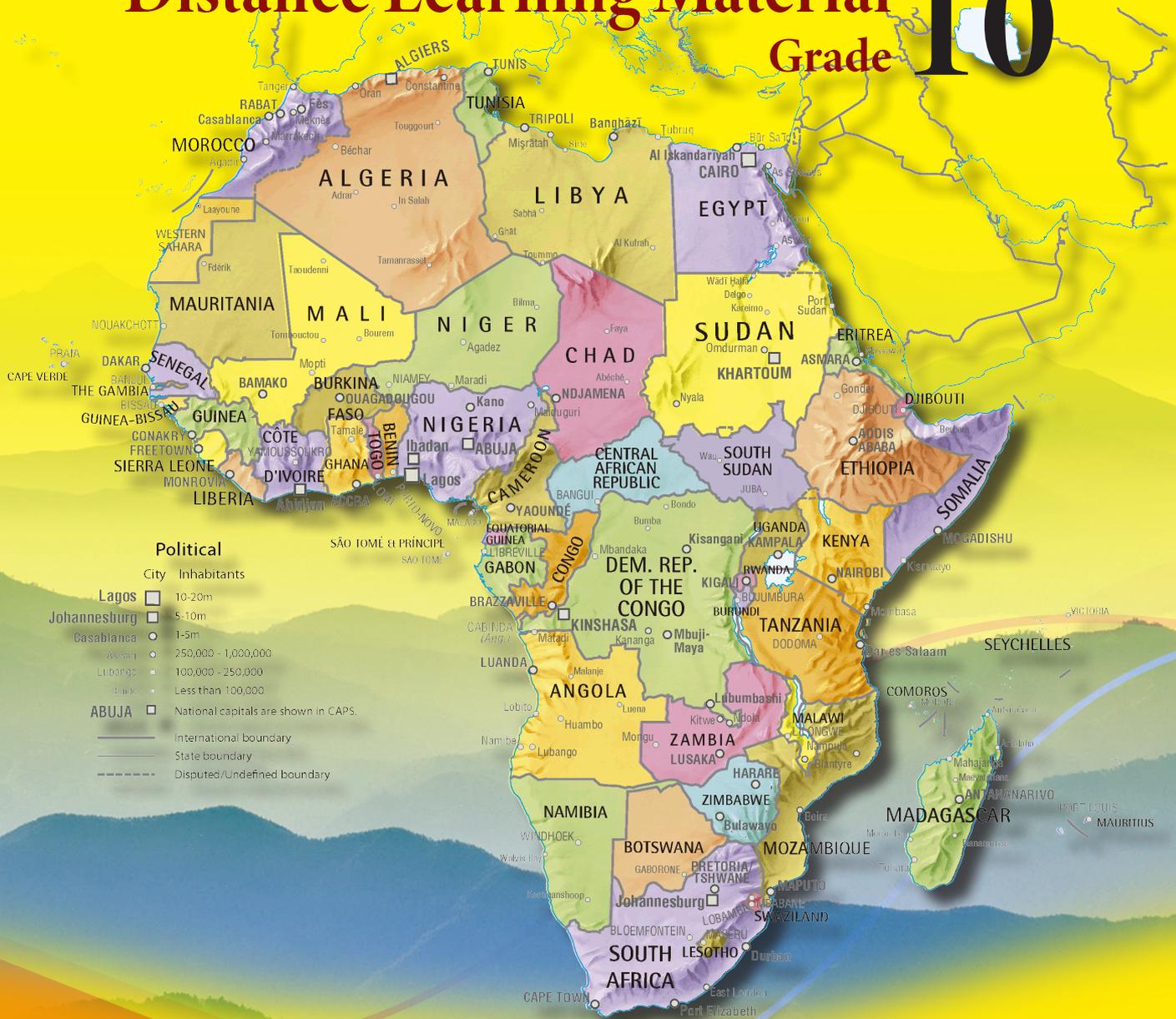




# GEOGRAPHY

## Distance Learning Material **Grade 10**



## Module II



# Geography

Distance Learning Material  
Grade **10**

## MODULE TWO

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# MODULE TWO

## I. Module Introduction

Hello, dear learner! Welcome to study the subject Geography. This is a Geography Module for grade 10 distance learners. Geography is one of the core subjects taught at the high school level in Ethiopia and the rest of the world. The study of geography can be described as the study of the earth's surface, focusing on the space within which the human population lives. It has three key characteristics: an emphasis on location and spatial variations; people-environment relationships; and regional analysis. Hence, by studying geography, you will acquire knowledge, skills, attitudes, and values about the variations of human and natural phenomena on the surface of the earth through its study and practice.

Dear learner! In module one you have studied many important geographical concepts, ideas, and features about our continent, – Africa. Here in the second module, you will mainly study the socioeconomic and spatial analysis of geographic features in Africa. While focusing on Africa, this module will also provide you with an overview of basic employment structure around the world, and global population change. This is important because we live in an interrelated and interdependent world, hence, we should learn some basic concepts about it.

At this level, you may ask what key geographical aspects of Africa or the rest of the world does the second module focus on. Great! In this module (Module 2) you will study about the major economic and cultural activities of Africa, human – natural environment interactions, geographic issues and public concerns in Africa, and geospatial information and data processing. Therefore, the module will cover the following key geographical aspects and the benefits of studying about them:

- **Economic and cultural activities** – to help you understand the economic and cultural activities in Africa and its regions. It enables you to understand businesses, markets, and people. Therefore, you can better respond to the threats and opportunities that emerge when things change;
- **Human – natural environment interactions** – to help you understand that a healthy environment supplies the necessities of life, like water, food, and air. It also provides resources for economic growth and the means to fight natural hazards;
- **Geographic issues and public concerns in Africa** – to help you understand the challenges Africans face today including the adverse impact of climate change, unemployment, migration, biodiversity and ecosystem loss, desertification, low resilience to natural disasters, the potential non achievement of the Millennium Development Goals (MDGs); and
- **Geospatial information and data processing** – to help you identify the geographic location and characteristics of natural or constructed features and boundaries on or about

the earth, including data and information derived from remote sensing, mapping, and surveying technologies.

This knowledge is expressed in the form of facts about places, key concepts that guide geographical inquiry (e.g., location, pattern, and region); and generalizations that explain patterns, evaluate consequences, and solve social and environmental problems. Therefore, a successful completion of Geography Module 2 of Grade 10 helps you to develop an understanding and acquire knowledge of economic activities, possible solutions to the problem of unemployment, linguistic and religious diversities in Africa, the global population change, unplanned urbanization, migration, pollution, geospatial information, geographic data acquisitions, advances in map making, and the interpretation of graphs, charts, and diagrams.

Dear learner, please keep in mind that you are entirely responsible for your own learning. Hence, for this module alone you need to allocate at least 44 hours of study time. Above all, you attend your distance education program in a condition where additional reading materials may not be available. Moreover, you are assumed to shoulder many other social and family responsibilities. Thus, you try to learn under such a demanding environment. To complete the module properly, and become successful, you need to study hard and have planned time to read the module and complete exercises incorporated in the module, and perform your assignment. Therefore, it is good to give adequate attention to the assignment. Do not copy it from your friends. They may give you the answers but not their mind. You must do it yourself.

Dear learner, the module is written in such a way that it is suitable for self-learning. Unwarranted details and jargons have been left out. In fact, you may face many challenging issues that may hamper your progress. Whenever you face challenging cases in the module, do not worry. If such cases encounter you, try to record and bring them to your tutorial class to discuss with your tutor on the issue. If you want to understand and exhaustively exploit the contents of the module, you are advised to have your own study plan. It is evident that unless you have your own study plan, it is very difficult to complete the module properly. Therefore, your conviction towards having a study plan is highly important for your success.

Dear learner, the grade 10 geography module consist of eight chapters, which are organized into two modules. Each module has four units. The units are further divided into sections and sub sections. Moreover, in the module you will find in-text questions, activities, and self-test exercises. At the end of each unit, you will find self-test exercises. Hence, try to go through the questions that are provided at the end of each unit. However, once you begin doing the exercises, you are advised not to look at your reading material until you have tried all the questions by yourself. First, try yourself and then check your answers by going back to your reading material. You must begin doing your assignment after you have completed reading your module. As you attend your education in the absence of teachers, it is advisable to have your own dictionary to look up the meanings of vocabularies you do not understand. Finally, wishing you a happy time, we would like to present to you the module objectives and units of module 2 as follows.

## II. Objectives for Module Two

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

-  *understand the socioeconomic conditions of Africa;*
-  *appreciate the cultural and religious diversities of Africa;*
-  *identify the geographic issues and public concerns in Africa; and*
-  *make maps, graphs, and charts of an area of your interest.*

## III. Contents for Module Two

*Unit five: Economic and Cultural Activities of Africa*

*Unit six: Human – natural environment interactions*

*Unit seven: Geographic issues and public concerns in Africa*

*Unit eight: Geospatial information and data processing*

## IV. Assessment Methods for Module Two

In this module there are activities with a lot of questions useful to check the progress of your learning. Therefore, whenever you come across the following assessment methods try, to answer the questions.

### *Formative assessment*

#### *Brainstorming questions*

-  Essays
-  Self-test exercises
-  Feedback on learning-in-process
-  Self-evaluation

#### *Summative assessment*

-  Assignment
-  Final examination

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# UNIT FIVE

## MAJOR ECONOMIC AND CULTURAL ACTIVITIES OF AFRICA



### Unit Introduction

Required study time: 5 hours

Dear learner! In this unit, you are going to learn about the way of life of the peoples of Africa. These include economic activities, social and cultural diversities in the continent. Africa is very resourceful region in the world. Nevertheless, the continent faces huge economic problems. Its economy is not as diversified as other diversities in the continent. Therefore, its people are largely engaged in primary economic activity.

Africa needs a very strong commitment to come out of the cycles of poverty, high unemployment, and economic problems. Specially, it must seek solutions to the problem of unemployment. Therefore, the leaders of Africa have come together and set goals called Agenda 2063 in 2015. The agenda aims to foster economic development, political integration, improvements in democracy and justice, and the establishment of security and peace on the entire African continent.

Culture is a manifestation of socio-religious and economic conditions, the standard of living, the level of technology and people's environmental perception. It is abstract or intangible; however, it can be defined by elements like language, religion, ethnicity, rituals, customs, traditions, and tools. The society has the maximum bearing of **religion**. It is the religion which compels people to adopt certain kinds of economies, dresses, food habits, and beliefs. It also commands people to learn certain languages, and provides some restrictions at the time of cultural mingling. All other variables are directly or indirectly controlled by religion.



### Unit Learning Outcome

**After successfully completing this unit, you will be able to:**

-  summarize the employment structure in the world;
-  identify the major economic activities in Africa;
-  identify the major cultural landscapes in Africa;
-  describe the linguistic and religious diversity of Africa;
-  assess the pillars of Africa's Agenda 2063 and their implication for the socio-economic transformation of the continent; and
-  compare and contrast the indicators of Agenda 2063 with those of the Sustainable Development Goals (SDGs).



## Unit Learning Strategies

Dear learner, we suggest you to practice the following learning strategies:

-  reading,
-  writing and taking notes,
-  studying and remembering information,
-  improving assignment and test performance,
-  time management and
-  organization,
-  self-advocacy (the ability to effectively communicate, convey, negotiate, or assert one's interests, desires, needs and rights), and
-  practice activities on a computer or laptop.



## Unit Contents

**5.1 Overview of Employment Structure in the World**

**5.2 Major economic activities in Africa**

**5.3 Possible Solutions to the Problem of Unemployment**

**5.4 Africa's Agenda 2063 and Its Implications**

**5.5 Africa's Agenda 2063 Vis-À-Vis Sustainable Development Goals (SDGs)**

**5.6 Linguistic and Religious Diversity in Africa**



## The Required Study Time

Dear learn! On your study plan, consider devoting adequate time for study, doing intext exercises and answering review questions. Therefore, please allocate 5 hours of study time for unit one.

## Section 5.1 Overview of Employment Structure in the World



### Section Overview

Required study time: 1 hour

Dear learner, in this section you will study about employment structure of the world. Employment structure means how the workforce is divided up between the three main employment sectors – primary, secondary, and tertiary. Employment structures change over time. Countries in the early stage of development usually have a high percentage of the population in primary sector. This is because most people are engaged in **agricultural** activities. As a country begins to develop, there is an increase in the secondary sector. An increase in machinery on farms means fewer people are needed. People tend to migrate to urban areas to get jobs in factories. When a country becomes more economically developed there is a greater demand for **services** such as education, healthcare, and tourism. Therefore, the tertiary sector undergoes growth. By this time computers, machinery and robots are replacing people in the secondary sector leading a decline in secondary jobs.



## Section Learning Outcome

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

describe the major employment structures of the world.



### Key terms

- ✓ Developing country
- ✓ Economic activity
- ✓ Employment structure
- ✓ Lower middle-income
- ✓ Middle-income
- ✓ Upper middle-income

## BRAINSTORMING QUESTION

1. Dear learner! Is Africa developed or developing region? Please, explain your answer on the space provided. \_\_\_\_\_

\_\_\_\_\_

Dear learner, have you tried the activity? If so, that is great. Let's now identify the main types of economic activities in the world.

The employment structure of a country, a region or the whole world shows how the labor force is divided between **primary**, **secondary**, and **tertiary** economic activities. These three types are commonly used classification systems; while, **quaternary** is a newly emerging system, hence it is not included in the assessment of economies of countries. Different countries have different employment structures. Therefore, the employment structure of a given country can reflect many things about the country's economy.



### Main Types of Economic Activities

**Primary sector:** involves extracting raw materials, rearing animals, and growing crops.

**Secondary sector:** involves changing of raw materials into new products (finished products). Hence, it is called 'manufacturing'.

**Tertiary sector:** involves the activities of people in the service sector, such as education, health, tourism, and banking.

**Quaternary sector:** is based on knowledge. It includes activities such as information and communication technology (ICT), research and development, education, financial planning, etc. It mostly engages people in information generating and sharing.

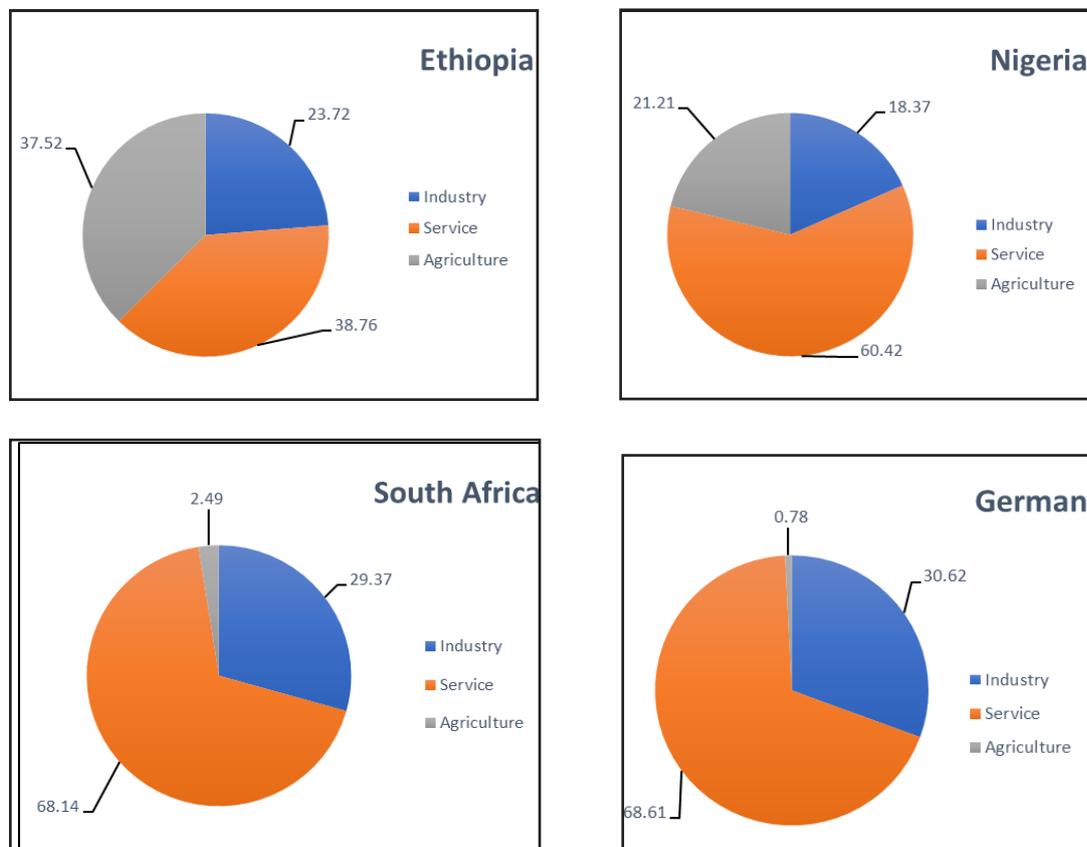
Such economic activities provide people with job opportunities. Then the people can purchase the goods and services they need with their earnings. Note that all countries in the world do not have the same share of these economic activities. The percentage of each sector varies from one country to another depending on its level of development. Developed countries have more people who work in the tertiary sector, whereas, developing countries have more people engaged in the primary sector, particularly in agriculture.

## ? Activity 5.1

**Dear learner! Can you match the following tertiary economic activities with its respective examples?**

Services	Examples
<ol style="list-style-type: none"> <li>1. Social services</li> <li>2. Distribution services</li> <li>3. Consumer services</li> <li>4. Business services</li> </ol>	<ol style="list-style-type: none"> <li>A. trade, transport, communications</li> <li>B. banking, insurance</li> <li>C. administration, education, health</li> <li>D. hotel, restaurant, culture sites</li> </ol>

Dear learner, have you tried the activity? That is great, let's now see the structure of economies of some countries.



**Figure 5.1:** Percentage Share of Economic Activities by Countries



## Developing countries (DVCs)

**Developing countries (DVCs)** are the world's least industrialized nations heavily committed to agriculture. They have a low level of literacy, high unemployment, rapid population growth and their exports are largely agricultural or raw materials. Capital equipment is scarce, production technologies are primitive, and productivity is low. More than 60% of the world's population lives in these nations, which can be divided into two groups.

a. The first group consists of **middle-income countries**. These are home to 75% of the world's population and 62% of the world's poor in 2020. They are further divided into two based on their gross national income (GNI): **lower middle-income** and **upper middle-income** economies.

-  lower middle-income economies - those with a GNI per capita between \$1,036 and \$4,045 in 2021.
-  upper middle-income economies - those with a GNI per capita between \$4,046 and \$12,535 in 2021.

b. The **low-income** countries are countries with a GNI per capita of \$1,025 or less in 2018. Dominating this group in 2020 are Afghanistan, Bangladesh, and the sub-Saharan African nations.

Many DVCs such as China, Malaysia and Thailand have achieved high annual growth rates in their GDPs in recent decades and have moved from low-income to lower middle-income. Meanwhile, previous DVCs, such as South Korea, and Singapore have achieved impressive success and became high-income countries.



## Checklist

Dear learner! Now it is time to check whether you understood the contents of the section. Therefore, please put a tick mark (✓) in the boxes given to prove that you have understood the respective issues well.

I can:

- 1. summarize the employment structure in the world
- 2. identify the major economic activities in Africa
- 3. list the types of economic activities
- 4. differentiate developed and developing countries on basis of income

Is there any box that you did not mark (✓) under it? If there is please go back to your text and read about it before you go to the following exercises.

## SELF-TEST EXERCISES OF SECTION 5.1

The following questions can help you to study section 5.1.

### PART I: MATCHING

Direction: Match the Items Under Column “A” with Items Under Column “B”.

#### Column A

1. Results from education and/or training
2. Provision of services
3. Value added raw material
4. Extraction of raw materials

#### Column B

- A. Primary sector
- B. Secondary sector
- C. Tertiary sector
- D. Quaternary sector



### Resources for further reading

<https://www.worldbank.org/en/region/afr/overview>

[https://www.studysmarter.us/textbooks/economics/macroeconomics-22nd/the-economics-of-developing-countries/q1rq-question-true-or-false-the-term-developing-country-dvc-/](https://www.studysmarter.us/textbooks/economics/macroeconomics-22nd/the-economics-of-developing-countries/q1rq-question-true-or-false-the-term-developing-country-dvc/)

## Section 5.2 Major Economic Activities in Africa



### Section Overview

Required study time: 1 hour

Dear learner, in this section you will study about the major economic activities of Africa. Africa is home to about 1.3 billion people. Hence, it has a large working age population. It is also a diverse continent offering human and natural resources which have the potential to yield inclusive growth and eradicate poverty in the continent. Therefore, Africa has very good opportunities for economic growth and development. At present, Africa is composed of low, lower-middle, upper-middle, and high-income countries. However, Africa faces huge economic hurdles created largely by its **historical past**, widespread conflicts and bad economic policies pursued by its leaders. Nevertheless, economic growth should focus on enabling Africans to live healthier and prosperous lives by harnessing the potential of their resources and people.



### Section Learning Outcome

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

 describe the major economic activities of Africa.

**Key terms**

- ✔ Foreign Aid
- ✔ Gross Domestic product
- ✔ Poverty Trap
- ✔ Primary Sector
- ✔ Secondary Sector
- ✔ Technological Capacity

**? BRAINSTORMING QUESTION**

1. Dear learner, what is the dominant economic activity in Africa? Why is the economic activity so dominant in Africa? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Dear learner, have you tried the activity? That is great. Let's now identify main economic activities in Africa.

**5.2.1. Economic Activities in Africa**

Africa largely depends on the primary sector or the extraction of basic materials from the natural environment. When an economy highly relies on the extraction of basic natural resources through agriculture, mining, forestry, and fishing. This sector faces several challenges, especially due climate variability and change, and price fluctuations.

**A. Primary Sector in Africa**

**i. Agriculture:**

Agriculture is by far the single most important economic activity in Africa. It provides employment for about two-thirds of the continent's working population and it contributes on average 30 to 60 percent of the gross domestic product (GDP) and about 30 percent of the value of exports to each country. However, most agriculture in Africa is rain-fed and therefore very vulnerable to climate variability that is characterized by frequent droughts and occasional floods, which at times destroy crops and livestock.

**ii. Mining:**

Mining is one of the major economic activities in Africa. Africa has huge mineral resources (see Unit Three). Therefore, due to Africa's mineral wealth and the global demand for mineral resources such as copper, gold, platinum, diamonds, etc. the mining sector actively operates in Africa.



### Activity 5.2

1. Dear learner, which of the following Africa's historical past had significant effect on its economy? A. Slave trade B. Colonialism C. Both (A and B)

#### iii. Forestry:

Africa is rich in forests and woodlands. Africa has 624 million hectares of forests, which comprise 20.6 percent of the continent's total land area and 15.6 percent of the world's forest cover. Forests and trees support many African national economies by supplying a variety of products and services to rural and urban communities. In addition, many wildlife and game parks are in forested areas.

#### iv. Fishery:

The fishery sector plays a significant role in Africa's economy and society. It has crucial role in food and nutrition security, especially for coastal populations. Moreover, the sector contributes to the economy of the continent by creating employment opportunities.



### Challenges of the Primary Sector in Africa

**Heavy reliance on the extraction of basic natural resources or primary sector has the following challenges in Africa:**

- Productivity and reliability in these industries vary because they depend on weather and natural elements (soil fertility and adequate rainfall.).
- Products of the natural environment are also dependent on **exchange rates** and other industries to set their prices because the manufacturers have more economic power than the producer of raw materials.
- Primary sector workers often work for **extremely low wages**.
- Moving out of the primary sector into the secondary sector is the **hardest of all moves**, as governments may not have enough money for investment in the manufacturing sector.

## B. Secondary Sector in Africa

This sector is made up of activities that process basic materials obtained by the primary sector, and turn them into new goods and products. An example could be copper ore transformed into an electric cable. In Africa the secondary sector has grown at a rapid pace in recent decades, but Africa is not keeping up with worldwide improvements in the manufacturing industry. Africa has a large selection of manufacturing consisting of textiles, clothing, footwear, and the manufacturing of basic woods and metals. Electricity, gas, and water industries in the secondary sector have been markedly fluctuating over the past decades. They appear to be very sensitive to changing economic trends.

### C. Tertiary Sector in Africa

The tertiary sector consists of a range of service activities. It involves the selling of services and skills. Meanwhile, selling goods and products from primary and secondary industries is also involved in the service sector. Services related to transport, storage, communication, and real estate have shown significant improvement in Africa in recent decades. The growth in the hospitality industry, represented by hotels and restaurants, indicates the growing importance of tourism in many African countries. Hence, tourism in Africa depends directly on the continent's natural resources and biodiversity.



### Activity 5.3

1. Dear learner! Which of the following is not a tertiary economic activity?
 

A. Transportation	D. Retail
B. Education	E. Tannery
C. Entertainment	

Dear learner, have you tried the activity? That is wonderful. Let's now focus on the major factors hindering growth of economy of Africa.

### 5.2.2. Major Factors Hindering Growth of Economy of Africa

Several factors hinder the growth of African economy. Some of the problems include limitations in technological capabilities, overdependence on aids, poor economic structure, and poor education, among others.

#### 1. Limitations in Technology

Improvements in technological capacity are the key to development. It helps countries to create, access and use Information Communications Technology (ICT) to solve socio-economic problems. In addition, innovation in science and technology is bringing significant changes to agriculture, medicine, and transportation among other sectors. Technological capability, therefore, brings the major difference between the developed and developing countries in the world. Hence, developed countries in Europe, North America and Asia have transformed their economies through the advancement of their technological capacities and improvement in human capital.

Therefore, to be successful, African countries should invest in technology because limitation in technology capabilities is among the factors that hinder economic growth in Africa.

#### 2. Over-dependence on Foreign Aids

In Africa, many countries highly depend on development partners to finance their development projects. Some sectors such as education, health and agriculture rely on foreign development partners to function. Over-relying on foreign aid leads to the stagnation of the economy of a country. Many African countries now have large percentages of their budgets financed by foreign donations. The main problem such as dependence on aid is that instead of engaging in

activities that facilitate economic growth, the countries wait for aids to enhance their education and infrastructure. Therefore, African countries should engage in activities that generate revenue through trade and investment rather than depending on foreign aids.

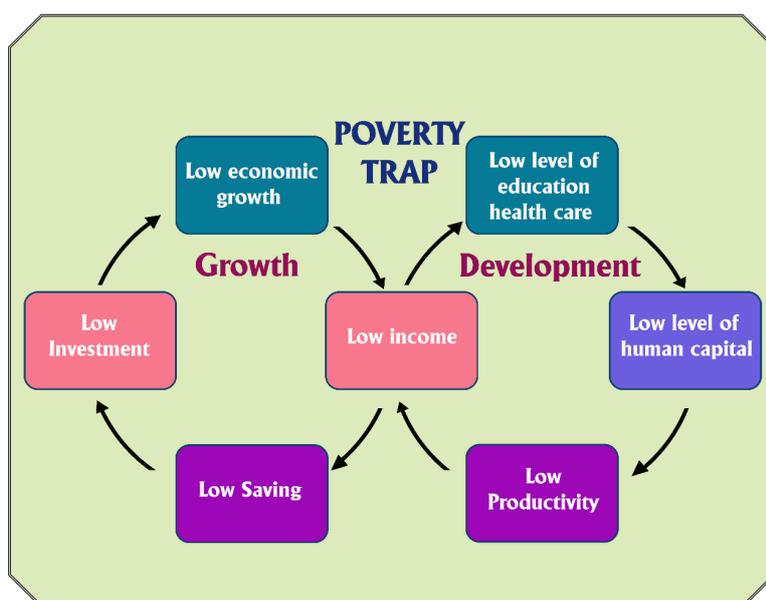
### 3. Poor Structures of the Economy

Since most African countries could not adopt improved science and technology, they have not changed their economic structures since the time of independence. Therefore, they are still exporting raw materials that include cocoa, diamond, gold, bauxite, and gold in their raw forms. Thus, they do not **add value** to raw materials as a way of increasing their earnings in a global market. African countries still import products from light industries like toys, matches, and toothpicks among other products from other regions. This will in turn hinder its economic growth. Therefore, African countries should take the initiative to embrace technology in the manufacturing sector and establish better economic structures.

### 4. Poor Education

Education is very important for the development of a country. Education promotes entrepreneurship by producing a skilled workforce. Countries get the knowledge and skills for manufacturing from quality education. However, the current education that the African countries are offering to students is yet to produce graduates that can take up the task of enhancing the African economy. African education system should, therefore, be changed to equip students with the information and skill that can help them to be competent in the global market activities.

Generally, the poor status of Africa’s economy has led the continent to face high **unemployment**. Africa has the world’s highest rate of working poverty – people who are employed but earning less than US\$2 a day. Youth unemployment and underemployment are among the main barriers to development in Africa. The exclusion of young people from the labor force causes generational



cycles of poverty to continue and put countries into **vicious cycles of poverty**. It also breaks down social cohesion and can be associated with higher levels of crime and violence among idle youth. It also leads a large number of youths to migrate taking very dangerous routes towards the developed regions.

Figure 5.2: The Poverty Trap



## Checklist

Dear learner! Now it is time to check whether you understood the contents of the section. Therefore, please put a tick mark (✓) in the boxes given to prove if you have understood the respective issues well or not.

I can:

- 1. describe the major economic activities of Africa
- 2. explain the challenges of the primary sector
- 3. discuss factors hinder the growth of African economy
- 4. explain the vicious cycles of poverty

Is there any box that you did not mark (✓) under it? If there is please go back to your text and read about it before you go to the following exercises.



## SELF-TEST EXERCISES OF SECTION 5.2

The following questions can help to study section 5.2.

**Direction: For the following questions, write “True” if the statement is correct and write “False” if it is incorrect.**

1. Africa had huge economic opportunities created largely by its historical past.
2. Africa largely depends on the primary sector or the extraction of raw materials from the environment.
3. Heavy reliance on the extraction of natural resources or primary sector may lead to rapid economic growth.
4. The growing importance of tourism in many African countries is an indication of the good performance of primary sector.
5. Over-dependence on foreign aids may help African countries generate high revenue.



