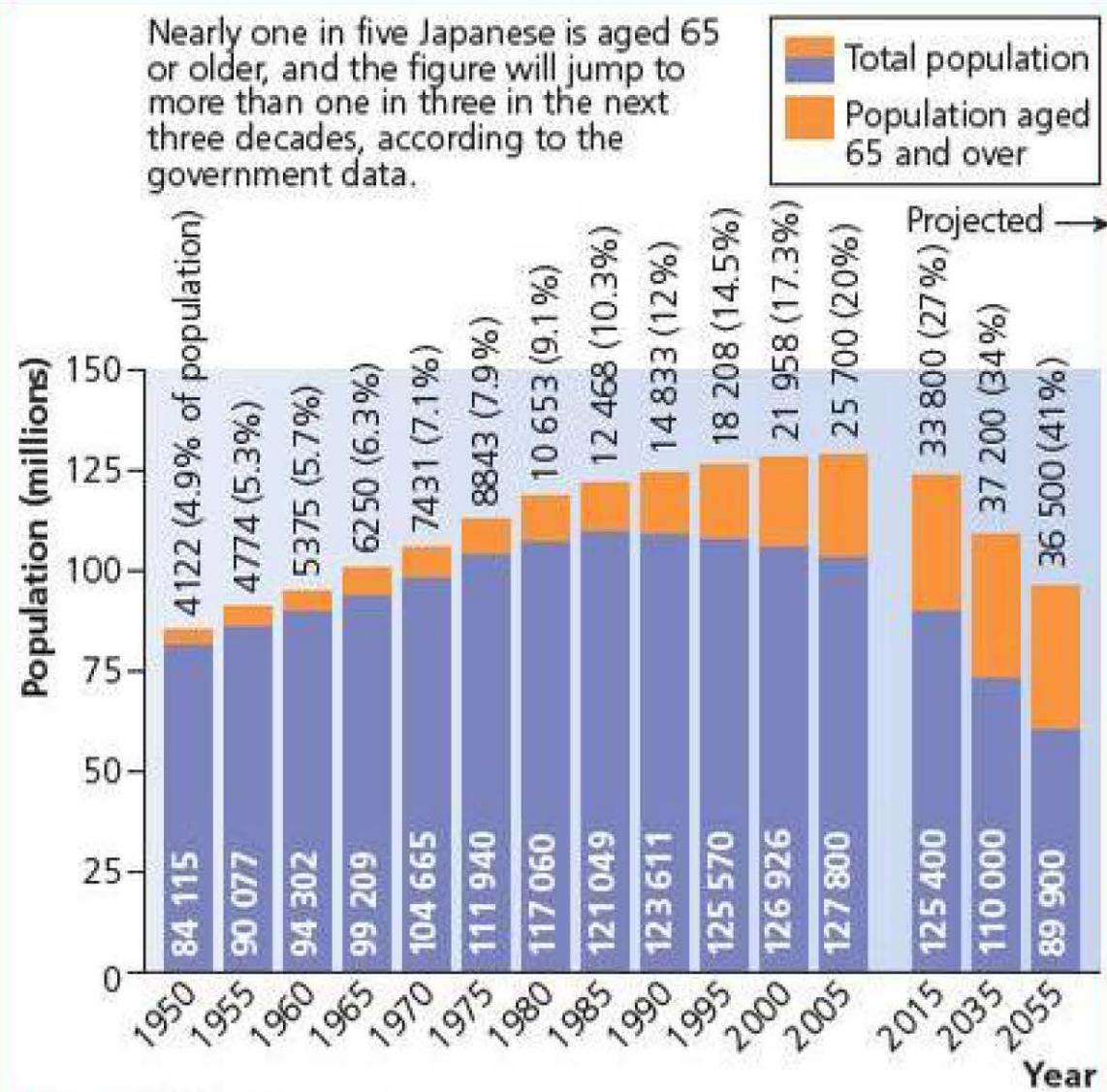


Figure 4.24 Population trends in Japan

A high elderly dependency ratio presents considerable economic and social challenges to the country, not least in terms of pensions, healthcare and long-term care. Japan's workforce peaked at 67.9 million in 1998 and has been in decline since. This presents an increasing economic burden on the existing workforce. However, it must be noted that there is a high labour-force participation rate among the elderly. Japanese men work an average of five years after mandatory retirement.

Japan has a long tradition of positive attitudes towards older people. Every year, National Respect the Aged Day is a public holiday. However, while there is a strong tradition of elderly people being looked after by their families, the number of old people living in care homes or other welfare facilities is steadily rising. The cost of care is shared between the elderly person, their family and the government. As the number of people in this situation increases, more pressure is placed on the country's economy. Social changes are also occurring, for example the emergence of ageing as a theme in films and books.

Younger workers are at a premium and there is considerable competition to recruit them. One solution is for manufacturers to set up affiliated companies in China or other countries, but past results have been mixed. The possibility of expanding immigration to help reduce the rising dependency ratio appears to be politically unacceptable in Japan. Foreigners make up only 1 per cent of Japan's labour force. Legal immigration is practically impossible (except for highly skilled ethnic Japanese workers) and illegal immigration is strictly suppressed.

The UN predicts that by 2045 for every four Japanese aged 20–64 there will be three people aged 65 or over. The key question is: what is a socially acceptable level of provision for the elderly in terms of the proportion of the country's total GDP? This is a question many other countries are going to have to ask themselves as well. Pension reforms have been implemented, with later retirement and higher contributions from employers. However, it is likely that further changes will be required as the cost of ageing rises.

Section 4.2 Activities

- Describe the changes in Japan's population shown in Figure 4.24.
- Why does Japan have a rapidly ageing population?
- Suggest why this trend may contribute to changing attitudes towards the elderly.

Issues of youthful populations

Rapid population growth results in a large young dependent population. The young dependent population is defined as the population under 15 years of age. Table 4.10 shows the huge variation around the world average of 26 per cent. The 41 per cent for Africa is over two and a half times higher than the figure for Europe. The highest figures for individual countries are in Niger (50 per cent), Chad (49 per cent), Somalia, Uganda, Angola and Mali (all 48 per cent).

Table 4.10 The percentage of total population under 15 years of age (2013)

Country	% population under 15 years of age
World	26
Africa	41
North America	19
Latin America/Caribbean	27
Asia	25
Europe	16
Oceania	24

Source: Selected data from the 2014 World Population Data Sheet

Countries with large young populations (Figure 4.25) have to allocate a substantial proportion of their national resources to look after them. Young people require resources for health, education, food, water and housing above all. The money required to cover such needs may mean there is little left to invest in agriculture, industry and other aspects of the economy. A LIC government might see this as being too large a demand on the country's resources and as a result may introduce family planning policies to reduce the birth rate. However, individual parents may have a different view, where they see a large family as valuable in terms of the work children can do on the land. Alongside this, people in poor countries often have to rely on their children in old age because of the lack of state welfare benefits.



Figure 4.25 Young adults at a gathering point in an urban area

As a large young population moves up the age ladder over time, it will provide a large working population when it enters the economically active age group (15–64). This will be an advantage if a country can attract sufficient investment to create enough jobs for a large working population. Then, the large working population will contribute a lot of money in taxes to the country, which can be invested in many different ways to improve quality of life and to attract more foreign investment. Such a situation can create an upward spiral of economic growth. On the other hand, if there are few employment opportunities for a large working population, the unemployment rate will be high. The government and most individuals will have little money

to spend and the quality of life will be low. Many young adults may seek to emigrate because of the lack of opportunities in their own country.

Eventually, the large number of people in this age group will reach old age. If most of them enter old age in poverty, this creates even more problems for the government.

□ The link between population and development

Development, or improvement in the quality of life, is a wide-ranging concept. It includes wealth, but it also includes other important aspects of our lives. For example, many people would consider good health to be more important than wealth. People who live in countries that are not democracies

Case Study: The Gambia

A country with a high young dependent population

- The Gambia has a young and fast-growing population, which has placed big demands on the resources of the country.
- 95 per cent of the country's population is Muslim, and until recently religious leaders were against the use of contraception. In addition, cultural tradition meant that women had little influence on family size.
- Children were viewed as an economic asset because of their help with crop production and tending animals. One in three children aged 10–14 are working.
- In 2012, the infant mortality rate was 70/1000. With 44 per cent of the population classed as young dependents and only 2 per cent elderly dependents, the dependency ratio is 85.

- Many parents in the Gambia struggle to provide basic housing for their families. There is huge overcrowding and a lack of sanitation, with many children sharing the same bed.
- Rates of unemployment and underemployment are high and wages are low, with parents struggling to provide even the basics for large families.
- Many schools operate a two-shift system, with one group of pupils attending in the morning and a different group attending in the afternoon.
- Another sign of population pressure is the large number of trees being chopped down for firewood. As a result, desertification is increasing at a rapid rate.
- In recent years, the government has introduced a family-planning campaign, which has been accepted by religious leaders.
- Family planning programmes have had limited success to date, with the total fertility rate falling from 6.1 in 1970 to just 5.6 in 2013.

and where freedom of speech cannot be taken for granted often envy those who do live in democratic countries. Development occurs when there are improvements to the individual factors making up the quality of life. For example, development occurs in a LIC when:

- the local food supply improves due to investment in machinery and fertilisers
- the electricity grid extends outwards from the main urban areas to rural areas
- a new road or railway improves the **accessibility** of a remote province
- levels of literacy improve throughout the country
- average incomes increase above the level of inflation.

There has been much debate about the causes of development. Detailed studies have shown that variations between countries are due to a variety of factors:

Physical geography

- Landlocked countries have generally developed more slowly than coastal ones.
- Small island countries face considerable disadvantages in development.
- Tropical countries have grown more slowly than those in temperate latitudes, reflecting the cost of poor health and unproductive farming in the former. However, richer non-agricultural tropical countries, such as Singapore, do not suffer a geographical deficit of this kind.
- A generous allocation of natural resources has spurred economic growth in a number of countries.

Economic policies

- Open economies that welcomed and encouraged foreign investment have developed faster than closed economies.
- Fast-growing countries tend to have high rates of saving and low spending relative to GDP.
- Institutional quality in terms of good government, law and order and lack of corruption generally result in a high rate of growth.

Demography

Progress through demographic transition is a significant factor, with the highest rates of economic growth experienced by those nations where the birth rate has fallen the most.

The Human Development Index

In 1990, the **Human Development Index (HDI)** was devised by the United Nations to indicate levels of development in countries. The HDI contains four variables:

- life expectancy at birth
- mean years of schooling for adults aged 25 years

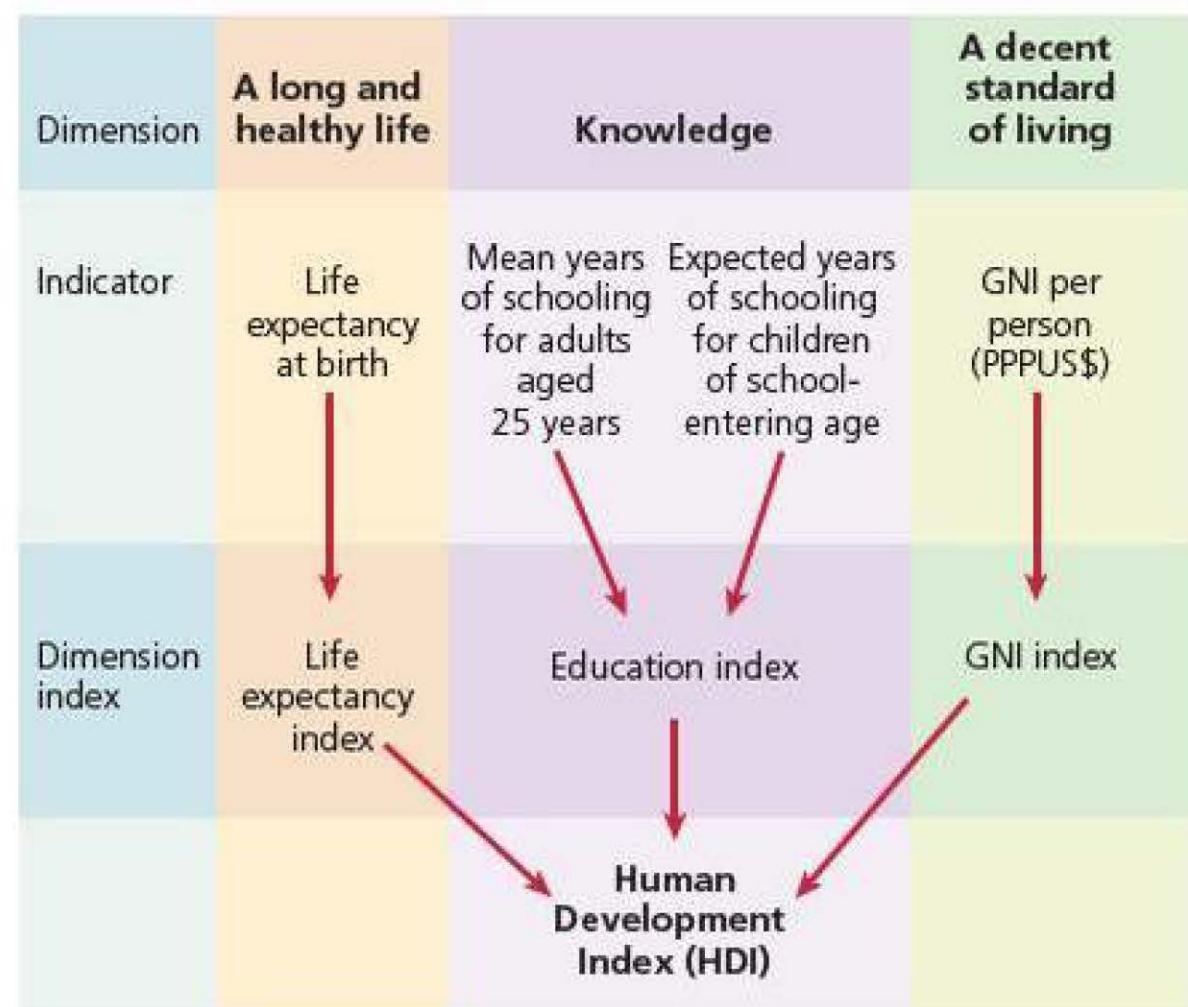


Figure 4.26 Constructing the Human Development Index

- expected years of schooling for children of school-entering age
- GNI per person (PPP).

One of the four variables used in the HDI is therefore a key demographic factor. The actual figures for each of these four measures are converted into an index (Figure 4.26) that has a maximum value of 1.0 in each case. The four index values are then combined and averaged to give an overall Human Development Index value. This also has a maximum value of 1.0. Every year, the United Nations publishes the *Human Development Report*, which uses the HDI to rank all the countries of the world in terms of their level of development.

Various academic studies have concluded that there is no straightforward relationship between population and economic growth. Thus some economies with a low level of economic growth may not be hugely affected by population growth, but are more affected by other factors such as political instability and lack of investment. On the other hand, some economies that achieve a high level of economic growth may not have done so mainly because of declining population growth, but due to other factors.

Table 4.11 shows the top 25 countries listed in the *Human Development Report* for 2014. All 25 countries are in stage 4 (or stage 5) of demographic transition, suggesting a very strong link between the rate of population growth and the level of economic development (Figure 4.27). Two first-generation NICs are on the list – Singapore and Hong Kong. In both of these countries, the rate of natural increase declined as economic growth progressed. Of course, the debate is – which comes first? Does economic growth lead to lower natural increase, or vice versa? Or is there a more complex relationship between the two variables?

Table 4.11 Top 25 countries in the *Human Development Report 2014*

HDI rank	Country	HDI value 2013	Life expectancy at birth (years) 2013	Mean years of schooling (years) 2012	Expected years of schooling (years) 2012	GNI per person (2011 PPP\$) 2013	HDI value 2013
1	Norway	0.944	81.5	12.6	17.6	63909	0.943
2	Australia	0.933	82.5	12.8	19.9	41524	0.931
3	Switzerland	0.917	82.6	12.2	15.7	53762	0.916
4	Netherlands	0.915	81.0	11.9	17.9	42397	0.915
5	United States	0.914	78.9	12.9	16.5	52308	0.912
6	Germany	0.911	80.7	12.9	16.3	43049	0.911
7	New Zealand	0.910	81.1	12.5	19.4	32569	0.908
8	Canada	0.902	81.5	12.3	15.9	41887	0.901
9	Singapore	0.901	82.3	10.2	15.4	72371	0.899
10	Denmark	0.900	79.4	12.1	16.9	42880	0.900
11	Ireland	0.899	80.7	11.6	18.6	33414	0.901
12	Sweden	0.898	81.8	11.7	15.8	43201	0.897
13	Iceland	0.895	82.1	10.4	18.7	35116	0.893
14	UK	0.892	80.5	12.3	16.2	35002	0.890
15	Hong Kong , China (SAR)	0.891	83.4	10.0	15.6	52383	0.889
15	Korea (Republic of)	0.891	81.5	11.8	17.0	30345	0.888
17	Japan	0.890	83.6	11.5	15.3	36747	0.888
18	Liechtenstein	0.889	79.9	10.3	15.1	87085	0.888
19	Israel	0.888	81.8	12.5	15.7	29966	0.886
20	France	0.884	81.8	11.1	16.0	36629	0.884
21	Austria	0.881	81.1	10.8	15.6	42930	0.880
21	Belgium	0.881	80.5	10.9	16.2	39471	0.880
21	Luxembourg	0.881	80.5	11.3	13.9	58695	0.880
24	Finland	0.879	80.5	10.3	17.0	37366	0.879
25	Slovenia	0.874	79.6	11.9	16.8	26809	0.874

Source: United Nations Human Development Report 2014

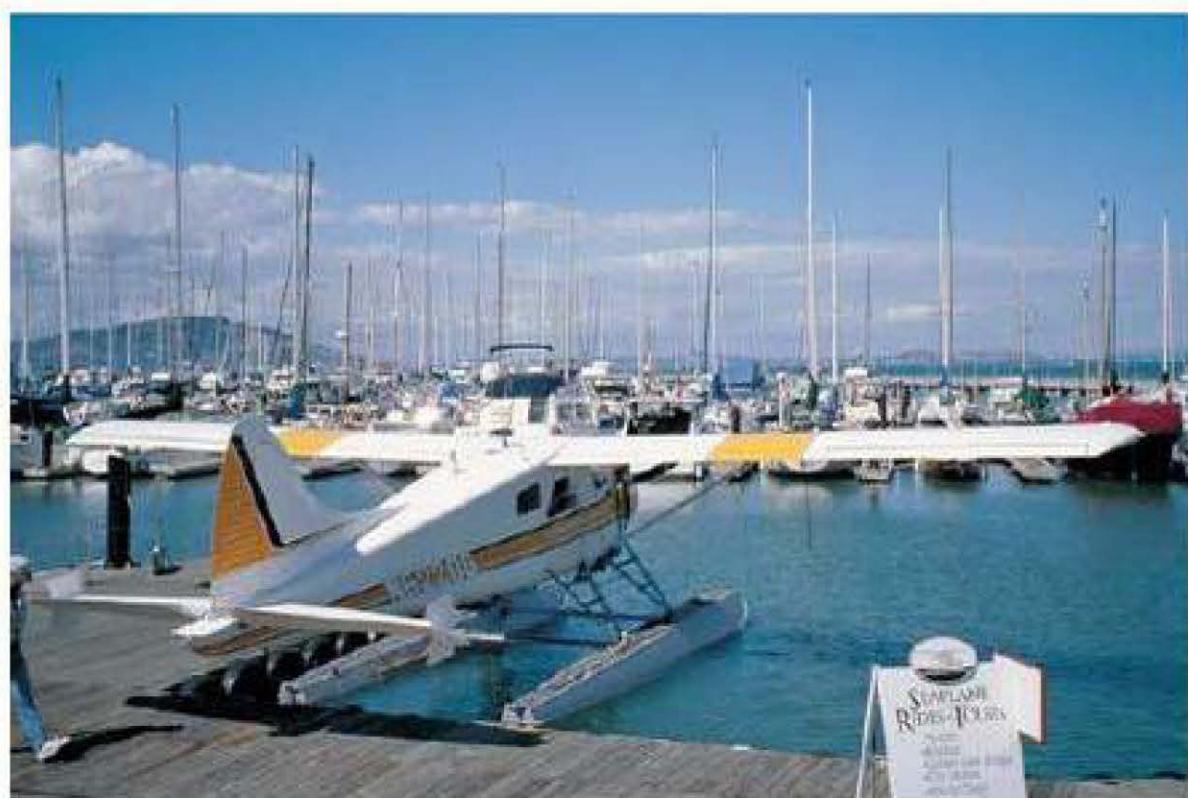


Figure 4.27 The Waterfront, San Francisco – the USA has a very high level of human development

Figure 4.28 shows people living in a country at a low level of human development. Table 4.12 shows the human development index values for each category: very high, high, medium and low human development. The countries with low human development invariably have high rates of population growth and most are in stage 2 of demographic transition. The more advanced LICs are generally in stage 3 of demographic transition. This includes countries such as Brazil, Mexico, India and Malaysia. However, again it must be stated that the development process is complex and is the result of the interaction of a wide range of factors.



Figure 4.28 A fishing village in Papua New Guinea – a low human development country

Table 4.12 Human Development Index values

Level of human development	HDI value	Number of countries 2013
Very high	0.8 and over	49
High	0.7–0.799	53
Medium	0.55–0.699	42
Low	Below 0.55	43

Source: Human Development Report 2014



Infant mortality: changes over time

The infant mortality rate is a significant measure of the general health of a population. It has a big influence on life expectancy at birth. The most recent data for infant mortality by world region is shown in Table 4.6 on page 89. The global average (2014) is now down to 38/1000 after a very considerable decline in recent decades. The first edition of this book gave 2010 data, which showed the global average for infant mortality at 46/1000. A fall of 8/1000 is a major success for global health improvement in such a short time period. Figure 4.29 shows how much infant mortality has fallen since 1950 and the UN projections to 2050.

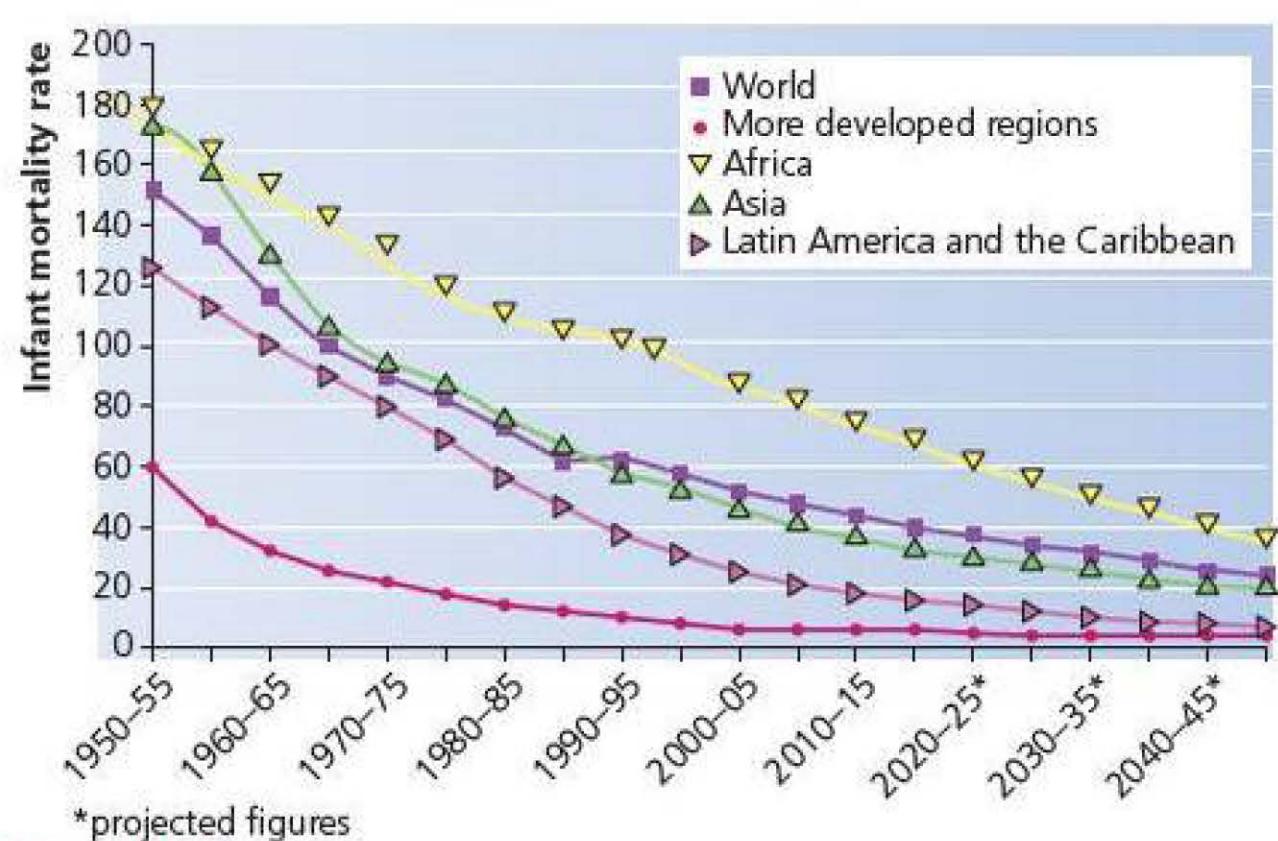


Figure 4.29 Decline in infant mortality rate, 1950–2050

To put the current figures in context, a review of infant mortality at the beginning of the twentieth century found that only one country in the world, Sweden, had an infant mortality rate of less than 100/1000 (or 10 per cent). This means that for the world as a whole, more than 10 per cent of all live births did not survive until their first birthday. In many countries, the figure was above 20 per cent, or 200/1000!

The factors responsible for the considerable decline in global infant mortality include:

- better nutrition
- improvements in public health, particularly with regard to water supply and sanitation
- significant medical advances, particularly in the field of paediatrics
- improvements in housing and other human environmental conditions
- the introduction of better maternity conditions (maternity leave, and so on) for new mothers.

A child's risk of dying is greatest in the first 28 days of life, known as the **neonatal period**. There have been major advances in caring for infants during this period worldwide. The number of deaths globally of children under 28 days fell from 4.7 million in 1990 to 2.8 million in 2013. In the same period, deaths of children under 1 year of age declined from 8.9 million in 1990 to 4.6 million in 2013.

Changes in life expectancy

The decline in levels of mortality and the increase in life expectancy has been the most important reward of economic and social development. On a global scale, 75 per cent of the total improvement in longevity has been achieved in the twentieth century and the early years of the twenty-first century. In 1900, the world average life expectancy is estimated to have been about 30 years, but by 1950–55 it had risen to 46 years. By 1980–85 it had reached a fraction under 60 years. The current global average is 70 years. Here there is a four-year gap between males and females (69 and 73 years). The gender gap is wider in HICs (75 and 82 years) than in LICs (67 and 71 years). It is likely that the life expectancy gap between HICs and LICs/MICs will continue to narrow in the future (Figures 4.30 and 4.31).



Figure 4.30 The provision of water pumps in this village in Nepal has improved life expectancy

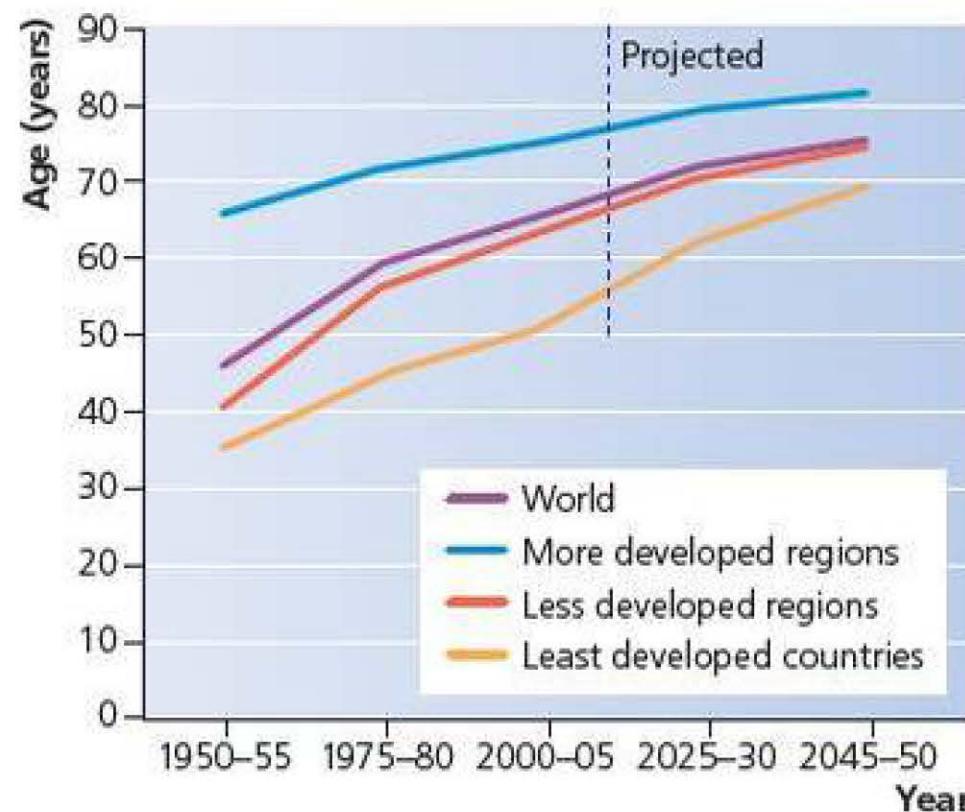


Figure 4.31 Life expectancy at birth – world and development regions, 1950–2050

Section 4.2 Activities

- 1 a What is development?
b Give three examples of how development occurs.
- 2 Discuss the demographic and other factors that influence development.
- 3 Describe the data presented in Table 4.11.
- 4 What are the main reasons for the global decline in infant mortality?
- 5 Discuss the changes in life expectancy shown in Figure 4.31.

4.3 Population–resource relationships

□ Food security

The definition of **food security** is when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life. The total amount of food produced around the world today is enough to provide everyone with a healthy diet. The problem is that while some countries produce a food surplus or have enough money to buy it elsewhere, other countries are in food deficit and lack the financial resources to buy enough food abroad. About one in nine of the world's population remains chronically undernourished. The global distribution of undernourishment has changed significantly in recent decades.

Forecasts of famine tend to appear every few decades or so. In 1974, a world food summit held in Rome met against a background of rapidly rising food prices and a high rate of global population growth. The major concern was that the surge in population would overwhelm humankind's ability to produce food in the early twenty-first century. The next world food summit, again hosted by Rome, was

held in 1996. It too met against a background of rising prices and falling stocks. But new concerns, unknown in 1974, had appeared. Global warming threatened to reduce the productivity of substantial areas of land and many scientists were worried about the long-term consequences of genetic engineering.

Rapidly rising food prices (Figure 4.32) in recent years and a range of other problems associated with food production have resulted in the frequent use of the term 'global food crisis'. At the World Summit on Food Security held in Rome in November 2009, the FAO Director-General Jacques Diouf referred to the over 1 billion hungry people in the world as 'our tragic achievement in these modern days'. He stressed the need to produce food where poor and hungry people live and to boost agricultural investment in these regions.

There is a huge geographical imbalance between food production and food consumption, resulting in a lack of food security in many countries. The three main strands of food security are:

- **food availability** – sufficient quantities of food available on a consistent basis
- **food access** – having sufficient resources to obtain appropriate foods for a nutritious diet
- **food use** – appropriate use based on knowledge of basic nutrition and care, as well as adequate water and sanitation.

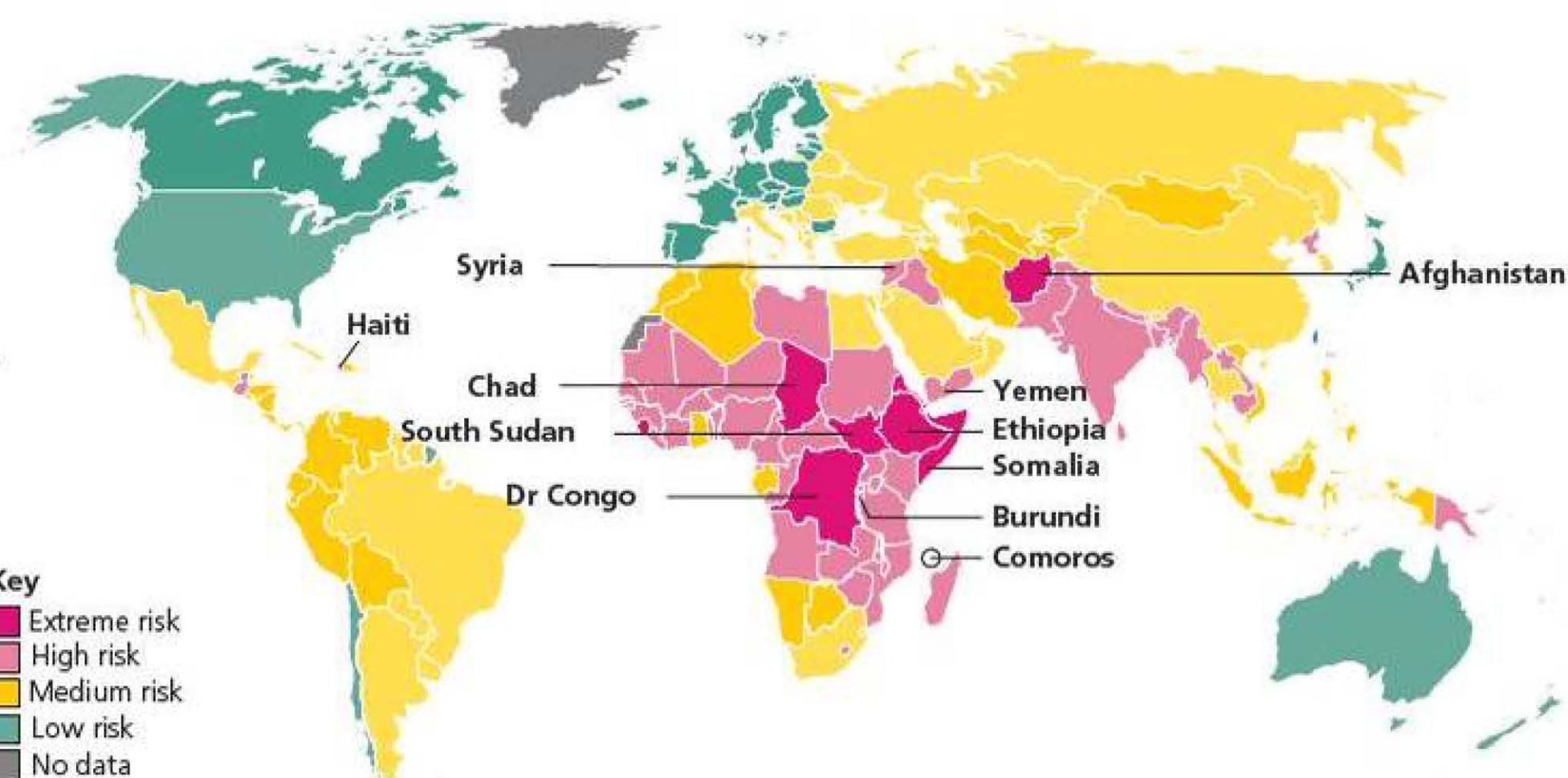


Figure 4.32 Selling local produce in a Vietnamese food market

Figure 4.33 shows the Food Security Risk index for 2013. The greatest degree of risk is in Africa, the Middle East and Asia.

The current food crisis presents three fundamental threats, which are:

- pushing more people into poverty
- eroding the development gains that have been achieved in many countries in recent decades
- presenting a strategic threat by endangering political stability in some countries; a significant number of countries have experienced food-related riots and unrest in recent years.



Source: IGCSE Geography, P. Guinness and G. Nagle (Hodder Education)

Figure 4.33 World map – Food Security Risk Index, 2013

Table 4.13 summarises some of the current adverse influences on food supply and distribution. LICs have long complained about the subsidies that the European Union and other HICs give to their farmers and the import tariffs they impose on food products coming from elsewhere. This denies valuable markets to many LICs. On the other side of the coin, production for local markets has declined in some LICs because of increasing production for export markets. Agricultural transnational corporations (TNCs) are often the driving force behind this trend, but governments in LICs are also anxious to increase exports to obtain foreign currency.

Table 4.13 Adverse influences on global food production and distribution

Nature of adverse influence	Effect of adverse influence
Economic	Demand for cereal grains has outstripped supply in recent years Rising energy prices and agricultural production and transport costs have pushed up costs all along the farm-to-market chain Serious underinvestment in agricultural production and technology in LICs has resulted in poor productivity and underdeveloped rural infrastructure The production of food for local markets has declined in many LICs as more food has been produced for export
Ecological	Significant periods of poor weather and a number of severe weather events have had a major impact on harvests in key food-exporting countries Increasing problems of soil degradation in both HICs and LICs Declining biodiversity may impact on food production in the future
Socio-political	The global agricultural production and trading system, built on import tariffs and subsidies, creates great distortions, favouring production in HICs and disadvantaging producers in LICs An inadequate international system of monitoring and deploying food relief Disagreements over the use of trans-boundary resources such as river systems and aquifers

□ The causes and consequences of food shortages

About 800 million people in the world suffer from hunger. The problem is mainly concentrated in Africa but also affects a number of Asian and Latin American countries. Food shortages can occur because of both natural and human problems. The natural problems that can lead to food shortages include:

- soil exhaustion
- drought
- floods

- tropical cyclones
- pests
- disease.

However, economic and political factors can also contribute to food shortages. Such factors include:

- low capital investment
- rapidly rising population
- poor distribution/transport difficulties
- conflict situations.

The impact of such problems has been felt most intensely in LICs, where adequate food stocks to cover emergencies affecting food supply usually do not exist. However, HICs have not been without their problems. Thus HICs are not immune from the physical problems that can cause food shortages. However, they invariably have the human resources to cope with such problems, so actual food shortages do not generally occur.

The effects of food shortages are both short term and longer term. **Malnutrition** can affect a considerable number of people, particularly children, within a relatively short period when food supplies are significantly reduced. With malnutrition people are less resistant to disease and more likely to fall ill. Such diseases include beri-beri (vitamin B1 deficiency), rickets (vitamin D deficiency) and kwashiorkor (protein deficiency). People who are continually starved of nutrients never fulfil their physical or intellectual potential. Malnutrition reduces people's capacity to work, so the land may not be properly tended, and other economic activities may not be pursued to their full potential. This is threatening to lock parts of the developing world into an endless cycle of ill-health, low productivity and underdevelopment.

□ The role of technology and innovation in the development of food production

The world has passed through many stages of food production, each marked by significant technological advance. Never before has the world's production-to-consumption food system been more complex. Contemporary food science and technology have made major contributions to the success of modern food systems by integrating key elements of many different academic disciplines to solve difficult problems, such as improving nutritional deficiencies and food safety.

Another huge challenge is the large and growing food-security gap around the world. As much as half of the food grown and harvested in LICs is not consumed, partly because proper handling, processing, packaging and distribution methods are lacking. Starvation and nutritional deficiencies in vitamins, minerals, protein and calories are still prevalent in many parts of the world. Science-based improvements in agricultural production,

Case Study: Sudan and South Sudan

The countries of Sudan and South Sudan (Figure 4.34), which were the single country of Sudan until 2011, have suffered food shortages for decades. The long civil war and drought have been the main reasons for famine in Sudan, but there are many associated factors as well (Figure 4.35). The civil war, which lasted for over 20 years, was between the government in Khartoum and rebel forces in the western region of Darfur and in the south (now South Sudan). A Christian Aid document in 2004 described the Sudan as 'A country still gripped by a civil war that has been

fuelled, prolonged and part-financed by oil'. One of the big issues between the two sides in the civil war was the sharing of oil wealth between the government-controlled north and the south of the country where much of the oil is found. The United Nations has estimated that up to 2 million people were displaced by the civil war and more than 70 000 people died from hunger and associated diseases. At times, the UN World Food Programme stopped deliveries of vital food supplies because the situation was considered too dangerous for the drivers and aid workers.



Figure 4.34 Sudan and South Sudan



Figure 4.36 The fertile banks of the River Nile in Sudan with desert beyond

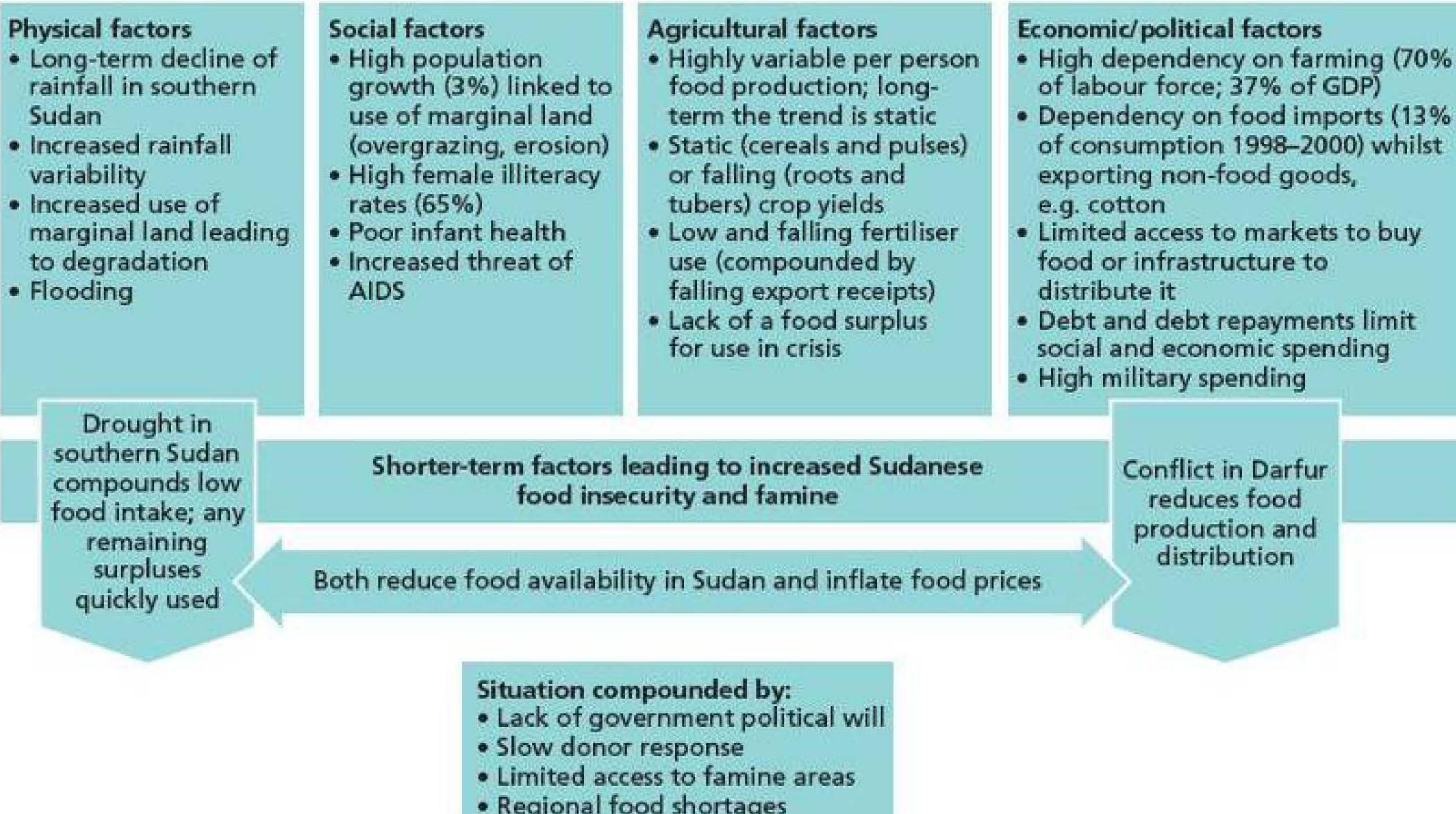


Figure 4.35 Summary of causes of famine in Sudan and South Sudan

food science and technology, and food distribution systems are vitally important in tackling this problem.

Agricultural technology covers a wide range of activities and includes:

- the development of high-yielding seeds
- genetic engineering, which remains a controversial issue although its use has spread significantly around the world in the last decade
- precision agriculture – the integration of information to improve agricultural knowledge in addressing site-specific production targets
- environmental modelling – the optimal use of genetics on specific soils within known weather profiles
- continued advances in the ‘classical’ agricultural technologies
- employing advanced techniques to remediate land that has been damaged by poor agricultural practices
- integrated pest management (IPM), which considers the site-specific conditions, but also the values and business considerations of the food producers.

Food production: the Green Revolution

Innovation in food production has been essential to feeding a rising global population. The package of agricultural improvements generally known as the **Green Revolution** was seen as the answer to the food problem in many LICs and MICs. India was one of the first countries to benefit when a high-yielding variety seed programme (HVP) started in 1966–67. In terms of production, it was a turning point for Indian agriculture, which had virtually reached stagnation. The HVP introduced new hybrid varieties of five cereals: wheat, rice, maize, sorghum and millet. All were drought-resistant, with the exception of rice; were very responsive to the application of fertilisers; and they had a shorter growing season than the traditional varieties they replaced. Although the benefits of the Green Revolution are clear, serious criticisms have also been made. The two sides of the story can be summarised as follows:

Advantages

- Yields are twice to four times greater than of traditional varieties.
- The shorter growing season has allowed the introduction of an extra crop in some areas.
- Farming incomes have increased, allowing the purchase of machinery, better seeds, fertilisers and pesticides.
- The diet of rural communities is now more varied.
- Local infrastructure has been upgraded to accommodate a stronger market approach.
- Employment has been created in industries supplying farms with inputs.
- Higher returns have justified a significant increase in irrigation.

Disadvantages

- High inputs of fertiliser and pesticide are required to optimise production. This is costly in both economic and environmental terms. In some areas, rural indebtedness has risen sharply.
- High-yielding varieties (HYVs) require more weed control and are often more susceptible to pests and disease.
- Middle- and higher-income farmers have often benefited much more than the majority on low incomes, thus widening the income gap in rural communities. Increased rural-to-urban migration has often been the result.
- Mechanisation has increased rural unemployment.
- Some HYVs have an inferior taste.
- The problem of salinisation has increased, along with the expansion of the irrigated areas.
- HYVs can be low in minerals and vitamins. Because the new crops have displaced the local fruits, vegetables and legumes that traditionally supplied important vitamins and minerals, the diet of many people in LICs and MICs is now extremely low in zinc, iron, vitamin A and other micronutrients.

Perennial crops: the next agricultural revolution?

The answer to many of the world’s current agricultural problems may lie in the development of **perennial crops**. Today’s annual crops die off once they are harvested and new seeds have to be planted before the cycle of production can begin again. The soil is most vulnerable to erosion in the period between harvesting and the next planting. Perennial crops would protect the soil from erosion and also offer other advantages. Over the next few years, plant biologists hope to breed plants that closely resemble domestic crops but retain their perennial habit. Classical crossing methods have been proved to work in the search for perennial crop plants, but the process is slow. Some plant breeders aim to speed up the process by using genetic engineering. The objective is to find the genes that are linked to domestication and then insert these into wild plants.

The role of constraints in sustaining populations

There are a significant number of potential constraints in developing resources to sustain changing populations. Figure 4.37 illustrates the factors affecting the development of a particular resource body. The factors included in the diagram are those that operate in normal economic conditions and thus do not include war or other types of conflict, which can greatly increase the constraints operating on resource development.

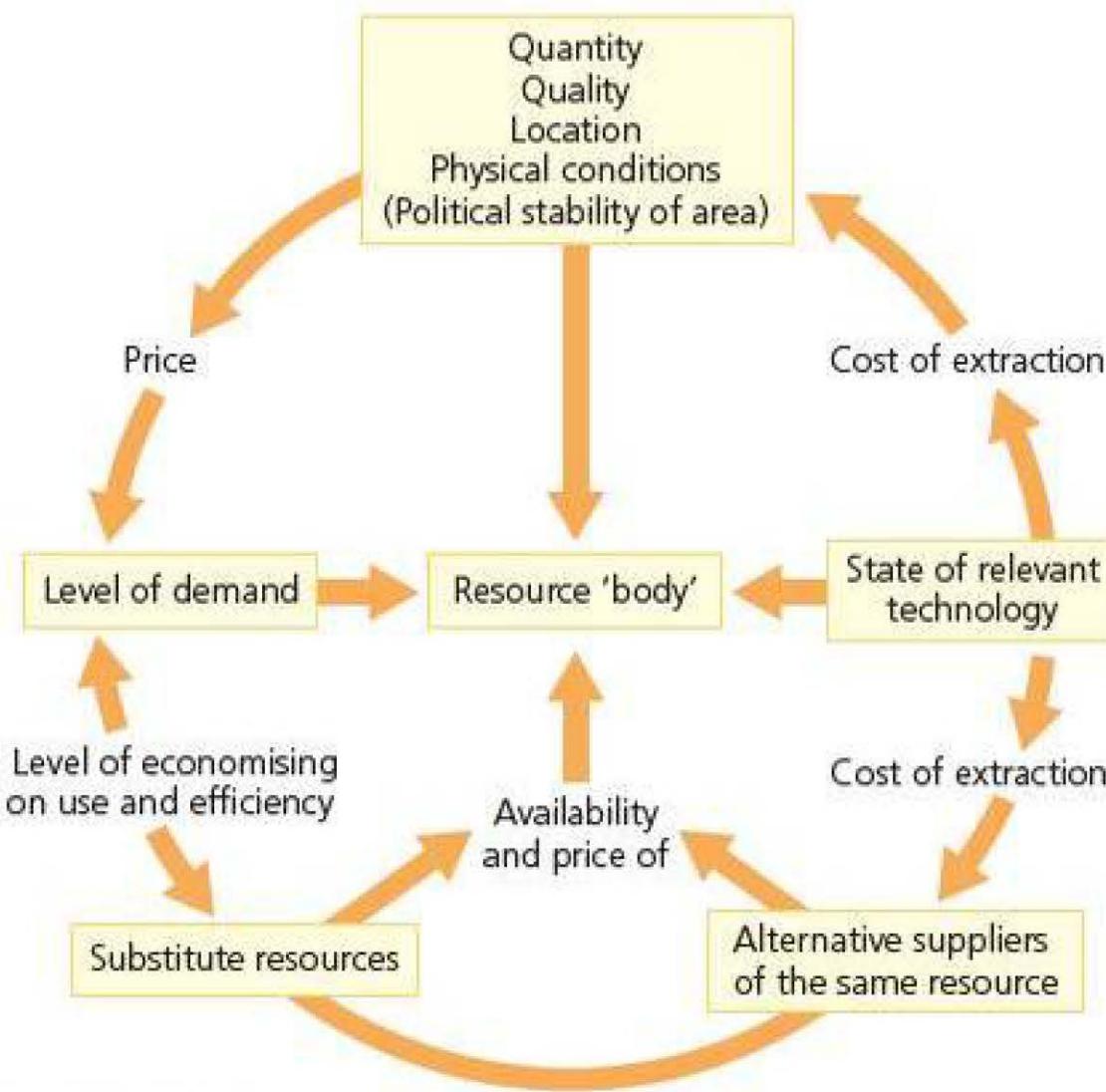


Figure 4.37 Factors affecting the development of a particular resource body

War is a major issue for development. It significantly retards development and the ability of a country to sustain its population. Major conflict can set back the process of development by decades. In many conflicts, water, food and other resources are deliberately destroyed to make life as difficult as possible for the opposing population. Conversely, where development succeeds, countries become progressively safer from violent conflict, making subsequent development easier.

Trade barriers are another significant constraint. Many LICs complain that the trade barriers (tariffs, quotas and regulations) imposed by many HICs are too stringent. This reduces the export potential of poorer countries and hinders their development.

Climatic and other hazards in the short term, and climate change in the medium and long term, have a serious impact on the utilisation of resources. For example:

- Tropical storms are a major hazard and an impediment to development in a number of LICs such as Bangladesh and the countries of Central America and the Caribbean.
- Regions at significant risk of flooding, due to tropical storms and other factors, are often deprived of investment in agriculture and other aspects of development because of the potential losses involved.
- Drought has a considerable impact on the ability to sustain changing populations in many parts of the world. Desertification is reducing the agricultural potential of many countries, for example those in the Sahel region in Africa.

- Volcanic eruptions can devastate large areas, covering farmland in lava, burying settlements and destroying infrastructure. A major eruption on the island of Montserrat in the Caribbean in 1995 has had a huge impact on the development of the island. The southern third of the island had to be evacuated and all public services had to be removed to the north of the island.
- Earthquakes can have a significant impact on resource development, adding considerably to the costs of development because of the expensive construction techniques required to mitigate the consequences of this hazard.

Climate change has the potential to increase the frequency of extreme events in many parts of the world. In some regions, there will be wide-ranging implications for human health.

Section 4.3 Activities

- 1 Give three examples of the modern role of agricultural technology.
- 2 Discuss the advantages and disadvantages of the Green Revolution.
- 3 How might perennial crops lead to a new agricultural revolution?
- 4 Explain the role of constraints in sustaining changing populations.

□ Carrying capacity

Carrying capacity is the largest population that the resources of a given environment can support. Carrying capacity is not a fixed concept as advances in technology can significantly increase the carrying capacity of individual regions and the world as a whole. For example, Abbé Raynal (*Révolution de l'Amérique*, 1781) said of the USA: 'If ten million men ever manage to support themselves in these provinces it will be a great deal'. Yet today the population of the USA is over 300million and hardly anyone would consider the country to be overpopulated.

Resources can be classed as either natural or human. The traditional distinction is between renewable or flow resources and non-renewable or stock resources. However, the importance of aesthetic resources is being increasingly recognised. Further subdivision of the non-renewable category is particularly relevant to both fuel and non-fuel minerals. Renewable resources can be viewed as either critical or non-critical. The former are sustainable if prudent resource management is employed, while the latter can be seen as everlasting.



Figure 4.38 Water tower in a reservoir: Lake Vyrnwy, Wales – even in temperate countries like the UK, sufficient water supply is becoming of increasing concern

The relationship between population and resources has concerned those with an understanding of the subject for thousands of years. However, the assumptions made by earlier writers were based on very limited evidence, as few statistical records existed more than two centuries ago.

The enormous growth of the global economy in recent decades has had a phenomenal impact on the planet's resources and natural environment (Figure 4.38). Many resources are running out and waste sinks are becoming full. The remaining natural world can no longer support the existing global economy, much less one that continues to expand. The main responsibility lies with the rich countries of the world. The world's richest 20 per cent of the population accounted for over 94 per cent of the world's wealth in 2014, while the world's poorest 80 per cent currently own just 5.5 per cent!

