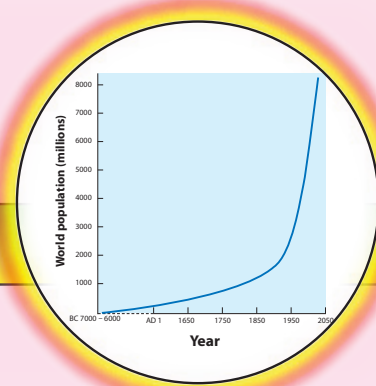# Unit 3

WORLD POPULATION

Unit Outcomes

At the end of this unit, you will be able to:

- 🌍 Understand the size and trend of world population growth;
- 🌍 State the components of population change and compare the characteristics of population structure between developed and developing countries;
- 🌍 Show factors affecting spatial distribution of population and compute population densities;
- 🌍 Recognize and appreciate the process and development of urbanization;
- 🌍 Explain the general characteristics of the population of Ethiopia.

Main Contents

3.1 **SIZE AND TREND OF WORLD POPULATION GROWTH**

3.2 **COMPONENTS OF POPULATION CHANGE**

3.3 **POPULATION STRUCTURE**

3.4 **SPATIAL DISTRIBUTION OF WORLD POPULATION**

3.5 **POPULATION OF ETHIOPIA**

⇨ *Unit Summary*

⇨ *Review Exercise*

🌍 INTRODUCTION

In the previous unit, you have learnt about the physical environment such as structure, geological events and components of the earth's environment. This unit deals with population of the world and Ethiopia. You will learn about their size and trend of population growth, dynamics of population structure and spatial distribution of population, urbanization, and population policy of Ethiopia.

3.1   SIZE AND TREND OF WORLD POPULATION GROWTH

At the end of this section, you will be able to:

🌍 Compare population size of the world on continental bases;

🌍 Identify three leading populous countries in each continent;

🌍 Describe population growth trends of the world to show doubling time;

🌍 Compare the population trend between Africa and Europe.

Key Terms 🔑
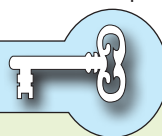
- size of population
- doubling time of population
- growth rate of populations
- population explosion
- trend of population growth

What factors have contributed to the growth of world population since 5000 BC, about 7000 years ago?

For most of our history, human populations have been small, compared to those of other species. Studies of hunting and gathering societies (before 5000 BC) suggest that total world population was probably only a few million people. A major change occurred about 10,000 years ago, when humans began to domesticate animals. This advance led to increased food supplies, which allowed the human population to grow, reaching perhaps 50 million people by 5000 B.C. (See Table 3.1).

However, for thousands of years, the human population increased very slowly, and it took more than 1,500 years to reach the 500 million mark. Growth was not steady, but was marked by great fluctuations dictated by climate, food supply, disease and war.

Table 3.1: **World population growth and doubling time**

Date	Population (millions)	Doubling time (years)
5000 B.C	50	-
800 B.C	100	4,200
200 B.C	200	600
1200 A.D	400	1,400
1700 A.D	800	500
1900 A.D	1,600	200
1965 A.D	3,200	65
1990 A.D	5,300	38
2020 A.D (estimate)	8,230	55

Source: *Cunningham and Saigo, 1996*
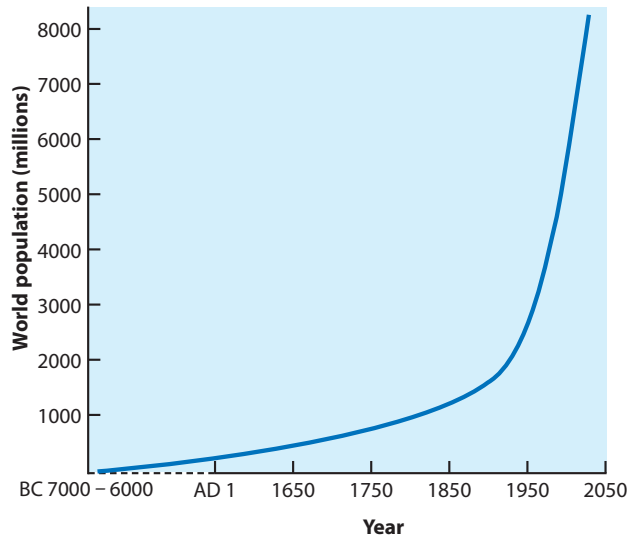
Figure 3.1: **World population growth**

Activity 3.1

In your geography workgroup of three to five students, discuss the following questions.

With the help of Table 3.1 and Figure 3.1, briefly describe changes in world population size and growth trends over time. Consider the following important points during your discussion:

a   The 17th century and onwards has been a period of advancement of science and technology.

b   Since about 1950, we have had moderate medicine costs, high-yield varieties of seeds, improvements in transport facilities, great declines in death rates, increased life expectancy, and so forth.

Both Table 3.1 and Figure 3.1 show that, by 1900, world population had reached 1.60 billion, and by 1960 it stood at 3.04 billion.

The United Nations estimated that world population reached 6 billion with an annual growth rate of 1.5% by 2000 A.D. The number added to world population per year would increase from 80 million to 90 million if the growth rate of 1.5% continues, and world population would double in a period of 40-50 years from about 2000 A.D. Such rapid and dramatic growth rate of the world population is known as *population explosion*.

Focus

How do you calculate population doubling time?

Population doubling time is the time taken, in years, for a population of a given region or country to double at a given rate of population growth. It can be calculated using the following formula:

$$\text{Doubling Time} = \frac{70}{\text{Growth Rate}}$$

Population growth rate determines the time required for a population to double. The lower the growth rate, the longer is the doubling time, and the higher the growth rate, the shorter is the doubling time (Table 3.2).

Table 3.2: **World population size growth rate and doubling time**

Region	Population (millions) 2010	Annual growth rate in % 1975 - 2009	Doubling time (year) 1975 - 2010
World	6,909	1.53	46
Asia	4167	1.62	43
Africa	1033	2.59	27
Europe	733	0.23	304
L.America	589	1.73	41
N.America	352	1.07	65
Oceania	36	1.49	47

Source: *World Population Prospects, UN, New York, 2009.*

3.1   *SIZE AND TREND OF WORLD POPULATION GROWTH*

Activity 3.2

Answer the following questions, based on Table 3.2 and Figure 3.1.

1. Identify the two continents whose population growth rates differ the most.
2. Why do you think that Africa experiences the shortest doubling time in the world?
3. Briefly discuss the consequences of any rapid population growth you have observed in your locality. What measures do you suggest to correct the situation?
4. Why is the beginning of the 20th century taken as a turning point in the history of world population? (Refer to Table 3.1 and Figure 3.1.)

As it is shown in Table 3.2, Europe and Africa have shown very contrasting doubling times. The doubling times of the former and the later are 304 years and 27 years, respectively. This implied that even among the developing regions, Africa has the fastest population growth rate in the world.
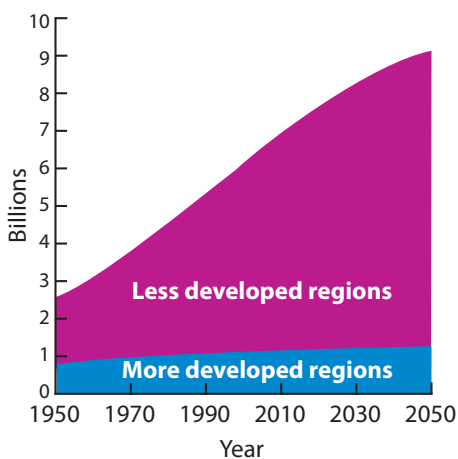
Figure 3.2: **Population growth in more and less developed countries, 1950 – 2050**

Table 3.3: **The world's populous countries in each continent**

2010		2050	
Country	**Population (million)**	**Country**	**Population (million)**
China	1338	China	1747
India	1189	India	1437
USA	310	USA	420
Indonesia	236	Indonesia	297
Brazil	193	Brazil	295
Pakistan	185	Pakistan	282
Bangladesh	164	Bangladesh	260
Nigeria	158	Nigeria	231
Russia	142	Russia	187
Japan	128	Japan	150
Ethiopia	85	Ethiopia	173
Egypt	80.5	Egypt	138
UK	62	UK	77
Germany	82	Germany	72
Colombia	46	Colombia	61
Mexico	111	Mexico	129
Canada	34	Canada	48
Australia	22.4	Australia	34

Source: *2010 Population Reference Bureau*

Generally, nations are considered to be less developed if they have a lower standard of living than the developed nations. A large share of the population in these less developing countries live at subsistence levels, and medical resources

are limited. However, population growth in less developed nations occurs at a much faster rate than in the developed nations.

As of 2000, 1.2 billion people lived in the developed nations of the world, and 4.9 billion people lived in the less developed countries. By region, over half the world's population was in East and South Asia: China, with 1.3 billion inhabitants, India with 1.1 billion, and Indonesia with 0.23 billion were the dominant contributors.
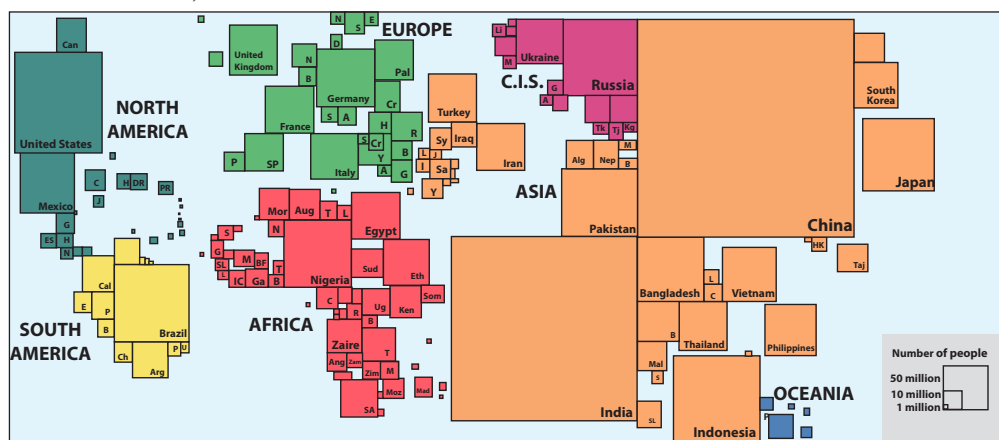
Figure 3.3: **Population, by country**

Europe and the countries of the former USSR contained 14% of the world population, North and South America made up 14%, Africa had 13%, Asia 58% and the Pacific islands had about 1% (see Figure 3.3 and Table 3.4).

Table 3.4: **Percentage distribution of population, over years, by continents**

Continents	1750	1800	1850	1900	1950	2000	2050
Africa	13.4	10.9	8.8	8.1	8.9	13.1	20.3
Asia	63.5	64.9	64.1	57.4	56.2	60.7	59.0
Europe	20.6	20.8	21.9	24.7	21.4	12.0	7.1
L. America	2.0	2.5	3.0	4.5	6.5	8.6	5.3
N. America	0.3	0.7	2.1	5.0	8.6	7.9	7.9
Oceania	0.3	0.2	0.2	0.4	0.5	0.5	0.5

Source: *Microsoft (R) Encarta ® 2006. (C) 1993-2005 Microsoft corporation.*

The nations currently defined as developed represented 20% of the world population in 2000. This percent is expected to fall to 15% by 2050. Nine out of every ten persons who are now being added to the world's population are living in the less developed countries.

More specifically, when we compare the population trends of Africa and Europe (see Table 3.4), Africa's population has increased since 1900. It had added

about 5.0% of the world population between 1950 and 2000. This is expected to increase to 20.3% by 2050. Whereas, the population of Europe has shown a trend of decline by 12.7% in the same period.

Activity 3.3

Work out the following questions in your group.

1   Look at Figure 3.3. Describe the differences in population growth and projected growth, between 1950 and 2050, in the developed and developing countries.

2   Based on Figure 3.3 and Table 3.3, identify the three most populous countries of each continent.

3   Draw a map of the world, identifying these countries on it.

3.2   COMPONENTS OF POPULATION CHANGE

At the end of this section, you will be able to:

🌍 Describe components of population change;

🌍 Compute natural increase rate of the population.

Key Terms
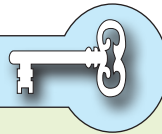
- fertility
- mortality
- emigration
- infant mortality rate
- cohort
- migration
- immigration
- population change
- total fertility rate

What are the components of population change? How do the components affect population structure and population size?