### Resources for further reading

<https://www.worldbank.org/en/region/afr/overview>

<https://www.google.com/url?sa=i&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=0CAMQw7AJahcKEwiguOmhtZr-AhUAAAAAHQAAAAAQAw&url=https%3A%2F%2F>

[www.britannica.com/place/Africa/Economy](http://www.britannica.com/place/Africa/Economy)&psig=AOvVaw32w1m73Hoh7bO7bs6gaOeP&ust=1681047817283952

<https://www.worldbank.org/en/news/feature/2012/05/17/india-agriculture-issues-priorities>

## Section 5.3 Possible Solutions to the Problem of Unemployment



### Section Overview

Required study time: 1 hour

Dear learner, in this section you will study about one of the most serious economic problems of Africa, unemployment and its possible solutions. Unemployment and poverty are linked, since a lack of income makes it hard for people to meet their basic need. Hence, it requires solutions. The solutions can be categorized into three, helping people become more employable, creating more jobs, and avoiding the cycle of poverty.



### Section Learning Outcomes

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

 forward solutions to the problem of unemployment.



### Key terms

- |                      |                           |
|----------------------|---------------------------|
| ✓ Active job seeking | ✓ Job Opportunities       |
| ✓ Employment         | ✓ Sustainable Development |
| ✓ Employability      | ✓ Unemployment            |



### BRAINSTORMING QUESTION

- Dear learner! What are the possible solutions for unemployment? \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Dear learner, have you tried the activity? That is fantastic. Now let's first understand the nature of unemployment.

### I. Main Features of Unemployment

- ⚙️ Employment is tied to wages or money that is paid regularly for doing work. If someone is employed, he/she must be willing to work for the prevailing wage being offered to do the job. If someone is unemployed, he/she is unable to work or unwilling to do that same job. There are two ways of being unemployed.
- ⚙️ **Voluntary unemployment** occurs when a person is jobless by choice, rather than due to a lack of employment opportunities. Quitting a job because someone has just started

his/her own small business is one example of voluntary unemployment.

**Involuntary unemployment** occurs when a person is willing and able to work for a given wage but cannot find a job. When university graduates could not get a job because the economy fails to hire, this is an example of involuntary unemployment.

Therefore, unemployment is a term referring to individuals who are **employable** and **actively seeking** a job but are unable to find a job. Unemployment is usually measured by the unemployment rate. Unemployment is calculated by:

$$\frac{\text{The number of unemployed people}}{\text{The total number of people in the workforce}} \times 100$$

Unemployment rate serves as one of the indicators of a country's economic status.



## Activity 5.4

1. Dear learner! Please read the quotation first, and then attempt the question that follows. "Unemployment rate serves as one of the indicators of a country's economic status." What can you infer from this statement about the economic status of Africa?

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Dear learner, have you tried the activity? That is nice! Let's now identify on effects of unemployment.

## II. Effects of Unemployment

Unemployment affects both the workers and the economy of a country or region. It causes workers to suffer financial hardship. Then, it affects families, relationships, and communities. Unemployment results in reduced demand for goods and services. Low level of consumption and buying power among citizens, in turn, cause lower profits for businesses. Finally, businesses may disappear and governments may reduce their budget and workforce as they lose income from taxes.

## III. Solutions for Unemployment

### 1. The Creation of more Job Opportunities

The workforce of any country usually makes up a large part of its population. In order to satisfy the needs of their people, all countries should ensure that they create many job opportunities so that the people who are eager to work, get the chance to do so. In addition, governments should ensure that people are paid adequately for the services they provide so that no one feels like he or she has been overworked and paid less.

### 2. Individuals should be Encouraged to Enter Diverse Fields

Many of us grew up having been told to choose from very specific job options starting at a very young age. Most often, our parents encouraged us to become either a doctor or a pilot. Everyone cannot be a doctor or a pilot. Therefore, from a very young age, kids should be encouraged to broaden their choices and horizons. As they grow up, they can be innovative in different fields and the economy of the country becomes more diverse.



### Activity 5.5

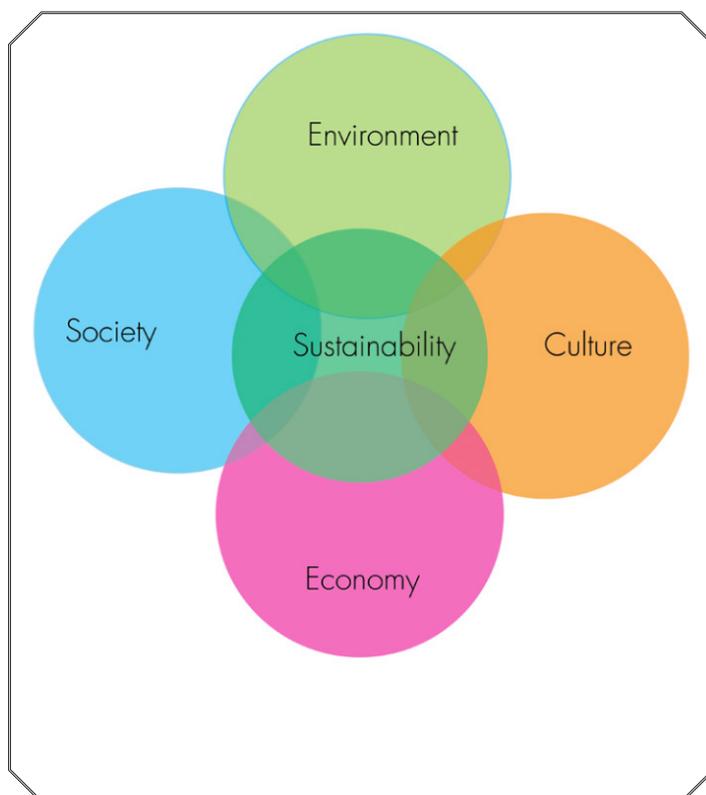
1. Dear learner, what do you want to be in the future? What field of study do you want to study? \_\_\_\_\_

Dear learner, have you tried the activity? That is great! Let's now discuss the importance of sustainable development.

### 3. Sustainable Development

Africa should pursue the principles of sustainable development to come out of poverty and solve the problem of unemployment. It is the overarching paradigm of the United Nations. The concept of sustainable development was described by the Brundtland Commission Report (1987) as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”

There are four dimensions to sustainable development – **society, environment, culture, and**



**economy** – which are intertwined, not separate. Sustainability is a paradigm for thinking about the future in which environmental, societal, and economic considerations are balanced in pursuit of improved quality of life. For example, a prosperous society relies on a healthy environment to provide food and resources, safe drinking water and clean air for its citizens. Sustainable development integrates many processes and pathways to achieve it (e.g., sustainable agriculture and forestry, sustainable production and consumption, good governance, research and technology transfer, education, and training, etc.). Therefore, sustainable development leads to sustainable employment.

**Figure 5.3:** Dimensions of Sustainable Development



## Checklist

Dear learner! Now it is time to check whether you understood the contents of the section. Therefore, please put a tick mark (✓) in the boxes given to prove if you have understood the respective issues well or not.

I can:

- 1. forward ideas as solutions to the problem of unemployment
- 2. explain the main features of unemployment
- 3. describe the effects of unemployment
- 4. explain the importance of sustainable development as a longlasting solution for unemployment

Is there any box that you did not mark (✓) under it? If there is please go back to your text and read about it before you go to the following exercises.



## SELF-TEST EXERCISES OF SECTION 5.3

The following questions can help to study section 5.3.

### PART I: MULTIPLE CHOICE ITEMS

**Direction: For the following questions, choose the correct word or phrase from the given alternatives.**

1. Which one of the following is correct about the notion of employment?
  - A. Someone unwilling to work is employed.
  - B. Someone unable to work is employed.
  - C. Someone willing to work at a given wage is employed.
  - D. Someone willing to work at a given wage is unemployed.
2. A person who is actively seeking a job can be referred to as;
  - A. voluntarily unemployed person
  - B. employable person
  - C. a person affected by joblessness
  - D. a person who was able to find a job
3. Which one of one of the following is **not** the effect of unemployment;
  - A. It causes workers to suffer financial hardship.
  - B. It affects families, relationships, and communities at large.
  - C. It results in high demand for goods and services.
  - D. It may force governments to reduce budget.

4. Which one of the following should Africa do to come out of poverty and solve the problem of unemployment?
  - A. Provide jobs for whoever needs them.
  - B. Follow the principles of sustainable development.
  - C. Increase the number of involuntary unemployment.
  - D. Encourage everyone to be voluntarily unemployed.
  
5. Individuals should be encouraged to enter diverse fields of work because;
  - A. there is no enough job for every person in a country.
  - B. governments cannot create adequate jobs for everyone.
  - C. it can make citizens more innovative in different fields.
  - D. it is difficult to bring about sustainable development.



### Resources for Further Reading

<https://econ.economicshelp.org/2009/10/solutions-to-unemployment.html>

<https://environmental-conscience.com/unemployment-types-causes-effects-solutions/>

<https://www.economicdiscussion.net/difference-between/difference-between-voluntary-and-involuntary-unemployment/709>

<https://www.un.org/sustainabledevelopment/>

## Section 5.4 Africa's Agenda 2063 and Its Implications



### Section Overview

Required study time: 1 hour

Africa has multiple socio-economic problems that need urgent solutions. In order to solve the problems, African leaders have launched Agenda 2063. It is Africa's blueprint and masterplan for transforming Africa into the global powerhouse of the future. Hence, the agenda is the continent's strategic framework that aims to deliver on its goal for inclusive and sustainable development and is a concrete manifestation of the pan-African drive for unity, self-determination, freedom, progress, and collective prosperity pursued under Pan-Africanism and the African Renaissance.



### Section Learning Outcomes

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

-  describe Africa's Agenda 2063 and its implications; and
-  compare and contrast the indicators of Agenda 2063 with those of Sustainable Development Goals (SDGs).

**Key terms**

- ✓ African Union (AU)
- ✓ Agenda 2063
- ✓ Economic Development Affordable and Clean Energy
- ✓ Agenda 2030
- ✓ Climate Action
- ✓ Consumption
- ✓ Gender Equality
- ✓ Hunger poverty
- ✓ Inequality
- ✓ Infrastructure
- ✓ Innovation
- ✓ Pan-African Ideals
- ✓ Production
- ✓ Sustainable City
- ✓ Sustainable Development Goals (SDG)
- ✓ Flagship Programs
- ✓ Organization of African Unity (OAU)

**BRAINSTORMING QUESTION**

1. Dear learner! Is Agenda 2063 comprehensive enough in addressing the problems of Africa?

Have you tried the activity? Very good. Let's now explore the purposes of Agenda 2063.

The main aim of Agenda 2063 was to refocus and reprioritize Africa's agenda from the struggle against apartheid and the attainment of political independence for the continent (which had been the focus of the Organization of African Unity (OAU), the predecessor of the African Union (AU) and instead to prioritize on:

-  **inclusive social and economic development;**
-  **continental and regional integration;**
-  **democratic governance; and**
-  **peace and security.**

Agenda 2063 is the concrete manifestation of how the continent intends to achieve this vision within a 50 year from 2013 to 2063.

**Activity 5.6**

1. Dear learner, where is the headquarter of the AU? Who is the current chairperson of the union?

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Dear learner, have you tried the activity? Very good.

The need to envision a long-term, 50-year, development plan for Africa is important as Africa needs to revise and adapt its development agenda – mainly for the following initiatives:

-  renewed economic growth and social progress;
-  the need for people - centered development;
-  gender equality and youth empowerment; and
-  changing global contexts such as increased globalization and the ICT revolution.

Therefore, Agenda 2063 does not only express these essential features of Africa's aspirations for the future but also identifies key **Flagship Programs** which can boost Africa's economic growth and development and lead to the rapid transformation of the continent.



### Agenda 2063 - Flagship Programs

The flagship programs include:

1. Integrated high-speed train network
2. Formulation of an African commodities strategy
3. Establishment of the African Continental Free Trade Area (AfCFTA)
4. The African passport and free movement of people
5. Silencing the guns by 2020
6. Implementation of the Grand Inga Dam Project
7. Establishment of a single African air transport market (SAATM)
8. Establishment of an annual African economic forum
9. Establishment of African financial institutions
10. The pan-African e-network
11. Africa's outer space strategy
12. An African virtual and e-university
13. Cyber security
14. Great African Museum
15. Encyclopedia Africana



### Activity 5.7

**Dear learner, please answer the following questions in the space provided.**

1. Which of the Flagship Programs of Agenda 2063 has already missed a target year?

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2. Do you think that all the intended projects can finally be realized?

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Dear learner, have you tried the activity? That is great! Let's now compare Africa's Agenda 2063 with the Sustainable Development Goals (SDGs).

### 5.4.1. Africa’s Agenda 2063 vis-à-vis Sustainable Development Goals (SDGs)

The goals of Agenda 2063 are economic development, political integration, improvements in democracy and justice, the establishment of security and peace on the entire African continent. It aspires to the strengthening of cultural identity through an “African Renaissance” and pan-African ideals. It also gives priority to gender equality and political independence from foreign powers.

The Sustainable Development Goals (SDG) or Global Goals are a collection of 17 interlinked global goals designed to be a “blueprint to achieve a better and more sustainable future for all”. These goals provide a shared blueprint for **peace** and **prosperity** for people and the planet, now and into the future. SDGs recognize that ending poverty and other deprivations must go together with strategies that improve health and education, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve our oceans and forests.

The SDGs were set up in 2015 by the United Nations General Assembly and are intended to be achieved by the year 2030. They are included in a UN Resolution called Agenda 2030 or what is simply known as Agenda 2030. The SDGs were developed in the Post-2015 Development Agenda as the future global development framework to succeed the Millennium Development Goals (MDG) which ended in 2015.



#### Activity 5.8

1. Dear learner, what are some of the basic similarities and differences between Africa’s Agenda 2063 and Agenda 2030 of the SDG?

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Dear learner, have you tried the activity? That is great, let’s now refer to the details of sustainable development goals from the following table.



#### Sustainable Development Goals

<p><b>Goal 1</b> <b>No poverty</b></p>	<p><b>Eradicating poverty in all its forms and dimensions by 2030.</b> Large number of people are in the world are deprived of the most basic human needs. They live in absolute poverty or earn less than US\$1.90 a day. They lack food, clean drinking water and sanitation. Thus, this goal targets the most vulnerable in the society by increasing basic resources and services and supporting communities affected by conflict and climate-related disasters.</p>
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## Sustainable Development Goals

<p>Goal 2 Zero Hunger</p>	<p><b>The SDGs aim to end all forms of hunger and malnutrition by 2030</b> by making sure that all people – especially children, have sufficient and nutritious food all year round. This involves promoting sustainable agriculture, supporting small-scale farmers, and providing equal access to land, technology, and markets. It also requires international cooperation to ensure investment in infrastructure and technology to improve agricultural productivity.</p>
<p>Goal 3 <b>Good health and well-being</b></p>	<p><b>Good health is essential to sustainable development.</b> Agenda 2030 reflects the complexity and interconnectedness of the two. It takes into account widening economic and social inequalities, rapid urbanization, threats to the climate and the environment, the continuing burden of HIV and other infectious diseases, and emerging challenges such as non-communicable diseases. Multisectoral, rights-based and gender-sensitive approaches are essential to address inequalities and build good health for all.</p>
<p>Goal 4 <b>Quality education</b></p>	<p>Achieving inclusive and quality education for all reaffirms the belief that education is one of the most powerful and proven vehicles for sustainable development. <b>This goal ensures that all girls and boys complete free primary and secondary schooling by 2030.</b> It also aims to provide equal access to affordable vocational training, eliminate gender and wealth disparities, and achieve universal access to quality higher education.</p>
<p>Goal 5 <b>Gender Equality</b></p>	<p><b>Ending all discrimination against women and girls is not only a basic human right, it is crucial for a sustainable future.</b> It is proven that empowering women and girls helps economic growth and development. Therefore, it is vital to give women equal rights to land and property. In addition, encouraging more women to become leaders will help achieve greater gender equality.</p>
<p>Goal 6 <b>Clean water and sanitation</b></p>	<p><b>Safe and affordable drinking water for all by 2030</b> requires countries to invest in adequate infrastructure, provide sanitation facilities, and encourage hygiene. Protecting and restoring water-related ecosystems is essential.</p>
<p>Goal 7 <b>Affordable and clean energy</b></p>	<p>The world population is continuing to grow at a rapid rate. Hence, there is high demand for cheap energy. Many economies which depend on fossil fuels are creating drastic changes to climate. Therefore, investing in solar, wind and thermal power, improving energy productivity, and <b>ensuring energy for all is vital to achieve SDG 7 by 2030.</b></p>



## Sustainable Development Goals

<p><b>Goal 8</b> <b>Decent work and economic growth</b></p>	<p>The SDGs promote sustained economic growth, higher levels of productivity and technological innovation. Encouraging entrepreneurship and job creation are key to this, as are effective measures to eradicate forced labor, slavery, and human trafficking. With these targets in mind, the goal is to achieve <b>full and productive employment, and decent work, for all women and men by 2030.</b></p>
<p><b>Goal 9</b> <b>Industry, innovation, and infrastructure</b></p>	<p>Technological progress is the key to finding lasting solutions to both economic and environmental challenges. However, it requires providing new jobs and promoting energy efficiency. Therefore, <b>promoting sustainable industries, and investing in scientific research and innovation,</b> are all important ways to facilitate sustainable development.</p>
<p><b>Goal 10</b> <b>Reduced inequalities</b></p>	<p>Income inequality has increased nearly everywhere in recent decades, but at different speeds. It is lowest in Europe and highest in the Middle East. Income inequality requires global solutions. This involves improving the regulation and monitoring of financial markets and institutions, encouraging development assistance, and <b>foreign direct investment</b> to regions where the need is greatest. Facilitating the safe migration and mobility of people is also a key to bridging the widening divide.</p>
<p><b>Goal 11</b> <b>Sustainable cities and communities</b></p>	<p>Sustainable development cannot be achieved without significantly transforming the way cities are built and managed. The rapid growth of cities – a result of rising populations and increasing migration, has led to a boom in mega-cities, especially in the developing world, and slums are becoming a more significant feature of urban life. Therefore, it requires governments to make sustainable cities by creating career and business opportunities, safe and affordable housing, and building resilient societies and economies. It also involves investment in public transport, creating green public spaces and improving urban planning and management in participatory and inclusive ways.</p>
<p><b>Goal 12</b> <b>Responsible consumption and production</b></p>	<p>Achieving economic growth and sustainable development requires that we urgently reduce our <b>ecological footprint</b> by changing the way we produce and consume goods and resources. The efficient management of our shared natural resources, and the way we dispose of toxic waste and pollutants, are important targets to achieve this goal. Encouraging industries, businesses, and consumers to recycle and reduce waste is equally important, as is supporting developing countries to move towards more sustainable patterns of consumption by 2030.</p>
<p><b>Goal 13</b> <b>Climate action</b></p>	<p>Every country is experiencing the drastic effects of climate change. Supporting vulnerable regions will directly contribute not only to Goal 13 but also to the other SDGs. These actions must also go hand in hand with efforts to integrate disaster risk measures, sustainable natural resource management, and human security into national development strategies.</p>



## Sustainable Development Goals

<p><b>Goal 14</b> <b>Life Below Water</b></p>	<p>The SDGs aim to <b>sustainably manage and protect marine and coastal ecosystems from pollution</b>, as well as address the impacts of ocean acidification. Enhancing conservation and the sustainable use of ocean-based resources through international law will also help mitigate some of the challenges facing our oceans.</p>
<p><b>Goal 15</b> <b>Life on land</b></p>	<p>Human life depends on the earth for sustenance and livelihoods. There is rapid a rate of deforestation, land degradation and desertification in many parts of the world. Therefore, <b>urgent action must be taken to reduce the loss of natural habitats and biodiversity</b>, which are part of our common heritage and support global food and water security, climate change mitigation and adaptation, and peace and security.</p>
<p><b>Goal 16</b> <b>Peace, justice, and strong institutions</b></p>	<p>We cannot hope for sustainable development without peace, stability, human rights, and effective governance, based on the rule of law. Some regions enjoy peace, security, and prosperity, while others fall into seemingly endless cycles of conflict and violence. This is not inevitable and must be addressed. The SDGs aim to significantly reduce all forms of violence, and work with governments and communities to end conflict and insecurity.</p>
<p><b>Goal 17</b> <b>Partnerships for the goals</b></p>	<p>The SDGs can only be realized with strong global partnerships and cooperation. The world is more interconnected than ever. Improving access to technology and knowledge is an important way to share ideas and foster innovation. Coordinating policies to help developing countries manage their debt, as well as promoting investment for the least developed, is vital for sustainable growth and development.</p>



### Checklist

Dear learner! Now it is time to check whether you understood the contents of the section. Therefore, please put a tick mark (✓) in the boxes given to prove if you have understood the respective issues well or not.

I can:

- 1. describe Africa's Agenda 2063 and its implications
- 2. compare and contrast the indicators of Agenda 2063 with those SDGs
- 3. list the flagship programs of Agenda 2063
- 4. enumerate the goals of Sustainable Development Goals

Is there any box that you did not mark (✓) under it? If there is please go back to your text and read about it before you go to the following exercises.



## SELF-TEST EXERCISES OF SECTION 5.4

The following questions can help you to study section 5.4.

### PART I: Short answer questions

**Direction: Fill in the blank spaces with appropriate words or terms as used in the section.**

1. What are the four priority areas of Agenda 2063?
  - i. \_\_\_\_\_
  - ii. \_\_\_\_\_
  - iii. \_\_\_\_\_
  - iv. \_\_\_\_\_
2. Which of the flagship programs of Agenda 2063 targets avoiding visas between African countries?
  - i. \_\_\_\_\_
3. What are the four key goals of Agenda 2063?
  - i. \_\_\_\_\_
  - ii. \_\_\_\_\_
  - iii. \_\_\_\_\_
  - iv. \_\_\_\_\_
  - v. \_\_\_\_\_



### Resources for further reading

Agenda 2063 | African Union

Agenda 2063: The Africa We Want | African Risk Capacity Group - ARC

Africa's Agenda 2063 - International Labour Organization

Reporting on Africa's Agenda 2063 | Africa Renewal

THE 17 GOALS | Sustainable Development

Take Action for the Sustainable Development Goals

## Section 5.5 Linguistic and Religious Diversity in Africa



### Section Overview

Required study time: 1 hour

Dear learner, in this section, you will study about language and religious diversities in Africa. The African continent is home to two thousand (33%) of the world's 6,000 languages. Africa's linguistic diversity can even be found among individual Africans, as most Africans are multilingual. Hence, the continent has the highest index of linguistic diversity in the world, at least seven out of ten top indices are found on the African continent. Africa has diversity in its climate across the whole continent, this coupled with infectious diseases across Africa has given rise to some areas with geographical isolation for long periods of time which contributed to the diversity of different languages in Africa. Meanwhile, African religions are as diverse as the continent is varied. Nevertheless, long cultural contact, in degrees ranging from trade to conquest, has mixed some fundamental principles of the religions through generalizations, with indigenous religions of Africa.



### Section Learning Outcomes

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

 identify the major cultural landscapes, and linguistic and religious diversities of Africa.



### Key terms

- ✓ Folk Religion
- ✓ Modern Language
- ✓ Religion
- ✓ Religious Diversity Index (RDI)
- ✓ Sacred texts and objects



### BRAINSTORMING QUESTION

1. Dear learner, how diverse is your local area in terms of language and religion?

Dear learner, have you tried the activity? That is very good. Now let's discuss the diversity of language and religion in Africa. 5.6.1 Language Diversity in Africa

Africa has a long history of human habitation; hence, it is home to numerous cultural and linguistic groups. The African continent is home to one-third of the world's 6,000 languages, but less than one seventh of the world's population. Hence, Africa is the most linguistically diverse continent.

Many African countries are highly multilingual. There are more than 2000 living languages in Africa. A living language is simply a language that is still spoken at the current time. It is

sometimes referred to as a **modern language** and is currently in use. A living language must have at least one speaker whose first language is the language in question.

The list below shows that in just 22 countries about 2,086 languages are spoken in Africa.

**Table 5.1: Number of Major Languages in Africa**

S.N.	Country	languages
1.	Nigeria	514
2.	Cameroon	278
3.	Democratic Republic of Congo	215
4.	Chad	131
5.	Tanzania	128
6.	Ethiopia	86
7.	Ghana	79
8.	Côte d’Ivoire	78
9.	Central African Republic	71
10.	Kenya	69
11.	Burkina Faso	68
12.	Congo (Brazzaville)	62
13.	Mali	57
14.	Benin	54
15.	Gabon	42
16.	Togo	39
17.	Liberia	30
18.	Botswana	29
19.	Guinea-Bissau	21
20.	Equatorial Guinea	14
21.	South Africa	11
22.	Gambia	10

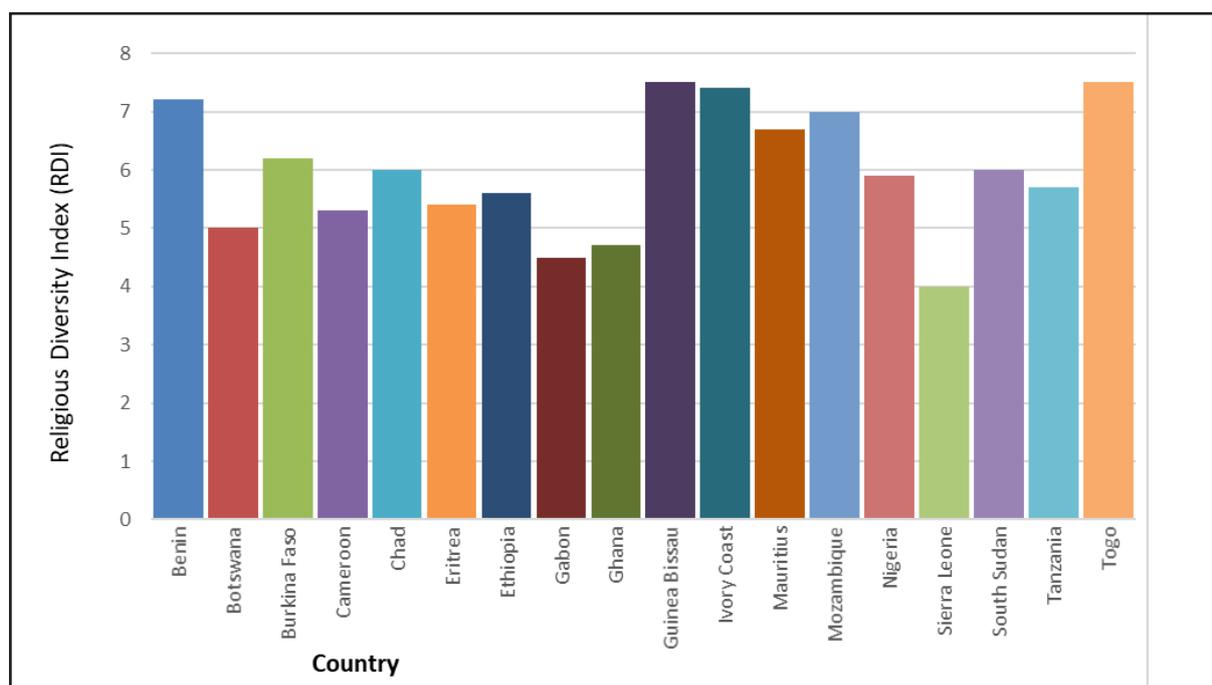
### 5.5.1. Religious Diversities in Africa

The major religions of the world (Hinduism, Buddhism, Islam, Confucianism, Christianity, Taoism, and Judaism) differ in many respects, including how each religion is organized and the belief system each upholds. Other differences include the nature of belief in a **supernatural power**, the history of how the **world and religion began**, and the use of **sacred texts and objects**. Therefore, there is a very diverse religious system in the world.

Africa is home to many religions and beliefs. It contains a mixture of both local beliefs and global beliefs. Although religion in Africa is multifaceted, it has largely influenced the art, philosophy, and culture of the continent. In today’s Africa, various individuals adhere to mostly

**Christianity, Islam, and traditional African beliefs (folk religions).**

Many African countries have high scores on the religious diversity index (RDI). The RDI calculates scores for countries, based on the shares of eight major world religions (**Christians, Muslims, Buddhists, folk religions, Hindus, Jews, other religions** considered as a group, and the **religiously unaffiliated**). The index is on a scale from 0 to 10, with 10 being the maximum possible diversity if each of the eight groups constitutes an equal share of the population. The RDI is divided into four ranges: **very high** (scores 7.0 and higher), **high** (scores from 5.3 to 6.9), **moderate** (scores from 3.1 to 5.2) and **low** (scores from 0 to 3.0). This score estimates the number of people in a country who view themselves as belonging to one religious group.



**Figure 5.4:** Religious Diversity in Africa



### Activity 5.9

- Dear learner, based on Figure 5.4 above, categorize the countries into three RDI score levels.

very high	high	moderate

Dear learner, have you tried the activity? That is great. In Africa Guinea Bissau and Togo with RDI 7.5 each and Ivory Coast (7.4), Benin (7.2) and Mozambique (7.0) are highly religious diverse countries. However, religious diversity is not only limited to Africa. It is also common

in the whole world. Some countries host one or two religions. While others have many religions fairly-well distributed in their territories and coexist peacefully.