Climate change will have an impact on a number of essential resources for human survival, increasing the competition between countries for such resources. An article in the British newspaper *The Times* (9 March 2009) about this global situation was entitled 'World heading

for a War of the Resources'. In the same month, an article appeared in *The Guardian* newspaper (20 March 2009) entitled 'Deadly crop fungus brings famine threat to developing world'. It reported that leading crop scientists had issued a warning that a deadly airborne fungus could devastate wheat harvests in poor countries and lead to famines and civil unrest over significant regions of central Asia and Africa. A further article in *The Times* (14 May 2009) was entitled 'Russia warns of war within decade over hunt for oil and gas'.

The **ecological footprint** has arguably become the world's foremost measure of humanity's demands on the natural environment. It was conceived in 1990 by M. Wackernagel and W. Rees at the University of British Columbia. The concept of ecological footprints has been used to measure natural resource consumption, how it varies from country to country and how it has changed over time. The ecological footprint (Figure 4.39) for a country has been defined as 'the sum of all the cropland, grazing land, forest and fishing grounds required to produce the food, fibre and timber it consumes, to absorb the wastes emitted when it uses energy, and to provide

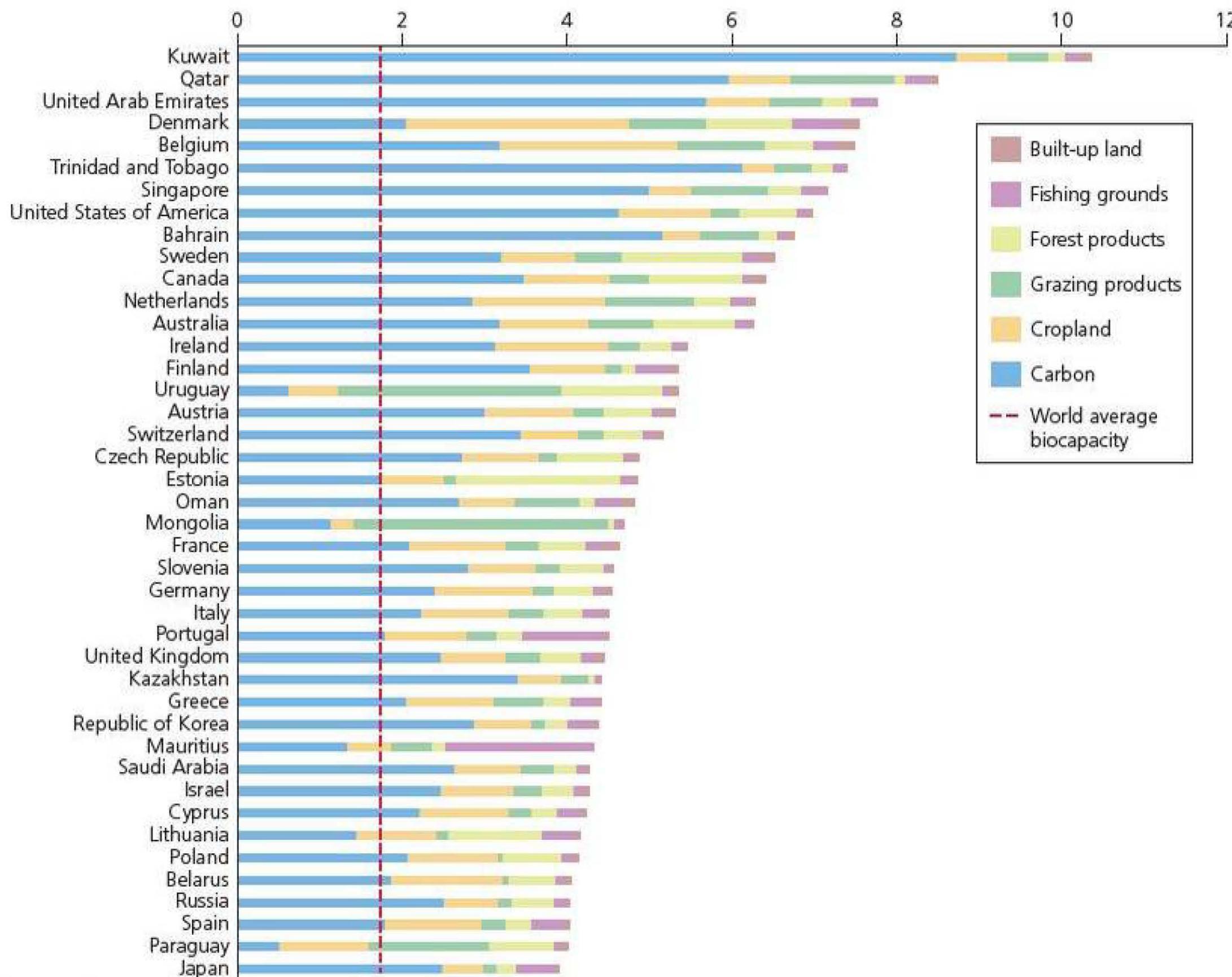


Figure 4.39 Per person ecological footprint (global hectares demanded per person), 2010

space for its infrastructure' (Living Planet Report 2008). Thus the ecological footprint, calculated for each country and the world as a whole, has six components (Figure 4.39):

- built-up land
- fishing grounds
- forest
- grazing land
- cropland
- carbon footprint.

In previous years, an additional component reflecting the electricity generated by nuclear power plants was included in ecological footprint accounts. This component is no longer used because the risks and demands of nuclear power are not easily expressed in terms of **biocapacity**.

The ecological footprint is measured in **global hectares**. A global hectare is a hectare with world-average ability to produce resources and absorb wastes. In 2005 the global ecological footprint was 17.5 billion global hectares (gha) or

2.7 gha per person. This can be viewed as the demand side of the equation. On the supply side, the total productive area, or biocapacity of the planet, was 13.6 billion gha, or 2.1 gha per person. With demand greater than supply, the Earth is living beyond its environmental means.

Figure 4.39 shows the ecological footprint of countries with the highest per person figures and how the footprint of each country is made up. Kuwait, Qatar, United Arab Emirates, Denmark and Belgium have the highest ecological footprints per person in the world. A total of 13 countries have figures above 6 gha per person. Nations at different income levels show considerable disparities in the extent of their ecological footprint. The lowest per person figures were attributed to Bangladesh, Pakistan, Afghanistan, Haiti, Eritrea, Occupied Palestinian Territory, and Timor-Leste. All these countries have an ecological footprint of about 1.0 gha per person. Footprint and biocapacity figures for individual countries are calculated annually by Global Footprint Network.

In many of the countries illustrated in Figure 4.39, the **carbon footprint** is the dominant element of the six components that comprise the ecological footprint, but in others like Denmark, Uruguay and Mongolia other aspects of the ecological footprint are more important. In Uruguay, the demand on grazing land is by far the dominant component of the ecological footprint. In Denmark, the demand on its cropland is the country's major impact on the natural environment. In general, the relative importance of the carbon footprint declines as the total ecological footprint of countries falls (Figure 4.40). In many Sub-Saharan African countries, the contribution of carbon to the total ecological footprint is extremely low indeed.

The ecological footprint is strongly influenced by the size of a country's population. The other main influences are the level of demand for goods and services in a country (the standard of living), and how this demand is met in terms of environmental impact. International trade is taken into account in the calculation of a country's ecological footprint. For each country, its imports are added to its production, while its exports are subtracted from its total.

The expansion of world trade has been an important factor in the growth of humanity's total ecological footprint. In 1961, the first year for which full datasets are available, global trade accounted for 8 per cent of the world's ecological footprint. By 2010, this had risen to more than 40 per cent.

The ecological footprint includes only those aspects of resource consumption and waste production for which the Earth has regenerative capacity, and where data exist that allow this demand to be expressed in terms of productive area. For example, toxic releases do not figure in ecological footprint accounts. Ecological footprint



Figure 4.40 Women carrying firewood across a river in Nepal – depletion of forest resources is part of the ecological footprint

calculations provide snapshots of past resource demand and availability. They do not:

- attempt to predict the future
- indicate the intensity with which a biologically productive area is being used
- evaluate the social and economic dimensions of sustainability.

Assessing human pressure on the planet is a vital starting point. The ecological footprint can be calculated at the full range of scales from the individual to the total global population. Knowing the extent of human pressure on the natural environment helps us to manage ecological assets more wisely on both an individual and a collective basis. It is an important tool in the advancement of sustainable development.

Figure 4.41 shows how humanity's ecological footprint increased from 1961 to 2013. According to the *Living Planet Report 2008*, the global ecological footprint now exceeds the planet's regenerative capacity by about 30 per cent. This global excess is increasing and as a result ecosystems are being run down and waste is accumulating in the air, land and water. The resulting deforestation, water shortages, declining biodiversity and climate change are putting the future development of all countries at risk.

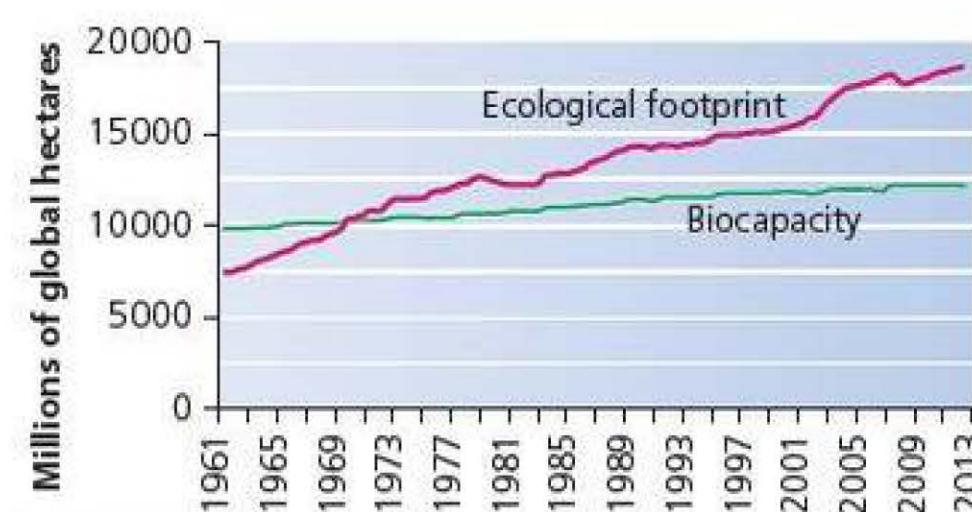


Figure 4.41 Global ecological footprint, 1961–2013

Human demand on the Earth has more than doubled over the last 45 years due to a combination of population growth and rising living standards, which has involved greater individual consumption (Figure 4.42). In 1961, most countries in the world had more than enough biocapacity to meet their own demand, but by the mid-1980s humankind's ecological footprint had reached the Earth's biocapacity. Since then, humanity has been in ecological **overshoot**, with annual demand on resources exceeding the Earth's regenerative capacity. The WWF calculates that it now takes the Earth 1 year and 4 months to regenerate what the global population uses in a year. This is a very significant threat to both the well-being of the human population and the planet as a whole.



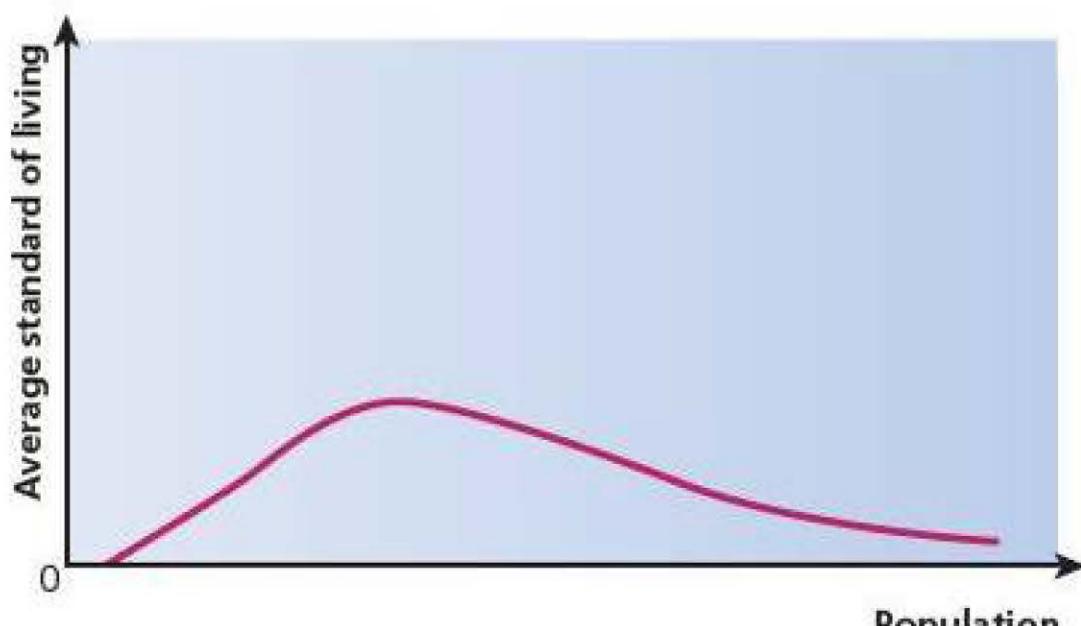
Figure 4.42 Fishing boats on the coast of Indonesia – fish are an important resource

Section 4.3 Activities

- 1 Define the term *carrying capacity*.
- 2 a What is the *ecological footprint*?
b How is it calculated?
- 3 Describe the variations in the ecological footprint for the countries illustrated in Figure 4.39.
- 4 Present a brief analysis of Figure 4.41.

Overpopulation, optimum population and underpopulation

The idea of **optimum population** has been mainly understood in an economic sense (Figure 4.43). At first, an increasing population allows for a fuller exploitation of a country's resource base, enabling living standards to rise. However, beyond a certain level rising numbers place increasing pressure on resources, and living standards begin to decline. The highest average living standard marks the optimum population, or more accurately the

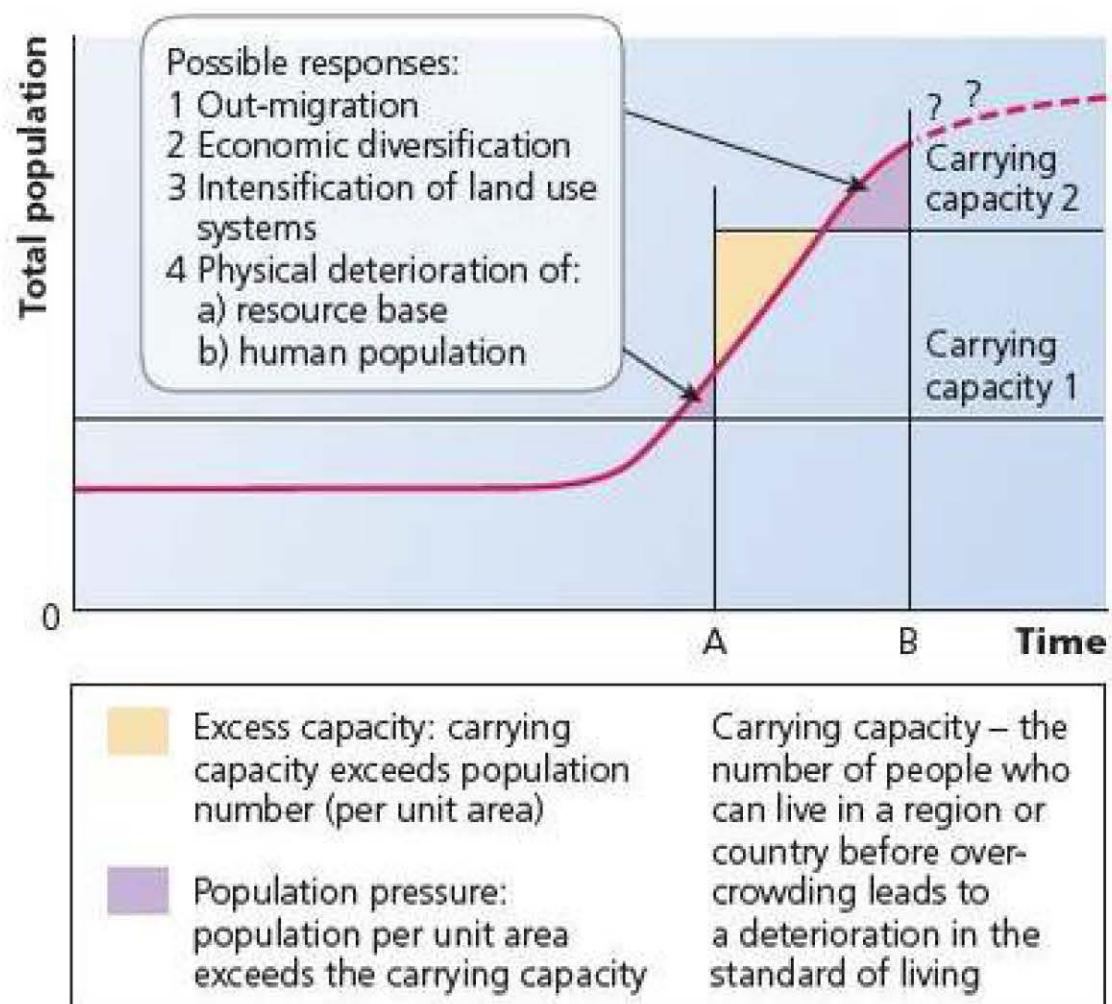


Source: Advanced Geography: Concepts & Cases by P. Guinness & G. Nagle (Hodder Education, 1999), p.32

Figure 4.43 The optimum population

economic optimum. Before that population is reached, the country or region can be said to be **underpopulated**. As the population rises beyond the optimum, the country or region can be said to be **overpopulated**.

There is no historical example of a stationary population having achieved appreciable economic progress, although this may not be so in the future. It is not coincidental that in the past, periods of rapid population growth have paralleled eras of technological advance, which have increased the carrying capacity of countries and regions. Thus we are led from the idea of optimum population as a static concept to the dynamic concept of **optimum rhythm of growth** (Figure 4.44), whereby population growth responds to substantial technological advances.



Source: Advanced Geography: Concepts & Cases by P. Guinness & G. Nagle (Hodder Education, 1999), p.33

Figure 4.44 Optimum rhythm of growth

The most obvious examples of **population pressure** are to be found in LICs, but the question here is: are these cases of absolute overpopulation, or the results of underdevelopment that can be rectified by adopting remedial strategies over time?

The ideas of Thomas Malthus

The Rev. Malthus (1766–1834) produced his *Essay on the Principle of Population* in 1798. He said that the crux of the population problem was 'the existence of a tendency in mankind to increase, if unchecked, beyond the possibility of an adequate supply of food in a limited territory'. Malthus thought that an increased food supply was achieved mainly by bringing more land into arable production. He maintained that while the supply of food could, at best, only be increased by a constant amount in arithmetical progression (1 – 2 – 3 – 4 – 5 – 6), the human

population tends to increase in geometrical progression (1 – 2 – 4 – 8 – 16 – 32), multiplying itself by a constant amount each time. In time, population would outstrip food supply until a catastrophe occurred in the form of famine, disease or war. War would occur as human groups fought over increasingly scarce resources. These limiting factors maintained a balance between population and resources in the long term. In a later paper, Malthus placed significant emphasis on 'moral restraint' as an important factor in controlling population.

Clearly, Malthus was influenced by events in and before the eighteenth century and could not have foreseen the great advances that were to unfold in the following two centuries that have allowed population to grow at an unprecedented rate, alongside a huge rise in the exploitation and use of resources. There have been many advances in agriculture since the time of Malthus that have contributed to huge increases in agricultural production. These advances include: the development of artificial fertilisers and pesticides, new irrigation techniques, high-yielding varieties of crops, cross-breeding of cattle, greenhouse farming and the reclamation of land from the sea.

However, nearly all of the world's productive land is already exploited. Most of the unexploited land is either too steep, too wet, too dry or too cold for agriculture (Figure 4.45). In Asia, nearly 80 per cent of potentially arable land is now under cultivation.

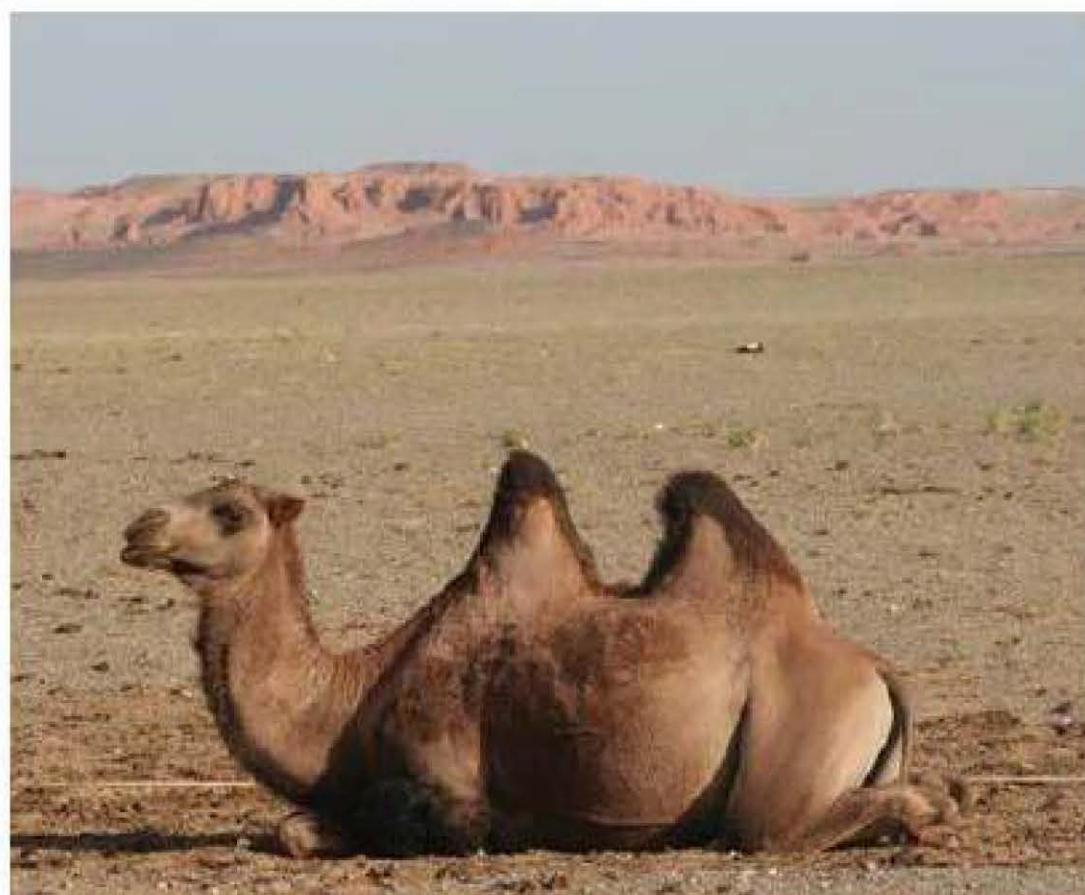
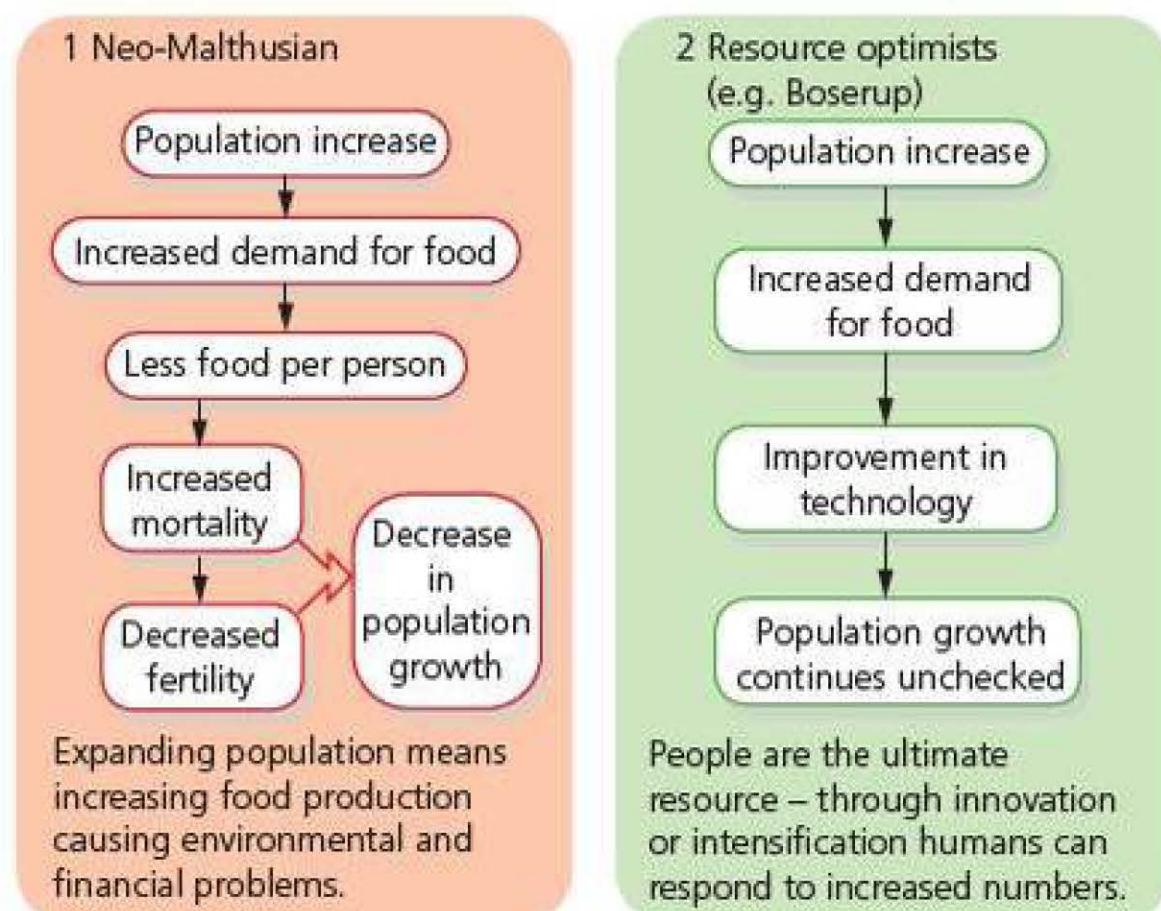


Figure 4.45 The Gobi desert in central Asia – the process of desertification has been spreading in recent decades

Figure 4.46 summarises the opposing views of the **neo-Malthusians** and the resource optimists such as Esther Boserup (1910–99). Neo-Malthusians argue that an expanding population will lead to unsustainable pressure on food and other resources. In recent years, neo-Malthusians have highlighted:

There are two opposing views of the effects of population growth:



Source: Advanced Geography: Concepts & Cases
by P. Guinness & G. Nagle (Hodder Education, 1999), p.35

Figure 4.46 The opposing views of the neo-Malthusians and the anti-Malthusians

- the steady global decline in the area of farmland per person
- the steep rise in the cost of many food products in recent years
- the growing scarcity of fish in many parts of the world
- the already apparent impact of climate change on agriculture in some world regions
- the switchover of large areas of land from food production to the production of biofuels, helping to create a food crisis in order to reduce the energy crisis
- the continuing increase in the world's population
- the global increase in the level of meat consumption as incomes rise in NICs in particular.

The **anti-Malthusians** or resource optimists believe that human ingenuity will continue to conquer resource problems, pointing to many examples in human history where, through innovation or intensification, humans have responded to increased numbers. Resource optimists highlight a number of continuing advances, which include:

- the development of new resources
- the replacement of less efficient with more efficient resources
- the rapid development of green technology, with increasing research and development (R&D) in this growing economic sector
- important advances in agricultural research
- stabilising levels of consumption in some HICs.

Section 4.3 Activities

- 1 Explain the following:
 - a underpopulation, b overpopulation and c optimum population.
- 2 Study Figure 4.44.
 - a Suggest why the population initially started to increase.
 - b What could account for the increases in carrying capacity at times A and B?
 - c Why can Figure 4.44 be described as a dynamic model while Figure 4.43 is a static model?
- 3 With the aid of Figure 4.46, explain the opposing views of the neo-Malthusians and the resource optimists.

and to aid development, with a government-backed family planning programme. Rural and urban birth-control clinics rapidly increased in number. Financial and other incentives were offered in some states for those participating in programmes, especially for **sterilisation**. In the mid-1970s, the sterilisation campaign became increasingly coercive, reaching a peak of 8.3 million operations in 1977. **Abortion** was legalised in 1972 and in 1978 the minimum age of marriage was increased to 18 years for females and 21 years for males. The birth rate fell from 45/1000 in 1951–61 to 41/1000 in 1961–71. By 1987, it was down to 33/1000, falling further to 29/1000 in 1995. By 2014, it had dropped to 22/1000. It was not long before many other LICs followed India's policy of government investment to reduce fertility. The most severe anti-natalist policy ever introduced has been in operation in China since 1979.

What is perhaps surprising is the number of countries that now see their fertility as too low. Such countries are concerned about:

- the socio-economic implications of population ageing
- the decrease in the supply of labour
- the long-term prospect of population decline.

Russia has seen its population drop considerably since 1991. Alcoholism, AIDS, pollution and poverty are among the factors reducing life expectancy and discouraging births. In 2008, Russia began honouring families with four or more children with a Paternal Glory medal. The government has urged Russians to have more children, sometimes suggesting it is a matter of public duty.

Section 4.4 Activities

- 1 Define the term *population policy*.
- 2 What is the difference between a pro-natalist policy and an anti-natalist policy?
- 3 Suggest why the governments of some countries want to reduce their fertility while others want to increase it.
- 4 Why does the management of natural increase focus on fertility as opposed to mortality?

Case Study: Managing natural increase in China

China, with a population in excess of 1.3 billion, has been operating the world's strictest **family-planning programme** since 1979. Known as the one-child policy, it has drastically reduced population growth, but also brought about a number of adverse consequences, including:

- demographic ageing
- an unbalanced sex ratio
- a generation of 'spoiled' only children
- a social divide as an increasing number of wealthy couples 'buy their way round' the legislation.

Chinese demographers say that the one-child policy has been successful in preventing at least 300 million births, and has played a significant role in the country's economic growth.

Although it is the third largest country in the world in terms of land area, 25 per cent of China is infertile desert or mountain and only 10 per cent of the total area can be used for arable farming. Most of the best land is in the east and south, reflected in the extremely high population densities found in these regions. Table 4.14 ranks China's administrative regions by population size and shows a comparable country in terms of total population for each region. For example, Guangdong, with over 95 million people, equivalent to the population



Figure 4.47 The central business district of Beijing

of Mexico, has the largest population in China. Anhui has a population similar to that of the UK, and seven Chinese provinces have populations higher than the UK.

Table 4.14 China's administrative regions by population

Rank	Administrative division, China	Population	Comparable country (country rank worldwide)
	CHINA	1 358 650 000	India (1.2 billion), or combined populations of western Europe, North America and South America
1	Guangdong	95 440 000	Mexico (11)
2	Henan	94 290 000	Ethiopia (15) + Guatemala (66)
3	Shandong	94 170 000	Vietnam (13) + Sierra Leone (107)
4	Sichuan	81 380 000	Germany (14)
5	Jiangsu	76 770 000	Egypt (16)
6	Hebei	69 890 000	Iran (18)
7	Hunan	63 800 000	Thailand (21)
8	Anhui	61 350 000	UK (22)
9	Hubel	57 110 000	Italy (23)
10	Zhejiang	51 200 000	Myanmar (24)
11	Guangxi	48 160 000	South Korea (26)
12	Yunnan	45 430 000	Spain (28)
13	Jiangxi	44 000 000	Colombia (29)
14	Liaoning	43 150 000	Sudan (31)
15	Heilongjiang	38 250 000	Argentina (33)
16	Gulzhou	37 930 000	Kenya (32)
17	Shaanxi	37 620 000	Poland (34)
18	Fujian	36 040 000	Algeria (35)
19	Shanxi	34 110 000	Canada (36)
20	Chongqing	28 390 000	Nepal (40)
21	Jilin	27 340 000	Uzbekistan (45)
22	Gansu	26 280 000	Saudi Arabia (45)
23	Inner Mongolia	24 140 000	North Korea (47)

Rank	Administrative division, China	Population	Comparable country (country rank worldwide)
23	Inner Mongolia	24 140 000	North Korea (47)
	Taiwan Province (Republic of China)	22 980 000	Texas state, USA
24	Xinjiang	21 310 000	Mozambique (51)
25	Shanghai	18 880 000	Cameroon (58)
26	Beijing	16 950 000	Netherlands (61)
27	Tianjin	11 760 000	Greece (73)
28	Hainan	8 540 000	Austria (92)
29	Hong Kong	7 000 000	Tajikistan (98)
30	Ningxia	6 180 000	Paraguay (102)
31	Qinghai	5 540 000	Denmark (108)
32	Tibet	2 870 000	Kuwait (136)
33	Macau	540 000	Solomon Islands (164)

The balance between population and resources has been a major cause of concern for much of the latter part of the twentieth century, although debate about this issue can be traced as far back in Chinese history as Confucius (Chinese philosopher and teacher of ethics, 551–479 BCE). Confucius said that excessive population growth reduced output per worker, depressed the level of living and produced strife. He discussed the concept of optimum numbers, arguing that an ideal proportion between land and numbers existed and any major deviation from this created poverty. When imbalance occurred, he believed the government should move people from overpopulated to underpopulated areas.

Between 1950 and 2014, the crude birth rate fell from 43.8/1000 to 12/1000. China's birth rate is now at the level of many HICs such as the UK. The impact of the one-child policy is very clear to see in Figure 4.48.

From 2000 to 2010, China's population increased by 0.57 per cent a year. This was only about half the level of the previous decade and only one-fifth of the level of 1970. The total fertility rate, which was 6.1 between 1965 and 1970, fell to 2.6 between 1980 and 1985, 1.9 between 1990 and 1995, 1.7 between

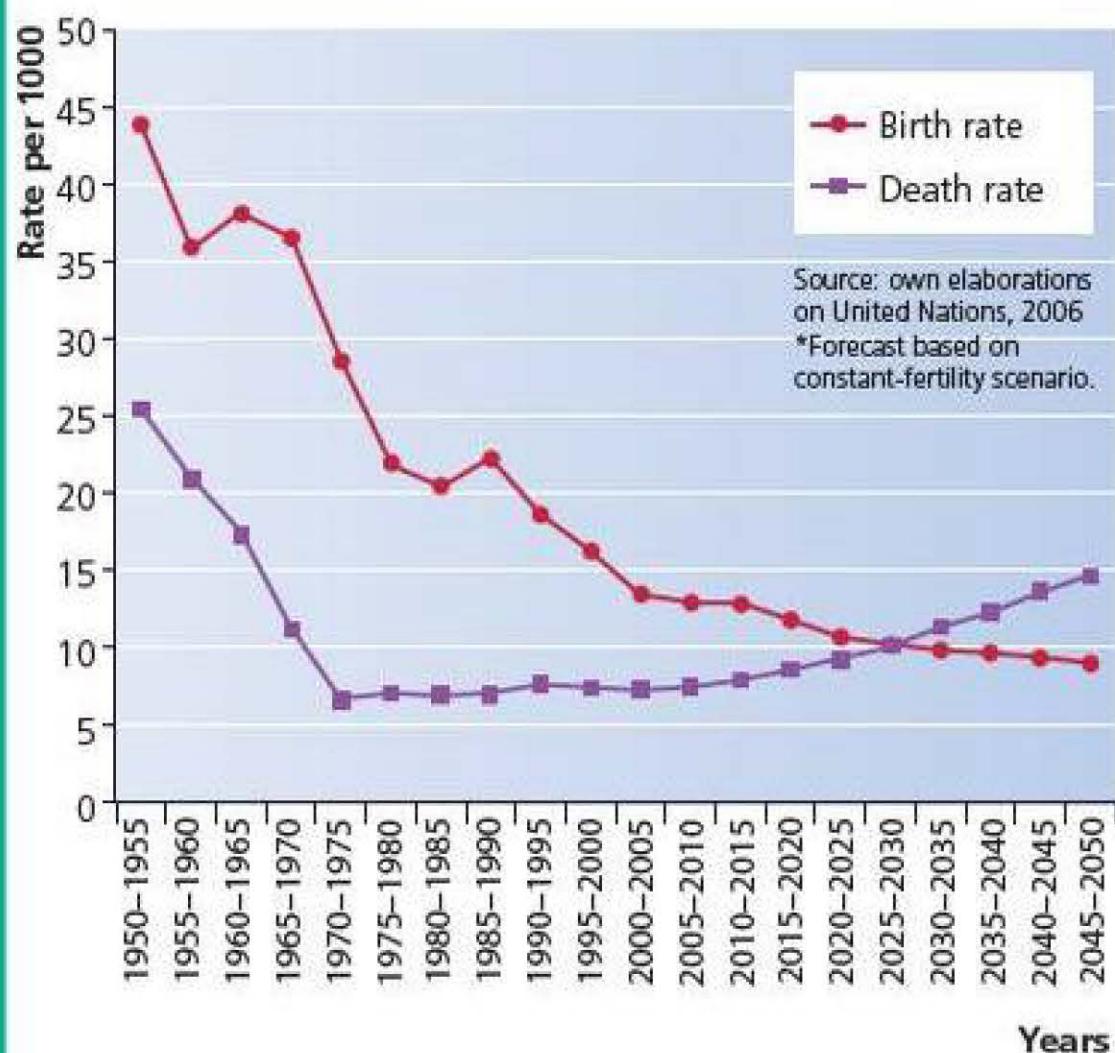


Figure 4.48 Birth and death rates, 1950–2050

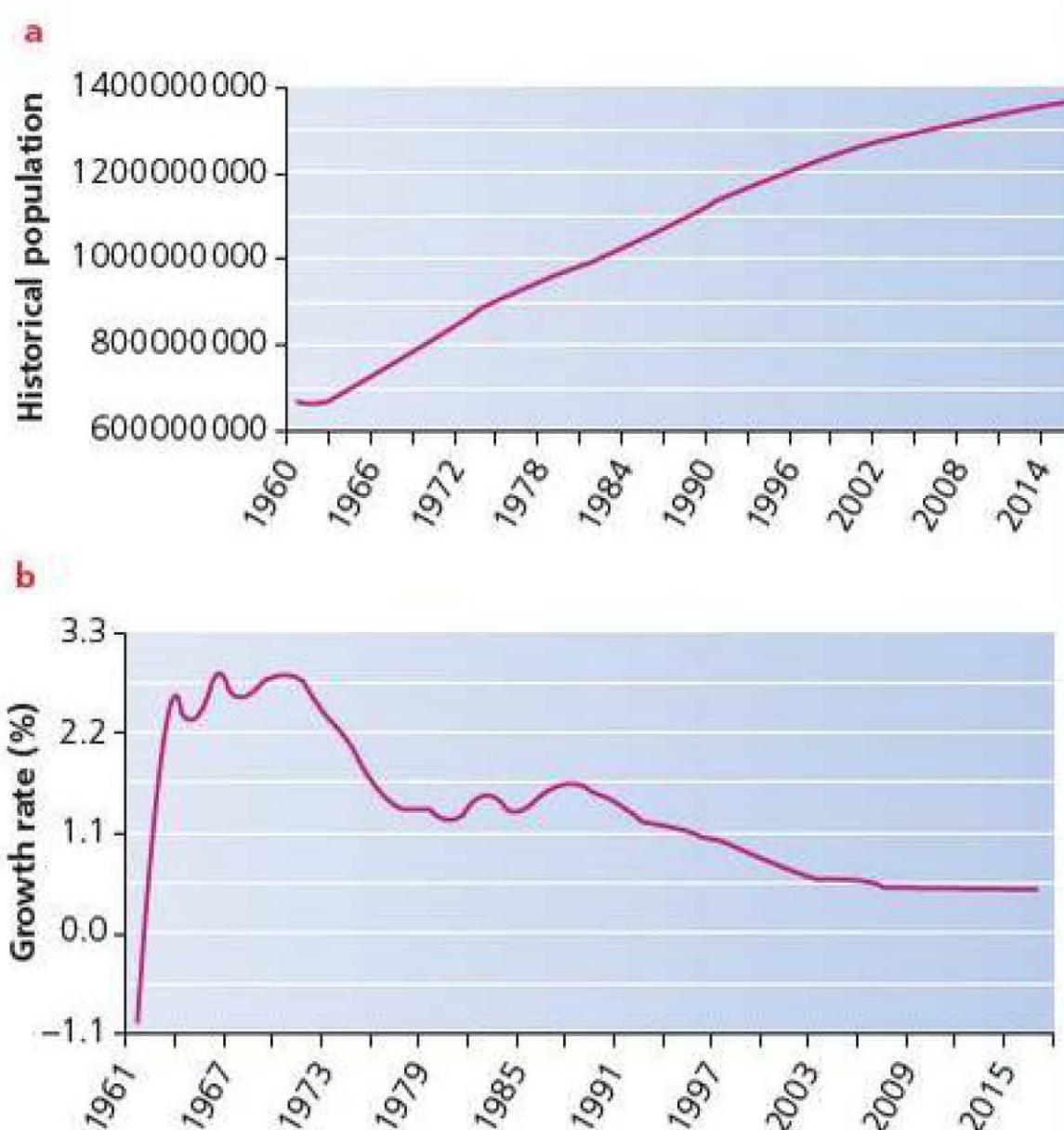


Figure 4.49 a) China's historical population, 1960–2015 and
b) Growth rate, 1961–2015

2000 and 2005, and was down to 1.6 in 2013. Figure 4.49a shows the growth in China's population between 1960 and 2015 and Figure 4.49b shows the growth rate for the same period.

For people in the West, it is often difficult to understand the all-pervading influence over society that a government can have in a **centrally planned economy**. In the aftermath of the communist revolution in 1949, population growth was encouraged for economic, military and strategic reasons. Sterilisation and abortion were banned and families received a benefit payment for every child. However, by 1954 China's population had reached 600 million and the government was now worried about the pressure on food supplies and other resources. Consequently, the country's first birth-control programme was introduced in 1956. This was to prove short-lived, for in 1958 the 'Great Leap Forward' began. The objective was rapid industrialisation and modernisation.





Figure 4.50 Crowds at the Forbidden City, Beijing – China's population was only about 75 million when the Forbidden City was built in the early fifteenth century

The government was now concerned that progress might be hindered by labour shortages and so births were again encouraged. But by 1962, the government had changed its mind, heavily influenced by a catastrophic famine due in large part to the relative neglect of agriculture during the pursuit of industrialisation. An estimated 20 million people died during the famine. Thus a new phase of birth control ensued in 1964. Just as the new programme was beginning to have some effect, a new social upheaval – the Cultural Revolution – got underway. This period, during which the birth rate peaked at 45/1000, lasted from 1966 to 1971.

With order restored, a third family planning campaign was launched in the early 1970s with the slogan 'Late, sparse, few'. However, towards the end of the decade the government felt that its impact might falter and in 1979 the controversial one-child policy was imposed. The Chinese demographer Liu Zeng calculated that China's optimum population was 700 million, and he looked for this figure to be achieved by 2080. Some organisations, including the UN Fund for Population Activities, have praised China's policy on birth control. Many others see it as a fundamental violation of **civil liberties**.

Ethnic minorities were exempt from parts of the policy, which applied mainly to the Han ethnic majority, which makes up more than 90 per cent of the total population. China's policy is

based on a reward and penalty approach. Rural households that obey family-planning rules get priority for loans, materials, technical assistance and social welfare. The slogan in China is *shao sheng kuai fu* – 'fewer births, quickly richer'. The one-child policy has been most effective in urban areas where the traditional bias of couples wanting a son has been significantly eroded. However, the story is different in rural areas where the strong desire for a male heir remains the norm. In most provincial rural areas, government policy has relaxed so that couples can now have two children without penalties.

The policy has had a considerable impact on the sex ratio, which at birth in China is currently 119 boys to 100 girls. This compares with the natural rate of 106:100. In some provinces, it is estimated the figure may be as high as 140. A paper published in 2008 estimated that China had 32 million more men aged under 20 than women. The imbalance is greatest in rural areas because women are 'marrying out' into cities. This is already causing social problems, which are likely to multiply in the future. **Selective abortion** after pre-natal screening is a major cause of the wide gap between the actual rate and the natural rate. But even if a female child is born, her lifespan may be sharply curtailed by infanticide or deliberate neglect. Feminist writers in China see 'son preference' as a blatant form of gender discrimination and gender-based violence.



Figure 4.51 The metro in Beijing

However, this is an issue that affects other countries as well as China.

The significant gender imbalance means that a very large number of males will never find a female partner, which could result in serious social problems as significant numbers of males are unable to conform to the basic **social norms** of society, which revolve around marriage and parenthood. Such unmarried men are known as 'bare branches'!

In recent years, reference has been made to the 'Four-Two-One' problem, whereby one adult child is left with having to provide support for two parents and four grandparents. Care for the elderly is clearly going to become a major problem for the Chinese authorities, since the only social security system for most of the country's poor is their family. China's ageing process is happening more quickly than in most other countries, mainly due to the speed of its demographic transition.

In July 2009, newspapers in the UK and elsewhere reported that dozens of babies had been taken from parents who had breached China's one-child policy and sold for adoption abroad. In the cities, the fines for having a second child can be up to 200 000 yuan (£20 000). This is meant to reflect the schooling and healthcare costs of additional children. However, an increasing number of affluent parents are prepared either to pay these fines outright or to travel to Hong Kong where no permit for a second child is needed.

In recent years, there has been a certain level of debate within China about the one-child policy. A substantial decline in

the supply of young labour has been a major factor in pushing up wages. China is no longer the substantial source of cheap labour that it once was. Another consequence of the one-child rule has been the creation of a generation of so-called 'little emperors' – indulged and cosseted boy children who are often overweight, arrogant and lacking in social skills.

Since late 2013, 29 of the 31 provincial regions on the mainland have enacted policies that allow couples to have a second baby if either partner is a single child. However, although many Chinese couples would undoubtedly have more children if allowed by the government, in urban areas a new class of city workers has arisen with a Western-style reluctance to have more than one child, because they want to preserve their rising standard of living.

In September 2015, the Chinese government announced it would relax the rules to allow all couples to have two children from March 2016.

Section 4.4 Activities

- 1 Write a brief bullet-point summary of the main changes in Chinese fertility policy since 1949.
- 2 How successful has the one-child policy been in reducing fertility in China?
- 3 Discuss some of the disadvantages of the one-child policy.

5

Migration

5.1 Migration as a component of population change

Movements of populations: definitions

Migration is more volatile than fertility and mortality, the other two basic demographic variables. It can react very quickly indeed to changing economic, political and social circumstances. However, the desire to migrate may not be achieved if the constraints imposed on it are too great.

Migration is defined as the movement of people across a specified boundary, national or international, to establish a new permanent place of residence (Figure 5.1). The United Nations defines 'permanent' as a change of residence lasting more than one year. Movements with a time scale of less than a year are termed 'circulatory movements'.

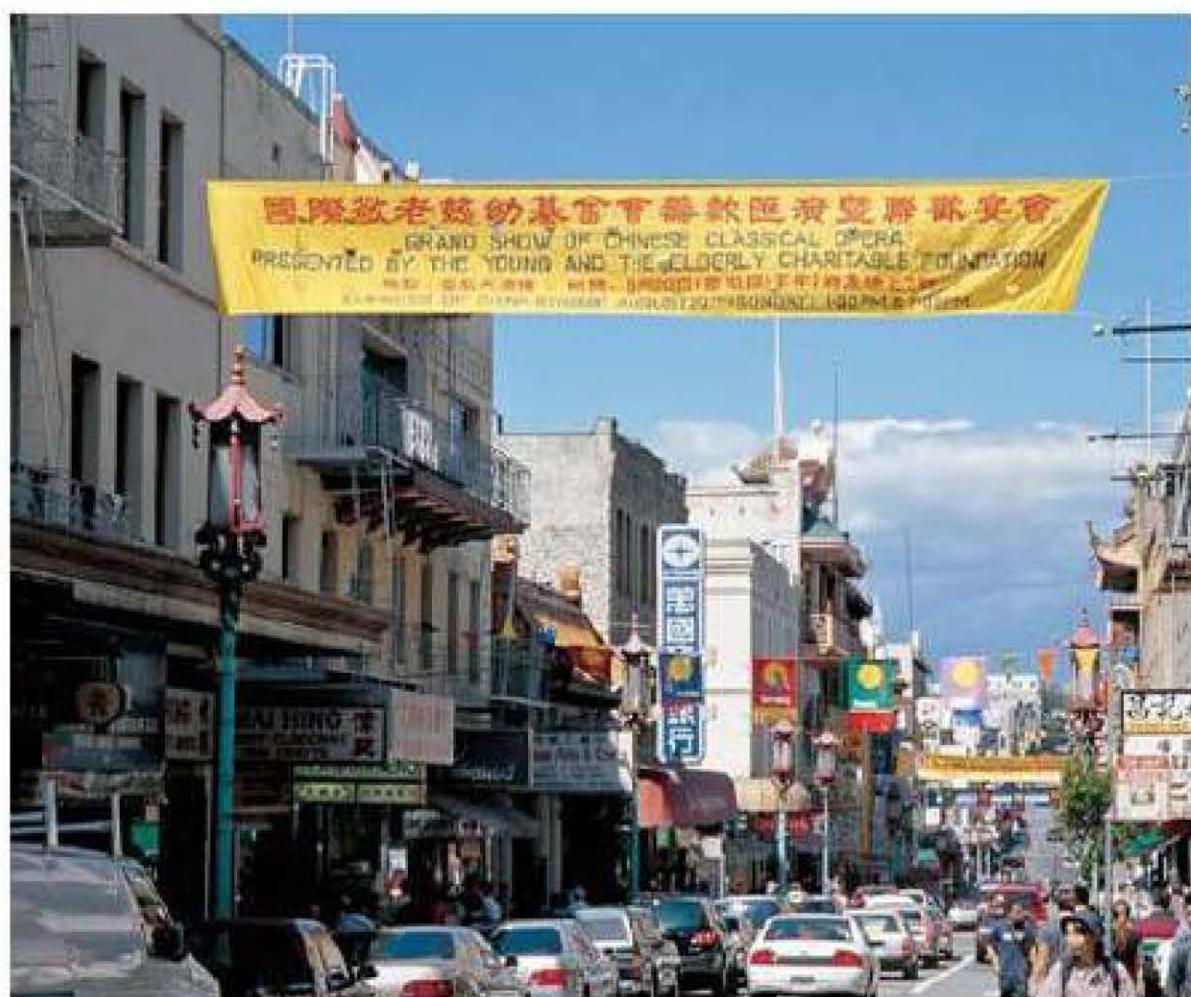
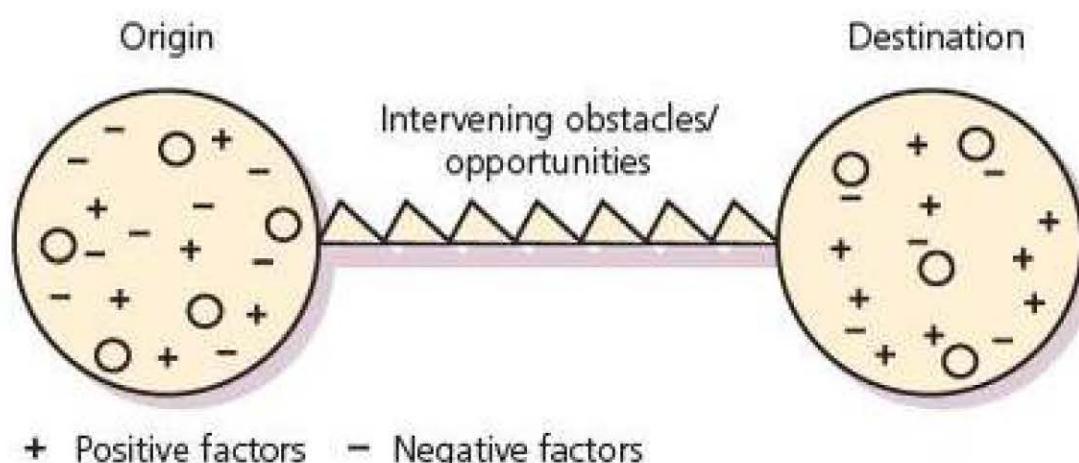


Figure 5.1 Chinatown in San Francisco – the Chinese community is long established in this city

It is customary to subdivide the field of migration into two areas: **internal migration** and **international migration**. International migrants cross international boundaries; internal migrants move within the frontiers of one nation. The terms **immigration** and **emigration**

are used with reference to international migration. The corresponding terms for internal movements are **in-migration** and **out-migration**. Internal migration streams are usually on a larger scale than their international counterparts. **Net migration** is the number of migrants entering a region or country less the number of migrants who leave the same region or country. The balance may be either positive or negative.

Migrations are embarked upon from an area of **origin** and are completed at an area of **destination**. Migrants sharing a common origin and destination form a **migration stream**. For every migration stream, a **counterstream** or reverse flow at a lower volume usually results as some migrants dissatisfied with their destination return home. Push and pull factors (Figures 5.2 and 5.3) encourage people to migrate. **Push factors** are the observations that are negative about an area in which the individual is presently living, while **pull factors** are the perceived better conditions in the place to which the migrant wishes to go. Once strong links between a rural and an urban area are established, the phenomenon of **chain migration** frequently results. After one or a small number of pioneering migrants have led the way, others from the same rural community follow. In some communities, the process of **relay migration** has been identified, whereby at different stages in a family's life cycle different people take responsibility for migration in order to improve the financial position of the family. Another recognisable process is **stepped migration**, whereby the rural migrant initially heads for a familiar small **town** and then after a period of time moves on to a larger urban settlement. Over many years, the migrant may take a number of steps up the **urban hierarchy**.