A change in the overall size of a population is the result of the collective effects of changes in **fertility**, **mortality** and **migration**. The three factors are collectively known as population-change *dynamics or determinants or components.* Fertility and mortality are biological factors, while migration is purely non-biological. The combined effect of the three factors controls the changes in population size and composition. Their influence is shown in Figure 3.4.
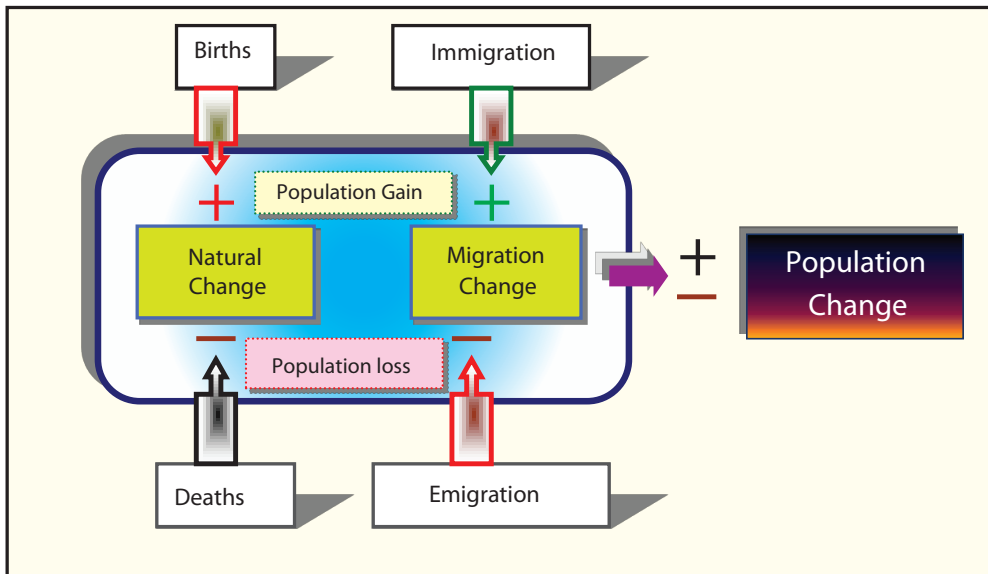
Figure 3.4: **Components of population change**

What do the plus and minus signs imply in the above figure?

As you can see from Figure 3.4, the population size of a particular area is the result of collective effects of birth, death and migration (here, "migration" is the net balance of immigration and emigration). Immigration and birth are positive factors, which tend to increase population size, while emigration and death are negative factors that reduce population size.

Fertility

What is fertility? What factors affect the fertility of a society? How can the fertility of a society be measured?

The study of human fertility occupies a central position in the study of population because it is responsible for biological replacement and maintenance of the population of the human race. The growth of world population depends largely on human fertility. This is so because any society replenishes itself through the process of human fertility. Thus, in population dynamics, fertility is a force of expansion of population by counteracting the force of attrition caused by mortality.

Fertility is the actual occurrence of ***live births*** in a given population; it is the beginning of life. Specifically, fertility refers to the actual *reproductive performance* of a population.

Measures of fertility. Fertility can be determined using different methods, but it is measured most commonly in terms of:

➲ *Crude Birth Rate (CBR),*

➲ *General Fertility Rate (GFR) and*

➲ *Total Fertility Rate (TFR).*

a *Crude Birth Rate (CBR):* is the most common and simplest index of fertility. It is simply the number of live births observed in one year among one thousand people in a given region. It can be expressed as a number of live births per thousand people.

$$CBR = \frac{B}{P} \times k$$ where B is the total number of live births during a year, P is mid-year total population and k is a constant, conventionally 1000.

Example

If the number of live births in a population of 70,686,000 was 270,300, the crude birth rate is:

$$CBR = \frac{270,300}{70,686,000} \times 1,000 = 3.8 \; births \; per \; 1,000 \; per \; year.$$

This measure is simple to compute, but it is crude because its denominator includes all persons, regardless of their contribution to fertility (birth). For example all unmarried persons, including children, are included. This is the weakness of the CBR as a measure of fertility.

b *General Fertility Rate (GFR):* The easiest method of refining the weakness of CBR is by expressing live births, not in terms of total population, but as a percentage of the number of adults or, even better, of the number of women of reproductive age (typically defined as between the ages of 15 and 49). GFR measures the number of live births in a year per thousand women of reproductive age. It is calculated:

$$GFR = \frac{B}{P_1} \times k$$ where B is the total number of live births during a year, P_1 is mid-year population of women between 15 and 49 years age and k is a constant, conventionally 1000.

Fertility rates differ greatly among continents, regions and countries. Generally, fertility rate is much higher in developing countries than in the developed regions. Let us consider the following example.

Example

The estimated mid-year population of a given country in 2000 was 50,000,000, of which women in their reproductive ages constituted one-fifth. In the course of the year, there were 500,000 live births. Calculate the general fertility rate of this population.

Given:

Number of live births = 500,000

Number of women in their reproductive age was one-fifth of total population = $(1/5) \times 50,000,000 = 10,000,000$

Then, GFR = $(500,000/10,000,000) \times 1000 = 50$ per 1000. This shows that 50 children were born for every 1000 women in their reproductive years.

Activity 3.4

Calculate the following:

1   The number of live births for place "A" was 8400, and its mid year population was 240,000, find CBR.

2   The number of deaths for place "B" was 170,300, and its mid year population was 10,296,000. Calculate CDR.

3   The estimated mid-year population of a given country in 2000 was 100,000,000, of which women in their reproductive ages constituted 25%. In the course of the year, there were 600,000 live births. Find the general fertility rate of the population.

What problem of GFR have you noticed from the above example? Explain to the class.

GFR's drawback is that it does not account for differences in age groups. Each age group is not equally fertile. That is, the child-bearing rate is appreciably higher in the age group of 20-29 than in the 15-19 and 30-49 age groups.

C   *Total Fertility Rate (TFR):*

What makes TFR different from the other measures of fertility? How do you calculate it?

TFR is the average number of children that would be born alive to a woman during her lifetime if she were to pass through all her child-bearing years. This happens if the group under question passed through its reproductive span of life with these birth rates in each year of age. It is generally known as an effective summary rate for describing the frequency of child bearing in a year. More importantly, TFR is useful when comparison is made, for it is standardized for age and is a single summary measure. It is helpful for comparing the fertility performance of different populations or social groups.

TFR is the sum of the age-specific birth rates (5-year age groups between 15 and 49) for female residents of a specific geographic area (example: country, kelil, zone, kefle-ketema, woreda kebele, etc.) during a specified time period (usually a calendar year) multiplied by 5. This rate estimates the number of children a hypothetical cohort (person of same age group) of 1000 females in the specified population would bear if they all went through their childbearing years experiencing the same age-specific birth rates for a specified time period. More importantly, TFR is useful when comparison is made, for it is standardized for age and is a single summary measure. It is helpful for comparing the fertility performance of different populations or social groups.

Formula:

(∑ASBR) × 5, where ∑ is summation of, ASBR is each five-year age-specidfic birth rate defined as

$$\frac{B_x}{p_x} \times 1,000$$

where B_x is the number of live births to mothers of age x and P_x is the number of resident women age x. The values or age group represented by B_x 15 - 19, 20 - 24, 25 - 29, 30 - 34, 35 - 39, 40 - 44 and 45+. The values or age groups represented by P_x are 15 - 19, 20 - 24, 25 - 29, 30 - 34, 35 - 39, 40 - 44 and 45 - 49 years. The sum of these ASBRs is multiplied by 5 because each ASBR represents a five-year cohort of women.

Example:

The Total Fertility Rate for a given hypothetical *kelil* for year 2007:

Age Group	2007 Births	2007 Female Population	ASBR (Live births per 1000 per ages)
15 - 19	11,000	179,000	61.5
20 - 24	20,000	192,000	104.2
25 - 29	22,000	222,000	99.1
30 - 34	20,000	213,000	93.9
35 - 39	10,000	212,000	47.2
40 -44	2000	210000	9.5
45 - 49	500	200,000	2.5
			Total or $\sum$ of ASBR = 417.9

TFR = 417.9 ×5 = 2089.5 live births per 1000 female kelil residents in 2007 who live through their reproductive years.

Activity 3.5

Calculate the TFR based on the data given below.

The Total Fertility Rate for a given hypothetical kelil for year 2009:

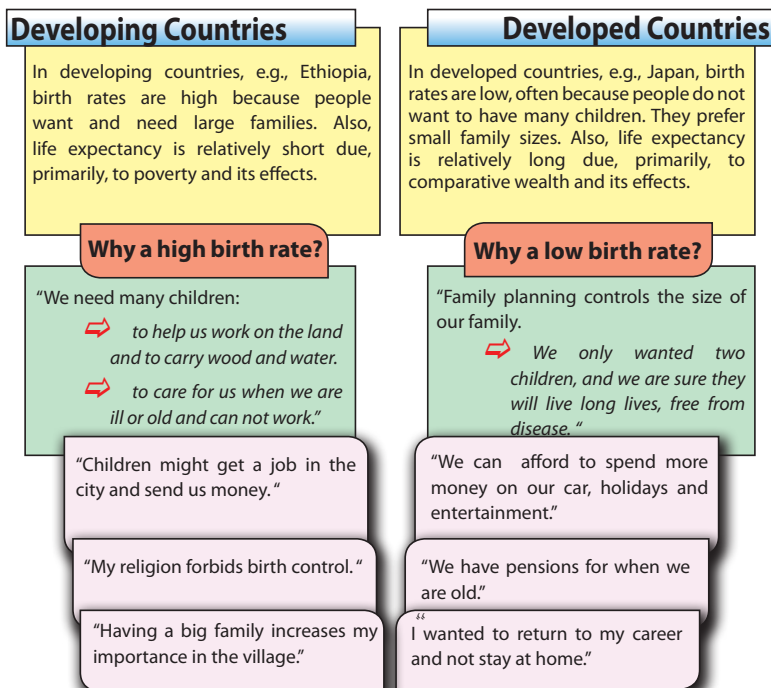| Age Group	2009 Births	2009 Female population
15 - 19	15,000	195,000
20 - 24	25,000	213,000
25 - 29	30,000	232,000
30 - 34	24,000	221,000
35 - 39	12,000	215,000
40 - 44	3000	210,000
45 - 49	800	200,000

Focus
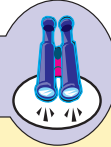
Remember that, although **CBR**, **GFR** and **TFR** are the most common measures of fertility in a community, they are not the only measures. Although the CBR is simple to compute, it is said to be crude because it considers persons of all ages indiscriminately. The GFR refines the CBR, but it has a weakness, in that it regards all females aged 15-49, regardless of differences in their potential birth performances. Note that a woman can bear a child only after the onset of menstruation and can continue to bear children only until she reaches the age of menopause. Statistically, 15 is the age when menstruation begins, and 45-49 is the age span during which menopause occurs. Therefore, on average, women are less likely to bear children before the age of 15 or after the age of 50.

The number of children born to women in developing countries is much larger than to women in the developed regions (see Figure 3.5 and Table 3.6).

Figure 3.5 shows differences regarding birth rate in developing and developed countries.

Developing Countries

In developing countries, e.g., Ethiopia, birth rates are high because people want and need large families. Also, life expectancy is relatively short due, primarily, to poverty and its effects.

Why a high birth rate?

"We need many children:
⇨ to help us work on the land and to carry wood and water.
⇨ to care for us when we are ill or old and can not work."

"Children might get a job in the city and send us money. "

"My religion forbids birth control. "

"Having a big family increases my importance in the village."

Developed Countries

In developed countries, e.g., Japan, birth rates are low, often because people do not want to have many children. They prefer small family sizes. Also, life expectancy is relatively long due, primarily, to comparative wealth and its effects.

Why a low birth rate?

"Family planning controls the size of our family.
⇨ We only wanted two children, and we are sure they will live long lives, free from disease. "

"We can afford to spend more money on our car, holidays and entertainment."

"We have pensions for when we are old."

"I wanted to return to my career and not stay at home."

Figure 3.5: **Differences regarding birth rates (fertility), in developing and developed countries**

Activity 3.6

Form a group of not more than five and discuss facts outlined in Figure 3.5 and present your answers to questions 1 - 3 to the class and undertake the fourth activity.

1   What factors affect fertility in developed countries and in developing countries?
2   Give four reasons for each statement.
   i   Many families in developing countries are large, with five or more children.
   ii   Many families in developed countries are small, often with not more than two or three children.
3   How can birth rates be reduced in developing countries?
4   Design a poster showing the need for family planning for a small village or a neighbourhood in Ethiopia (your locality). Assume that the community members can read and understand it.