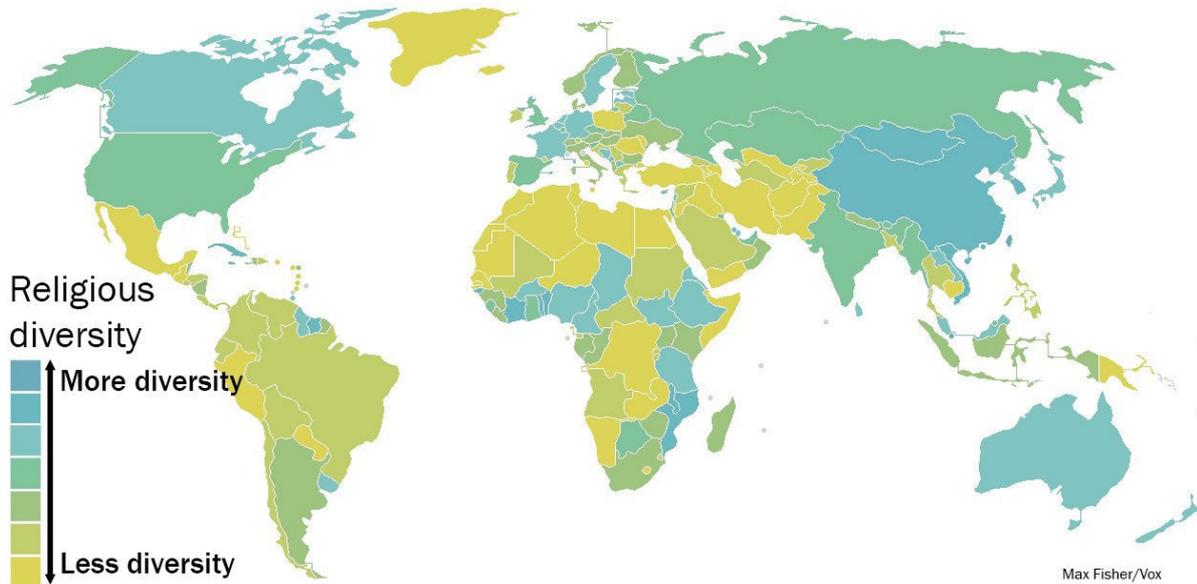


Figure 5.4: Religious Diversity in the World



### Checklist

Dear learner! Now it is time to check whether you understood the contents of the section. Therefore, please put a tick mark (✓) in the boxes given to prove that you have understood the respective issues well.

I can:

- 1. identify the major linguistic diversities of Africa
- 2. identify the major religious diversities of Africa
- 3. differentiate the religious diversity index (RDI) of African countries
- 4. explain why Africa has diverse languages
- 5. describe the religious diversity of Africa
- 6. categorize African countries based on religious diversity index

Is there any box that you did not mark (✓) under it? If there is please go back to your text and read about it before you go to the following exercises.



## SELF-TEST EXERCISES OF SECTION 5.5

The following questions can help you to study section 5.5.

### PART I: TRUE OR FALSE ITEMS

**Direction: For the following questions, write “True” if the statement is correct and write “False” if it is incorrect.**

1. More than 6000 languages are spoken in Africa.
2. A living language is a language spoken by the majority of the population at the current time.
3. A modern language is currently in use and spoken by at least one person.
4. Ethiopia is the leading country in the number of languages spoken in Africa.
5. Africa is home to many locally and internationally found religions and beliefs.



### Resources for further reading

<https://thinkafrica.net/africas-diversity/>

<https://www.languagemagazine.com/africas-linguistic-diversity/>

Multilingualism and Linguistic diversity | UNESCO



## UNIT SUMMARY

- Dear learner, in unit five, we have examined the economic activities, social and cultural diversities in the continent of Africa. This resourceful continent faces serious economic problems. Hence, it largely engages in the extraction of raw materials from the natural environment. Overdependence of such economic activities widely exposes countries to fluctuations in earnings or national income. Thereby the economy suffers from stagnation and countries will be forced to heavily depend on foreign aid. Then they will be left in a poverty trap.
- Therefore, to address the factors that hinder economic growth in Africa, African leaders need to avoid over-relying on donations. Instead, they should take initiatives that will enable African countries to fund their budgets. Africa should also embrace technology because it will enhance the growth of the economy especially in the manufacturing sector. It is only by embracing modern technology that African countries will stop importing products that they can produce and start adding value to raw materials before exporting them. The structures of the economies of African countries should also be designed in a way that they favor sectors that are important for the growth of the economy. Particularly investing in the industrial or manufacturing sectors is very important. The African education system should be changed to equip students with the right information so that they can participate in global market activities.
- In addition, a stronger system of assessing unemployment should be put in place to determine its causes and how to better address it. Once more job opportunities are created, the unemployment rate is sure to come down a great deal.
- As a possible solution to the multifaceted economic problems of Africa, its leaders have come up with Agenda 2063. The Agenda re-dedicates Africa towards the attainment of the Pan African Vision of “**An integrated, prosperous and peaceful Africa, driven by its citizens, representing a dynamic force in the international arena.**” It is also aligned with the UN’s Agenda 2030.
- Africa is a very diverse continent in terms of language and religion. Africa is the most linguistically diverse continent. Many African countries are multilingual. There are more than 2000 living languages in Africa. Meanwhile, Africa is home to many religions and beliefs. It contains a mixture of both local beliefs and global beliefs.



## SELF-ASSESSMENT QUESTIONS OF THE UNIT

### Instruction I: Determine whether each of the sentences below is True or False

1. Secondary sector involves activities of people in the service sector.
2. Primary sector involves changing of raw materials into new products.
3. Primary sector involves extracting raw materials.
4. Africa is home to many religions and beliefs.
5. Africa is the most linguistically diverse continent.
6. Many African countries are highly multilingual.

### Instruction II: For the following questions, choose the correct answer from the given alternatives.

7. How many living languages are there in Africa?
  - A. 100
  - B. 200
  - C. 1000
  - D. 2000
8. Which of the following economic activities is based on knowledge?
  - A. Primary
  - B. Secondary
  - C. Tertiary
  - D. A and B
9. Developing countries (DVCs) are characterized by one of the following?
  - A. they are the world's unindustrialized nations
  - B. they are the world's heavily industrialized nations
  - C. their economy largely depends on service sector
  - D. no developing country is found in Africa
10. "Ending all discrimination against women and girls is not only a basic human right, it's crucial for a sustainable future." This goal of SDG is related to one of the following.
  - A. Reduced inequalities
  - B. Decent work and economic growth
  - C. Gender Equality
  - D. Responsible consumption and production



# ANSWER KEY FOR SECTION LEVEL SELF-TEST EXERCISES

## I. Self-test exercises of section 5.1

### PART I. MATCHING ITEMS

- |      |      |
|------|------|
| 1. D | 3. B |
| 2. C | 4. A |

## II. Self-test exercises of section 5.2

### PART I. TRUE OR FALSE ITEMS

- |          |          |          |
|----------|----------|----------|
| 1. False | 3. False | 5. False |
| 2. True  | 4. False |          |

## III. Self-test exercises of section 5.3

### PART I. MULTIPLE CHOICE ITEMS

- |      |      |      |
|------|------|------|
| 1. C | 3. C | 5. C |
| 2. B | 4. B |      |

## IV. Self-test exercises of section 5.4

### PART I: Short answer questions

1. What are the four priority areas of Agenda 2063?
  - i. inclusive social and economic development
  - ii. continental and regional integration
  - iii. democratic governance
  - iv. peace and security
2. Which of the flagship programs of Agenda 2063 targets avoiding visas between African countries?
  - i. The African passport and free movement of people
3. What are the four key goals of Agenda 2063?
  - i. economic development
  - ii. political integration
  - iii. improvements in democracy and justice
  - iv. the establishment of security and peace

## V. Self-test exercises of section 5.5

### PART I. TRUE OR FALSE ITEMS

- |          |          |         |
|----------|----------|---------|
| 1. False | 3. True  | 5. True |
| 2. False | 4. False |         |



# ANSWER KEY FOR UNIT LEVEL SELF-TEST EXERCISES

## PART I. TRUE OR FALSE ITEMS

- |          |         |         |
|----------|---------|---------|
| 1. False | 3. True | 5. True |
| 2. False | 4. True | 6. True |

## PART II. MULTIPLE CHOICE ITEMS

- |      |       |
|------|-------|
| 7. D | 9. A  |
| 8. C | 10. C |

# UNIT SIX

## HUMAN – NATURAL ENVIRONMENT INTERACTIONS



### Introduction

Required study time: 3 hour

Dear learner! In unit five, we hope that you successfully studied about major economic and cultural activities in Africa. Hence, you learned that people use resources obtained from natural environment for different purposes. In unit six, you will study about why and how people interact with the natural environment while using their resources. The major topics covered in this unit include an overview of global population change, human-environment relationships, and the role of Indigenous Knowledge in the conservation of natural resources in Africa.



### Unit Learning Outcomes

**After successfully completing this unit, you will be able to:**

-  analyze why human beings depend on the environment;
-  explain how human beings modify the natural environment;
-  identify humans' adaptation strategies to environmental changes; and
-  elaborate on the significance of indigenous knowledge; and
-  describe the practices of African people in natural resources conservation.



### Unit Learning Strategies

Dear learner, we suggest you to use the following learning strategies:

- |   |   |
|---|---|
|  reading;                              |  time management and organization; and   |
|  writing and taking notes;             |  self-advocacy (the ability to effectively communicate, convey, negotiate, or assert one's interests, desires, needs, and rights). |
|  studying and remembering information; |   |
|  individual learning;                  |   |
|  self-testing;                         |   |



## Unit Contents

### 6.1 Overview of Global Population Change

#### 6.2 Human-environment Relationships

##### 6.2.1 Dependence on the Environment

##### 6.2.2 Modification of the Environment

##### 6.2.3 Adaptation to the Environmental changes

#### 6.3 Indigenous knowledge in the conservation of natural resources in Africa

##### 6.3.1 Case study of the practice of indigenous knowledge in Africa



## The Required Study Time

Dear learner! On your study plan, consider devoting adequate time for study, doing in text exercises, and answering review questions. Therefore, please allocate 3 hours of study time for unit six.

## Section 6.1 Overview of Global Population Change



### Section Overview

Required study time: 1 hour

The world's population is rapidly increasing. Today over 7 billion people live on the planet Earth. This figure has far-reaching implications as humans have a huge impact on the natural environment. Therefore, providing space, food and resources for a large world population in a sustainable way into the distant future is the most serious challenge. Africa in particular, coupled with its low level of economic development and very rapid population growth rate, will be highly affected. However, this challenge can be overcome if the natural resources are sustainably used. Besides, the environment allows humans to make certain modifications for their survival. Hence, humans have made significant changes to the environment in a way that suits them.



### Section Learning Outcomes

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

-  describe the characteristics of global population change; and
-  analyze the spatial variations in the world population growth relative to Africa.



### Key Terms

- |  |   |
|--|---|
|  Birth            |  Migration         |
|  Colonization     |  Population change |
|  Deadly diseases  |  Slave trade       |
|  Death            |   |
|  Living standards |   |

## BRAINSTORMING QUESTION

1. Dear learner! What do you think is the importance of studying about global population change? \_\_\_\_\_  
\_\_\_\_\_

Have you tried the activity? Very good. Let's now explore the characteristics of world population change and its spatial or continental variations.

Population change refers to the difference in the size of the population from the beginning to the end of a certain period of time. The change in the population also changes the composition of the population because of **birth** and **death** rates, **sex ratios**, **life expectancy** and **migration** rates. Meanwhile, population growth is the increase in the number of individuals in a population. The two factors involved in the **increase** in the number of individuals in a population are **birth rate** and **migration** into the population. On the other hand, the death rate and the migration out of the population decrease the number of individuals in a population. Understanding these changes at different spatial scales (local, national, regional and global scales) is very important for development planning.

Therefore, understanding global population trends and anticipating the demographic changes to come are crucial to the achievement of development goals that countries, regions or global communities plan. One among such plans is **the 2030 Agenda for Sustainable Development**. The 2030 Agenda emphasizes that people are at the center of sustainable development. Population trends observed over the past few decades point to substantial progress made towards several of the Sustainable Development Goals (SDGs) so far. Examples include reduced **mortality**, particularly among children, as well as increased **access** to sexual and reproductive health care as a result of population policies and family planning programs.

Recent demographic trends in different countries and regions of the world are indications of future **challenges** to sustainable development. For example, countries experiencing rapid population growth, most of which are in sub-Saharan Africa, must provide **schooling** and **health** care to growing numbers of children, and ensure **education** and **employment** opportunities to increasing numbers of youth. Countries where population growth has slowed or stopped must prepare adequate health care for an increasing proportion of older persons. These and other challenges can be addressed in part by anticipating coming demographic trends and incorporating that information into policies and planning.

The present continued high population growth of sub-Saharan Africa is to a large extent a consequence of the continent's past history. Africa experienced stagnation in population size between 1500 and 1900. Its population size increased by only 20 million people from 80 million in 1500 to 100 million in 1900. The stagnation was caused by impact of the slave trade, the disturbances to traditional societies due to colonization, and the spread of deadly diseases. Meanwhile, during this period, the population size of other regions (e.g., Asia, South America, and North America) has increased 3 to 5-fold.

The twentieth century witnessed the “demographic explosion” of the developing world. Between 1900 and 1980, all developing regions including sub-Saharan Africa experienced about a doubling of their population. In particular, in sub-Saharan Africa, the population kept increasing. As a result, population growth of the region stood at 2.8% per year on average. The three major sub regions of sub-Saharan Africa, namely Eastern Africa, Middle Africa, and Western Africa, represented about 93.5% of the population of the continent in 2015. They had high rates of population growth in the period between 1980 - 2015, respectively, of 2.9%, 3.0% and 2.7% per year on average. During the same period, a lower rate of population growth was observed in the southern sub-region of Africa with a rate of growth of 1.8% per year. Hence, by mid-2015, the sub-Saharan African population was estimated at 962 million, i.e., about ten times its 1900 level. Now the total population of the continent is more than 1.3 billion and increasing at a rate of 2.45% per year.

**Asia** is the most populous continent in the world, with 4.68 billion people accounting for 59.5% of the world population as of 2021. **Africa** is the second largest continent by population, with around 1.37 billion people, or 17.2% of the world’s population. Only these two continents have crossed one billion people milestone. Asia and Africa, together share about 77% of the global population. **Europe** has a population of around 748 million (9.59%), and **North America** is home to around 597 million (7.60%), **South America**, the second least populated continent, has about 434 million inhabitants (5.53%). **Oceania** (43 million) is the smallest continent in terms of population with 0.55% of the world’s population.

**Table 6.1: Continents by Population**

Rank	Continent	Population		Share (%)	Growth (2021)	
		2020	2021		Net Change	Rate (%)
1	Asia	4,641,054,786	4,679,660,580	59.54	38,605,794	0.83
2	Africa	1,340,598,113	1,373,486,472	17.20	32,888,359	2.45
3	Europe	747,636,045	747,747,396	9.59	111,351	0.01
4	North America	592,072,204	596,591,192	7.60	4,518,988	0.76
5	South America	430,759,772	434,260,138	5.53	3,500,366	0.81
6	Oceania	42,677,809	43,219,954	0.55	542,145	1.27
		7,794,798,729	7,874,965,732		80,167,003	



### Activity 6.1

- Based on Table 6.1 above and using the doubling time formula given in unit four, how many years will it take to double the population of Africa and Europe, respectively?

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The high growth in the world population over the past centuries is largely the result of advances in modern **medicine** and improvements in **living standards**. These have significantly reduced infant, child and maternal mortality and have contributed to an increase in people’s life expectancy. This in turn increases the world’s population.



### Checklist

Dear learner! Now it is time to check whether you understood the contents of the section. Therefore, please put a tick mark (✓) in the boxes given to prove that you have understood the respective issues well or not.

I can:

- 1. describe the characteristics of global population change
- 2. describe the world demographic changes at different spatial scales
- 3. explain how the recent demographic trends in different countries and regions of the world are becoming challenges to sustainable development
- 4. describe the demographic characteristics and changes in the Sub-Saharan Africa
- 5. since 1900
- 6. analyse the contribution of each continent in making up the global population size

Is there any box that you didn’t mark (✓) under it? If there is please go back to your text and read about it before you go to the following exercises.



### SELF-TEST EXERCISES OF SECTION 6.1

The following questions can help you to study and comprehend section 6.1.

#### PART I: MULTIPLE CHOICE ITEMS

**Direction:** For the following questions, choose the correct answer from the given alternatives.

1. What is the current estimated global population size?
 

A. 10 billion	C. more than 7 billion
B. more than 7 million	D. close to 12 million
  
2. Which one of the following is **not** among the major factors for global population change?
 

A. Deaths	C. Migration
B. Births	D. Life expectancy

3. Africa faced population stagnation between 1500 and 1900 due to all of the following except;
 

A. High fertility	C. Diseases
B. Slave trade	D. Colonization
  
4. The high population growth over the last centuries was attributed to;
 

A. Infant mortality	C. Improvement in medical facilities
B. Maternal Mortality	D. Low fertility
  
5. Referring to Table 6.1 above, which continent has the highest population growth rate?
 

A. Africa	C. North America
B. Europe	D. Latin America



### Resources for Further Reading

<https://www.un.org/en/global-issues/population>  
[https://www.weforum.org/agenda/2017/07/11-facts-about-world-population/?](https://www.weforum.org/agenda/2017/07/11-facts-about-world-population/)  
<https://ourworldindata.org/world-population-growth>

## Section 6.2 Human-Environment Relationship



### Section Overview

Required study time: 1 hour

Dear learner, in this section, you will study human-environment relationships and interactions. Environment is defined as the surroundings or conditions in which persons, animals, or plants live or operate. It is the natural world, as a whole or in a particular geographical area, especially as affected by human activity. It is also related to the ways people adapt and modify nature. Environment is the sum total of substances or forces external to organisms in such a way that they affect the organism's existence. It refers to all of the external factors affecting an organism. Environment is a multidimensional system of complex relationships in a continuous state of change.



### Section Learning Outcomes

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

- explain the human – environment relationships and interactions; and
- identify the types of human-environment interactions.


**Key terms**

- |                                |                                    |
|--------------------------------|------------------------------------|
| ✓ <i>Adaptation</i>            | ✓ <i>Environmental determinism</i> |
| ✓ <i>Adaptation responses</i>  | ✓ <i>Environmental possibilism</i> |
| ✓ <i>Adaptation strategies</i> | ✓ <i>Modernization</i>             |
| ✓ <i>Adjustment</i>            | ✓ <i>Modification</i>              |
| ✓ <i>Autonomous adaptation</i> | ✓ <i>Physical environment</i>      |
| ✓ <i>Climate change</i>        | ✓ <i>Planned adaptation</i>        |
| ✓ <i>Dependence</i>            | ✓ <i>Shocks and stresses</i>       |
| ✓ <i>Environment</i>           | ✓ <i>Spontaneous adaptation</i>    |
| ✓ <i>Environmental changes</i> | ✓ <i>Technological advancement</i> |


**BRAINSTORMING QUESTION**

1. Dear learner! Have you ever considered your interactions with the environment?

Dear learner, have you tried to answer the question above? That is very good. Let's now explore how the human and the environment interact as well as their interactions with one another.

Human-environment interaction can be defined as the connection between human society and the environment. It is a complex system due to the fact that both society and the environment have many elements. Humans are part of the environment and rely on it for their lives. Over time, the way people and the environment interact has changed and developed.

***Why do humans interact with the environment?***

The objective of human interaction with the environment is to satisfy human being's increasing **needs**. In order to satisfy the needs, the relationship that exists between human beings and the environment is a two-way or **reciprocal** direction. That is, human beings and the environment affect each other. However, the role of humans in the interaction, especially how humans affect the environment, was understood differently at different times. Therefore, different theories were put forward to explain the role of human beings in human environment interaction. The two most popular theories are – **environmental determinism** and **environmental possibilism**.

1. **Environmental Determinism:** is the idea that the natural or physical environment shapes and creates cultures; in other words, the environment essentially **dictates** culture. It is the doctrine that asserts economic growth and other activities of human beings are controlled by the **physical environment**. This view was commonly propagated by Europeans in the 19<sup>th</sup> century. However, the view that human activities are governed by the environment, primarily by the physical environment, was rejected in 1950s and substituted by environmental possibilism.
2. **Environmental Possibilism:** is the theory that asserts people can adapt to diverse environmental conditions and choose from many alternatives (possibilities), despite the **limitations** that the environment poses. Possibilism is the opposite of environmental determinism. Possibilism is a doctrine which claims that human beings have the capacity

to choose between a range of possible responses to physical conditioning (environment). Therefore, the degree of influence of the natural environment declines with increasing **modernization** and **technological** advancement.



## Activity 6.2

Dear learner, please attempt the following questions.

1. Which of the two thoughts – environmental determinism or environmental possibilism, do you support? Why? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Have you tried? If so, that is great. Human environment relationship refers to the interaction human beings have with their environment. Human beings cannot survive without some form of interaction with the environment. Interaction is understood in the ways people adapt and modify the environment. There are three types of human environment interaction. These are: dependence, modification, and adaptation to the environment.

### 6.2.1. Dependence on the Environment

Every living thing on the Earth depends on the environment. The dependence is basically to obtain the essential resources for survival. Therefore, human beings depend on the environment such as air, water, food or shelter they obtain from the environment.

-  **Food:** Without food, life would not exist. The environment provides food since plants grow from the soil. Plants growing from the soil are also eaten by certain animals like goats, sheep and cattle which are all considered as food for human being.
-  **Water:** This is the element of life without which all things would die. The environment provides this element in various ways including rain, rivers, lakes and oceans. Human beings use water for drinking, washing, irrigation and power generation.
-  **Shelter:** Some of the materials used in construction include sand, stones and trees. The environment has an abundance of these raw materials and that is why human beings are able to build shelters.
-  **Clothing:** Without clothing, human beings would find it difficult to cope with the harsh elements of the climate. The environment provides raw materials, such as silk and cotton, which are all used in the manufacture of clothing products.

Moreover, the natural environment plays an important role in supporting **economic activities**. Its contributions include: **directly** by providing resources and raw materials such as water, timber and minerals that are required as input for the production of goods and services; and **indirectly** through services provided by ecosystems including carbon sequestration, water purification, managing flood risks and nutrient cycling.

Therefore, the environment is vital for securing economic growth and development by providing natural resources. The provision is not just for present generations but also for future generations. As a result of this, human beings are extremely dependent on the environment.

### 6.2.2. Modification of the Environment

Humans modify their environment either **negatively** or **positively**. The main purpose of the modification is to fulfill their needs. The modification allows them to extract and utilize natural resources. Some of these modifications include:

-  cutting down the forests to increase agricultural land and grow more crops;
-  construction of dams to store water for hydroelectricity, irrigation and avoiding floods; and
-  drilling of holes in the ground to extract oil or other natural resources.

Human activities lead to the modification of the environment. Specially, as the number of people in a country or region increases, more food is needed to feed the people. This in turn forces people to utilize more natural resources for survival. Then humans cause impacts on the environment in such ways as overpopulation, pollution, burning fossil fuels, and deforestation. Changes like these have triggered climate change, soil erosion, poor air quality, and undrinkable water. On the contrary, the environment also has a negative impact on the lives of people. Natural calamities like floods, droughts, wildfires, earthquakes, and tsunamis are a few examples of nature's negative impacts. Consequently, these negative impacts on the environment can cause large-scale migrations and the deaths of people.

Humans also have positive effects on the environment. Some human activities bring positive changes to the environment. For example, through afforestation and conservation, humans have greatly contributed to the functioning of the environment. Thus, humans can contribute to better air quality and make efforts to reduce the levels of carbon dioxide in the atmosphere as well as protect endangered species.



### Activity 6.3

**Dear learner! Attempt the following questions.**

1. When did humans start to modify the environment? Why?
2. Is the modification of the environment still going on? If your answer is “yes” what evidence from your locality can you cite for that?

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### 6.2.3. Adaptation to the Environment

People adapt to the environment when changes occur to the existing environment or when they move to a new environment. Adaptation refers to an adjustment to a new environment so as to improve the chances of survival in that environment. The main purpose of the adaptation is to

fulfill the needs and ensure the survival of people.

Adaptation requires an **adjustment** in natural or human systems in response to actual or expected stimuli or their effects (for example, increasing temperature, flooding, etc.). Adaptation makes people get prepared for the following actions:

-  Reducing vulnerability (e.g., to climate change),
-  Identifying the most vulnerable people,
-  Building adaptive capacity,
-  Reducing exposure or sensitivity to impacts, and
-  Ensuring sustainable development.



## Activity 6.4

**Dear learner! Attempt the following questions.**

1. How do people in hot deserts adapt to such a harsh climate?
2. How do people in cold areas adapt to such a harsh climate?

---



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Have you tried the above questions? If so, that is nice. Now let you compare your answer with the following paragraphs. The adaptation of human systems is a process which requires the engagement of a wide range of stakeholders. The stakeholders can be governmental or nongovernmental organizations. It also requires analysis of **current** exposure to different **shocks** and **stresses**, as well as analysis of future impacts of **environmental changes** (e.g., climate change, deforestation, desertification, etc.). Therefore, it demands an understanding of the existing vulnerability of individuals, households and communities. Moreover, the adaptation process requires that the most critical issues identified are addressed.

Next to the analysis of impacts, **adaptation strategies** should be designed and implemented. Then it is followed by **monitoring** and **evaluation** of the effectiveness of activities planned. Finally, sharing knowledge and lessons learnt are the last part of the adaptation process.

Well-planned adaptation strategies result in **adaptation responses**, which are an implementation actions to respond to the impacts of environmental changes that have already taken place as well as future impacts.

Adaptation responses can be grouped into the following broad categories:

-  technological solutions – grey measures;
-  ecosystem based adaptation options – green measures; and
-  behavioral, managerial and policy approaches – soft measures.

**Green** and **soft** measures aim at decreasing the sensitivity and increasing the adaptive capacity

(the ability to adjust to the changes or use them as an opportunity and create new mechanisms) of human and natural systems, hence, building resilience. They often provide low-cost solutions. There are also high-tech and innovative technological solutions which often need a large amount of funding and require more research, experience and training to be operated. Meanwhile, green measures result in nature-based solutions and ecosystem services for environmental problems. For instance, reforestation can stop desertification and recharge groundwater supplies in times of drought.

## Types of Adaptations to Environmental Changes

1. **Autonomous Adaptation:** It is an adaptation that does not constitute a conscious response to environmental change but is triggered by ecological changes in natural systems and by market forces or changes in ways of living in human systems. It is also referred to as **spontaneous adaptation**.
2. **Planned Adaptation:** It is an adaptation that is the result of a deliberate policy decision, based on an awareness that conditions have changed or are about to change and that action is required to return to, maintain, or achieve the desired state.

*Can humans modify every environment?*

There are some environmental conditions, that humans cannot modify. Hence, they adapt to such conditions for their survival. Some examples of such environmental conditions in which human beings make adaptations include:

-  taking benefit of the natural slope of the land for irrigation;
-  building houses on higher ground to avoid flood;
-  wearing thin clothes to survive in hot climates; and
-  wearing warm clothes to survive in cold climate.



### Activity 6.5

**Dear learner! Attempt the following questions.**

1. What are the other types of human adaptations and responses to environmental changes?

---



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2. What are the human responses to the changing climate in your locality?

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## Checklist

Dear learner! Now it is time to check whether you understood the contents of the section. Therefore, please put a tick mark (✓) in the boxes given to prove that you have understood the respective issues well or not.

I can:

- 1. define the concept of environment
- 2. explain the nature of human-environment relationships and interactions
- 3. explain why humans interact with the environment
- 4. distinguish the two popular theories underlying the role of humans in human-environment interactions
- 5. identify the three types of human-environment interactions (dependence, modification and adaptation)
- 6. identify the types of human adaptations to environmental changes

Is there any box that you didn't mark (✓) under it? If there is please go back to your text and read about it before you go to the following exercises.



## SELF-TEST EXERCISES OF SECTION 6.2

The following questions can help you to study Section 6.2 in this unit.

### PART I: TRUE OR FALSE ITEMS

**Direction: For the following questions, write "True" if the statement is correct and write "False" if it is wrong.**

1. Human environment interaction refers to human actions that only have a direct effect on the environment.
2. Environmental determinism asserts that economic growth and other activities of human beings are controlled by the physical environment.
3. Human beings are always subordinate to the influence of the environment.
4. Deforestation is a human-environment interaction that can contribute to climate change by reducing the amount of carbon dioxide absorbed by trees.
5. Spontaneous adaptation to environmental changes refers to the adaptation that is the result of a deliberate policy decision, based on an awareness that conditions have changed or are about to change.



## Resources for Further Reading

Eduardo S. Brondízio Emilio F. Moran (ed.) (2013). Human-Environment Interactions: Current and Future Directions. Springer. <https://link.springer.com/content/pdf/bfm>  
<https://ecocation.org/human-environment-interaction/>  
<https://www.studysmarter.co.uk/explanations/human-geography/introduction-to-human-geography/human-environmental-interaction/>

## Section 6.3 Indigenous Knowledge in Conservation of Natural Resources in Africa



### Section Overview

Required study time: 1 hour

Indigenous knowledge can be defined as context specific knowledge that communities have developed themselves for centuries and that has allowed them to live in their environment for often long periods of time. Indigenous knowledge systems are a significant resource that would contribute to the increased efficiency, effectiveness and sustainability in environmental conservation among rural communities in developing countries, including Africa.

Indigenous knowledge forms the basis for community-level decision making in areas pertaining to food security, human and animal health, education and more importantly in natural resource management.



### Section Learning Outcomes

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

-  *define the concept of indigenous knowledge; and*
-  *appreciate the role of indigenous knowledge in the conservation of natural resources in Africa.*



### Key Terms

- |   |  |
|---|--|
|  Biodiversity              |  Indigenous knowledge |
|  Biological resource       |  Indigenous people    |
|  Conservation              |  Local community      |
|  Environmental degradation |  |

## BRAINSTORMING QUESTION

1. Dear learner! What is indigenous knowledge? Can you mention some of the examples of how indigenous knowledge is practiced in your locality to conserve natural resources?

Dear learner, have you tried the above questions? Well, let's see the role of indigenous knowledge in the conservation of natural resources in Africa.

Africa is endowed with rich and highly diverse biological (natural) resources. In addition to the well-known uses of biological resources for food, the building of houses, etc. the African people highly depend on biological resources for medicinal purposes. The heavy reliance on plant medicine in Africa is attributed to their local availability, low price, acceptance by local communities and the low number of health care centers and medical professionals, especially, in rural areas. Therefore, since ancient times plant medicine has been an important part of the health care system in Africa.