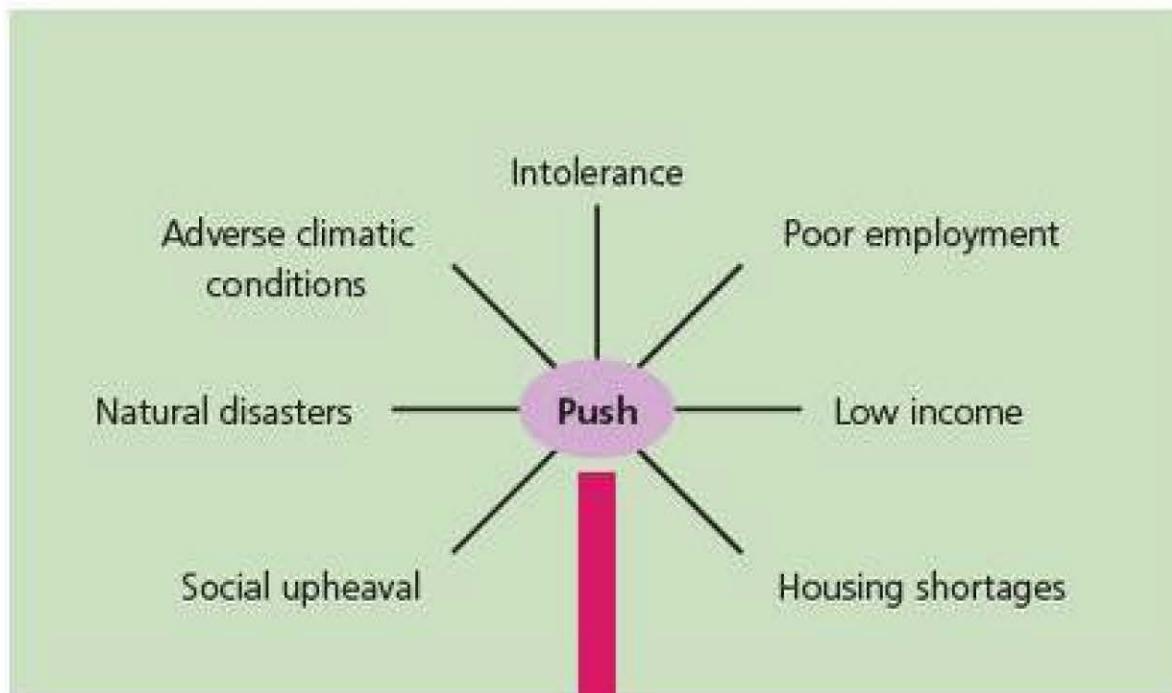


+ Positive factors - Negative factors

○ Factors perceived as unimportant to the individual

Source: IGCSE Geography by P. Guinness & G. Nagle (Hodder Education, 2009), p.23

Figure 5.2 Push and pull factors



Source: IGCSE Geography by P. Guinness & G. Nagle (Hodder Education, 2009), p.23

migration occurs when the individual or household has little or no choice but to move. This may be due to environmental or human factors. Figure 5.4 shows that there are barriers to migration. In earlier times, the physical dangers of the journey and the costs involved were major obstacles. However, the low real cost of modern transportation and the high level of safety have reduced these barriers considerably. In the modern world, it is the legal restrictions that countries place on migration that are the main barriers to international migration. Most countries now have very strict rules on immigration, and some countries restrict emigration.

Section 5.1 Activities

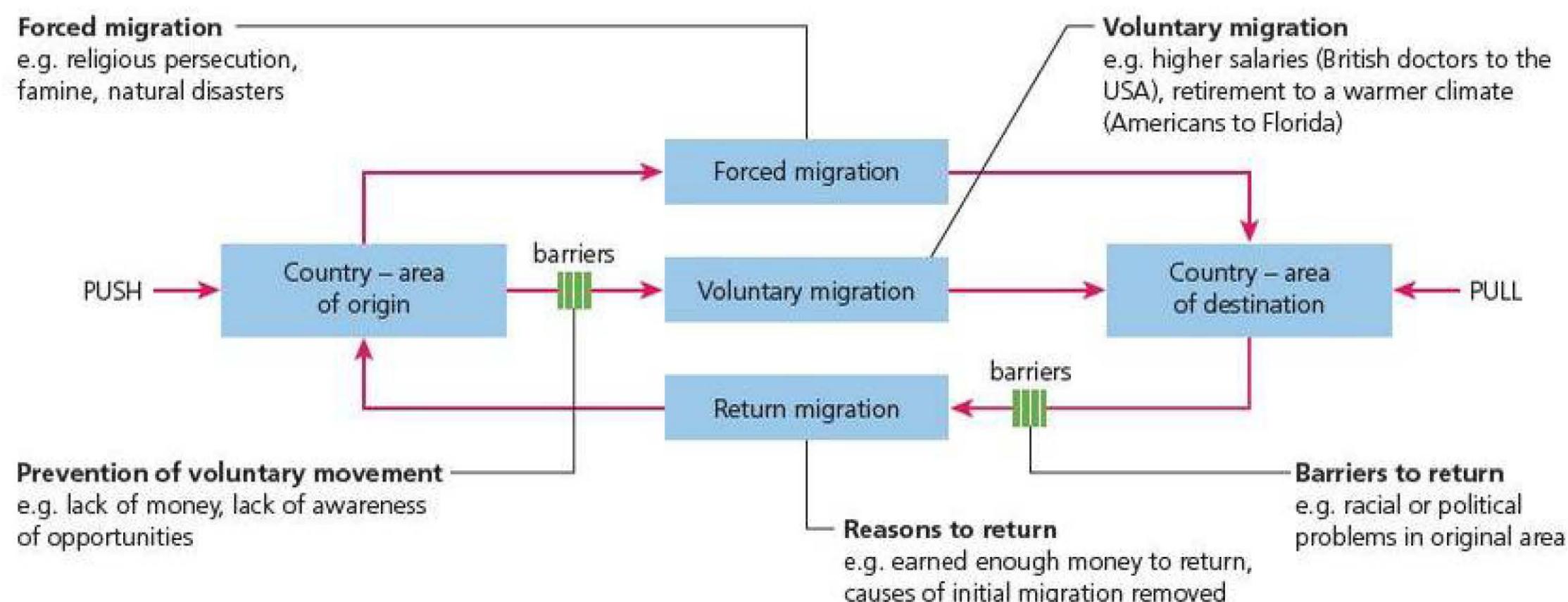
- 1 Define *migration*.
- 2 Distinguish between **a** *immigration* and *emigration* and **b** *in-migration* and *out-migration*.
- 3 Explain the terms **a** *origin* and *destination* and **b** *stream* and *counterstream*.
- 4 Briefly describe each of the following:
 - a** *chain migration*
 - b** *relay migration*
 - c** *stepped migration*.
- 5 Discuss three push factors and three pull factors shown in Figure 5.3.
- 6 Write a brief summary to explain Figure 5.4.

Figure 5.3 Push and pull factors

The most basic distinction drawn by demographers is between voluntary and forced migration (Figure 5.4). **Voluntary migration** is where the individual or household has a free choice about whether or not to move. **Forced**

Causes of migration

Various attempts to classify migration have helped improve understanding of its causes. In 1958, W. Peterson noted the following five migratory types: primitive, forced, impelled, free and mass.



Source: IGCSE Geography by P. Guinness & G. Nagle (Hodder Education, 2009), p.23

Figure 5.4 Voluntary and forced migration

- The nomadic pastoralism and shifting cultivation practised by the world's most traditional societies are examples of primitive migration. Physical factors such as seasonal rainfall and the limits of soil fertility govern such migratory practices.
- The abduction and transport of Africans to the Americas as slaves was the largest forced migration in history. In the seventeenth and eighteenth centuries, 15 million people were shipped across the Atlantic Ocean as slaves. The expulsion of Asians from Uganda in the 1970s, when the country was under the dictatorship of Idi Amin, and the forcible movement of people from parts of the former Yugoslavia under the policy of 'ethnic cleansing', are much more recent examples. Migrations may also be forced by natural disasters (volcanic eruptions, floods, drought, and so on) or by environmental catastrophe such as nuclear contamination in Chernobyl.
- Impelled migrations take place under perceived threat, either human or physical, but an element of choice lacking in forced migrations remains. Arguably the largest migration under duress in modern times occurred after the partition of India in 1947, when 7 million Muslims fled India for the new state of Pakistan and 7 million Hindus moved with equal speed in the opposite direction. Both groups were in fear of their lives but they were not forced to move by government, and minority groups remained in each country.
- The distinction between free and mass migration is one of magnitude only. The movement of Europeans to North America was the largest mass migration in history.

Within each category, Peterson classed a particular migration as either innovating or conservative. In the former, the objective of the move was to achieve improved living standards, while in the latter the aim was just to maintain present standards.

E.S. Lee (1966) produced a series of Principles of Migration in an attempt to bring together all aspects of migration theory at that time. Of particular note was his **origin-intervening obstacles-destination** model, which emphasised the role of push and pull factors (Figures 5.2 and 5.3). Here, he suggests there are four classes of factors that influence the decision to migrate:

- 1 those associated with the place of origin (Figure 5.5)
- 2 those associated with the place of destination
- 3 intervening obstacles that lie between the places of origin and destination
- 4 a variety of personal factors that moderate 1, 2 and 3.

Each place of origin and destination has numerous positive, negative and neutral factors for the individual. What may constitute a negative factor at destination



Figure 5.5 A severe winter in Mongolia caused great loss to animal herds, forcing farmers to leave the countryside for the capital city, Ulaanbaatar

for one individual – a very hot climate, say – may be a positive factor for another person. Lee suggested that there is a difference in the operation of these factors at origin and destination, as the latter will always be less well known: 'There is always an element of ignorance or even mystery about the area of destination, and there must always be some uncertainty with regard to the reception of a migrant in a new area'. This is particularly so with international migration. Another important difference noted by Lee between the factors associated with area of origin and area of destination related to stages of the life cycle. Most migrants spend their formative years in the area of origin enjoying the good health of youth with often only limited social and economic responsibilities. This frequently results in an overvaluation of the positive elements in the environment and an undervaluation of the negative elements. Conversely, the difficulties associated with **assimilation** into a new environment may create in the newly arrived a contrary but equally erroneous evaluation of the positive and negative factors at destination. The **intervening obstacles** between origin and destination include distance, the means and cost of transport and legal restraints (mainly in the form of immigration laws).

Akin Mabogunje, in his analysis of rural–urban migration in Africa, attempted to set the phenomenon in its economic and social context as part of a system of interrelated elements (Figure 5.6). The systems approach does not see migration in over-simplified terms of cause and effect, but as a circular, interdependent and self-modifying system.

In Mabogunje's framework, the African rural–urban migration system is operating in an environment of change. The system and the environment act and react upon each other continuously. For example, expansion in

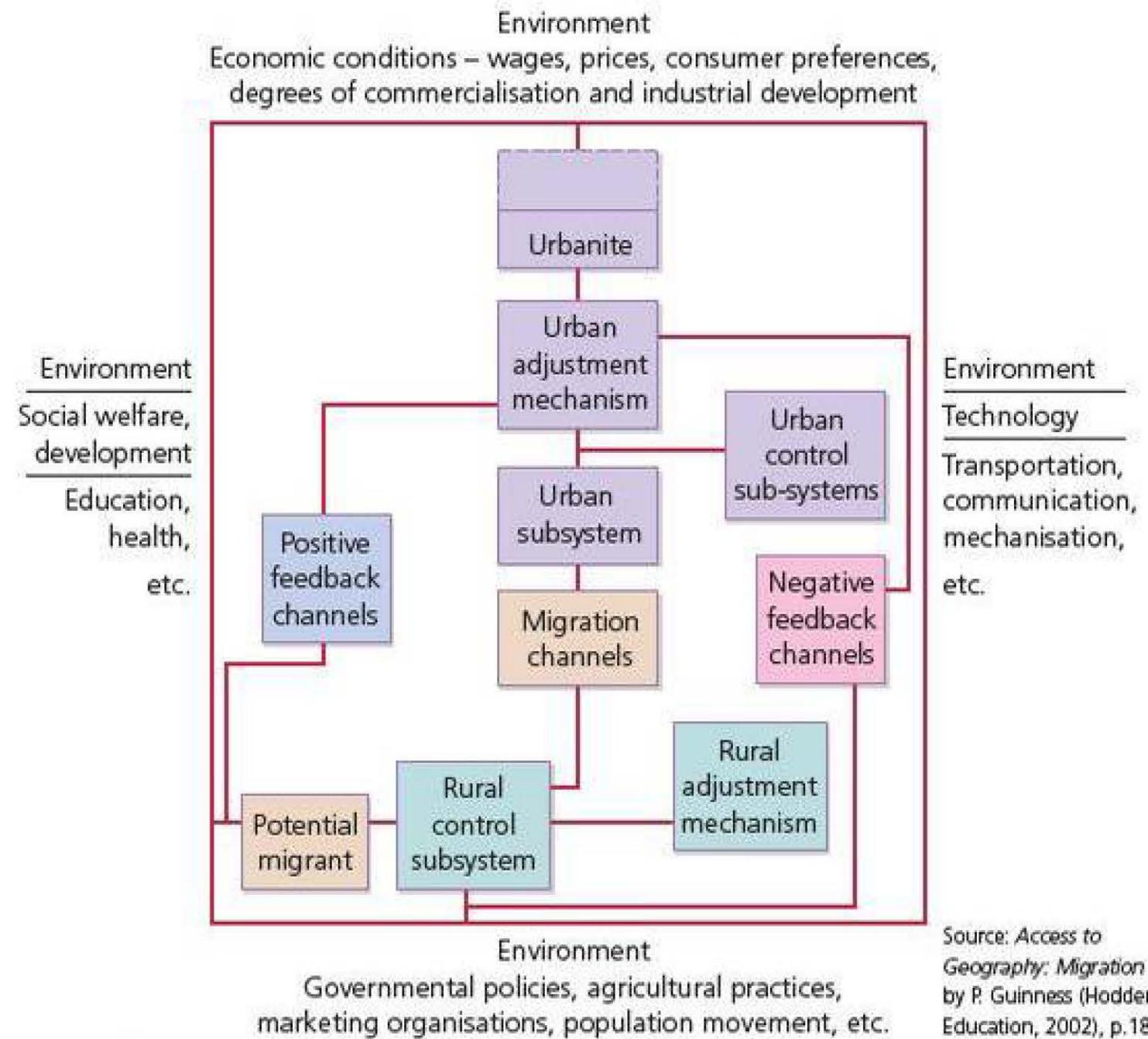


Figure 5.6 A systems approach to migration

the urban economy will stimulate migration from rural areas, while deteriorating economic conditions in the larger urban areas will result in a reduction of migration flows from rural areas.

If the potential migrant is stimulated to move to an urban area by the positive nature of the environment, he/she then comes under the influence of the 'rural control subsystem'. Here the attitudes of the potential migrant's family and local community come into strong play, either encouraging or restraining movement. If movement occurs, the migrant then comes under the influence of the 'urban control subsystem'. The latter will determine, by means of the employment and housing opportunities it offers, the degree to which migrants assimilate.

In addition, there are adjustment mechanisms. For example, at the rural point of origin a positive adjustment resulting from out-migration might be increased income per head for the remaining villagers. The most likely negative adjustment will be the reduced level of social interaction between the out-migrants and their families. At the urban destination, the in-migrant may benefit from the receipt of regular wages for the first time, but as a result may be drawn into the negative aspects of lower-income urban life such as gambling, excessive drinking and prostitution.

The flow of information between out-migrants and their rural origin is an important component of the system. Favourable reports from the new urban

dwellers will generally increase the migration flow, while negative perceptions will slow down the rate of movement. The trans-Siberian railway (Figure 5.7) is an important routeway for people moving between the Asiatic and European parts of Russia. Many small communities in Asiatic Russia have been abandoned because of high out-migration.



Figure 5.7 The trans-Siberian railway

Section 5.1 Activities

- 1 What is meant by *primitive migration*?
- 2 What is the difference between *forced migration* and *impelled migration*?
- 3 With reference to Figure 5.2:
 - a Explain the terms *origin*, *destination* and *intervening obstacles*.
 - b Suggest how intervening obstacles between origin and destination have changed over time.
- 4 Look at Figure 5.6.
 - a What do you understand by a systems approach to migration?
 - b Suggest how the 'rural control subsystem' might affect a potential migration decision.
 - c Outline three ways in which the urban subsystem can have an impact on rural–urban migration.
 - d Explain the influence of positive and negative feedback channels on new potential migrants.

Recent approaches to migration

Figure 5.8 summarises the main differences in the most recent approaches to migration, each of which is briefly discussed below.

Determinants of migration	Effects	Unit of analysis		
		Individual	Household/family	Institutions
Economic	Positive	Todaro Push–pull	Stark and others; 'new economics' of migration	
	Negative			Marxism Structuralism
Sociological/anthropological			Structuration theory Gender analyses	

Figure 5.8 Recent approaches to migration studies

The Todaro model: the cost–benefit approach

In the post-1950 period, there has been a huge movement of population from rural to urban areas in LICs. For many migrants, it appeared that they had just swapped rural poverty for urban poverty. The simplistic explanation put forward was that many rural dwellers had been attracted by the 'bright lights' of the large urban areas without any clear understanding of the real **deprivation** of urban life for those at or near the bottom of the socio-economic scale. They had migrated due to false perceptions picked up from the media and other sources. The American economist Michael Todaro challenged this view, arguing that migrants' perceptions of urban life were realistic, being strongly based on an accurate flow of information from earlier migrants from their rural

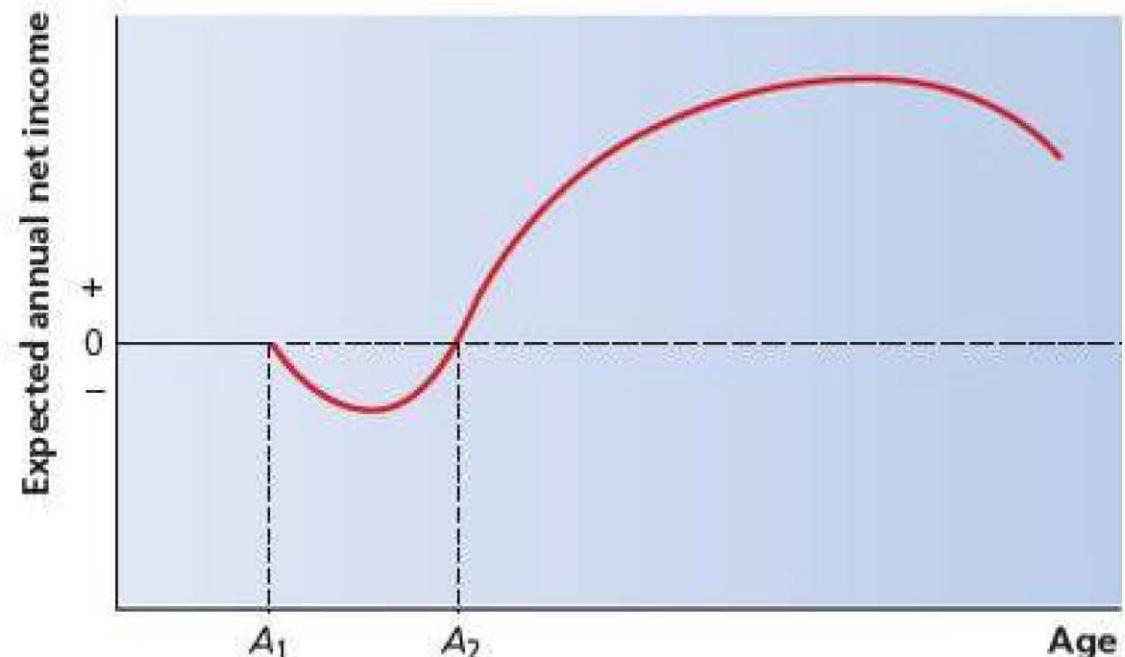


Figure 5.9 A typical net-income stream

community. Potential migrants carefully weighed up the costs and benefits of moving to urban areas, including the 'anticipated income differential'. They were very aware that in the short term they might not be better off but, weighing up the odds, the likelihood was that their socio-economic standing would improve in the long term. Thus people were willing to endure short-term difficulties in the hope of better prospects eventually, if not for themselves then for their children. Expected wages were discounted against the prospects of remaining unemployed for any length of time.

Figure 5.9 summarises the typical net-income stream of a young rural–urban migrant. While at school, the young rural dweller's net income is zero. At A_1 he migrates to a large urban area but is initially unable to find work because of the intense competition for employment and the limited nature of his contacts. His net income is negative as he has no option but to live on savings or borrowed money. However, in time, as his knowledge of the city improves and his contact base widens, he finds employment and his net income becomes positive (A_2), rising to a peak and then decreasing with age as his productivity begins to fall.

Stark's 'new economics of migration'

Stark, in what is often referred to as the 'new economics of migration', has extended the Todaro model by replacing the individual with the household as the unit of analysis. Stark, along with others, argued that insufficient attention had been paid to the institutions that determine migration. For example, in the Todaro model it is assumed that migrants act individually according to a rationality of economic self-interest. However, migration, according to Stark, is seen as a form of economic diversification by families whereby the costs and rewards are shared. It is a form of risk spreading. She asserts that 'even though the entities that engage in migration are often individual agents, there is more to labour migration than an individualistic optimising behaviour. Migration by one person can be due to, fully consistent with, or undertaken by a group of persons, such as the family.'

So often the initial cost of establishing the rural migrant in an urban area is carried by the family in the expectation of returns in the form of remittances. The migrant also has expectations in maintaining the link, for example in the form of inheritance. A number of studies have described how families invest in the education of one member of the family, usually the firstborn son, for migration to the urban formal sector. The expectation is that the remittances received will be crucial to the up-bringing of the remaining children and have an important effect on the general standard of living of the family.

The Stark model also takes account of: incomplete and imperfect information; imperfections in rural capital markets and transaction costs; and stresses the importance in migration decisions of relative deprivation in the local income distribution rather than absolute deprivation.

Marxist/structuralist theory

Some writers, often in the tradition of Marxist analyses, see labour migration as inevitable in the transition to capitalism (Figure 5.10). Migration is the only option for survival after alienation from the land. Structuralist theory draws attention to the advantages of migrant labour for capitalist production and emphasises the control that capitalism has over migrant labour. For example, employers in destinations do not bear the cost of their workers' reproduction as the latter maintain ties with their rural communities, and employers use migrant labour to reduce the bargaining power of local labour. In the international arena, migration is seen as a global movement in which labour is manipulated in the interest of HICs to the detriment of LICs. According to Rubenstein, remittances are 'a minor component of surplus labour extraction, a small charge to capital in a grossly unequal process of exchange between core and peripheral societies'.



Figure 5.10 Eastern European food shop in London – the population of Eastern Europeans in the UK has increased rapidly since Poland and other Eastern European countries joined the EU in 2004

Structuration theory

Structuration theory incorporates both individual motives for migration and the structural factors in which the migrants operate. It stresses that rules designed to regulate behaviour also provide opportunity and room for manoeuvre for those they seek to constrain. This approach also builds in an awareness of cultural factors.

Gender analyses

In recent decades, gender has come to occupy a significant place in migration literature. According to Arjan de Haan, 'There is now much more emphasis on the different migration responses by men and women, which themselves are context dependent, and on gender discrimination in returns to migrant labour.'

Case Study: Push and pull factors in Brazil

While recognising that individuals can react differently to similar circumstances, it is still important to consider the negative factors that act to 'push' people from rural areas of origin, and the positive influences that 'pull' them towards towns and cities. In Brazil, the push factors responsible for rural–urban migration can be summarised as follows:

- The mechanisation of agriculture has reduced the demand for farm labour in most parts of the country.
- Farms and estates have been amalgamated, particularly by agricultural production companies. In Brazil, as elsewhere in Latin America, the high incidence of landlessness has led to a much greater level of rural–urban migration than in most parts of Africa and Asia.
- Conditions of rural employment are generally poor. Employers often ignore laws relating to minimum wages and other employee rights.

- There is desertification in the north-east and deforestation in the north.
- Unemployment and **underemployment** are significant.
- Social conditions are poor, particularly in terms of housing, health and education.

The pull factors for internal migrants in Brazil revolve around individuals wanting to better their own and their children's lives. Within the larger urban areas such as São Paulo, Rio de Janeiro, Belo Horizonte and Brasilia, migrants hope to find particular advantages:

- A greater likelihood of paid employment – many people will be unable to find work in the formal sector, but opportunities in the informal sector, even if only part-time, may be available. Developing skills in the informal sector may open the way to work in the formal sector at a later date. Paid



employment provides the opportunity to save money, even if the amounts initially are very small.

- Greater proximity to health and education services – this factor is particularly important for migrants with children. There is a clear urban/rural divide in standards for both health and education.
- Most migrants end up in *favelas* or *corticos* (deteriorating formal inner-city housing). However, even *favela* housing may be better than that found in some rural areas. Many *favelas* show substantial signs of upgrading over time and develop an important sense of community.

- Greater access to retail services than in rural areas – Competition in the urban retail services sector can result in lower prices, enabling the individual/household to purchase a wider range of goods.
- The cultural and social attractions of large cities may be viewed as important factors in the quality of life.
- Access to internet services is often lacking in rural areas. This is often an important factor for younger migrants.

□ The role of constraints, obstacles and barriers

Brief reference has already been made to factors that can either prevent migration or make it a difficult process. Here a distinction has to be made between internal and international migration. In most countries, there are no legal restrictions on internal migration. Thus the main constraints are distance and cost. In contrast, immigration laws present the major barrier in international migration where national borders have to be crossed.

The cost of migration can be viewed in three parts.

- 1 'Closing up' at the point of origin – this will vary considerably according to the assets owned by an individual or household. In LICs, the monetary value may be small, although the personal value may be high. In HICs, costs such as those of estate agents and legal fees for selling a house and selling possessions that cannot be transported at below market value, and other associated costs, can be substantial.
- 2 The actual cost of movement itself will depend on the mode of transport used and the time taken on the journey. Costs may involve both personal transport costs and the freight costs of transporting possessions.
- 3 The costs of 'opening up' at the point of destination – many HICs impose a 'stamp duty' on the purchase of a house above a certain value. This is in addition to estate agents' and legal fees. Other legal costs may also be required to begin life at the destination. If the migration is linked to employment, costs may be paid by an employer. In poorer countries, such costs may appear low in monetary value, but may be substantial for the individuals concerned because of their very low income.

The consideration of distance usually involves the dangers associated with the journey. Such dangers can be subdivided into physical factors and human factors. Physical factors include risks such as flood, drought, landslide and crossing water bodies (Figure 5.11). Human factors centre around any hostility from other people that may be encountered on the journey, and the chances of an accident while travelling. For example, in recent years people fleeing Zimbabwe for South Africa have



Figure 5.11 Iguazu Falls, Brazil – the physical environment is much less of a barrier to migration than it once was

encountered bandits on both sides of the border, waiting at these locations to rob them. Ethnic tensions along a migration route may also result in significant danger.

In terms of international migration, government attitudes in the form of immigration laws usually present the most formidable barrier to prospective migrants. A number of reasonably distinct periods can be recognised in terms of government attitudes to immigration:

- Prior to 1914, government controls on international migration were almost non-existent. For example, the USA allowed the entry of anybody who was not a prostitute, a convict, a lunatic and, after 1882, Chinese. Thus the obstacles to migration at the time were cost and any physical dangers that might be associated with the journey.
- Partly reflecting security concerns, migration was curtailed between 1914 and 1945. During this period, many countries pursued immigration policies that would now be classed as overtly racist.
- After 1945, many European countries, facing labour shortages, encouraged migrants from abroad. In general, legislation was not repealed but interpreted very liberally. The Caribbean was a major source of labour for the UK during this period. The former West Germany

attracted 'guest workers' from many countries but particularly from Turkey.

- In the 1970s, slow economic growth and rising unemployment in HICs led to a tightening of policy that, by and large, has remained in force. However, in some countries immigration did increase again in the 1980s and early 1990s, spurring the introduction of new restrictions.

Thus over time the legal barriers to immigration have generally become more formidable. Most countries favour immigration applications from people with skills that are in short supply and from people who intend to set up businesses and create employment.

□ Migration data

There are three principal sources of migration data: censuses, population registers and social surveys. For all three, moves are recorded as migration when an official boundary used for data collection is crossed. Moves that do not cross a boundary may go unrecorded even though they may cover longer distances. This is one of the major problems encountered by the researcher in the study of migration.

Population censuses are important sources of information because they are taken at regular intervals and cover whole countries. The two sorts of data generally provided are:

- birthplaces of the population
- period migration figures (movement over a particular period of time).

Birthplace data tells us a great deal about the broad picture of migration but it is not without its deficiencies. For example, there is no information about the number of residential moves between place of birth and present residence. In terms of period migration, recent British censuses have asked for place of residence a year before as well as place of birth. When these are compared with the present addresses of people at the time of the census, we can begin to trace **migration patterns**. However, again, intervening moves during the one-year period and between censuses (every ten years in the UK) will go unrecorded.

Japan and a number of European countries (including Norway, Sweden and Switzerland) collect 'continuous data' on migration through **population registers**. Inhabitants are required to register an address with the police or a civic authority and to notify all changes of residence. Population registers aim to record every move, rather than just those caught by the rather arbitrary administrative and period framework of the census. In the UK and many other countries, only partial registers exist to record movements for some parts of the population. Examples are electoral rolls, tax registers and school rolls. Social

researchers have argued for the introduction of population registers in countries like the UK but strong opposition has focused on possible infringements of individual liberties. Thus it was only under the exceptional circumstances of the Second World War and its immediate aftermath that a national register operated in the UK.

Specific **social surveys** can do much to supplement the sources of data discussed above. An example from the UK is the International Passenger Survey, a sample survey carried out at seaports and airports. It was established to provide information on tourism and the effect of travel expenditure on the balance of payments, but it also provides useful information on international migration. The annual General Household Survey of 15 000 households also provides useful information, as does the quarterly Labour Force Survey. Questionnaire-based surveys are perhaps the only means by which the relationship between attitudes and behaviour in the migration process can be fully analysed.

Even when all the available sources of information are used to analyse migration patterns, the investigator can be left in no doubt that a large proportion of population movements go entirely unrecorded; and even in those countries with the most advanced administrative systems, there is only partial recording of migrants and their characteristics.

□ Conclusion

Migration has been a major process in shaping the world as it is today. Its impact has been economic, social, cultural, political and environmental. Few people now go through life without changing residence several times. Through the detailed research of geographers, demographers and others, we have a good understanding of the causes and consequences of the significant migrations of the past, which should make us better prepared for those of the future whose impact may be every bit as great. We can only speculate about the locations and causes of future migrations. Causal factors may include the following: continuing socio-economic disparity between rich and poor nations; global warming and all its implications; nuclear catastrophe; civil wars; and pandemics due to current and new diseases.

Section 5.1 Activities

- 1 Briefly discuss the cost–benefit approach of the Todaro model.
- 2 What are the main elements of Stark's new economics of migration?
- 3 Discuss the principal sources of migration data.

5.2 Internal migration (within a country)

□ Distance, direction and patterns

Figure 5.12 provides a comprehensive classification of population movements in LICs and MICs, covering distance, direction and patterns. The 'distance continuum' ranges from relatively limited local movements to very long-distance movements, often crossing international frontiers. The majority of the movements shown in Figure 5.12 are internal migrations. In terms of settlement size, the following movements are included:

- rural–rural
- rural–urban
- urban–rural
- urban–urban.

Distance	Direction	Patterns
Intra-national	Rural–rural	Step migration
Local	Rural–urban	Migration stream
Intra-district	Urban–rural	Counter-stream
Inter-district	Urban–urban	
Intra-provincial	Periphery–core	
Inter-provincial	Core–periphery	
Intra-regional	Traditional–modern spheres	
Inter-regional		
International		
LEDCs–LEDCs		
LEDCs–MEDCs		

Figure 5.12 Spatial dimensions of population movements in LICs and MICs

In this section, particular consideration will be given to **rural–urban migration** in LICs and urban–rural movements in HICs (Figure 5.13).

As Parnwell states in relation to Figure 5.12, 'Distance provides a useful basis for differentiating between types of movement and types of mover, because the distance over which a person travels can also be used as a proxy for other important variables'. As cost is a significant factor in the distance over which migration takes place, the relative distance of movements may have a filtering effect upon the kinds of people who are moving between



Figure 5.13 Rural depopulation in northern Spain as a result of out-migration

different areas. There is also a broad relationship between social/cultural change and distance. A change of dialect or differences in the social organisation of groups may make the migrant seem an obvious 'outsider'. To avoid such changes, the prospective migrant may decide on a shorter-distance movement. Long-distance movement may also involve entry into areas with different ethnicity, colour or religion, which may all hinder the process of assimilation.

In terms of direction, the most prevalent forms of migration are from rural to urban environments and from peripheral regions to economic **core** regions. Thus the main migration streams are from culturally traditional areas to areas where rapid change, in all its manifestations, is taking place. In LICs and MICs, the socio-economic differences between rural and urban areas are generally of a much greater magnitude than in HICs. This may necessitate some quite fundamental forms of adaptation by rural–urban migrants in the poorer nations of the world.

Although of a lesser magnitude, rural–rural migration is common in LICs and MICs for a variety of reasons, including employment, family reunion and marriage. In some instances, governments have encouraged the agricultural development of frontier areas such as the Amazon basin in Brazil.

Movements between urban areas consist in part of stepped migration up the urban hierarchy as migrants improve their knowledge base and financial position, adding to a range of other urban–urban migrations for reasons such as employment and education. Urban–rural migration is dominated by counterstream movement; that is, urbanites who are returning to their rural origins. Very few people, apart from the likes of government officials, teachers and doctors, move to the countryside for the first time to live or work. Apart from perhaps Brazil and a few other more affluent developing nations, **counterurbanisation** has yet to gain any kind of foothold in LICs.

Section 5.2 Activities

- 1 What is *internal migration*?
- 2 Provide a brief explanation of Figure 5.12.
- 3 Define **a** *stepped migration* and **b** *counterurbanisation*.

□ The causes of internal migration

The reasons why people change their place of permanent residence can be viewed at three dimensions of scale: **macro-level**, **meso-level** and **micro-level**.

The macro-level

This dimension highlights socio-economic differences at the national scale, focusing particularly on the **core-periphery** concept. The development of core regions in many LICs had its origins in the colonial era, which was characterised by the selective and incomplete opening-up of territories, supporting development in a restricted range of economic sectors. At this time, migration was encouraged to supply labour for new colonial enterprises and infrastructural projects, such as the development of ports and the construction of transport links between areas of raw-material exploitation and the ports through which export would take place.

The introduction of capitalism, through colonialism, into previously non-capitalist societies had a huge influence on movement patterns. The demand for labour in mines, plantations and other activities was satisfied to a considerable extent by restricting native access to land and by coercing people into migration to work either directly through forced labour systems or indirectly through taxation. The spread of a cash economy at the expense of barter into peripheral areas further increased the need for paid employment that, on the whole, could only be found in the economic core region (Figure 5.14).

In the post-colonial era, most LICs and MICs have looked to industrialisation as their path to a better world, resulting in disproportionate investment in the urban-industrial sector and the relative neglect of the rural economy. Even where investment in agriculture has been considerable, either the objective or the end result was to replace labour with machinery, adding further to rural out-migration.

The macro-level perspective provides a general explanation of migration patterns in LICs and MICs. However, this approach has two weaknesses:

- it fails to explain why some people migrate and others stay put when faced with very similar circumstances in peripheral areas
- it offers no explanation as to why not all forms of migration occur in the direction of economic core regions.



Figure 5.14 The Ger district in Ulaanbaatar, Mongolia, which is expanding rapidly due to high levels of rural–urban migration

The meso-level

The meso-level dimension includes more detailed consideration of the factors in the origin and destination that influence people's migration decisions. E.S. Lee's origin-intervening obstacles-destination model, which is discussed in the previous section, is a useful starting point in understanding this level of approach, which looks well beyond economic factors and recognises the vital role of the perception of the individual in the decision-making process.

Lee argues that migration occurs in response to the prevailing set of factors both in the migrant's place of origin and in one or a number of potential destinations. However, what is perceived as positive and what is viewed as negative at origin and destination may vary considerably between individuals, as may the intervening obstacles. As Lee states, 'It is not so much the actual factors at origin and destination as the perception of these factors which results in migration'. Lee stressed the point that the factors in favour of migration would generally have to outweigh considerably those against, due to the natural reluctance of people to uproot themselves from established communities.

High population growth is often cited as the major cause of rural–urban migration. However, in itself population growth is not the main cause of out-migration. Its effects have to be seen in conjunction with the failure of other processes to provide adequately for the needs of growing rural communities. Even when governments focus resources on rural development, the volume of out-migration may not be reduced. The irony in many LICs and MICs is that people are being displaced from the countryside because in some areas change is too

slow to accommodate the growing size and needs of the population, or because in other areas change is too quick to enable redundant rural workers to find alternative employment in their home areas. In such circumstances, out-migration does indeed provide an essential 'safety valve'.

The evidence in Table 5.1 and in other similar studies is that the economic motive underpins the majority of rural-urban movements. During the 1960s, most demographers cited the higher wages and more varied employment opportunities of the cities as the prime reasons for internal migration. It was also widely held that the level of migration was strongly related to the rate of urban unemployment. However, while rural/urban income differentials are easy to quantify, they do not take into account the lower cost of living in the countryside and the fact that non-cash income often forms a significant proportion of rural incomes.

Table 5.1 Reasons for migration from rural areas in Peru and Thailand

PERU	
Reason	% respondents citing reason
To earn more money	39
To join kin already working	25
No work in the villages	12
Work opportunities presented themselves	11
Dislike of village life	11
To be near the village and family	11
To support nuclear and/or extended family	9
Poor	8
To pay for education	7

Source: J. Laite 'The migrant response in central Peru', in J. Gugler (ed.) *The Urbanization of the Third World*, OUP 1988

NORTH-EAST THAILAND		
Principal reason	No. respondents citing reason	% respondents citing reason
To earn more money for the household	138	52.9
To earn more money for self	57	21.8
To earn more money for parents	31	11.9
To further education	12	4.6
To earn money to build a house	10	3.8
To earn money to invest in farming	4	1.5
For fun	3	1.1
To earn money to purchase land/land title	2	0.8
To earn money to repay a debt	1	0.4
To earn money to pay for hired labour	1	0.4
To see Bangkok	1	0.4
To earn money to get married	1	0.4
Total	261	100.0

Source: M. Parnwell, *Population Movements and the Third World*, Routledge, 1993

In the 1970s, as more and more cities in LICs experienced large-scale in-migration in spite of high unemployment, demographers began to reappraise the situation. Michael Todaro was one of the first to recognise that the paradox of urban deprivation on the one hand and migration in pursuit of higher wages on the other could be explained by taking a long-term view of why people move to urban areas. As the more detailed consideration of the Todaro model in the previous section explains, people are prepared to endure urban hardship in the short term in the likelihood that their long-term prospects will be much better in the city than in the countryside. Apart from employment prospects, the other perceived advantages of the cities are a higher standard of accommodation, a better education for migrants' children, improved medical facilities, the conditions of infrastructure often lacking in rural areas and a wider range of consumer services. The most fortunate migrants find jobs in the formal sector. A regular wage then gives some access to the other advantages of urban life. However, as the demand for jobs greatly outstrips supply, many can do no better than the uncertainty of the informal sector.

Of all the factors that migrants take into account before arriving at a decision, the economic perspective invariably dominates the decision to leave the countryside. However, all the evidence shows that other factors, particularly the social environment, have a very strong influence on the direction that the movement takes. This largely explains why capital cities, with their wide range of social opportunities, attract so many rural migrants.

The micro-level

The main criticisms of the macro- and meso-level explanations of migration are that:

- they view migration as a passive response to a variety of stimuli
- they tend to view rural **source areas** as an undifferentiated entity.

The specific circumstances of individual families and communities in terms of urban contact are of crucial importance in the decision to move, particularly when long distances are involved. The alienation experienced by the unknown new migrant to an urban area should not be underestimated and is something that will be avoided if at all possible. The evidence comes from a significant number of sample surveys and of course from the high incidence of 'area of origin' communities found in cities. For example:

- A sample survey of rural migrants in Mumbai found that more than 75 per cent already had one or more relatives living in the city, from whom 90 per cent had received some form of assistance upon arrival.
- A survey of migration from the Peruvian Highlands to Lima found that 90 per cent of migrants could rely

on short-term accommodation on arrival in the city, and that for about half their contacts had managed to arrange a job for them.

The importance of established links between urban and rural areas frequently results in the phenomenon of 'chain migration'. After one or a small number of pioneering migrants have led the way, subsequent waves of migration from the same rural community follow. The more established a migrant community becomes in the city, the easier it appears to be for others in the rural community to take the decision to move and for them to assimilate into urban society.

Apart from contact with, and knowledge of, urban locations, differentiation between rural households takes the following forms:

- level of income
- size of land holding
- size of household
- stage in the life cycle
- level of education
- cohesiveness of the family unit.

All of these factors have an influence on the decision to migrate (Figure 5.15). Family ties and commitments may determine whether or not someone is able to migrate, and may also influence who from a family unit is most likely to take on the responsibility of seeking employment in the city. Here the stage in the life cycle is crucial and it is not surprising that the great majority of migrants in LICs and MICs are aged between 15 and 25 years. In some communities, the phenomenon of 'relay migration' has been identified, whereby at different stages in a family's life cycle, different people take responsibility for migration.

It is only by examining all three dimensions – macro, meso and micro – that the complexity of the migration process can be fully understood. As elsewhere in geographical analysis, there is a tendency to over-simplify.



Figure 5.15 Migrants from north-east Brazil farming a smallholding in the Amazon basin

This is often useful in the early stages of enquiry, but unless we are careful the understandable generalisation may mask essential detail.

Section 5.2 Activities

- 1 Why is it important to consider different dimensions of scale when examining internal migration?
- 2 Produce a brief summary of the information in Table 5.1.

□ The impacts of internal migration

Socio-economic impact

Figure 5.16 provides a useful framework for understanding the costs and benefits of migration. It highlights the main factors that determine how rural areas are affected by migration; namely, the two-way transfers of labour, money, skills and attitudes. However, while all of the linkages seem fairly obvious, none is easy to quantify. Therefore, apart from very clear-cut cases, it is often difficult to decide which is greater – the costs or benefits of migration.

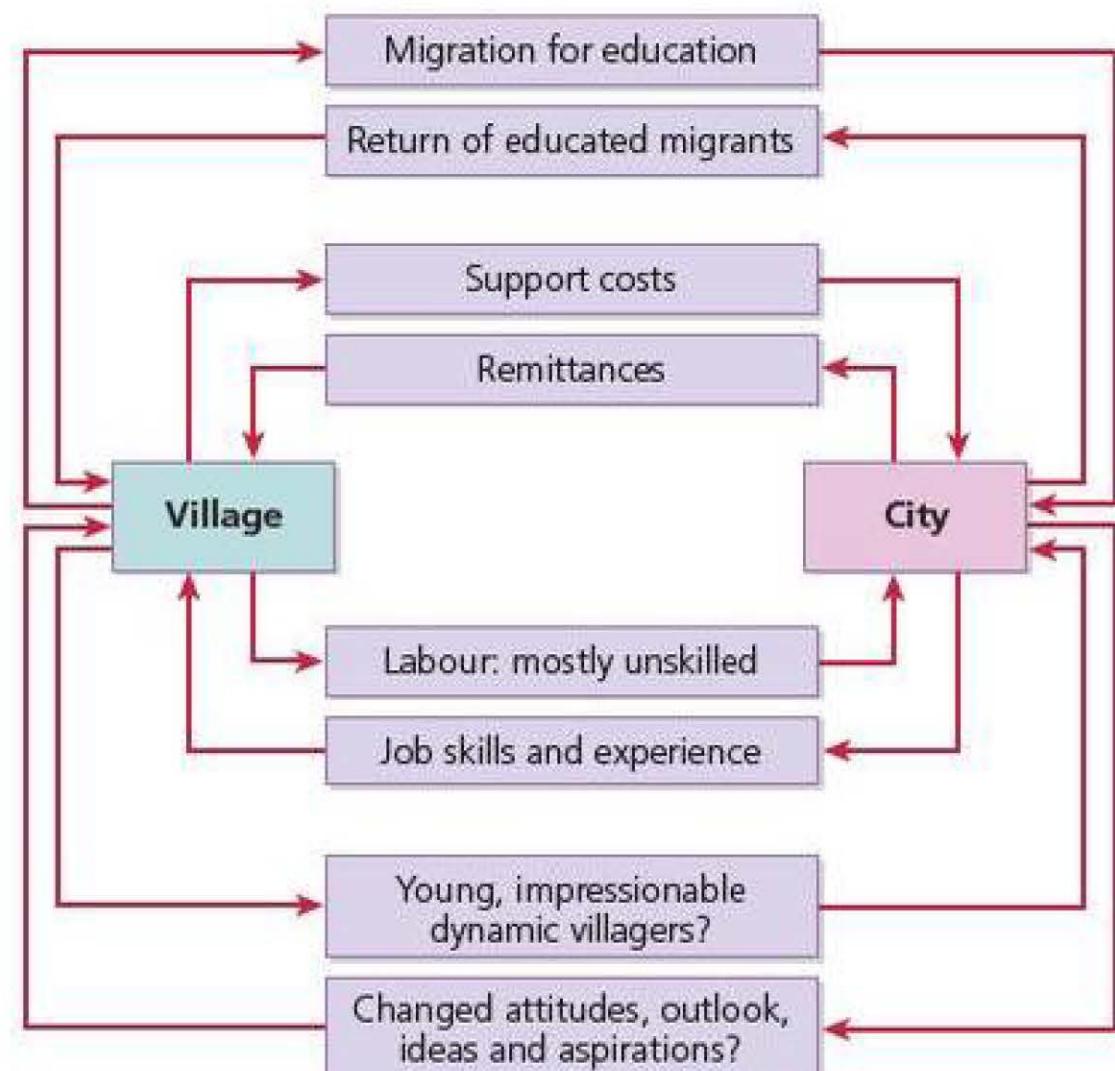


Figure 5.16 The costs and benefits of migration

Remittances from internal migration are even more difficult to estimate than those arising from international migration. Thus it is not surprising that research has produced a fairly wide range of conclusions, of which the following are but a sample:

- Williamson (1988) put urban–rural remittances at 10–13 per cent of urban incomes in Africa.
- Reardon (1997) noted that in rural areas in Africa not close to major cities, migrant earnings accounted for

only 20 per cent of total non-farm earnings, whereas it reached as high as 75 per cent of total non-farm earnings in areas close to major cities.

- Adepoju and Mbugua (1997) noted that migrants often remit up to 60 per cent of their income.

However, it is important to note that the flow of money and support in general is not always one-way. Some studies have highlighted village-to-town remittances to support education or the search for employment.

Helweg (1983) studied the changing use of remittances over time, noting three stages: initially, they are spent on family maintenance and improving land productivity; in the following stage, spending tends to be on 'conspicuous' consumption; in the third and final stage, remittances are also invested to start commercial, non-agricultural activities.

The relationship between migration and development is complex and still the subject of much debate. The four questions that have been the subject of much research are:

- 1 How does development in areas of destination affect migration?
- 2 How does development in the area of origin affect migration?
- 3 How does migration affect development in areas of destination?
- 4 How does migration affect development in areas of origin?

The first question is the least problematic. The importance of pull factors in explaining both national and international movements is widely accepted. Clearly migrants do move in reaction to newly developed opportunities. However, a number of recent studies have shown that people in the poorest areas of LICs and MICs do not exhibit the highest levels of out-migration. In such regions, levels of literacy and skill may be so low that access to even very menial urban jobs can be difficult.

It is in many ways ironic that development in rural areas of origin often acts as a stimulus to out-migration. In China, the development of rural enterprises appears to increase rates of out-migration. In the Punjab, the Green Revolution witnessed both high rates of out-migration by the resident population and in-migration from a number of poorer Indian states. Development often acts as an important stimulus, widening the horizons of a significant number among the rural population.

There is some evidence that internal migration in LICs and MICs is beneficial for receiving regions. The fact that rural migrants are often the most dynamic young adults from their communities should be of benefit to the receiving urban areas, providing enough opportunities are available for most to gain reasonable employment. However, newcomers can place a massive burden on overstretched urban amenities and services, particularly if large numbers are unemployed.

The impact of out-migration on areas of origin is not at all clear. The traditional view has been that by reducing unemployment and underemployment, and providing inputs such as remittances and newly acquired skills, migration promotes development in rural areas of origin, narrows regional disparities and eventually makes migration unnecessary. However, recent research on this issue has in some respects been contradictory and the possibility of such mobility having an adverse effect on the economy of labour-exporting areas cannot be ruled out. Lipton, with reference to the Indian Village Studies Programme, emphasised the inequality-increasing effects of rural-urban migration in areas of origin. High emigration from a village was strongly related to the unequal distribution of resources, usually land. Migration frequently involved both the richest and poorest households in the village. Richer potential migrants were 'pulled' towards fairly firm job prospects in the formal sector, whereas the poor were 'pushed' by rural poverty and labour-replacing methods. The much higher remittances from rich migrants compared with those from poorer migrants from the same community acted to increase inequalities in villages and between villages in the same region.

An important issue is the impact of out-migration on local agriculture. In some cases, out-migration undoubtedly causes a shortage of labour, although in other instances it clearly alleviates unemployment and underemployment. In some areas, large numbers of women now perform agricultural tasks that were once the preserve of men. This 'new' work is frequently in addition to an existing heavy household workload. Although remittances help, they are often too low to hire in labour. There is also a tendency for land to become concentrated in the hands of migrant families who gradually turn into non-farmers, resulting in a fall in agricultural production.

Whether the impact of out-migration on agriculture is positive or negative depends on the complex interaction of a range of social and economic factors that may be subject to change over time.

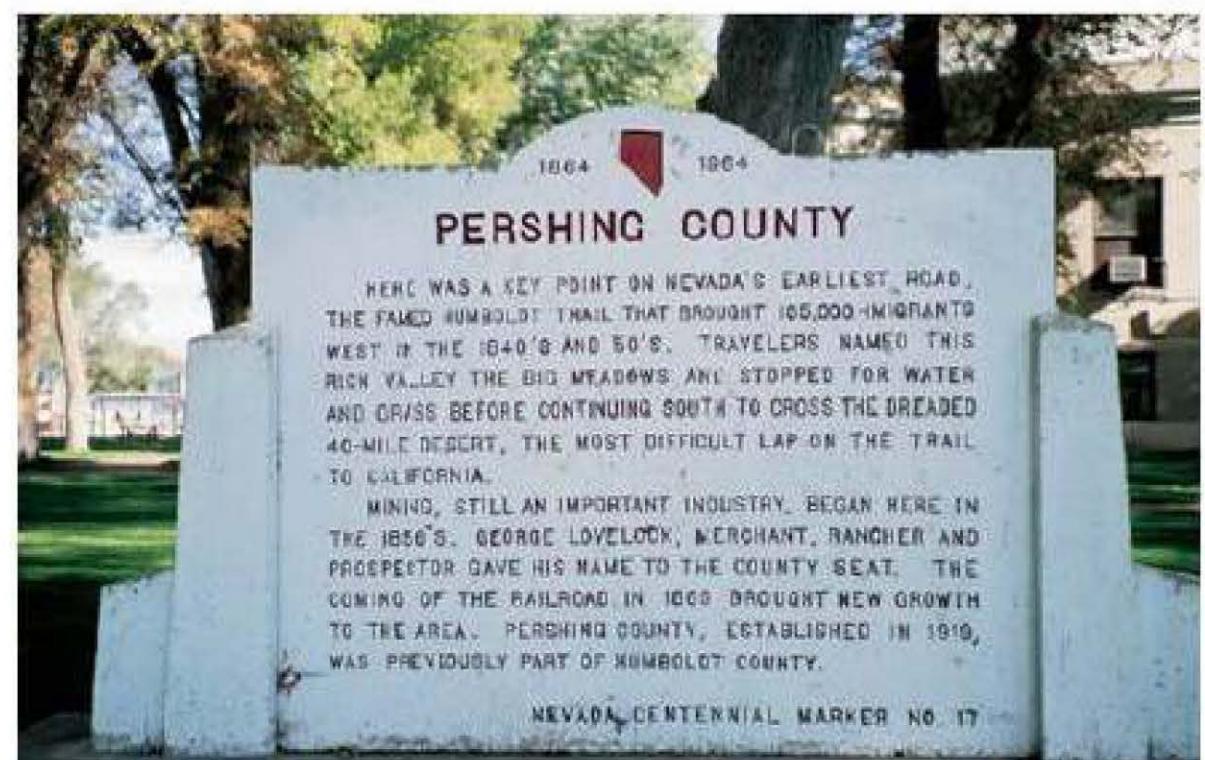


Figure 5.17 Lovelock, Nevada – on the historic Humboldt Trail

Political impact

Internal migration at a significant scale can have considerable political repercussions. For example:

- Where migration results in **depopulation**, the reduced number of people in a region can reduce the 'political voice' of the community. A lower population can also result in decreased funding from central government. Such a downward spiral may result in a region becoming more and more peripheral to its country as a whole.
- In contrast, where population is growing rapidly, partly at least as a result of in-migration, the political voice of such regions will become more important. In some LICs and MICs in particular, capital cities have grown rapidly, attaining an increasingly dominant political and economic role. Such economic and political primacy

may be of considerable benefit to the residents of the capital city, but to the detriment of the rest of that country.

- Internal migration can significantly change the ethnic composition of a region or urban area, which may result in tension. In the Niger Delta, many local people feel that most jobs go to members of the country's majority ethnic groups – the Igbo, Yoruba, Hausa and Fulani, who traditionally come from elsewhere in Nigeria. The local ethnic groups, whose numbers are small in national terms, feel that they have been largely overlooked by the government. This has resulted in a high level of resentment and is certainly one cause of the development of armed groups that have become a major threat to the large oil industry in the region.

Case Study: Tibet's changing ethnic balance

In some countries, governments have been accused of deliberately using internal migration to change the ethnic balance of a region. Tibet is an example where the in-migration of large numbers of Han Chinese has had a huge impact. Prior to the Chinese occupation of Tibet in 1950, very few Chinese lived in what is now the Tibetan Autonomous Region (TAR). This has changed completely, with Chinese migrants now in the majority in some parts of Tibet. In the capital Lhasa, there are 200 000 Chinese and 100 000 Tibetans. If the present influx continues, Tibetans could become the minority population within a few decades. Most Tibetans see this as an immense threat to the survival of their culture and identity. The Dalai Lama, Tibet's exiled spiritual leader, has stated that this policy of 'demographic aggression' has led to 'cultural genocide'.

Most in-migrants to Tibet are Han Chinese, by far the largest ethnic group in China. They fall into two general groups:

- government officials and technical experts who can be thought of as involuntary migrants
- economic migrants – miners, construction workers, retail and other service workers.

Incentives provided by the government for Han Chinese to go to Tibet include tax incentives, allowances, higher wages and better housing.

In 2006, the world's highest railway, the Qinghai–Tibet line, was opened. It runs from Golmud to Lhasa (Figure 5.18). China

says the 1140 kilometre line will bring economic opportunities to Tibet. However, many Tibetans fear it will encourage even more in-migration.



Figure 5.18 The Qinghai–Tibet railway

- the expansion of landfill sites
- air and water pollution from factories, households, power stations, transportation and other sources.