Factors of Fertility Distribution

Various factors affect fertility distribution in the world including those presented in Table 3.5.

Table 3.5: **Factors of fertility and their effects**

Factors	Effects
1 **Age at marriage:** the age at which a person marries influences the number of children one can have.	**Early marriage:** more children are born to girls who marry early, because they are exposed to sex for more of their reproductive ages (15-49). They are also exposed to related health problems.
2 **Status of women:** important components of status include access to (or lack of) education, employment, family decision making, etc.	i **Education:** Education usually offers women access to information about how to limit family size, increase their marriage ages, use contraception, and so forth. ii **Employment:** Employment usually motivates women to limit family size, partly because they have less time for performing child-care tasks. Also, employment generally increases access to information about how to limit family size.

Factors	Effects
3 **Socio-cultural factors:** religion, ethnicity and family structure.	**Religion**: the teachings of some religions oppose the use of contraceptive methods. This encourages large family size.
	Ethnicity: some communities are more biased toward males over females.
	Family structure: Some families need their children to contribute socioeconomically – for example, by working on family farms and by providing their parents with the status of having many children.
4 **Sex preference** (the desire to have children of one sex over the other).	When a family wants children of a particular sex (usually male), but produces children of the other sex, they are likely to keep having more children until they achieve their goals.

Activity 3.7

Part I

Form a group of three to five and discuss fertility conditions in your area. Based on the factors listed in Table 3.5, assess the fertility situation in your specific community. Identify which factor most strongly influences the fertility situation of the community. List the factors, according to their decreasing importance. Cite specific households that are good examples for each factor. Add more effects for each factor.

1   Do you think information on family planning is needed for a woman to be able to make an informed choices that affect her fertility situation? Why?
2   Are there barriers to accessing information about family planning in your locality? If yes, what are they, and how can they be reduced?

Part II

In your geography workgroup, perform these activities:

1   Compare and contrast the population demographics of developed and developing countries. Cite some countries from each group to support your opinions.
2   Discuss relationships between fertility and poverty. Support your opinions with examples from your locality.
3   Work with your group to choose a representative to present the group's opinions to the class.

How Can Birth Rates be Reduced?

The United Nations stated that two basic conditions must be achieved if birth rates are to be controlled. These include

⇨ *Improved status of women, including their rights to decide between the use of birth control and having children.*

⇨ *Improved educational levels regarding family planning, particularly for women. Also improved access to family-planning supplies.*

A lesser, but still important condition is reduction of poverty and its effects. It was previously believed that high birth rates were a result of poverty. However, in those parts of the world where the status of women has been raised, there have been declines in birth rates even though there have been no obvious reductions in poverty. In all regions of the world, fertility rates are decreasing. However, Africa still has the highest fertility rate in the world.

Activity 3.8

Answer the following questions.

1   Why does Africa have the largest fertility rates? Discuss in pairs.
2   Calculate the crude birth rates for the following two hypothetical regions, A and B:
    i   The number of live births and mid-year population in region A were 4,500 and 160,000, respectively.
    ii   For region B, the number of live births was 20,500, and mid-year population was 2,500,000.
3   Work out the general fertility rates (GFR) for two hypothetical regions, F and G.
    i   In region F, the number of newborn children was 73,060 and the number of women aged 15 – 49 years was 826,000.
    ii   In region G, the number of live births was 50,000, and the number of women aged 15 – 49 years was 950,000.

Mortality

What is mortality? What factors affect mortality?

Mortality is the occurrence of death. Mortality rates, though decreasing worldwide, are higher in the developing countries than in the developed ones. This difference is caused by variations in standards of living, nutrition, medical services, personal hygiene and environmental sanitation.

Mortality can be measured in a number of ways, including the use of *crude death rate and infant mortality rate.*

Measures of Mortality

i   *Crude death rate (CDR):* is the ratio of the total registered deaths of a specified year in a region to the total mid-year population, multiplied by 1000. It is computed as follows:

$$CDR = \frac{D}{P} \times k$$ where CDR is crude death rate, D stands for total observed deaths, P is total mid-year population, and k is a constant, 1000.

Example:

In a hypothetical region, the total number of deaths observed in 2006 was 60,000, and the total mid-year population was 12,000,000. Therefore, the resulting CDR was:

$$CDR = \frac{60,000}{12,000,000} \times 1,000 = 5/1000$$

This number indicates that the deaths of 5 persons were observed for each 1000 people.

What are some of the weaknesses of CDR? Describe them.

ii   *Infant mortality rate (IMR):* is the number of deaths of infants under the age of one year, per 1000 live births, in a given year.

$$IMR = \frac{\text{Number of deaths below the age of 1 year}}{\text{Number of live births in the year}} \times 1000$$
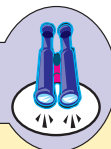
Example:

A total of 400,000 babies were born in a certain region in 2010. Of these newborns, 340,000 babies survived their first year of life. Calculate the IMR of this region.

Deaths under age one: 400,000 - 340,000 = 60,000 babies

$$IMR = \frac{60,000}{400,000} \times 1,000 = 150/1000$$

Out of 1000 children born in the year 2010, about 150 infants died before celebrating their first year of life.

Focus

Infant mortality rate is a good indicator of the level of development of any country. In countries with better living conditions, for example, countries in Europe, mortality is comparatively low. In contrast, the less developed countries (example, most African countries, including Ethiopia), infant mortality is quite high, due to malnutrition, various diseases and poor environmental sanitation. **Life expectancy** is the number of years a newborn is expected to live. It tends to increase with standard of living.

Activity 3.9

Based on the following data, answer these questions.

Country	Total population	Total deaths	Number of deaths of infants	Number of newly born children
A	200,000	9,000	4,200	25,000
B	480,000	8,000	2,000	28,000

i   Calculate the CDR and IMR for each country.
ii   Which country has better standard of living? Why?

Migration

Does migration influence population?

Migration involves movement of people and thereby influences both the rate of growth and distribution of population just like the other two components of population change. (Formal definitions, types and causes of migration are given in section 3.4.3). The most common measures of migration that can affect population growth of an area include:

a   **Immigration Rate**: it is the number of people arriving at a destination per 1000 people in a given year.

$$\text{Im migrant rate} = \frac{\text{Number of immigrants}}{\text{Total population at destination}} \times 1000$$

b   **Emigration Rate:** it is the number of departing people from an area of origin per 1000 people of the area of origin in a given year.

$$\text{Emigration rate} = \frac{\text{Number of emigrants}}{\text{Total population at origin}} \times 1000$$

C   **Net Migration Rate (NMR)**: shows the net effect (balance) of immigration and emigration in an area. It can be expressed as an increase or decrease per 1000 people in the area in a given year.

$$\text{Net Migration Rate} = \frac{\text{Number of Immigrants} - \text{Number of Emigrants}}{\text{Total Population}} \times 1000$$

Example

Suppose the number of emigrants and immigrants of country 'A' are 40,000 and 250,000 respectively. If the total population is 105 million, what is the NMR for country 'A'?

$$\text{NMR} = \frac{250,000 - 40,000}{105,000,000} \times 1000$$

$$= \frac{2}{1000} \text{(i.e 2 per thousand population)}$$

Measures of Population Change

In order to calculate the change in the total population size of a particular nation or place one has to use the following formula (see Figure 3.4).

i   **Rate of Natural Increase (RNI):** it is the difference between birth and death rates.

Hence, it is a naturally caused numerical change of a population which results from the interplay between *fertility* and *mortality*. It is expressed as:

$$\text{RNI} = \text{BR} - \text{DR}$$

Example

If the birth rate and death rate of a certain country were 50 per thousand and 28 per thousand, respectively, what was the rate of natural increase (RNI)?

$$\text{RNI} = \text{BR} - \text{DR} = \frac{50}{1,000} - \frac{28}{1,000} = \frac{22}{1,000} = 2.2\%$$

That is, 22 per thousand population or 2.2 per hundred people.

ii   **Population Growth Rate (PGR):** in order to find the growth rate of a population, we consider **net migration rate** and **rate of natural increase**.

$$\text{PGR} = \text{BR} - \text{DR} \pm \text{NMR} = \text{RNI} \pm \text{NMR}$$

Example

If the RNI of place 'y' is 2.2% and the NMR is 2/1000, find the population growth rate for place 'y'.

$$PGR = 2.2\% \pm \frac{2}{1000} = \frac{2.2}{100} \pm \frac{2}{1000} = \frac{22}{1000} \pm \frac{2}{1000}$$

$$PGR = \frac{24}{1000} \text{ or } \frac{20}{1000}$$

Activity 3.10

Calculate the following:

1   Supposing the birth rate and death rate of a certain country to be 47 per thousand and 18 per thousand, respectively, calculate the rate of natural increase (RNI).

2   If the rate of natural increase of place "A" is 3.1% and the net migration rate is 20/1000, find the growth rate of population for place "A".

3   The population of Ethiopia was reported as 53 million and 73 million in 1994 and 2007, respectively. What was the annual rate of population growth between the two census periods. Use the formula given below.
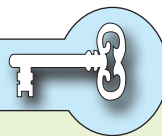
$$\left[t\sqrt{\frac{p_1}{p_o}} - 1 \right] \times 100$$
where P_o is mid-year population at the beginning of the period, and P_1 is population at the end of the period and t is the number of years between the two periods.

3.3   POPULATION STRUCTURE

At the end of this section, you will be able to:

🌍 interpret population pyramids of developed and developing countries.

Key Terms

- population structure
- average dependency ratio
- sex ratio
- population pyramid
- old age dependency ratio
- youth dependency ratio

What is population structure? How do population structures differ between developed and developing countries?

The *structure of a population* is the distribution of males and females within different age groups. Sex and age structures are basic characteristics and biological attributes of a population, and they affect demographic as well as socio-economic situations. Data on **population age-sex structure** is ideally collected through

census, reflecting a complete population count. A **population pyramid**, also called **age structure diagram**, is a graphical illustration. It normally forms the shape of a pyramid and shows the distribution of various age groups of each sex in a human population.

It typically consists of two back-to-back bar graphs, with the population plotted on the x-axis and age on the y-axis, one showing the number of males and the other showing females in a particular population of five-year age groups (also called **cohorts**). Males are conventionally shown on the left and females on the right, and they may be measured in raw numbers or as percentage of the total population (*See Figure 3.6*).

Population pyramids are often considered to be the most effective way to graphically depict the age and sex distribution of a population. This is partly because of the very clear image that these pyramids present.

Population is divided into age groups of five-year intervals (0-4, 5-9, 10-14, etc.) for each sex. The population of a given country can be further grouped into three categories (segments) of the population consisting of young dependents (0-14), elderly dependents (65+) and the working age groups that are economically active (15-65 years of age). The grouping applies to both males and females of all ages (*See Figure 3.6.*).
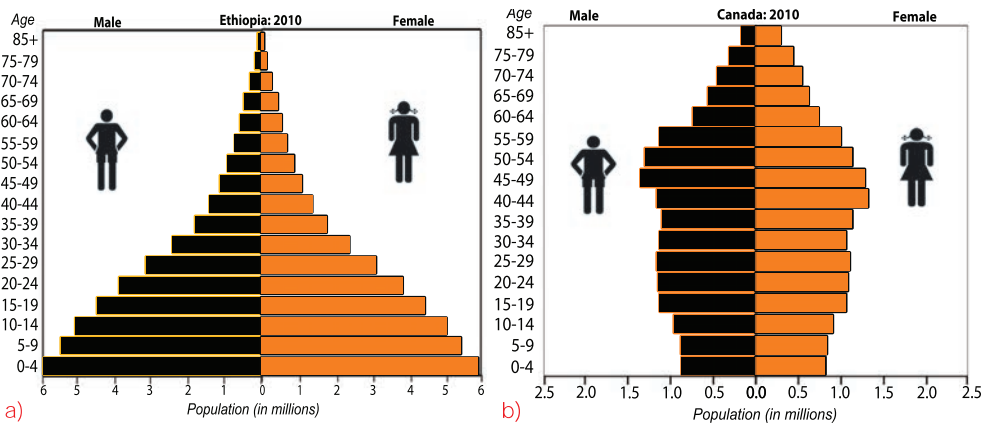
Figure 3.6: **Typical examples of population pyramids of developing (a) and developed (b) countries**

A great deal of information about a population, broken down by age and sex, can be read from a population pyramid. For example, it can shed light on the extent of development and other aspects of the population.

The proportion of the three age groups varies from region to region and among countries. Most developing countries have a large proportion of their population

in the young age group. But in developed countries, people in the adult and old age group account for the largest proportions of the population. As a result, the shape of the population pyramids of the two groups of countries is not the same (see *Figure 3.6*).