The African people have an enormous amount of knowledge about biodiversity and its uses. Such indigenous knowledge has been accumulated among the indigenous peoples of the continent and has been orally transferred across many generations. Indigenous knowledge has been the basis for the conservation of natural resources in Africa. Therefore, indigenous knowledge is valuable in managing environmental degradation and the sustainable use of natural resources.

### 6.3.1. Case Study of the Practice of Indigenous Knowledge in Africa

**Case study: Protection of sacred places, floral, faunal and water resources conservation (Teso community in Busia County-Kenya)** By: Dominics Dan Ayaa and Fuchaka Waswa (2016: pp 471).

*Among the Teso community members activities such as farming, grazing of animals or even settlements were prohibited in protected areas. The members of the Teso community had various beliefs and practices related to both the dead and the living that had some links to the conservation of the environment. For instance, since ancient times, community members have believed that the dead and long buried relatives' spirits continuously haunt the living family members to free them from the graves. Thus, to refuse these dead relatives, there was a common practice of exhuming (digging out) the remains of the dead from the graves that were at least ten years old for preservation. The ceremony, which is locally known as Ekutet /Epunyas was carried out by a special group of elderly men and women from the community and was done in the absence of children and foreigners. Accordingly, once all the remains had been recovered from the grave, special baskets were used to transfer the bodies to some special central site where such remains were stored in places that were strictly protected. Then, no human activity of any kind was carried out in such an area as it was believed that the spirits would attack anybody who disturbed the peace of the dead. The area thus remained a very thick forest habiting a number*

of species or different organisms. Such sites and places were considered sacred and were thus protected from any internal or external interference, thereby encouraging the natural growth of the vegetation that later turned out to be dense forests that formed important habitats for a variety of flora and fauna.

Besides, the Teso community members greatly recognized the importance of rivers, marshes and swamps as important dwelling places for ancestors and “God’s creatures” (biodiversity) since various species of plants and animals thrived in them. Thus, the conservation of water courses, streams, water pans and wells as well as the associated vegetation was protected through rules that ensured their sustainability. Again, reptiles such as snakes, frogs and toads that inhabited ponds, rivers and wells were protected from any harm due to the belief that they helped maintain and sustain the lives of these important water points. Also, the community members highly recognized and appreciated the importance of wells and rivers as crucial sources of water for livestock and human beings as well as a source of fish. Therefore, in order to conserve these resources, there were strong rules and beliefs that protected such sites for many generations.

The case study presented above clearly reveals that Indigenous peoples have great contributions to sustainable natural resources management. For thousands of years African societies have used knowledge of their local environments to sustain themselves and maintain their cultural identity. Recently, this knowledge has been recognized by the western scientific community as a valuable source of environmental and social information. Today, large quantities of information exist that demonstrate the existence of effective indigenous strategies for ensuring the sustainable use of resources.



## Activity 6.6

**Dear learner! Attempt the following questions.**

2. What is the difference between indigenous knowledge and traditional knowledge?  
What is the relationship between indigenous knowledge and scientific knowledge?

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## Checklist

Dear learner! Now it is time to check whether you understood the contents of the section. Therefore, please put a tick mark (✓) in the boxes given to prove that you have understood the respective issues well or not.

I can:

- 1. define indigenous knowledge
- 2. distinguish indigenous knowledge from scientific knowledge
- 3. elaborate the significance of indigenous knowledge and practices of African people in natural resources conservation.
- 4. identify indigenous knowledge-based conservation of natural resources in my locality

Is there any box that you didn't mark (✓) under it? If there is please go back to your text and read about it before you go to the following exercises.



## SELF-TEST EXERCISES OF SECTION 6.3

The following questions can help you to study section 6.3

### PART I: SHORT ANSWER QUESTIONS

**Direction: Write a brief answer to each of the following questions.**

1. What are the types and categories of indigenous knowledges?
2. How do the indigenous people maintain their indigenous knowledge for generations?
3. What are other activities other than conservation of natural resources where indigenous knowledge is practiced?



### Resources for Further Reading

Dominics, Dan A. and Fuchaka W. (2016). Role of indigenous knowledge systems in the conservation of the bio-physical environment among the Teso community in Busia County-Kenya. *African Journal of Environmental Science and Technology*. Vol. 10(12), pp. 467-475. <https://doi.org/10.5897/AJEST2016.2182>

ESTHER MWANGI (1998). Indigenous Knowledge and Environmental Conservation In East Africa. School of Public and Environmental Affairs. <https://dlc.dlib.indiana.edu/dlc/bitstream/handle/10535/5778/inigenous>.

<https://environment-review.yale.edu/indigenous-knowledge-natural-resource-management-integrating-local-perspectives-conservation#>

<https://www.sciencedirect.com/topics/earth-and-planetary-sciences/indigenous-knowledge>



## UNIT SUMMARY

-  Dear learner! In unit six, we examined the current trend of world population change, human environment interaction – the dependence, modification and adaptation, and exemplary practices of indigenous knowledge in Africa.
-  The world's population is rapidly increasing. Especially, in Sub-Saharan Africa – having recovered from the past stagnation, very rapid population growth was observed. The trend in rapid population growth has far-reaching implications. It affects economic development, employment, income distribution, poverty alleviation and social protections. It also affects efforts to ensure universal access to health care, education, housing, sanitation, water, food and energy. Therefore, to more sustainably address the needs of the society, policymakers must understand how many people are living in a country or region under consideration, where they are, and how old they are.
-  The rapid growth of the sub-Saharan African population is, in most countries, the result of the late adoption of population policies and family planning programs, and the poor implementation of these programs in societies that remain largely pronatalist.
-  Meanwhile, nature has provided human beings with an opportunity through a sustainable and favorable environment. However, humans have destroyed the perfect balance of the natural environment by over utilizing the resources around them or using the resources in unsustainable ways. Therefore, although human-environment interactions are inevitable for co-existence, maintaining a suitable balance is the key to survival. This impact of humans on the environment was understood differently at different times. Two important theories tried to explain the impacts of humans on the environment. These theories were **environmental possibilism** and **determinism**. The theories were put forth in order to comprehend and understand the role played by the physical environmental conditions in the emergence and progress of any human culture or society in a particular location.
-  Humans highly depend on the environment, modify and adapt to changes in it. These human activities are basically meant to draw maximum benefit from it and meet their needs. However, it disturbs the natural balance of the environment and causes the destruction. Avoiding the damage or reducing it is very crucial for the survival of human beings. In this regard, the accumulated indigenous knowledge of the African people is inevitable.



# SELF – ASSESSMENT QUESTIONS OF THE UNIT

## PART I: MULTIPLE CHOICE ITEMS

**Direction: Choose the correct word or phrase from the given alternatives.**

1. Which one of the following may be regarded as a hurdle for environmental sustainability of the world?
  - A. providing food and water for humans
  - B. rapid rate of population increase
  - C. intensive use of non-renewable resources
  - D. All of the above
2. Which one of the following is correct about Agenda 2030;
  - A. it is set by African leaders to help solve problems of Africa
  - B. it is formulated and spearheaded by the European Union
  - C. it is an agenda for sustainable development
  - D. it is a carbon copy of Agenda 2063
3. Why has Africa experienced population stagnation between 1500 and 1900?
  - A. because of the absence of health facilities in the continent
  - B. because it is located in the Tropical Zone or hot climate
  - C. because its most fertile population had migrated to Europe and North America
  - D. because of the effects of the slave trade and widespread diseases
4. The role of the physical environment in relation to environmental determinism is;
  - A. to control human activities
  - B. to pose limitations on human activities
  - C. to set alternatives out of which humans can choose
  - D. to force humans to use advanced technology
5. Why do humans modify the environment?
  - A. they modify the environment to avoid the negative impacts of their activities
  - B. they modify the environment to positively change it
  - C. they modify the environment since it is inevitable for their existence
  - D. they modify the environment by cutting trees in forests for firewood

**PART II: SHORT ANSWER ITEMS**

**Direction: Define the following terms as used in this unit.**

6. Adaptation
7. Environment
8. Mortality
9. Migration
10. Dependence

**INSTRUCTION III: WRITE AN ESSAY**

11. Write an essay on an exemplary (typical) indigenous knowledge of the people or community of your area used in conservation of natural resources.

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## ANSWER KEY FOR SECTION LEVEL SELF-TEST EXERCISES

### I. Self-test exercises of section 6.1

#### PART I. MULTIPLE CHOICE ITEMS

- |      |      |      |
|------|------|------|
| 1. C | 3. A | 5. A |
| 2. D | 4. C |      |

### II. Self-test exercises of section 6.2

#### PART I. TRUE OR FALSE ITEMS

- |          |          |          |
|----------|----------|----------|
| 1. False | 3. False | 5. False |
| 2. True  | 4. True  |          |

### III. Self-test exercises of section 6.3

#### PART I: SHORT ANSWER ITEMS

1. What are the types and categories of indigenous knowledge?

Indigenous knowledge is called in different names such as traditional knowledge (TK), indigenous technical knowledge (ITK), folk and local knowledge, environmental or ecological knowledge (EK), and sometimes it has also been called people's science.

There are different types and categories of indigenous knowledges - indigenous knowledge relating to categories such as agricultural knowledge, medicinal knowledge, biodiversity-related knowledge, and expressions of folklore in the form of music, dance, song, handicraft, designs, etc.

2. How do the indigenous people preserved and transfer indigenous knowledges from generation to generation?

Indigenous knowledge is shared and passed down through the generations orally and through cultural practices and ritual. These sets of understandings, interpretations and meanings are attached to language, naming and classification systems, and resource use.

3. What are other activities other than conservation of natural resources where indigenous knowledge is practiced?

Indigenous knowledge incorporates all aspects of life - spirituality, history, cultural practices, social interactions, language, and healing. While indigenous knowledge research originally emphasized indigenous technical knowledge of the environment, it is now accepted that the concept of IK goes beyond this

narrow interpretation. It is now considered to be cultural knowledge in its broadest sense, including all of the social, political, economic and spiritual aspects of a local way of life such as folk medicines.



## **ANSWER KEYS FOR UNIT LEVEL SELF-TEST EXERCISES**

### **PART I: MULTIPLE CHOICE ITEMS**

- |      |      |      |
|------|------|------|
| 1. D | 3. C | 5. B |
| 2. C | 4. A |      |

### **PART II: SHORT ANSWER/DEFINITION OF TERMS**

6. Adaptation: is an adjustment to a new environment so as to improve the chances of survival in that environment.
7. Environment: the surroundings or conditions in which persons, animals, or plants live or operate.
8. Mortality: the occurrence of death in the human population.
9. Migration: the movement of people from one place to another.
10. Dependence: the state of relying on or being controlled by someone or something else to obtain the essential resources for survival.

### **PART III. ESSAY QUESTION**

This may not be given a specific answer but it is left to the distance learner to attempt and show to the tutor.

In Ethiopia, there are different types of indigenous knowledge practiced by the different communities. IK is now considered to be cultural knowledge in its broadest sense, including all of the social, political, economic and spiritual aspects of a local way of life such as folk medicines.

# UNIT SEVEN

## GEOGRAPHIC ISSUES AND PUBLIC CONCERNS IN AFRICA



### Unit Introduction

Required study time: 3 hour

Dear learner! In unit six, we hope you successfully studied about the human- natural environment interactions in general and in Africa in particular. Hence, you learned from the antiquity that there have been strong human-natural environment interactions in which human beings depend on the environment for various reasons. In unit seven, you will learn about the main geographic issues that affect the people of Africa. One such issue is unplanned urbanization. It is a process of increasing the area of urban centers and the proportion of people living in that area. The increase in population pressure causes the surrounding areas of town to change into urban areas very rapidly exceeding the carrying capacity of the urban facilities and infrastructures. The other main issue is migration. Migration is the movement of people from one place to another; they do this to establish their permanent or semi-permanent residence at the destination. Africans are also facing serious coastal pollution.



### Unit Learning Outcomes

**After completing this unit, you will be able to:**

-  explain the cause and consequences of unplanned urbanization in Africa;
-  list consequences of unplanned urbanization in Africa;
-  analyze the factors and impacts of migration in Africa; and,
-  describe the causes and effects of coastal pollution on African population.



### Unit Learning Strategies

Dear learner! We suggest you to practice the following learning strategies:

- |   |   |
|---|---|
|  reading;                              |  time management and organization; and   |
|  writing and taking notes;             |  self-advocacy (the ability to effectively communicate, convey, negotiate, or assert one's interests, desires, needs, and rights). |
|  studying and remembering information; |   |
|  individual learning;                  |   |
|  self-testing;                         |   |



## Unit Contents

7.1 *Unplanned Urbanization*

7.2 *Migration – Factors and Impacts on Africa*

7.3 *Coastal Pollution in Africa*



## The Required Study Time

Dear learner! On your study plan, consider devoting adequate time for study, doing in text exercises, and answering review questions. Therefore, please allocate 3 hours of study time for unit seven.

## Section 7.1 Unplanned Urbanization



### Section Overview

Required study time: 1 hour

Unplanned urbanization refers to the gradual expansion of an unconnected, unplanned, unequal, and haphazardly scattered city without thinking about sustainability future risks. Unplanned urban development also refers to the absence of planning standards and lack of urban policies and laws that lead to informal settlements, which lack basic infrastructure, services and contribute to hazard creation. It is one of the commonest problems we see in many of the cities of developing countries. In some cases, it is also called **chaotic urbanization**.



### Section Learning Outcomes

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

-  explain the causes and consequences of unplanned urbanization in Africa; and
-  list consequences of unplanned urbanization in Africa.



### Key Terms

- |  |   |
|--|---|
|  City                   |  Social instability  |
|  Town                   |  Urban violence      |
|  Legacy of colonialism  |  Social unrest       |
|  Unplanned urbanization |  Urbanization        |
|  Slum                   |  Squatter settlement |
|  Urban primacy          |   |

## ? BRAINSTORMING QUESTIONS

1. Dear learner! What is urbanization? Have you ever observed the nature of urbanization in your locality? Is it planned or unplanned? \_\_\_\_\_

\_\_\_\_\_

Have you tried the activity? That is very good. Let's now discuss the concepts of urbanization, causes and consequences of rapid and unplanned urbanization in general and in Africa in particular.

Urbanization refers to the population shift from rural to urban areas. It involves a corresponding decrease in the proportion of people living in rural areas. It also relates to the ways in which societies adapt to these situations. It is predominantly the process by which **towns** and **cities** are formed and become larger as more people begin living and working in them.

As cities grow in population size, spatial extent and density, their environmental and ecological footprints increase (i.e., human impact on the environment increases). Urban expansion that takes place in forests, wetlands and agricultural systems leads to habitat clearing, degradation and fragmentation of the landscapes. Urban lifestyles, which tend to be consumptive, requiring great natural resources and generating increasing amounts of waste also lead to increased levels of air, water and soil pollution. Therefore, unplanned urbanization is the root cause of damage to the environment and nature.

However, urbanization is by no means bad per se. It brings important benefits for economic, cultural, and societal development. Well managed cities are both efficient and effective, enabling economies of scale (the term "economies of scale" refers to the advantages that can sometimes occur as a result of increasing the size of a business). Furthermore, the proximity and diversity of people can spark innovation and create employment as exchanging ideas breeds new ideas.

Those ideal concepts however are threatened by some of the factors driving rapid urbanization. For example, one of the main factors is rural-urban migration, which is driven by the prospect of greater employment opportunities and the hope of a better life in cities. A rapid increase in population density can create severe problems, especially if planning efforts are not sufficient to cope with the influx of new inhabitants. In extreme cases, the result may be widespread poverty. Finally, unplanned urban expansion creates big slums, exacerbating socio-economic disparities and creating unhealthy or poor sanitary conditions that facilitate the spread of diseases.

To sum up, carefully considered urban planning and good governance with effective regulatory frameworks are required for rapid urbanization to provide opportunities for all.



### Focus! Here are the key features of unplanned urbanization:

-  Accelerated poverty
-  Environmental degradation
-  Insufficient water availability
-  Unplanned land use change
-  Poor air and water quality
-  Unplanned urban growth
-  Urban sprawl and horizontal expansion
-  Waste-disposal problems

#### 7.1.1. Causes of Unplanned Urbanization in Africa

Though Africa is still largely rural, it is one of the fastest urbanizing continents in the world. Africa's urban population is expected to reach 2.5 billion in 2050. This accounts for 21% of the world's projected urban population. Currently, the continent has seven megacities, that is cities with populations over 10 million: Cairo, Kinshasa, Lagos, Accra, Johannesburg–Pretoria, Khartoum, and Nairobi.

Despite high rates of urban population growth, many African countries still have a high degree of **urban primacy**. That is, one city - usually the capital, has population, economic activity, and political power that are several times greater than the next largest city. Although Africa's high urbanization rates make it similar to other rapidly urbanizing places in the world, it is important to underscore that the underlying processes that shape urbanization in Africa are vastly different from those experienced elsewhere. Much of urban expansion in Africa is characterized by unplanned and unregulated growth, exacerbated by the **legacy of colonialism**, the structural adjustment program, and the effects of **neoliberalism** that spawned weak urban planning institutions.



### Focus! Causes of unplanned urbanization in Africa:

-  Unplanned and unregulated growth
-  Weak urban planning institutions and lack of good governance
-  The legacy of colonialism
-  The policy pressure of international institutions (e.g., the structural adjustment Program of IMF)
-  Pressure of developed countries (e.g., neoliberalism policies towards developing countries)



## Activity 7.1

**Dear learner, attempt the following questions;**

1. What are the typical characteristics of African urbanization compared to urbanization in the developed world? Elaborate on the rate and level of urbanization in Africa.
2. What are the causes of urban primacy in Africa?

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### 7.1.2. Consequences of Unplanned Urbanization

In the preceding section it was indicated that the lack of regulatory controls, poor governance and other factors have resulted in chaotic and haphazard urbanization which impacts the urban growth process. The consequences of such a process of urbanization can be seen not only in core urban areas but are also prominently visible in their suburban or periphery areas.

Due to unplanned urbanization, large cities and emerging urban centers in Africa have faced many problems. Unplanned urban growth has a lot of effects on the living conditions of the inhabitants and the environment. Some of the consequences of unplanned urbanization are discussed as follows:

#### 1. Development of Slums and Squatter Settlement

When urbanization takes place as a result of a random and unexpected growth it leads to the spread of unlawful residential settlements represented by **slums** and **squatters**. The growth of slums and squatters in urban areas is even further exacerbated by fast-paced industrialization, a lack of developed land for housing, large influx of rural immigrants to the cities in search of better life, and very high prices of land beyond the capability of the urban poor.

#### 2. Poor Infrastructure

The quality of a city's infrastructure is central to its residents' quality of life, social inclusion, and economic opportunities. It also determines the city's resilience to a number of common risks such as economic, environmental, social and health-related ones. The availability and quality of infrastructure are at the core of many of the challenges faced by rapidly urbanizing cities in African countries.

As cities expand rapidly, the rate at which infrastructure growth occurs does not keep pace with the growth or the increased demands of populations. Therefore, action is urgently needed to close the infrastructure gap and reduce the potential risks that have negative effects. Moreover, many African countries face tight budget constraints and they tend to allocate much of their national income to meet the basic needs of their population.



## Focus! Characteristics of Urban Infrastructure in Africa

Urban infrastructure in Africa is characterized by the following features:

-  *Infrastructure investments in urban areas in most African countries are insufficient to maintain the quality of infrastructure.*
-  *Transportation infrastructure (roads, railroads, airports, and ports) is very weak.*
-  *Electric power supply and distribution are inadequate.*
-  *Water supply and sewage are in serious shortage.*
-  *Communications infrastructure is very weak.*

### 3. Economic Problem

Residents in many urban centers in Africa face huge economic problems. The costs of housing, food and transportation are very high in urban centers. In addition, in urban areas, unemployment rates are high and about 60 percent of jobs are in the informal or grey economy which is neither taxed nor monitored by the government.

### 4. Health Problem

Urbanization creates not only opportunities but also exacerbates health risks, (e.g., obesity, respiratory diseases, etc.). Moreover, a large proportion of urban dwellers in Africa lack adequate sanitation and are exposed to high health risks. Such risks happen at a rapid pace; hence, it puts the capacity of the health sector to plan and adapt under big challenge. This is particularly true in Africa. Therefore, unplanned urbanization in combination with high population density, poverty and lack of infrastructure can have an adverse effect on the health of residents by fostering conditions for communicable diseases.

### 5. Social Instability

Rapid and unplanned urbanization can also quickly lead to urban violence and social unrest. This could be because of the widening inequalities largely observed in urban rather than rural areas. The combination of inequality, competition for scarce resources such as land, violation of law and weak city governance increase the risk of violence and potential breakdowns in law and order.

Moreover, unplanned urbanization can accelerate social instability. For example, high population density fuels the price of housing. When there is a shortage of affordable housing, it contributes to the disregard of urban poor residents. This in turn may increase social instability and the prevalence of crime in urban centers.



## Activity 7.2

**Dear learner, attempt the following questions;**

1. Where is crime more prevalent in your locality, urban or rural areas?
2. What types of crime can you identify in urban and rural areas?

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### Focus! Climate Change and Unplanned Urbanization in Africa

**Climate change poses serious problems on urban centers in Africa.**

Rapid, inadequate, and poorly planned expansion of cities in Africa leave urban populations highly exposed to the effects of climate change. For instance, the migration of large number of people from rural areas to cities is at least partially driven by the increasing prevalence of extreme weather. Moreover, cities located near the sea or natural waterways, are at more risk of flooding. Therefore, making cities more resilient to extreme weather events should be a priority for both local governments and the private sectors in African countries.

### Case Study: Unplanned Urbanization in Africa: The Case of Addis Ababa, Ethiopia

*Rapid and unplanned urbanization is a common phenomenon in Africa which results in poor social, economic, and environmental outcomes due to inadequate and overburdened infrastructure and services. The outcome has led to congestion, worsening air pollution, a shortage of adequate housing, and other infrastructure problems. Ethiopia has experienced the fastest rates of urbanization, and one of the major challenges of urban development in the country has been spontaneously emerging settlements, which have contributed to the country's increasing and unplanned urban growth trends.*

*Addis Ababa, Ethiopia's largest city, is a fast-growing city that is overwhelmed by many problems, including unplanned urban development and inefficient land uses, extensive urban poverty, joblessness, inadequate housing, congestion, and underdeveloped infrastructure.*

*Historically, Addis Ababa was established from villages that evolved into major urban settlement without a master plan. Informal settlement is at the heart of the genesis and development of the city of Addis Ababa. The informal settlements in Addis Ababa have been spontaneously emerged and grown around the major centres of the city. The settlements lack basic municipal services such as water, sanitation, waste collection facilities, which remain the hallmarks of such settlements.*

*Unplanned and informal settlements in Addis Ababa are of two types. The first one is commonly known as the slums which are located in highly congested areas marked by deteriorated infrastructure and an unsanitary environment. The dwellings are also built with substandard materials. Their physical characteristics are visible in the poorly planned settlements largely*

*inhabited by low-income groups. More than two-thirds of the population of the city are believed to be living in slums. The second type of unplanned urban settlement is the squatter settlement, which denotes the settlements illegally built due to urbanization in an open space, farmland, steep slope, along river buffers and road sides without legal title deed particularly in the urban periphery. Such settlements in Addis Ababa city are characterized by low-quality housing, which are occupied by the poor.*

*Therefore, the proliferation of informal settlement in Addis Ababa has negatively affected proper land use and adequate provision of municipal services. The unplanned development of such settlements has prohibited a planned development of the city and promoted spontaneous horizontal expansion of the city from time to time.*



**Figure 7.1:** Slum and Squatter Settlements in Addis Ababa



### Checklist

Dear learner! Now it is time to check whether you understood the contents of the section. Therefore, please put a tick mark (✓) in the boxes given to prove that you have understood the respective issues well or not.

I can:

- 1. explain the nature of urbanization in developing countries including Africa
- 2. list out the causes of unplanned urbanization
- 3. explain the key features of unplanned urban growth
- 4. describe the consequences of unplanned urbanization on the residents and the environment
- 5. analyse the unplanned urbanization and climate change in Africa

Is there any box that you didn't mark (✓) under it? If there is please go back to your text and read about it before you go to the following exercises.

## SELF-TEST EXERCISES OF SECTION 7.1

The following questions can help you to study and comprehend section 7.1.

### PART I: SHORT ANSWER ITEMS

**Direction: Give brief answers to the following questions.**

1. Unplanned urbanization is a typical geographic issue in the twenty-first century. What are the reasons for that? \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
2. What are the major problems you know are caused by unplanned urban development in Ethiopia? \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
3. What are informal settlements? How do you think such settlements affect the urban development process of a given country? \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
4. Discuss the relationship between unplanned urbanization and climate change. \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
5. What are the economic impacts of unplanned urbanization? Explain it with examples.  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_



## Resources for Further Reading

<https://geographyfieldwork.com/GeographicalIssues.htm>  
<https://unhabitat.org/sites/default/files/2020/05/0.-final-fundamentals-of-urbanization-training-companion-publication-2019.pdf>  
<https://www.newagebd.net/article/163203/unplanned-urbanisation-and-sustainable-housing>  
<https://perspectivesblog.sagepub.com/blog/research/the-environmental-and-social-impacts-of-unplanned-and-rapid-industrialization-in-suburban-areas>

## Section 7.2 Migration – Factors and Impacts on Africa



### Section Overview

Required study time: 1 hour

Human migration refers to the permanent change of residence by an individual or group of people. It can occur within a country or across an international boundary. Migration falls into several broad categories. First, internal, and international migration may be distinguished. Within any country there are movements of individuals and families from one area to another (for example, from rural areas to the cities), and this is distinct from movements from one country to another. Second, migration may be voluntary or forced. Most voluntary migration, whether internal or external, is undertaken in search of better economic opportunities or to seek a better life. Forced migrations usually involve people who have been expelled by different factors, such as war, drought, famine, natural disasters, or other political conflicts.



### Section Learning Outcomes

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

-  explain the nature and causes of migration in African continent; and,
-  describe the patterns and impacts of internal and international migration in Africa.



### Key Terms

- |                           |                       |
|---------------------------|-----------------------|
| ✓ Destination             | ✓ Origin              |
| ✓ Forced migration        | ✓ Pull factor         |
| ✓ Internal migration      | ✓ Push factor         |
| ✓ International migration | ✓ Voluntary migration |

**BRAINSTORMING QUESTION**

1. Dear learner, do you remember what migration means while you study unit four in Module one? Why do people move? What factors do you think drive human migration?

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Dear learner, we hope you recall the meaning of migration and its impact on population change over time and space. Well, in this section we will discover the factors and impacts of human migration in Africa as one of the major geographic issues and concerns.

Africa is often seen as a continent of mass migration and displacement caused by poverty, violent conflict, and environmental stress. **Do you agree with this?**

Now, compare your thoughts with the following paragraphs. Throughout its history, Africa has experienced important migratory movements, which have contributed to its present-day demographic landscape. This could be done either voluntarily or in a forced manner. The forced act of slave migrations those compelled by European slave traders operating in Africa from the 16<sup>th</sup> to the 19<sup>th</sup> centuries had significantly reduced the total population of the continent. Moreover, in many parts of the continent, communities are found spread across two or three nation states as movement of people is often not limited by political boundaries.

The causes of migration are numerous since a complex web of factors underlie the process. There are push and pull factors of migration. In Africa, multiple push factors spur migration both within the continent and to other regions. Some of the push factors are economic in nature, like; poor socio-economic conditions, low wages, high levels of unemployment, and poverty. These factors are usually caused by a mismatch between the rapid population growth and the available resources, low level of requisite technology and capacity to create employment.

Even though several factors are mentioned as causes of human migration in Africa, both internal and international, economic factors are of primary importance in the decision to migrate, in that people migrate ultimately to improve their economic well-being.

In addition to economic factors, various political and social factors create fertile grounds for migration. Among these, poor governance, corruption, political instability, conflict and civil strife are major causes of migration for both skilled and unskilled workers. The real or perceived opportunity for a better life, high income, greater security, better quality of education and health care at the **destinations** influence the decision to migrate.

The shift in population from rural to urban settlements (urbanization) is an inherent global phenomenon. In Africa, the percentage of the population living in urban areas has risen from 15 per cent in the 1960s to 43 per cent in 2018, and is projected to grow to 50 per cent by 2030. Rural-to-urban migration, as one of the dominant types of human migration, is a much more deeply rooted social process that goes beyond economic explanations alone. It has other drives such as the intrinsic motivations of (young) people to live in cities, not only to acquire a job or

study, but also to acquire particular lifestyles driven by changing notions of the 'good life'.



## Activity 7.3

**Dear learner, attempt the following questions;**

2. What are the linkages between rural-urban migration and urbanization?
3. What are the major impacts or consequences of human migration on a place of origin?

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## Checklist

Dear learner! Now it is time to check whether you understood the contents of the section. Therefore, please put a tick mark (✓) in the boxes given to prove that you have understood the respective issues well or not.

I can:

- 1. explain the various causes or drivers of human migration in Africa
- 2. describe the patterns of human migration in Africa
- 3. distinguish the factors considered to classify migration into different types (internal vs international; voluntary vs forced; rural-urban vs urban-urban;
- 4. identify the consequences or impacts of migration on both the place of origin and place of destination
- 5. describe the linkage between rural-urban migration and urbanization

Is there any box that you didn't mark (✓) under it? If there is please go back to your text and read about it before you go to the following exercises.



## SELF-TEST EXERCISES OF SECTION 7.2

The following questions can help you to study Section 7.2

### PART I: TRUE OR FALSE ITEMS

**Direction: For the following questions, write “True” if the statement is correct and write “False” if it is incorrect.**

1. Economic factors were the major driving forces behind the movement of African people during the colonial era in Africa.
2. The movements of individuals and families in Africa from one area to can be an example of intra-regional migration.
3. In economically poorer regions of Africa, the urban pull factors of migration are the efficient reasons for human migration.
4. The forced act of slave migrations compelled by Europeans had no significant effect on the demographic landscape of Africa in the latter centuries.
5. The drivers and patterns of human migration in all regions of Africa are similar.