Internally displaced people and refugees can have a considerable impact on the environment. They often concentrate in marginal and vulnerable environments where the potential for environmental degradation is high. Apart from immediate problems concerning sanitation and the disposal of waste, long-term environmental damage may result from deforestation

□ Environmental impact

Large-scale rural–urban migration has led to the massive expansion of many urban areas in LICs and MICs (Figure 5.19), which has swallowed up farmland, forests, floodplains and other areas of ecological importance. In turn, the increased impact of these enlarged urban areas is affecting environments even further afield, in a variety of different ways. These include:

- deforestation due to the increasing demand for firewood
- increasing demands on regional water supplies and other resources

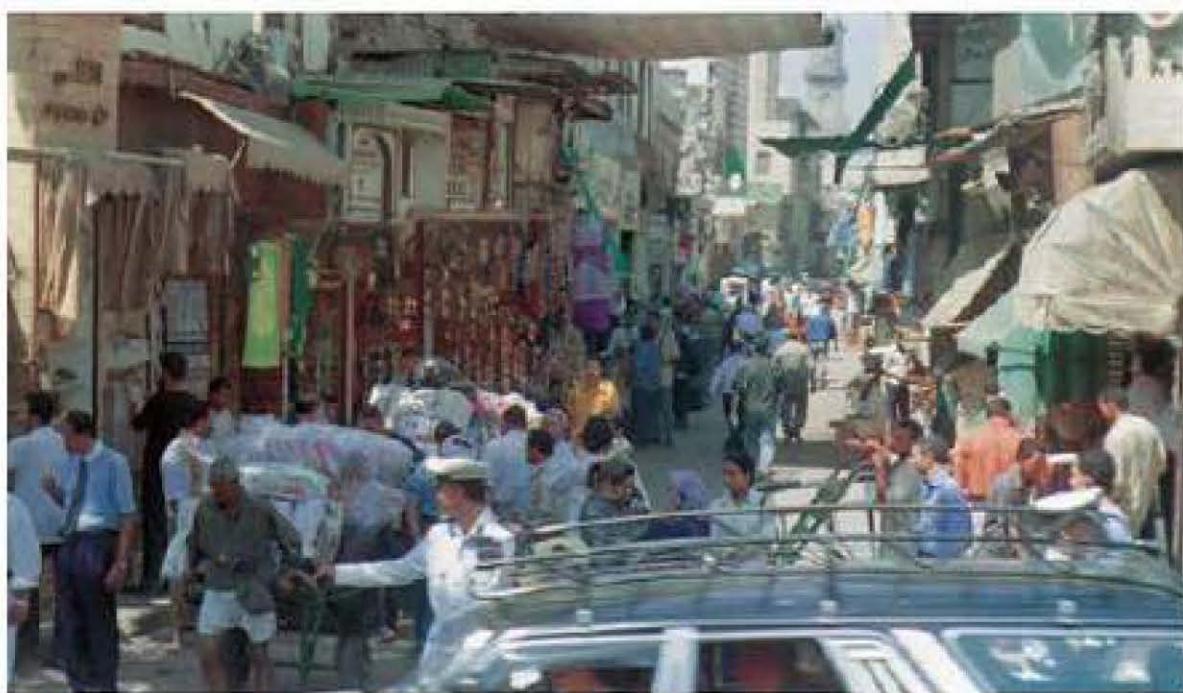


Figure 5.19 Cairo has expanded rapidly due both to high in-migration and high natural increase

associated with the need for firewood and building materials. Increased pressure on the land can result in serious soil degradation.

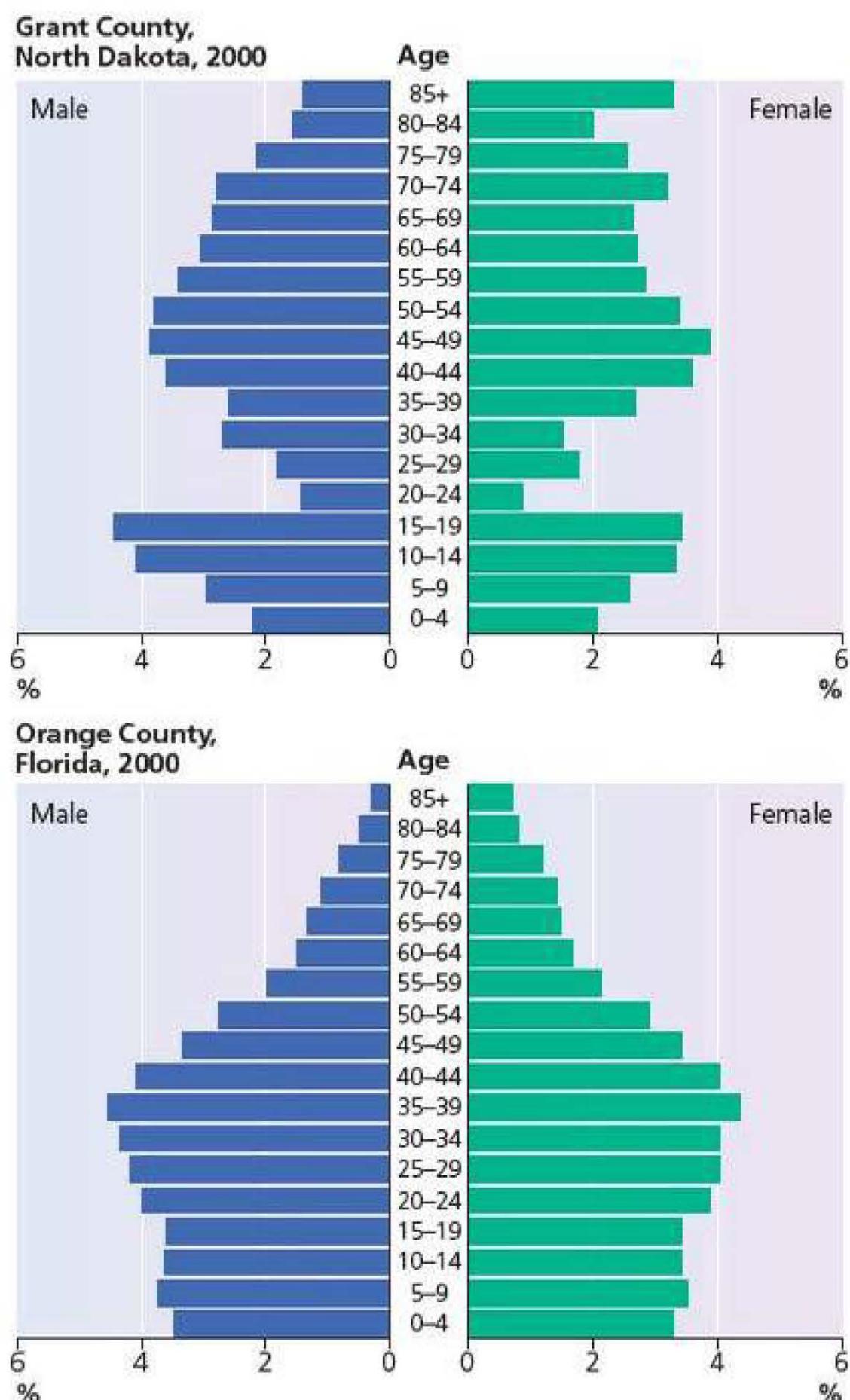
A study of high in-migration into the coastal areas of Palawan in the Philippines found that the historical social processes that helped maintain reasonable patterns of environmental use had been overwhelmed by the rapid influx of migrants. The newcomers brought in new resource extraction techniques that were more efficient but also more destructive than those previously employed by the established community. The study concluded that high in-migration had caused severe environmental damage to the coastal environment.

□ Impact on population structures

The age-selective (and often gender-selective) nature of migration can have a very significant impact on both areas of origin and destination. This is no more so than in rural areas of heavy out-migration and urban areas where heavy in-migration is evident.

Age/sex structure diagrams for rural areas in LICs and MICs frequently show the loss of young adults (and their children) and may also show a distinct difference between the number of males and females in the young-adult age group, due to a higher number of males than females leaving rural areas for urban destinations. However, in some rural areas female out-migration may be at a higher level than male out-migration, as Figure 5.20 illustrates. In contrast, urban population diagrams show the reverse impact, with age-selective in-migration.

In Figure 5.20, women aged 20 to 35 years in Grant County, USA comprise just 4.3 per cent of the population. This is a mainly rural area. The county's ageing population lowers the birth rate and increases the death rate. Here, out-migration has caused depopulation – an actual fall in the population. In contrast, in Orange County, Florida, 12 per cent of the population are women aged 20 to 35 years. Orange County is a predominantly urban area.



Source: OCR A2 Geography by M. Raw (Philip Allan Updates, 2009), p.135

Figure 5.20 Age/sex structure diagrams for Grant County, North Dakota and Orange County, Florida in the USA

Section 5.2 Activities

- 1 With reference to Figure 5.16:
 - a Give two reasons for rural–urban migration.
 - b To what extent and why is rural–urban migration selective?
 - c Discuss the ‘support costs’ flowing from village to city.
 - d What are remittances? Suggest how remittances are used in rural areas.
- 2 In what ways can internal migration have a political impact?
- 3 Describe how internal migration can have an impact on the environment.
- 4 Explain how rural–urban migration can have an impact on population structures.

□ Stepped migration and urban–urban movements

A number of analyses of internal migration, for example in Nigeria, have recognised a stepped structure to such movements, with migrants from rural areas often moving to a local town before later making a move further up the urban hierarchy. Figure 5.21 shows three ways stepped migration might occur in a LIC.

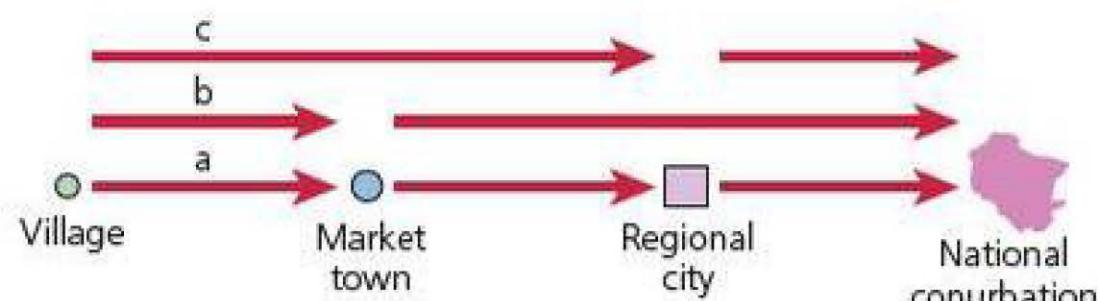


Figure 5.21 Stepped migration

During the initial move from a rural environment to a relatively small urban area, migrants may develop skills and increase their knowledge of and confidence in urban environments. They may become aware of better employment opportunities in larger urban areas and develop the personal contacts that can be so important in the migration process. For those working in the formal sector, a move up the urban hierarchy may be linked to a promotion within the company in which they work, or a transfer linked to public-sector employment.

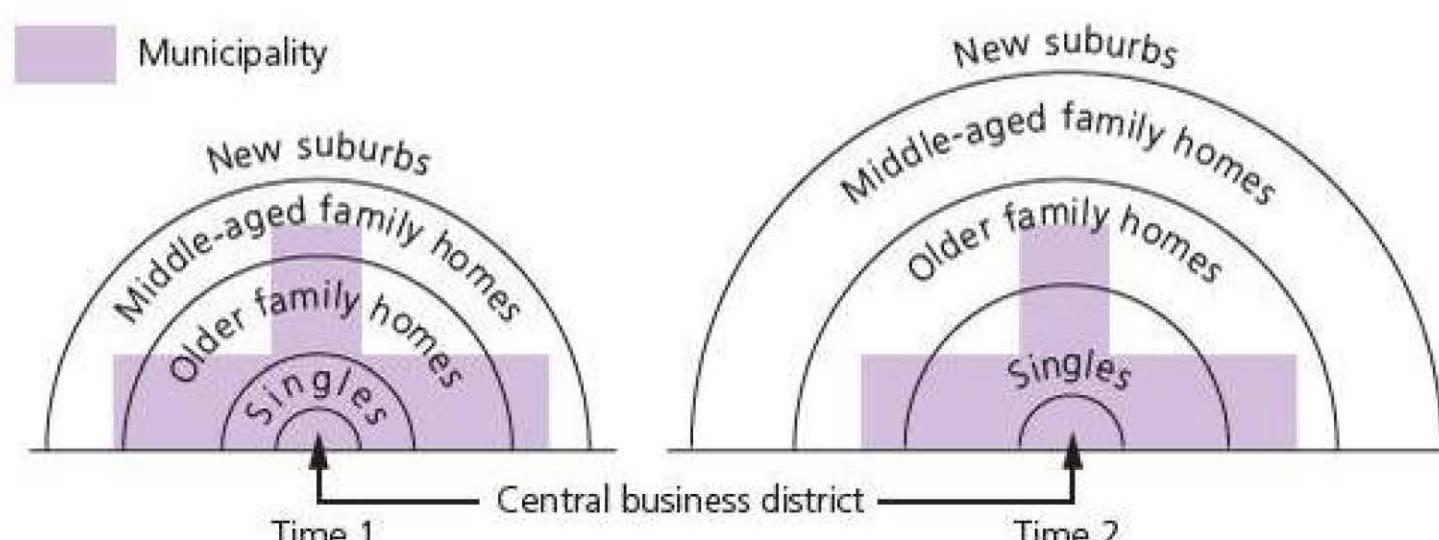
Another important form of urban–urban migration is from towns and cities in economic **periphery** areas to urban areas in the economic core. An example is Brazil, with significant movement in the last 50 years from urban areas in the relatively poor north east such as Fortaleza, Natal, Recife and Salvador to the more prosperous cities of the south east, such as São Paulo, Rio de Janeiro and Belo Horizonte. Greater employment opportunities and higher average wages have been the main reason for such movements, but many of the other push and pull factors discussed earlier have also been significant.

□ Causes and impacts of intra-urban movements

Demographic analysis shows that movements of population within cities are closely related to stages in the **family life cycle**, with the available housing stock being a major determinant of where people live at different stages in their life. Studies in Toronto show a broad **concentric zone** pattern (Figure 5.22). Young adults frequently choose housing close to the **central business district (CBD)**, while older families occupy the next ring out. Middle-aged families are more likely to reside at a greater distance from the central area; and farther out still, in the newest suburban areas, young families dominate. This simplified model applies particularly well to a rapidly growing metropolis like Toronto where an invasion and succession process evolves over time.

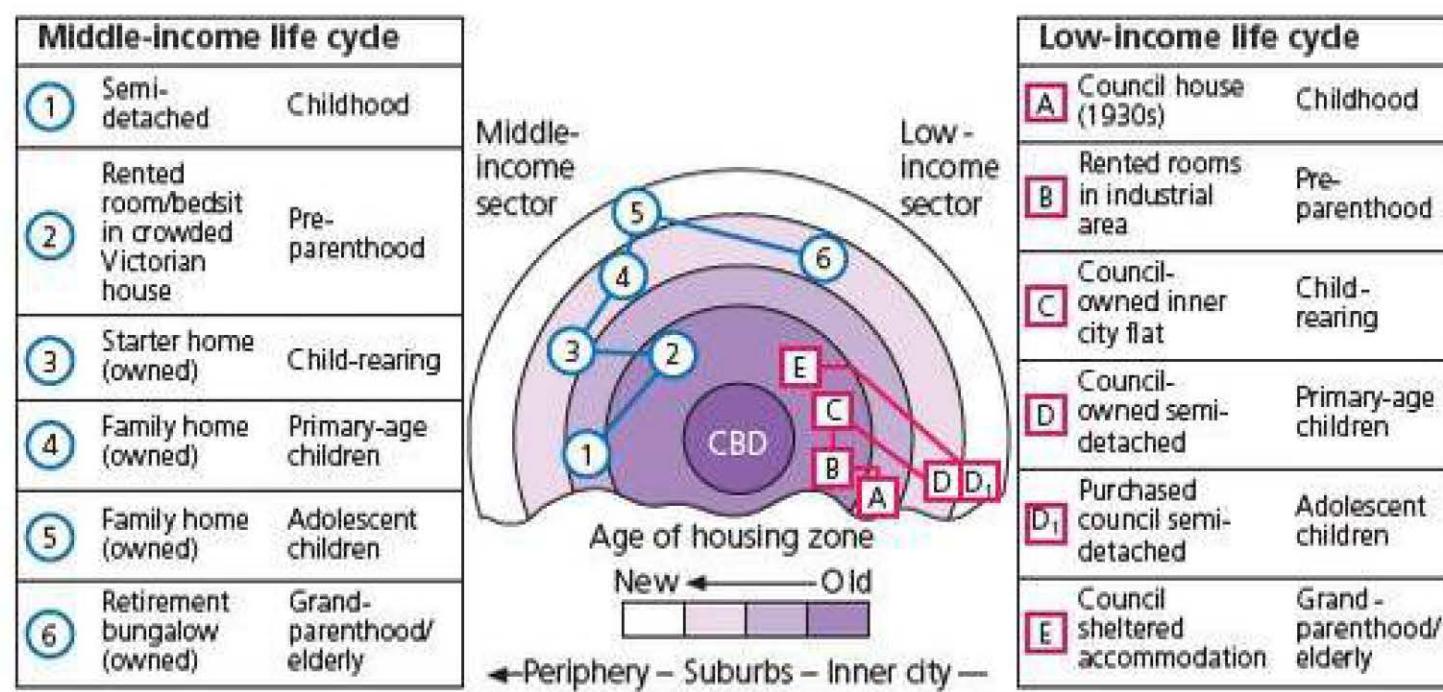
Toronto's inner city has a much higher percentage of rented and small-unit accommodation than the outer regions, which, along with the stimulus of employment and the social attractions of the central area, has attracted young adults to the area. Most housing units built in the inner area in recent decades have been in the form of apartments.

Studies in the UK have highlighted the spatial contrasts in life cycle between middle- and low-income groups (Figure 5.23). With life cycle and income being the major determinants of where people live, residential patterns are also influenced by a range of organisations, foremost of which are local authorities, housing associations, building societies and landowners. On top of this is the range of choice available to the household. For those on low income this is frequently very restricted indeed. As income rises, the range of choice in terms of housing type and location increases.



Source: *Toronto in Transition*, City of Toronto Planning and Development Dept. Policy and Research Division, April 1980, p. 21

Figure 5.22 Toronto – changing social structure in a growing city



Housing choice is based on life cycle and income. Residential patterns are influenced by building societies, landowners, local authorities/housing associations, and free choice.

Source: Advanced Geography: Concepts & Cases, P. Guinness & G. Nagle (Hodder Education, 1999), p.104

Figure 5.23 Middle- and low-income models of the family life cycle in the UK

□ Counterurbanisation

According to G.J. Lewis, 'counterurbanisation involves a series of fundamental changes in the redistribution of population including a population shift out of core industrial regions and into the peripheral regions as well as movements down the urban hierarchy'. Changes in telecommunications in particular have helped to diversify many non-metropolitan economies so that they are now viable locations for employers and residents in search of less congestion, lower costs and a better quality of life.

The general consensus is that counterurbanisation first became clearly evident in the USA in the 1970s and that since then most countries of western Europe as well as Australia, New Zealand, Canada and Japan have followed suit. However, this is not to say that evidence of counterurbanisation could not be found to some degree before 1970 in various parts of the developed world. It seems the starting point of counterurbanisation was the transformation of the most accessible rural settlements within the metropolitan hinterland into commuter communities. As a 'rural' lifestyle became more popular amongst urbanites, its spatial impact gradually diffused into more remote regions.

In all the countries affected, the movement of urbanites into rural areas has reduced differences in culture, lifestyle and population composition. There has been much debate about the causes of counterurbanisation. The most plausible explanations are as follows:

- The 'period' explanation emphasises the role of the peculiar economic and demographic circumstances of the 1970s. The energy crisis, periods of recession, the sharp growth in retirees and the impact of the post-war baby boom combined to weaken metropolitan growth. In metropolitan areas, push factors had never

been stronger, while – perhaps for the first time – rural location was a viable alternative for many. This perspective viewed counterurbanisation as a very temporary phenomenon, which would subside once economic and demographic conditions returned to 'normal'.

- The 'regional restructuring' explanation emphasises the role of the new organisation of production, the changing spatial division of labour and the increasing importance of service industries. All these factors stimulated a greater spread of activities and population towards smaller places and the rural periphery.
- The 'de-concentration' explanation highlights the lowering of institutional and technological barriers to rural location. Long-standing preferences for lower-density environments are now much less constrained than in the past and an increasing number of businesses and households have felt free to leave the metropolitan areas, confident that their prospects were more likely to improve rather than diminish. The key factor here is the convergence, across size and place, in the availability of amenities that were previously accessible only in larger places.

While all three explanations have their merits, it would appear from the literature on the subject that the third argument is viewed as the most important.

Section 5.2 Activities

- 1 Describe and explain Figure 5.21.
- 2 a What is the *family life cycle*?
b Describe and explain the two family life cycles shown in Figure 5.23.
- 3 a What is *counterurbanisation*?
b What are the reasons for this process occurring?

5.3 International migration

Voluntary migration

International migration is a major global issue. In the past, it has had a huge impact on both donor and receiving nations. In terms of the receiving countries, the consequences have generally been beneficial. But today, few countries favour a large influx of outsiders, for a variety of reasons.

In terms of voluntary migration, it is useful to differentiate between 'independent' and 'dependent' movements. In independent movements, the decision to move to a new location is made by the individual, whereas in dependent movements the decision is taken collectively by the household. In the latter case, the individual concerned may or may not have a significant say in the final decision, often depending on the age and gender of the prospective migrant.

Currently, about 3 per cent of the world's population live outside the country of their birth. This amounts to about 213 million people, higher than ever before. Recent migration data shows that:

- with the growth in the importance of labour-related migration and international student mobility, migration has become increasingly temporary and circular in nature; the international mobility of highly skilled workers increased substantially in the 1990s and 2000s
- the spatial impact of migration has spread, with an increasing number of countries affected either as points of origin or destination; while many traditional migration streams have remained strong, significant new streams have developed
- the proportion of female migrants has steadily increased (now almost 50 per cent of all migrants); for some countries of origin, for example the Philippines, Sri Lanka, Thailand and Indonesia, women now make up the majority of contract workers
- the great majority of international migrants from HICs go to other affluent nations; migration from LICs and MICs is more or less equally split

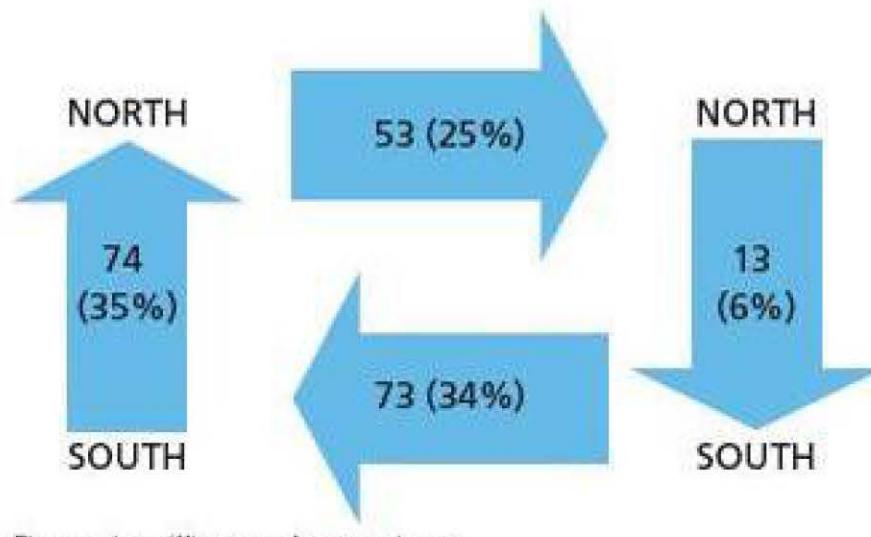
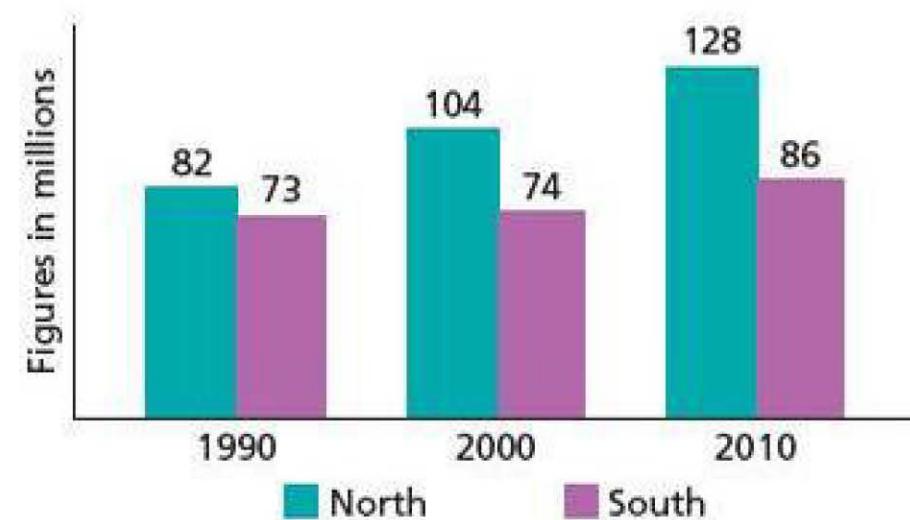


Figure 5.24 International migrant stock by origin and destination, 2010



The terms 'North' and 'South' are sometimes used in international reports to refer to the developed countries (HICs) and developing countries (MICs and LICs) respectively.

Source: IGCSE Geography 2nd edition, P. Guinness & G. Nagle (Hodder Education, 2014) p.22

Figure 5.25 International migrant stock in the North and South, 1990–2010

between HICs and LICs/MICs (Figures 5.24 and 5.25); however, there is an important qualification here in that the movement between LICs/MICs is usually from weaker to stronger economies

- HICs have reinforced controls, in part in response to security issues, but also to combat illegal immigration and networks that deal in trafficking and exploitation of human beings.

Globalisation in all its aspects has led to an increased awareness of opportunities in other countries. With advances in transportation and communication and a reduction in the real cost of both, the world's population has never had a higher level of potential mobility (Figure 5.26). Also, in various ways, economic and social development has made people more mobile and created the conditions for emigration.



Figure 5.26 The development of air transport (Air China) has been a significant factor in high levels of international migration in recent decades

Each receiving country has its own sources, the results of historical, economic and geographical relationships. Earlier generations of migrants form networks that help new ones to overcome legal and other obstacles. Today's tighter rules tend to confine immigration to family members of earlier 'primary' migrants.

Section 5.3 Activities

- 1 In terms of voluntary migration, distinguish between independent and dependent movements.
- 2 Describe and comment on the information illustrated in Figures 5.24 and 5.25.

Forced migration

In the historical writings on migration in LICs, there is an emphasis on the forced recruitment of labour. The abduction and transport of Africans to the Americas as slaves was the largest forced migration in history. In the seventeenth and eighteenth centuries, 15 million people were shipped across the Atlantic Ocean as slaves.

Even in recent times, the scale of involuntary movement in LICs is considerably higher than most people think. However, giving due consideration to such movements should not blind us to the increasing scale of free labour migration that has occurred in recent decades. Here the focal points have been the most dynamic economies of the LICs, which have sucked in labour from more laggard neighbouring countries.

In the latter part of the twentieth century and at the beginning of the twenty-first century, some of the world's most violent and protracted conflicts have been in the LICs, particularly in Africa and Asia. These troubles have led to numerous population movements of a significant

scale. Not all have crossed international frontiers to merit the term **refugee** movements. Instead, many have involved **internal displacement**. This is a major global problem, which is showing little sign of abatement.

A number of trends appear to have contributed to the growing scale and speed of forced displacement:

- the emergence of new forms of warfare involving the destruction of whole social, economic and political systems
- the spread of light weapons and land mines, available at prices that enable whole populations to be armed
- the use of mass evictions and expulsions as a weapon of war and as a means of establishing culturally and ethnically homogeneous societies – the term 'ethnic cleansing' is commonly used to describe this process.

In a number of locations around the world, whole neighbourhoods of states have become affected by interlocking and mutually reinforcing patterns of armed conflict and forced displacement, for example in the Caucasus and Central Africa. The United Nations High Commission for Refugees (UNHCR) is responsible for guaranteeing the security of refugees in the countries where they seek asylum and aiding the governments of these nations in this task. The UNHCR has noted a growing number of situations in which people are repeatedly uprooted, expelled or relocated within and across state borders, forcing them to live a desperately insecure and

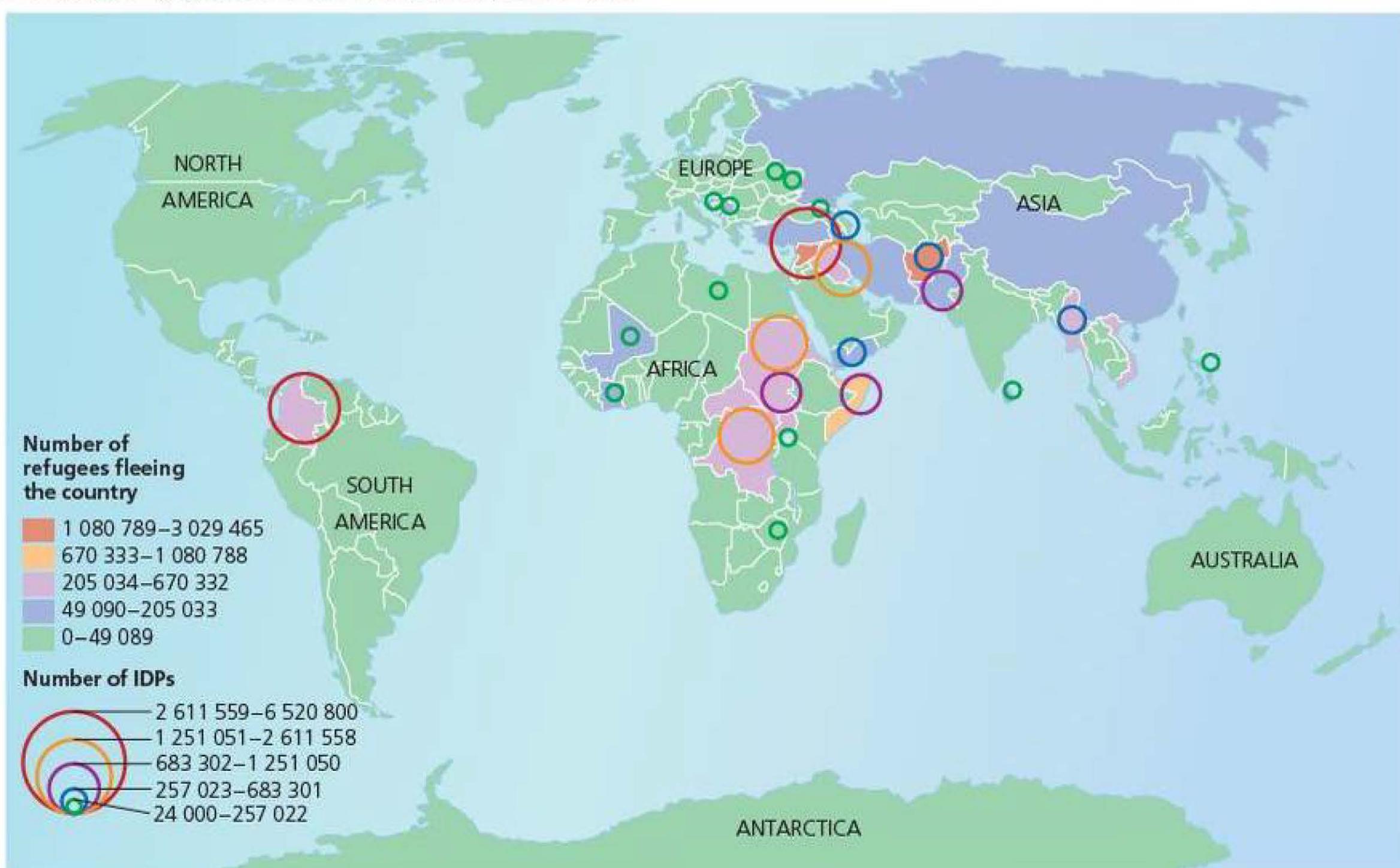


Figure 5.27 Map of world refugees and internally displaced people (IDPs), 2014

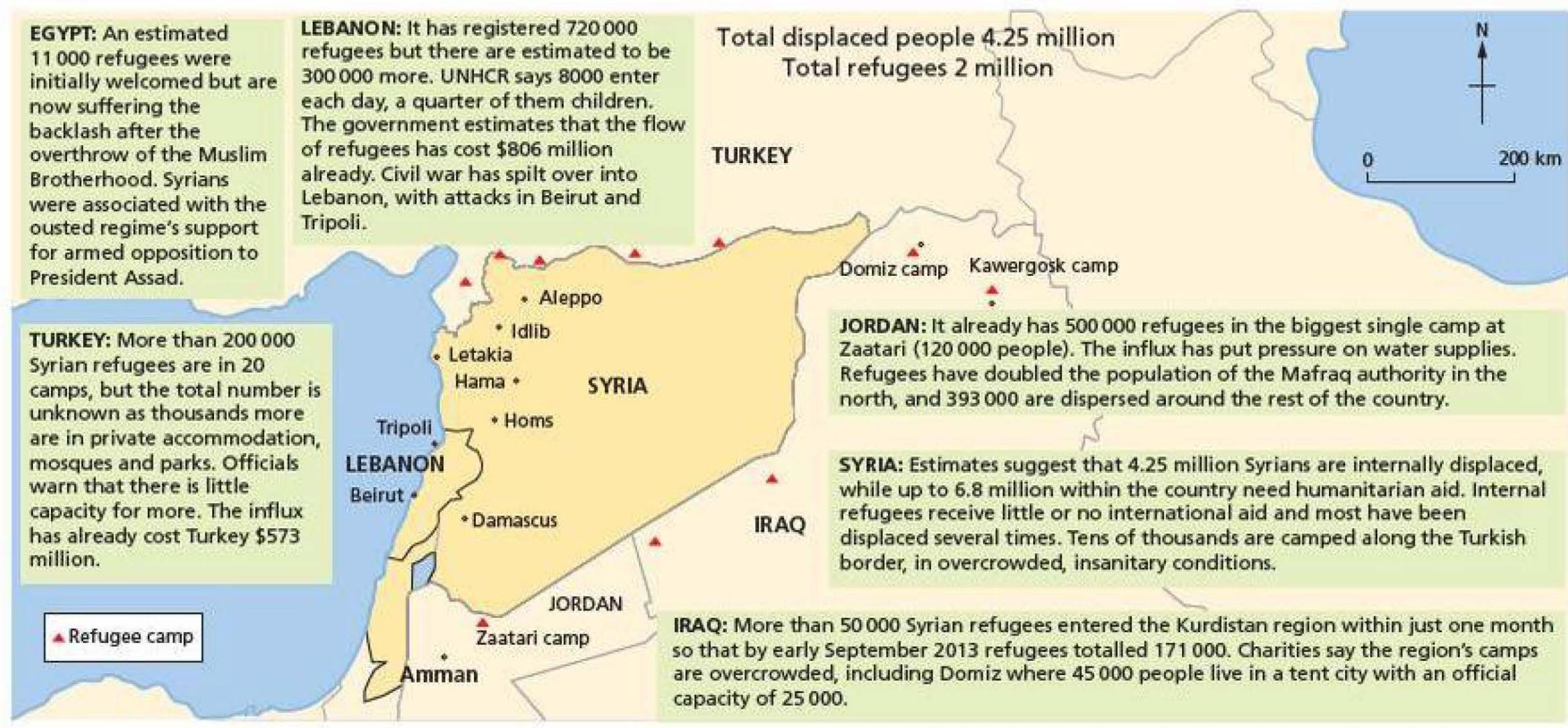


Figure 5.28 Syria – refugees and internally displaced people, September 2013

nomadic existence. The UNHCR has observed that 'the forced displacement of minorities, including depopulation and repopulation tactics in support of territorial claims and self-determination, has become an abominable characteristic of the contemporary world'. Figure 5.27 shows world refugees and internally displaced persons (IDPs) as of mid-2014. The UNHCR put the number of forcibly displaced people worldwide at 42.5 million. This includes 15.4 million refugees, the remainder being internally displaced people. The current conflict in Syria has produced large numbers of both refugees and internally displaced people (Figure 5.28). An increasing number of people have fled the conflict in Syria and other conflict situations such as in Eritrea, Iraq and Afghanistan, many to seek sanctuary in Europe.

Many LICs are prone to natural disasters. Because poor nations do not possess the funds to minimise the consequences of natural disaster, forced migration is often the result. Some areas have been devastated time and time again, often eliciting only a minimal response from the outside world. Ecological and environmental change are a common cause of human displacement. Much of central Asia is affected by problems such as soil degradation and desertification, a situation created by decades of agricultural exploitation, industrial pollution and overgrazing. The worst situation is in and around the Aral Sea, a large lake located between Kazakhstan and Uzbekistan. In a large-scale effort to increase cotton production in the region, most of the river water flowing into the Aral Sea was siphoned off for irrigation. Since 1960, the surface area of the sea has been reduced by half. Dust from the dried-up bed of the sea, containing significant amounts of agricultural and industrial chemicals, is carried long distances by the wind, adding

further to the pollution, salinisation and desertification of the land. Agricultural production has fallen sharply and food has increased in price, the fishing industry has been almost totally destroyed and local people are plagued by significant health problems. It has been estimated that more than 100 000 people have left the Aral Sea area since 1992 because of these problems.

Semipalatinsk in Kazakhstan, where almost 500 nuclear bombs were exploded between 1949 and 1989, 150 of them above ground, is another environmental disaster zone. Here, 160 000 people decided to leave, due to concerns about the consequences of nuclear radiation. Around half of these people moved to other parts of Kazakhstan, with the remainder going to a number of other former Soviet states. Tackling environmental degradation in this region will not be an easy task. The problem is so deep-rooted and was kept hidden for so long under Soviet rule that it may in some instances be too late for effective remedial action to be taken.

Increasingly large numbers of people have been displaced by major infrastructural projects and by the commercial sector's huge appetite for land. In LICs, the protests of communities in the way of 'progress' are invariably ignored for reasons of 'national interest' or pure greed. The World Bank and other international organisations have been heavily criticised in recent decades for financing numerous large-scale projects without giving sufficient consideration to those people directly affected.

It is predicted that climate change will force mass migrations in the future. In 2009, the International Organization for Migration estimated that worsening tropical storms, desert droughts and rising sea levels will displace 200 million people by 2050.

Section 5.3 Activities

- 1 What is the difference between a refugee and an *internally displaced person*?
- 2 Describe the extent of global human displacement shown in Figure 5.27.
- 3 Briefly describe the refugee situation in Syria (Figure 5.28).
- 4 Suggest how climate change may cause forced migrations in the future.

workers can pay up to \$2000 to a broker for a job in Saudi Arabia.

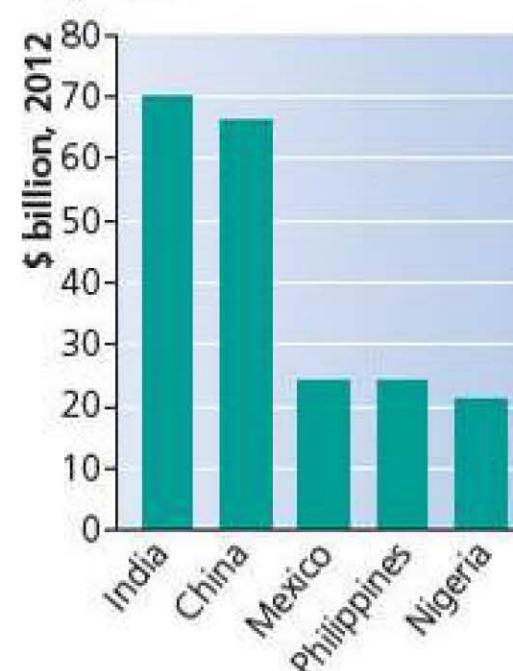
Some international labour migration takes the form of commuting. Examples include:

- workers travelling daily from Malmö in Sweden to Copenhagen, the Danish capital city
- German, French and Belgian 'frontaliers' commuting daily into Luxembourg, where they account for a quarter of the labour force.

The World Bank estimates that international remittances totalled \$529 billion in 2012, of which just over \$400 billion went to LICs and MICs. The value of remittances has increased significantly in recent decades from about \$30 billion a year in the early 1990s.

Figure 5.29 shows (a) the top recipients of remittances by value in 2012 and (b) countries where remittances formed the highest percentage of GDP in 2011. Research in a number of countries such as Nepal has linked rising remittance payments to reduced levels of poverty.

a Top recipients of remittances by value



b Countries where remittances formed the highest percentage of GDP

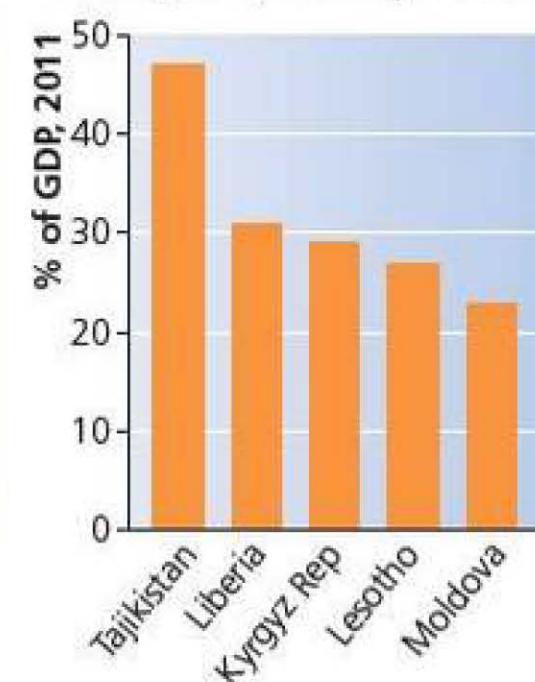


Figure 5.29 Top recipients of remittances, 2012

Some economists argue that remittances are the most effective source of financing in LICs and MICs. Although foreign direct investment (FDI) is larger, it varies with global economic fluctuations. Remittances exceed considerably the amount of official aid received by LICs and MICs. Remittances have been described as 'globalisation bottom up'.

Migration advocates stress that these revenue flows:

- help alleviate poverty
- spur investment
- cushion the impact of global recession when private capital flows decrease.

The major sources of remittances are the USA, Western Europe and the Gulf (Figure 5.30). The number of foreigners working in these areas is rising significantly. About 1.3 million migrants settle in the USA annually, around one-third of them illegally. The top destinations of



Figure 5.30 MoneyGram sign – remittances are an important element of international migration

remittances are India, China, Mexico and the Philippines. The 20 million people who make up the Indian **diaspora** are scattered over 135 countries. In 2012, they sent back to India \$70 billion. The Indian state of Kerala has nearly 1 million 'Gulf wives' living apart from their husbands.

Apart from the money that migrants send directly to their families, their home communities and countries also benefit from:

- donations by migrants to community projects
- the purchase of goods and services produced in the home country by migrants working abroad
- increased foreign exchange reserves.

All three forms of economic benefit mentioned above combine to form a positive **multiplier effect** in donor countries.

In the past, the perceived major disadvantage of emigration has been that it will lead to a 'brain drain' in which countries will lose their best workers. However, the direct and indirect effects of remittances may more than compensate for this. For some countries, the proportion of graduates working overseas is high – 25 per cent for Iran, 26 per cent for Ghana, 10 per cent for the Philippines, 6 per cent for South Korea. It has been estimated that about \$60 billion worth of LIC investment in tertiary education has been 'drained' to OEDC countries. However, it should be noted that some LICs have more graduates in some areas than they need.

Social assimilation usually follows on the back of economic assimilation, although the speed and degree to which it is achieved tends to be strongly related to the socio-political maturity of the host society, as well as to the degree of difference between an immigrant community and the host society. Racial differences create the greatest barrier to social assimilation, but differences in language, religion and culture can also be important. As social

barriers decline, the benefits that different cultures can bring to society as a whole become more apparent. One of the great attractions of cities such as London and New York is their multiculturalism. The social impact on the donor country can also be considerable. This tends to occur in two stages. The first stage is the initial loss of many of its most dynamic individuals. The second stage occurs as new ideas from the adopted country filter back to the home country, often clashing with traditional values.

Section 5.3 Activities

- 1 Comment on the socio-economic status of immigrants in OEDC countries.
- 2 Produce tables to present the data shown in Figure 5.29.
- 3 How do remittances benefit receiving communities?

The cultural impact

Migration has played a major role in shaping the global cultural map. The phenomenon is essentially a series of exchanges between places. The impact of migration on population change has been greatest where mass migrations have overwhelmed relatively small indigenous populations, as exemplified by the demographic histories of the Americas and of Australia and New Zealand. In turn, the old colonial powers have relatively cosmopolitan populations compared with most of their non-colonial counterparts, as significant numbers of people from former colonies have sought a higher standard of living in the 'mother' country. The Afro-Caribbean and Asian elements of the British population are a reflection of this process. In countries such as the UK, France, Germany, Italy and the USA, there is a considerable difference in ethnic composition between the large metropolitan areas and rural regions as most immigrants invariably head for large urban areas where the greatest concentration of employment opportunities can be found.

Significant diaspora populations have been established in many HICs, resulting in growing cultural hybridity. An example is the enlargement of the European Union in 2004 to include Eastern European countries such as Poland. A considerable number of Polish workers migrated to the UK. In areas such as London and Reading where the Polish community concentrated, shops providing goods and services to the expanding Polish community opened up and a number of Catholic churches began offering a weekend mass conducted in the Polish language. The building industry and hotels, pubs and catering attracted particularly large numbers of Polish workers. High immigration from Poland and a number of other countries increased the birth rate in the UK and widened the range of first languages spoken by children in schools. This placed considerable demands on many education authorities.

In the USA, the large inflow of migrants from Latin America has resulted in a substantial increase in the proportion of Spanish speakers in the country. Many areas in the southern part of the USA, in states such as California, New Mexico, Texas and Florida, are effectively bilingual. Many other traits of Latin American culture are also evident in the region. In turn, the contact that migrant workers have with their families and communities elicits a certain reverse flow of cultural traits, as workers relate their experiences and send money home.

The political impact

Significant levels of international migration can have a considerable political impact, both within and between countries. In many countries, there is a clear trend of immigrants being more likely to vote for parties of the centre and the left as opposed to political parties to the right of centre. In HICs, immigrants tend to head for economic core regions and to inner-city areas within these regions. Such concentrations can have a big impact on voting patterns.

Over time, immigrants gradually assimilate into host societies. In general, economic assimilation comes first, followed by social assimilation and then political assimilation. When immigrant groups reach a certain size and standing they begin to develop their own politicians, as opposed to voting for politicians from the host society. This process is more likely to happen in mature democracies where there is a long history of immigration. The UK and the USA are examples of countries where this process has been evident.

High levels of international migration between one country and another can lead to political tension. The high level of Mexican migration into the USA, both legal and illegal, has created tensions between the US and Mexican governments. In recent years, the USA has greatly increased the size of its Border Patrol. Critics refer to the 'militarisation of the Mexican border', which is costing \$3 billion a year.

In a number of EU countries in recent decades, high levels of immigration have created sizeable immigrant populations. Such populations have been assimilated more successfully in some countries than others. Where and how people are housed is a big factor in assimilation.

Many LICs and MICs are looking to HICs to adopt a more favourable attitude to international migration. The subject is brought up regularly at international conferences. This political pressure is known as 'the pro-migration agenda of developing nations'.

Living within a new political system can also affect the attitudes of immigrant communities to what goes on back in their home country. The harshest critics of authoritarian governments in the Middle East and Asia are invariably exiles living in other countries.

The environmental impact

In an article entitled 'The Environmental Argument for Reducing Immigration to the United States', Winthrop Staples and Philip Cafaro argue that 'a serious commitment to environmentalism entails ending America's population growth by implementing a more restrictive immigration policy. The need to limit immigration necessarily follows when we combine a clear statement of our main environmental goals – living sustainably and sharing the landscape generously with other species – with uncontroversial accounts of our current demographic trajectory and of the negative environmental effects of U.S. population growth, nationally and globally.'

Staples and Cafaro explain how population growth contributes significantly to a host of environmental problems in the USA. They also argue that a growing population increases America's large environmental footprint beyond its borders and creates a disproportionate role in stressing global environmental systems.

There have been growing environmental concerns about immigration in other countries too, as the concept of sustainability has become understood in a more detailed way. However, some critics see such arguments as a disingenuous way of attempting to curtail immigration.

Figure 5.31 is a summary of the possible impacts of international migration. Many of these factors are also relevant to internal migration. Because migration can be such an emotive issue, you may not agree with all of these statements, and you may consider that some important factors have been omitted.

Section 5.3 Activities

- 1 With brief reference to one country, describe the cultural impact of international migration.
- 2 Give two examples of the way international migration can have a political impact.
- 3 How can international migration have an impact on the environment?

The impact of international migration		
Impact on countries of origin	Impact on countries of destination	Impact on migrants themselves
Positive <ul style="list-style-type: none"> Remittances are a major source of income in some countries. Emigration can ease the levels of unemployment and underemployment. Reduces pressure on health and education services and on housing. Return migrants can bring new skills, ideas and money into a community. 	<ul style="list-style-type: none"> Increase in the pool of available labour may reduce the cost of labour to businesses and help reduce inflation. Migrants may bring important skills to their destination. Increasing cultural diversity can enrich receiving communities. An influx of young migrants can reduce the rate of population ageing. 	<ul style="list-style-type: none"> Wages are higher than in the country of origin. There is a wider choice of job opportunities. A greater opportunity to develop new skills. They have the ability to support family members in the country of origin through remittances. Some migrants have the opportunity to learn a new language.
Negative <ul style="list-style-type: none"> Loss of young adult workers who may have vital skills, e.g. doctors, nurses, teachers, engineers (the 'brain-drain' effect). An ageing population in communities with a large outflow of (young) migrants. Agricultural output may suffer if the labour force falls below a certain level. Migrants returning on a temporary or permanent basis may question traditional values, causing divisions in the community. 	<ul style="list-style-type: none"> Migrants may be perceived as taking jobs from people in the long-established population. Increased pressure on housing stock and on services such as health and education. A significant change in the ethnic balance of a country or region may cause tension. A larger population can have a negative impact on the environment. 	<ul style="list-style-type: none"> The financial cost of migration can be high. Migration means separation from family and friends in the country of origin. There may be problems settling into a new culture (assimilation). Migrants can be exploited by unscrupulous employers. Some migrations, particularly those that are illegal, can involve hazardous journeys.

Source: IGCSE Geography 2nd edition, P. Guinness & G. Nagle (Hodder Education, 2014) p.23

Figure 5.31 Matrix showing the impact of migration

Case Study: Diasporas in London

London is undoubtedly the most cosmopolitan city in Europe (Figures 5.32 and 5.33). Some commentators go further and view London as the most multiracial city in the world. The diverse **ethnicity** of the capital is exemplified by the fact that over 200 languages are spoken within its boundaries. The lobby group Migration Watch estimates that two-thirds of immigration into the UK since the mid-1990s has been into London. Within the UK, the process of **racial assimilation** is much more advanced in London than anywhere else. Almost 30 per cent of people in London were born outside the UK, compared with 2.9 per cent in north-east England. London has the highest proportion of each ethnic minority group apart from Pakistanis, of whom there is a higher proportion in Yorkshire.



Figure 5.32 An Indian pub in Southall – the largest Indian community in the UK



Figure 5.33 Percentage populations of non-white ethnic groups in London, and the highest proportion of particular ethnic groups in England and Wales



Figure 5.34 A Nepalese restaurant in South London

Just over 50 per cent of London's population described themselves as white British in the 2001 census. A further 14 per cent are either white Irish or white Other (Europeans, Americans, Australians, New Zealanders, and so on). There are now more ethnically African residents (8 per cent) in London than black Caribbean. The largest Asian community is Bangladeshis (5 per cent).

London's non-white population – 28.8 per cent of the capital's total – is the largest of any European city. The highest proportion of most ethnic groups in the UK can be found in one

London borough or another (Figure 5.33). A range of factors affect ethnic concentration:

- There is a tendency for more recent immigrants to live in wards with a high ethnic-minority concentration.
- Those who are not fluent in English are more likely to live in areas with a high ethnic-minority concentration.
- Those in the highest social classes live in areas with a lower concentration of ethnic-minority communities.
- Higher levels of qualification are also associated with lower levels of ethnic-minority concentration.
- The more paid workers there are in a household, the less likely they are to live in areas with a high concentration of ethnic-minority population.

Ethnic villages

The concept of **ethnic villages** often appears in newspapers, magazines and academic journals. Ethnic villages to a greater or lesser extent show clear evidence of the groups residing within their areas in terms of shops, places of worship, schools, cinemas, newspapers, social facilities, advertising and, of course, street presence. The following list of ethnic villages in London comes from a variety of recent publications including *The Economist* and various articles in the *London Evening Standard*:

- Arabs in Bayswater
- West Indians in Brixton

- Punjabis in Southall
- Bangladeshis in Tower Hamlets
- Algerians and Moroccans in Finsbury Park
- Kosovans and Albanians in Enfield and Newham
- Iraqis in Barnet
- Congolese in Croydon

- Germans in Richmond
- Brazilians in Bayswater
- Turks in Hackney and Haringey
- Chinese in Soho
- Koreans in New Malden (Figure 5.35).



Figure 5.35 There are many Korean businesses in New Malden, which has the largest concentration of Koreans in the UK

Section 5.3 Activities

- 1 Define the terms **a diaspora**, **b ethnicity** and **c racial assimilation**.
- 2 Summarise the information presented in Figure 5.33.
- 3 Discuss the concept of ethnic villages in relation to London.

5.4 A case study of international migration

□ Mexicans to the USA: a major migration stream

One of the largest international migration streams in the world over the last 40 years has been from Mexico to the USA. This significant movement of people has been primarily a **labour migration** and has largely been the result of a very large gap in:

- **average income** – the income gap has been a powerful stimulus to movement and emigration has tended to surge during periods of wage decline in Mexico
- **unemployment rates** – weak growth in Mexico's labour demand has resulted in high levels of unemployment and underemployment
- **the growth of the labour force** – with significantly higher population growth in Mexico compared with the USA
- **the overall quality of life** – for virtually every aspect of the quality of life, conditions are better in the USA than in Mexico.

About 30 per cent of legal immigrants in the USA and an estimated half of all unauthorised foreigners

in the country are from Mexico. The ties between the two countries go back to the 1800s, when what is now the south-western USA was part of Mexico. However, there was only very limited movement across the US/Mexican border until the twentieth century. In fact, most migration has taken place in the last three decades. Although previous surges occurred in the 1920s and 1950s, persistent **mass migration** between the two countries did not take hold until the late twentieth century. Table 5.2 summarises the main push and pull factors influencing migration from Mexico to the USA. Mexico is Latin America's major emigration country, sending up to 500 000 people – half of its net population increase – to the USA each year. Most emigrants make unauthorised entries.