Observing different characteristics of a population pyramid can tell you a lot about the population it presents.

⇨ **Width of the base of the pyramid**: *birth rate varies with the width of the base. A wide base indicates a high birth rate, and a narrow base indicates a low birth rate. The former is typical of populations of developing countries.*

⇨ **Symmetry:** *statistically speaking, pyramids are relatively symmetrical. Any asymmetry indicates a size difference between males and females.*

⇨ **Shape of sides:** c*oncave sides indicate a high death rate, and convex sides indicate a low death rate. The population pyramid of Ethiopia exhibits concave sides, indicating a high death rate.*

Table 3.6: **Age distribution of the world population and of selected countries (2010)**

Region	Percentage distribution of population, by age		
	Under 15	15 – 64	65 and over
World	27	65	8
Developed regions	17	67	16
Developing regions	30	64	6
Africa	41	56	3
N. America	20	67	13
L. America	29	64	7
Asia	26	67	7
Europe	16	68	16
Oceania	24	65	11
Ethiopia	44	53	3
Uganda	49	48	3
Sweden	17	65	18
Afghanistan	44	54	2

Source: *2010 Population Reference Bureau, http://www.prb.org/pdf10/10wpds eng.pdf.*

Sex Structure or Composition

What is sex structure? Which sex is dominant in your locality? Why?

A population pyramid also tells how many people of each sex live in an area. This statistic is typically defined in terms of what is called *sex-ratio (SR),* which is a numerical measurement. It is the number of males per 100 females, or otherwise- for example, the number of females per 100 males. Sex ratio is expressed in percentage or ratio form.

$$SR = \frac{P_m}{P_f} \times 100$$

Where SR is sex ratio which may also be referred to as *masculinity ratio* P_m stands for the total number of males, and P_f stands for total number of females.

$$SR = \frac{P_f}{P_m} \times 100$$

This is also possible and gives the number of females per 100 males. This can be called *femininity ratio* as well as sex ratio.

Example:

Say total students of a given school was 5000. Out of this 3000 were females. What was sex-ratio of student population?

Solution:

$$S.R = \frac{P_m}{P_f} \times 100$$

$$= \frac{2000}{3000} \times 100$$

$$= 66.7m / 100f$$

Dependency Ratio

What is dependency ratio? Is the dependency ratio of your locality or region high or low? Why?

Why do we need to know about dependency ratio?

The working age of people varies. Traditionally people worked until they were 65 years old. The common trend now is for people to retire closer to 55 years of age. However, for statistical purposes, we recognize people between 15 and 65 as the workers of a society. People under 15 and over 65 are considered dependent upon the working population. The age dependency ratio (ADR) of a population indicates how many people are dependent upon every 100 workers.

$$ADR = \frac{Young + Elderly}{Adults} \times 100 = \frac{(Population\ 0 - 14) + (Population\ 65+)}{(Population\ 15 - 64)} \times 100$$

Activity 3.11

By referring to the table below answer the questions that follow:

Country	Total Population	Female population	Child Population (%)	Old age population (%)
x	800,000	500,000	42	8
y	1,250,000	790,000	20	15
z	930,000	465,000	50	6

a   Calculate both the sex ratio and the ADR of each country (use SR = pm x 100).

b   Which country has comparatively better socio-economic development?

c   Which country shows the greatest dependency ratio? What do you suggest to correct the situation?

Focus
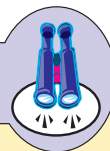
Age-sex structures of the population of different countries vary, depending upon variation in the socio-economic settings and demographic history of the individual countries. This is reflected in the shapes of their population pyramids. There are three classes of population:

i   **Expansive or expanding** population pyramids, which have the classic triangular shape with wide base and narrow top, indicating a high birth rate and a high death rate.

ii   **The sides of stationary or stable** population pyramids have a half-ellipse shape, which is a characteristic of a high standard of living due to low birth rate (due to good family planning), financial planning, education, etc.

iii   **Contractive or contracting** population pyramids have a narrower base than the reproductive age population. This indicates a decreasing population trend. The low birth rate is indicative of a well-developed country.

Activity 3.12

Part I

Test Yourself.

1   What does the vertical axis on population pyramids represent?
2   What type of population pyramid is indicative of a developing country?
3   What does a narrow base on a population pyramid indicate?
4   What type of population is shown in a pyramid that has a triangular shape?
5   What type of population pyramid is wider for the reproductive ages than for the prereproductive ages?
6   What types of population pyramid are depicted in Figures 3.6 a and b?
7   Which of the two population pyramids (Figure 3.6 a and b) indicate high birth and death rates?
8   On the two pyramids, identify the age intervals of the three population segments: young dependents, economically independent people and elderly dependents.
9   Which of the two population pyramids shows a smaller population for the working ages, compared to the two dependent age groups?

Part II

In your group answer the following questions.

10   Copy the table given below and complete it using information from Figure 3.6. Which of the two countries (Ethiopia or Canada) is represented by each population characteristic that is listed in the first column? Indicate your choice, in one of the two right-hand columns, by drawing a tick (✓).

| Population characteristics	Ethiopia	Canada
Broad based and narrowing pyramid at the top		
It has the highest birth rate.		
It has fastest natural increase of population.		
Highest infant mortality rate		
Highest % living to middle age		
Lowest life expectancy.		
Many people survive beyond the age of 65.		
Highest dependant age group		

11   Write a short report about the population structures of the two countries.

12   What would happen to the shape of Ethiopia's population pyramid if there were rapid declines in its birth rate and death rate?

3.4   SPATIAL DISTRIBUTION OF WORLD POPULATION

At the end of this section, you will be able to:

- 🌍 Discuss the factors affecting spatial distribution of world population;
- 🌍 Compute crude and agricultural population density;
- 🌍 Realize causes and types of human migration;
- 🌍 Recognize what urbanization is;
- 🌍 Compare level of urbanization at continental level;
- 🌍 State factors affecting urbanization process.

Key Terms 🔑
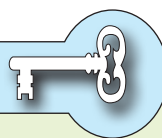
- ⌐ population cluster
- ⌐ population distribution
- ⌐ crude population density
- ⌐ agricultural population density
- ⌐ population density
- ⌐ urbanization

Why is the distribution of world population uneven?

What factors have influenced the distribution of world population?

The most important characteristic feature of current world-population distribution is its extreme unevenness. It was estimated, some years ago, that one-half of the world's people was contained within about 5% of the earth's land area while, in contrast, about 57% of the land area contained less than 5% of the population. World population distribution, and hence concentration, varies considerably across the earth, among different continents, between individual countries, between developed countries and developing countries, between rim lands and hinterlands, between highlands and lowlands, and between the Northern Hemisphere and the Southern Hemisphere (*see Figure 3.7*).
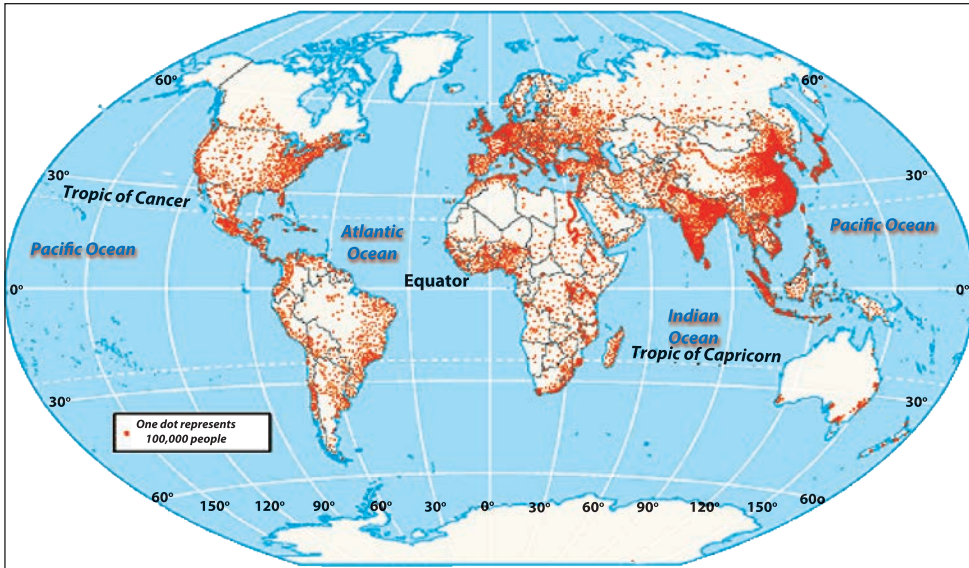
Figure 3.7: **Dot map showing world-population distribution, 2000 (Source:** *Maps.com***)**

3.4.1 Factors of Population Distribution

Numerous factors have positively and negatively influenced population distribution. The extreme current unevenness in population distribution is due to these factors:

⇨ *Ecological (physical) factors*
⇨ *Socio-economic factors*
⇨ *Political factors*
⇨ *Demographic factors*

Some factors, for example, favourable climate, fertile soil, adequate water supply, and industrial development positively influence population concentration (See Figure 3.8a). Others, such as unfavourable climate (for example, extremely hot or cold and dry climates), mountainous regions of very rugged topography with poor soils, and inhospitable areas where communication and trade are difficult, discourage large human settlements (see Figure 3.8b).

The four population clusters and the sparsely populated regions are found in varying geographical locations, have different population sizes and socio-economic characteristics. Table 3.7 gives an overview of the various centers of high and low population concentrations, their locations and determining factors.

(A)

(B)

Figure 3.8: *The Nile Valley in Egypt, one of the world's most fertile places, is intensively irrigated and densely inhabited. It exists in the heart of the Sahara Desert* (A)*; the Sahara Desert is very inhospitable for permanent human settlement because of its hostile climate which is very hot and dry* (B)*.*
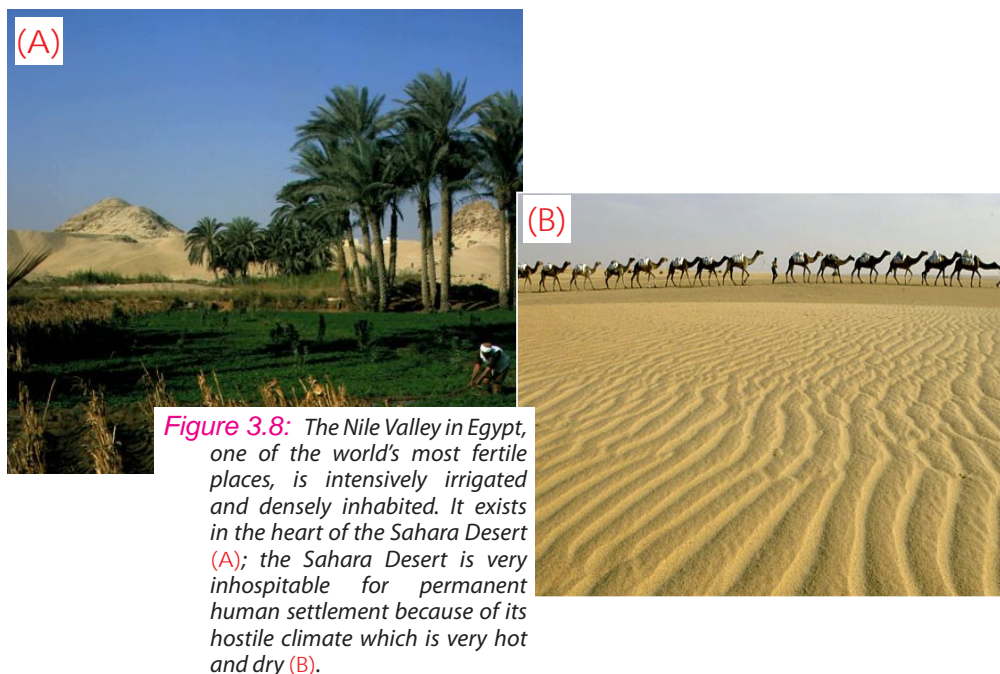
Table 3.7: **Overview of the major densely and sparsely populated areas of the world**

Population distribution	Regions or areas	Distribution factors	
		Ecological	**Socio-economic**
Areas of very high population concentration	Asiatic population belt (supports more than 60% of world population). ⇨ East Asia-China, Japan and Korean Peninsula (supports 25% of world population).	Favourable climatic condition for agriculture.	Birthplace of one of the principal human races. Ancient history of habitation; high industrial development (Japan).
	⇨ South Asia - India, Pakistan, Bangladesh, Myanmar (Burma) and Sri Lanka (supports) accounts for about 25% of world population.	Favourable monsoon climate,	Pre-modern civilization of small-scale agriculture, which essentially is traditional in nature and subsistence levels. Irrigation technology (for rice cultivation).
	Europe (more than 10% of world population).	Enjoys a very favourable climate.	Largest portion of its land area is devoted to agriculture. High industrial development.
	American cluster: Northeastern part of the USA and Canada (supports about 5% of world population).	Favourable climate, Short growing season, Rich natural resources.	During its formative period, large influx of immigrants and fast natural increase of the population. Efficient agricultural management. High industrial development.
Sparsely populated areas	Tundra (part of N. America and Eurasia).	Very cold climate (no cultivation).	
	Hot and dry lands (tropical deserts).	High temperature. Shortage of water.	
	Hot and humid regions: Amazon, Congo and Indonesia basins.	Very high humidity, rainfall and temperature.	
	High relief areas.	High mountains with rugged topography, Cold temperature.	
	Areas with poor soil.	Poor soil, badly degraded lands.	