### Resources for further reading

Adepoju, Aderanti (1984). Linkages between internal and international migration: The African situation. ISSJ, Vol. XXXVI, No. 3. <https://anthkb.sitehost.iu.edu/a104/kenya/african%20migration.htm>

Akin L., Mabogunje (1970). Systems Approach to a Theory of Rural-Urban Migration. *Geographical analysis*. Volume2, Issue1. <https://onlinelibrary.wiley.com/>, <https://doi.org/10.1111/j.1538-4632.1970.tb00140.x>

UNECA (2017). African Migration Drivers of Migration in Africa. Draft Report Prepared for Africa Regional Consultative Meeting on the Global Compact on Safe, Orderly and Regular Migration. <https://archive.uneca.org/sites/default/files/uploaded-documents/SocialDevelopment/Global-Compact-Migration-2017/drivers-of-migration-in-africaadvance-copy.pdf>

United Nations Conference on Trade and Development (UNCTAD) (2018). Economic Development in Africa. Migration for Structural Transformation. A report. <https://unctad.org/system/files/official-document/aldcafrica2018en.pdf>

## Section 7.3 Coastal Pollution in Africa



### Section Overview

Required study time: 1 hour

Coastal pollution is one of the major environmental issues and concerns in geography. Coastal pollution refers to the introduction of substances or any form of energy in the coastal environment, which results in or is likely to result in adverse effects on the ecosystem due to changes in its physical, chemical, and/or biological characteristics. Coastal and estuarine ecosystems have been, and still are, heavily influenced by humans through pollution and habitat loss worldwide. Over 80% of all marine pollution originates from land-based sources which are primarily industrial, agricultural, and urban.



### Section Learning Outcomes

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

-  identify the causes of coastal pollutions in Africa;
-  describe the impacts of coastal pollution in Africa; and,
-  suggest solutions to the issue of coastal pollutions in Africa.



### Key Terms

- |  |  |
|--|--|
|  Discharge          |  Municipal sewage |
|  Industrial waste   |  Oil spills       |
|  Marine environment |  Sea coast        |



### BRAINSTORMING QUESTIONS

1. Dear learner! Have you ever heard about coastal pollution? What is coastal pollution? Why are coastal areas of major water bodies polluting?

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Dear learner, we hope you tried the above questions? That is very good. It is very common to hear from different sources that nowadays coastal pollution has become one of the major environmental problems around the globe. Well, let's explore the meaning, sources, impacts, and solutions of coastal pollution in Africa in particular and the world at large.

#### 7.3.1. Causes and Impacts of Coastal Pollution in Africa

Pollution in coastal areas is a long-standing problem caused primarily by anthropogenic activities, including industry, urbanization, agriculture, aquaculture, and tourism. Plastic debris, nutrients, metals, and persistent organic compounds are some of the pollutants most commonly

found in these areas, derived from point and nonpoint sources. The majority of pollutants that make their way into the ocean caused by human activities along the coastlines and far inland. Pollution of coastal waters may arise from various sources, such as: the discharge of sewage and industrial waste from coastal channels, the dumping of wastes at sea, the discharge of sewage and rubbish from ships, the handling of cargo, the exploration and exploitation of the sea bed and ocean floor, accidental pollution by oil spills, and other substance of pollutants from the land by air and other routes. Undoubtedly the most frequent cause of coastal pollution problems is the discharge of municipal sewage and industrial wastes into coastal waters or estuaries through low quality disposal facilities. If wastes contain persistent pollutants, discharge into rivers even at considerable distances upstream from the mouth can result in substantial quantities reaching the sea. The major classes of pollutant reaching coastal waters are decomposable organic materials, heavy metals, and other toxic matter, dissolved and suspended non-toxic inorganic substances, and pathogenic organisms.

Many factors such as dilution, temperature, adsorption, sedimentation, and nutrient deficiencies negatively affect the sea's ability to purify itself. The marine environment is generally unfavorable for the survival of most pathogenic organisms. Under special circumstances, particularly in temperate and warm coastal waters near large cities, pathogenic agents may be found in marine waters in the proximity of the coastline and in estuaries.

The many people living in coastal zones, and even those located far inland, generate large quantities of wastes and other polluting substances that enter the seas directly or through coastal watersheds, rivers, and precipitation from polluted air. Coastal pollution is rising rapidly as a result of population growth, urbanization, and industrial development along many coastal areas of Africa. Hence, its coastlines and marine protected areas of Africa are under a high degree of threat from industrial wastes. The coastal marine environment is clearly being affected by the modification and destruction of habitats, over-fishing, and pollution. Many of these impacts can be traced back to land-based human activities located far from the sea.

Many coastal waters carry excessive sediment and are contaminated by microbes and organic nutrients. Pollution by nitrogen resulting from sewage discharges, agricultural and urban run-off, and atmospheric precipitation, are common problem. The destruction of wetlands and mangroves, which act as natural filters for sediment, excessive nitrogen, and wastes, has also accelerated nutrient buildup. Additional pollution sources are oil leaks and accidental spills from shipping, discharge of bilgewater, oil drilling and mineral extraction. Some persistent pollutants are even reaching deep ocean waters.



### Activity 7.4

**Dear learner, now please attempt the following questions;**

1. Why does the pollution of the vast ocean matter to humanity?
2. What are the impacts of coastal pollution in Ethiopia? (You may consider coastal areas of major rivers and lakes in your locality). \_\_\_\_\_

### 7.3.2. Management of Coastal Pollution in Africa

More than half of the world's population lives within 60 km of the shoreline and in Africa trends in population growth indicate that these numbers could rise to 75% by the next century. In many parts of Africa, the coastal resources have been overexploited and the fragile coastal and marine ecosystems have been severely degraded and their productivity reduced by unregulated human activities. Lack of understanding of the coastal and marine environment and its interaction with terrestrial and oceanic processes, as well as ineffective planning and management have exacerbated the situation.

The solutions to reducing coastal pollution through planning and management depend on the sources and causes of coastal pollutants. Regions in Africa vary in their sources of coastal pollution. In addition, the marine pollution profile for each country differs significantly depending on which sectors are most active near the coast, as well as on the political, technical, and economic will to address these issues. However, a number of issues and the means of addressing them cut across the regions as a whole. Water quality studies can help policymakers set targets and baselines and develop pollution reduction plans at the local, national, and regional levels. Such studies generally focus on pollution from sewage/wastewater, nutrients, and marine litter; they may also include other pollutants, such as oil (spills from ships and offshore oil exploration and production), chemicals, and heavy metals. Reducing the generation of plastic debris requires information on the origin, volumes, and types of plastic litter, so that appropriate measures can be taken to reduce, reuse, or recycle plastic products.

#### Case Study: The Impacts of Plastic Pollution in Seas and Oceans: A Case from Coastal Africa

*Plastic pollution is one of the greatest threats to life in oceans and seas worldwide. It contributes to impacts on human health, loss of livelihoods, greenhouse gas emissions, loss of biodiversity and compromises ecosystem functioning in all of Africa's land and seascapes.*

*The United Nation Environment Program's (UNEP) estimates show that the total global plastic production in 2020 was over 400 million tons. Most of the plastics are produced in China (28%), North America (19%) and Western Europe (19%). Interestingly, the same countries or regions are the leading consumers of plastics, with China accounting for (20%), North America (21%) and Western Europe (18%). With 1.3 billion people living in Africa as of 2020 (16% of the world's population), Africa produces 5% and consumes 4% of global plastic volumes. Plastic consumption in Africa in 2015 was 16 kg per person, compared to the global average of 45 kg per person and 136 kg per person in Western Europe.*

*For example, in 2010, South Africa ranked 11th in the list of the worst offenders regarding plastic pollution in the ocean. According to the World Wildlife Fund (WWF) over 80 percent of marine pollution in South Africa originates from land-based sources. In South Africa, 16% of plastic is recycled; the rest of the plastic (about 8 million metric tons were discarded plastic) ends up in rivers due to wind, littering, improper waste management, overflowing landfills and eventually ends up in the ocean.*

*The complexities of plastic pollution in coastal areas and estuaries requires multi stakeholder interventions and coordinated actions.*



**Figure 7.2:** Plastic Clogs Cuttings Beach near Durban, South Africa



## Activity 7.5

**Dear learner, attempt the following questions;**

1. In your view what do you think are the solutions to coastal pollution in Africa?
2. What do you think is your personal role in reducing and managing environmental pollutions (including in rivers and lakes)?

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## Checklist

Dear learner! Now it is time to check whether you understood the contents of the section. Therefore, please put a tick mark (✓) in the boxes given to prove that you have understood the respective issues well or not.

I can:

- 1. identify the causes of coastal pollution in Africa
- 2. describe the types of coastal pollution in Africa including plastic pollution
- 3. explain the impacts of coastal pollution in Africa on the coastal and marine ecosystems
- 4. suggest solutions and management of coastal pollution for the continent

Is there any box that you didn't mark (✓) under it? If there is please go back to your text and read about it before you go to the following exercises.



## SELF-TEST EXERCISES OF SECTION 7.3

The following questions can help you to study section 7.3

### PART I: FILL THE BLANK SPACES

**Direction: Fill the blank spaces with appropriate words or phrases.**

1. \_\_\_\_\_ flows to rivers, seas, lakes and oceans carrying with it agricultural fertilizers and pesticides, waste water, solid wastes and litters.
2. \_\_\_\_\_ refers to the release of a liquid petroleum hydrocarbon into the environment, especially the marine ecosystem, due to human activity, and is a form of pollution.
3. The introduction of substances or any form of energy in the coastal environment, which results in or is likely to result in adverse effects on the ecosystem due to changes in its physical, chemical, and/or biological characteristics is known as \_\_\_\_\_.
4. \_\_\_\_\_ is the type of waste or pollutant that is not confined to an isolated country or continent because it can be moved around via atmospheric currents, transboundary waterways and ocean currents.
5. \_\_\_\_\_ source pollution is defined by the U.S. Environmental Protection Agency (EPA) as “any single identifiable source of pollution from which pollutants are discharged ...”.



### Resources for further reading

- Eric O. Odada (). African Coastal Areas and their Management for Sustainable Development. Vikas M, G.S.Dwarakish (2015). Coastal Pollution: A Review. International Conference on Water Resources, Coastal and Ocean Engineering (ICWRCOE). **Science Direct**. *Aquatic Procedia* 4 ( 2015) 381 – 388. Available online at [www.sciencedirect.com](http://www.sciencedirect.com)
- Nunes, M., Leston, S. (2020). Coastal Pollution: An Overview. In: Leal Filho, W., Azul, A.M., Brandli, L., Lange Salvia, A., Wall, T. (eds) Life Below Water. Encyclopedia of the UN Sustainable Development Goals. Springer, Cham. <https://doi.org/10.1007/978-3-319-71064-8~9-1>.
- THE WORLDBANK GROUP West African coastal areas management Program. Reducing Marine and Coastal Pollution. <https://www.wacaprogram.org/sites/waca/files/knowdoc/Reducing%20marine%20and%20coastal%20pollution.pdf>



## UNIT SUMMARY

-  Dear learner! In unit seven, we examined the major geographic issues and public concerns of our continent - Africa. Africa is facing serious challenges as a result of rapid and unplanned urbanization, migration, and coastal pollution.
-  If cities are well organized and efficient, they have many benefits for the residents and the overall economy of a country. However, it should be recognized that rapid, often unplanned urbanization brings risks of profound social instability, risks to critical infrastructure, potential water crises and the potential for the devastating spread of disease.
-  As the world continues to urbanize, power will increasingly be concentrated in cities. This power – ranging from economic to social – not only makes cities the center of gravity, but offers greater scope to find practical solutions to the most pressing challenges. Indeed, many observers and organizations are now focusing on cities and the connections between them rather than directing their attention at the national level. The strength of city-level institutions and national institutions if they are capacitated to be flexible, innovative, and dynamic, and effectively involve multiple stakeholders in governance will largely determine whether urbanization makes Africa more resilient or more vulnerable to several risks and problems it poses.
-  As these risks are interconnected, a holistic view and approach are keys to mitigating them. They can affect all of us in unpredictable ways, and they are our shared concerns. The risks should be carefully managed. The very first step to manage those risks is creating awareness – so it is necessary to highlight and discuss the challenge of interconnected risks on a broader level to ensure adequate levels of public awareness. Then, the next step is creating close contact between businesses, governments, communities, city councils, and academic institutions to bring about effective solutions that will foster an environment where innovative public private partnerships can develop. Such partnership makes cities both efficient and resilient.
-  Migration involves the movement of people leaving their place of birth for a temporary or permanent change of residence. It may take the form of internal and international migration, resulting from push or pull factors through voluntary or forced decisions of the immigrants.
-  Africa's coasts are being highly affected by coastal pollutions. In recent times, the problem has become more serious as a result of rising rapid population growth, urbanization, and industrial development along many coastal areas of Africa.



## SELF – ASSESSMENT QUESTIONS OF THE UNIT

### PART I: MULTIPLE CHOICE ITEMS

**Direction: For the following questions, choose the correct word or phrase from the given alternatives.**

1. One of the following is not among the key features of unplanned urbanization.
  - A. Monitored land use change
  - B. Environmental degradation
  - C. Unregulated urban growth
  - D. Urban sprawl
  
2. Which of the following best describes the characteristics of African urbanization?
  - A. Infrastructure development is in pace with rapid urban growth
  - B. Inadequate and poorly planned expansion of cities
  - C. Fast growth of employment opportunities
  - D. Indigenous urbanization and social stability
  
3. The pull factors of migration in Africa at the place of destination include all of the following except;
  - A. Conflicts and political instability
  - B. Better job opportunities
  - C. Better infrastructure
  - D. Better quality of education and health services
  
4. Which of the following was not among the major characteristics of migratory movements in Africa?
  - A. It involved both voluntary and forced migration
  - B. It was influenced by the external forces
  - C. It was limited by a political boundary
  - D. It contributed to the present-demographic landscape of Africa
  
5. Coastal pollution in Africa becomes one of the major environmental challenges due to;
  - A. Africa's fast development in wetland ecosystem
  - B. Discharge of municipal and industrial wastes
  - C. Improvement in waste management infrastructure
  - D. Improvement in per-capita income of households

**PART II: Short Answer Items**

**Direction: Give a short Answer to the following questions.**

6. Explain the causes of unplanned urbanization in Africa
7. Explain the consequences of unplanned urbanization in Africa
8. What are the major pushing and pulling factors of migration in Africa?
9. Describe the effect of Slave Trade on population of Africa.
10. What are possible solutions to avoid coastal pollution in Africa?



**ANSWER KEY FOR SECTION LEVEL SELF-TEST EXERCISES**

**I. Self-test exercises of section 7.1**

**PART I: SHORT ANSWER ITEMS**

1. The two leading causes of urbanisation in the 21<sup>st</sup> century is natural population increase and rural to urban migration. Urbanization in the cities of the developing countries is characterized by the fastest rate of urbanization and the lowest level urbanization. The leading factor behind rapid urban growth and consequent problems is unplanned and unregulated rural urban migration. Therefore, unplanned urbanization that affects the quality of urbanization results from such factors of urban growth that lead to chaotic and haphazard urbanization.
2. Ethiopia as one of the African countries and hence developing countries faces all the challenges of the contemporary urban problems. Therefore, Ethiopia is not an exception in terms of unplanned urban growth. High influx of rural population to the urban areas coupled with poor regulatory frameworks for urban development are among the major causes of unplanned urban development in Ethiopia.
3. Informal settlements are residential areas that do not comply with local authority requirements for conventional (formal) townships. They are, typically, unauthorized and are invariably located upon land that has not been proclaimed for residential use. Almost all urban centers in Ethiopia are affected by the proliferation of informal settlement which affects sustainable urban development of the country through unregulated growth and misuse of urban land resource.
4. Growing cities will be hotspots of heat-related risks from climate change, as modification and changes in land use and land cover (LULC) during urbanization processes intensifies the urban heat island (UHI) effect, and subsequently, exacerbates current and projected heat stress. Hence, unplanned

urbanization leads to environmental destruction through deforestation leading to climate change.

5. Unplanned urbanization is a challenge for cities of all sizes. Unplanned urban development requires huge investment and cost to transform an unplanned to a planned city. Unplanned expansion urban settlement is very costly for expansion of infrastructure. Poor air and water quality, insufficient water availability, waste-disposal problems, and high energy consumption are examples of the economic implication and costs of unplanned urbanization.

## II. Self-test exercises of section 7.2

### PART I: True or False Items

1. FALSE
2. TRUE
3. FALSE

## III. Self-test exercises of section 7.3

### PART I: FILL IN THE BLANK SPACES

1. Runoff
2. Oil spill
3. Coastal pollution
4. Plastic pollution
5. Point source



## ANSWER KEYS FOR UNIT LEVEL SELF-TEST EXERCISES

### PART I: MULTIPLE CHOICE ITEMS

1. A
2. B
3. A
4. C
5. B

### Part II. Short answer questions.

1. There are several causes for unplanned urbanization in Africa. Much of urban expansion in Africa is characterized by unplanned and unregulated growth mainly caused by rapid population growth, and being unguided by urban plan. This situation was exacerbated by the legacy of colonialism, the structural adjustment program, and the effects of neoliberalism that spawned weak urban planning institutions.
2. The consequences of unplanned urbanization in Africa include: The developments of slums and squatter settlements (informal settlements);
  - a) *Poor infrastructure and service provision, and*
  - b) *Economic and health problems to the urban community.*

3. The push factors are largely economic in nature (poor socioeconomic conditions, unemployment, poverty, etc.). Whereas, the pull factors are; real or perceived opportunity for a better life, high income, greater security, better quality of education and better health.
4. The Slave Trade had a serious impact on the population of Africa by depopulating the continent's population. It moved the young working age population out of Africa; hence it affected the economy of the continent.
5. Coastal pollution can be reduced through:
  - ◆ *Proper management of municipal and industrial wastes,*
  - ◆ *Recycling of plastic materials, and*
  - ◆ *Multi stakeholder interventions and coordinated actions on the causes of coastal pollution.*

# UNIT EIGHT

## GEOSPATIAL INFORMATION AND DATA PROCESSING



### 8. Unit Introduction

Required study time: 11 hours

Dear learner! We hope you enjoyed studying basic geographic concepts related to physical and human aspects. Now we turn our attention to a technical aspect of geographical studies. Therefore, in this unit, you will study how geographic data are gathered, compiled, and used. However, before the output reaches the end user a lot of steps, tools, and processes are involved. Hence, the overall process of geospatial information and data processing depends on **geographic data**. The sources of the data could be direct or remotely sensed sources. There are different types of tools or hardware that help us to collect the data. The two most important tools include a global positioning system (GPS) and digitizers.

The geographic data gathered through the methods and tools mentioned above helps us to answer basic geographic questions such as ‘what is where?’, and ‘why is it there?’ Answering these questions helps us to identify risk areas and solve critical problems.

The end result or output of geographic data analysis can be the representation of data in numeric values, display on maps, graphs, charts, and diagrams.



### Unit Eight: Learning Outcome

*After successfully completing this unit, you will be able to:*

-  *recognize ways of presenting geographic information;*
-  *explain the concepts of geospatial information;*
-  *identify sources and tools of geographic data;*
-  *describe ways of geographic data representations; and*
-  *produce graphs, charts and diagrams from raw data.*



## Unit Learning Strategies

Dear learner, the following learning strategies are suggested for your study:

-  reading,
-  writing and taking notes,
-  practices using a computer,
-  studying and remembering information,
-  improving assignment and test performance,
-  time management and organization, and
-  self-advocacy (the ability to effectively communicate, convey, negotiate, or assert one's interests, desires, needs and rights).



## The main contents of this unit are:

- 8.1 Basic Concepts of Geospatial Information**
- 8.2 Sources and tools of geographic data**
- 8.3 Geographic Data Representations**
- 8.4. Advances in Mapmaking and the Birth of Geographic Information System**
- 8.5. Making and Interpretation of Graphs, Charts and Diagrams**



## The Required Study Time

Dear learner! On your study plan consider devoting adequate time for study, doing in-text exercises and answering review questions. Therefore, please allocate 11 hours of study time for unit eight.

## Section 8.1 Basic Concepts of Geospatial Information



### Section Overview

Required study time: 3 hours

Dear learner, in this section you will study basic concepts of geospatial information. Hence, you will identify the similarities and differences between information and data, geospatial data, that is data about objects, events or phenomena that have location information about the surface of the earth they represent, and visualizing geographic data.



### Section Learning Outcomes

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

-  describe the main concepts of geospatial information.

**Key terms**

<ul style="list-style-type: none"> <li>✔ <i>Attribute</i></li> <li>✔ <i>Attribute Information</i></li> <li>✔ <i>Continuous Data</i></li> <li>✔ <i>Data</i></li> <li>✔ <i>Discrete Objects</i></li> <li>✔ <i>Geographical Data</i></li> <li>✔ <i>Geospatial Data</i></li> </ul>	<ul style="list-style-type: none"> <li>✔ <i>Information</i></li> <li>✔ <i>Location Information</i></li> <li>✔ <i>Observations</i></li> <li>✔ <i>Qualitative Variable</i></li> <li>✔ <i>Quantitative Variable</i></li> <li>✔ <i>Temporal Information</i></li> <li>✔ <i>Visualization</i></li> </ul>
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## BRAINSTORMING QUESTIONS

1. Dear learner! What is data? How does data differ from information?

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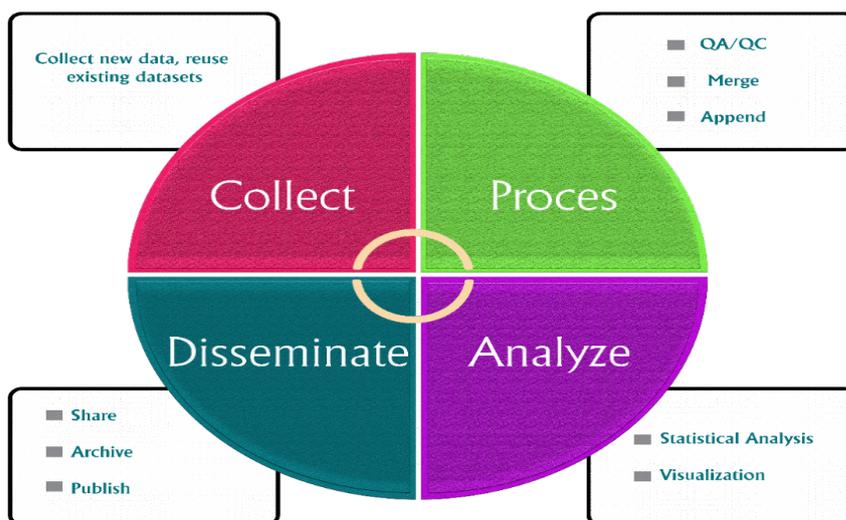
Dear learner, have you tried the activity? If so, that is good. Let’s now differentiate data and information.

### 8.1.1. The Similarity and Difference between Data and Information

Although **data** and **information** are often used interchangeably, they are not the same. They both have specific meanings.

**Data:** It refers to different **observations** that are collected and stored as numbers, characters, images, facts and symbols. They describe a feature, idea, status, or situation that we want to focus on or are interested in. Therefore, data are sets of values of **qualitative** or **quantitative** variables about one or more persons or objects. Data can be meaningful when it is further processed by human interpretation or input into a computer and the results are disseminated.

Data has important lifecycles. It begins with data collection. At this stage, we may collect new data (primary data) from a study area or existing secondary data obtained from different offices (e.g., the Central Statistical Agency). The second stage in data lifecycle is data processing. This stage involves checking for data quality using methods such as quality assurance (QA) and quality control (QC), merging duplicate variables, and appending new information to the data. The third stage involves the analysis of data. Here, different statistical analyses can be used to identify meaningful relationships between or among variables, and then the results can be displayed in tables, charts, and graphs for visualization. The final stage is the dissemination of results. This stage involves sharing the results with the general public through conferences, workshops, and publishing the results in known journals and archiving the results so that they can be accessible for future use.



## The Data Cycle

**Figure 8.1:** The Data Cycle

- Information:** It is the result of processing, manipulating, and organizing data in a way that adds to the knowledge of the receiver. In other words, it is the context, in which data is taken.



### Activity 8.1

1. Dear learner! Please categorize the following into **data** and **information**.

- Maximum temperature at Jimma was 20°C.
- Gambella has hot climate.
- Challa scored 95 out 100 in mathematics.
- Abebaw is 1.60 meters tall.
- Only 3% of the students passed national exam.

**Data**

**Information**

Dear learner, have you tried the activity? That is great, let's now differentiate data and information.

**Table 8.1: Some Differences between Data and Information**

Data	Information
<ul style="list-style-type: none"> <li>• Data is used as an <b>input</b> for the computer system.</li> <li>• Data is <b>unprocessed</b> facts or figures.</li> <li>• Data <b>does not depend</b> on information.</li> </ul>	<ul style="list-style-type: none"> <li>• Information is an <b>output</b> of data.</li> <li>• Information is <b>processed</b> data</li> <li>• Information <b>depends</b> on data</li> </ul>

### 8.1.2. Basic Concepts of Geospatial Data

**Geospatial data:** It is data about objects, events or phenomena that have **location** information about the surface of the earth they represent. Geospatial data typically combines **location information** (usually coordinates on the earth) and **attribute information** (the characteristics of the object, event, or phenomenon concerned) with **temporal information** (the time at which the location and attributes existed).

Geographical data links **place**, **time**, and **attributes**. Geographical data is at the heart of map making. Without geographic data, events or phenomena in an area of interest (AOI) cannot be visualized and analyzed.

#### a. Place

Place or location is essential in the collection of geographical data. Locations are the basis for mapping an area of our interest. Based on the location we can link different kinds of information to it, and measure distances and areas. Without locations, data are said to be “**aspatial**” and have no value at all.

#### b. Time

Time is an optional element. Many aspects of the earth’s surface are slow to change and can be thought of as unchanging. For example, height above sea level changes slowly because of erosion and movements of the earth’s crust, but these processes operate on scales of hundreds or thousands of years and for most applications (except geophysics), we can safely omit time from the representation of elevation. On the other hand, temperatures change daily and dramatic changes sometimes occur in minutes with the passage of a cold front or thunderstorm, so **time** is very important.

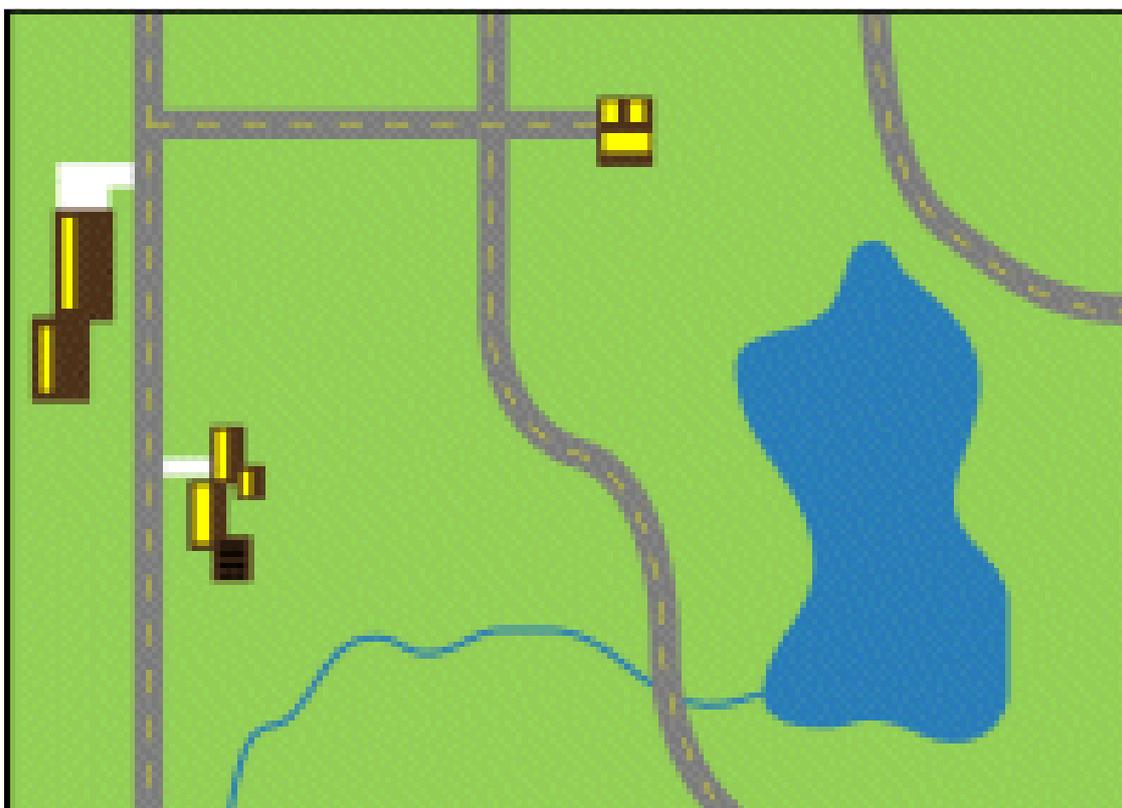
#### c. Attributes

Attributes refer to descriptive information about the objects, events or phenomena that we try to map. There is a lot of attribute information an area may have. Some attributes are **physical** or **environmental** (e.g., temperature or elevation), while others are **social** or **economic** (e.g., population size, or income).

### 8.1.3. Visualizing geographic data

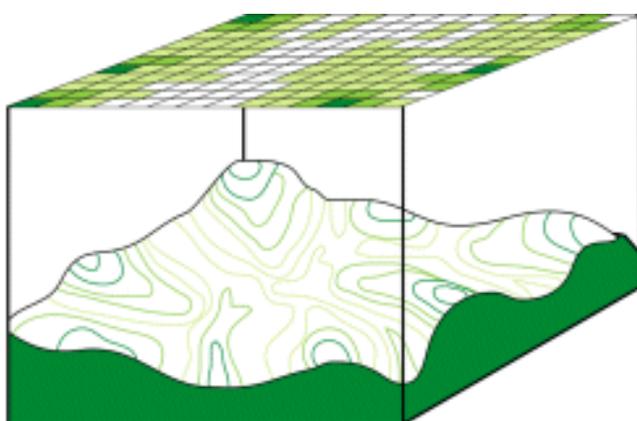
There are two fundamental ways of visualizing geographic data. It can be visualized as a discrete object or as continuous data.