□ Early and mid-twentieth-century migration

In the early part of the twentieth century, the American government allowed the recruitment of Mexican workers as **guest workers**. Young Mexican men known as *braceros* were allowed into the USA legally between 1917 and 1921, and then later between 1942 and 1964. Both guest worker programmes began when US farms faced a shortage of labour during periods of war. US farmers were strong supporters of allowing the entry of Mexican labour, as the increased supply of labour kept wages low and this contributed to higher land prices. Trade unions and many

Table 5.2 Factors encouraging migration from Mexico, by type of migrant

Type of migrant	Demand-pull	Supply-push	Network/other
Economic	Labour recruitment (guest workers)	Unemployment or underemployment; low wages (farmers whose crops fail)	Job and wage information flows
Non-economic	Family unification (family members join spouse)	Low income, poor quality of life, lack of opportunity	Communications; transport; assistance organisations; desire for new experience/adventure

Note: All three factors may encourage a person to migrate. The relative importance of pull, push and network factors can change over time.

Source: P. Martin and J. Widgren, International Migration: Facing the Challenge (2002) Vol. 57, No. 1 (page 8 table 1), quoted in Population Bulletin Vol. 63 No. 1 2008

religious groups were against the programmes. Congress agreed with what was then a common view in the USA – that the inflow of Mexican workers was holding down the wages of US farm workers – and ended the programme.

The end of the *bracero* programme saw farm wages rise, along with the increasing mechanisation of US agriculture. Re-adjusting the labour market in America after several decades of significant dependence on Mexican workers was not easy. On the other side, the loss of US jobs and wages was a difficult adjustment for many Mexican workers. Under the *bracero* programme, American farmers were required to pay for the transportation of Mexican workers from the US/Mexican border. This was an incentive for many Mexicans to move to the border area in the hope of being selected for work in the USA. When the programme ended they returned to border communities in Mexico where unemployment was extremely high.

□ The establishment of *maquiladoras*

The US and Mexican governments made changes to their trade laws to allow the establishment of *maquiladoras*. These were factories in Mexico that imported components and used Mexican labour to assemble them into goods such as televisions for export to the USA. The logical location for the *maquiladoras* was in towns just over the border in Mexico so that they were as close to their US markets as possible. As the number of factories grew, more Mexicans migrated from other parts of the country to the border towns, putting them in competition with returning *braceros* for jobs. The establishment of *maquiladoras* only solved the returning *bracero* problem to a certain extent, as many of the jobs in the factories went to women.

□ The increase in illegal migration

Although many rural Mexicans had become dependent on US employment, there was very little illegal migration

from Mexico to the USA in the 1960s and 1970s. However, high population growth and the economic crisis in the early 1980s resulted in a considerable increase in illegal migration across the border. Networks were soon established between Mexican communities and US employers. At this time, there were no penalties placed on American employers who knowingly hired illegal migrants. During this period, Mexican workers spread out more widely in the USA than ever before. They were employed mainly in agriculture, construction, various manufacturing industries and in low-paid services jobs. The US Border Patrol was responsible for apprehending illegal workers, but their numbers were limited and they only had a modest impact on the spread of illegal workers.



Figure 5.36 US Border Patrol

(Figure 5.36).

As attitudes in America again hardened against illegal workers, Congress passed the Immigration Reform and Control Act (IRCA) of 1986. This imposed penalties on American employers who knowingly hired illegal workers.

The objective was to discourage Mexicans from illegal entry. Much of the opposition of the unions to guest workers was because they saw the process creating 'bonded workers' with very limited rights.

However, the Act also legalised 2.7 million unauthorised foreigners. Of this number, 85 per cent were Mexican. The legalisation substantially expanded network links between Mexican workers and US employers.

The formation of the North American Free Trade Agreement (NAFTA) lowered barriers to trade and investment flow between Mexico, the USA and Canada. At the time, the Mexican government expected Mexico's export trade to increase and Mexico–USA migration to fall due to NAFTA. However, this proved not to be the case and migration from Mexico to the USA increased. Labour migration continued at a high rate even after economic and employment growth in Mexico improved in the late 1990s.

Since 1980, Mexicans have been the largest immigrant group in the USA. In 2013, approximately 11.6 million Mexican immigrants lived in the USA, up from 2.2 million in 1980 (Figure 5.37).

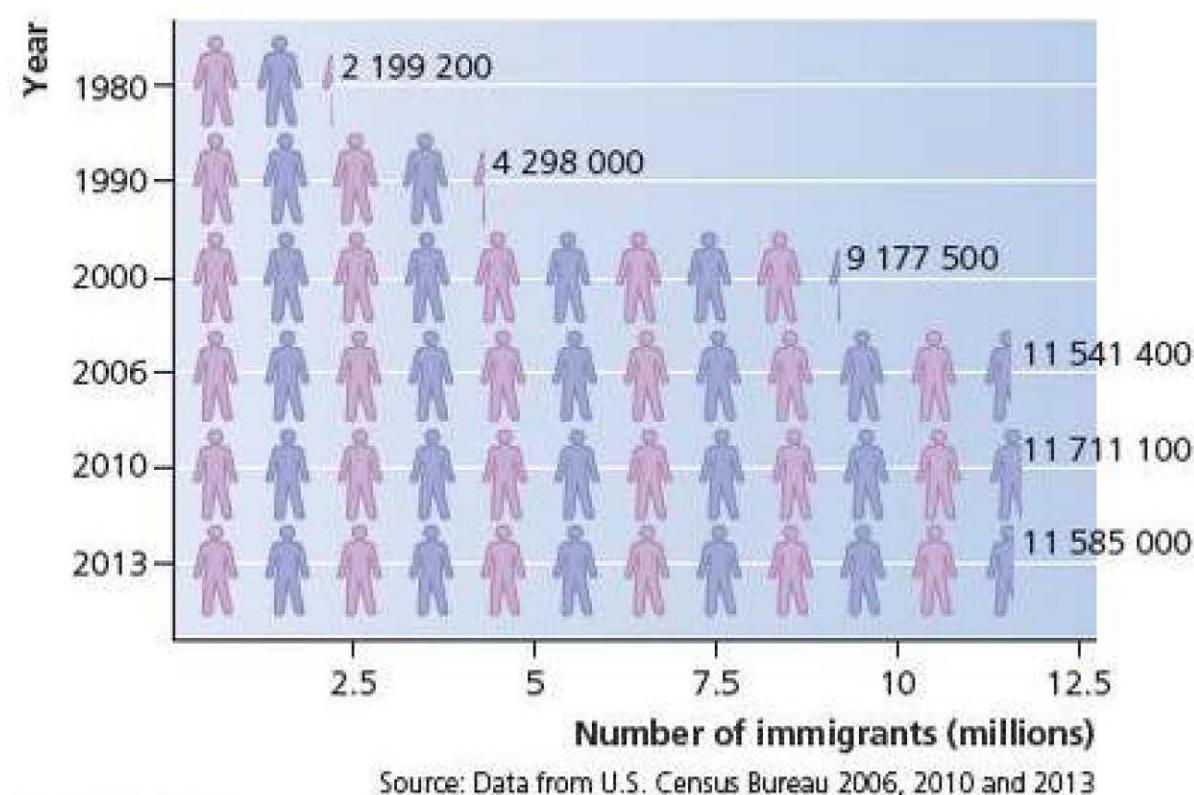


Figure 5.37 Mexican immigration to the USA, 1980–2013

The US Census in 2000 found an estimated 8.4 million, mostly Mexican, unauthorised foreigners. This stimulated new attempts to regulate migration between the two countries. George Bush, elected President in 2000, stated that he favoured a guest-worker programme to permit more Mexicans to work in America. In 2001, Mexican President Vicente Fox pressed the US government to endorse what was known as the 'whole *enchilada*'. This would involve legalisation for unauthorised Mexicans in the USA, a new guest-worker programme, improved conditions along the border and exempting Mexico from immigrant visa ceilings. These discussions were halted by the 11 September 2001 terrorist attacks.

Legal and illegal migration from Mexico continued as before. By 2006, there were an estimated 11.5 million

Mexican-born people living in the USA. This amounted to around 11 per cent of living people born in Mexico. With their children also taken into account, the figure increased to more than 20 million. This was equivalent to almost a fifth of the population of Mexico. The next four leading countries of origin were the Philippines, India, China and Vietnam, with between 1.1 and 1.6 million people each. This illustrates the size and impact of Mexican immigration into the USA.

Figure 5.38 shows the distribution of the Mexican population in the USA by county. Counties are subdivisions of states in the USA. There is a very strong concentration of the US Mexican population in the four states along the Mexican border – California, Arizona, New Mexico and Texas. The concentration is particularly strong in California and Texas. Other western states, including Washington, Oregon, Colorado, Nevada and Idaho, also have above-average concentrations. The main reasons for this spatial distribution are:

- proximity to the border
- the location of demand for immigrant farm workers
- urban areas where the Mexican community is long-established.

Figure 5.39 illustrates the distribution of the Mexican population in the Los Angeles region. Within the urban area itself, the Mexican population is concentrated in areas of poor housing and low average income. In more peripheral areas, the Mexican population is concentrated in low-cost housing areas where proximity to farm employment is an important factor.

Mexican culture has had a sustained impact on many areas in the USA, particularly urban areas close to the border. As a result, many Mexican migrants find reassuring similarities between the two countries. One study on labour migration from Mexico to the USA stated: 'Many Mexicans find adapting to Los Angeles as easy as navigating Mexico City.'

There is no doubt that the Mexican population in the USA has undergone a process of assimilation over time. There are three facets to assimilation:

- economic
- social
- political.

Assimilation tends to occur in the order presented above, with economic assimilation occurring first. While most migrants from Mexico would be in the low skills category, their children and grandchildren usually aspire to, and gain, higher qualifications and skills. Such economic mobility inevitably results in greater social contact with the mainstream population. Eventually, more people from migrant populations get involved in politics and the migrant community gains better political representation.

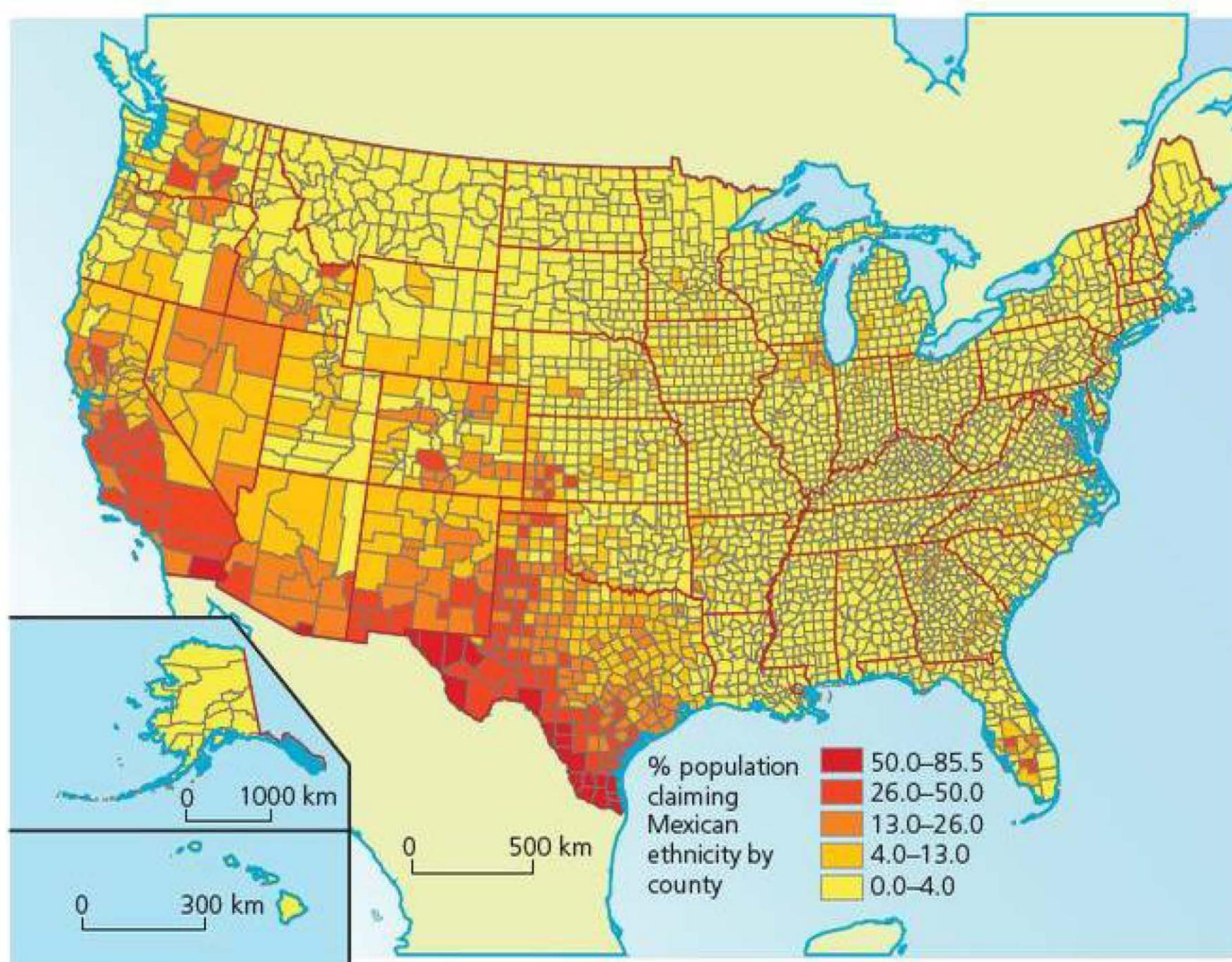


Figure 5.38 Distribution of the Mexican population in the USA by county

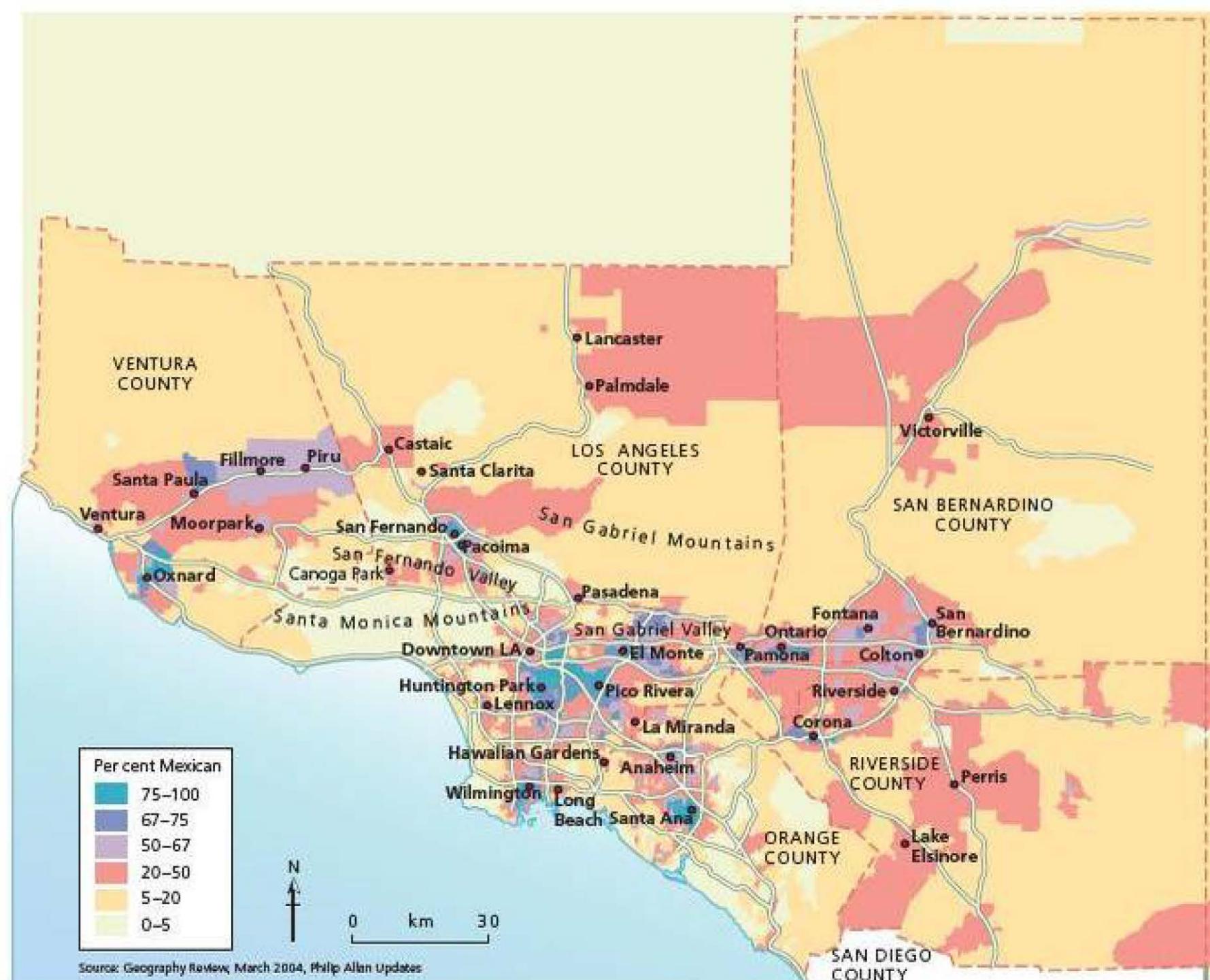


Figure 5.39 Distribution of the Mexican population in the Los Angeles region

The demography of Mexican migration to the USA

In an article entitled 'The demography of Mexican migration to the US', G.H. Hanson and C. McIntosh highlight the fact that with the US baby boom peaking in 1960, the number of US native-born people coming of working age actually declined in the 1980s. In contrast, high levels of fertility continued in Mexico in the 1960s and 1970s. The sharp increase in Mexico–USA relative labour supply coincided with the stagnation of Mexico's economy in the 1980s, after significant economic progress in the 1960s and 1970s. This created ideal conditions for an emigration surge.

However, the conditions behind recent emigration from Mexico are unlikely to be sustained. Today, Mexico's labour supply growth is converging to US levels. Between 1965 and 2000, Mexico's total fertility rate fell from 7.0 to 2.5, close to the US rate of 2.1. Thus, labour supply pressures for emigration from Mexico peaked in the late 1990s and are likely to fall in coming years.

Figure 5.40 is a simulation of migration from Mexico to the USA based on differences in labour supply and wage differentials between the two countries. Population projections are used to estimate future labour supply.

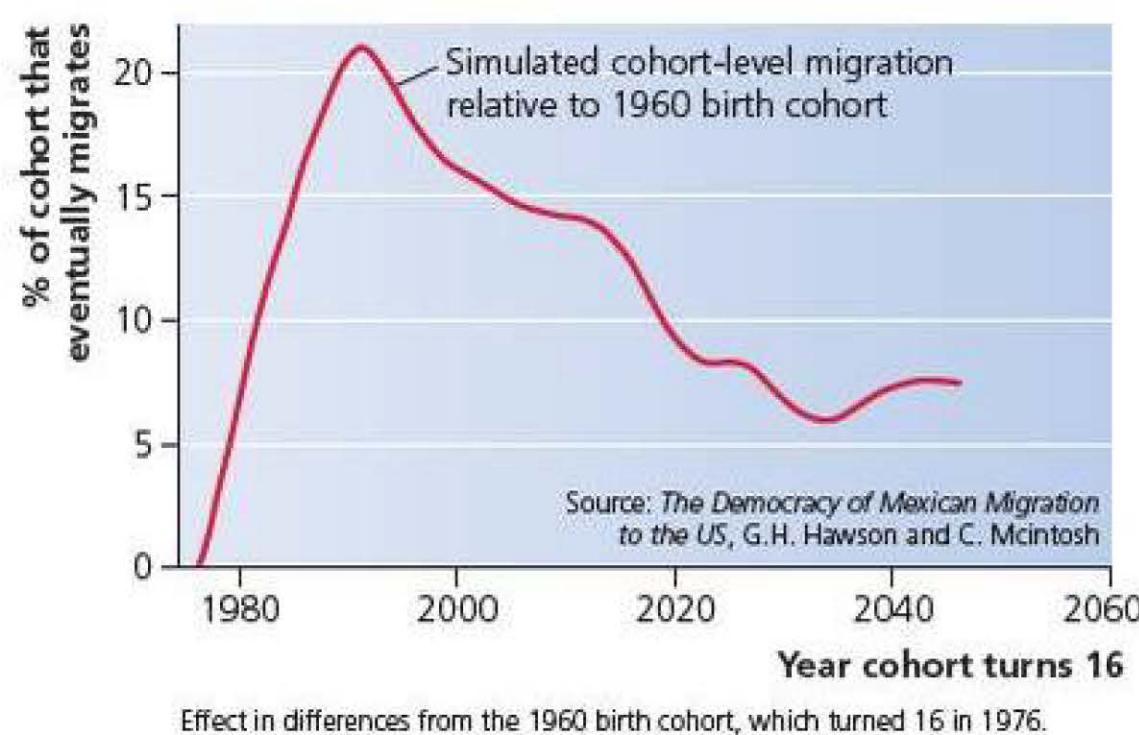


Figure 5.40 Labour supply pressures for Mexican migration to the USA

Opposition to Mexican migration into the USA

In the USA, the Federation for American Immigration Reform (FAIR) argues that unskilled newcomers:

- undermine the employment opportunities of low-skilled US workers
- have negative environmental effects
- threaten established US cultural values.

The recent global economic crisis saw unemployment in the USA rise to about 10 per cent, the worst job situation for 25 years. Immigration always becomes a more sensitive issue in times of high unemployment. FAIR has also

highlighted the costs to local taxpayers of illegal workers in terms of education, emergency medical care, detention and other costs that have to be borne.

Those opposed to FAIR see its actions as uncharitable and arguably racist. Such individuals and groups highlight the advantages that Mexican and other migrant groups have brought to the country.

An ethnographic case study

A. Mountz and R. Wright (1996) presented an interesting **ethnographic** account of the transnational migrant community of San Agustín, a village in the Mexican state of Oaxaca, and Poughkeepsie, a city in New York state. The link between the two communities began with the migration of a lone Oaxacan to Poughkeepsie in the early 1980s. In classic network fashion, the Mexican population of Poughkeepsie, predominantly male, grew to well over a thousand over the next decade. Most Oaxacans found employment as undocumented workers in hotels, restaurants and shops and as building workers and landscapers. Their remittances transformed village life in their home community.

What struck Mountz and Wright most was the high level of connectedness between San Agustín and Poughkeepsie, with the migrant community keeping in daily contact with family and friends via telephone, fax, camcorders, videotape and VCRs – communications technology that was rapidly being introduced to San Agustín. Rapid migration between the two communities was facilitated by jet travel and systems of wiring payments. In effect, the community of San Agustín had been geographically extended to encompass the Oaxacan enclave in Poughkeepsie. This is a classic example of **time-space distanciation** – the stretching of social systems across space and time.

Migrant remittances were used not only to support the basic needs of families but also for home construction, the purchase of consumer goods and financing fiestas. The last provided an important opportunity for migrants to display continued village membership. However, as out-migration became more established, tensions began to develop between some migrants and the home community. The main point of conflict was over the traditional system of communal welfare that requires males to provide service and support to the village. Where this could not be done in terms of time, a payment could be substituted. This was increasingly resented by some migrants who saw 'their money as their own'. The traditionalists in the village cited migration as the major cause of the decline of established values and attitudes.

The researchers found that a **migrant culture** had now become established in San Agustín, as it had in so many other Mexican communities, for four main reasons:

- economic survival
- rite of passage for young male adults

- the growing taste for consumer goods and modern styles of living
- the enhanced status enjoyed by migrants in the home community.

What started out as an exception was now well on the way to becoming the rule for San Agustín's young males.

The impact on Mexico

Sustained large-scale labour migration has had a range of impacts on Mexico, some of them clear and others debatable. Significant impacts include:

- the high value of remittances, which totalled \$22 billion in 2013 – as a national source of income, this is only exceeded by oil exports; it represents about 2 per cent of the country's GDP – remittances from the USA to Mexico have increased 14-fold since 1985!
- reduced unemployment pressure as migrants tend to leave areas where unemployment is particularly high
- lower pressure on housing stock and public services as significant numbers of people leave for the USA
- changes in population structure with emigration of young adults, particularly males

- loss of skilled and enterprising people
- migrants returning to Mexico with changed values and attitudes.

Women and children often assume the agricultural labour previously performed by now-absent men. Sometimes, if no-one is able to work the land, agricultural plots are either sold or abandoned. In general, women and children's psychological health has been greatly affected by family members' migration.

Section 5.4 Activities

- 1 With reference to Table 5.2, discuss the factors that encourage migration from Mexico by type of migrant.
- 2 Comment on the information presented in Figure 5.37.
- 3 Describe the distribution of the Mexican population in the USA shown in Figure 5.38.
- 4 What impact has such a high rate of emigration had on Mexico?

6

Settlement dynamics

6.1 Changes in rural settlements

Rural settlements form an essential part of the human landscape (Figure 6.1). However, such settlements in HICs, MICs and LICs have undergone considerable changes in recent decades. This has happened for a number of reasons, which include:

- rural–urban migration
- urban–rural migration
- the consequences of urban growth
- technological change
- rural planning policies
- the balance of government funding between urban and rural areas.



Figure 6.1 Rural settlement in Nepal

□ Changing rural environments in the UK

In the past, **rural** society was perceived to be distinctly different from urban society. The characteristics upon which this idea was based are shown in Figure 6.2. However, rapid rural change over the last 50 years or so in the UK and other HICs has seen the idea of a rural–

urban divide superseded by the notion of a rural–urban continuum. The latter is a wide spectrum that runs from the most remote type of rural settlement to the most highly urbanised. A number of the intermediate positions exhibit both rural and urban characteristics. Paul Cloke (1979) used 16 variables, including population density, land use and remoteness, to produce an ‘index of rurality’ for England and Wales (Figure 6.3). Urban areas now make substantial demands on the countryside, the evidence of which can be found in even the most remote areas.

Rural areas are dynamic spatial entities. They constantly change in response to a range of economic, social, political and environmental factors. In recent years, the pace of change has been more rapid than ever before. The UK reflects many of the changes occurring in rural areas in other HICs.

- 1 Close-knit community with everybody knowing and interacting with everyone else.
- 2 Considerable homogeneity in social traits: language, beliefs, opinions, mores, and patterns of behaviour.
- 3 Family ties, particularly those of the extended family, are much stronger than in urban society.
- 4 Religion is given more importance than in urban society.
- 5 Class differences are less pronounced than in urban society. Although occupational differentiation does exist, it is not as pronounced as in towns and cities. Also the small settlement size results in much greater mixing which in turn weakens the effects of social differentiation.
- 6 There is less mobility than in urban society, both in a spatial sense (people do not move house so frequently) and in a social sense (it is more difficult for a farm labourer to become a farmer or farm manager than for a factory worker to become a manager).

Source: *The Geography of Rural Resources*
by C. Bull, P. Daniel and M. Hopkinson, Oliver & Boyd, 1984

Figure 6.2 Principal characteristics of traditional rural society

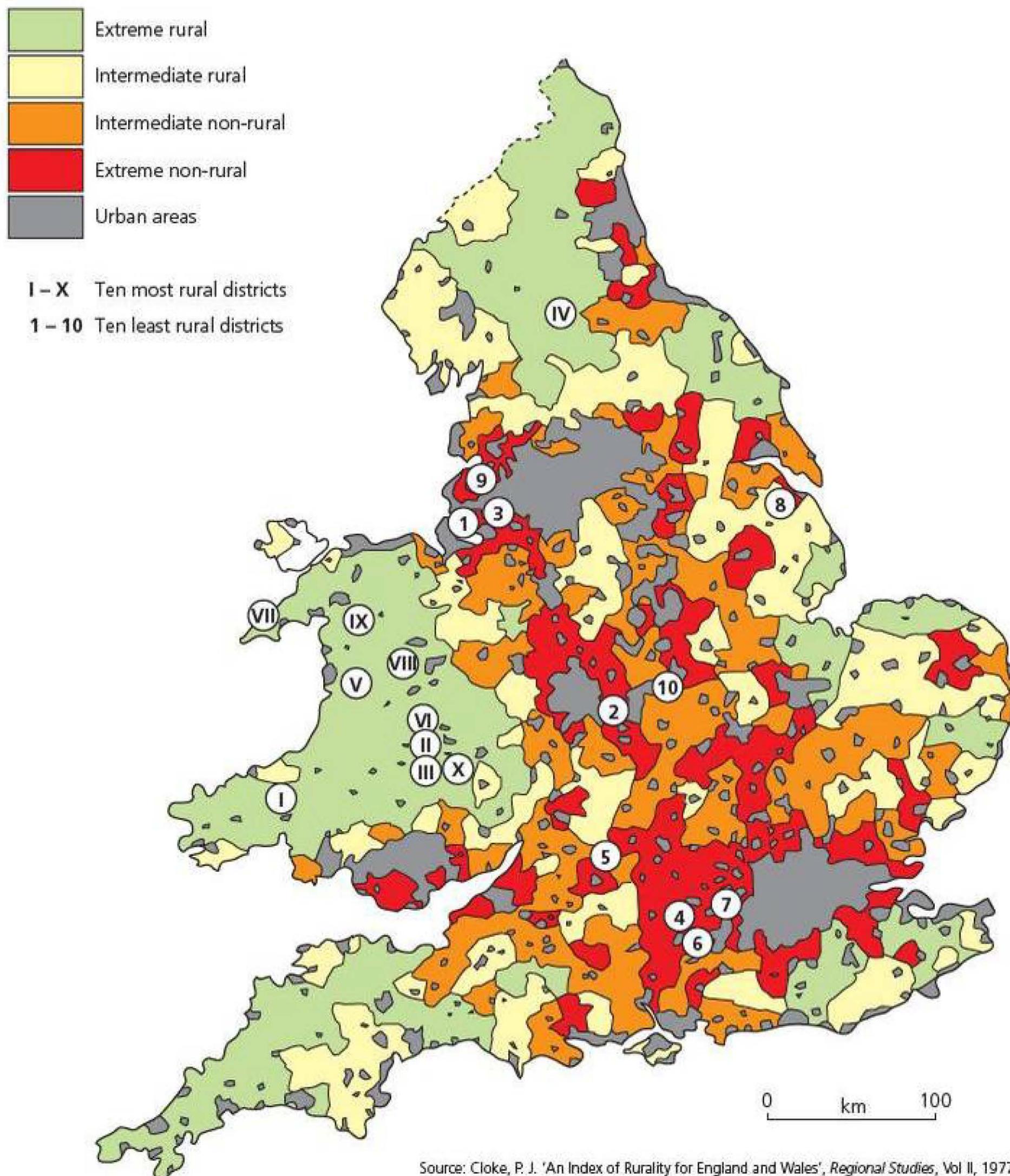


Figure 6.3 An index of rurality for England and Wales

The economy of rural areas is no longer dominated by farmers and landowners. As agricultural jobs have been lost, new employers have actively sought to locate in the countryside. Manufacturing, high technology and the service sector have led this trend. Most of these firms are classed as SMEs – small and medium-sized enterprises. In fact, in recent decades employment has been growing faster in rural than in urban areas. Other significant new users of rural space are recreation, tourism and environmental conservation. The **rural landscape** has evolved into a complex multiple-use

resource and as this has happened the **rural population** has changed in character.

These economic changes have fuelled social change in the countryside with the in-migration of particular groups of people. To quote Brian Ilbery, a leading authority on rural geography, 'The countryside has been repopulated, especially by middle-class groups ... who took advantage of relatively cheap housing in the 1960s and 1970s to colonize the countryside'. Once they are significant in number, the affluent newcomers exert a strong influence over the social and physical nature of

rural space. In many areas, newcomers have dominated the housing market, to the detriment of the established population in the locality. Increased demand has pushed up house prices to a level beyond the means of many original families who then have no option but to move elsewhere.

Gentrification is every bit as evident in the countryside as it is in selected inner-city areas. However, the increasing mobility of people, goods and information has eroded local communities. A transformation that has been good for newcomers has been deeply resented by much of the established population.

In the post-war period, the government attempted to contain expansion into the countryside by creating **green belts** and by the allocation of housing to urban areas or to large **key villages**. Rural England has witnessed rising owner-occupation and low levels of local-authority housing. The low level of new housing development in smaller rural communities has been reflected in higher house prices and greater social exclusivity.

Such social and economic changes have increased the pressure on rural resources so that government has had to re-evaluate policies for the countryside. Regulation has become an important element in some areas, notably in relation to sustainability and environmental conservation.

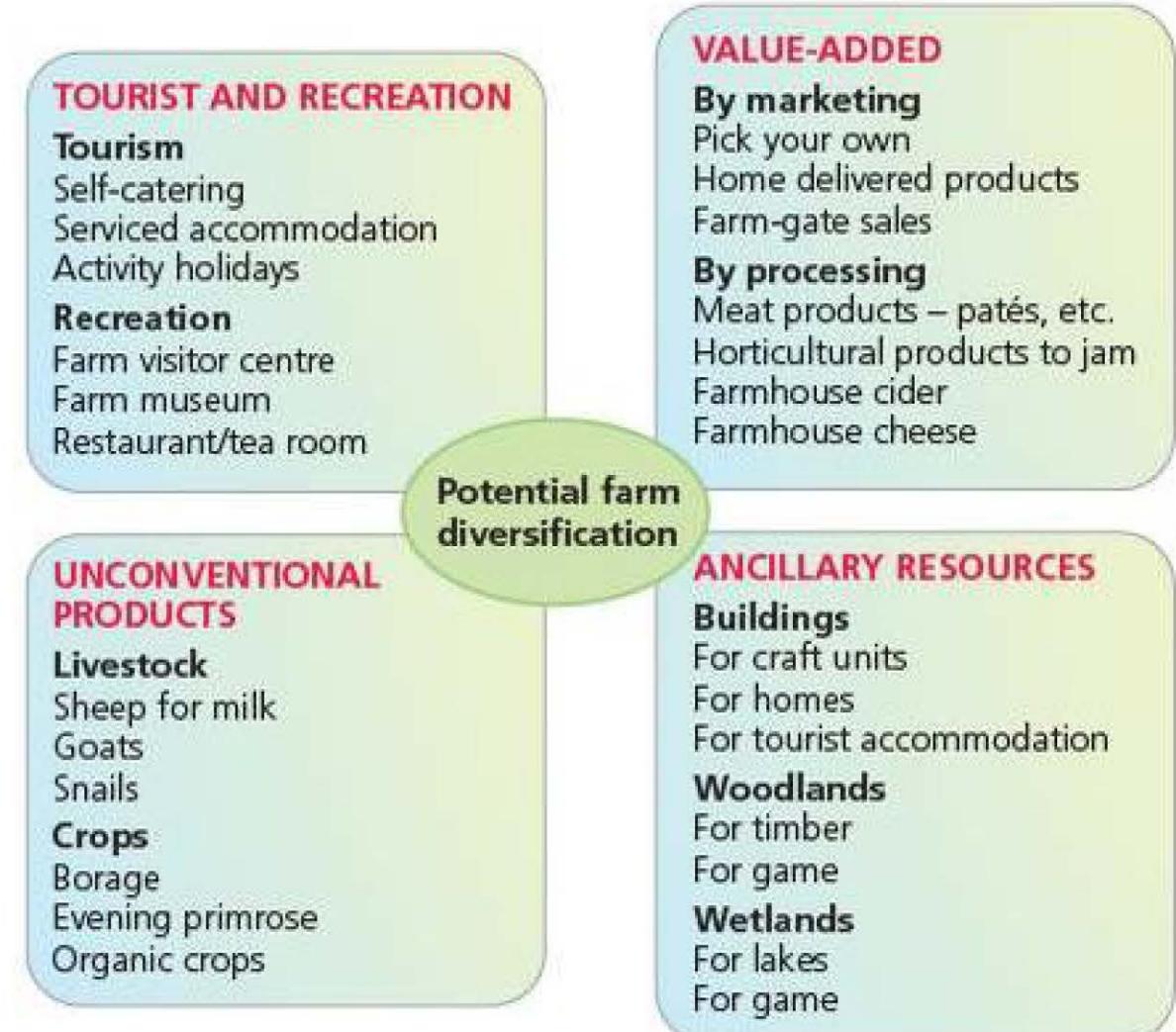
Changing agriculture

The countryside in the UK and other HICs has been affected by major structural changes in agricultural production. Although agricultural land forms 73 per cent of the total land area of the UK, less than 2 per cent of the total workforce are now employed in agriculture. This is down from 6.1 per cent in 1950 and 2.9 per cent in 1970. Even in the most rural of areas, agriculture and related industries rarely account for more than 15 per cent of the employed population.

At the same time, the size of farms has steadily increased (Figure 6.4). Such changes have resulted in a significant loss of hedgerows, which provide important ecological networks. Agricultural wages are significantly below the national average and as a result farmers are among the poorest of the working poor. As many farmers have struggled to make a living from traditional agricultural practices, a growing number have sought to diversify both within and outside agriculture (Figure 6.5). However, while diversification may initially halt job losses, if too many farmers in an area opt for the same type of diversification, a situation of over-supply can result in a further round of rural decline.



Figure 6.4 Large-scale cereal farming in the Paris Basin, France



Source: Sree, 1987

Figure 6.5 Areas of potential farm diversification

Section 6.1 Activities

- 1 With reference to Figure 6.2, outline the principal characteristics of traditional rural society.
- 2 Briefly describe the pattern of rural areas shown in Figure 6.3.
- 3 What impact has agricultural change had on the rural landscape?
- 4 Why does the potential for farm diversification vary from region to region?

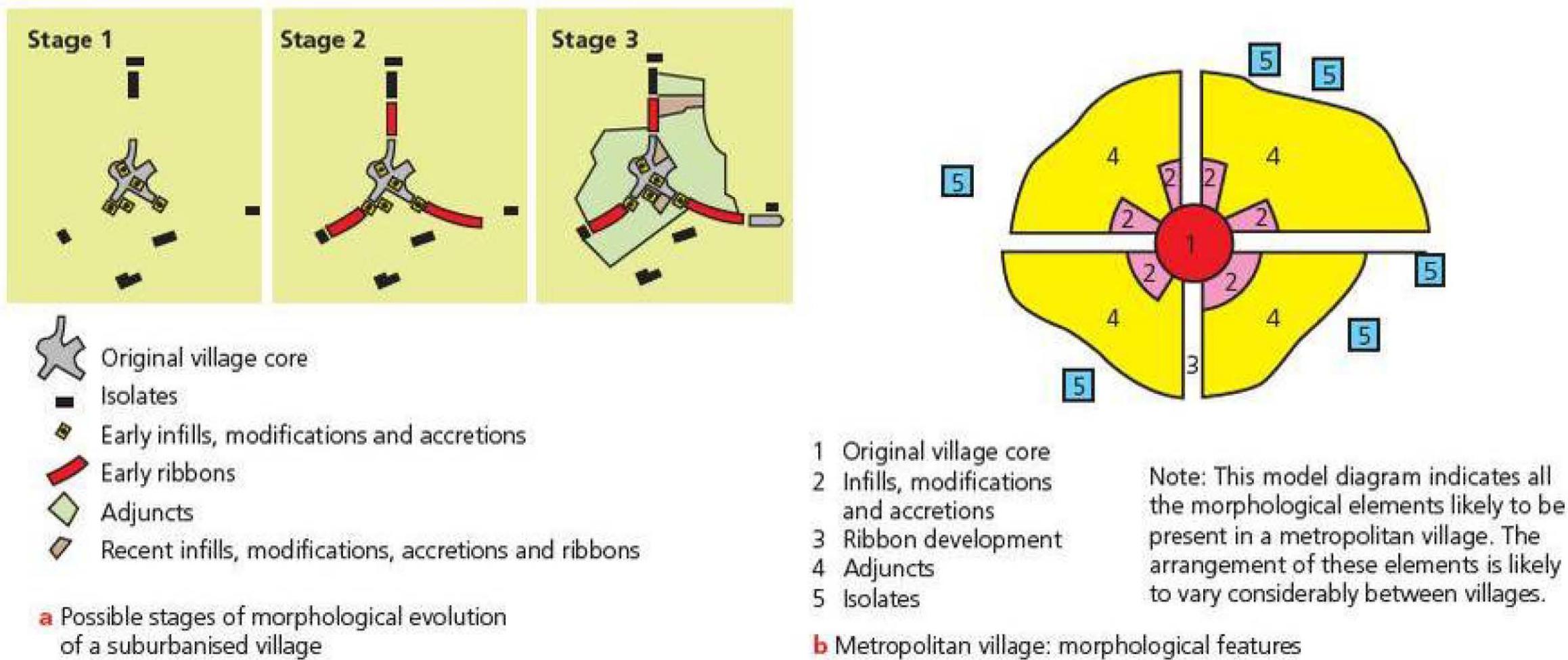


Figure 6.6 Morphology of metropolitan villages

Counterurbanisation and the rural landscape

In recent decades, **counterurbanisation** has replaced urbanisation as the dominant force shaping settlement patterns. It is a complex and multifaceted process that has resulted in a 'rural population turnaround' in many areas where depopulation had been in progress. Green-belt restrictions have limited the impact of counterurbanisation in many areas adjacent to cities. But, not surprisingly, the greatest impact of counterurbanisation has been just beyond green belts where commuting is clearly viable. Here, rural settlements have grown substantially and been altered in character considerably.

Figure 6.6 shows the changing morphology of **metropolitan villages** identified by Hudson (1977). Stage 1 is characterised by the conversion of working buildings into houses with new building mainly in the form of infill. However, some new building might occur at the edge

of the village. The major morphological change in stage 2 is ribbon development along roads leading out of the village. Stage 3 of the model shows planned additions on a much larger scale of either council or private housing estates at the edge of villages. Clearly, not all metropolitan villages will have evolved in the same way as the model, particularly those where green-belt restrictions are in place. Nevertheless, the model provides a useful framework for reference.

Rural depopulation

Because of the geographical spread of counterurbanisation since the 1960s or so, the areas affected by **rural depopulation** have diminished. Depopulation is now generally confined to the most isolated areas of the country, but exceptions can be found in other areas where economic conditions are particularly dire. Figure 6.7 is a simple model of the depopulation process.

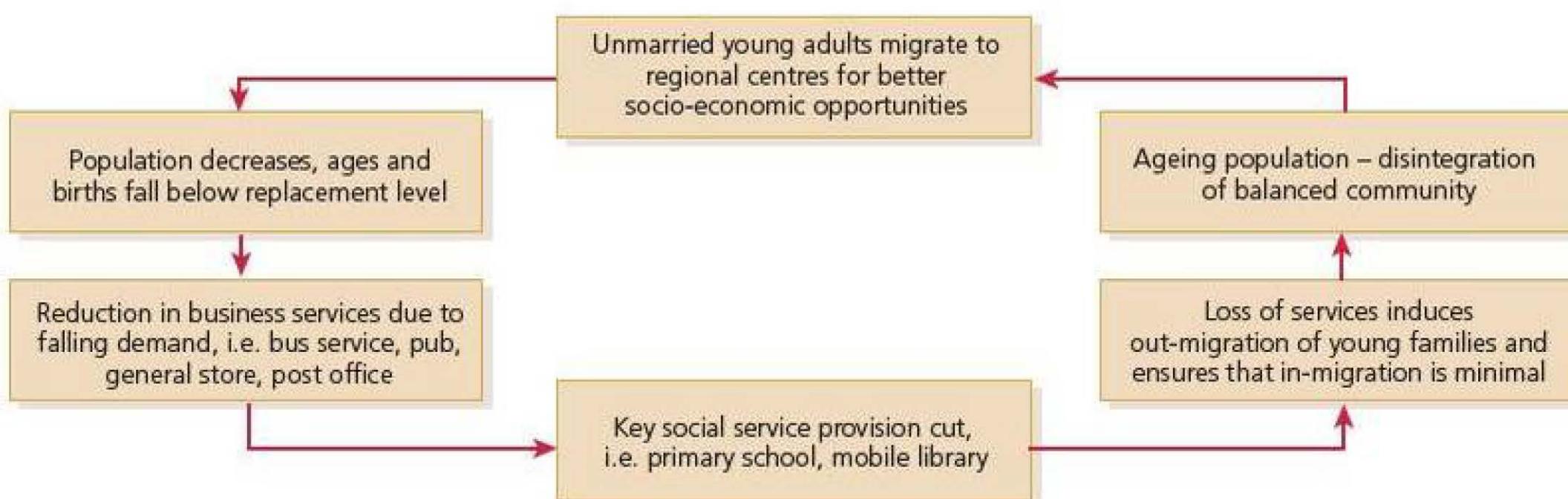


Figure 6.7 Model of rural depopulation

The issue of rural services

Services – access to shops and post offices, healthcare, activities – are the basis for any community, creating and enhancing a feeling of belonging and a sustainable future for the area. However, rural services have been in decline for a number of decades, with a significant impact on the quality of life of many people, particularly those without a car. A major report published in 2008 revealed that nearly half of communities have seen the loss of key local services in the previous four years. The Oxford University study warned that poorer people in the countryside 'form a forgotten city of disadvantage'. It found that residents of the village of Bridestowe on Dartmoor had the fewest amenities, while the village of Wrotham, in Kent, had suffered the greatest loss of services since 2004 and was the most excluded community in the south-east of the UK.

Critics accused the government of masterminding the 'near certain death of the village post office' with its plans to close 2500 branches by the end of the year. One in 13 rural primary schools has closed since 1997, and more are under threat as new Whitehall rules mean schools could lose funding by failing to fill their places. Existing village GP surgeries are also at risk as the government promotes its new 'polyclinics'.

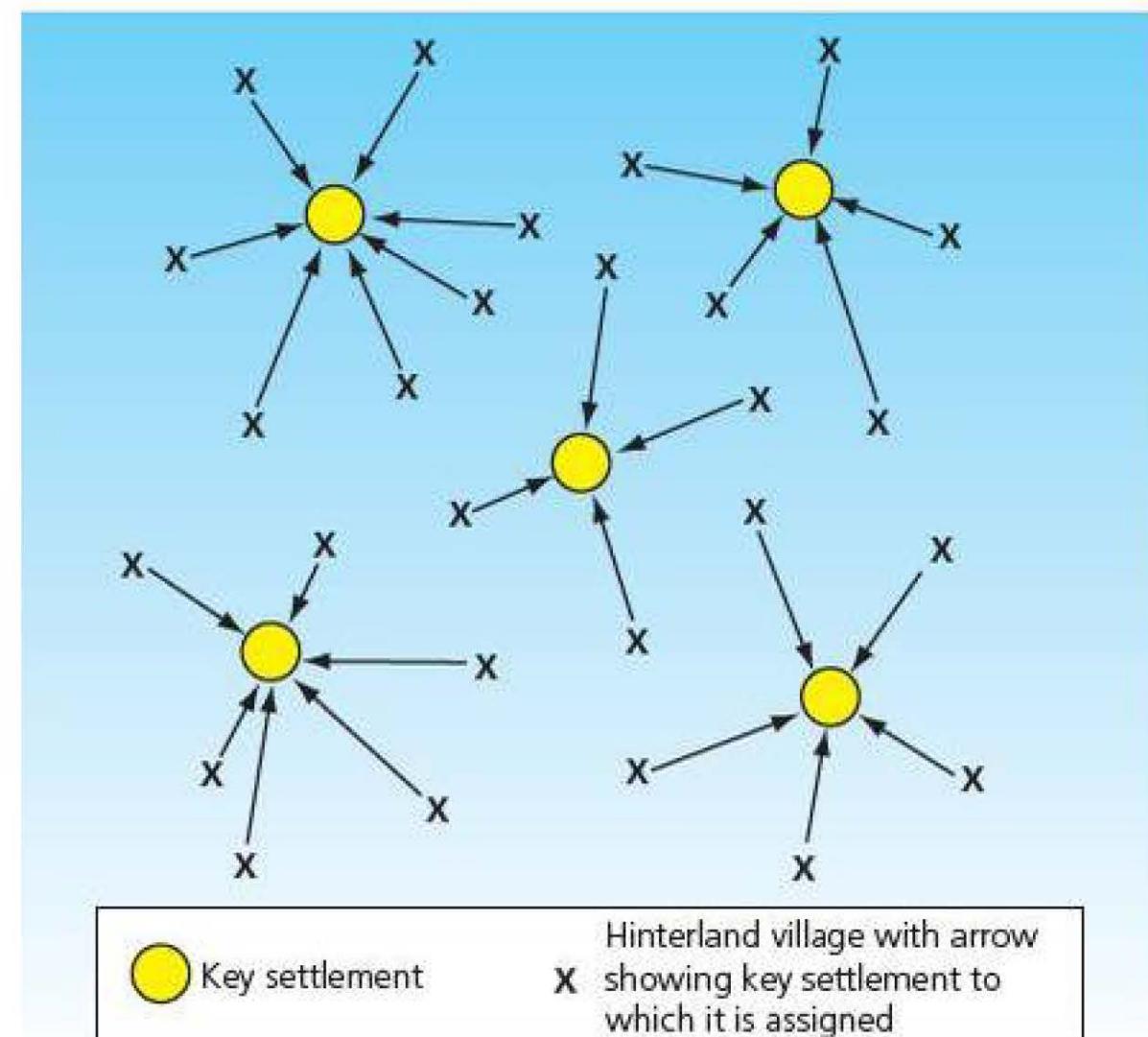
The Commission for Rural Committees warned that 233000 people are living in 'financial service deserts' – areas with no post office within 1.25 miles, or no bank, building society or cashpoint for 2.5 miles.

ACRE (Action with Communities in Rural England) highlights the following reasons for rural service decline:

- the effect of market forces and, in some cases, the arrival of supermarkets in local areas, making local services no longer competitive
- the changing pattern of rural population, with more mobile residents with different shopping and consumer patterns becoming a greater part of the rural pattern of life
- a change in expectations of rural residents themselves, no longer prepared to make do with relatively poor and expensive services and, in many cases, with the means and opportunity to access better services.

Key villages

Between the 1950s and 1970s, the concept of key settlements was central to rural settlement policy in many parts of Britain, particularly where depopulation was occurring (Figure 6.8). The concept relates to central place theory and assumes that focusing services, facilities and employment in one selected settlement will satisfy the essential needs of the surrounding villages and **hamlets**. The argument was that with falling demand, dispersed services would decline rapidly in vulnerable areas. The only way to maintain a reasonable level of service provision in such an area was to focus on those locations



Source: Advanced Geography: Concepts & Cases, P. Guinness & G. Nagle (Hodder Education, 1999), p.79

Figure 6.8 Key settlement concept

with the greatest accessibility and the best combination of other advantages. In this way, threshold populations could be assured and hopefully the downward spiral of service decline would be halted.

Devon introduced a key settlement policy in 1964 to counter the impact of:

- rural depopulation
- the changing function of the village in relation to urban centres
- the decline in agricultural employment
- the contraction of public transport.

The selection of key settlements in Devon was part of a wider settlement policy involving sub-regional centres, suburban towns and coastal resorts. The criteria used for selecting key settlements were as follows:

- existing services
- existing employment other than agriculture in or near the village
- accessibility by road
- location in relation to current bus (and possibly rail) services
- location in relation to other villages that would rely on them for some services
- the availability of public utilities capable of extension for new development
- the availability and agricultural value of land capable of development
- proximity to urban centres (key settlements would not flourish too close to competing urban areas).

Sixty-eight key settlements were selected initially, reduced to 65 in 1970. Although it has been difficult to measure the effectiveness of the policy with precision, depopulation in north and mid-Devon did fall considerably after the introduction of the policy, and in many areas the decline in service provision was slower than the predictions before the policy was implemented.

The rural transport problem

The considerable increase in car ownership in recent decades has had a devastating effect on public transport (Figures 6.9 and 6.10). While this has not disadvantaged rural car owners very much, it has considerably increased the isolation of the poor, elderly and young people who live there. The lack of public transport puts intense pressure on low-income households to own a car, a large additional expense that many could do without. Recent increases in the price of fuel have exacerbated this problem.

There has been continuing concern that the UK's remaining rural railway lines are under threat in a repeat of the 'Beeching cuts' of the 1960s. The new fears about government intentions towards rural rail closures were first awakened in 1998 when the transport minister said branch lines in sparsely populated areas might be replaced by buses. It would be possible to convert track beds into guided busways, and then for buses to divert into towns and villages. However, one study of replacing trains with buses found that, at most, only half of former rail passengers used the bus replacements. With one in five rural households lacking a car and a low level of bus service in many country areas, the train is essential for many.