Activity 3.13

In your geography work group, perform these activities.

1   Study the following table and then make a copy of it.

2   On your copy, fill in the blanks in the two right-most columns.

Factors	Explanation	Example	Encourages or discourages people
Low rainfall	Little water for farming	Sahara desert	Discourages
Fertile soil	Good soil for farming	Alexandria, Egypt	Encourages
Very hot and dry climate		Dallol depression	Discourages
Warm & humid climate		Amazon forests	Discourages
Icecaps		Greenland	Discourages
Alluvial plains		Mesopotamia	Encourages

3   On another piece of paper, create two columns with these headings:

⇨ Encourage settlement   ⇨ Discourage settlement

In each column list as many factors you can think of, except those in the preceding table. Consider all of these types of factors:

⇨ ecological, such as amount of rainfall and its seasonality, topography, including plains and steep mountains

⇨ natural hazards, such as flooding

⇨ socio-economic, such as poor standards of living

⇨ cultural, such as political unrest

4   Consider your own locality and the factors that have caused people to settle there, and also the factors that have caused them to leave. On a third piece of paper create the same columns as you did in the preceding task. Then list the factors you have thought of for your own locality.

Next perform the same task for your woreda, zone, or region.

5   Figure 3.7 shows the distribution of world population. Use it to identify the regions which are densely populated, sparsely populated, moderately populated and uninhabited. List them in writing.

Discuss the following questions and list them, and the group's answers, on a new piece of paper:

⇨ What are some possible consequences of increasing concentrations of people in rural and other areas? What are consequences of falling concentrations in different types of areas?

⇨ Can balances be achieve d between the number of people in a region and that region's ability to support people? Consider different types of regions.

⇨ How do we define overpopulation and underpopulation? Which areas of the world are overpopulated and which are underpopulated?

6   Considering the information that your group has created on the various pieces of paper, work with the group to create a report that summarizes the data.

3.4.2 Population Density

How can we measure and otherwise quantify world-population distribution? What measure was used to create Table 3.8?

It was noted earlier that population distribution over the earth's surface lacks uniformity. Some areas are overcrowded, while others are sparsely settled or uninhabited.

Table 3.8: **Population density of the world and its regions in 2000**

Continent	Population, in million	Area, in km²	Density (p/km²)
World	6,892	150,000,000	46
Africa	1030	30,251,000	34
Asia	4157	45,066,000	92.2
Europe	739	10,530,750	70.2
Latin America	585	17,825,479	33
North America	344	24,346,000	14.1
Oceania	37	7,772,021	4.7

Source: *Population Reference Bureau 2010; Microsoft (R) Encarta (R) 2006. (C) 1993 – 2005.*

Population density, also termed as the spread of population over space, is measurable in various ways. For example, we can *relate numbers of inhabitants to area of lands inhabited*:

a   *Crude density or Arithmetic density*

b   *Agricultural density* or *Rural density*

a   **Crude density or Arithmetic Density:** is a measure of the number of inhabitants per unit area. This type of measurement is also known as *human-land ratio.*

$$\text{Crude density} = \frac{\text{Total population of an area}}{\text{Total area, in sq.km, of the area}}$$

Activity 3.14

Calculate the following:

1   The population of Ethiopia was estimated at 79 million in 2010 (CSA 2010) and its total area is 1,106,000 km^2. Find the crude population density.

2   The total population and total area of China in 1999, were 1, 264, 536,000 and 9,596,960 km^2, respectively. Find the crude density.

b   **Agricultural density or Rural density:** It is the ratio of agricultural (rural) population to cultivated land. Agricultural density considers only agricultural population, the segment of an area's population whose livelihood depends on agricultural activities. The area under consideration can be a single contiguous piece of land, or it can be multiple unjoined areas – such as the land occupied by all rural populations in all developing countries. In countries like Ethiopia, almost all rural areas are occupied by people who are engaged in agricultural activities and whose livelihoods depend mainly on agricultural income. This may not be the case in the developed regions.

Activity 3.15

Part I

Perform the following activities:

1   Ethiopia has a total territorial expanse of about 1,106,000 km^2, out of which about 16% was under cultivation in 2007. Its urban population was about 16.2% of the country's total population which stood at about 73.9 million people. Rural population, was about 61.9 million, and the area under crop was about 176,960 km^2. Find agricultural density.

2   Why is agricultural density a better measure of rural population density than the crude population density in countries like Ethiopia?

3   What advantages does agricultural density have for a country?

4   What is the weakness of crude density in this respect?

Part II

Answer the following questions, based on the table below:

Country	Area (km²)	Population (thousands)	% of urban population	% of cultivated land
A	95,000	18,000	25	30
B	90,000	22,000	80	10
C	150,000	30,000	45	35

5   What are the crude and agricultural population densities of each country?

6   For which country does agricultural density appear to be a better measure than crude population density? Why?

Agricultural population density is a more meaningful measure than crude population density for developing countries where agriculture is the dominant economic activity. It also gives a better indication of population pressure on natural resources.

3.4.3 Human Migration

What is migration? Can we consider all kinds of people's movements as "migration"? Why or why not?

Definition and Types of Migration

Many geographers consider migration to be the permanent or quasi-permanent relocation, for a substantial duration of an individual or group of individuals from a place of origin to a place of destination. Migration begins in an *area of origin* and is completed at *an area of destination* and might involve a stay of a substantial period one year or more. In order to avoid ambiguity, the term *permanent migration* is used for situations in which the mover has no intention of returning to the place of origin.

When migrants cross an international frontier, they are referred to as either *emigrants,* if they are leaving a country or *immigrants,* if they are entering. Migrants who move within a country are referred to as *out-migrants* or *in-migrants* depending on whether they are leaving or entering a region.

When migrants cross an international boundary, the movement is called *international migration* (*see Figure 3.9*). However, if the movement is within a national territory, it is referred to as *internal migration*. A movement in which

a migrant arrives at the last destination after a series of short-term moves to other locations is referred to as *step migration.* When people move out with the intention of returning back to their place of origin after a few months or a season or more, this movement is called *seasonal migration*. Seasonal migration takes place commonly in rural Ethiopia during peak and slack seasons of agricultural labour.

Figure 3.9: **Major international migration flows**   **Source:** *IGCSE, 2009*

Migration can take the form of *refugee* migration, when people move for political reasons, war, ethnic conflicts and discrimination or religious persecution; or *evacuee* migration, if movement is caused by natural calamities like earthquake, volcanic eruption, flooding, drought, etc.; or **resettlement** migration, when people are displaced by war, natural calamity, etc. and are moved by government to a new location and, generally, given assistance in order to establish themselves therein.

Activity 3.16

In your geography workgroup, discuss the following questions.

1   Which forms of migration are common in your community? Is anyone a migrant among your family members? Were all your household members, including Dad and Mama, born and raised in your area?

2   What is the difference between 'refugee' and 'evacuee'?

3   What do you call the people whom the present government moved, some years back, from densely populated areas to sparsely populated parts of the country and settled them there?

Causes of Human Migration

Many factors affect migration. These include *economic, social* and *ecological considerations*, which, in turn, are affected by *individual perceptions* and *behaviour*. These factors act in such a way as to '*push'* or '*pull'* migrants (*see Figure 3.10*). Pull factors are those which attract the migrant to a particular destination. For example, good social and welfare services, a pleasant environment and political stability are typical pull forces.

Push factors, on the other hand, are forces which work in the migrant's home area. They impose pressures which persuade or compel a person to move away. For example, push factors include the impacts of natural disasters (drought, flood, and famine), low wages, poor employment and political instability.
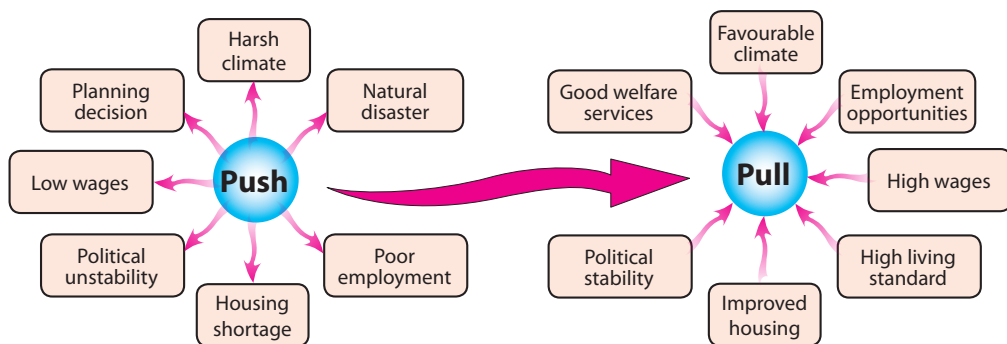
Figure 3.10: **Some forces of migration: 'push' and 'pull' factors**

➲ *Economic factors:* are often regarded as the main motivation for migration, acting as pull or push factors. The principal economic force is the search for employment, accompanied by the exploitation of natural resources, such as minerals, and the availability of good communication networks.

➲ *Social factors:* that influence migration, negatively and positively, include social oppression, political control and the availability of housing, health care and training.

➲ *Ecological factors:* Environmental crises such as droughts, desertification and industrial accidents can have profound impacts on human migration. Environmental or ecological refugees have become the single largest class of displaced people in the world.

Activity 3.17

In your geography workgroup, perform these activities.

1   Classify the factors noted in Figure 3.10 as ecological, economic, socio-cultural and political factors.

2   By asking ordinary people and government office holders in your community, identify economic, social and ecological reasons that make people migrate.

3   What are some of the possible consequences of migration, both in areas of origin and destination?

3.4.4   Urbanization

What is urbanization? What factors affect the process of urbanization?

What is Urban and What are Urban Settlements?

The term urban is something (for example a settlement) relating to, belonging to, characteristic of, constituting, or forming part of a town or city. It is the opposite of *rural.* **Urbanism** on the other hand refers to a city or town characteristic, the typical condition of a city or town, or a way of life characteristic of a city or town.

Urbanization, in conventional terms, refers to the process through which society is transformed from being predominantly rural, in economy, culture and life style, to being predominantly urban. It is also a process of territorial reorganization, in that it shifts the locations, as well as the characteristics, of a population and its production activities. *Typically,* urbanization *is commonly defined as the process by which large numbers of people become permanently concentrated in relatively small areas, forming cities or towns.*

Some of the criteria used to identify urban settlements and designate them as towns or cities include the status of an urban settlement, population size and of population function.

In terms of population size, the minimum population of a locality considered as a city varies from 1000 or less (example: Canada) to 50,000 (Japan). In most countries, this threshold varies from 2000 to 5000. In Ethiopia, a settlement is designated as *urban* if the number of inhabitants equals or exceeds 2000, and if most of them are engaged in non-agricultural activities. Another defining characteristic is that the area is an officially municipality.

The course of human history has been marked by accelerating urbanization. In 1800, less than 3% of the world's population lived in cities. During the post industrial revolution, sometimes defined as 1900, about 20% lived in cities. By 1950, 30% lived in cities. By the end of 1999, 47% lived in cities. Currently (2010) the percent of the world's population in cities equals or exceeds that in rural areas (see Table 3.9.)

Table 3.9: **Level of world urbanization, 1950 – 2000**

Region	Percentage of urban population as compared to the total			
	1950	**1975**	**2000**	**2010***
World	30	38	47	50
Developed	55	70	75	75
Developing	52	67	73	44
Africa	15	25	37	38
Europe	64	74	77	71
North America	50	76	79	79
Japan	18	27	56	86
Asia	15	22	36	43
Latin America	42	61	75	77

Source: *2010 Population Reference Bureau, http://www.prb.org/pdf10/10wpds_eng.pdf.*

Activity 3.18

In your geography workgroup, perform these activities:

1   Compare the level of urbanization at the continental level and identify the most and the least urbanized continents.

2   Why do the more developed regions of the world have higher percentages of urban populations than the less developed regions?