**A. Discrete objects** represent an area as objects with well-defined boundaries in open space. Hence, a **discrete object** has known and definable boundaries. It is easy to define precisely where the object begins and where it ends. For example, a lake is a discrete object within the surrounding landscape.



**Figure 8.2:** An Example of Discrete Object – Lake

**B. Continuous data** represents areas or phenomena that progressively vary across a surface or a location. The values of a measure of variables may vary from point to point. Continuous data is also referred to as field, non-discrete, or surface data. An example of continuous data is elevation. With the starting point being sea level, the elevation of an area varies across the surface.



**Figure 8.3:** An example of Continuous Data – Altitude



## Checklist

Dear learner! Now it is time to check if you understood the contents of the section or not. Therefore, please put a tick mark (✓) in the boxes given to prove that you have understood the respective issues well.

I can:

- 1. describe the main concepts of geospatial information
- 2. explain the characteristics of geospatial data
- 3. list the attribute information of geographical data
- 4. identify types of temporal information
- 5. identify types discrete objects
- 6. explain the nature of continuous data

Is there any box that you didn't mark (✓) under it? If there is please go back to your text and read about it before you go to the following exercises.



## SELF-TEST EXERCISES OF SECTION 8.1

The following questions can help to study section 8.1.

**Direction: Write "True" if the statement is right and write "False" if it is wrong.**

1. Measured or recorded observation of geographical feature makes up information of an area.
2. The lifecycle of data begins with data collection and ends with data processing.
3. Information is the result of processing, manipulating, and organizing of data.
4. An attribute information depicts the characteristics of the object for which data was collected.
5. Geographical data is a much-needed data for map-making.



## Resources for further reading

<https://www.ibm.com/topics/geospatial-data>

<https://www.gislite.com/tutorial/k1011>

<https://gisgeography.com/geospatial-vs-gis/>

<https://www.techtarget.com/searchdatamanagement/definition/spatial-data>

## Section 8.2 Sources and Tools of Geographic Data



### Section Overview

Required study time: 2 hours

Dear learner! In this section you will study about the two essential features of geographic data. These are sources of geographic data and tools for geographic data collection. Geographic data are collected from a variety of sources and in different formats. The data can be collected using instruments that measure natural phenomena (e.g., temperature, rainfall, humidity, etc.) as well as by advanced satellites (e.g., remote sensing).



### Section Learning Outcomes

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

 acquire and present spatial data using geo-spatial tools.



### Key terms

- |                   |                                   |
|-------------------|-----------------------------------|
| ✓ Base Map        | ✓ Global Positioning System (GPS) |
| ✓ Data Collection | ✓ Primary Sources                 |
| ✓ Data Format     | ✓ Remote Sensing                  |
| ✓ Digitizer       | ✓ Secondary Sources               |
| ✓ Field Survey    | ✓ Sources of Data                 |

## BRAINSTORMING QUESTION

1. Dear learner, can you list the sources and tools of data?

---



---

Dear learner, have you tried the activity? If so, that is good. Now, let's identify the sources and tools of data. 8.2.1 Sources of Geographic Data

Geographic data are collected from a variety of **sources** and in different **formats**. The data can be collected using instruments that measure natural phenomena (e.g., temperature, rainfall, humidity, etc.) as well as by advanced satellites (e.g., remote sensing). Therefore, geographic data come from two important sources:

- a) Directly collected
- b) Remotely sensed

### A. Directly Collected Data

**Directly collected data** are generated at the source of the phenomena being measured. Examples of directly collected data include measurements such as temperature readings at specific weather stations and elevations recorded by visiting the location of interest. Data can

also be obtained through **surveys** (e.g., the census and sample surveys) or **observation** (e.g., counting the number of trees in a farmland).

## B. Remotely sensed data

**B. Remotely sensed data** are measured from remote distances without any direct contact with the phenomena or a need to visit the locations of interest. Satellite images are examples of remotely sensed data.



### Sources of Geographic Data

The most common general sources for geographic data are:

-  hard copy maps (analogue maps);
-  aerial photographs;
-  remotely-sensed imagery;
-  point data samples from surveys; and
-  existing digital data files.

### 8.2.1. Tools for Geographic Data Collection

**Data collection** is the process of gathering and analyzing information on variables of interest. It is usually carried out systematically so that it enables us to appropriately map the area of our interest. Therefore, the first step in making a map is to complete a **field survey**. Surveyors observe, measure, and record what they see in the specific area.



### Activity 8.2

1. Dear learner, what is the purpose of geographic data collection?

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Dear learner, have you tried the activity? That is great, let's now explore how geographic data is collected.

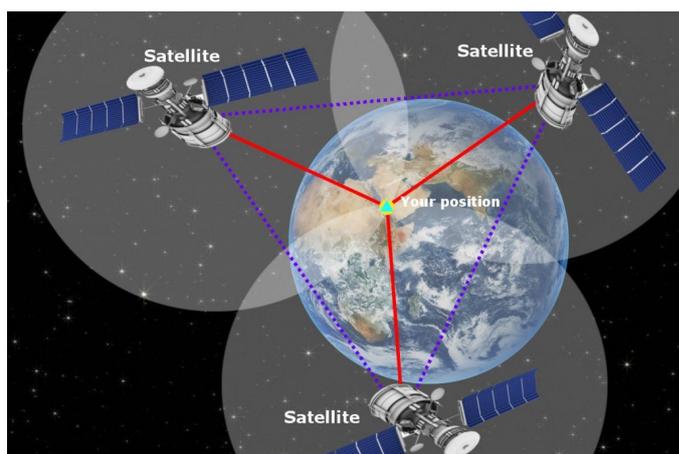
Geographic data is collected to create a **base map of an area**. Then other information about the layers that are going to overlap on the map will be collected. The data needed for the base map belong in a category named "**primary sources**" because these spatial and location data are received for direct use in making the map. The other category of data is called "**secondary sources**" and refers to data of general interest gathered for many reasons, which can then be further used by end users, based on their interests.

Hard copy maps (analogue maps) can be used as a secondary source. The information in these sources can be used by **enlarging** a map of the area of our interest on paper or by digitizing on a computer in a digital format. However, whenever we use data from secondary sources, we should be very careful and check if the data is right and **up-to-date**. Otherwise, our final result will be wrong and outdated.

Today, most mapping is done by remote sensing, which is the gathering of geographic information from a distance by an instrument which is not physically in contact with the mapping site. These data are gathered primarily by aerial photography or satellites. The data gathered includes information such as elevation, differences in land cover, and variations in temperature. This information is recorded and converted to a digital format. Cartographers or mapmakers then use these data and computer software to make maps.

There are different types of tools or hardware that help us in data collection. The tools are: **global positioning system (GPS)** and **digitizers**.

### i. Global Positioning System (GPS)



A global positioning system is a satellite network that is used to determine the exact location of a place. It communicates with GPS receivers accessed by individual users on the surface of the Earth. The GPS receiver needs to connect with four or more satellites orbiting the Earth as a reference to calculate the precise location of the user within a few meters.

**Figure 8.4:** Global Positioning System



GPS receivers are widely used in cars and smartphones to provide directions to specific locations. The GPS receiver is very valuable for documenting information about a place. It provides the latitudinal and longitudinal coordinate values of an area and the elevation value of the area.

**Figure 8.5:** GPS Receiver

## ii. Digitizers

A digitizer is a tool used to change images on an analogue form or on paper into digital form on a computer. Therefore, digitization is the process of converting information into a digital (i.e., computer-readable) format. The result is the representation of an object or image in digital format. Instruments that are used in digitation include: a table digitizer, a scanner, and smartphones. Data generated by the digitizer provides geo-referenced information about an area. Whereas images generated by scanners and smartphones should be geo-referenced. Georeferencing means that the internal coordinate system of a map or aerial photo image can be related to a geographic coordinate system of an area being scanned.



Figure 8.6: Table Digitizer



Figure 8.7: Scanner



### Checklist

Dear learner! Now it is time to check whether you understood the contents of the section or not. Therefore, please put a tick mark (✓) in the boxes given to prove that you have understood the respective issues well or not.

I can:

- 1. present spatial data using geo-spatial tools
- 2. list the sources and formats of Geographic Data
- 3. identify tools for geographic data collection
- 4. describe the importance of a base map of an area
- 5. discuss the functions of global positioning system

Is there any box that you didn't mark (✓) under it? If there is please go back to your text and read about it before you go to the following exercises.



## SELF-TEST EXERCISES OF SECTION 8.2

The following questions can help you to study section 8.2.

### PART I: MATCHING

Direction: Match the Items Under Column “A” with Items Under Column “B”.

#### Column A

1. Digitizer
2. Remote sensing
3. Primary source
4. Secondary source
5. Field Survey

#### Column B

- A. a first-hand account of an event or time period
- B. data previously gathered for many reasons and used by end users again
- C. collection or gathering of information at the local level by conducting primary surveys.
- D. tool used to change images on an analogue form or paper into a digital form on a computer
- E. collecting data without any direct contact with an object



### Resources for Further Reading

<https://www.library.unsw.edu.au/using-the-library/information-resources/primary-and-secondary-sources>

<https://www.usgs.gov/educational-resources/usgs-geospatial-data-sources>

<https://www.gps.gov/>

## Section 8.3 Geographic Data Representations



### Section Overview

Required study time: 2 hours

Dear learner, in this section you will study about geographic data representations. Geographic data representation involves graphical visualization of the data or producing a map of an area. Maps are used in order to gain better insight and understanding of the area of our interest. There are two main forms of geographic data representations. These hardcopies are also known as analogue format and **digital** format. The digital format is becoming increasingly important in the world today.



## Section Learning Outcomes

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

- describe and explain how to present geographic information.



### Key terms

- ✓ Analogue Format
- ✓ Data Representation
- ✓ Digital Format
- ✓ Geographic Data Structure
- ✓ Grid Cell Data
- ✓ Node

## ? BRAINSTORMING QUESTION

- Dear learner! Can you list some examples of a hardcopy map? \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Dear learner, have you tried the activity? If so, that is great. Let's now identify the advantages of digital representation of geographic data.

The digital representation of geographical data has enormous advantages over paper maps or hardcopy. It can be used in digital devices such as a personal computer (PC), information providers such as the internet, or mass storage devices for many purposes. Digital data are also easy to copy and transmit at very high speeds. Moreover, digital data can be stored at high density in very small spaces, and it is less subject to the physical deterioration that affects paper formats. Finally, data in digital form are easy to **transform**, **process**, and **analyze**.



### Activity 8.3

- Dear learner, describe the advantages of digital data formats and storage facilities over hard copy, or analogue format.  
 \_\_\_\_\_  
 \_\_\_\_\_

Dear learner, have you tried the activity? That is great! Let's now explore how geographic data is represented using features such as points, lines and areas.

A map is composed of different geographic features represented either as **points**, **lines**, and/or **areas**. Each feature is defined both by its location in space (with reference to a coordinate system), and by its characteristics (typically referred to as **attributes**). Therefore, a map is a model of the real world where all geographic features on the earth's surface can be characterized and defined as one of the three basic features – point, line, or area.

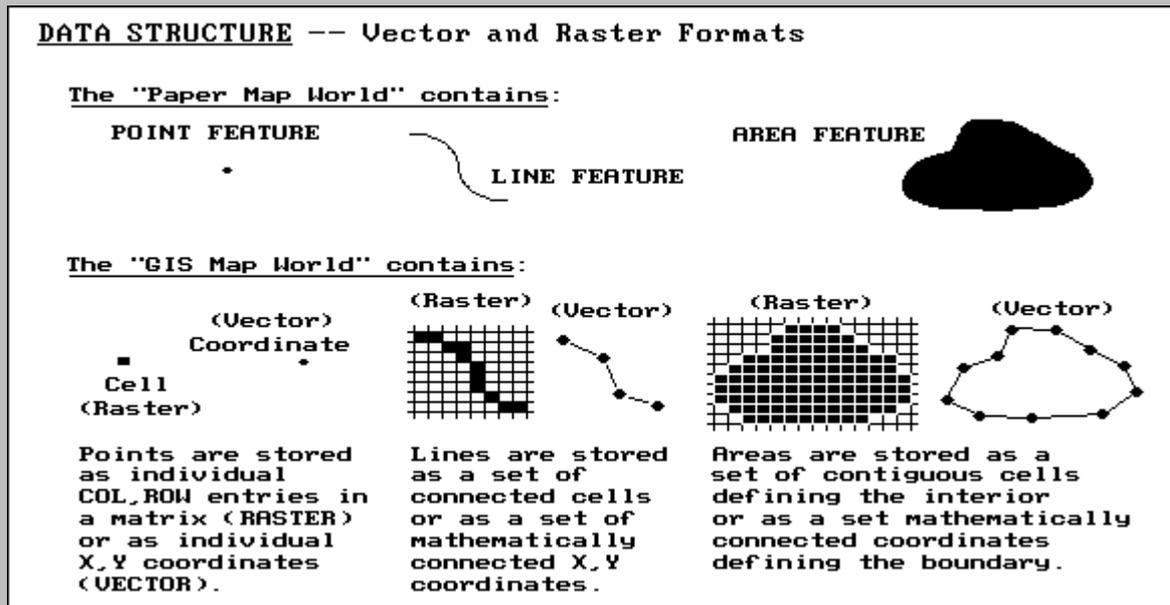
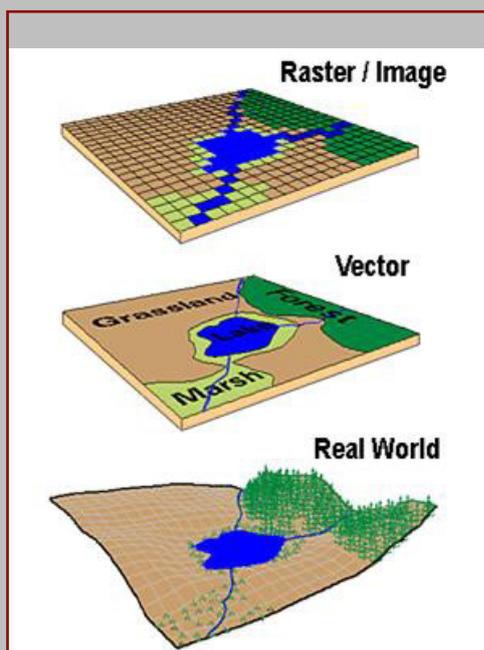


Figure 8.8: Geographic Data Structure

- i. **Point** data exists when a feature is associated with a **single** location in space. Examples of point features include a telephone network tower, water well and a weather station.
- ii. **Line** data exists when a feature's location is described by a string of spatial coordinates. Examples of linear data include rivers, roads, pipelines, etc.
- iii. **Area** data exists when a feature is described by a closed string of spatial coordinates. An area feature is commonly referred to as a **polygon**. Examples of polygonal data include forest stands, soil classification areas, administrative boundaries, and climate zones. Most **polygon** data are considered to be homogeneous, and thus they are consistent.



Meanwhile, in the digital format, the same geographic features outlined above are stored and displayed in three basic types of spatial data models.

- i. Vector
- ii. Raster
- iii. Image

The following diagram reflects the two primary spatial data storage techniques in the computer. These are **vector** and **raster**. Whereas, **images** reflect **pictures** or **photographs** of the landscape.

Figure 8.9: Digital forms of digital data representation



## Activity 8.4

**Dear learner, determine whether the following statement is correct or incorrect, and substantiate with examples.**

1. Whatever we can draw on a paper map using point, line, or polygon can also be drawn by vector and raster models in a computer.

---



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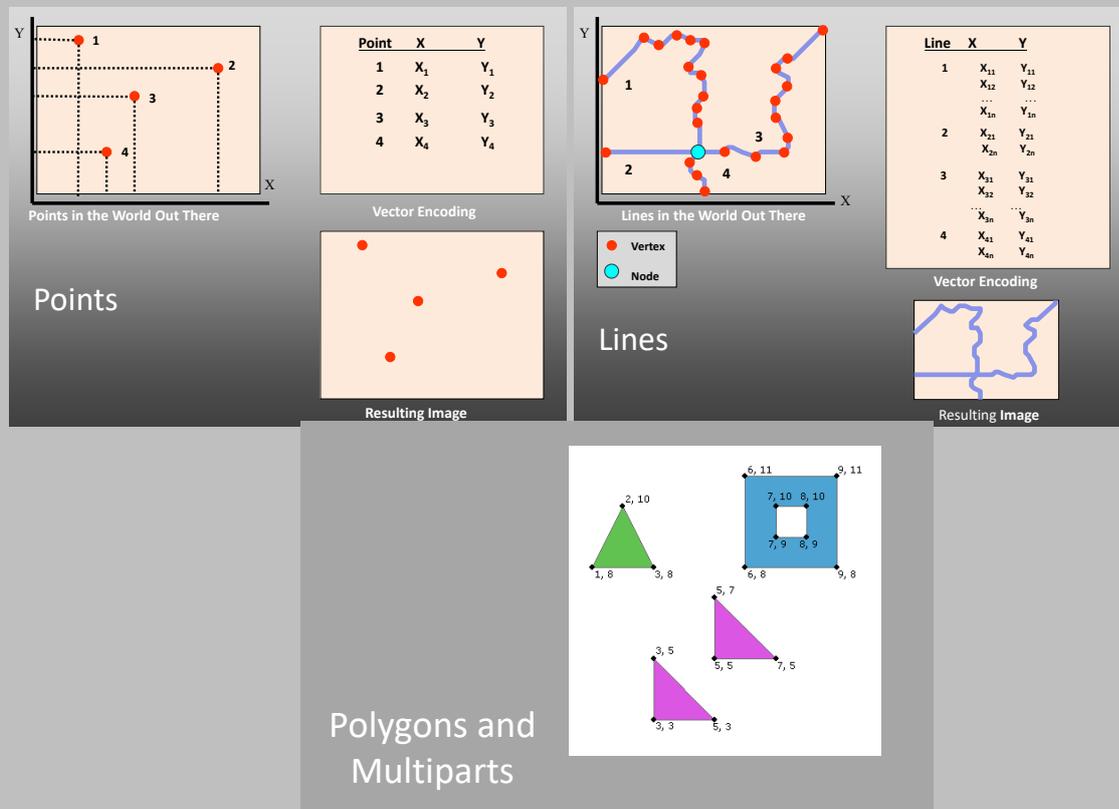


---

Dear learner, have you tried the activity? That is great! Let's now discuss vector and raster data models.

### 1. Vector Data Models

Vector storage implies the use of vectors (directional lines) to represent a geographic feature. Vector data is characterized by the use of sequential points or vertices to define a linear segment. Each vertex consists of an X coordinate and a Y coordinate, or latitudinal and longitudinal values. Hence, a **point** feature is defined by one coordinate pair of X and Y. Vector lines are also referred to as **arcs** and consist of a string of vertices terminated by a **node**. A node is defined as a vertex that starts or ends an arc segment. **Polygonal** (areal) features are defined by a set of closed coordinate pairs.

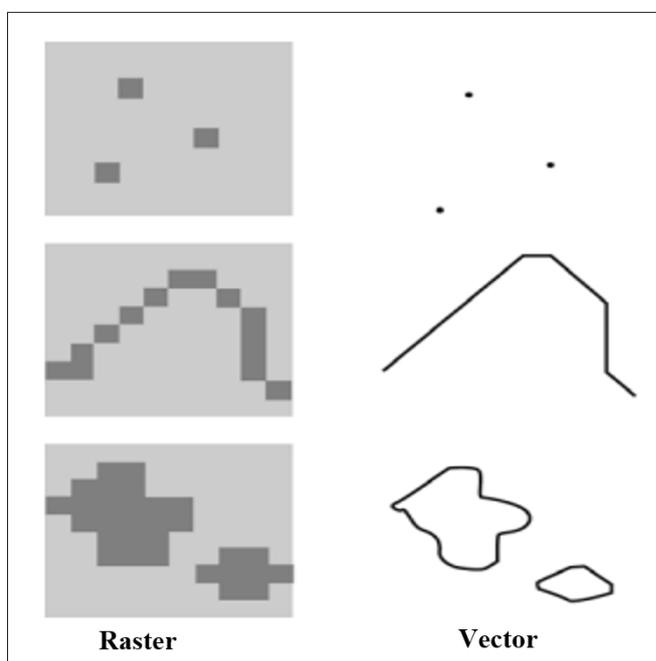


**Figure 8.10:** Vector Representation of the Real-World Features

## 2. Raster Data Models

Raster data models incorporate the use of a *grid-cell* data structure where the geographic area is divided into *cells* identified by row and column. This data structure is commonly called a

**raster**. The size of cells in a tessellated (characterized by a pattern of repeated shapes, especially polygons, that fit together closely without gaps or overlaps) data structure is selected based on the accuracy of the data and the resolution needed by the user. Since geographic data is rarely distinguished by regularly spaced shapes, cells are classified based on the most common attribute of the cell.



Therefore, raster data represent **points** by a single cell, **lines** by sequences of neighboring cells, and **areas** by collections of contiguous cells.

**Figure 8.11:** Representation of Point, Line and Area Features (Raster versus Vector)



### Checklist

Dear learner! Now it is time to check whether you understood the contents of the section. Therefore, please put a tick mark (✓) in the boxes given to prove that you have understood the respective issues well.

I can:

- 1. explain how geographic information is presented
- 2. describe the advantages of digital representation of geographical data
- 3. explain the disadvantages of paper formats
- 4. list the representations of geographic features
- 5. differentiate vector and raster data models

Is there any box that you didn't mark (✓) under it? If there is please go back to your text and read about it before you go to the following exercises.



## SELF-TEST EXERCISES OF SECTION 8.3

The following questions can help you to study Section 8.3.

### PART I: Multiple Choice Items

**Direction: Choose the correct word or phrase from the given alternatives.**

1. One of the following is the advantage of digital representation of geographic data;
  - A. it can be mounted on a wall or billboard.
  - B. it can be used in digital devices such as personal computer and laptop.
  - C. it requires large storage warehouses.
  - D. it is subject to the physical deterioration of the data.
  
2. Which of the following format is relatively easy to transform or analyze data?
 

A. Personal computer (PC).	C. Mass storage devices.
B. The internet.	D. Digital format.
  
3. One of the following can be represented by a line on a map;
 

A. a school compound.	C. a river.
B. a rural village.	D. water well
  
4. Which of the following can serve as a model?
 

A. map	C. information
B. data	D. computer
  
5. \_\_\_\_\_ starts or ends an arc segment on a vector format.
 

A. Point	C. Node
B. Polygon	D. Raster



### Resources for Further Reading

<https://courses.washington.edu/gis250/lessons/introduction~gis/spatial~data~model.html>  
<https://support.esri.com/en-us/gis-dictionary/vector-data-model>  
<https://desktop.arcgis.com/en/arcmap/latest/manage-data/raster-and-images/what-is-raster-data.htm>  
<https://www.slideshare.net/esambale/raster>  
 Shapiro, L. G. (1980). DESIGN OF A SPATIAL INFORMATION SYSTEM. In H. FREEMAN & G. G. PIERONI (Eds.), *Map Data Processing* (pp. 101–117). Academic Press.  
<https://doi.org/10.1016/B978-0-12-267180-7.50010-4>

## Section 8.4 Advances in Mapmaking and the Birth of Geographic Information System



### Section Overview

Required study time: 2 hours

Dear learner! In this section, you will study about the historical development of map making. Map-making has a long history. For centuries, mapmakers have used their skills to draw maps to help people navigate the world. However, the maps drawn in ancient times were not accurate compared to today's sophisticated digital maps. Hence, mapmaking has come a long way. Early mapmakers relied on field observations and their knowledge of the world to create maps. They often spend months or even years travelling to different parts of the world to gather information for making maps. Once they had gathered all of the necessary information, they then spent many hours carefully drawing and labeling the maps. Today, mapmakers have easy access to information to create maps. They can use satellite images, aerial photographs, and data from GPS devices to create detailed maps of any area in the world.



### Section Learning Outcomes

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

-  describe the developments in map making; and
-  make administration map using geographical information system.



### Key terms

- |   |   |
|---|---|
|  Components of GIS   |  Data storing                  |
|  Data analysis       |  Data visualization            |
|  Data interpretation |  Geographic Information System |



### BRAINSTORMING QUESTION

1. Dear learner, have you seen historical maps? Do you think that historical maps convey accurate information about a place?

---



---

Dear learner, have you tried the activity? If so, that is great. Let's now identify the advantages of digital representation of geographic data.

### 8.4.1. Historical Development of Mapmaking

Mapmaking has been an integral part of human history for thousands of years. It is believed that the human activity of graphically representing one’s perception of the world is a universally acquired skill and one that predates virtually all other forms of written communication. From cave paintings to ancient maps of Babylon, Greece, and Asia, right into the 21<sup>st</sup> century, people have created and used maps as an essential tool to help them define, explain, and navigate their way through the world.

Mapping represented a significant step forward in the intellectual development of human beings and it serves as a record of the advancement of knowledge of the human race, which could be passed from members of one generation to those that follow in the development of culture.

Early maps were a garbled or distorted mass of land that bore no resemblance to the actual world. As the centuries passed, maps became larger, more detailed, and more accurate.

Several technical advances since the 18<sup>th</sup> Century have helped mapmakers to accurately draw the general outline of the continents and locate their precise positions. The advances in mathematics and astronomy and the dividing of the Earth into lines of longitude and latitude were among the most notable advances.

There has been an ever-increasing demand for maps and greater reliability on maps in the 21<sup>st</sup> century. Specially, improvements in printing and photography, the mass production of maps and the ability to make accurate reproductions from more accurate data, as well as, the availability of airplanes and satellites, made it possible to photograph and provide images of large areas at a time. In particular, the role of satellites is very important. Satellites perform continuous scans to provide detailed and up-to-date maps of nearly the entire Earth.



#### Activity 8.5

1. Dear learner, “There is an ever-increasing demand for maps and greater reliability on it.” Why do you think the demand for maps and its reliability have highly increased?

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Dear learner, have you tried the activity? That is great. Let’s now identify the characteristics of geographic information system.

## 8.4.2. Geographic Information System (GIS)



**Figure 8.12:** Components of GIS

It is interesting that during the last few decades, more sophisticated mapping systems appeared. It was mainly due to the advancement of geographic information system (GIS). The geographic information system is a computer-based system that enables us to **store**, **visualize**, **analyze**, and **interpret** geographic data.

## 8.4.3. The Components of GIS

### 1. Hardware

The hardware is the computer and other devices (printers, plotters, scanners, etc.) attached to it. The hardware helps the GIS to operate.

### 2. Methods

Methods are well-designed plans and application specific procedures and rules describing how the technology is applied. This includes the following:

- 🌐 guidelines;
- 🌐 specifications;
- 🌐 standards; and
- 🌐 procedures.

### 3. Software

GIS software provides the functions and tools users need to store, analyze, and display geographical information. The key software components are:

- 🌐 **GIS** software;
- 🌐 **database** software;
- 🌐 **operating** system (OS) software; and
- 🌐 **network** software.

## 4. Data

Geographic data (also called spatial or geospatial data) identifies the geographic location of features. One of the most important components of GIS is the **data**. It is very important that data must be accurate. There are different types of data:

-  vector data;
-  raster data;
-  image data; and
-  attribute data.

## 5. People

GIS technology is clearly of limited value without people to manage the system and develop plans for applying it. Users of GIS range from highly qualified technical specialists to planners, foresters, etc. to help with everyday work.

-  Administrators
-  Managers
-  GIS technicians
-  Application experts
-  End users
-  Consumers



### Focus

Some basic GIS data can be obtained from the following web sites.

-  <https://africaopendata.org/dataset/ethiopia-shapefiles>
-  <https://maps.google.com/>
-  <https://earth.google.com>
-  <https://www.diva-gis.org/gdata>

Required  
study time:  
3 hours

### 8.4.4. Creating a Local Administrative Map with ArcMap

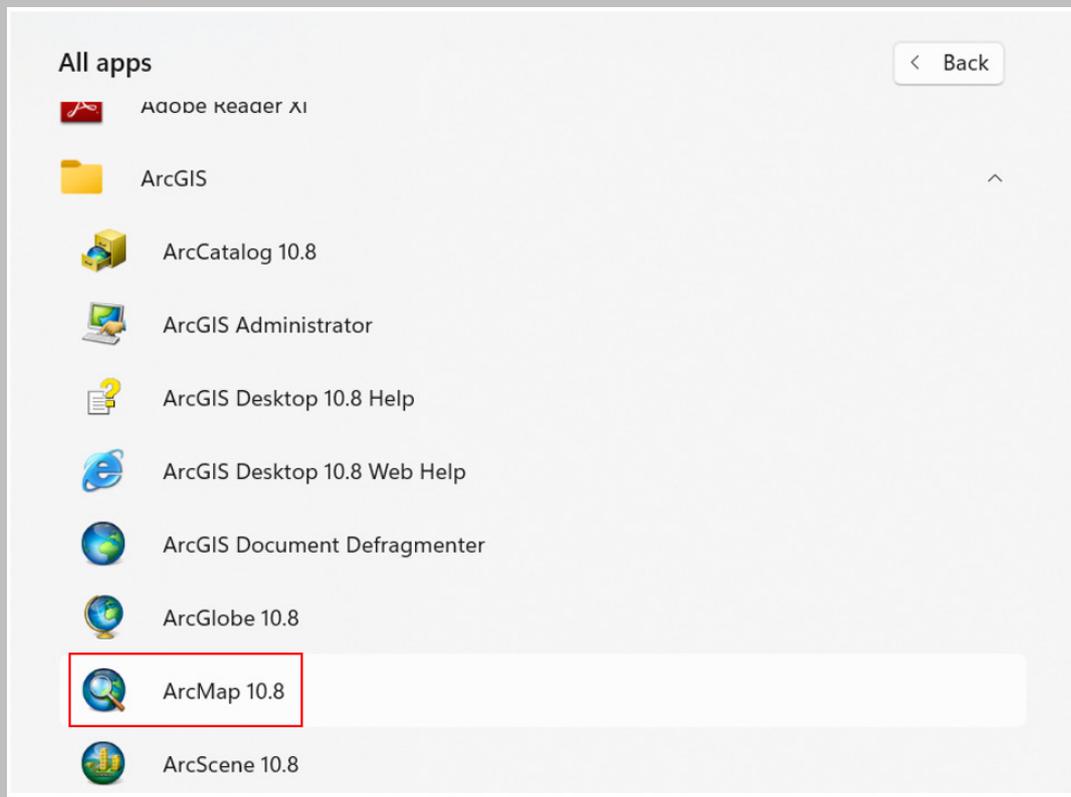
Dear learner, this is a practical part where you should practice map making on a computer. Therefore, you need ArcGIS software (Version 10.x) installed computer (personal computer or laptop). You also need lab technician to assist you in operating the computer or guide you through the map making. Hence, with ArcMap opened on the computer, follow the following steps.