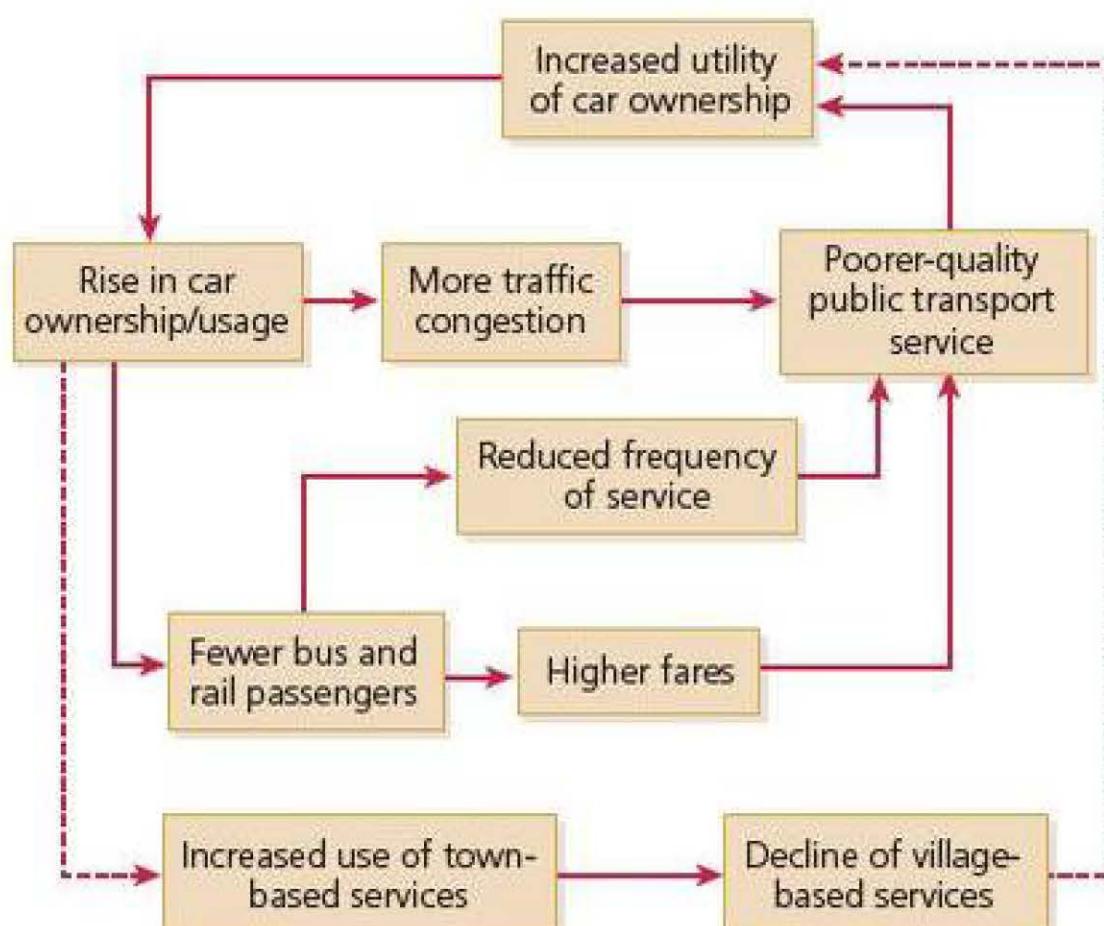


Figure 6.9 Car ownership and public transport

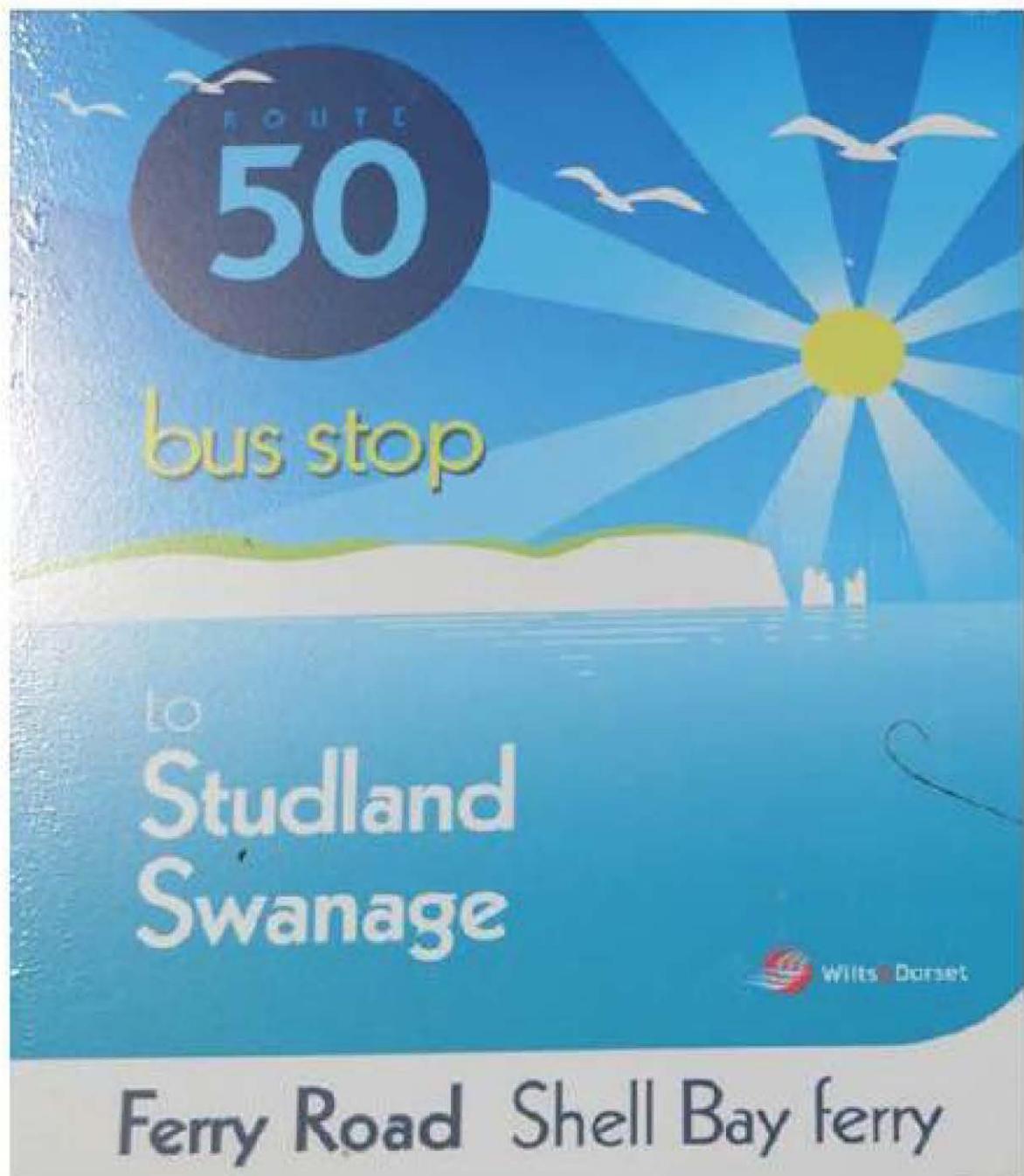


Figure 6.10 Rural bus service in southern England

The rural housing problem

The lack of affordable housing in village communities has resulted in a large number of young people having to move to market towns or larger urban centres. Only 12 per cent of rural housing is subsidised, compared with 25 per cent in urban areas. The 1995 White Paper on Rural Development sought to improve the rural housing situation by exempting villages with fewer than 3000 inhabitants from the right-to-buy for housing-association tenants. This is to prevent such housing moving onto the open market and being bought up at prices local people cannot afford. The government also announced plans to speed up the disposal of Ministry of Defence (MoD) housing. It estimated that there were 13 000 empty MoD homes in the UK, many of them in rural areas. Rural households would also be encouraged to take in lodgers through the rent-a-room scheme.

The issue of second homes has become increasingly contentious. Figure 6.11 indicates that some advantages might accrue from second-home development. However, recent debate on the issue has centred firmly on the problems created.

Advantages

- 1 Bring new employment opportunities to areas previously dependent upon a contracting agricultural economy (e.g. building trade, gardening and domestic staff).
- 2 Local restaurants, shops and garages derive new business and additional profits (which may be essential to year-round economic survival).
- 3 Specialised shops opened to cater for second-home owners also benefit local residents.
- 4 Property taxes imposed on second homes increase the finances of the local community.
- 5 Second-home owners make fewer demands on local services since education and other community facilities are not required.
- 6 Renovation of old buildings improves the appearance of the rural area.
- 7 Rural residents have the opportunity to sell-off surplus land and buildings at a high price.
- 8 Contacts with urban-based second-home owners can benefit local residents by exposing them to national values and information, broadening outlooks or stimulating self-advancement via migration.

Disadvantages

- 1 Concentrations of second homes may require installation of costly sewerage schemes, extension of water and electricity lines to meet peak season demand, and more frequent maintenance of rural roads, with the costs being partly borne by local people.
- 2 Demand for second homes by urbanites pushes up house prices to the disadvantage of local people.
- 3 Future schemes for farm enlargement or agricultural restructuring may be hindered by inflated land prices.
- 4 Fragmentation of agricultural land.
- 5 Destruction of the 'natural' environment (e.g. soil erosion and stream pollution).
- 6 Visual degradation may result from poorly constructed or inappropriately located second homes.
- 7 Second-home construction may distract the local workforce from ordinary house building and maintenance.
- 8 The different values and attitudes of second-home families disrupt local community life.

Source: Advanced Geography: Concepts & Cases, P. Guinness & G. Nagle (Hodder Education, 1999), pp.80–1

Figure 6.11 The second homes debate

Section 6.1 Activities

- 1 Explain the morphological changes in metropolitan villages illustrated by Figure 6.6
- 2 Examine the causes and consequences of rural depopulation.
- 3 Explain the logic of the key settlement concept.

- 4 a Outline two reasons for the decline of rural services.
b Which sections of the rural population see their quality of life decline the most when rural services are lost?
- 5 Write a brief explanation of Figure 6.9.
- 6 Discuss the main issues relating to rural housing.

□ Contemporary issues in rural settlements in LICs

The main process affecting rural settlements in LICs has been rural–urban migration. The impact of such migration has varied considerably across rural communities in LICs (Figure 6.12). In some areas, it has been considered advantageous by providing a safety valve in:

- reducing rural population growth and pressure on food, water and other resources
- helping to limit unemployment and underemployment
- providing a valuable source of income through the remittances of migrants.

However, in some rural communities the scale of rural–urban migration has been so great that it has resulted in:

- rural depopulation and an ageing population
- the closure of services, both public and private, as population declines
- insufficient labour to maintain agricultural production at its former levels.

In southern African countries such as Botswana and Lesotho, the devastating impact of AIDS has resulted in rural depopulation in many areas.

Rural poverty accounts for over 60 per cent of poverty worldwide, reaching 90 per cent in some LICs like Bangladesh. In the countries of Sub-Saharan Africa, rural poverty makes up between 65 and 90 per cent of national totals. In almost all countries, the conditions in terms of personal consumption and access to education, healthcare, potable water and sanitation, housing, transport and communication faced by the rural poor are far worse than those faced by the urban poor. Much urban poverty is created by the rural poor's efforts to get out of poverty by moving to cities.

An analysis of rural poverty in LICs by the International Monetary Fund highlighted the following factors in creating and perpetuating rural poverty:

- political instability and civil strife
- systemic discrimination on the basis of gender, race, ethnicity, religion or caste
- ill-defined property rights or unfair enforcement of rights to agricultural land and other natural resources
- a high concentration of land ownership and asymmetrical tenancy arrangements



Figure 6.12 Hilltop rural settlement in Morocco

- corrupt politicians and rent-seeking public bureaucracies
- economic policies that discriminate against or exclude the rural poor from the development process and accentuate the effects of other poverty-creating processes
- large and rapidly growing families with high dependency ratios

- market imperfections owing to high concentration of land and other assets and distortionary public policies
- external shocks owing to changes in the state of nature (for example, climatic changes) and conditions in the international economy.

Case Study: Rural Mongolia

There are very few parts of the world that remain completely untouched by interactions with the outside world, but there are a number where such interaction has been very limited. The people living in such areas can be considered to be non-globalised societies. An example of such a non-globalised society is the majority of rural Mongolia (apart from areas close to the capital Ulaanbaatar and a few other urban areas), which is characterised by:

- traditional family structures with a strong emphasis on the extended family
- the importance of local customs and hospitality
- populations living at extremely low densities, equalling the lowest in the world
- a heavy reliance on agricultural activities, particularly herding (Figure 6.13)
- difficult environmental conditions in both summer and winter
- traditional housing in the form of gers, often involving changes of location as herds are moved in search of fodder
- relative inaccessibility, with most parts of the country lacking paved roads; movement by horseback is common and only 4x4 vehicles can make progress in many areas
- low incomes and limited material possessions – repair and re-use have long been important strategies to make possessions last
- very limited service provision (Figure 6.14), reflected in lower health and education standards in many provinces compared with the capital city
- low levels of personal contact with other countries.

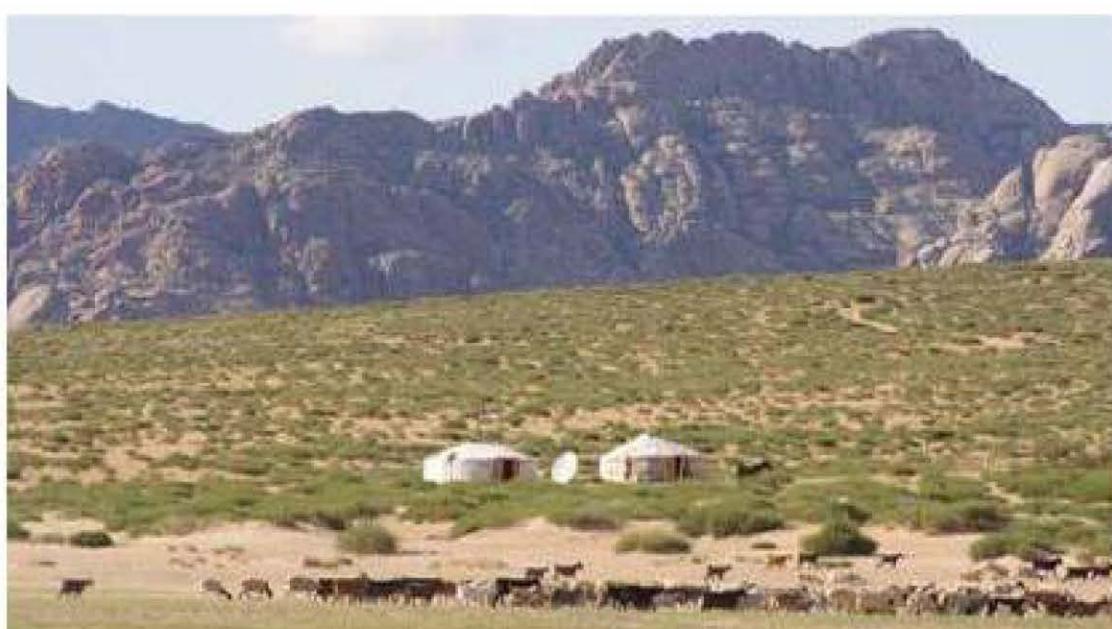


Figure 6.13 Gers and cattle with rock outcrop background in rural Mongolia.



Figure 6.14 A bank in a rural settlement in the Gobi region of southern Mongolia

About a third of the population live as nomadic herders on sparsely populated grasslands. Most live in very isolated locations. This is a major factor in their non-globalised status. In recent years, droughts and unusually cold and snowy winters have devastated livestock, destroying the livelihoods of hundreds of thousands of households. Many have moved to Ulaanbaatar, where they live in impoverished conditions mainly on the periphery of the city. This exemplifies the concept of the **urbanisation of poverty**.

According to 2006 census data, there are 170 700 herding households in Mongolia, of which 40 per cent live below the poverty line. Since 1996, the poverty of herding households has not decreased. A more detailed survey examined the livelihood conditions of rural herding households and found over 60 per cent in the lowest of four income categories (Table 6.1).

Government programmes that have been set up to improve the lives of herders have focused on:

- livestock insurance to protect herders from losses incurred in the extreme winters that occur every few years
- expansion of cell-phone coverage throughout the countryside
- the expansion of rural education.

Table 6.1 Livelihood conditions of rural herding households

% poor	% low-middle Income	% middle Income	% upper-middle Income
60.7	33.7	5.4	0

Section 6.1 Activities

1 Why has rural–urban migration benefited some rural areas in LICs, but caused problems in other rural areas?

2 Describe the main characteristics of the rural landscape in Mongolia.

Case Study: The Isle of Purbeck – issues in rural settlement

Location and historical development

The Isle of Purbeck forms the south-eastern part of Purbeck District in Dorset (Figure 6.15). It is an area of about 200 km², bounded by the sea to the south and east and by the River Frome and Poole Harbour to the north.

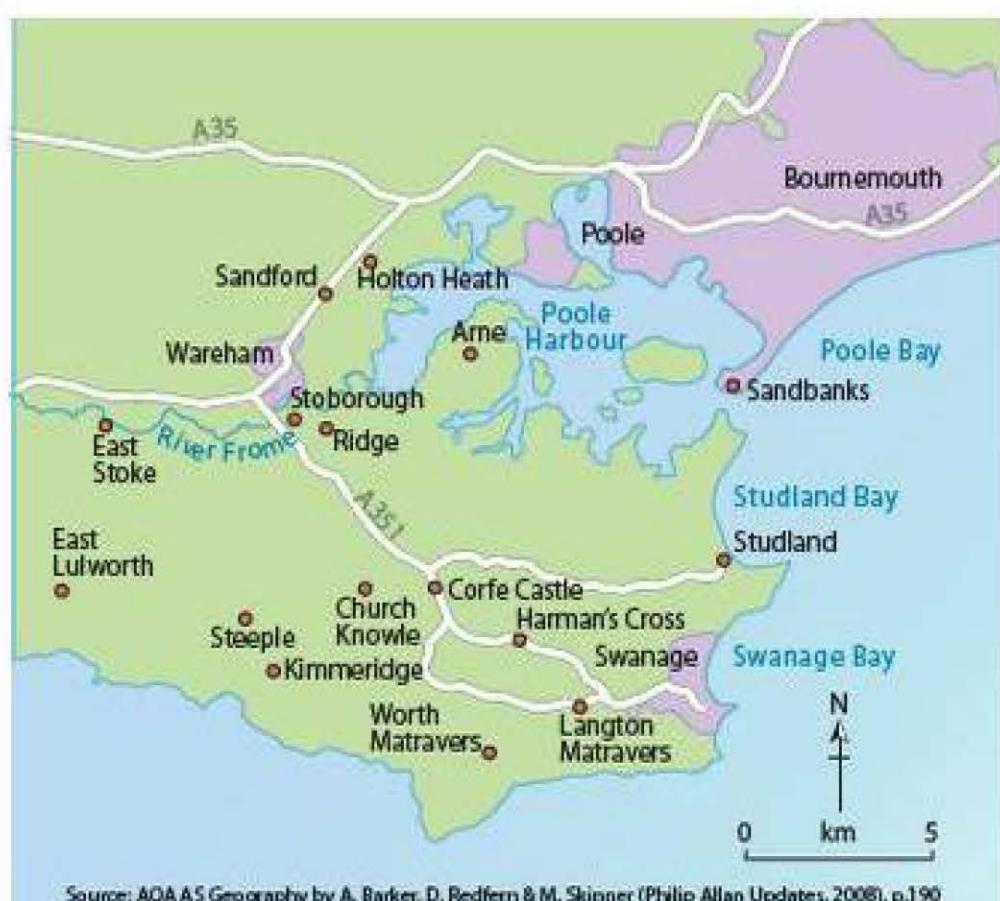


Figure 6.15 The Isle of Purbeck

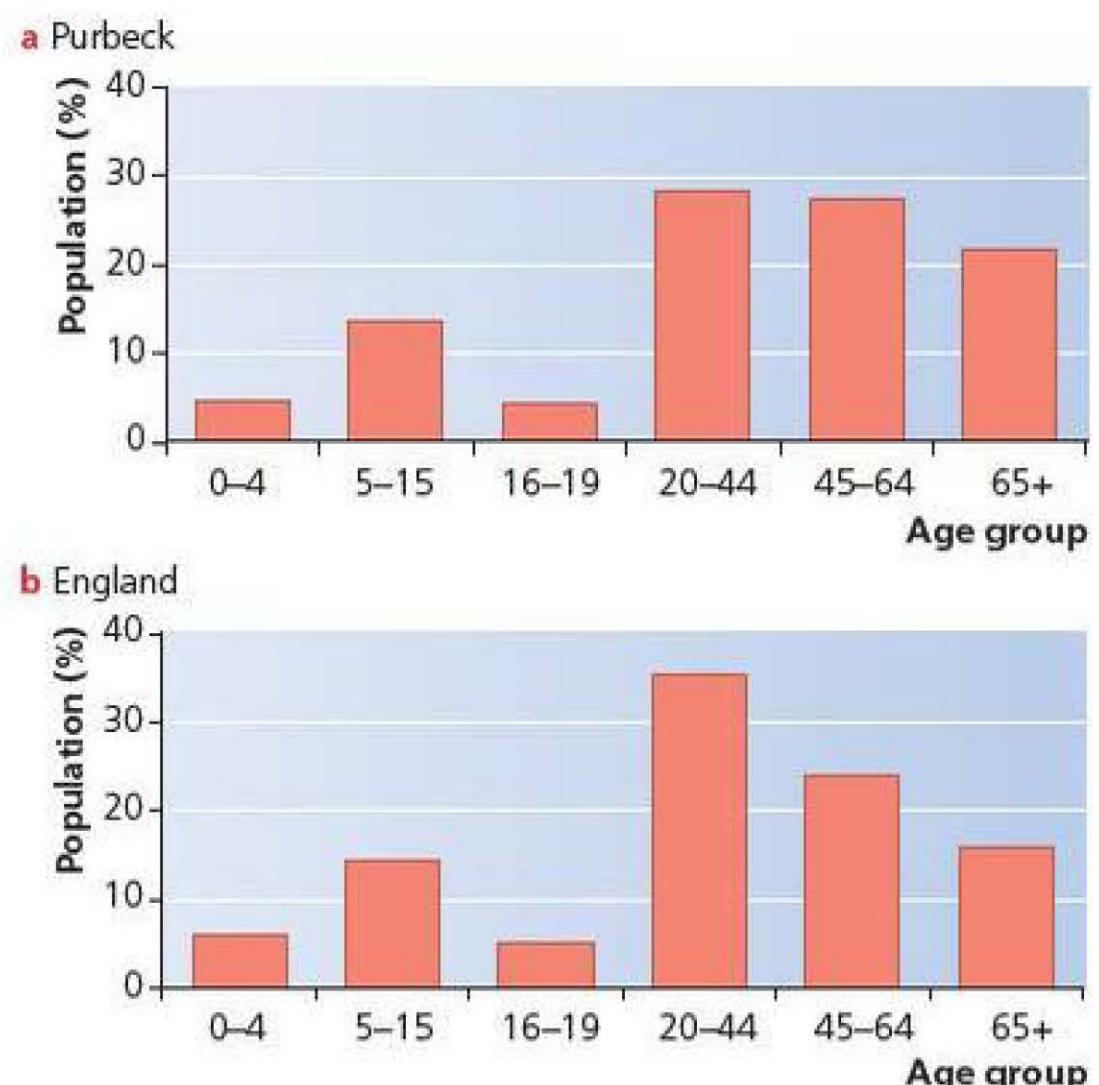
The Isle of Purbeck is classed as a remote rural district. Here, the rural settlement is concentrated in clustered villages, with Corfe Castle being the largest (Figure 6.16). Although these villages are set in a network of isolated farms and houses, there are relatively few hamlets in the region. Lower order urban services are provided by the towns of Swanage and Wareham, with higher order urban services being found in the Bournemouth–Poole conurbation, as it has increasingly become known in the region. The growth of the Bournemouth–Poole conurbation, with a population now approaching half a million people, has had an increasing influence on the rural settlement of the Isle of Purbeck, with the region developing an important dormitory function. The resulting commuter traffic at peak periods presents particular problems in the peninsula.



Figure 6.16 Village pub at Corfe Castle

Population change

The population of Purbeck District as a whole has risen consistently over the last 40 years, although the rate of growth has varied by parish. Figure 6.17 compares the population structure of Purbeck District with the UK average. The population of Purbeck District is considerably older than that of the country as a whole, mainly because of the popularity of the area for retirement. However, the out-migration of young adults in search of wider economic opportunities and lower-cost accommodation is also a factor. In 2001, the birth rate for the district was 10.1/1000 and the death rate 11.9/1000, leaving a significant natural decrease in the population. In some rural settlements such as Corfe Castle and Studland, the natural decrease was considerably higher.



Source: AQA AS Geography by A. Barker, D. Redfern & M. Skinner (Philip Allan Updates, 2008), p.191

Figure 6.17 Bar graphs comparing the age of the Purbeck population with the average for England, 2001

The rural housing problem

House prices in the area have risen at a rate above the national average over the last decade or so. This has been due largely to competition from a number of different groups of people:

- out-of-area commuters
- retirees
- second-home owners
- in-migrants.

This high level of competition for a limited number of available properties has pushed the cost of housing to a level well beyond the reach of most local people. The problem is compounded by limited local employment opportunities and low wages. The right-to-buy local authority housing has reduced the potential stock of



moderately priced rented properties. This, combined with the inability of many in the established population to compete with newcomers, has led to significant fragmentation of some local communities.

Rural service decline

Dorset County Council sees access to services as a key issue in the county. Service decline can have a huge impact on rural populations. This is an issue that has affected virtually all rural areas in Britain in recent decades. The Dorset Rural Facilities Survey 2002 found a continuing decline in rural services in the Isle of Purbeck and throughout Dorset. Some services had declined more than others in the previous decade. The survey noted a 'dramatic decline in the number of shops selling general produce, whether they are incorporated within a post office, garage or as a stand-alone general store'. In particular, the Survey noted that for Dorset as a whole:

- 3 out of 4 villages had no general store
- 38 rural post offices had closed since 1991
- 8 villages had lost their only pub over the previous decade

- 35 rural petrol stations had closed since 1991
- 4 villages with a population of over 500 had no general store.

However, the Survey also noted some service gains. Six village doctors' surgeries had opened since 1991 and there had been no rural school closures in the previous decade. The village church or chapel continued to be the facility most available in rural Dorset.

Rural settlements are constantly in fear of losing services such as a post office or the one remaining pub. Privately owned services are lost more quickly than public services because for the latter the decision to remain open is not purely an economic one – social and political considerations are also important. Service decline makes people more reliant on transport, both public and private, to gain access to basic services.

Table 6.2 shows the services located in each rural settlement in 2004. Corfe Castle had by far the best level of service provision, partly due to its tourist function and partly due to its location on the A351 halfway between Swanage and Wareham. Although Langton Matravers has a similar population to Corfe Castle, it is very close to Swanage and suffers from a 'service shadow' effect.

Table 6.2 Rural facilities in the Isle of Purbeck, 2004

District	Population	Public buildings		Facilities										Public transport					
		Church/chapel	Village hall	Village school	Post office & shop	Post office	General store	Food shop	Other shop	Petrol station & shop	Petrol station	Bank	GP surgery	Public house	Library	Recreation area	Cash point	Mobile library	Bus service*
Arne	20	Yes																	
Church Knowle	120	Yes	1											1				1	W
Coombe Keynes	60		1															1	D
Corfe Castle	980	Yes	1	1		1	1	2	13		1		1	4	1	1	1		D
East Holme	30	Yes																	W
East Lulworth	170	Yes												1		1		1	D
East Stoke	60																		W
Furzebrook	60		1																W
Harmans Cross	340	Yes	1			1						1					1	1	D
Kimmeridge	70	Yes	1															1	W
Kingston	100	Yes												1					D
Langton Matravers	910	Yes	1	1	1									2		1		1	D
Ridge	290																	1	W
Steeple	30	Yes																	W
Stoborough	800		1	1	1							1		1		1			D
Stokeford	180		1											1					D
Studland	540	Yes	1		1									1		1	1	1	D
West Lulworth	770	Yes	1	1	1									2		1	1	1	D
Wool	1970	Yes		2	1			2	9	2			1	2	1	1	1		D
Worth Matravers	240	Yes	1		1									1					D

*W = weekly, D = daily

Source: Dorset County Council, 2004

In terms of causal factors for rural service decline, the Dorset Rural Facilities Survey pointed in particular to:

- the increased competition from urban supermarkets that can undercut the prices and provide a greater range of produce than small rural retail outlets (Figure 6.18)
- the increasing personal mobility of most of the rural population as the proportion of people who have access to a private vehicle has risen over the years – this enables most of the rural population to shop weekly and in bulk.

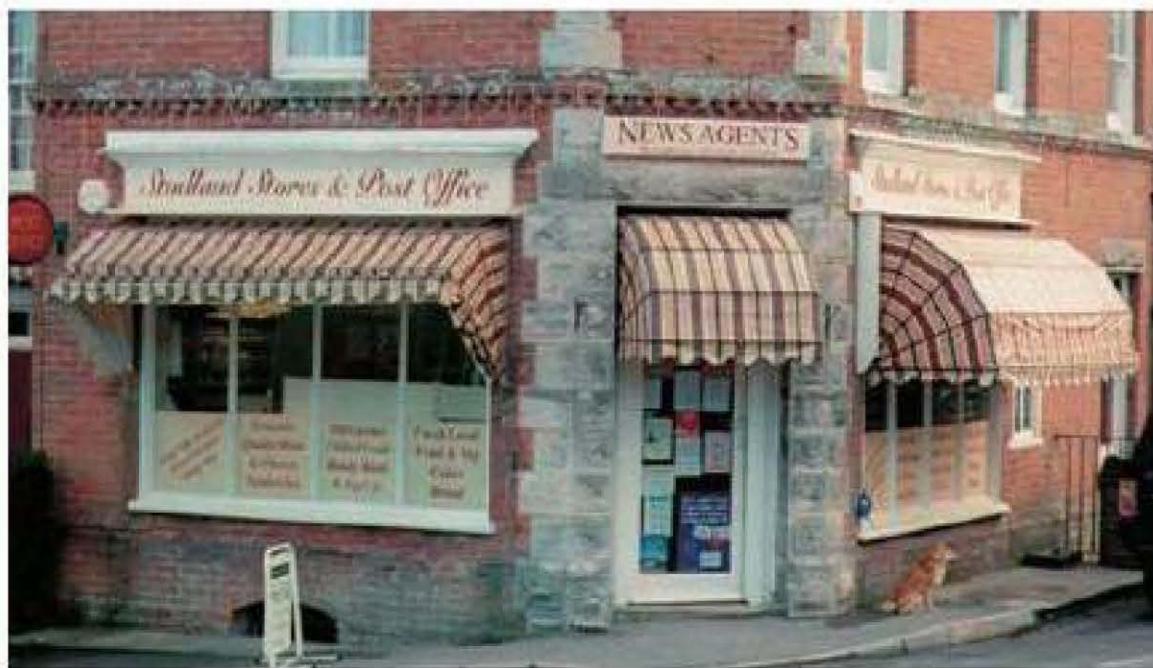


Figure 6.18 Post office and general store in Studland

It is now the policy of Dorset's District Councils not to permit the change of use of public houses in rural settlements unless it can be demonstrated that:

- there is no local need for the facility
- the retention is not economically viable and that there is no reasonable likelihood of an alternative facility being economically viable.

There have been some high-profile cases over the last decade or so where the local community has fought to save their village pub, sometimes, but not always, with success.

The decline of public transport

Public transport in the Isle of Purbeck is limited. It exists in the form of the 150 bus from Poole to Swanage via the Sandbanks/Studland ferry, and the 142/143/144 via Holton Heath, Sandford, Wareham, Corfe and variously Kingston, Langton Matravers, Worth Matravers and Harman's Cross to Swanage. There is extra minibus coverage through volunteer schemes but this is also limited in extent. The decline in public transport in rural areas usually becomes a vicious cycle.

In terms of rail transport, Wareham Station is on the London Waterloo to Weymouth line. The line between Wareham and Swanage was cut in 1972, along with many other rural railway lines around the country. A connection from Wareham to Furzebrook was however maintained to serve the railhead for the oil-well at Wytch Farm. Swanage does boast a steam railway but this is basically a tourist facility. The Swanage Railway currently operates on 10 kilometres of track between Swanage and Norden, passing the ruins of Corfe Castle. However, a prime objective of the Swanage Railway Trust is to restore the rail link between Swanage and Wareham, re-establishing a daily service to connect with mainline trains.

Rural deprivation

Deprivation in terms of housing is particularly acute in high-priced housing counties such as Dorset.

Opportunity deprivation – the lack of opportunity in health and social services, education and retail facilities – also affects disadvantaged people, particularly those living in the most isolated rural areas.

Mobility deprivation is also evident, as public transport is very limited on the Isle of Purbeck. As a result, many low-income households have no choice but to spend a high proportion of their income on running a car, which means that even less money is available for other needs. In the Isle of Purbeck, hospital access is often dependent on voluntary organisations. Deprivation is concentrated in the long-established population. Those who have migrated into the area generally have a significantly higher level of income.

Fieldwork: Case Study of a rural settlement

For this section, 'Changes in rural settlements', the syllabus states: 'A case study of a rural settlement (village or hamlet) or a rural area showing some of the issues of its development and growth (or decline) and evaluating the responses to these issues'. The confines of space prevent coverage of both options in this book, but the study of an individual rural settlement offers an excellent (and relatively straightforward) fieldwork opportunity.

Select a rural settlement within reasonable travelling distance and attempt the following:

- Find a map showing the location of the settlement.
- Gather census data illustrating population change.
- Draw a map showing the functions of the settlement (shop, place of worship, and so on) and their location.
- Find out how the number and nature of functions have changed over time. What have been the reasons for these changes?

- Is the settlement linked by public transport? If yes, how has public transport provision changed over time?
- How are people in the settlement employed? How has the nature of employment changed over time?
- How much employment is local to the settlement and how much involves commuting or other forms of movement?
- What have been the main problems facing the settlement in recent decades and what has been done to attempt to solve these problems?
- Any other relevant information.

Now write up your case study using the title 'A case study of [settlement name]: issues of its development, growth and management'. Limit yourself to 1000 words.

Section 6.1 Activities

- 1 Describe the location of the Isle of Purbeck.
- 2 With reference to Figure 6.17, describe and explain the differences between the population structures of the Isle of Purbeck and England as a whole.
- 3 Discuss the main issues affecting the rural population on the Isle of Purbeck.

6.2 Urban trends and issues of urbanisation

□ The development of the urban environment

The first cities

Gordon Childe used the term **urban revolution** to describe the change in society marked by the emergence of the first cities some 5500 years ago. The areas that first witnessed this profound social-economic change were:

- Mesopotamia – the valleys of the Tigris and Euphrates rivers
- the lower Nile valley
- the plains of the river Indus.

Later, urban civilisations developed around the Mediterranean, in the Yellow River valley of China, in South East Asia and in the Americas. Thus the first cities mainly emerged in areas that are now considered to be LICs.

The catalyst for this period of rapid change was the Neolithic Revolution, which occurred about 8000 BCE. This was when sedentary agriculture, based on the domestication of animals and cereal farming, steadily replaced a nomadic way of life. As farming advanced, irrigation techniques were developed. Other major advances that followed were the ox-drawn plough, the wheeled cart, the sailing boat and metallurgy. However, arguably the most important development was the invention of writing in about 4000 BCE, for it was in the millennium after this that some of the villages on the alluvial plains between the Tigris and Euphrates rivers increased in size and changed in function so as to merit the classification of urban.

Considerably later than the first cities, trading centres began to develop. The Minoan civilisation cities of Knossos and Phaistos, which flourished in Crete during the first half of the second millennium BCE, derived their wealth from maritime trade. Next it was the turn of the Greeks and then the Romans to develop urban and trading systems on a scale larger than ever

before. For example, the population of Athens in the fifth century BCE has been estimated at a minimum of 100 000. The fall of the Roman Empire in the fifth century CE (Figure 6.19) led to a major recession in urban life in Europe, which did not really revive until medieval times.

The medieval revival was the product of population growth and the resurgence of trade, with the main urban settlements of this period located at points of greatest accessibility. While there were many interesting developments in urban life during the medieval period, it required another major technological advance to set in train the next urban revolution.

The urban industrial revolution

The second 'urban revolution', based on the introduction of mass production in factories, began in Britain in the late eighteenth century. This was the era of the Industrial Revolution when industrialisation and urbanisation proceeded hand in hand. The key invention, among many, was the steam engine, which in Britain was applied to industry first and only later to transport. The huge demand for labour in the rapidly growing coalfield towns and cities was satisfied by the freeing of labour in agriculture through a series of major advances. The so-called 'Agricultural Revolution' had in fact begun in the early seventeenth century.

By 1801, nearly one-tenth of the population of England and Wales was living in cities of over 100 000 people. This proportion doubled in 40 years and doubled again in another 60 years. The 1801 census recorded London's population at 1 million, the first city in the world to reach this figure. By 1851, London's population had doubled to 2 million. However, at the global scale less than 3 per cent of the population lived in urban places at the beginning of the nineteenth century.

As the processes of the Industrial Revolution spread to other countries, the pace of urbanisation quickened. The change from a population of 10–30 per cent living in urban areas of 100 000 people or more took about 80 years in England and Wales, 66 years in the USA, 48 years in Germany, 36 years in Japan and 26 years in Australia.

The initial urbanisation of many LICs was restricted to concentrations of population around points of supply of raw materials for the affluent HICs. For example, the growth of São Paulo was firmly based on coffee; Buenos Aires on mutton, wool and cereals; and Kolkata on jute.

By the beginning of the most recent stage of urban development in 1950, 27 per cent of people lived in towns and cities, with the vast majority of urbanites still living in HICs. In fact, in HICs the cycle of urbanisation was nearing completion.



Figure 6.19 Remains of the Roman city of Pompeii, with Mt Vesuvius in the background

The post-1945 urban ‘explosion’ in LICs and MICs

Throughout history, **urbanisation** and significant economic progress have tended to occur together. In contrast, the rapid urban growth of LICs and MICs in the latter part of the twentieth century in general far outpaced economic development, creating huge problems for planners and politicians (Figure 6.20). Because urban areas in LICs and MICs have been growing much more quickly than did the cities of HICs in the nineteenth century, the term ‘urban explosion’ has been used to describe contemporary trends.

However, the clear distinction between urbanisation and urban growth should be kept in mind, as some of the least urbanised countries, such as China and India, contain many of the world’s largest cities and are recording the fastest rates of growth.

An approach known as ‘dependency theory’ has been used by a number of writers to explain the urbanisation of LICs and MICs, particularly the most recent post-1950 phase. According to this approach, urbanisation in LICs and MICs has been a response to the absorption of countries and regions into the global economy. The capitalist global economy induces urbanisation by concentrating production and consumption in locations that:

- offer the best economies of scale and agglomeration
- provide the greatest opportunities for industrial linkage
- give maximum effectiveness and least cost in terms of control over sources of supply.



Figure 6.20 Street market in Nabeul, Tunisia

Thus, urban development is one of the spatial outcomes of the capitalist system. TNCs are the major players in this economic process, which enables and encourages people to cluster in geographical space. The actions of TNCs encourage urbanisation directly in response to localised investment. However, TNCs also influence urbanisation indirectly through their impact on traditional patterns of production and employment. For example, the advance of export-oriented agriculture at the expense of traditional food production has reduced employment opportunities in the countryside and encouraged rural–urban migration.

Other factors that have encouraged urbanisation in LICs and MICs include:

- the investment policies of central governments, which have generally favoured urban over rural areas, often in an attempt to enhance their prestige on the international stage
- higher wage rates and better employment protection in cities
- greater access to healthcare and education
- the decline in the demand for locally produced food as consumers increasingly favour imported food.

The combined result of these factors has been ‘backwash urbanisation’, destroying the vitality of rural areas and placing enormous pressure on cities. In the longer term, the rate of urban growth should eventually slow as a result of falling fertility rates and a deceleration in the urbanisation process itself, as a growing share of the population becomes urbanised.

Current patterns

Current levels of urbanisation, as in the past, vary considerably across the globe (Figure 6.21). The most urbanised regions are North America, Europe, Oceania and Latin America. The lowest levels of urbanisation are in Africa and Asia. In contrast, **urban growth** is highest in Asia and Africa, as these regions contain the fastest-growing urban areas. The urban population in 2014 accounted for 54 per cent of total world population, up from 34 per cent in 1960.

By 2025 (Figure 6.22), half of the populations of Asia and Africa will live in urban areas and 80 per cent of urban dwellers will live in LICs and MICs. In HICs, levels of urbanisation peaked in the 1970s and have declined since then due to the process of counterurbanisation.

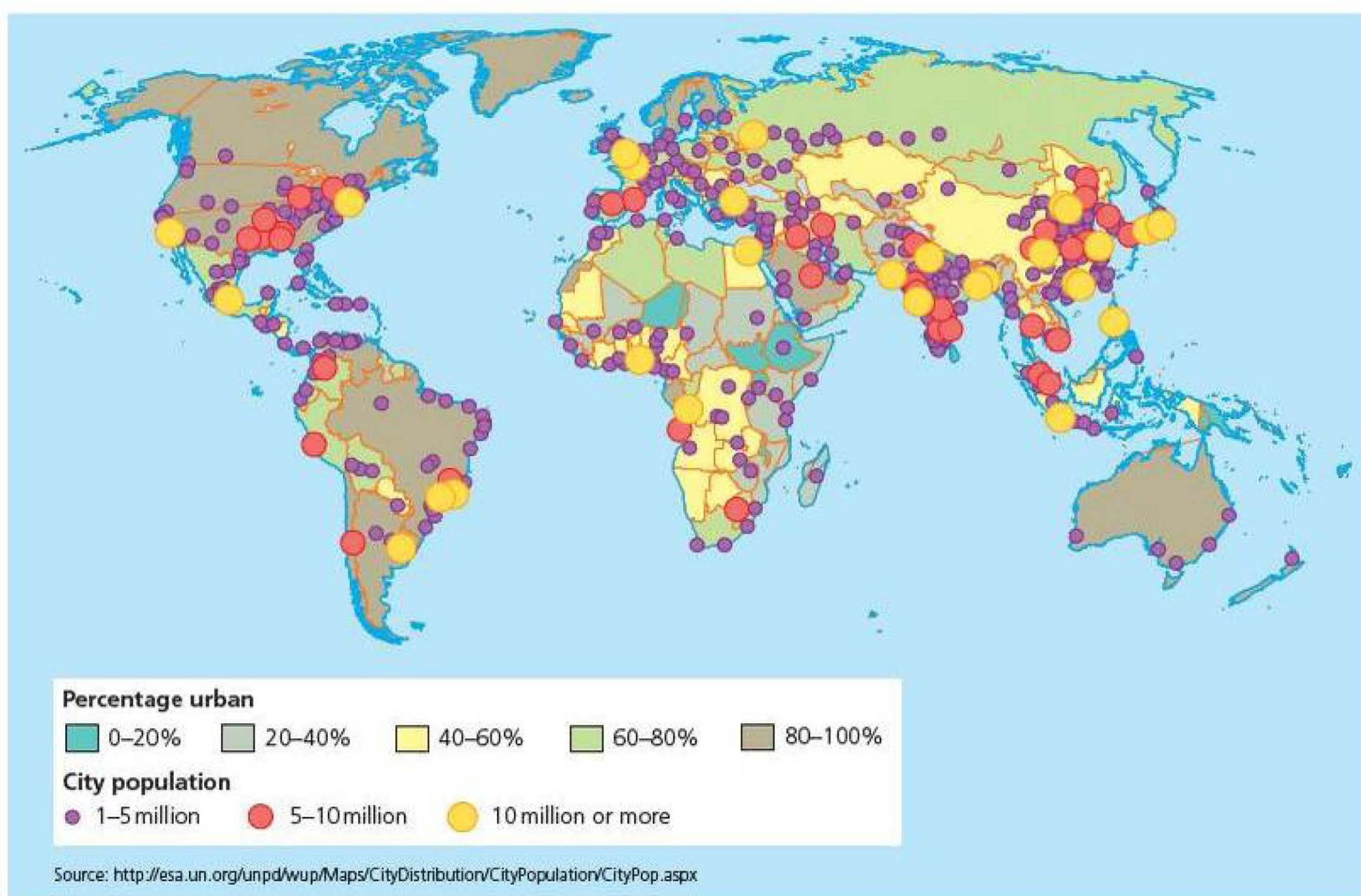
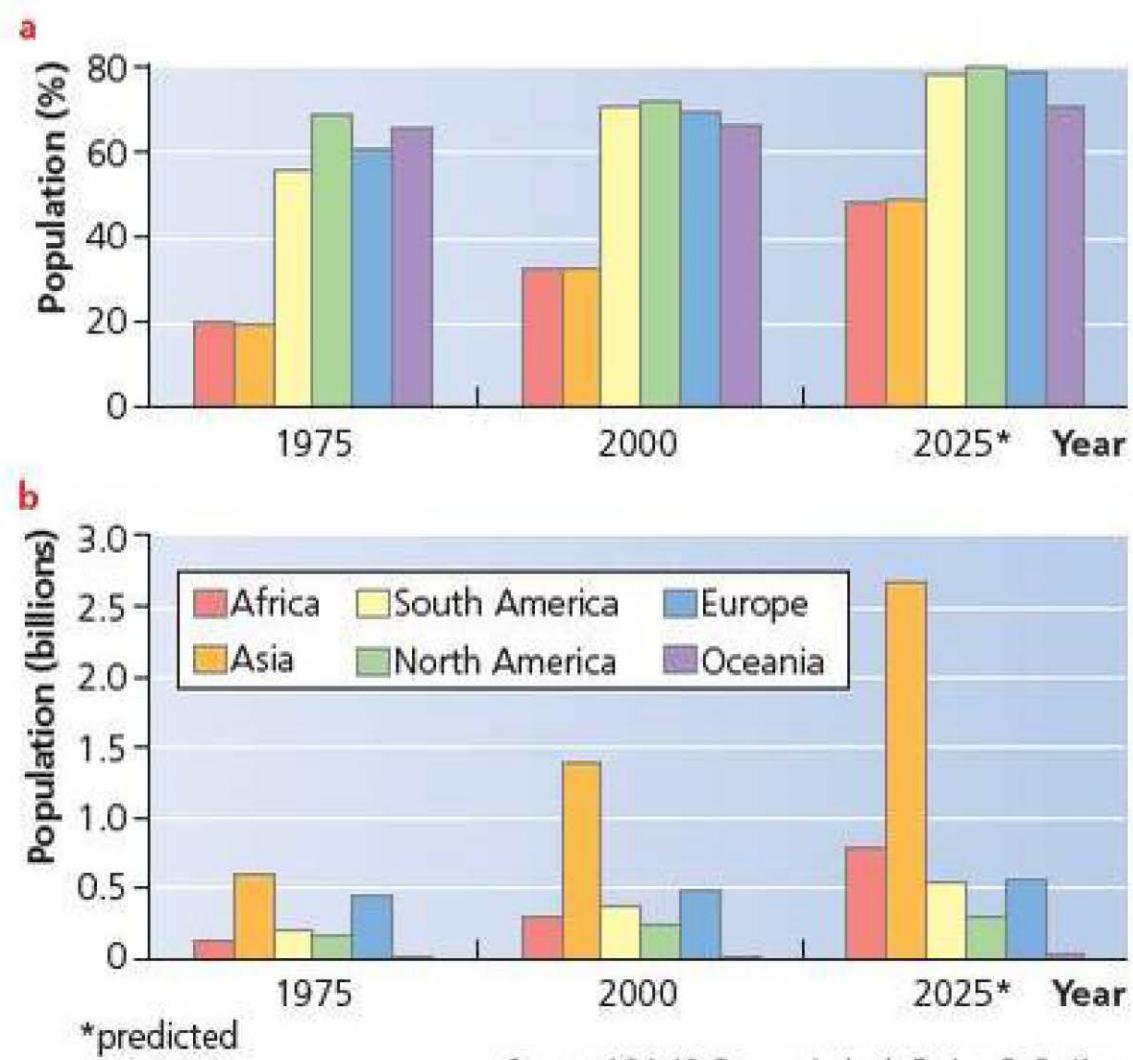


Figure 6.21 World urban population, 2014



Source: AQA A2 Geography by A. Barker, D. Redfern & M. Skinner (Philip Allan Updates, 2009), p.132

Figure 6.22 Patterns of urbanisation, 1975–2025

Table 6.3 The world's 50 largest cities in 2012

Position	City (country)	Population	Position	City (country)	Population
1	Tokyo (Japan)	37126000	26	Nagoya (Japan)	10027000
2	Jakarta (Indonesia)	26063000	27	Lima (Peru)	9121600
3	Seoul (South Korea)	22547000	28	Chicago (USA)	9121000
4	Delhi (India)	22242000	29	Kinshasa (Congo, DRC)	9046000
5	Shanghai (China)	20860000	30	Tianjin (China)	8922000
6	Manila (Philippines)	20767000	31	Chennai (India)	8865000
7	Karachi (Pakistan)	20711000	32	Bogotá (Colombia)	8702000
8	New York (USA)	20464000	33	Bengaluru (India)	8670000
9	São Paulo (Brazil)	20186000	34	London (UK)	8586000
10	Mexico City (Mexico)	19463000	35	Taipei (Taiwan)	8338000
11	Cairo (Egypt)	17816000	36	Ho Chi Minh City/Saigon (Vietnam)	8314000
12	Beijing (China)	17311000	37	Dongguan (China)	8278000
13	Osaka (Japan)	17011000	38	Hyderabad (India)	7903000
14	Mumbai/Bombay (India)	16910000	39	Chengdu (China)	7895000
15	Guangzhou (China)	16827000	40	Lahore (Pakistan)	7743000
16	Moscow (Russia)	15512000	41	Johannesburg (South Africa)	7618000
17	Los Angeles (USA)	14900000	42	Tehran (Iran)	7419000
18	Kolkata (India)	14374000	43	Essen (Germany)	7304000
19	Dhaka (Bangladesh)	14000000	44	Bangkok (Thailand)	7151000
20	Buenos Aires (Argentina)	13639000	45	Hong Kong (Hong Kong)	7106000
21	Istanbul (Turkey)	13576000	46	Wuhan (China)	6995000
22	Rio de Janeiro (Brazil)	12043000	47	Ahmedabad (India)	6482000
23	Shenzhen (China)	11885000	48	Chongqing (China)	6321000
24	Lagos (Nigeria)	11547000	49	Baghdad (Iraq)	6204000
25	Paris (France)	10755000	50	Hangzhou (China)	6178000

Source: www.worldatlas.com/citypops.htm

Table 6.3 shows the 50 largest cities in the world in 2012. If you look on the internet you will see that the rank order can change according to the source of information. Different sources can use different criteria to define urban boundaries. Table 6.3 shows nine urban areas with populations over 20million.

Section 6.2 Activities

- 1 a When did the first and second urban revolutions occur?
- b What were the reasons for each of these major changes in human settlement?
- 2 Distinguish between *urbanisation* and *urban growth*.
- 3 Describe and explain the variations shown in Figure 6.21.
- 4 Comment on the changes shown in Figure 6.22.
- 5 Compare the locations of the world's ten largest cities in 2014 (Table 6.3).

The cycle of urbanisation

The development of urban settlement in the modern period can be seen as a sequence of processes known as the **cycle of urbanisation** (Figure 6.23). The key processes and their landscape implications are: **suburbanisation**, **counterurbanisation** and **reurbanisation**. In the UK, suburbanisation was the dominant process until the 1960s. From this decade, counterurbanisation increasingly had an impact on the landscape. Reurbanisation of some of the largest cities, beginning in the 1990s, is the most recent phenomenon.

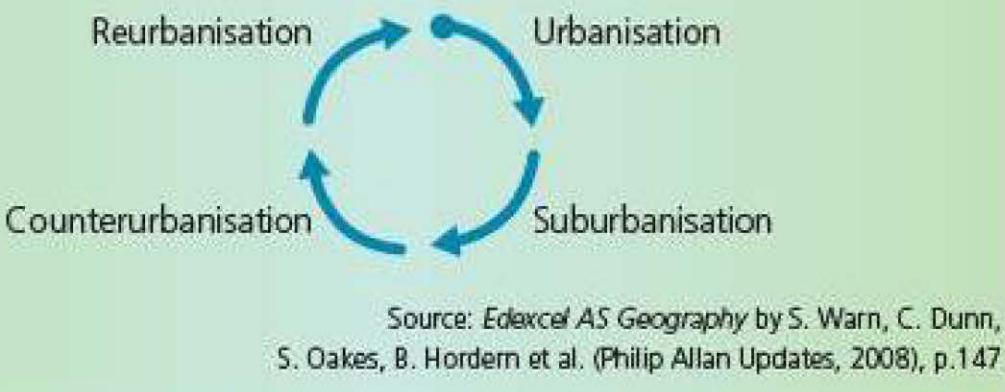


Figure 6.23 The cycle of urbanisation

Suburbanisation

Although the urban Industrial Revolution in Britain began in the late eighteenth century, it was not really

until the 1860s that urban areas began to spread out significantly. The main factor in this development was the construction of suburban railway lines. Each railway development spurred a rapid period of house building. Initially, the process of suburbanisation was an almost entirely middle-class phenomenon. It was not until after the First World War, with the growth of public housing, that working-class suburbs began to appear.

In the interwar period, about 4.3 million houses were built in the UK, mainly in the new suburbs. Just over 30 per cent were built by local authorities (councils). The reasons for such a rapid rate of suburban growth were:

- government support for house-building
- the willingness of local authorities to provide piped water and sewerage systems, and gas and electricity
- the expansion of building societies
- low interest rates
- development of public transport routes
- improvements to the road network.

Figure 6.24 describes the development of Stoneleigh, an outer suburb in south-west London (Figure 6.25). In the latter half of the twentieth century, suburbanisation was limited by the creation of Green Belts and the introduction of general planning controls.

STONELEIGH: A RAILWAY SUBURB

By the end of the 1930s developments were taking place on the rural-urban fringe. Stoneleigh acquired a railway station in 1932 and witnessed spectacular growth thereafter. The Stoneleigh Estate consisted of three farms. These had been offered for building development in the early 1900s but by the end of the 1920s only a few dozen houses had been built. However, following the arrival of the railway, development intensified. By 1933 a 3500 acre site for 3000 homes existed, and the area had a complete set of drains and sewers. By 1937 all farmland and woodland within a 1 mile radius of the railway station had been destroyed.

The housing density at Stoneleigh was low at eight houses per acre. As well as the railway there was a good bus service to Epsom, Surbiton and Kingston. Further developments followed quickly:

- a block of 18 shops (by 1933)
- a sub-post office (1933) and a bank (1934)
- Stoneleigh's first public house (1934)
- a cinema (1937)
- a variety of churches (1935 onwards)
- schools (from 1934)
- recreational grounds at Nonsuch Park and Cuddington.

Stoneleigh benefited from a strong and dynamic residents' association. The residents were aggrieved that nearby working-class areas in Sutton and Cheam were reducing their own land values. They canvassed successfully for boundaries to be

redrawn, raising the values of their properties. There were many social activities too, including dances, whist-drives, cricket, children's parties, choral societies, cycling and tennis. This went a long way to creating a sense of community. The chairman of the residents' association was also the editor of a local newspaper, which helped the residents in their aims.

By 1939 Stoneleigh was a model railway suburb. Over 3000 people used the railway each day for commuting to work and it was also useful for reaching the south coast. However, the railway also split the community in two. There were problems for buses and cars trying to move from one side of the town to the other. Socially, it also split the community.

The development of Stoneleigh shows many similarities with other suburbs:

- a variety of housing styles, reflecting the different building companies
- a somewhat chaotic road layout
- complete destruction of the former farming landscape
- ponderous shopping parades
- the claim by some that it is dull and soulless.

Yet because of its poor road layout, in particular the lack of railway crossings, and its housing developments right up to the railway line, it does not have the worst trappings of modern suburban development.

Source: *Geography Review*, September 1998, Philip Allan Updates

Figure 6.24 Stoneleigh – a railway suburb



Figure 6.25 Stoneleigh – an outer suburb in south-west London

Counterurbanisation

Urban deconcentration is the most consistent and dominant feature of population movement in most cities in HICs today, in which each level of the settlement hierarchy is gaining people from the more urban tiers above it but losing population to those below it. However, it must be remembered that the net figures hide the reasonable numbers of people moving in the opposite direction. There has been a consistent loss of population for metropolitan England in terms of net within-UK migration. It does not, however, mean an overall population decline of this magnitude, because population change is also affected by natural increase and international migration. London is the prime example of the counterbalancing effect of these last two processes.

Around London, where central rents are particularly high, much office employment has diffused very widely across south-east England. Between 20 and 30 decentralisation centres can be identified in the Outer Metropolitan Area, between 20 and 80 kilometres from central London, especially along the major road and rail corridors. Examples include Dorking, Guildford and Reigate.

Reurbanisation

In very recent years, British cities have, to a limited extent so far, reversed the population decline that has dominated the post-war period. Central government finance, for example the millions of pounds of subsidies poured into

London's Docklands, Manchester's Hulme wastelands and Sheffield's light railway, has been an important factor in the revival. New urban design is also playing a role. The rebuilding of part of Manchester's city centre after a massive IRA bomb has allowed the planners to add new pedestrian areas, green spaces and residential accommodation. A recent example is Birmingham's Big City Plan, set out in 2010, which plans for radical change in the city centre. The Big City Plan will co-ordinate the redevelopment of the area over the next 20 years.