3   Why do the proportions of urban populations in the developing regions show faster growth rates than in the more developed regions?

4   About three-fourths of the population of the developed countries live in urban centres. How do people in these regions earn their living?

Work with your group to choose a representative to present the group's opinions to the class.

Factors that affect Urbanization

In your previous discussions, you might have considered, directly or indirectly, some of the factors that affect urbanization. Can you mention some of them to your class?

One can attribute the growth and development of urbanization to several factors, including:

⇨ **High rate of natural increase of population:** *This is happened when birth rates remain high, but death rates fall rapidly due to great improvements in social facilities and in food production, that resulted in population growth and so does urbanization*

⇨ **Significant of rural to urban migration:** *Many large cities in developing countries are growing at a faster rate due to rural 'push' factors that forced the people to leave the country side, and due to urban 'pull' factors where people migrate to cities hoping (in reality doesn't exist) for better job prospects better social services, etc.*

⇨ **Industrialization:** *In the 19thC, industrialization led to a huge demand for labour in mining and manufacturing centers, in what are now referred to as developed countries. In these countries, urbanization was the result of economic development triggered by industrialization.*

Activity 3.19

In your geography work group, answer the following questions and perform the following activities.

1   Which factors have positively contributed to the growth of urbanization in Ethiopia?

2   By referring to a world atlas or other sources, identify the ten largest cities of the world. Create a world map that emphasizes these big cities.

3   What are the five largest urban centres (cities/towns) in Ethiopia?

4   What are the main problems of rapid urbanization in less developed countries like Ethiopia? Suggest possible ways of solving the problems.

3.5   POPULATION OF ETHIOPIA

At the end of this section, you will be able to:

🌍 Compare the present population size of Ethiopia with the past;
🌍 Describe the spatial distribution of Ethiopia's population;
🌍 Show the demographic characteristics of Ethiopia's population;
🌍 Analyze the population structure of Ethiopia;
🌍 Realize population policy of Ethiopia.

Key Terms
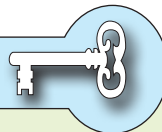
⊷ annual growth rate
⊷ population policy
⊷ physical factors

⊷ pro-natalist
⊷ human factors
⊷ anti-natalist

3.5.1   Population Size, Distribution and Growth Rate

When did the population of Ethiopia started growing very fast?

The population of Ethiopia was about 12 million toward the beginning of the 20th century (1900). It had an annual growth rate of 0.2%. Had this growth continued, the population would have doubled in 346 years. The rate of growth of the population was relatively very slow until 1920. But, after 1920, the population of Ethiopia started growing very fast, and it took only 60 years to double. The 1950's was another remarkable period. By 1960 the growth rate quadrupled, doubling the size of the population to 23.5 million. Then, between 1960 and 1990, i.e., within thirty years, the population once again doubled. During that period, its growth rate tripled, compared with the rate of 1920. The smallest doubling period recorded was in 1996, after which it started increasing again.

Ethiopia conducted its first census in May 1984. So far, the governments have conducted three successive population and housing censuses. The first census report showed that the population of Ethiopia (together with Eritrea) was 42.2 million. When we compare the 2007 census results with those of 1984 and 1994, we see that the population of the country increased by more than 31 and 21 million over 23 and 13 years, respectively. The population growth rate increased from 2.9% in 1984-1985 to 3.0% in 1994-1995.

Table 3.10: **Estimates of population growth in Ethiopia**

Year	Population (million)	Annual Growth Rate (%)	Population Doubling Time (year)
1900	11.8	0.2	346
1910	12.1	0.5	139
1920	12.9	1.0	69
1930	14.4	1.2	58
1940	16.2	1.5	46
1950	19.2	2.0	38
1960	23.5	2.2	32
1970	29.5	2.3	30
1980	37.7	2.8	25
1990	51.2	3.0	24
1993	53.4	3.1	23
1996	60.0	3.2	22
1999	61.6	2.9	24
2000	63.4	2.8	25
2010	79.0	2.6	27

Source: *Central statistical Authority (CSA), 1994 and 2010.*

Since 1999, the growth rate has decreased at an average rate of about 0.2% per year (*see Table 3.10*). By 2010, the rate had dropped to about 2.6% per year. With the current growth rate of 2.6%, the country's population is projected to grow by 1.9 million annually, and to attain a size of about 79 million by 2010, 94.5 million in 2015, about 118 million by 2025. This trend would make Ethiopia the most populous country in Africa, next to Nigeria. This rapid growth seriously strains socio-economic development.
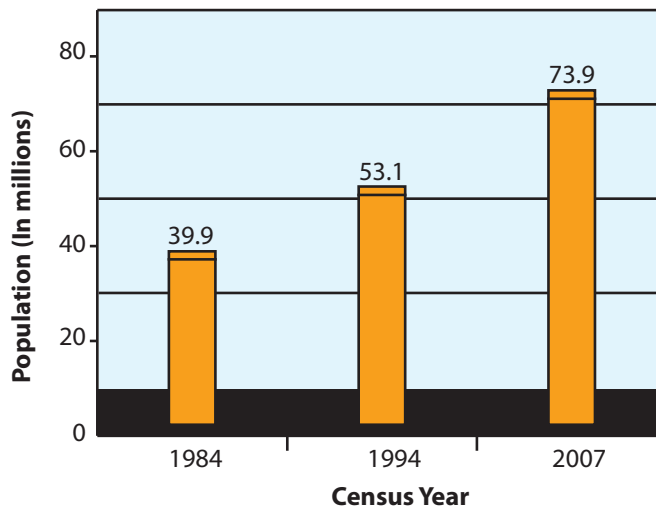
Figure 3.11: **Population size of Ethiopia (in million) 1984 – 2007 (**CSA, 2007**)**

Activity 3.20

With your geography workgroup, study Table 3.11 and Figure 3.11. Then perform the following tasks.

1   Assess the changes in these population characteristics in Ethiopia between 1900 and 2010.
  ⇨ size   ⇨ growth rate   ⇨ doubling time

2   Draw a line graph to illustrate the changes that you investigated in Task 1;
  ⇨ growth rate   ⇨ doubling time

Under the graph, create a note that describes the changes in words.

3   Study your graph. Can you divide the entire graph of changing growth rates and doubling times into approximately equal parts?
  How many approximately equal periods are there for the growth-rate changes?
  How do their slopes differ? How many for the doubling time?

4   Consider the results of Task 3 and the effects they probably had on Ethiopia's
  ⇨ natural resources
  ⇨ food production
  ⇨ investment and national savings opportunities
  ⇨ social services, such as health and education

5   What do you think Ethiopians can do to control population growth? Consider actions that can be taken at all of these levels.
  ⇨ individual   ⇨ regional government
  ⇨ household   ⇨ federal government
  ⇨ community

6   During your lifetime, in what different ways could you affect population growth? Do you expect to contribute to the problem or to the solution? How?

Spatial Distribution of Population

What does spatial (areal) distribution of population mean? Which parts of Ethiopia are densely and sparsely populated? Why?

Spatial distribution of population is the pattern created as a result of human occupation of land surface for settlement. The pattern of Ethiopian population distribution is markedly uneven. For example, we have very high population densities in the highlands. On the other hand, the peripheral lowlands of the country, which account for more than 50% of the total area of the country, are

very sparsely populated. There are variations in the distribution at the national level as well as at lower levels for example, between and within regions, zones, weredas and kebele administration units. Table 3.11 shows the country's population distribution at the regional level.

*Table 3.11:* **Ethiopia's population distribution, by region: 1994 and 2007**

Region	1994		2007	
	Number	**%**	**Number**	**%**
Tigray	3,136,267	5.9	4,314,456	5.8
Afar	1,060,573	2.0	1,411,092	1.9
Amhara	13,834,297	25.0	17,214,056	23.3
Oromiya	18,732,525	35.0	27,158,471	36.7
Somalia	3,198,514	6.0	4,439,147	6.0
Benishangul Gumuz	460,459	0.9	670,847	0.9
SNNP	10,377,028	19.4	15,042,531	20.4
Gambella	181,862	0.3	306,916	0.4
Harari	131,139	0.2	83,344	0.2
Addis Ababa	2,112,737	4.0	2,738,248	3.7
Dire Dawa	251,864	0.5	342,827	0.5
Special Enumeration	Not available	Not available	96,570	0.1
Country total	53,477,265	100.0	73,918,505	100.0

Source: *2007 population and housing census report, CSA, 2008*.

What have you observed from Table 3.11? Which regions were the most and least populous in the country in 2007? What factors are responsible for this variation? Which regions showed decrease or increase in their population proportion as compared to others, and why?

More than 80% of the population lived in three regions – Oromiya, Amhara and Southern Nations, Nationalities and Peoples Region (SNNPR). Their populations accounted for 36.7%, 23.3% and 20.4% of Ethiopia's total population, respectively.

According to the 1984 Ethiopian census, the nation's crude population density was 34 persons per square kilometer. By 1994, 10 years later, it had increased to 48.3. By 2007, the crude population density was almost double that of 1984 – about 67 persons per square kilometer.
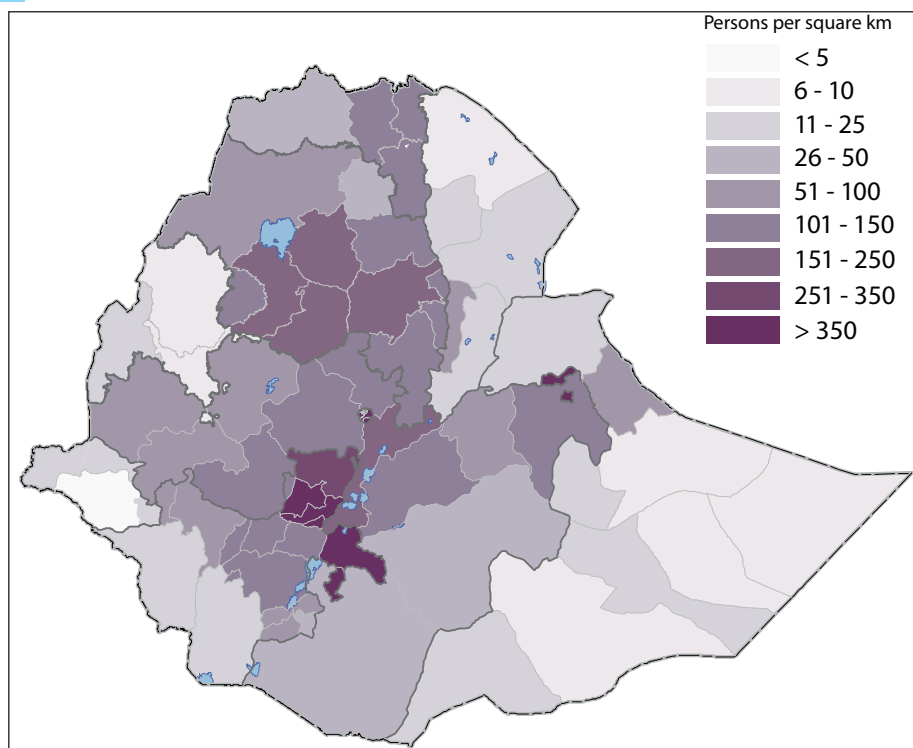
Figure 3.12: **Population density of Ethiopia**

Table 3.12 presents Ethiopia's ten most densely and sparsely populated zones, as of 2009. Population densities exceeded 150 persons per square kilometre. All of the zones listed in the first half of the table, except for the last four shown in the table, are in the SNNPR and are enset-growing areas. Of the SNNPR zones, the most densely populated are Gedeo Kembata and Tembaro, and Sidama. Their densities exceed 400 persons per square kilometre. In contrast, there are places with very low population densities, below 25 persons per square kilometre. Almost all very low-population areas are found in the peripheral lowlands of Benishangul Gumuz, Gambella, Afar and Somali regions. Some of zones of very low-population densities include Agnewak, Metekel, Kemashi, Zone one (Afar), Etang, Zone two (Afar), Asossa zones, Warder zone, Korahe zone and Fik zone.