#### Step 1: Starting ArcMap, and adding data layers

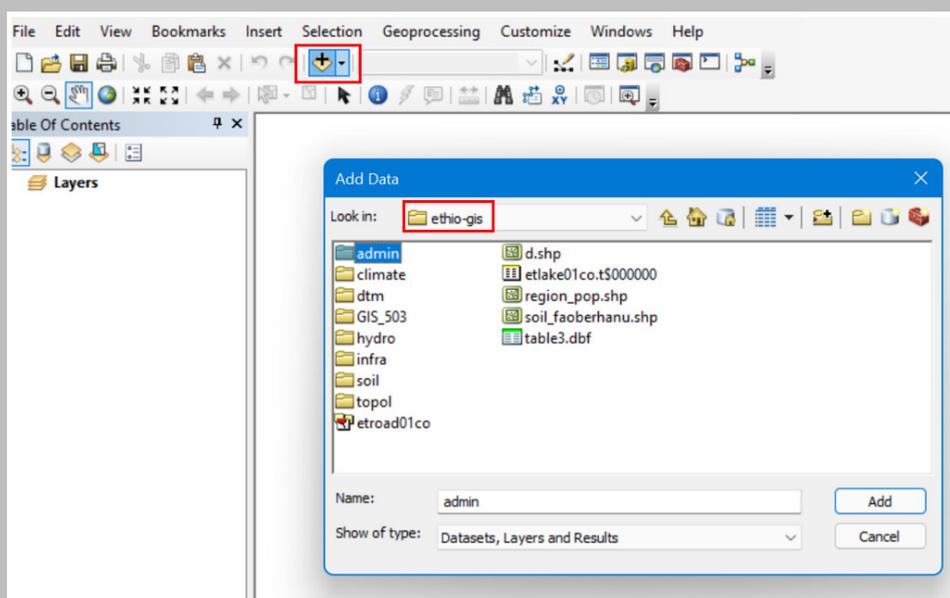
To start ArcMap choose start → all programs → ArcGIS → ArcMap 10.x. (Note that the x represents version number, it could be version 4 or 7, all versions can support the map making.)

N.B. The data to produce an administrative map can be obtained from different sources. One of the sources is from the internet using the following link (<https://africaopendata.org/dataset/ethiopia-shapefiles>). Then download the data and extract the file in a folder. It is very important to create a folder and save the data on a hard drive of a computer. From the folder using the following steps it is possible to create an administrative map of area of our interest.

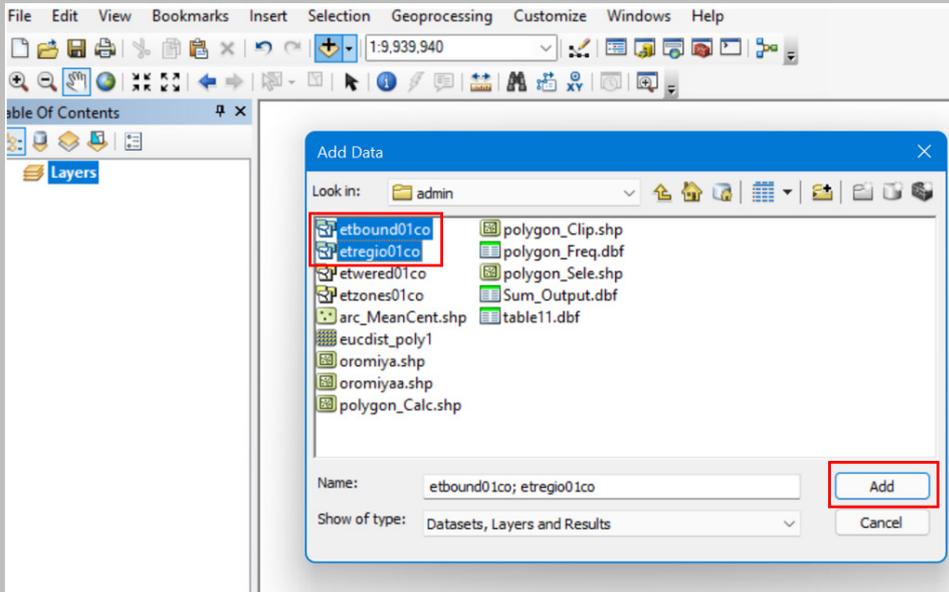
For example, to create an administrative map of Oromia National Regional State, we follow the following steps.



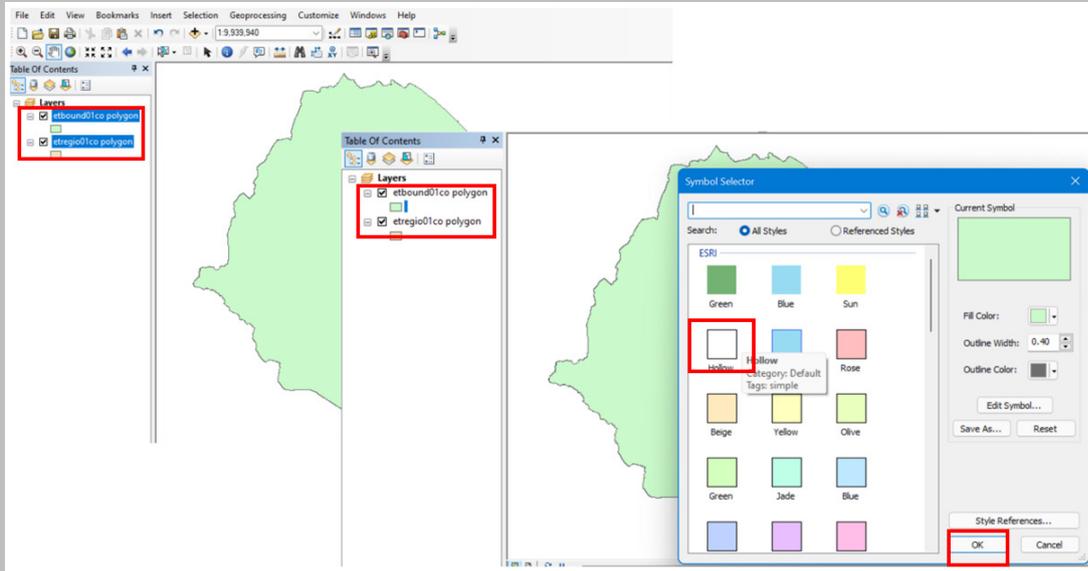
**Step 2:** Click the *connect to folder* icon. This allows you to access a folder where the Ethio-GIS data is located.



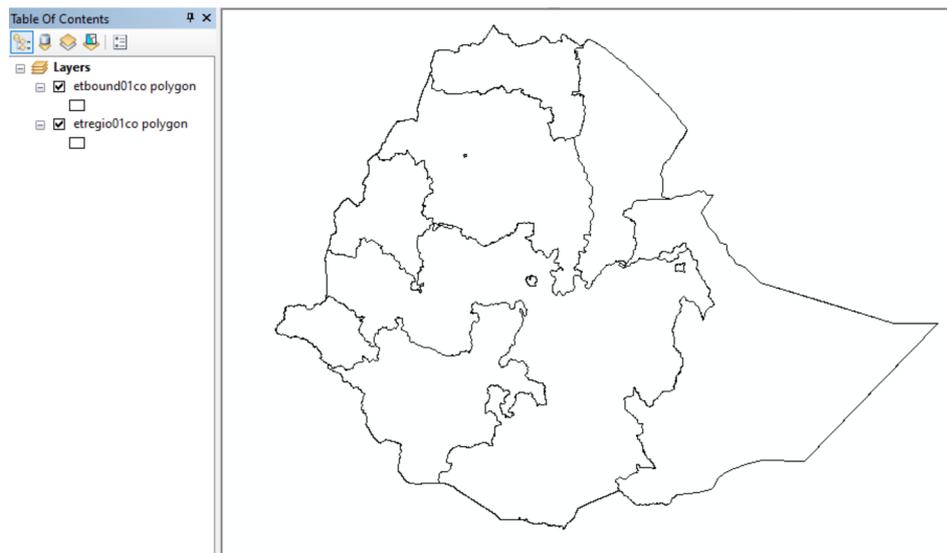
**Step 3:** By clicking on the *admin* folder, select *etbound01co* and *etregio01co*. Then, click on the *add* button.



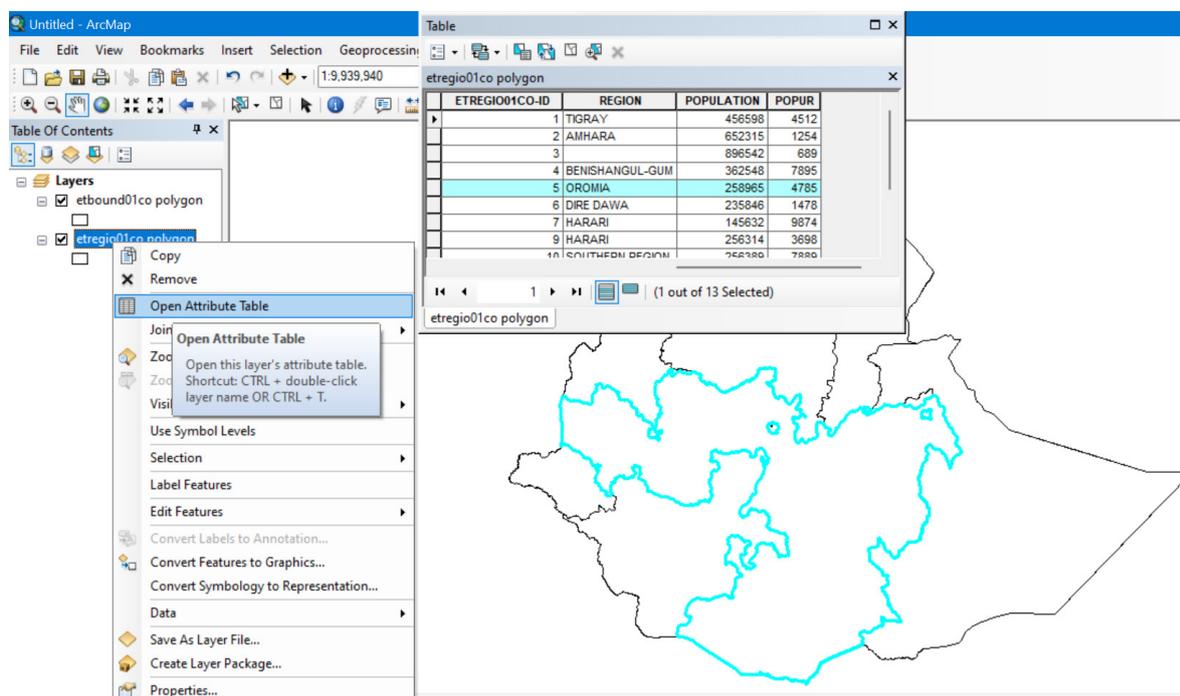
Once the selected shapefiles are added, it is important to remove the background shade of the files by clicking on the small squares, then choosing *hollow* from the symbol selector and clicking on ok button.



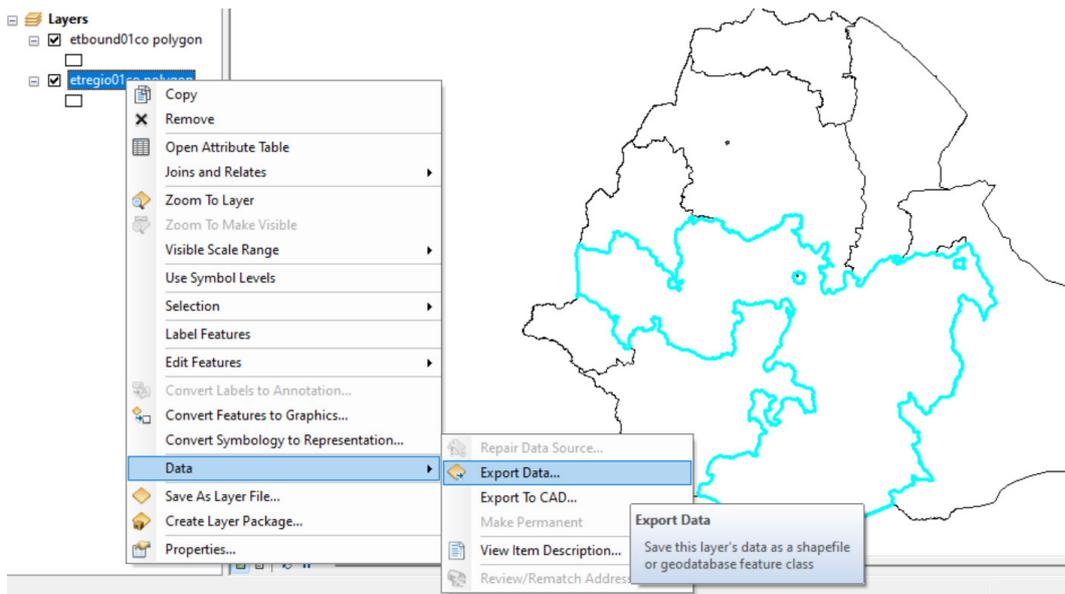
Now the in the window the image should appear as follows.



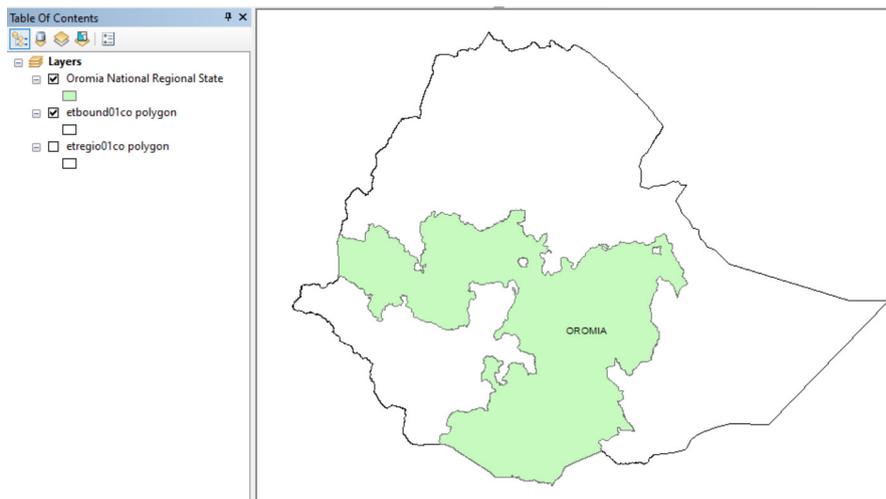
To select the area of your interest, (e.g., Oromia National Regional State, or you can select any region you want), right click on the *etregio01co* layer open attribute table click on the left margin of the table where **Oromia** is found in the list of tables, then check that Oromia is selected and highlighted.



Then right click on the *etregio01co* layer and click on **data, export data and save in a folder**. It will prompt you to add the data to your project, click **yes**.

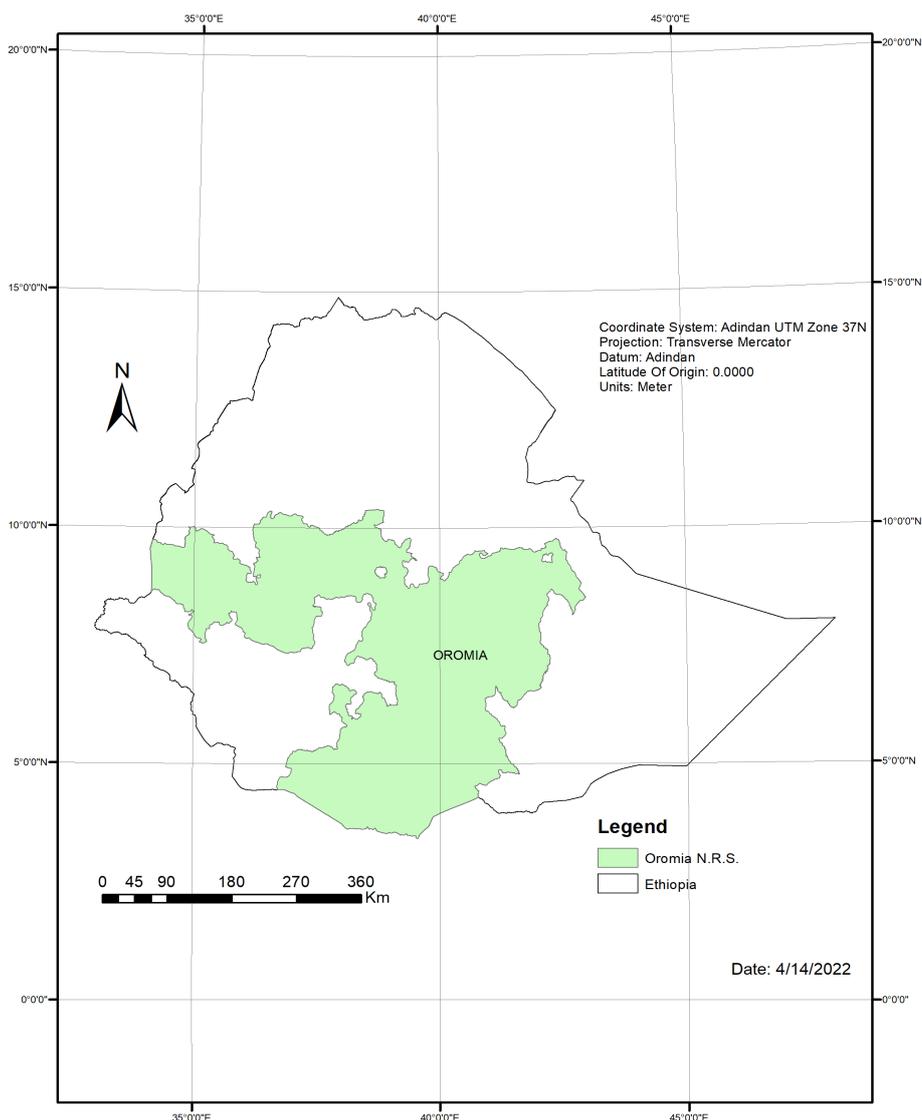


Now the map of the region appears as follows, after being renamed to its proper name, and unticking the other layers we do not want for the moment.



Finally, by clicking on a layout view we should include the necessary marginal information such as:

- ❁ legend;
- ❁ scale bar;
- ❁ north arrow;
- ❁ coordinate information;
- ❁ gridlines; and
- ❁ date of map compilation.



## Checklist

Dear learner! Now it is time to check whether you understood the contents of the section or not. Therefore, please put a tick mark (✓) in the boxes given to prove that you have understood the respective issues well.

I can:

- 1. describe the developments in map making
- 2. identify the components of GIS
- 3. create my local area map on a computer

Is there any box that you didn't mark (✓) under it? If there is please go back to your text and read about it before you go to the following exercises.



## SELF-TEST EXERCISES OF SECTION 8.4

The following questions can help you to study Section 8.4

### PART I: MATCHING

**Direction:** Dear learner, match the items under column “A” with items under column “B”.

#### Column A

1. Vector data
2. Raster data
3. Image data
4. Attribute data
5. People
6. Software
7. Methods
8. Hardware

#### Column B

- A. Characteristics of the feature of data
- B. Not a geo-referenced data
- C. Uses of grid-cell
- D. Uses sequential points or vertices to define a line segment
- E. the computer and other devices
- F. plans and specific procedures
- G. functions and tools users need to store, analyze and display geographical information
- H. managers of GIS system



### Resources for further reading

<https://www.communityheritagemaps.com/the-history-of-mapmaking/>

<https://africaopendata.org/dataset/ethiopia-shapefiles>

<https://storymaps.arcgis.com/stories/e40ae7d670d14466a1a3465b50d1c1d7>

<https://www.esri.com/en-us/what-is-gis/overview>

## Section 8.5 Making and Interpretation of Graphs, Charts and Diagrams



### Section Overview

Dear learner, in this section you will practice the making and interpretation of graphs, charts and diagrams. Many studies, researches, and textbooks use data and numbers. Hence, presentations using **charts**, **graphs**, and **diagrams** can help the presenter draw and keep the attention of his/her audiences or viewers. Presentation using graphs, charts and diagrams also helps the presenter to have a profound evidence-based work. People will also understand and memorize at least the main points of the presentation. Moreover, these tools are very important in describing **trends**, making **comparisons**, or showing **relationships** between two or more items.



### Section Learning Outcomes

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

 *make and interpreting graphs, charts, and diagrams.*



### Key terms

- ✓ *Bar Graph*
- ✓ *Diagram*
- ✓ *Final Output*
- ✓ *Pie Chart*
- ✓ *Raw Data*



### BRAINSTORMING QUESTION

1. Dear learner, what is the importance of charts, graphs, and diagrams in explaining research problem?

---

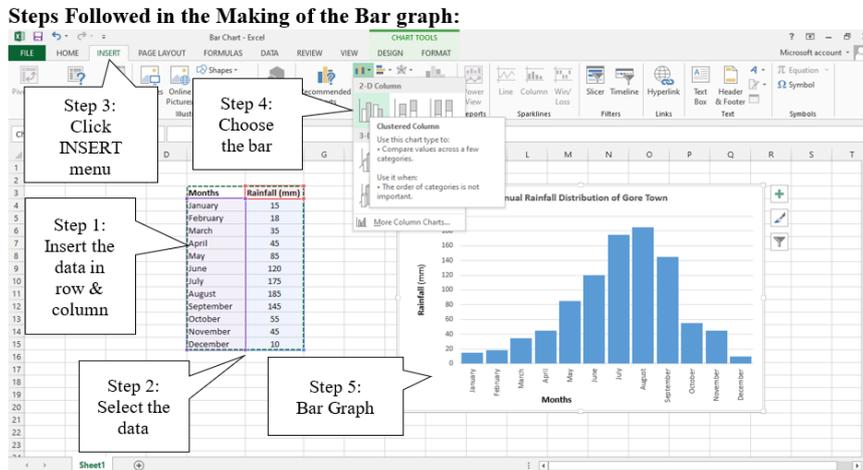


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Dear learner, have you tried the activity? If so, it is great. Let's now exercise making graphs, charts and diagrams using the steps provided on figures below. Hence, you need a practical session on a personal computer or laptop.

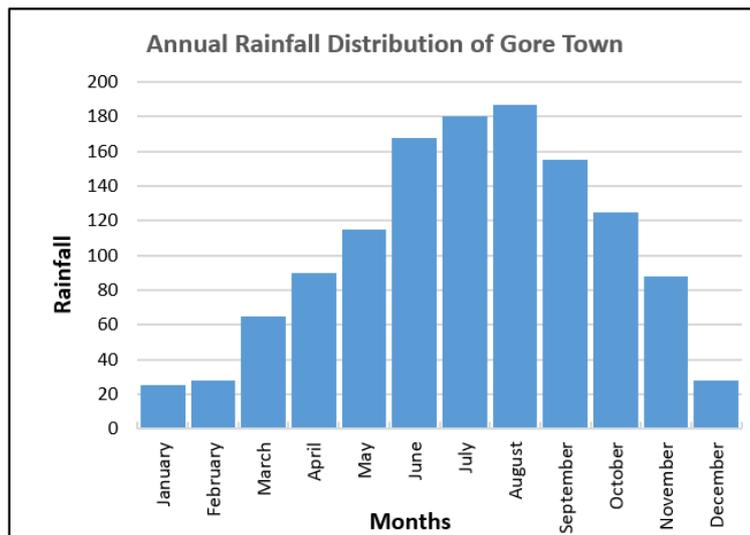
Computer programs such as Microsoft Excel, Microsoft Word and other spreadsheets like SPSS (Statistical Package for Social Sciences) are widely used for making graphs, charts and diagrams. There are so many types of graphs, charts and diagrams that can be produced on a computer. Therefore, the main task of the user is to choose the right one. Here are some common types out of which the user can make his or her choice. Bar graph, line graph and pie chart can be prepared in Microsoft Excel. Meanwhile, diagrams can be drawn in Microsoft Word using the steps indicated below.

**Bar Graph:** Bar graph is used to show relationships between different data series that are independent of each other. In this case, the height or length of the bar indicates the measured value or frequency. Below, you can see the example of a bar graph which is the most widespread visual for presenting rainfall data at Gore Town.



**Raw Data and Final Output**

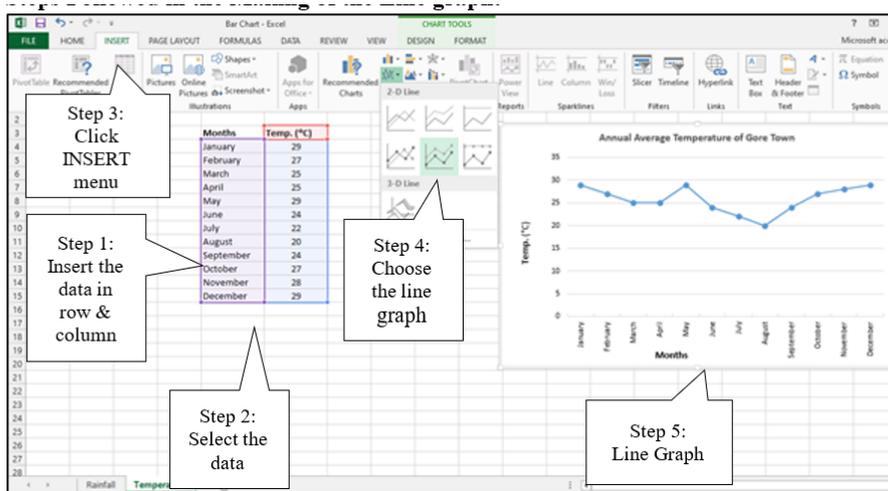
Months	Rainfall (mm)
January	25
February	28
March	65
April	90
May	115
June	168
July	180
August	187
September	155
October	125
November	88
December	28



**2. Line Graph**

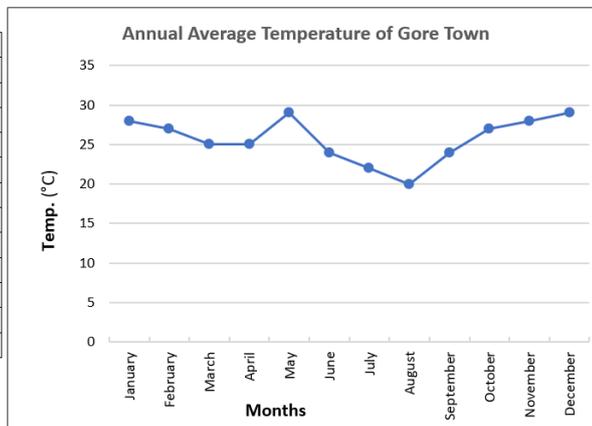
Line graph represents how data has changed over time. This type of charts is especially useful when we want to demonstrate trends or numbers that are connected. For example, how temperature varies within one year.

**Steps Followed in the Making of the Line graph:**

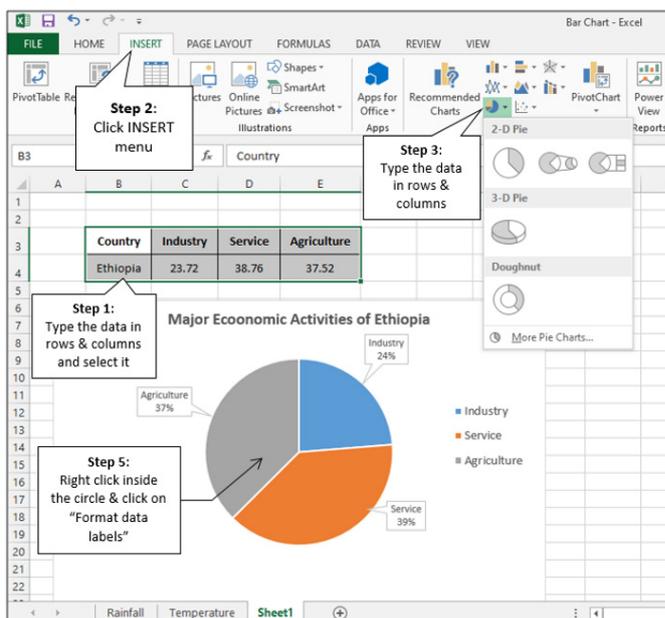


**Raw Data and Final Output**

Months	Temp. (°C)
January	29
February	27
March	25
April	25
May	29
June	24
July	22
August	20
September	24
October	27
November	28
December	29



**3. Pie Chart**

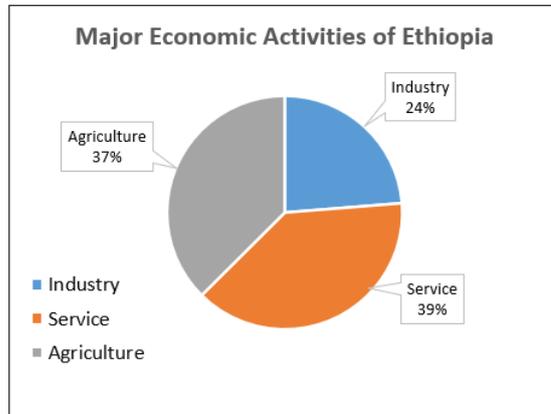


Pie chart is designed to visualize how a whole is divided into various parts. Each segment of the pie is a particular category within the total data set. In this way, it represents a percentage distribution of the variables under study.