The reduction in urban street crime due to the installation of automated closed-circuit surveillance cameras has significantly improved public perception of central areas (Figure 6.26). Rather than displacing crime to nearby areas, as some critics have claimed, a Home Office study found that, on the contrary, the installation of cameras had a halo effect, causing a reduction in crime in surrounding areas.

Is the recent reurbanisation just a short-term blip or the beginning of a significant trend, at least in the medium term? Perhaps the most important factor favouring the latter is the government's prediction in the late 1990s of the formation of 4.4 million extra households over the next two decades, 60 per cent of which will have to be housed in existing urban areas because there is such fierce opposition to the relaxation of planning restrictions in the countryside. Also, as many of the new households will be single-person units, the existing urban areas may well be where most of them would prefer to live.



Figure 6.26 Reurbanisation in the central area of Reading, UK

Case Study: The rejuvenation of inner London

For the first time in about 30 years, London stopped losing population in the mid-1980s and has been gaining people ever since, due to net immigration from overseas and natural increase. Perhaps the most surprising aspect of this trend is the rejuvenation of inner London, where the population peaked at 5 million in 1900 but then steadily dropped to a low of

2.5 million by 1983. The 2011 census recorded a population of 3.23 million in inner London, the highest since the 1961 census (3.34 million). Inner London has benefited from a number of regeneration projects (Figure 6.27), some of them very large in scale. The overall effect has been to improve housing, services, employment and the environment.

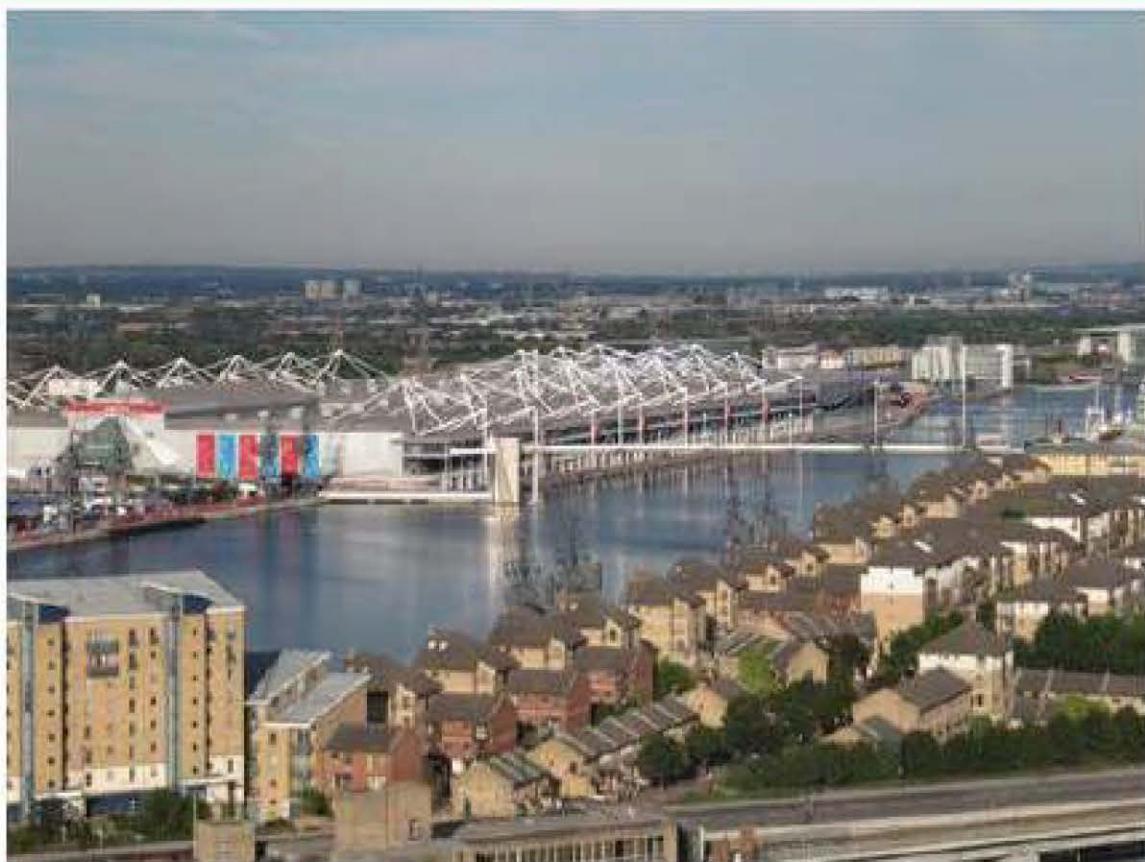


Figure 6.27 Regeneration in inner London



Figure 6.28 Gentrification of terraced housing in inner London

Section 6.2 Activities

- 1 What is the cycle of urbanisation?
- 2 With reference to Figure 6.24, describe the process of suburbanisation.
- 3 What is counterurbanisation and when did it begin?
- 4 a Define reurbanisation.
b Explain the reasons for the occurrence of this process.

□ Competition for land

All urban areas exhibit competition for land to varying degrees. Such competition varies according to location, and the level of competition can change over time. The best measures of competition are the price of land and

Young adults now form the predominant population group in inner London, whereas in the 1960s all the inner London boroughs exhibited a mature population structure. Inner London is seen as a vibrant and attractive destination by young migrants from both the UK and abroad.

Gentrification has been an important part of change in inner London. The term 'gentrification' was first coined in 1963 by the sociologist Ruth Glass to describe the changes occurring in the social structure and housing market in parts of inner London. The process involved:

- the physical improvement of the housing stock (Figure 6.28)
- a change in housing tenure from renting to owning
- an increase in house prices
- the displacement or replacement of the working class by the new middle class.

the rents charged for floorspace in buildings. However, planning measures such as **land-use zoning** and other restrictions can complicate the free market process to a considerable degree. Bid-rent theory does much to explain how competition for land can result in **functional zonation** – this is discussed in more detail in the next section. Space does not usually stay idle for long in the sought-after parts of urban areas. However, there are areas of some cities where dereliction has been long-standing. Here, the land may be unattractive for both residential and business purposes and it may require substantial investment from government to bring the area back into active use again.

Renewal and redevelopment

Urban redevelopment involves complete clearance of existing buildings and site infrastructure and constructing

new buildings, often for a different purpose, from scratch. In contrast, **urban renewal** keeps the best elements of the existing urban environment (often because they are safeguarded by planning regulations) and adapts them to new usages. Simple examples are where a bank has been turned into a restaurant, keeping the former's façade but altering the inside of the building to suit its new purpose. Urban renewal helps to maintain some of the historic character of urban areas.

In cities in various countries where damage was extensive as a result of the Second World War, large-scale redevelopment took place in the subsequent decades. The general model was to completely clear the land (redevelopment) and build anew. However, from the 1970s renewal gained increasing acceptance and importance in planning circles. In more recent years, the term **urban regeneration** has become increasingly popular. This involves both redevelopment and renewal.

In the UK, urban development corporations were formed in the 1980s and early 1990s to tackle large areas of urban blight in major cities around the country. The establishment of the London Docklands Development Corporation in 1981 set in train one of the largest urban regeneration projects ever undertaken in Europe. An important part of this development was the construction of Canary Wharf, which extended London's CBD towards the east. The regeneration of the Lower Lea Valley is a more recent development, stimulated by the granting of the 2012 Olympic Games to London.

The Lower Lea Valley was one of the most deprived communities in the country and was seen as the largest remaining regeneration opportunity in inner London. Unemployment was high and the public health record

poor. This run-down environment with an industrial history suffered from a lack of **infrastructure**. Most of the existing industry provided only low-density employment. Flytipping had been a major problem here for many years. The area is one of the most ethnically diverse in the UK. It had a negative image both within East London and in the capital city as a whole. It is hoped that the Olympic Games have transformed the Lower Lea Valley and much of the surrounding area, bringing permanent prosperity through the process of **cumulative causation**. The development that the Olympics brought was dovetailed with the existing regeneration framework. The total investment in the area exceeded £9 billion, much of which went into transport improvement. Plans to develop the Lower Lea Valley had been around for some time – the development role of the Olympic Games has been to speed up this process.

Global (world) cities

A **global (world) city** is one that is judged to be an important nodal point in the global economic system. The term 'global city' was first introduced by Saskia Sassen in her book *The Global City* published in 1991. Initially referring to New York, London and Tokyo, Sassen described global cities as ones that play a major role in global affairs in terms of politics, economics and culture. The number of global cities has increased significantly in recent decades as the process of globalisation has deepened. Global cities are defined by influence rather than size. Which large cities in terms of population do not appear on Figure 6.29? For example, in the USA, Los Angeles is larger in population size than Chicago, but while Chicago has Alpha status, Los Angeles does not merit an Alpha ranking.

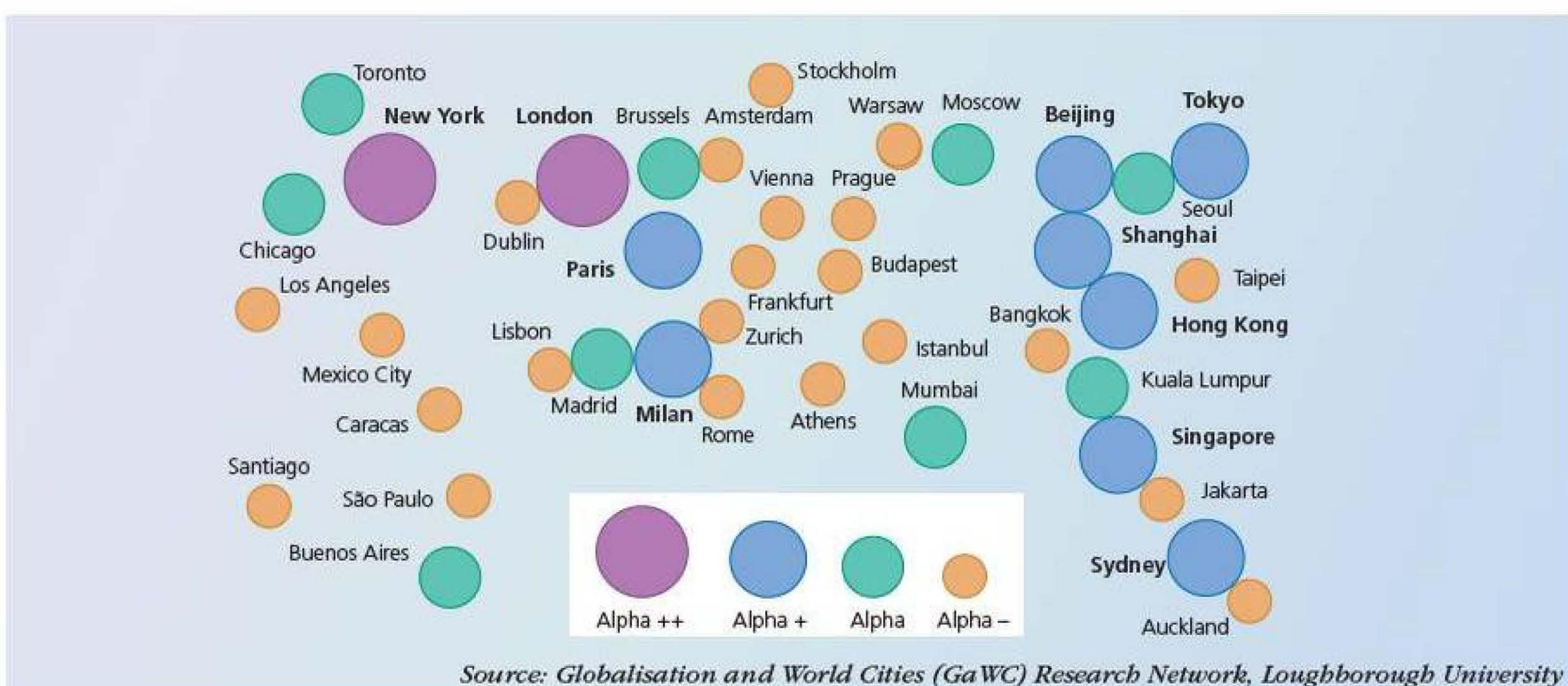


Figure 6.29 Alpha global cities

Hierarchy of world cities

The Globalisation and World Cities (GaWC) Research Network at Loughborough University has identified various levels of global city. Figure 6.29 shows those cities termed the 'Alpha' cities in 2008, which are subdivided into four categories. Only New York and London are placed in the highest Alpha++ category under this classification. Beijing is in the Alpha+ category, along with Shanghai, Hong Kong and Tokyo in the East Asia geographical region. The remaining cities in this category are Paris, Singapore (Figure 6.30) and Sydney. The GaWC analysis also recognises four lower levels of urban area around the world. The next two levels in the global city hierarchy, the Beta and Gamma levels, are shown in Table 6.4. The results are based upon the office networks of 175 advanced producer service firms in 526 cities in 2008.



Figure 6.30 Singapore – a world city

Table 6.4 Beta and Gamma global cities

Beta +	Beta	Beta -	Gamma +	Gamma	Gamma -
Washington	Oslo	Munich	Montreal	Ljubljana	Detroit
Melbourne	Berlin	Jeddah	Nairobi	Shenzhen	Manchester
Johannesburg	Helsinki	Miami	Bratislava	Perth	Wellington
Atlanta	Geneva	Lima	Panamá City	Kolkata	Riga
Barcelona	Copenhagen	Kiev	Chennai	Guadalajara	Guayaquil
San Francisco	Riyadh	Houston	Brisbane	Antwerp	Edinburgh
Manila	Hamburg	Guangzhou	Casablanca	Philadelphia	Porto
Bogotá	Cairo	Beirut	Denver	Rotterdam	San Salvador
Tel Aviv	Luxembourg	Karachi	Quito	Amman	St Petersburg
New Delhi	Bangalore	Düsseldorf	Stuttgart	Portland	Tallinn
Dubai	Dallas	Sofia	Vancouver	Lagos	Port Louis
Bucharest	Kuwait	Montevideo	Zagreb		San Diego
	Boston	Nicosia	Manama		Islamabad
		Rio de Janeiro	Guatemala City		Birmingham (UK)
		Ho Chi Minh City	Cape Town		Doha
			San José (CR)		Calgary
			Minneapolis		Almaty
			Santo Domingo		Columbus
			Seattle		

In 2008, the American journal *Foreign Policy* published its Global Cities Index. The rankings are based on 24 measures over five areas:

- business activity
- human capital
- information exchange
- cultural experience
- political engagement.

Foreign Policy noted that 'the world's biggest, most interconnected cities help set global agendas, weather transnational dangers, and serve as the hubs of global integration. They are the engines of growth for their countries and the gateways to the resources of their regions.'

Causes of the growth of world cities

The growth of global cities has been due to:

- **demographic trends** – significant rates of natural increase and in-migration at different points in time for cities in HICs, MICs and LICs; large population clusters offer potential in terms of both workforce and markets
- **economic development** – the emergence of major manufacturing and service centres in national and continental space, along with the development of key transport nodes in the global trading system
- **cultural/social status** – the cultural facilities of large cities are an important element of their overall attraction to FDI and tourism
- **political importance** – many global cities are capital cities, benefiting from particularly high levels of investment in infrastructure.

There will undoubtedly be many changes in the hierarchy of global cities as the years unfold. The rapid development of many NICs will have a significant impact on the rankings. Africa is so far unrepresented on the Alpha list, but cities such as Johannesburg, Cairo and Lagos may well get there in the not-too-distant future. In contrast, other established global cities may decline in importance.

Section 6.2 Activities

- 1 What is a *global city*?
- 2 Describe the levels and distribution of global cities shown in Figure 6.29.
- 3 On an outline map of the world, show the locations of the Beta global cities shown in Table 6.4.
- 4 Suggest how global cities can rise and fall in terms of their level or grading.

6.3 The changing structure of urban settlements

□ Functional zonation

The patterns evident and the processes at work in large urban areas are complex, but by the beginning of the twentieth century geographers and others interested in urban form were beginning to see more clearly than before the similarities between cities, as opposed to laying stress on the uniqueness of each urban entity. The first generalisation about urban land use to gain widespread recognition was the concentric zone model emanating from the so-called 'Chicago School'.

The concentric zone model

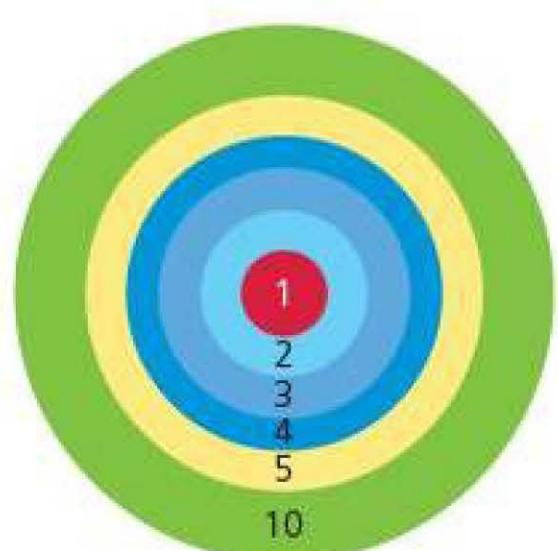
Published in 1925, and based on American Mid-Western cities, particularly Chicago (Figure 6.31), E.W. Burgess's model (Figure 6.32) has survived much longer than perhaps its attributes merit as it has only limited applicability to modern cities. However, it did serve as a theoretical foundation for others to investigate further.



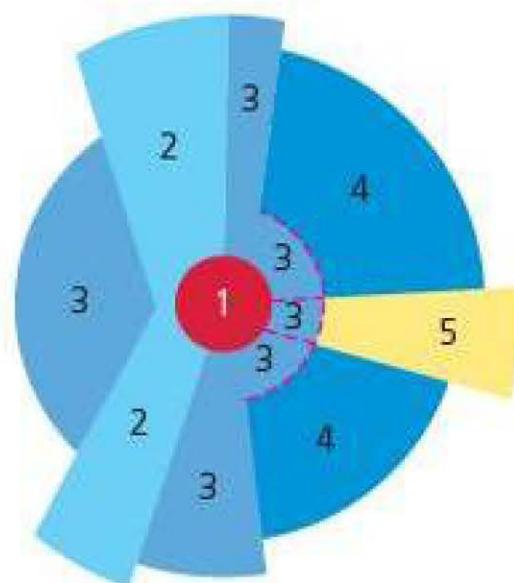
Figure 6.31 The CBD of Chicago

The main assumptions upon which the model was based are:

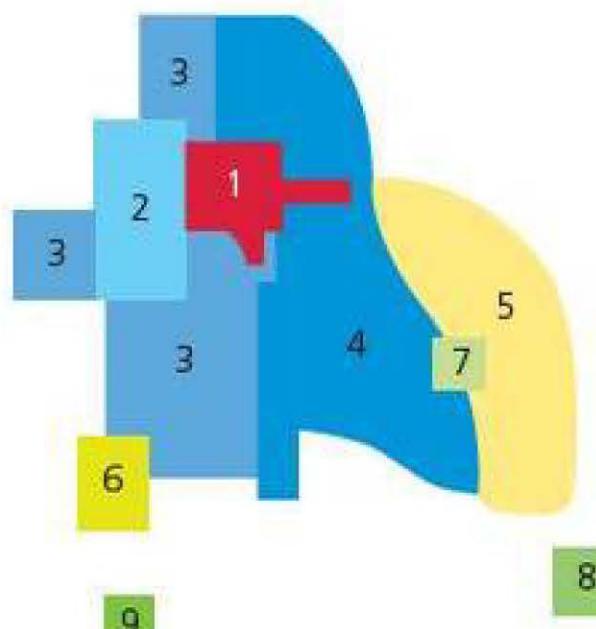
- a uniform land surface
- free competition for space
- universal access to a single-centred city
- continuing in-migration to the city, with development taking place outward from the central core.



a Concentric zone model



b Sector model



c Multiple-nuclei model

Source: OCR AS Geography by M. Raw (Philip Allan Updates, 2008), p.203

Figure 6.32 Concentric zone, sector and multiple-nuclei models

Burgess concluded that the city would tend to form a series of concentric zones. The model's basic concepts were drawn from ecology, with the physical expansion of the city occurring by invasion and succession, with each of the concentric zones expanding at the expense of the one beyond.

Business activities agglomerated in the CBD, which was the point of maximum accessibility for the urban area as a whole. Surrounding the CBD was the **zone in transition** where older private houses were being subdivided into flats and bedsits or converted to offices and light industry. Newcomers to the city were attracted to this zone because of the concentration of relatively cheap, low-quality rented accommodation. In-migrants tended to group in ethnic ghettos and areas of vice could be recognised (Figure 6.33). However, as an ethnic group assimilated into the wider community – economically, socially and politically – its members would steadily move out to zones of better housing, to be replaced by the most recent arrivals. Beyond the zone in transition came the 'zone of working-men's homes' characterised by some of the oldest housing in the city and stable social groups. Next came the 'residential zone' occupied by the middle classes with its newer and larger houses. Finally, the commuters' zone extended beyond the built-up area.

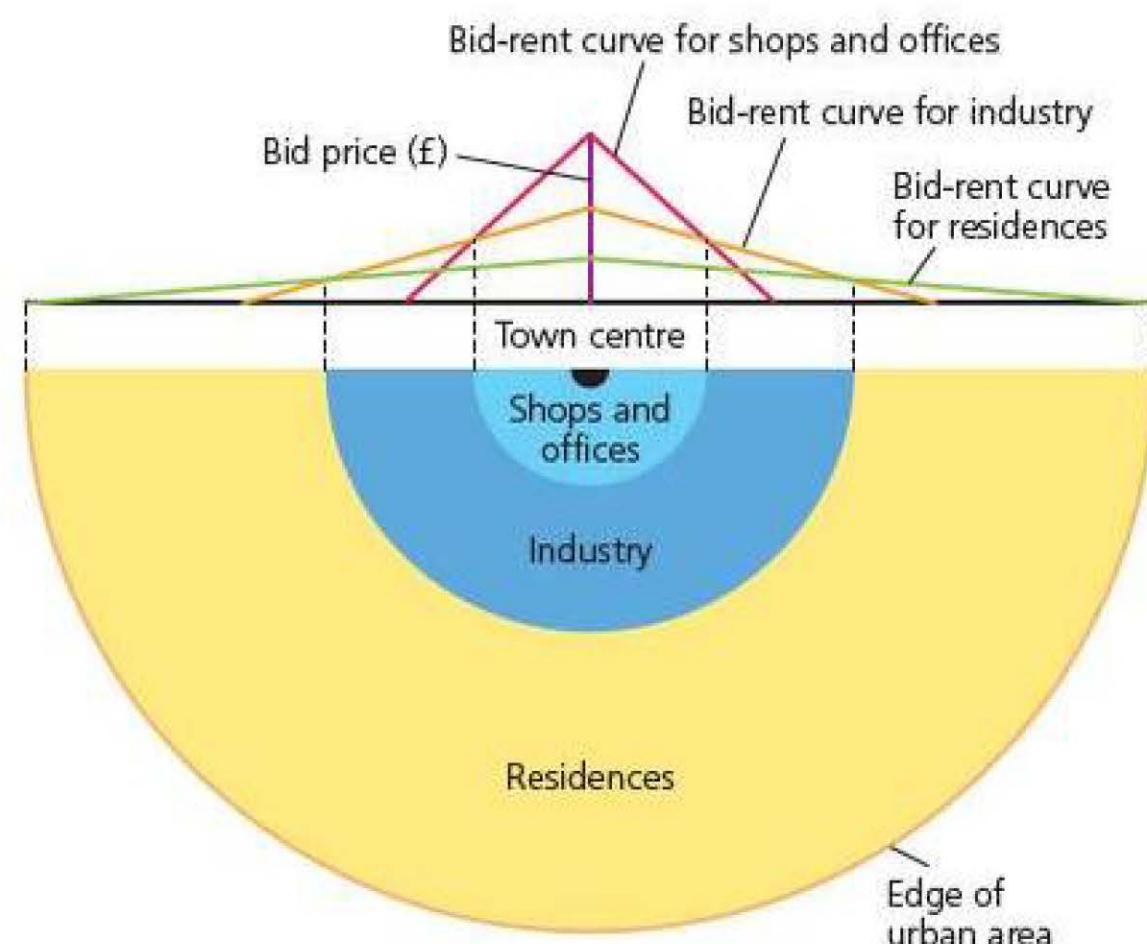


Figure 6.33 Subway graffiti, the Bronx – inner-city New York

Burgess observed in his paper that 'neither Chicago nor any other city fits perfectly into this ideal scheme. Complications are introduced by the lake front, the Chicago River, railroad lines, historical factors in the location of industry, the relative degree of the resistance of communities to invasion, etc.'

Bid-rent theory

Alonso's theory of urban land rent (1964), generally known as **bid-rent theory**, also produces a concentric zone formation, determined by the respective ability of land uses to pay the higher costs of a central location (Figure 6.34). The high accessibility of land at the centre, which is in short supply, results in intense competition among potential land users. The prospective land use willing and able to bid the most will gain the most central location. The land use able to bid the least will be relegated to the most peripheral location.



Source: OCR AS Geography by M. Raw (Philip Allan Updates, 2008), p.203

Figure 6.34 The bid-rent model

Alonso explained the paradox of poorer people living on expensive land in inner areas and more affluent people living on cheaper land further out as follows:

- With poor personal mobility, low-income groups prefer to reside in inner locations. They overcome the problem of land costs by living at high densities, each household buying or renting only a small amount of space.
- The more affluent, desiring a large house and garden, seek out cheaper land in the low-density suburbs where they can realise their 'dreams'. Being highly mobile, they trade off space against accessibility to the CBD.

The assumptions upon which the theory is based and the criticisms of it are similar to the Burgess model.

The sector model

Homer Hoyt's **sector** model (1939) was based on the study of 142 cities in the USA (Figure 6.32). Following Burgess, Hoyt placed the business district in a central location for the same reason – maximum accessibility. However, he observed that once variations arose in land uses near to the centre, they tended to persist as the city expanded. High-income housing usually developed where there were distinct physical or social attractions, with low-income housing confined to the most unfavourable locations. Middle-income groups occupied intermediate locations. Major transport routes often played a key role in influencing sectoral growth, particularly with regard to industry. As new land was required by each sector, it was developed at the periphery of that sector. However, medium- and high-class housing near the centre – the oldest housing in each case – was subject to suburban relocation by its residents, leading to deterioration, subdivision and occupation by low-income groups.

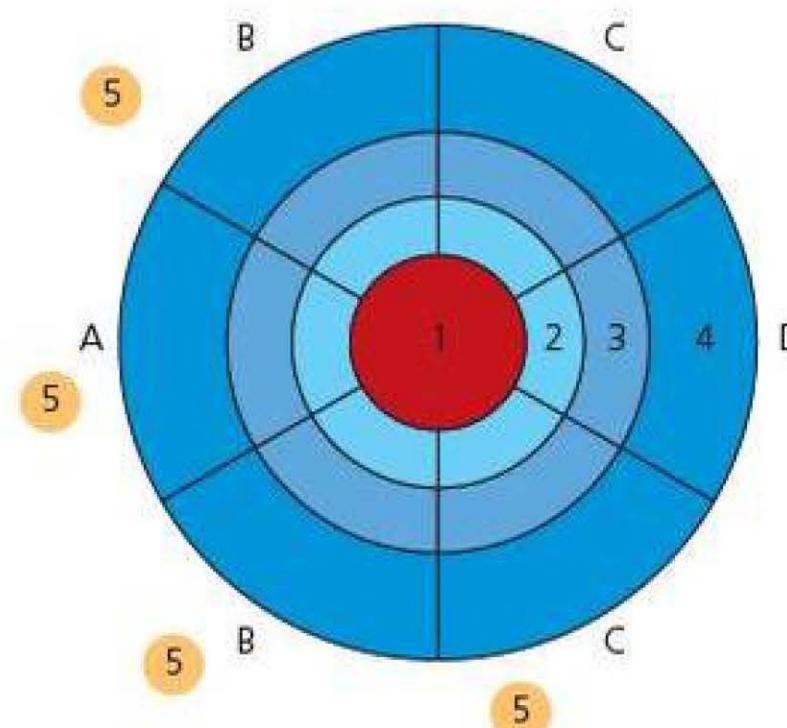
The multiple-nuclei model

C.D. Harris and E. Ullman (1945) argued that the pattern of urban land use does not develop around a single centre but around a number of discrete nuclei (Figure 6.32). Some nuclei may be long established, for example old villages that have been incorporated into the city by urban expansion. Others, such as industrial estates for light manufacturing, are much newer. Similar activities group together, benefiting from agglomeration, while some land uses repel others. Middle- and high-income house-buyers can afford to avoid residing close to industrial areas, which become the preserve of the poor. A very rapid rate of urban expansion may result in some activities being dispersed to new nuclei, such as a new out-of-town shopping centre.

A British urban land-use model

P. Mann based his land-use model for a typical British city on the theories of both Burgess and Hoyt (Figure 6.35), which he tried to apply to Sheffield, Nottingham and

Huddersfield. The outcome was very much a compromise between the two models, which he regarded as being complementary. Identifying four residential sectors from middle class to lower working class, he noted the influence of prevailing winds on the location of industry and the most expensive housing. He also allowed for local-authority house-building (the influence of planning), particularly towards the periphery of the urban area, and for commuter villages.



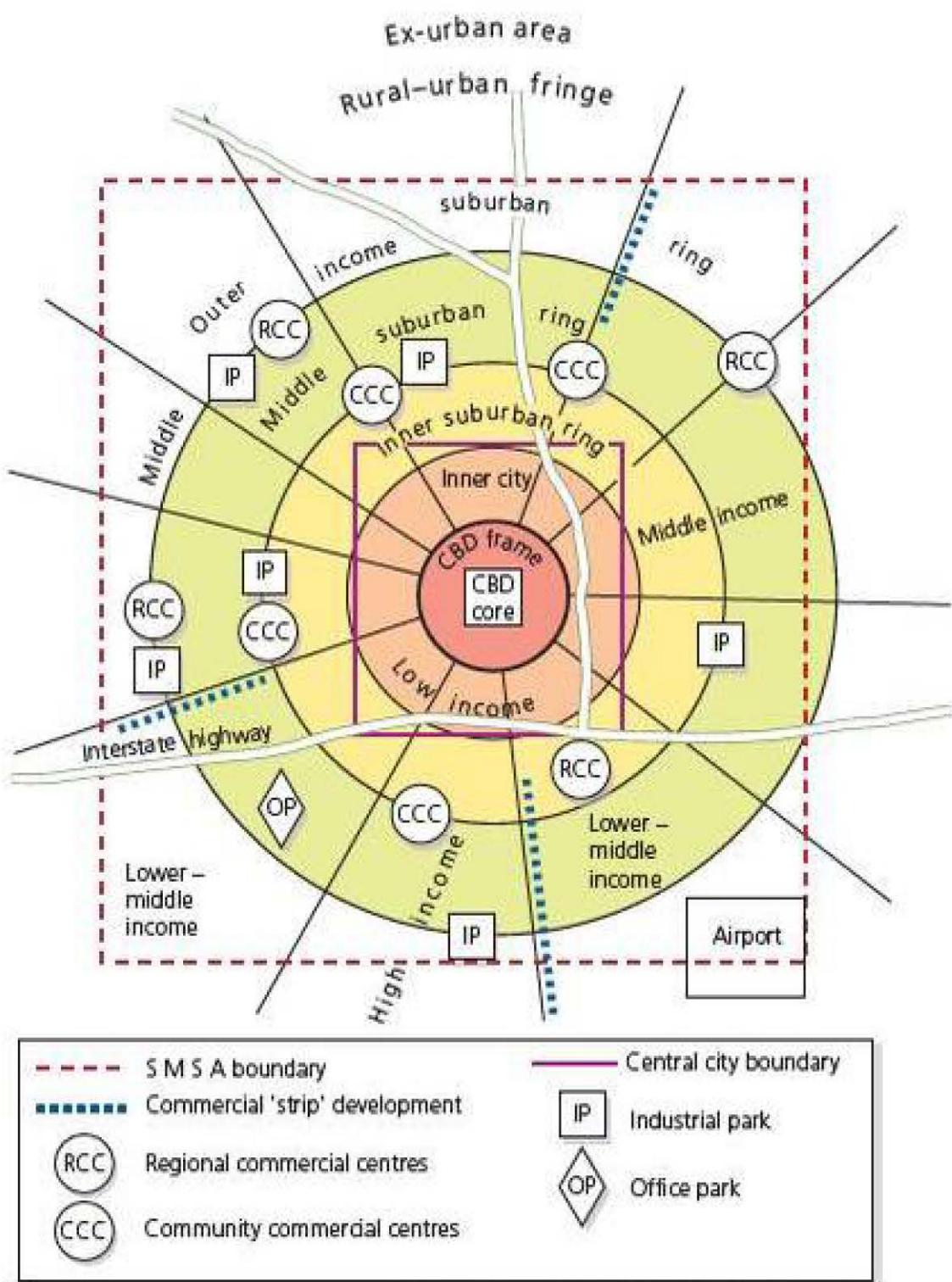
- | | |
|---|--|
| 1 | City centre |
| 2 | Transitional zone |
| 3 | Zone of small terraced houses in sectors C and D, bye-law houses in sector B, large old houses in sector A |
| 4 | Post-1918 residential areas with post-1945 development mainly on periphery |
| 5 | Commuting-distance villages |
| A | Middle-class sector |
| B | Lower-middle-class sector |
| C | Working-class sector (and main municipal housing areas) |
| D | Industrial and lowest working-class areas |

Source: OCR AS Geography by M. Raw (Philip Allan Updates, 2008), p.206

Figure 6.35 Mann's structure of a British city

A model of the modern North American city

Another model that incorporates aspects of both Burgess and Hoyt was produced by David Clark (Figure 6.36) in his book *Post-Industrial America*, although similar diagrams have also been produced by others. Here, the CBD is subdivided into a core and a frame. Outside the low-income inner city are three suburban rings, divided into sectors of lower-middle, middle and high income. Important elements in the commercial hierarchy are included, along with industrial and office parks. Thus decentralisation is a key element of this model. The central city boundary shows the legal limits of the main city that once contained the whole urban area. In the twentieth century, the city has sprawled way beyond its legal limits to incorporate other legal entities. The Standard Metropolitan Statistical Area (SMSA) also includes the rural sections of counties that form part of the wider urban area.



Source: Advanced Geography: Concepts & Cases, P. Guinness & G. Nagle (Hodder Education, 1999), p.92

Figure 6.36 The spatial structure of the post-industrial American city

Models of cities in LICs and MICs

Although the development of urban land-use models has favoured Western cities, some interesting contributions relating to cities in LICs, MICs and socialist cities have appeared at various points in time.

Griffin and Ford's model, upon which Figure 6.37 is based, summarises many of the characteristics that they noted in modern Latin American cities:

- Central areas, which had changed radically from the colonial period to now, exhibit most of the characteristics of modern Western CBDs.
- The development of a commercial spine, extending outwards from the CBD, is enveloped by an elite residential sector.
- There is a tendency for industries, with their need for urban services such as power and water, to be near the central area.
- The model includes a 'zone of maturity' with a full range of services containing both older, traditional-style housing and more recent residential development. The traditional housing, once occupied by higher-income families who now reside in the elite sector, has generally undergone subdivision and deterioration. A significant

proportion of recent housing is self-built of permanent materials and of reasonable quality.

- Also included is a zone of 'in situ accretion', with a wide variety of housing types and quality but with much still in the process of extension or improvement. Urban services tend to be patchy in this zone, with typically only the main streets having a good surface. Government housing projects are often a feature of this zone (Figure 6.38).
- There is a zone of squatter settlements, which are the place of residence of most recent in-migrants. Services in this zone are at their most sparse, with open trenches serving as sewers and communal taps providing water. Most housing is of the **shanty** type, constructed of wood, flattened oil-cans, polythene and any other materials available at the time of construction. The situation is dynamic and there is evidence of housing at various stages of improvement.

Source: OCR AS Geography
by M. Raw (Philip Allan Updates, 2008), p.205

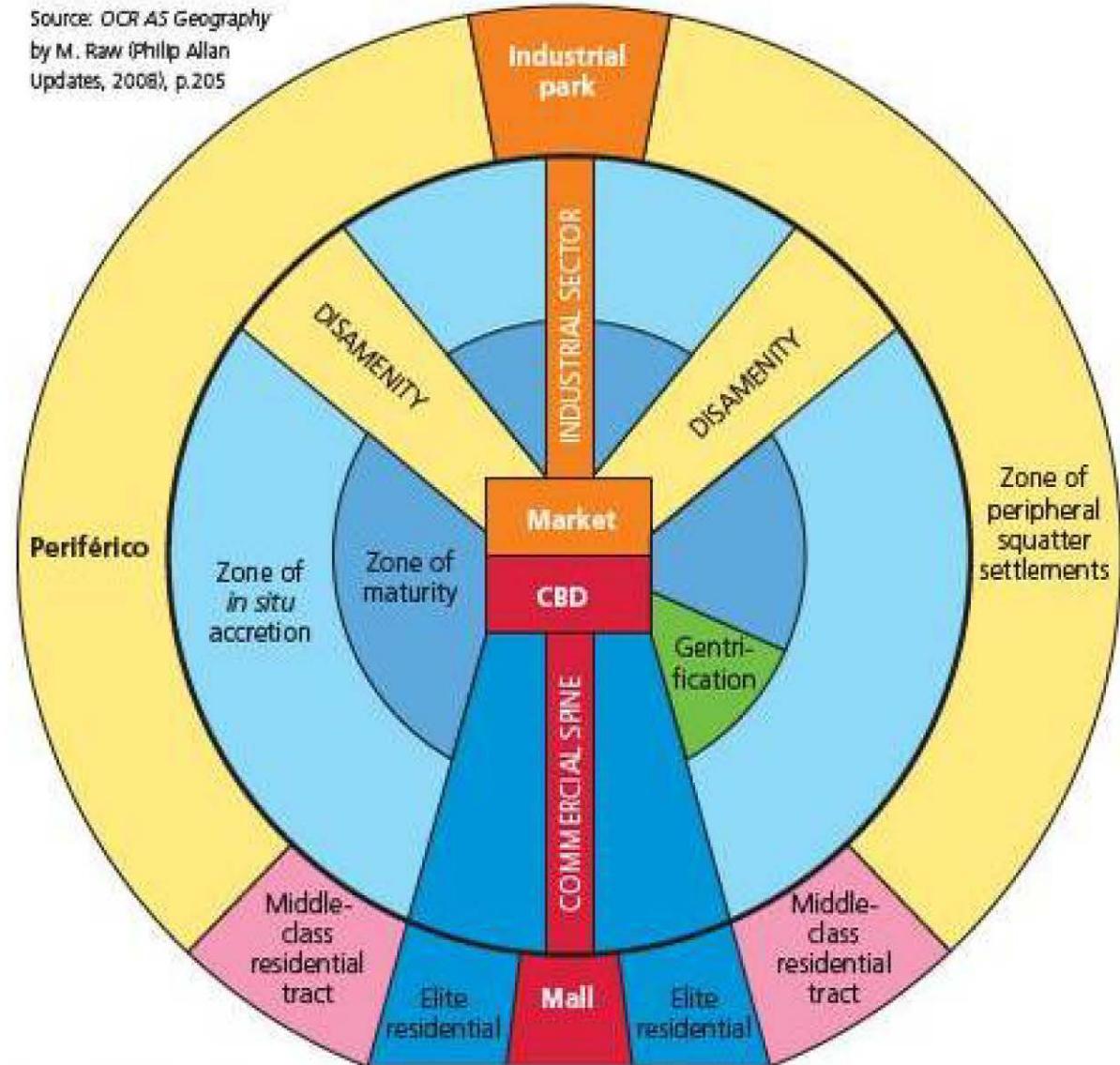


Figure 6.37 Latin American city model

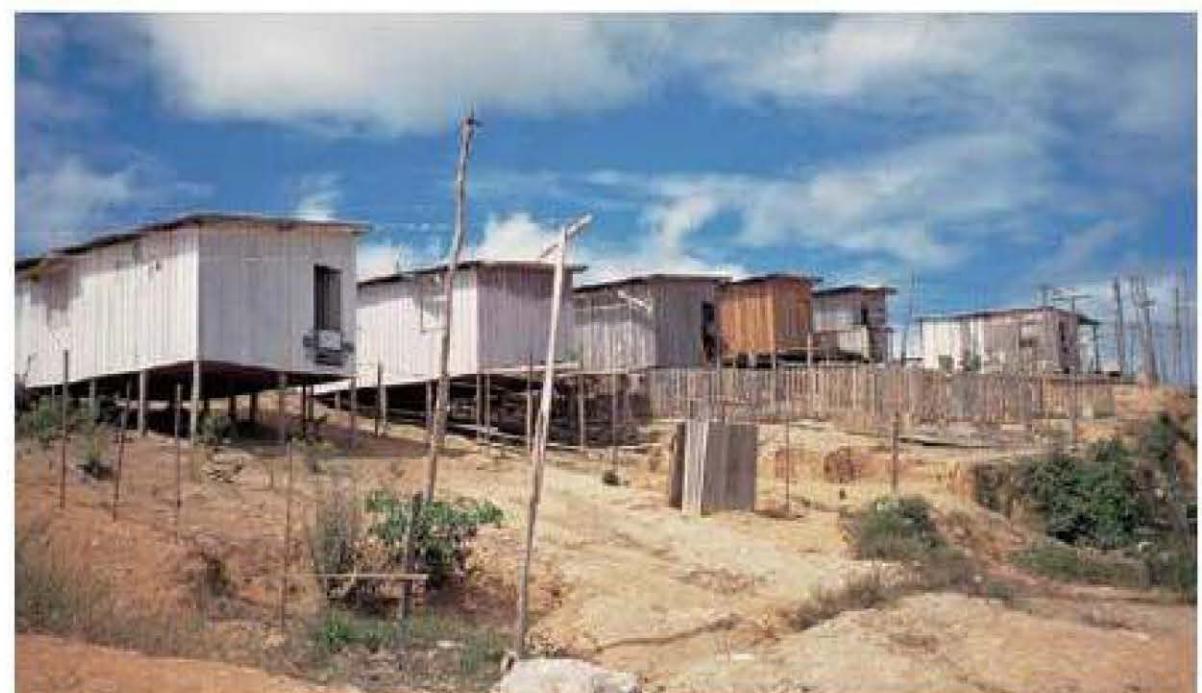


Figure 6.38 Low-cost government housing – Manaus, Brazil



Figure 6.39 High-rise apartment blocks in the inner area of São Paulo

Urban density gradients

Contrasting functional zones within urban areas characteristically vary in residential population density. Examination of population density gradients, termed 'gradient analysis', shows that for most cities densities fall with increasing distance from the centre (Figure 6.39).

Gradient analysis of cities in HICs over time (Figure 6.40a) shows the following trends:

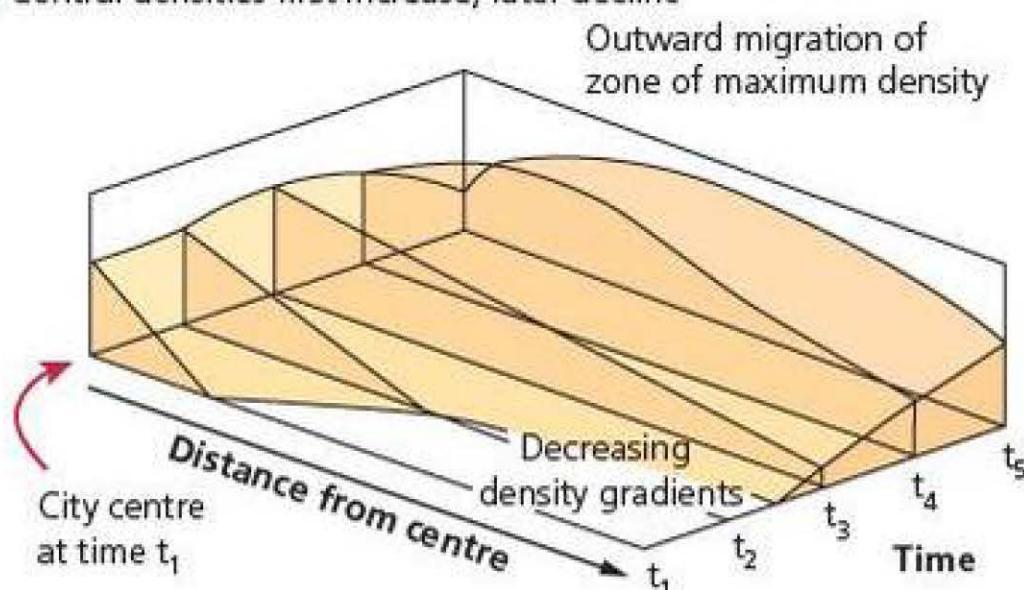
- the initial rise and later decline in density of the central area
- the outward spread of population and the consequent reduction in overall density gradient over time.

In contrast, analysis of density gradients in LICs and MICs shows:

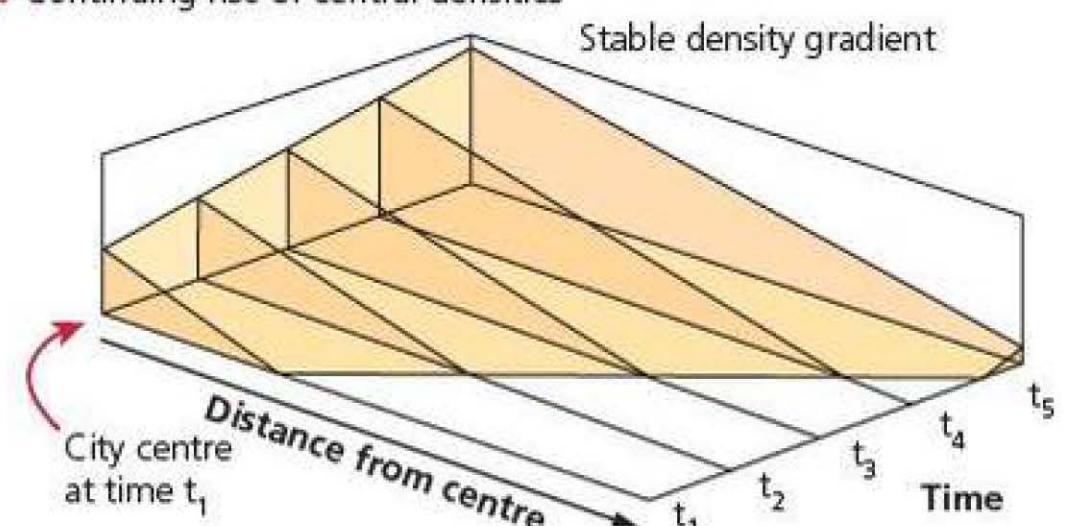
- a continuing increase in central area densities (Figure 6.40b)
- the consequent maintenance of fairly stable density gradients as the urban area expands.

In cities in LICs and MICs, both personal mobility and the sophistication of the transport infrastructure operate at a considerably lower level. Also, central areas tend to retain an important residential function. Both of these factors result in a more compact central area and the transport factor in particular has restricted urban sprawl to levels below that of cities in HICs. The presence of extensive areas of informal settlement in the outer areas also results in higher suburban densities. However, in the more advanced LICs and MICs, where car ownership is rising rapidly, significant sprawl is now occurring.

a Central densities first increase, later decline



b Continuing rise of central densities



Source: after B.J.L Berry et al., 1963.

Figure 6.40 Changes in urban density gradients through time

Section 6.3 Activities

- 1 With reference to Figure 6.32, briefly explain the differences between the three models illustrated.
- 2 Identify the main features of Mann's land-use model for a typical British city.
- 3 Briefly describe and explain the main elements of the model illustrated in Figure 6.36.
- 4 Comment on the main characteristics of the model of Latin American cities shown in Figure 6.37.
- 5 a Define the term *urban density gradient*.
b How and why do urban density gradients differ between cities in HICs and LICs/MICs?

□ Factors affecting the location of urban activities

A range of factors affects the location of urban activities such as retailing, manufacturing, office functions, education, health, leisure and open space. Most, if not all, of these factors can be placed under two general headings:

- **Market forces** – the demand and supply of land in various locations dictates its price.
- **Local or central government planning decisions** – planners can overrule market forces where they consider it necessary for the public good. Government may be able to decide, within certain constraints, where the locations of public housing, open spaces, schools, hospitals and public buildings should be.

Under extreme conditions, government can issue compulsory purchase orders. This is most likely to happen when privately owned land is in the way of a planned new transport route.

Manufacturing industry

The relatively compact nature of towns and cities during the Industrial Revolution years of the nineteenth century resulted in a concentration of manufacturing industry in the inner cities of the twentieth century as the era of the motor vehicle allowed cities to sprawl far beyond their previous limits. However, as the decades evolved, the disadvantages of inner-city location became more and more obvious. The first reaction to the constraints of inner-city sites was to select new suburban locations, but increasingly, from the 1960s in particular, manufacturing industry has been attracted to rural areas. The process of **deindustrialisation**, involving the filter-down of manufacturing industry from HICs to MICs, has resulted in many factory closures in more affluent countries. The term **post-industrial city** is now commonly used when referring to HICs.

The explanation for the inner-city decline of manufacturing industry lies largely in **constrained location theory**. This identifies the problems encountered by manufacturing firms in congested cities, particularly in the inner areas:

- The industrial buildings of the nineteenth and early twentieth centuries, mostly multi-storey, are generally unsuitable for modern manufacturing, which has a preference for single-storey layout.
- The intensive nature of land use usually results in manufacturing sites being hemmed in by other land users, thus preventing on-site expansion.
- The size of most sites is limited by historical choice and frequently deemed to be too small by modern standards, making change of use to housing, recreation or other uses likely. Old sites can rarely accommodate industrial estates, the preferred form of industrial location in most local-authority areas.
- Where larger sites are available, the lack of environmental regulations in earlier times has often resulted in high levels of contamination. In such situations, reclamation is very costly indeed.
- The high level of competition for land in urban areas has continuously pushed up prices to prohibitive levels for manufacturing industry in many towns and cities.

Other factors specific to inner cities that have contributed to manufacturing loss are:

- Urban-planning policies in the form of the huge slum-clearance schemes of the 1950s, 1960s and 1970s meant that factories located in slum-housing areas were frequently demolished too.

- Regional economic planning also had an impact in some areas, with incentives to industry to relocate to another part of a country.
- Before the era of decline, important inter-firm linkages had been built up in inner-city areas. As these links were steadily broken, the locational *raison d'être* of the remaining inner-city firms gradually evaporated.

Although manufacturing employment has declined in cities as a whole in recent decades, job loss has been much more severe in inner cities than in suburban areas. Thus there has been a marked relative shift of manufacturing employment within urban areas in favour of the suburbs, and in a few instances manufacturing employment in the suburbs has shown an absolute increase.

The movement of people from inner to suburban areas increased the relative strength of the latter in terms of labour supply. For some industries, population movement also meant a locational shift of their markets. Investment in new roads, particularly motorways, dual-carriageways and ring roads, has given many suburban areas a very high level of accessibility. Industrial estates in suburban areas are usually much larger than those in inner areas because of contrasts in building density and competition for land. Land prices and rents are in general considerably lower in suburban locations. Also, the quality of life is perceived to be significantly higher in suburban locations.

Retailing

The location and characteristics of retailing have changed significantly in most cities in recent decades. Changes within the CBD itself are discussed in the next section. Outside the CBD, large urban areas have witnessed the development of particular features:

- **Suburban CBDs** – As urban areas increase in population size and urban sprawl occurs, more people find themselves at a considerable distance from the central CBD. Suburban retail and business centres develop to satisfy this demand.
- **Retail parks** – These entities are characterised by retail units requiring very large floorspace and a large area for car parking. They are invariably located along key arterial and ring roads.
- **Urban superstores** – These single-owner retail units (very large supermarkets) are located at points of high accessibility and consumer demand.
- **Out-of-town shopping centres** – Large indoor shopping centres are located at the edge of cities or in the rural areas beyond. Table 6.5 summarises the advantages and disadvantages of out-of-town shopping centres.
- **Internet shopping and home delivery services** – Such services are rapidly increasing in popularity and threaten the future existence of certain types of shops.

Table 6.5 Advantages and disadvantages of out-of-town shopping centres

Advantages	Disadvantages
<ul style="list-style-type: none"> • Plenty of free parking • Lots of space so shops are not cramped • New developments so usually quite attractive • Easily accessible by car • Being large means the shops can sell large volumes of goods and often at slightly lower prices • Having a large shop means that individual shops can offer a greater range of goods than smaller shops • Being on the edge of town means the land price is lower so the cost of development is kept down • Developments on the edge of town reduce the environmental pressures and problems in city centres • Many new jobs may be created both in the short term (construction industry) and in the long term (retail industry and linked industries such as transport, warehousing, storage, catering, etc.) 	<ul style="list-style-type: none"> • They destroy large amounts of undeveloped greenfield sites • They destroy valuable habitats • They lead to pollution and environmental problems at the edge of town • An increase in impermeable surfaces (shops, car parks, roads, etc.) may lead to an increase in flooding and a decrease in water quality • They only help those with cars (or those lucky enough to live on the route of a courtesy bus) – people who do not benefit might include elderly people, those without a car, those who cannot drive • Successful out-of-town developments may take trade away from city centres and lead to a decline in sales in the CBD • Small businesses and family firms may not be able to compete with the vast multinational companies that dominate out-of-town developments – there may be a loss of the 'personal touch' • They cause congestion in out-of-town areas • Many of the jobs created are unskilled

Other services

The range of urban services that people use over a long time period can be extensive, often changing significantly during a person's lifetime. The location of some of these services may change more than others. For example:

- **Health** – There has been a tendency in many countries to invest in larger hospitals and health centres in order to achieve economies of scale, resulting in the closure of smaller local hospitals and clinics. Thus the average person has to travel further to reach their nearest hospital.
- **Education** – Although primary schools have tended to remain local in character, secondary education is generally being provided in larger schools than in the past, increasing the distance between such schools, resulting in longer 'journey to school' times. This has considerable implications for traffic congestion in cities.
- **Sport** – The redevelopment of sports stadia (football, cricket, baseball, and so on) often results in a move from an inner city to a suburban or edge-of-city location due to a shortage of space and congestion in inner-city locations.

Over the years, an increasing number of land uses that require large sites and are mainly used by urban residents have been located in the **rural–urban fringe**. This is the boundary zone where rural and urban land uses meet. It is an area of transition from agricultural and other rural land uses to urban use. It is characterised by a mix of land uses, all requiring a lot of space. Such uses include theme parks, race courses, golf courses, cemeteries, hospitals and colleges. It is logical for these land uses to locate where the space requirements can be met as close as possible to the built-up area.

A major issue with regard to service provision is the role of **key workers** such as nurses, teachers and police officers. Such workers are absolutely vital for the efficient running of an urban area. However, many key workers on modest salaries struggle with high costs of housing in many cities. Some cities have developed schemes to help key workers with the cost of housing.