Table 3.12: **Ethiopia's ten most densely and most sparsely populated areas at the zone level, 2009**

No.	The ten most densely populated areas		No.	The ten sparsely populated areas	
	Zone	Density (persons/km²)		Zone	Density (persons/km²)
1	Gedeo	772.6	1	Agnewak	5.7
2	Kembata Tembaro	535.8	2	Metekel	10.1
3	Sidama	482.5	3	Kemashi	11.5
4	Wolayita	386.0	4	Zone 1 (Afar)	14.8
5	Hadiya	368.1	5	Etang Special Zone	18.8
6	Gurage	231.0	6	Zone 2 (Afar)	20.6
7	West Arsi	183.7	7	Asossa	22.5
8	East Shewa	177.6	8	Warder	
9	Jimma	175.5	9	Korahe	6 - 25
10	East Hararge	167.2	10	Fik	

Source: *Central Statistical Authority (CSA), 2010*.

The spatial distribution of Ethiopia's population is uneven, characterized by high population density on the highlands while lowlands have very low population density. Such uneven distribution of population has been the result of ecological (physical) factors and human factors (see Figure 3.13). More important physical factors include climate (mainly rainfall and temperature), soil, vegetation and relief (altitude). The human factors primarily consist of historical factors, for example peopling of the country and migration, development of infrastructure, types of economic activities and political factors related to government policies such as resettlement programs, land tenure system, villagization process, etc. All these factors individually or collectively have influenced human settlements favorably or adversely. They have either encouraged or discouraged settlement.

Activity 3.21

In your geography workgroup, perform these tasks.

1 Find a political map of Ethiopia that shows the nation's administrative units. Locate the ten most densely populated and most sparsely populated areas of the country. (See Table 3.12 again.)

2 Which ecological and human factors, for example, those shown in Figure 3.13, could have influenced the patterns of population distribution, you considered in Table 3.13?

3 Variation of physical factors such as climate (temperature and rainfall), soil, and vegetation, are strongly correlated with altitude. With this fact in mind, explain the impacts of changes in elevation on population distribution.

Table 3.13: **Population distribution, related to altitude**

Altitude (metre)	% of total area of Ethiopia	% of total population of Ethiopia (1984)	Density (persons/ km²) (1984)
> 2600	5.8	10.4	85.0
1800 – 2600	31.8	67.1	157.5
1400 – 1800	28.1	11.5	68.14
1000 – 1400	13.4	8.5	69.14
< 1000	21.5	2.8	29.0
Total	100.0	100.0	6.2

Source: *Aynalem Adugna, The Population of Ethiopia, I.D.R, 1987.*

4   Analyse the data in Table 3.13. What percent of the total population of Ethiopia live in the lowlands, areas found below 1500 m above sea level? Why?

5   In Ethiopia, areas found between 1800 m and 2600 m are the most densely populated. They are inhabited by about 67% of the total population. Why?

6   Briefly explain the impacts of such high population density on the environment.

7   Suggest possible measures to improve the situation in the lowland areas, enabling them to support more population, and also measure to help the over-populated highland areas, motivating their people to settle in the lowlands.
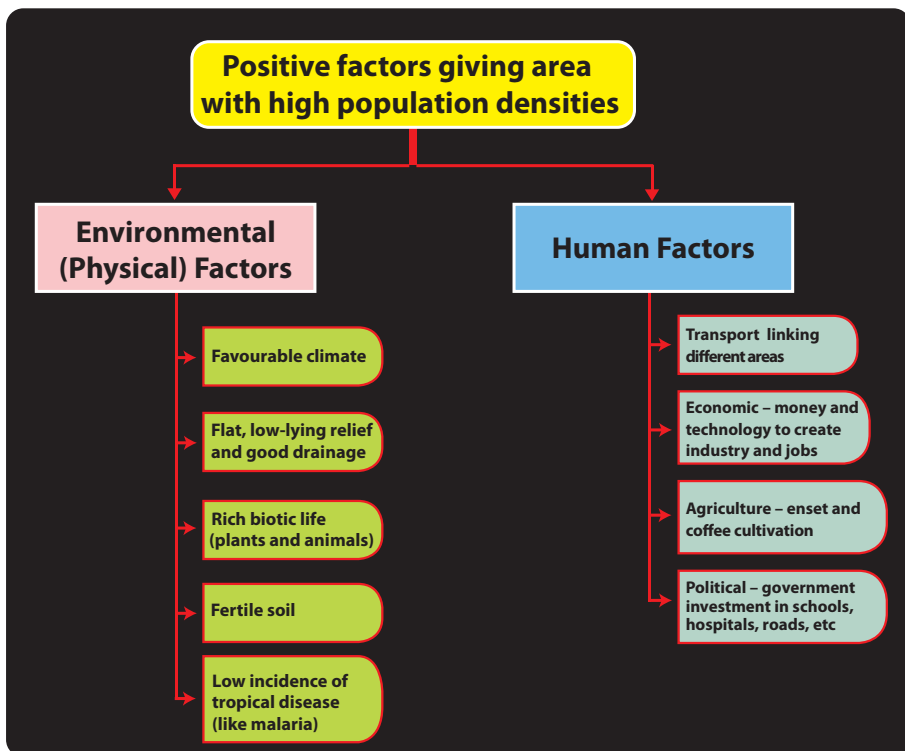

Figure 3.13: **Factors that contributed to high population density in Ethiopia**

3.5.2   Components of Population Change in Ethiopia

What factors affect fertility, mortality and migration?   How does the three components of population change influenced growth rate of the population of Ethiopia?

Fertility in Ethiopia

Is the rate of birth higher or lower in Ethiopia, compared to the rest of Africa and to the world at large?

What are the trends of fertility in Ethiopia? Is fertility decreasing or increasing? Why? What measures, if any, have been taken to improve the situation in your locality? If none have been taken, why is that?

Ethiopia's total fertility rate is one of the highest in the world. In 1984, TFR was 7.52 per woman. By 1994 it dropped to 6.74 (*see Table 3.14*), and then to 5.4 in 2010.

There is significant fertility variation between urban and rural areas. For example, in 1984, TFR in urban areas was 6.33, while it was 8.08 in rural areas. In 2010 these rates, respectively, dropped to 4.5 and 7.19.

Fertility also varies from region to region. In 1994, Oromiya and the SNNPR recorded the highest TFRs, reaching as high as 7.26 and 7.16, respectively. In contrast to this, Addis Ababa, Dire Dawa, Harari and Gambella recorded TFRs of less than 4.3.

Table 3.14: **Measures of fertility in Ethiopia, by major regions, 1994**

Region	Total		Urban		Rural	
	TFR	**CBR**	**TFR**	**CBR**	**TFR**	**CBR**
Ethiopia	6.74	4.434	4.50	34.88	7.19	45.80
Tigray	6.95	43.89	5.38	39.33	7.28	45.11
Afar	6.39	36.21	4.47	39.51	6.61	36.05
Amhara	6.76	43.86	5.40	43.40	6.94	43.95
Oromiya	7.26	45.63	6.10	44.14	7.42	45.83
Somali	6.73	36.38	5.84	35.04	6.89	36.67
Benshangul and Gumuz	6.46	45.63	5.46	44.70	6.56	44.61
SNNPR	7.16	49.95	6.42	48.06	7.22	49.72
Gambella	4.72	36.24	4.19	38.14	4.82	35.10
Harari	4.68	36.50	3.40	26.63	6.98	51.48
Addis Ababa	2.14	18.78	2.09	16.37	7.40	41.10
Dire Dawa	4.95	37.82	4.28	35.21	6.89	43.37

Source: *CSA, 1999*.

Activity 3.22

In your geography workgroup, study Table 3.14 and answer the following questions.

1   Which regions have the highest CBR in their rural and urban areas? Why?

2   Why do rural areas have higher TFRs than urban areas? What do you suggest to improve the situation?

3   Why is that both CBR and TFR are lower in urban areas than in rural areas?

4   Why are crude birth rates as well as TFR generally higher in Ethiopia than in most of the rest of the world?

5   Choose 10 families (households), including yours, in your locality and answer the following question:

 i   How many children does each family have?

 ii   Do parents in your community tend to have many or few children? Why?

 iii   Do women in your locality have easy access to medical, education and family planning services? If no, why not? What is the effect of such availability or lack of availability?

Mortality in Ethiopia

Has the number of deaths in your community per year increased or decreased during your lifetime? Your parents' lifetimes? What causes death most often in your locality? Among which age groups is death observed most frequently in your community?

Mortality is the measure of frequency of deaths in a population. Ethiopia has one of the highest levels of mortality in the world (see Table 3.15). The main causes of such high mortality are the effects of poverty, low living standards and poor access to health services.

Other significant factors include civil war, and recurrent drought and famine. Deaths of children under the age five accounts for over half of all deaths in the country. The main causes of children death are measles, malaria, malnutrition, and acute respiratory infections such as pneumonia and influenza.

However, despite all of the current factors that cause deaths in Ethiopia, mortality rates have decreased because of improved medical technology and the population's improved access to health services. During the last two decades, crude death rate dropped from 20 per 1000 population in 1970 to 16.4 per 1000 in 1990 and then to 12 per 1000 in 2010. Similarly, the infant mortality rate declined from 153 deaths per 1000 live births in 1970 to 110 in 1990 and then to 77 in 2010 (see Table 3.15 again).

Unfortunately, however, many people now fear that such decreasing trend (and that of increasing life expectancy) will soon be reversed due to the increasing prevalence of HIV/AIDS in Ethiopia's population. For 1999, estimates put the number of infected people in the country at 3 million. Now, ten years later, some experts are predicting increases in mortality rates and decreases in life expectancy.

Table 3.15: **Crude death rate, infant mortality rate and life expectancy in Ethiopia, 1970 – 2010**

Year of Survey	Crude death rate			Infant mortality rate			Life expectancy	
	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban
1970	20.0	16.9	20.0	155	134	153	43.8	45.0
1981	18.1	15.7	17.9	141	117	139	46.5	46.8
1984	17.2	14.17	17.1	112	94	110	46.0	58.1
1990	–	–	–	111.6	94.2	110.1	47.4	49.4
1998	17.8	14.0	17.0	109.9	92.0	109.0	48.0	50.9
2010*			12			77	–	51

Source: *Central Statistical Authority (CSA), 1994; * Population Reference Bureau, 2010*.

Activity 3.23

1   Based on Table 3.15, answer the following questions:
   i   Are the trends of CDR and IMR in Ethiopia increasing or decreasing? What about life expectancy at birth? Why?
   ii   Why is the IMR higher in rural areas than urban areas of the country? How can we improve the situation?
2   Can we relate high mortality rate with poverty and environmental degradation in Ethiopia? Support your answer with examples.
3   It is known that HIV/AIDS have direct impacts on mortality.
     In your opinion, what roles should teachers and students play to control the expansion of HIV/AIDS in your locality?

3.5.3   Population Structure of Ethiopia

Can you remember the factors that influence population structure? How does population structure influence the process of Ethiopia's socio-economic development?

Age Structure

Which age group is greatest in Ethiopia? What are the socio-economic and demographic implications of its size? Does the shape of Ethiopia's population pyramid correspond to that of most developing countries?

Table 3.16 presents Ethiopia's population age distribution. As you can see from the recent population pyramid of Ethiopia shown in Figure 3.6a and from the data in Table 3.16, Ethiopia's population is predominantly young. It has persistently remained so, at least since 1970. On average, about 45% of the population is young and economically dependent. Elderly people account for about 3% of the total. This would mean only 52% of the population is economically active and supports both itself and the rest of the population. Ethiopia has one of the largest non-productive populations in the world. This is a direct result of the country's high fertility rate.

Table 3.16: **Age structure (composition) of the Ethiopian population**

Year	Population in millions	Percentage distribution of population by age		
		Under 15	15 – 64	65 and over
1970	-	45.3	51.5	3.2
1981	-	45.5	51.0	3.5
1984	41.1	48.1	47.1	4.8
1990	-	50.0	43.8	6.2
1994	53.4	45.4	51.4	3.2
1999	-	43.8	53.1	3.1
2007	73.9	45.0	51.8	3.2
2010*	79.0	44.0	53.0	3.0

Source: *Central Statistical Authority (CSA), 1999 and 2007 and Population Reference Bureau 2010.*

With such a large dependent young population, government expenditure for education, health, shelter, food and other basic social services is very high. The only way that Ethiopia can release this large amount of budgetary resources for more economically productive investments is by reducing its dependency ratio.

Focus
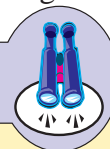
Fast population growth, like that of Ethiopia and many other developing countries, produces a youthful population dominated by children who are economically dependent. This age-structure has the potential to increase the momentum of population growth as those numerous children grow up and enter their reproductive years and have multiple children of their own. This demographic instability of large, highly dependent and consuming, rather than effectively producing, populations cripples the socio-economic development process and can impede sectorial planning. Moreover, unemployment and under employment tend to prevail due to national economic issues.