**Steps Followed in the Making of Pie Chart:**

Raw Data and Final Output

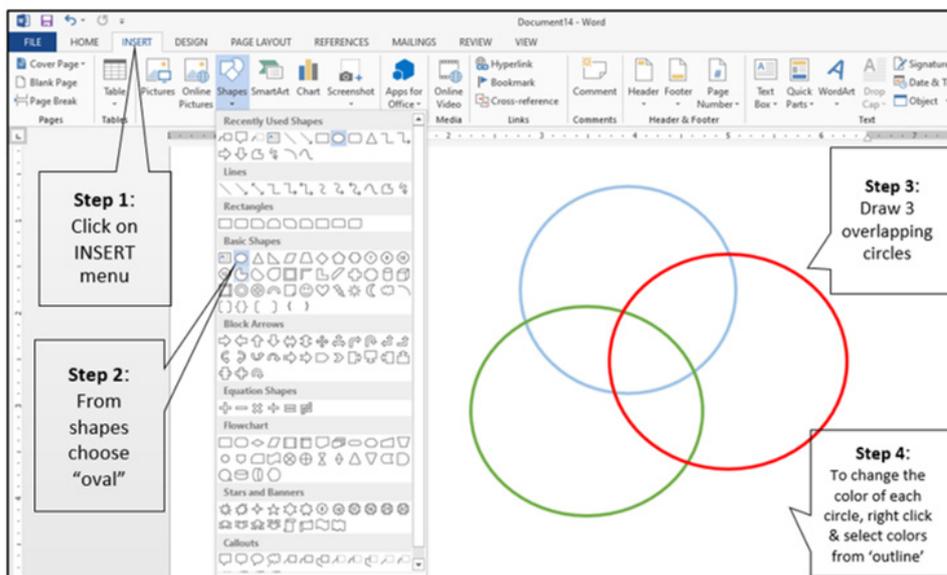
Country	Industry	Service	Agriculture
Ethiopia	23.72	38.76	37.52



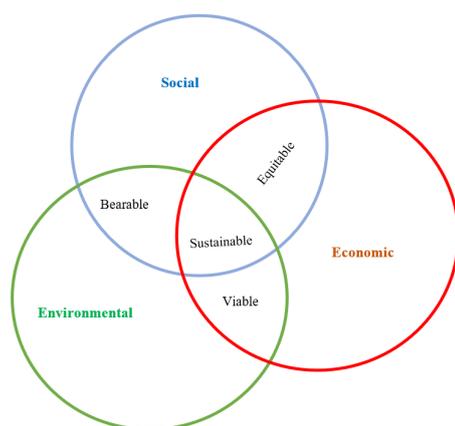
4. Diagram

Diagram is a plan, drawing or outline created to illustrate how separate parts work and overlap at the connecting points. For example here is how we can draw the components of sustainable development in Microsoft Word.

Steps Followed in Making the Diagram:



Note also that you can insert texts that describe the contents you wanted to show. In the example above, each word is written inside the circles as shown in the steps below.



## Checklist

Dear learner! Now it is time to check whether you understood the contents of the section. Therefore, please put a tick mark (✓) in the boxes given to prove that you have understood the respective issues well.

I can:

- 1. make and interpreting graphs, charts, and diagrams
- 2. make and interpret bar graph
- 3. make and interpret diagram
- 4. make and interpret pie chart
- 5. discuss the function of final output of graphs, charts, and diagrams
- 6. describe the importance of raw data as an input for graphs, charts, and diagrams making

Is there any box that you didn't mark (✓) under it? If there is please go back to your text and read about it before you go to the following exercises.



## SELF-TEST EXERCISES OF SECTION 8.5

The following questions can help to study section 8.5.

### PART I: WORKOUT PART

1. Using the following hypothetical data;
  - i. make a bar graph of rainfall of the area
  - ii. make line graph of temperature data

Months	Rainfall (mm)	Temperature (°C)
January	15	22
February	12	24
March	18	21
April	25	20
May	75	25
June	115	22
July	125	19
August	140	17
September	110	20
October	50	24
November	10	25
December	5	27

2. Make map of your Woreda by downloading spatial data from the following website:  
<https://africaopendata.org/dataset/ethiopia-shapefiles>



### Resources for Further Reading

<https://www.communityheritagemaps.com/the-history-of-mapmaking/>  
<https://africaopendata.org/dataset/ethiopia-shapefiles>  
<https://storymaps.arcgis.com/stories/e40ae7d670d14466a1a3465b50d1c1d7>  
<https://www.esri.com/en-us/what-is-gis/overview>



## UNIT SUMMARY

-  Dear learner, in unit eight, we have examined geospatial information and data processing. Such a process is very important to analyze and understand socioeconomic and environmental problems. The solutions to these problems require spatial thinking and geographic data analysis. Therefore, geographic data is the basis for providing answers to the problems.
-  Data can represent all types of information and may consist of numbers, text, images and many other formats. A wide variety of data sources exist for both spatial and attribute data. Some geographic phenomenon is well placed in discrete object while other phenomenon is well placed in a continuous field.
-  Spatial data is collected in many different ways. The oldest method is the **ground survey**. The dimensions of geographic features are measured, such as length, size and direction by surveying equipment. These days, those surveying equipment have been increasingly replaced with GPS. Other methods are remote sensing. Remote sensing allows for collecting spatial data without direct contact with the object of our interest.
-  Digital technology has driven the need for putting reality into the computer. In other words, human conceptualization or representation of geographic data largely depend on digital format. Hence, data structure can be seen as the digital representation of an area of our interest which the computer can understand. For example, lines are stored as a set of points where points have x, y coordinates. Areas or polygons by connected lines. The shapes could appear in a vector or raster formats.
-  Moreover, geographic representation in a digital form is becoming increasingly important in our world today. Digital representations have enormous advantages over paper maps, written reports, or spoken accounts. As a result of this and other advances in technology during the last few decades more sophisticated mapping systems came into existence. Particularly, the advancement of geographic information system (GIS) played a great role in the improvements of mapping. The geographic information system is a computer-based system that enables us to store, visualize, analyze, and interpret geographic data.
-  Developing technical skills such as making graphs, charts and diagrams are very important. Because, many studies, researches and textbooks use data and numbers. Hence, presentations using these tools can help the presenter draw and keep the attention of the listeners. Presentation using graphs, charts and diagrams also helps the presenter to have a profound evidence-based work.



**SELF – ASSESSMENT QUESTIONS OF THE UNIT**

**Instruction I: Match items under column ‘A’ with its appropriate descriptions under column ‘B’**

Column A	Column B
<ol style="list-style-type: none"> <li>1. Hardware</li> <li>2. Methods</li> <li>3. Data</li> <li>4. People</li> <li>5. Observation</li> <li>6. Attributes</li> <li>7. Information</li> <li>8. Software</li> <li>9. Polygon</li> <li>10. Digitizer</li> </ol>	<ol style="list-style-type: none"> <li>A. An area feature described by a closed string of spatial coordinate</li> <li>B. Provides the functions and tools users need to store, analyze and display geographical information</li> <li>C. Observations collected and stored as numbers, characters and images</li> <li>D. A well-designed plans and procedure</li> <li>E. Objects that can be seen and counted</li> <li>F. A tool used to change images on an analogue form or on a paper to a digital form</li> <li>G. System managers and developers of the plan</li> <li>H. Tools that help us in data collection and run functions of GIS</li> <li>I. A processed, manipulated and organized data.</li> <li>J. Basic characteristics of an area of our interest</li> </ol>

**Project: List down the name, sex, and age of your neighbors, or team mates and work on the following.**

1. Draw a pie chart showing the sex distribution of your family members or people in your work place.
2. Draw a bar graph showing the age distribution of your family members or people in your work place.



## ANSWER KEY FOR SECTION LEVEL SELF-TEST EXERCISES

### I. Self-test exercises of section 8.1

#### PART I. TRUE OR FALSE ITEMS

- |          |          |         |
|----------|----------|---------|
| 1. False | 3. False | 5. True |
| 2. False | 4. True  |         |

### II. Self-test exercises of section 8.2

#### PART I. MATCHING

- |      |      |      |
|------|------|------|
| 1. D | 3. A | 5. C |
| 2. E | 4. B |      |

### III. Self-test exercises of section 8.3

#### PART I. MULTIPLE CHOICE ITEMS

- |      |      |      |
|------|------|------|
| 1. B | 3. C | 5. C |
| 2. D | 4. A |      |

### IV. Self-test exercises of section 8.4

#### PART I. MATCHING

- |      |      |      |
|------|------|------|
| 1. D | 4. A | 7. F |
| 2. C | 5. H | 8. E |
| 3. B | 6. G |      |

### V. Self-test exercises of section 8.5

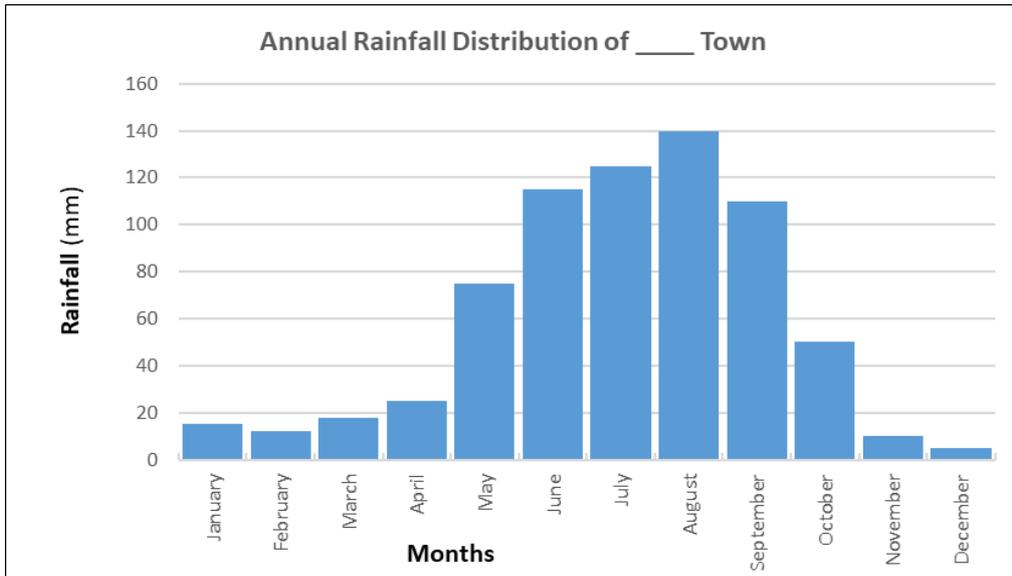
#### PART I: WORKOUT PART

1. Using the following hypothetical data;

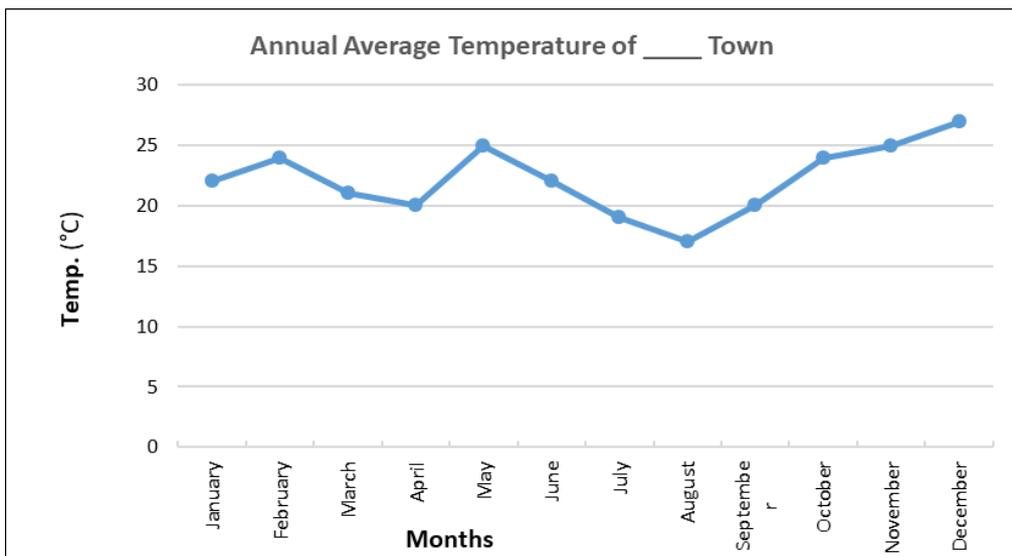
- i. make bar graph of rainfall of the area
- ii. make line graph **of temperature data**

Dear learner, please first try your level best and repeatedly practice the questions on a computer until your final result resembles the following figures.

i.



ii.





## ANSWER KEY FOR UNIT LEVEL SELF-TEST EXERCISES

### PART I. MATCHING

- |      |      |       |
|------|------|-------|
| 1. H | 5. E | 9. A  |
| 2. D | 6. J | 10. F |
| 3. C | 7. I |       |
| 4. G | 8. B |       |

### PART II. PROJECT

Dear learner, for the questions of the project please first try your level best and consult the tutor or lab technician during tutorial sessions, then compare your results with the ones prepared by the technician.

# Glossary of Terms in Module Two

## Unit Five

**Agenda 2030:**– refers to an agenda for the Sustainable Development Goals (SDG) that is intended to transform our world. This is an Agenda of unprecedented scope and significance. It is accepted by all countries and is applicable to all, taking into account different national realities, capacities and levels of development and respecting national policies and priorities.

**Agenda 2063:** – The flagship projects of Agenda 2063 refer to key programs and initiatives that have been identified as key to accelerating Africa’s economic growth and development as well as promoting our common identity by celebrating African history and vibrant cultures.

**Consumption:** – Consumption is defined as the use of goods and services by a household. It is a component in the calculation of the Gross Domestic Product (GDP).

**Developing country :**– a developing country is a country whose standard of living, income, economic and industrial development remain more or less below average. For instance, countries of the African and Latin American continent fall in this category.

**Economic development :**– economic development denotes the process by which countries with low living standards become nations with high living standards. It also refers to the process by which the overall health, well-being, and academic level the general population improves.

**Employment structure:** – Employment structure means how the workforce is divided up between the three main employment sectors - primary, secondary and tertiary. Employment structures change over time.

**Flagship program:** – Flagship program is major program of the government /organization to achieve certain goal. For example, the flagship projects of Agenda 2063 refer to key programs and initiatives which have been identified as key to accelerating Africa’s economic growth and development as well as promoting our common identity by celebrating our history and our vibrant culture.

**Lower middle income :**– this is an income level not too low and not too high. Middle Income Countries are a diverse group by size, population and income level, and are home to 75% of the world’s population and 62% of the world’s poor.

**Middle income :**– Middle-income countries make up a large share of the world’s population and economic activity, and they are key to global economic growth.

**Sustainable city:** – a sustainable city is an urban center engineered to improve its environmental impact through urban planning and management. A sustainable city reduces environmental impacts through its activities and promotes sustainable consumption and production patterns in accordance with its own territorial, geographical, social, economic and cultural conditions.

**Sustainable Development Goals (SDGs):** – The Sustainable Development Goals or Global Goals are the collection of seventeen interlinked objectives designed to serve as a “shared blueprint for peace and prosperity for people and the planet, now and into the future”.

## Unit Six

**Adaptation:** – adaptation refers to an adjustment to a new environment so as to improve the chances of survival in that environment. The main purpose of the adaptation is to fulfill the needs and ensure the survival of people. Adjustment is an example of adaptation to environmental changes.

**Autonomous adaptation:** – Autonomous adaptation is a type of adaptation that does not constitute a conscious response to environmental change but is triggered by ecological changes in natural systems and by market forces or changes in ways of living in human systems.

**Biodiversity :**– Biodiversity or biological diversity is the variety and variability of life on Earth. Specifically, it represents the variety of living species on Earth, including plants, animals, bacteria, and fungi.

**Biological resources:** – Biological resources refer to the living landscape—the plants, animals, ... breeding of endangered species in zoos, the primary means of protecting wildlife. Biological resources provide important ecosystem services such as air and water purification, pollination and pest control.

**Colonization :**– colonization is a process of establishing foreign control over target territories or peoples for the purpose of cultivation or other economic benefits.

**Conservation:** – Conservation is the act of protecting Earth’s natural resources for current and future generations. Environmental conservation has become one of the core issues that need to be addressed to battle climate change and global warming.

**Environment:** – Environment can be defined as a sum total of all the living and non-living elements and their effects that influence human life.

**Environmental degradation:** – is the disintegration of the earth or deterioration of the environment through the consumption of assets, for example, air, water and soil; the destruction of environments and the eradication of wildlife.

**Indigenous knowledge:** – Indigenous knowledge can be defined as context specific knowledge that communities have developed themselves for centuries and that has allowed them to live in their environment for often long periods of time.

**Living standard/Standard of living:** – refers to the quantity and quality of material goods and services available to a given population. Standard of living is the material wellbeing of the average person in a given population. It is typically measured using gross domestic product (GDP) per capita.

**Modernization:** – modernization, in social sciences, refers to the transformation from a traditional, rural, agrarian society to a secular, urban, industrial society.

**Slave Trade:** – Slave Trade refers to the capturing, selling, and buying of enslaved persons. The slave trade is usually known by the transatlantic trading patterns which were established as early as the mid-17th century.

## Unit Seven

**Chaotic urbanization:** – the type of urbanization created due to unplanned urban development leading to unordered growth of cities with little or no urban services and infrastructures.

**Coastal pollution -** Coastal pollution refers to the introduction of substances or any form of energy in the coastal environment, which results or is likely to result in adverse effects in the ecosystem due to changes in its physical, chemical, and/or biological characteristics. Various sources for the pollution of the coastal ecosystem are identified to be directly or indirectly related to human activities.

**Forced migration :**– this is a type of migration in which an element of coercion exists, including threats to life and livelihood, whether arising from natural or man-made causes.

**Internal migration:** – internal migration involves the movement of people within a state, country, or continent.

**International migration:** – international migration is the type of migration which involves permanent movement from one country to another.

**Slum:** – a slum is a highly populated urban residential area consisting of densely packed housing units of weak build quality and often associated with poverty. The infrastructure in slums is often deteriorated or incomplete, and they are primarily inhabited by impoverished people.

**Social instability:** – social instability refers to a situation when social justice is not in place, thus leading to the increase in social problems, while limiting social progress.

**Squatter settlement:** – can be defined as a residential area which has developed without legal claims to the land and/or permission from the concerned authorities to build; as a result of their illegal or semi-legal status, infrastructure and services are usually

inadequate.

**Unplanned urbanization:** – refers to the absence of planning standards and lack of urban policies and laws that lead to informal settlements, which lack basic infrastructure, services and contribute to hazard creation in urban environment and its people.

**Urban primacy:** – Urban primacy denotes the situation in which one city - usually the capital, has population, economic activity, and political power that are several times greater than the next largest city.

**Voluntary migration:** – Voluntary migration is a type of movement based on the initiative and the free will of the person or group of people, both internal and international.

## Unit Eight

**Area of our interest:** – this involves the geographic extent of the job we want to do (e.g., area we want to map, study, survey, etc.) This helps us to confine the unit of work to a geographic area. It also helps us to continuously edit.

**Base map:** – Base map is the graphic representation at a specified scale of selected fundamental map information; used as a framework upon which additional data of a specialized nature may be compiled

**Continuous data:** – Continuous data is a type of quantitative data that represents precise measurements of nearly any numeric value. Often, a continuous data variable has many decimal points because it is an exact measurement between two defined points.

**Data :-** data are facts and statistics collected together for reference or analysis.

**Digital mapping:** – Digital mapping is the process of collection, compiling and formatting of data into a virtual image. The primary function of this technology is to produce maps that give accurate representations of a particular area, detailing major road networks and other points of interest.

**Discrete data:** – discrete data is a type of quantitative data that includes non-divisible figures and statistics one can count. Discrete data usually represents single events that have already occurred.

**End user:** – an end user is a person who uses the final output of a map or research.

**Enlargement of a map :-** an enlargement of a map involves making a new, proportionally larger map, out of the original map.

**Field survey:** – field survey involves the collection and gathering of information at the local level by conducting primary surveys. These are an essential component of geographic enquiry and are carried out through observation, interviews, sketching, measurement, etc.

**Geographic Information Systems (GIS):** – refers to a computer system for capturing, storing, checking, and displaying data related to positions on Earth’s surface.

**Geographical Data:** – geographic data means data that contain either coordinates that references a geographic location or area or attribute data. Such data helps to answer basic geographic questions such as ‘what is where?’ and ‘why is it there’?

**Geospatial Data:** – geospatial data is information that describes objects, events or other features with a location on or near the surface of the earth. Geospatial data typically combines location information (usually coordinates on the earth) and attribute information (the characteristics of the object, event or phenomena concerned) with temporal information (the time or life span at which the location and attributes exist).

**Geospatial information:** – geospatial information refers to information that identifies the geographic location and characteristics of natural or constructed features and boundaries on or about the earth.

**Hard copy map:** – a hard copy map includes a map which is printed on physical material, such as on a paper, book or textbook.

**Information:** – information is related to the Facts provided or learned about something or someone. It is associated with data. data represents values attributed to parameters, whereas, information is data in context and with meaning attached.

**Primary source:** – primary sources include documents, first-hand accounts, or other sources that constitute direct evidence of an object of study.

**Reduction of a map:** – reduction of a map involves reducing the same map that is proportionally smaller than the original.

**Secondary source:** – secondary sources include information obtained from books, articles, or other sources that provide information about an object of study but does not constitute direct, first-hand evidence.

**Variable :-** variable is data item that can take more than one value. For example, in qualitative data, a variable could be color (e.g., black, red, etc.) whereas in quantitative data it could be real numbers (e.g., number of students in a class can be 27 Male and 23 Female).

**FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA  
MINISTRY OF EDUCATION  
DISTANCE AND CONTINUING EDUCATION  
COORDINATION**

**GEOGRAPHY GRADE 10  
ASSIGNMENT FOR SUBMISSION  
(Module Two)**

*Name of the Student:* \_\_\_\_\_

*ID. No.:* \_\_\_\_\_

*Grade:* \_\_\_\_\_

*School:* \_\_\_\_\_

*Signature:* \_\_\_\_\_

**General Direction**

- 1) This “assignment for submission” is to be completed and submitted to invigilators during final exam session along with the final exam of geography grade 10.
- 2) This assignment accounts for 30 percent of your total mark. Thus, please do not forget to allocate enough time for your assignment. Before you begin to give answers, make sure that you have already covered all activities and review questions included into the module.
- 3) Give your answers on the space provided in question paper.
- 4) Your hand writing should be as legible as possible.

**Wish you the best of study time!**

## Sample assignment questions based on Units 5 - 8

### Part I: Multiple choice Items

**Instruction:** Choose the correct answer from the given alternatives and write the answer on the space provided in front of each question.

- Which of the following is the most labor absorbing sector of the African Economy?
  - Primary sector
  - Tertiary Sector
  - Secondary sector
  - Private sector
- The tertiary sector of an economy is also known as \_\_\_\_\_.
  - Primary sector
  - Service sector
  - Manufacturing sector
  - All of the above
- One of the following parameters may **not** among the parameters used to classify countries into developing and developed?
  - Capital equipment
  - Production and productivity
  - Employment level
  - Ethnicity
- \_\_\_\_\_ occurs when a person is jobless by choice, rather than due to a lack of employment opportunities.
  - Involuntary unemployment
  - Voluntary unemployment
  - Urban unemployment
  - Rural unemployment
- “Achieving economic growth and sustainable development requires that we urgently reduce our ecological footprint by changing the way we produce and consume goods and resources.” This belongs to which goal of the Sustainable Development Goals?
  - Goal Five
  - Goal Nine
  - Goal Twelve
  - Goal Eleven
- Which one of the following African countries has the **lowest** religious diversity index?
  - Ethiopia
  - Togo
  - Ivory coast
  - Siera Leone
- Migrants who move into a new place are called \_\_\_\_\_.
  - emigrants
  - net migration rate
  - immigrants
  - long distance migrants

8. “Cutting down of the forests to increase agricultural land to grow more crops” is an example of \_\_\_\_\_.
- A. modification of the environment
  - B. adaptation to the environment
  - C. adjustment to the environment
  - D. A and B
9. One of the following is **not** among the causes of unplanned urbanization. Which one is it?
- A. Economic growth
  - B. Urban planning institutions
  - C. The legacy of colonialism
  - D. The policy pressure of international institutions
10. There are several geographic data sources. All **except** one of the following are the major sources of geographic data. Which one is it?
- A. Analogue maps
  - B. Digital data files
  - C. Observational data
  - D. Remotely-sensed data

## Part II: fill the Blank Spaces

**Instruction: Fill in the Blank Spaces with Appropriate Words or Phrases**

11. \_\_\_\_\_ is a newly emerging economic system that is not usually included in the assessment of economies of countries in Africa.
12. Many Developing countries in Asia such as \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_ have achieved high annual growth rates in their GDPs in recent decades and have moved from low-income to lower middle-income.
13. \_\_\_\_\_ refers to an economic system in which it is difficult to escape poverty.
14. \_\_\_\_\_ is Africa’s blueprint and master plan for transforming Africa into the global powerhouse of the future. It is the continent’s strategic framework that aims to deliver on its goal for inclusive and sustainable development.
15. Data has important lifecycles. List down the major elements of the life cycles of data.
- i. \_\_\_\_\_
  - ii. \_\_\_\_\_
  - iii. \_\_\_\_\_
  - iv. \_\_\_\_\_

**Part III: Short Answer Type Questions**

**Instruction: Write an essay (short answer) on the following questions.**

16. What are the causes and possible solutions to problems of unemployment in Africa?

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17. Discuss the link between Agenda 2063 of Africa and the Sustainable Development Goals (SDGs).

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18. What are the roles of Indigenous knowledge in the economic and social development of ventures of communities in African? Explain it with relevant examples.

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19. Discuss the characteristics of human-environment interaction and its impacts on the sustainable co-existence of man and nature.

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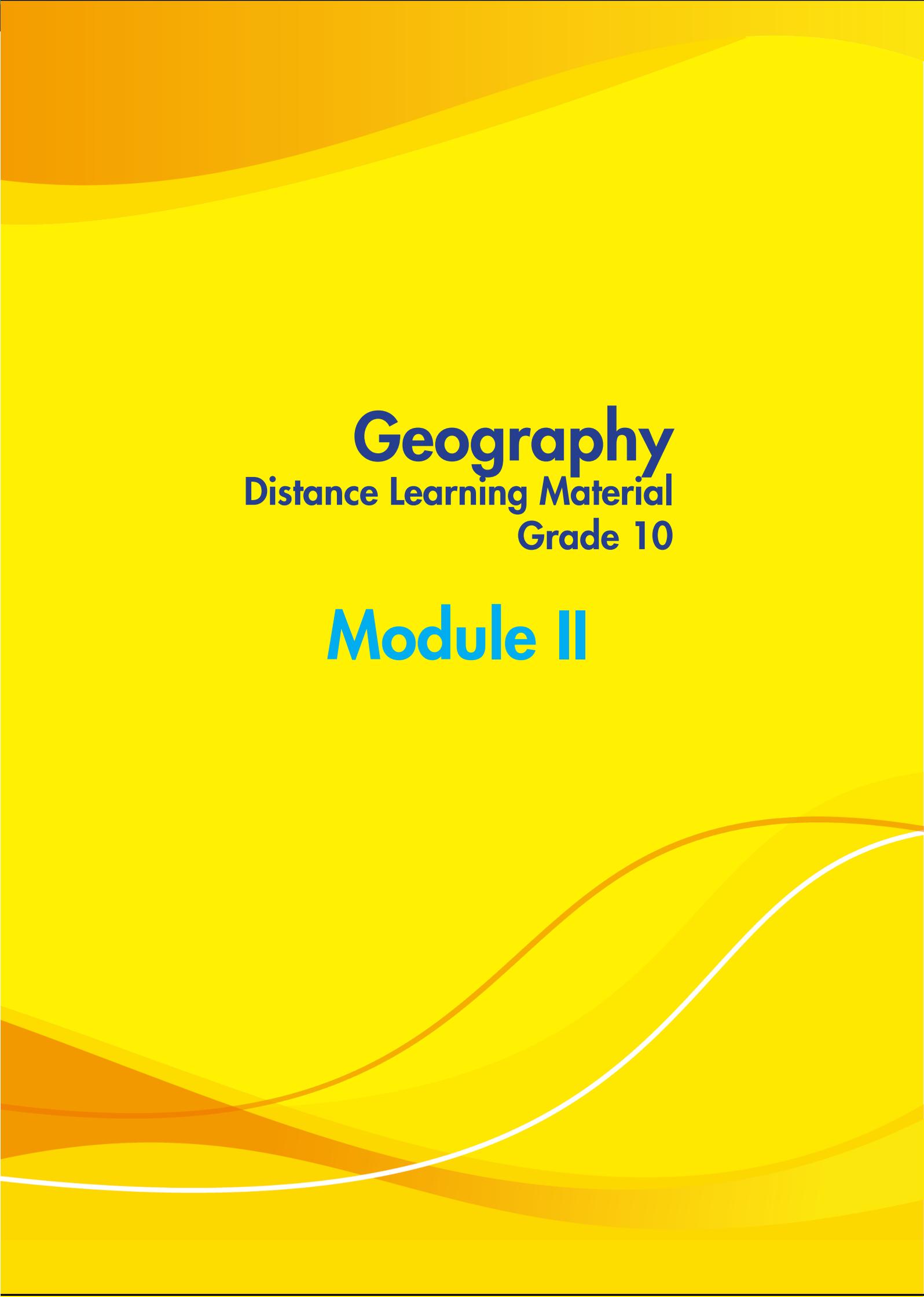
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20. Compare and contrast geographic and non-geographic data with appropriate examples.

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The background is a vibrant yellow with several overlapping, wavy lines in shades of orange and white, creating a dynamic, flowing effect.

**Geography**  
Distance Learning Material  
Grade 10

**Module II**