□ The changing central business district

The CBD is the commercial core of an urban area, which exhibits the highest land values (Figures 6.41 and 6.42). It is the focus of public transport systems and, in theory at least, the most accessible area in a city. A high level of accessibility results in high land values and rents, which in turn encourage vertical development. Most large CBDs exhibit a core and a frame (Figure 6.43).

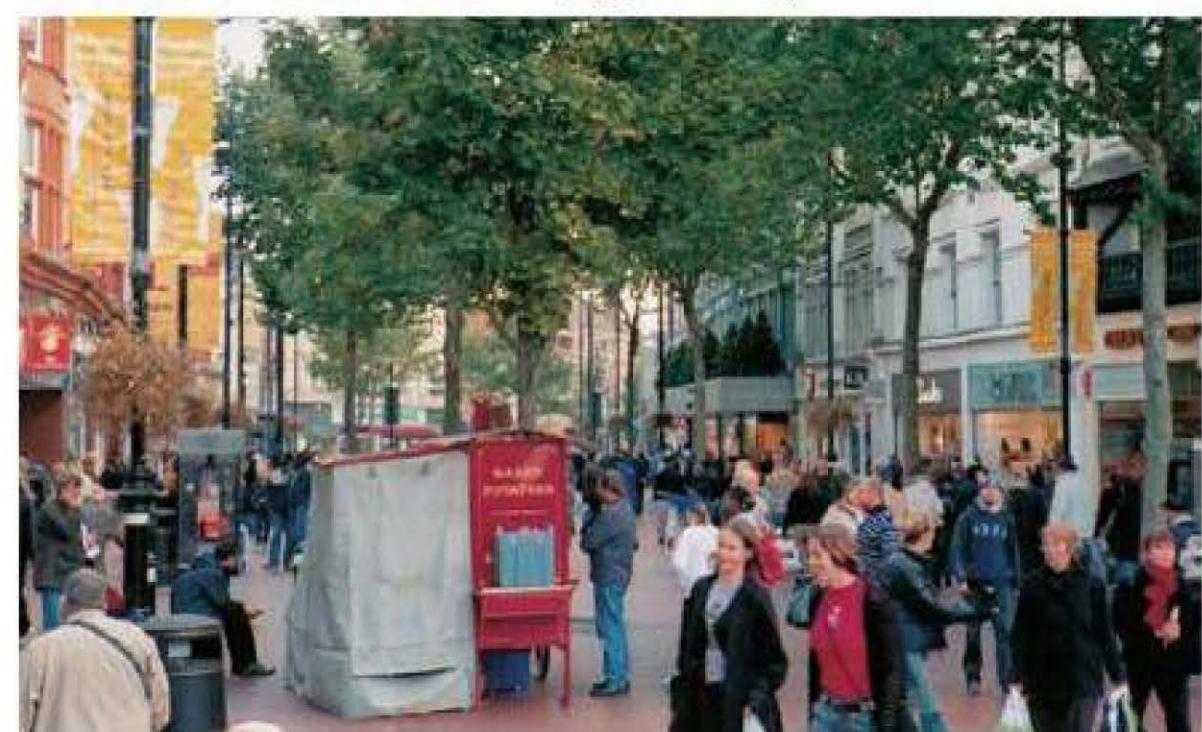


Figure 6.41 Pedestrianised precinct – CBD of Reading, UK



Figure 6.42 Large indoor shopping centre – the Eaton Centre, Toronto, Canada

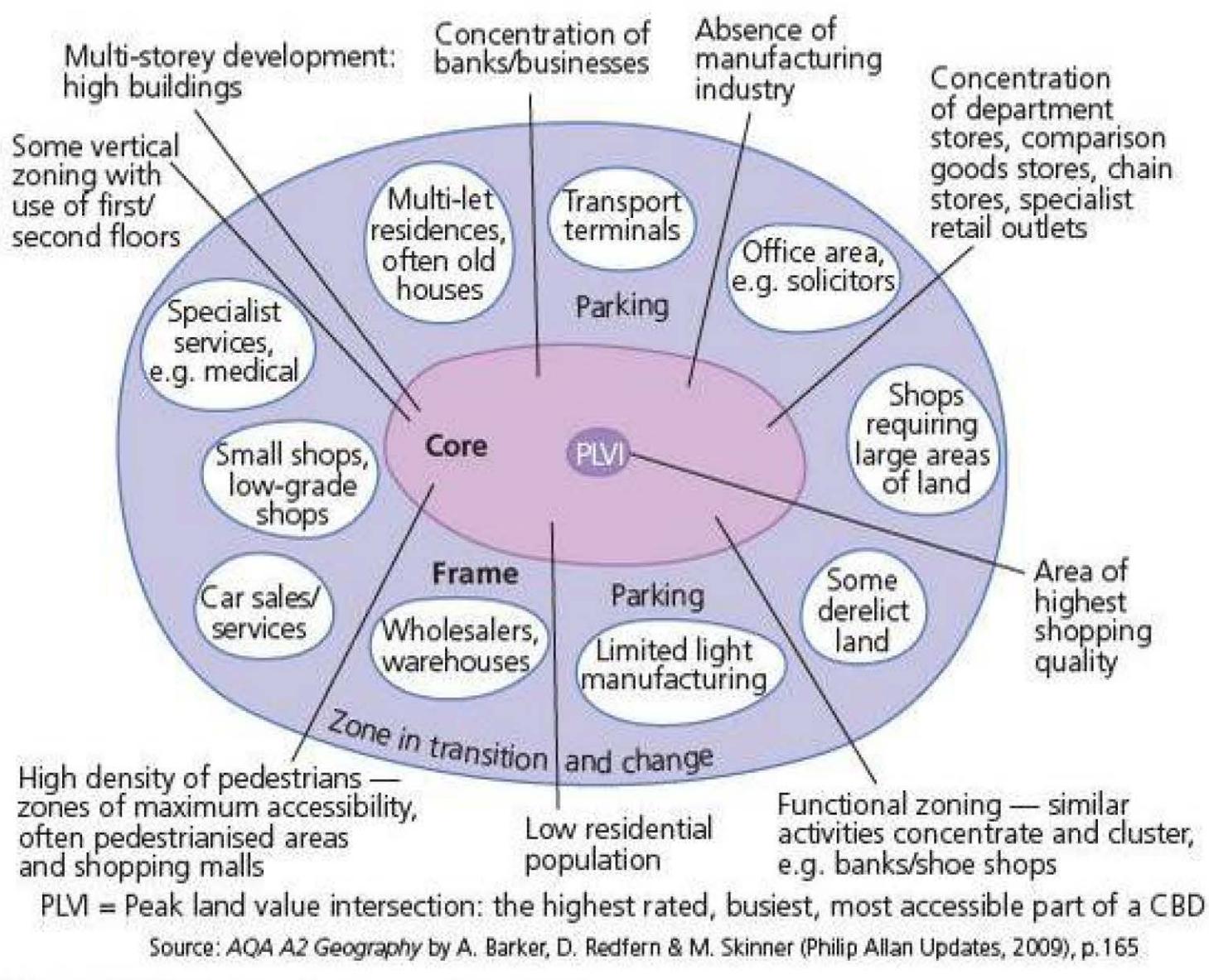


Figure 6.43 The key features of the CBD

Major retailing and office functions dominate the core, alongside theatres, cinemas, restaurants, bars, hotels and key public buildings. Vertical zoning is often apparent, with retailing occupying lower floors and offices above. Similar functions often locate together, for example department stores and theatres. The high land values of the CBD result in extremely low residential populations. This contrasts with the very high pedestrian flows recorded in CBDs – a combination of a large number of people attracted to the CBD to purchase goods and services and the very significant number of people who work there.

Traffic congestion is a universal problem in CBDs and thus it is not surprising that this is the urban zone with the greatest traffic restrictions. In London, a congestion charge zone covers much of the CBD. At the time of writing, motorists have to pay £11.50 a day to enter the zone.

CBDs change over time. Common changes in many HICs and an increasing number of MICs and LICs have been:

- pedestrianised zones
- indoor shopping centres
- environmental improvements
- greater public transport coordination
- ring roads around the CBD with multi-storey car parks.

Some parts of the CBD may expand into the adjoining inner city (a zone of assimilation), while other parts of the CBD may be in decline (a zone of discard). The CBD is a major factor in the economic health of any urban area. Its prosperity can be threatened by a number of factors (Figure 6.44). CBDs are often in competition with their nearest neighbours and are constantly having to upgrade their facilities to remain attractive to their catchment populations.



Source: AQA A2 Geography by A. Barker, D. Redfern & M. Skinner (Philip Allan Updates, 2009), p.166

Figure 6.44 Factors influencing CBD decline

Urban redevelopment can be a major factor in CBD change (Figure 6.45). The redevelopment of London Docklands changed London's CBD from a bi-nuclear entity (the West End and the City) to its current tri-nuclear form (West End, City, Canary Wharf). In the West End retailing is the dominant function, whereas in the City offices dominate, for example the latter area contains the Bank of England, the Stock Exchange and Lloyd's of London (insurance). Canary Wharf was planned to have a good mixture of both offices and retailing. It has been an important development in maintaining London's position as a major global city (Figure 6.46).



Figure 6.45 Times Square – part of the CBD of New York



Figure 6.46 London's CBD

□ Residential segregation

Residential segregation is very apparent in cities in HICs, MICs and LICs. The main causes of residential segregation are income and race/ethnicity. The processes that result in residential segregation include:

- the operation of the housing market
- planning
- culture
- the influence of family and friends.

The way the housing market operates in an urban area or a country as a whole significantly determines the number of housing units built, the type of housing, the availability of mortgages and where housing construction takes place. The last is of course also heavily influenced by planning. In terms of the number of housing units built, the ideal situation is where the supply of housing matches the demand. In such a situation, in theory, housing should be reasonably affordable with little overcrowding. However, in so many urban areas housing is in short supply, resulting in high prices and overcrowding at the lower end of the housing market in particular. Residential segregation tends to become more intense when housing is in short supply, with people on lower incomes gradually pushed out of desirable areas and into what is sometimes termed the 'urban periphery'.

Access to finance, mainly in terms of the availability of mortgages, is an important factor in the efficient operation of the housing market. Where access to housing finance is generally good, the level of residential segregation is likely to be less intense compared to a situation where housing finance is difficult to access.

The tenure of housing is also a major issue, with the proportion of housing units that are classed as 'social housing' a major factor here. Where the proportion of social housing is significant, the way it is distributed in an urban area has a major impact on residential segregation. The situation where planners aim for a good social mix in an urban area is very different from the grouping of social housing in distinct areas, which may result in 'urban ghettos'.

Culture can be a strong determinant of where people want to live in an urban area. Income may allow people to live in certain areas, but if they do not feel 'comfortable' in an area they will tend to avoid it. This factor is strongly linked to the influence of family and friends.

London provides a prime example of residential segregation. On all socio-economic measures, the contrast between the relative deprivation of inner London and the affluence of outer London is striking. London is made up of the City of London and the 32 boroughs, of which 13 are in inner London and 19 in outer London (Figure 6.47).

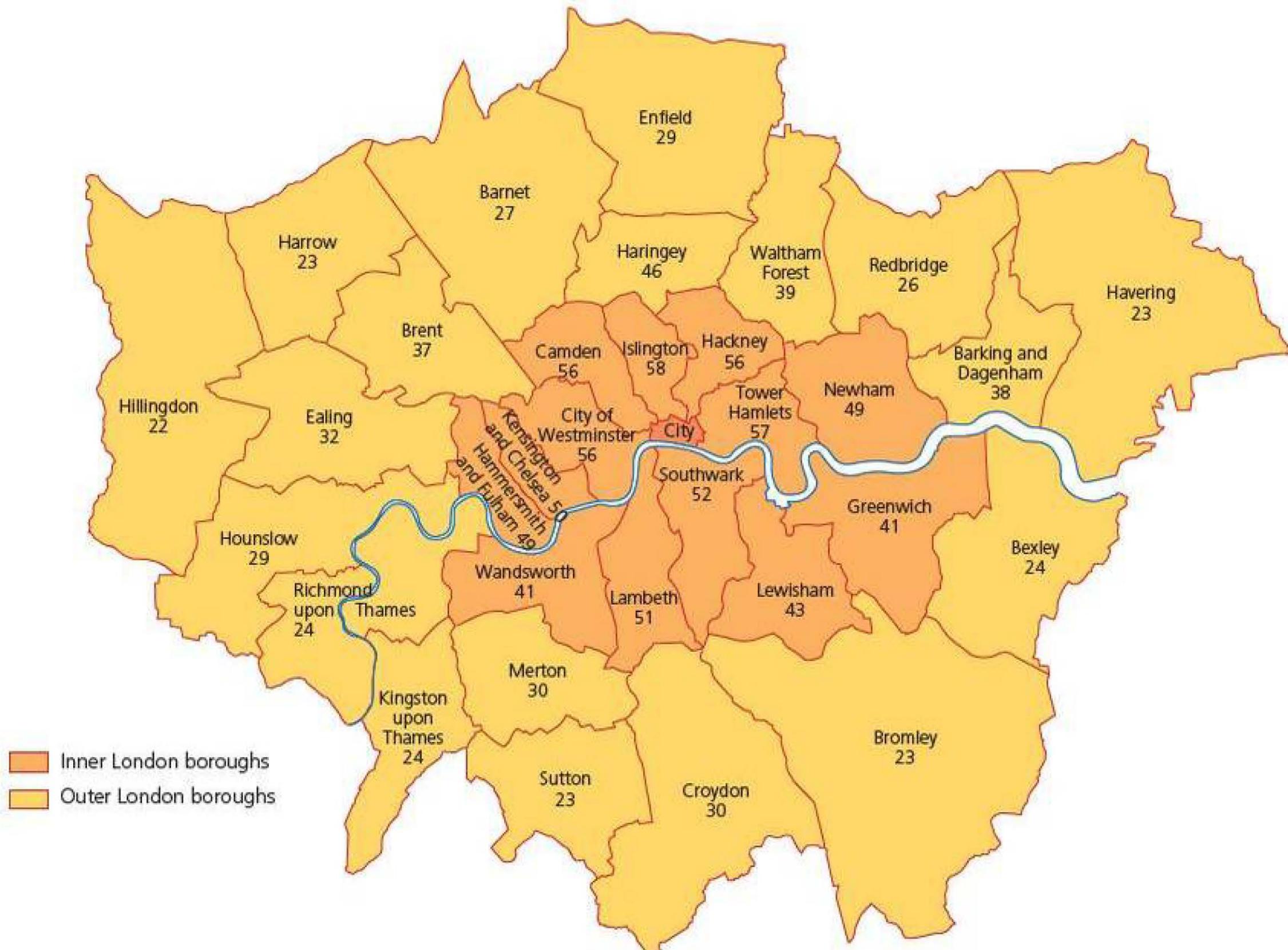


Figure 6.47 London – percentage of households without a car or van

The most intense deprivation in inner London is concentrated towards the east (the East End). However, significant contrasts exist within virtually all boroughs, so that the better-off wards (subdivisions of boroughs) in some inner London boroughs often record a higher quality of life than the least affluent wards in outer London boroughs. The pattern found within boroughs is often quite intricate, forming the **residential mosaic** that social geographers frequently talk about. The process of gentrification invariably increases residential segregation.

The urban-mosaic model highlights three main features:

- **Income** – People on high incomes have a very wide choice of where to live. Because housing is a very important factor in people's lives, most people tend to live in the best houses and locations they can afford. People on low incomes have very limited choice for houses and locations.
- **Ethnicity** – People from particular ethnic groups tend to cluster together in particular areas, which are sometimes called 'ethnic villages' (see Section 5.2, 'Ethnic villages').
- **Age** – Most people move a number of times during their lives. The location and type of property they live

in is often affected by their age and family size. For example, young people often rent small flats; families with children require more space and tend to buy the largest properties they can afford; older people, once their children have left home, often 'trade down' to a smaller property. As certain types of property tend to be in different areas, people often move from one area to another as their 'life cycle' progresses.

The following three indicators show the contrast between inner and outer London according to three key single indicators from the 2001 census:

- **Households with no car or van 2001** – The availability of a car or van is a significant factor in personal mobility, which can have a significant impact on the quality of life. Figure 6.47 shows the contrast between inner and outer London. Eight London boroughs have at least 50 per cent of households with no car or van. The lowest figure in inner London is the 41 per cent recorded by Wandsworth and Greenwich. In contrast, eight outer London boroughs have figures below 25 per cent, with the lowest being Hillingdon (22 per cent).

- **Households in owner-occupied accommodation 2001**
 - Most people will buy their own house or flat if they can afford to do so. The considerable increase in owner-occupation in the UK in recent decades is testament to this argument. The range of owner-occupation in inner London is from a low of 29 per cent in Tower Hamlets to 52 per cent in Wandsworth. The range in outer London is from 49 per cent in Greenwich to 79 per cent in Havering and Bexley.
- **Rate of unemployment 2001** – The range in inner London was from 5.7 per cent in Hackney to 3.4 per cent in Wandsworth. In outer London, the range was from 4.4 per cent in Greenwich to 2 per cent in Havering and Sutton.

Urban renaissance

Urban renaissance is a common theme running through strategic planning in most HICs and in an increasing number of MICs and LICs. It is about:

- creating a high quality of life in urban areas
- more sustainable living – putting people close to services and facilities, reducing traffic and minimising the need to travel by car
- maintaining and creating attractive living environments
- social well-being, housing and jobs for all sectors of the community that need them
- having a good transport system, promoting good urban design and meeting community needs.

Section 6.3 Activities

- 1 Discuss the factors that have changed the location of manufacturing industry in developed world cities.
- 2 Explain the reasons for the changing location of urban retailing.
- 3 Describe and explain the changes that have occurred in CBDs.
- 4 **a** What is residential segregation?
b Discuss the factors highlighted by the urban-mosaic model.
c Describe and explain the differences shown in Figure 6.47.

6.4 The management of urban settlements

Squatter settlements in São Paulo



About 32 per cent of the world's urban population live in **slums**. The problem of poor housing quality is overwhelmingly concentrated in MICs and LICs. São Paulo (Figure 6.48) has the largest slum population in South America. Here, urban poverty is concentrated in two types of housing:

- **favelas** (squatter settlements/shanty towns)
- **corticos** (decaying formal housing, mainly in the inner city).

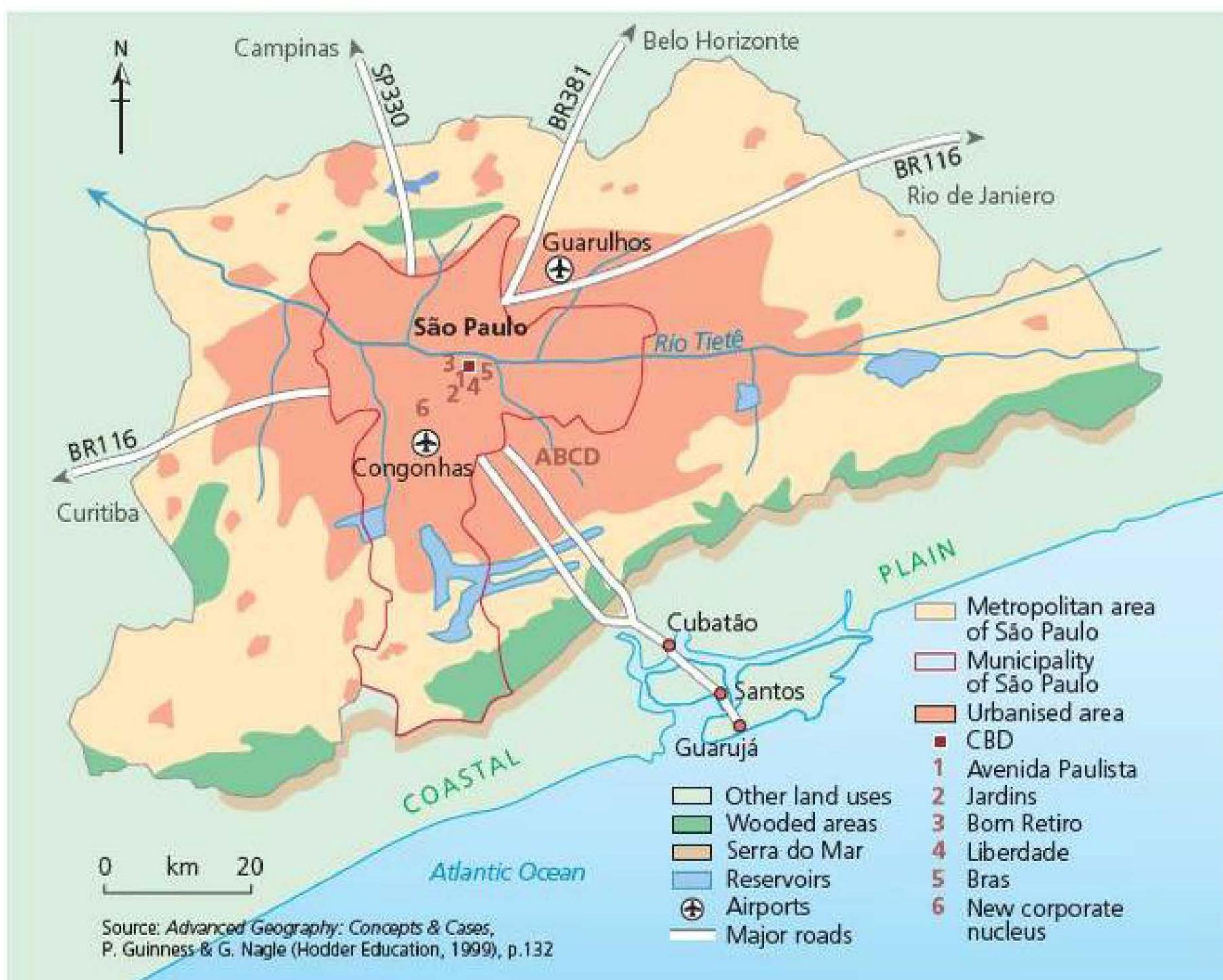


Figure 6.48 Greater São Paulo

The population of the metropolitan area is over 20 million. In international terms, São Paulo is a compact urban area. At approximately 8110 per km², the population density is more than twice that of Paris and almost three times that of Los Angeles.

The extreme inequality in São Paulo was highlighted in a report in August 2002 by the city administration. Figure 6.49 shows the relationship between inequality, poverty and slum formation.

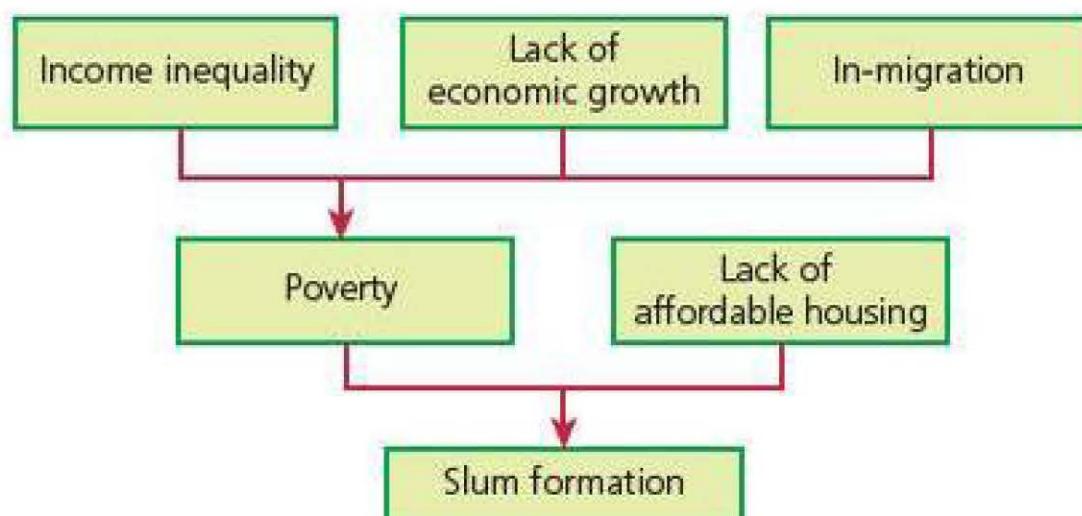


Figure 6.49 Inequality, poverty and slum formation

The slum housing problem

It is estimated that substandard housing occupies 70 per cent of São Paulo's area – approximately 1500 km². Two million people – 20 per cent of the population – live in favelas, while over half a million people live in converted older homes and even factories in São Paulo's inner core, known as *corticos* (see above). Often, whole families share a single room, which may lack electricity and plumbing. Rat and cockroach infestations are common. More than 60 per cent of the population growth in the 1980s is considered to have been absorbed by the favelas.

By the beginning of the twentieth century, São Paulo was socially divided between the affluent who lived in the higher central districts and the poor who were concentrated on the floodplains and along the railways. The rapid acceleration of urbanisation between 1930 and 1980 built on the existing pattern of segregation. However, by the late 1970s this pattern was beginning to change, with growing numbers of poor migrants spreading into virtually all areas of the city. The 'lost decade' of the 1980s witnessed the rapid development of shanty towns (favelas) at the urban periphery, and inner-city slum tenements (*corticos*). The *cortico* was the dominant form of slum housing until the early 1980s, when the favela broke out of its traditional urban periphery confines and spread throughout the city to become the new dominant type of slum. This happened as the newly arrived urban poor sought out every empty or unprotected urban space. It is estimated that favela residents now outnumber those living in *corticos* by 3:1. The rapid spread of the favelas in the 1980s mixed up the pattern of centre/periphery segregation in São Paulo. However, public authorities constantly removed favelas in the areas valued by the

property market. The action of private property owners regaining possession of their land has pushed favelas to the poorest, most peripheral and hazardous areas (floodplains, hill slopes, and so on). Few favelas remain in well-served regions, although the largest two, Heliópolis and Paraisópolis, are located in these areas.

Heliópolis is São Paulo's largest slum (see the Case Study on page 183). In Paraisópolis, almost 43 000 people are crammed into an area of 150 hectares near the CBD and elite residential areas.

The location of favelas

The location of squatter settlements is strongly linked to the city's physical and environmental situation. A large number are found in municipal and privately-owned areas:

- near gullies
- on floodplains
- on river banks
- along railways
- beside main roads
- adjacent to industrial areas.

These are areas that have often been avoided in the past by the formal building sector because of building difficulties and hazards. The nature of favela construction makes them vulnerable to fire, landslide and other hazards.

The transformation of favelas

Initially, favelas are densely packed informal settlements made of wood, cardboard, corrugated iron and other makeshift materials. Later, they are replaced by concrete block constructions. Often, only one wall at a time will be built as a family saves up enough money to buy materials for the next wall (Figure 6.50). Then, concrete tiles will replace corrugated iron or other makeshift materials on the roof. The large-scale improvement in favelas is due to residents' expectations of remaining where they are as a result of changes in public policy in the last 30 years, from one of slum removal to one of slum upgrading.



Figure 6.50 A favela in central São Paulo

Section 6.4 Activities

- 1 What is the difference between *favelas* and *corticos*?
- 2 Explain the links illustrated by Figure 6.49.

- 3 Describe and explain the types of urban locations where *favelas* develop.

Case Study: Heliópolis – the development and improvement of a *favela*

Heliópolis, in the district of Sacomã, is São Paulo's largest slum and one of the largest areas of slum housing in Latin America (Figure 6.51). Established from the late 1960s, *heliópolis* means 'city of the Sun' in Greek. People first came to this location to play football, but later they began to build shacks and the *favela* was established. Over 100 000 people live here in a mix of absolute and semi-poverty. Access to facilities is very limited. For example, there is one library with about 300 books for the whole community.

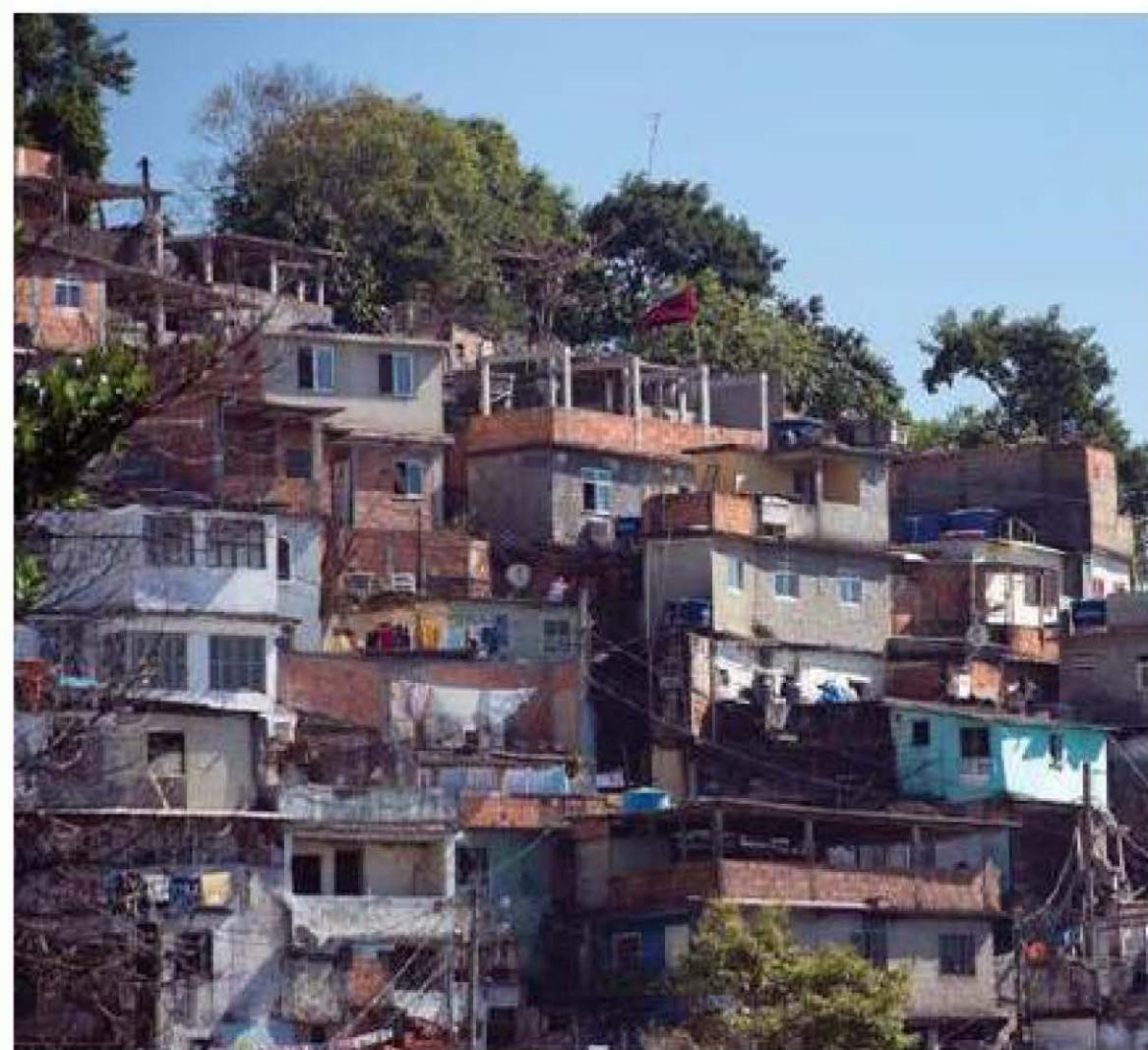


Figure 6.51 Heliópolis

This *favela*, to the south-east of the city centre, developed rapidly in the 1970s as a result of a high level of land invasion, and for about 20 years it was considered to be an illegal settlement. It continued to grow in the following decades, with many people arriving from the north-east of Brazil from the 1990s. Structural unemployment in the latter region encouraged many to seek a better life in the large urban areas of south-east Brazil (São Paulo, Rio de Janeiro, Belo Horizonte). Housing estates were built by the City agency CDHU COHAB and dirt roads were replaced by asphalt. During this period of rapid growth, drug gangs developed considerable power in the area and murder and violence were at a high level.

According to the residents' association UNAS, 75 per cent of Heliópolis has urban infrastructure. The Basic Sanitary Company of São Paulo (Sabesp) states that there is now 100 per cent water connection and 77 per cent sewerage

connection. Almost 100 per cent of Heliópolis has street lighting. These rates of connection have increased markedly since the turn of the century. Heliópolis now has WiFi connection, making it possible for residents to use the internet. Since 1997, Community Radio Heliópolis has broadcast in the neighbourhood.

Most of the streets are now paved, but there is only one bus stop in Heliópolis, opposite the hospital, due to the narrowness of the roads.

The fragile nature of construction in Heliópolis was brought home in July 2013, following a fire that killed three people and left almost 900 people homeless.

NGOs are active in Heliópolis and have condemned the conditions in which people live. For example, ActionAid continually presses City Hall for housing improvement. Following the July 2013 fire, ActionAid reiterated that new housing should be:

- safely constructed and close to the area the community used to live in
- subsidised by the government to ensure the poorest people are not exploited.

UNAS, ActionAid's local partner in Heliópolis, said 'It was a foretold tragedy. That area had been visited by City Hall and the need for the rehousing of people was established, but nothing was done. What they did not do in two years, they now want to do in a week.' ActionAid runs a child sponsorship programme in the *favela*.

The most basic problem in any *favela* or shanty settlement is the quality of housing and the general environment in which people live. In 2003, one of Brazil's top architects, Ruy Ohtake, was brought in to radically improve the environment in Heliópolis. This was part of a wider plan to 'rethink Brazil's *favelas*'.

- The initial project was a coordinated street colour scheme. This was to replace an irregular street façade of red brick structures.
- Then the residents' association, UNAS, worked with Ohtake on projects for a library, a recreational centre and a housing project.
- As a result of this participation, the Heliópolis Housing Project (*Conjunto Habitacional Heliópolis*) was created as part of an Urban Plan initiated by SEHAB (the Department for Housing) in 2010. The wider city plan was to provide housing for 70 000 people in 18 000 households, as well as improving urban living and leisure spaces, and educational and health facilities. Across São Paulo, SEHAB is engaged in slum upgrading programmes, land tenure regularisation of municipal public areas, sanitary improvement and regularisation of informal land subdivisions.

- The first stage in the housing project in Heliópolis, completed in late 2011, was the construction of 11 five-storey circular towers (*redondinhos*), each containing 18 apartments. The first occupants came from the most marginal sites in the favela.
- The second stage of construction in Heliópolis will develop 29 circular towers containing 542 new apartments. The unit cost is estimated to be between \$60 000 and \$70 000, which is comparable to the cost of traditional social housing.

Ruy Ohtake has praised the levels of participation of local residents in developing projects in Heliópolis, saying 'They regained their civic sense not by any concept handed down to them by an architect, but by action, from results they achieved while making their own environment more beautiful.'

The size of Heliópolis is such that many people consider it a town in its own right. There have been various schemes

to encourage entrepreneurship, and there are now small commercial ventures located throughout the area. A 2010 report in business magazine *The Economist* praised the innovation and entrepreneurial spirit found within Heliópolis, adding that the city government should act to capitalise on these qualities.

Gradually, Heliópolis has developed through a process of urbanisation to reach the status of a neighbourhood. It is a slum that has matured into a significantly improved area, although much still remains to be done. It has been transformed from a shack settlement divided by muddy paths to a neighbourhood of mainly brick buildings and paved roads, sanitation, water and electricity services. The security situation has improved markedly over the last 15 years, bringing greater stability to the neighbourhood and encouraging more people to invest in their local area.

Case Study: The provision of transport infrastructure for a city – Cairo

Cairo, the capital city of Egypt, is situated on the banks of the River Nile (Figure 6.52), about 200 kilometres south of the Mediterranean Sea. It extends along the banks of the Nile for about 30 kilometres. It is the largest city in Africa and one of the most densely populated metropolitan areas in the world. The population has risen rapidly over the last 50 years (Figure 6.53). The average population density is about 30 000 per km².

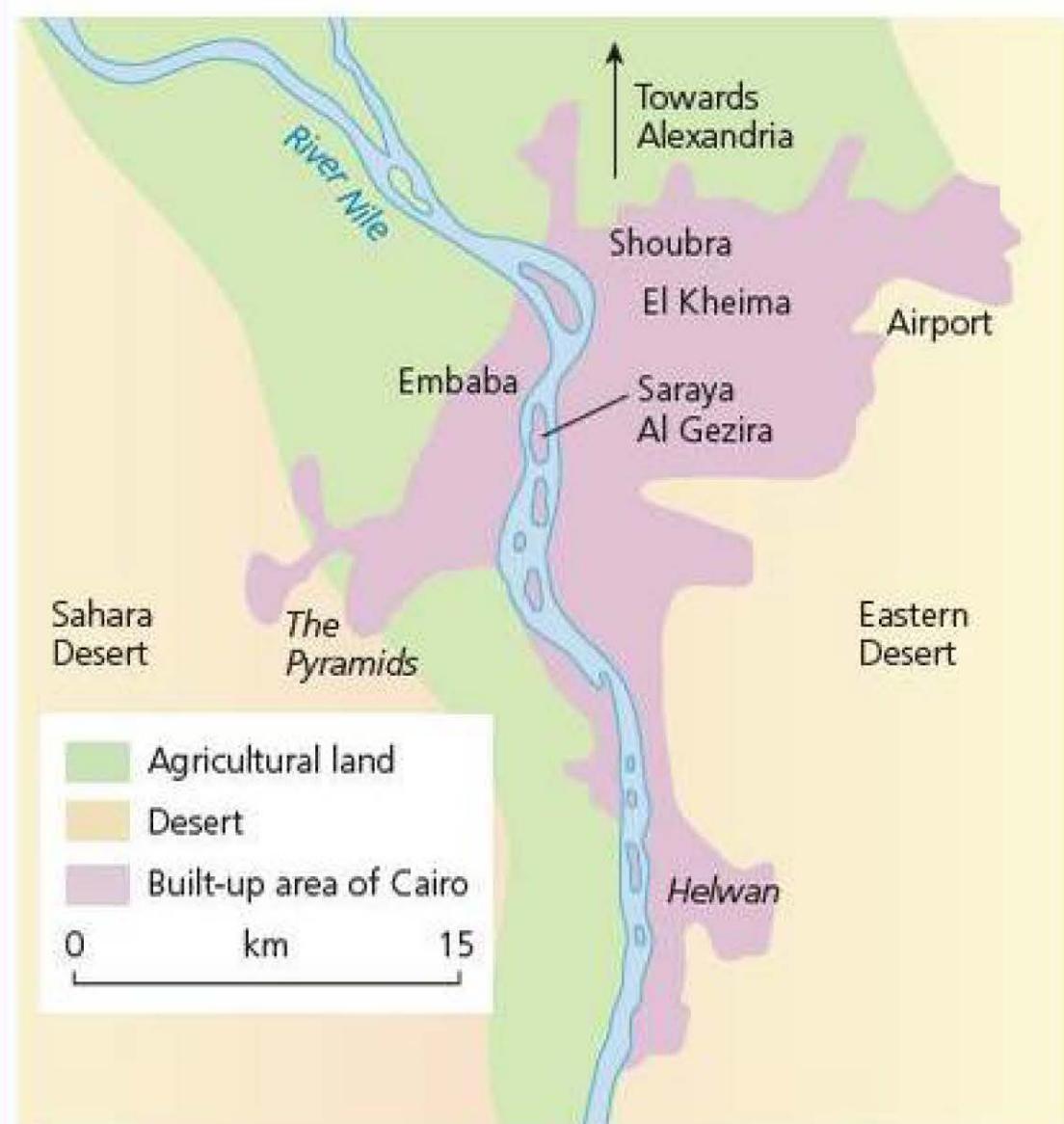


Figure 6.52 Cairo

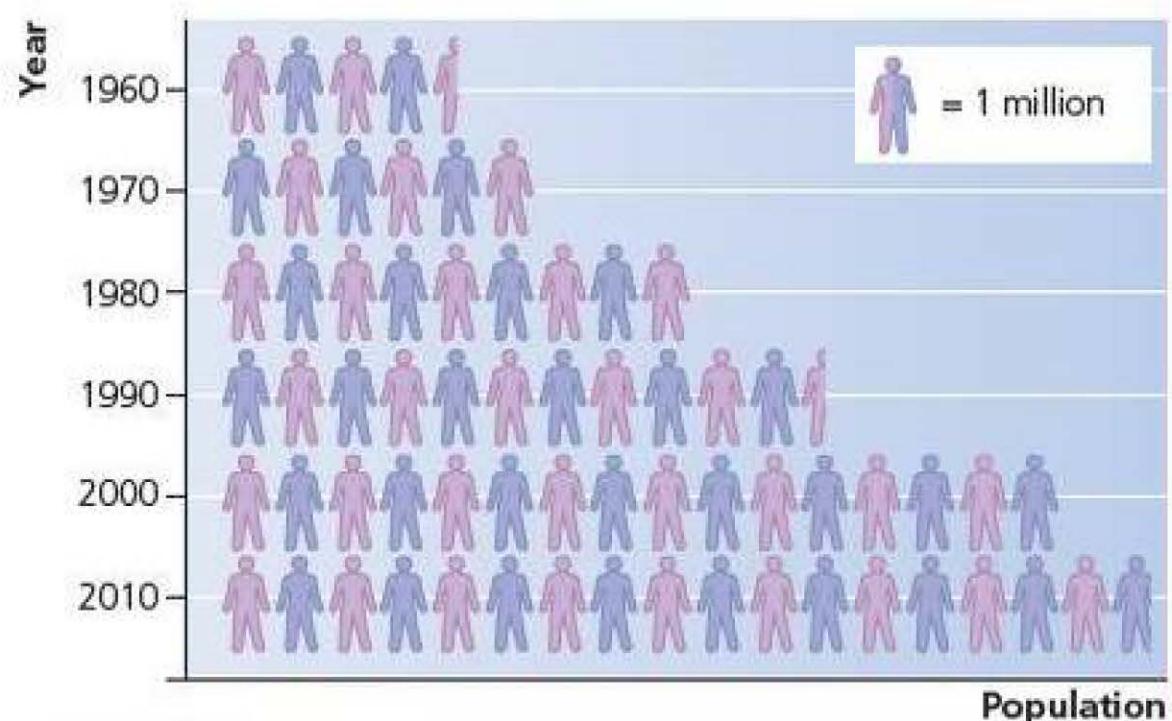


Figure 6.53 Cairo's population, 1960–2010

Much of the infrastructure of Cairo is designed for a population of about 2 million people and thus is under considerable strain from the tremendous demands being put on it by a much larger population. Housing is overcrowded and in short supply. Other elements of the urban infrastructure, including transport, education, health, water and sewerage, are under extreme pressure from the rapidly rising population. City planners have tried to improve the situation, but finding sufficient funds for new infrastructure has been a continuing challenge.

Planners generally recognise two types of infrastructure: **hard infrastructure** and **soft infrastructure**. The former refers to transportation, communication, sewerage, water and electric systems, while the term 'soft infrastructure' covers housing, education, health, leisure and other associated facilities. Both are vital to a city's economy and the quality of life of its residents.

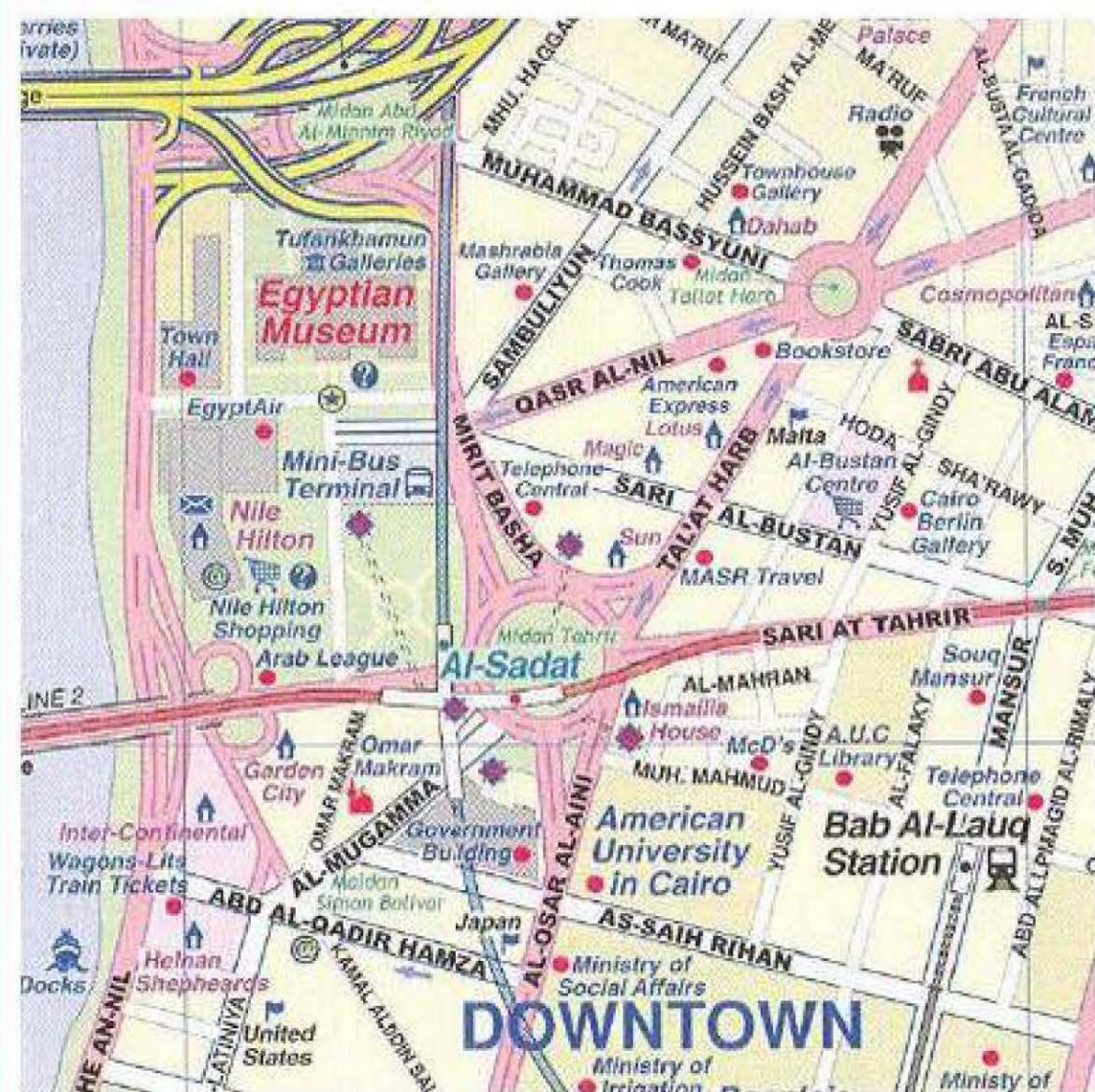
Transportation in Cairo

Transportation (Figure 6.54) is the most fundamental form of infrastructure within an urban area, as virtually every other human activity depends on it. In large, rapidly growing urban areas such as Cairo, city and national governments have struggled to keep up with the rising demands

for the movement of both people and goods. When demand exceeds supply, congestion and environmental pollution increase, and the city becomes a less efficient economic entity. Figure 6.55 is a map of part of the central area of Cairo, which shows important elements of the transportation infrastructure.



Figure 6.54 Traffic in central Cairo



Source: www.fantasticegypt.com/images/Map6_Cairo.jpg

Figure 6.55 Map of part of central Cairo

Transportation in Cairo comprises:

- an extensive road network within the city itself and linking the city to other urban areas in Egypt; road transport is facilitated by personal vehicles, public buses, privately owned buses, taxis and Cairo minibuses
- a railway system
- the Cairo metro
- a tram system (now largely shut down)
- Nile ferries
- a major international airport that links in to much of the general transport system in the country.

Road transport has required a sustained high level of investment as the city has expanded in land area and population. Seven bridges now span the River Nile. Downtown expressways and lesser flyovers bypass areas of major congestion and new roads knit outlying suburbs into the urban fabric. Of major importance has been a 100 kilometre ring-road expressway that was completed in the 1990s. It surrounds the outskirts of the city, with exits that reach the outer districts of Cairo. Most people see the constant development of the road system as essential, but critics say that new roads simply generate more traffic. In spite of significant development, the road system is overcrowded and traffic jams are routine.



The Cairo Traffic Congestion Study 2014 produced by the World Bank highlighted the problems of chronic congestion in many parts of Cairo. Total daily commute time has been estimated to be an average of about 90 minutes. Congestion is a by-product of:

- population growth
- high and rising levels of car ownership
- lack of sufficient off-street parking
- insufficient capacity of the public transport system.

Twenty per cent of the total population are private car owners, and private cars make up over 80 per cent of traffic congestion. There are rising concerns over greenhouse gas emissions, deteriorating air quality and noise. About half of all motorised vehicles in Egypt operate in Cairo. Poor traffic management and the inadequate supply of mass transport add to the problems of congestion. No Bus Rapid Transit (BRT) system currently exists. The high ridership on buses and the metro is evidence of the strong demand for public transport in Cairo.

The 2014 study also highlighted the poor environment in the city for both pedestrians and cyclists. There is a very high accident rate especially for pedestrians, with more than 1000 deaths each year on Cairo's roads.

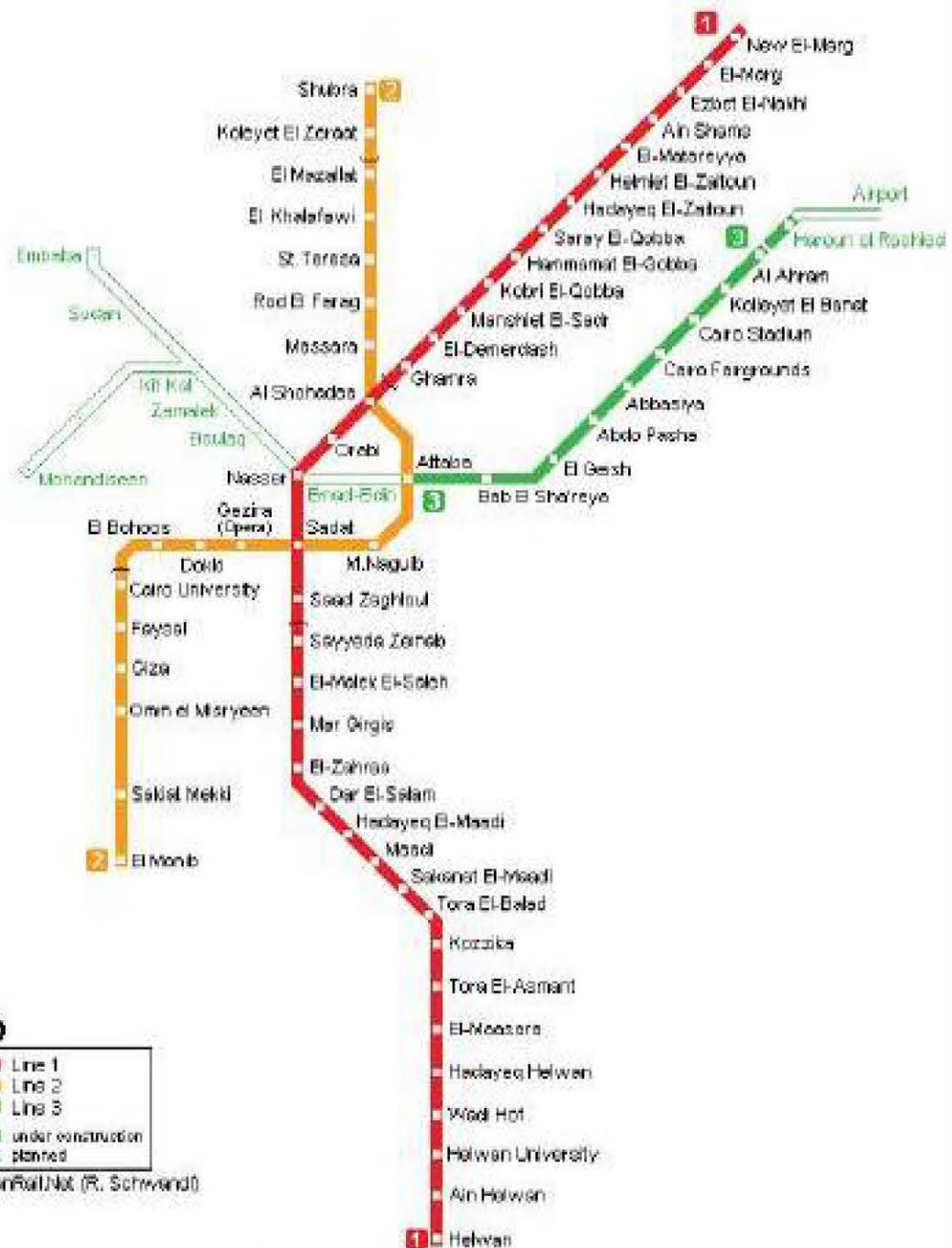
The standard full-size bus service is run by the Cairo Transport Authority (CTA). There are about 450 formal bus routes in the city. There are also minibuses run by companies sub-contracted by the government. In addition, taxis and micro-buses privately run by individuals are an important component of road transport.

The tram system in Cairo has been running since 1896 but has now largely been shut down. The focus of the rail system is the centrally located Ramses Station, which links with major commuter stations and beyond to the national urban network. Trains are run by Egyptian National Railways. Nile ferries also play a role in the daily movement of people. Popular among tourists are the *feluccas*, comparable to Venice's gondolas, which operate along the Nile to and from the pyramids at Giza.

Cairo's metro (Figure 6.56) carries an average of about 2.2 million passenger rides a day. The metro underground system was developed in an attempt to cut the number of vehicles on Cairo's roads. Line 1 was opened in 1987 and Line 2 in 1996. Line 3 was opened in 2012, although the extension to connect with Cairo airport will not be completed until 2019. The fourth line is about to start construction in 2016, and two more lines are planned. By 2014, there were 61 stations with a total track length of 78 kilometres. The ticket price in 2013 was EGP1.0 (\$0.14), regardless of distance.

Cairo's airport is the second busiest in Africa after Johannesburg International Airport. It has had to expand

to keep pace with demand. The airport is located about 15 kilometres from the heart of the city's business area. It is a large site covering an area of about 37 km². There are three main terminals and a Seasonal Flights Terminal opened in 2011. The purpose of the latter is to ease the strain on the existing terminals during pilgrim seasons. The airport handled 14.7 million passengers in 2012. The expansion of the airport has been vital to maintain Cairo's global city status.



Source: www.urbanrail.net/af/cairo/cairo-map.gif

Figure 6.56 Map of the Cairo metro

Section 6.4 Activities

- 1 With reference to an atlas and Figure 6.52, describe the location of Cairo.
- 2 Describe and explain the growth of Cairo's population since 1960.
- 3 Distinguish between *hard infrastructure* and *soft infrastructure*.
- 4 a Describe the main elements of Cairo's transport infrastructure.
b Why is transportation so important to the successful development of a city?