Sex Structure

What is the importance of studying sex structure?

Sex is one of the basic demographic characteristics of a population. Sex structure is very important for demographic analysis because it provides useful information about reproductive potential, human resources, and so on.

Table 3.17: **Population size, by sex and by region, in Ethiopia (2007)**

Region	Sex			
	Male		**Female**	
	Number	**%**	**Number**	**%**
Country – total	37,296,657	50.5	36,621,848	49.5
Tigray	2,124,853	49.2	2,189,603	50.8
Afar	786,338	55.7	624,754	44.3
Amhara	8,636,875	50.2	8,577,181	49.8
Oromiya	13,676,159	50.4	13,482,312	49.6
Somali	2,468,784	55.6	1,970,363	44.4
Benshangul – Gumuz	340,378	50.7	330,469	49.3
SNNP	7,482,051	49.7	7,560,480	50.3
Gambella	159,679	52.0	147,237	48.0
Harari	92,258	50.3	91,086	49.7
Addis Ababa	1,304,518	47.6	1,433,730	52.4
Dire Dawa	171,930	50.2	170,897	49.8
Special Enumerations	52,834	54.7	43,736	45.3

Source: *Central statistical Authority (CSA), 2010.*

What does Table 3.17 show you? For example, which sex is most numerous at national and regional levels?

In 2007, Ethiopia had an almost balanced (one-to-one) sex ratio, both in rural and urban areas. The sex ratio for the whole country was 100.8. This meant that in the 2007 estimate, males slightly outnumbered females. Earlier, 1999, estimates indicated slightly different sex ratios. In rural areas, males slightly outnumbered females – the sex ratio was 101.2. In urban areas, females slightly outnumbered males – the sex ratio was 98.5.

Regional sex-ratio data generally supported the preceding data for the nation as a whole, showing slight variations.

Male populations exceeded female populations in all regions except in Addis Ababa, Tigray and the SNNPR. In Addis Ababa, whose population is nearly 100% urban and may be considered 'representative' of other urban centres of the country, the number of females is considerably higher than the number of males.

Activity 3.24

In your geography work group, study Table 3.16 and perform the following tasks.

1   Calculate, for 1984, 1994, 2007 and 2010
   i   ADR (age dependency ratio)
   ii   young age dependency burden
   iii   old age dependency burden Inter the economic implications of these series of numbers.
2   What measures should be taken to reduce Ethiopia's ADR? Support your answer by citing examples from your locality.
      Along with each of the students in your workgroup, list your household members, giving their age and sex.
3   Form a group consisting of 10 classmates. Let each student consider his or her household and list each person's age and sex with your group, aggregate the results for all of the householdes by creating a table that shows the age-sex structure of the combined households. Then compare the
   a   Age distribution   c   Youth dependency burden
   b   ADR   ratio
4   Using population data, from Table 3.17 calculate the sex ratio of all regions. Which region(s) has the highest and lowest sex-ratio? Why?
5   Calculate the sex-ratio for each grade or grades (10-12) in your school? Which grade has the highest sex-ratio? What does the ratio indicate?

3.5.4   Population Policy of Ethiopia

What is population policy? Why has the government of Ethiopia formulated a population policy? When did it do that? What type of population policy has been adopted in Ethiopia? Do you support the idea of this type of policy? Why or why not?

Population policy is defined in a variety of ways. Some of them include:

⇨ *"All deliberate government actions intended to influence population growth, size, distribution and composition";*

⇨ *"A deliberate effort by a national government to influence the three demographic variables: fertility, mortality and migration."*

⇨ *"Measures initiated by governments to influence, in a targeted direction, the size, rate of change, composition or geographic distribution of a population."*

What did you understand from the three above definitions of population policy? What is the main issue stressed by all of the definitions?

Generally, population policies are used as guidelines to create positive relationships between population and resources. To this end, they are used to ensure balanced growths of population and economy. Maintaining a balance between a country's population and its economy helps improve the peoples' quality of life while improving the environment.

There are two major types of population policy used by different countries in the world:

a **Pro-natalist (populationist) policies:** they are designed to encourage population growth. Such policies are adopted with the objective of achieving various goals such as maintaining military strength, economic production and national pride. When more-developed countries have expanding economies but very low growth rates, they adopt pro-natalist population policy programs. Examples: the Netherlands, Kuwait and Israel.

b **Anti-natalist policies:** they are designed to reduce birthrates. Such policies are promoted for several reasons. For example, moderating rapid population growth and preventing related social problems such as shortages of housing, education and services. Example; China.

As you know, Ethiopia has a rapid population growth rate and one of the fastest growing populations in the world. Because of this, the government adopted an *anti-natalist* population policy since 1993. As such the population policy of the country aims at attaining these general objectives:

a Closing the gap between high population growth and low economic productivity through planned reduction of population growth and increasing economic returns;

b Speeding up economic and social development processes through holistic, integrated development programs designed to speed up the structural differentiation of the economy and employment;

c   Reducing the rate of rural-to-urban migration;

d   Maintaining and improving the carrying capacity of the environment by taking appropriate environmental-protection and conservation measures;

e   Raising the economic and social status of women by freeing them from the restrictions and hard work of traditional life and making it possible for them to participate productively in the larger community;

f   Significantly improving the social and economic status of unprotected or easily affected groups;

g   Facilitating research programs in reproductive health;

h   Developing population programs specially designed to promote male involvement in family planning;

i   Diversifying methods of contraception with particular attention to increasing the availability of male-orientated methods.

Activity 3.25

In your geography workgroup, answer the following questions and perform the following activities.

1   Of the two main types of population policy, which one is more appropriate for the demographic characteristics of the population of Ethiopia? Why?

2   Explain briefly how anti-natalist population policies can contribute to the well being of the environment in your locality.

3   How can the traditional institutions like "Edir", "Equb", "Mahaber" and others contribute to implementing population policies in your locality? Identify the obstacles that have hindered these institutions from acting as facilitators for such changes. Suggest possible strategies to overcome the obstacles.

Unit Review

🌍 UNIT SUMMARY

🌐 Until 1650, the world's population grew quite slowly. But by 2000 A.D, it had reached six billion. The current annual world growth rate is quite large- about 1.5%. But developing countries have higher growth rates, and these rates are much higher than those of the developed countries.

🌐 For instance, Africa and Europe has shown a very contrasting population growth trends. The former has shown fastest growth rate with shortest doubling time but the later has revealed an opposite trends.

🌐 By 2010, world population has reached 6.9 billion. The first three populous continents may include Asia, Africa and Europe, and then followed by L. America, N. America and Oceania according to their size of population.

🌐 The three leading populous countries in Asia (China, India and Indonesia), in Europe (Geromany, UK and Italy), in North America (USA,Mexioc and Canada), in Latin America (Brazil, Argentina and Colombia) and in Africa (Nigeria, Egypt and Ethiopia).

🌐 The population of any area is determined by fertility, mortality and migration. The difference between birth and death rates is known as rate of *natural increase*. Overall, growth rate is determined by the net effect of natural increase and net migration rate. The three main age groups that determine *population structure* are young, adult and old age.

🌐 Population pyramids show considerable differences in population age structures between developed and developing countries. In the former, it is rectangualr at the middle adn narrow both at the base and at the top. But in the later, it is narrow at the top and very broad at the base.

🌐 Population is unevenly distributed across the earth's surface. This distribution is dictated by positive and negative factors. Favourable climate, fertile soil, adequate water supply and industrial development positively influence population concentration. Where as unfavourable climate (extremely hot or cold and dry climates) mountaiinous regions of very rugged topography with poor soil, and inaccessible areas discourage large human settlements.

🌐 Urbanization is the increase in the proportion of people living in cities. It is most rapid in cities of developing countries, where it causes considerable problems.

🌐 Population denisty, which shows the spread of population over space, can be measured using crude (arithmetic) density and agricalatural (rural) density. The former is the best measure of population density in agrarian countires such as in Ethiopia.

🌐 The major causes of migration include economic factors (employment opportunities, communication and transport networks, etc), social factors (social facilities, political control, etc) and ecological factors (ecological crises such as droughts, desertification, etc).

🌐 There are many factors that affect urbanization like rate of natural increase, rural to urban migration, establishment of large number of industries, the development of commerce, transportation and communication, etc. N. America, L. America and Europe are the most urbanized continents followed by Asia and Africa accordingly.

🌐 By 1900, the estimated population of Ethiopia was only 11.8 million. Since then, it has grown at a rapid rate. At the current rate, the country's population is projected to grow by 1.9 million persons annually. Fertility and mortality are the main factors in population growth rates. Migration has very little effect because most of the population has low mobility across international boundaries.

🌐 The pattern of Ethiopiain population distribution is marked unequal. High population densities observed in the highlands but teh peripheral lowlands of the country are very sparsely populated.

🌐 Ethiopian population is predominatly young, which is economically dependent with elderly people upon the economically active population. This adversely affect the development of the country at large.

🌐 The population pyramid of Ethiopia is very wide at the base that indicates a high birth rate and very narrow towards the top due to a high infant mortality rate and relatively short life expectancy. The country also has almost a balanced sex ratios both in rural and ruban areas.

🌐 There are two main types of population policy: pro-natalist and anti-natalist. Ethiopia's population policy's main goal is to achieve a balanced population growth rate. It was launched in 1993 and is essentially anti-natalist.

🌍 REVIEW EXERCISE FOR UNIT 3

I *Write 'true' for correct statements and 'false' for wrong statements*

1 Population growth in the developed nations occurs at a much faster rate than in less developed countries.

2 Anti-natalist population policies refer to policies proposed to reduce the birth rate.

3 In Ethiopia, fertility is higher in urban centers than in rural areas.

4 Standard of living is one of the factors that affects fertility.

5 There is a direct relationship between fertility and education.

6 The Nile Valley of Egypt is one of the most densely populated regions of the world.

7 The rate of urbanization is higher in developing countries than in the developed countries.

8 The shape of population pyramids of developing countries is broad-based.

II **Matching Item:** *Match the items under column "A" with those under column "B"*

A		B	
9	Doubling time	A	Number of live births per 1000 women
10	Early marriage	B	Sex structures
11	Mortality	C	Increases fertility rate
12	Migration	D	It has little effect on population change in Ethiopia
13	Age dependency ratio	E	Average number of children that would be born alive to a woman
14	Total fertility rate	F	The time needed for a population to double in size.
15	General fertility rate	G	The rate of frequency of death in a population

III *Multiple-choice items: choose the correct answer from the given options.*

16 A population pyramid is a drawing that shows population distribution by

A   Age group and death rate   C   Sex and age group

B   Sex and birth rate   D   Age group and growth rate

17 Which one of the following is a 'push' factor of migration?

A   High living standard   C   Hostile climate

B   Poverty and poor   D   Land scarcity
     employment
                                     E   All except 'A'.

18 The most densely populated part of Ethiopia is

A   The enset-growing regions of the SNNPR
B   The southwestern part of Ethiopia
C   The Gambella and Somali regions
D   The Cereal-growing regions of Bale and Arsi

19 The age structure of the Ethiopian population implies that:

A   There is a low dependency ratio in Ethiopia.
B   There is a high dependency ratio in Ethiopia.
C   The old age group is twice as large as that of the middle age group.
D   The middle age group and the old age group are roughly equal in number.

20 If the birth rate of a population is 50/1000, and the death rate is 30/1000, then the natural increasing rate is equal to:

A   8%   B   80%   C   2%   D   None

IV *Fill the following blank spaces with appropriate word(s).*

21 An exceptionally fast world-population growth is known as_____.

22 Policy that designed to encourage population growth is _____.

23 The *adult* age group is also known as _____.

24 Among the measures of population dynamics, _____ can be regarded as a good indicator of level of development.

25 The main population agglomeration centres of world population are called _____.

V   *Workout Items.*

26   The birth rate of country "X" was 47/1000, and its death rate was 18/1000. Find the rate of natural increase.

27   Suppose the demographic characteristics of a certain region are:

Total population = 120,000;

Urban population = 25,000;

Total area = 5000 km^2

Area of arable land = 3000 km^2. Based on the above data, calculate:

   i   crude density   ii   agricultural density

28   By mid 1995, the population size of a hypothetical country, "X", was 100 million, of which 35% of the people were under 15 years of age, and 40% were adult. What is the ADR of this population?

29   The population size of a hypothetical country "Y" was 75 million, of which 30% were under 15 years of age and 10% were in old age. Calculate the ADR of this population.

30   A hypothetical country "A" has a sex ratio of 88%. If the female population is 10 million, what is the total population?