

Geography of Ethiopia and the Horn(GeES 1011)

CHAPTER ONE **INTRODUCTION**

1.1. Geography: Definition, Scope and Themes

- This chapter deals with the meaning, scope, themes, and approaches of Geography. In addition, it discusses the location, shape, and size of Ethiopia and the Horn. It also introduces the tenets of basic map reading skills.

1.1.1. Meaning of Geography

- It is difficult to forward a definition acceptable to all geographers at all times and places because of the dynamic nature of the discipline and the changes in its scope and method of study.
- However, the following may be accepted as a working definition.

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- Geography is the scientific study of the Earth that describes and analyses spatial and temporal variations of physical, biological and human phenomena, and their interrelationships and dynamism over the surface of

1.1.2. The Scope, Approaches and Themes of Geography

- Geography has now acquired the status of science that explains the arrangements of various natural and cultural features on the Earth surface. Geography is a holistic and interdisciplinary field of study contributing to the understanding of the changing spatial structures from the past to the future.

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- Thus, the scope of Geography is the surface of the Earth, which is the very thin zone that is the interface of the atmosphere, lithosphere, hydrosphere and biosphere, which provides the habitable zone in which humans are able to live

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- Geography can be approached by considering two continuums: a human-physical continuum and a topical regional continuum. The topical (systematic) fields of Geography view particular categories of physical or human phenomena as distributed over the Earth while regional geography is concerned with the associations within regions of all or some of the elements and their

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- Geography has five basic themes namely location, place, human-environment interaction, movement, and region
- **Location**
- Location is defined as a particular place or position. Most studies of geography begin with the mention of this theme of geography. Location can be of two types: absolute

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- place
- Place refers to the physical and human aspects of a location. This theme of geography is associated with toponym (the name of a place), site (the description of the features of the place), and situation (the environmental conditions of the place)..

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- Each place in the world has its unique characteristics expressed in terms of landforms, hydrology, biogeography, pedology, characteristics and size of its human population, and the distinct human cultures. The concept of “place” aids geographers to compare and contrast two places on Earth.

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- **Human-Environment Interaction**

- . Humans have always been on ceaseless interaction with their natural environment. No other species that has lived on our planet has a profound effect on the environment as humans. Humans have adapted to the environment in ways that have allowed them to dominate all other species on Earth.

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- Thus, human-environment interaction involves three distinct aspects, dependency, adaptation, and modification. Dependency refers to the ways in which humans are dependent on nature for a living. Adaptation relates to how humans modify themselves, their lifestyles and their behavior to live in a new environment with new challenges. Modification allowed humans to “conquer” the world for their comfortable living.

- **Movement**

- Movement entails to the translocation of human beings, their goods, and their ideas from one end of the planet to another. The physical movement of people allowed the human race to inhabit all the continents and islands of the world. Another aspect of movement is the transport of goods from one place on the Earth to another.

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- The third dimension of movement is the flow of ideas that allows the unification of the human civilization and promotes its growth and prosperity.
- **Region**
- A region is a geographic area having distinctive characteristics that distinguishes itself from

- It could be a formal region that is characterized by homogeneity in terms of a certain phenomenon (soil, temperature, rainfall, or other cultural elements like language, religion, and economy). It can also be a functional or nodal region characterized by functional interrelationships in a spatial

1.2. Location, Shape and Size of Ethiopia and the Horn

- The Horn of Africa, a region of eastern Africa, is a narrow tip that protrudes into the northern Indian Ocean, separating it from the Gulf of Aden. It is the easternmost extension of African land defined as the region that is home to the countries of Djibouti, Eritrea, Ethiopia, and Somalia whose cultures have

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- Although the countries of the region share many common features, there is also great diversity among them, rendering each country unique in many respects. In terms of size, Ethiopia is the largest of all the Horn of African countries, while Djibouti is the smallest.

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- The Horn contains such [diverse](#) areas as the highlands of the [Ethiopian Plateau](#), the Ogaden desert, and the Eritrean and Somali coasts. Its coasts are washed by the [Red Sea](#), the Gulf of Aden, and the [Indian Ocean](#), and it has long been in contact with the [Arabian Peninsula](#) and southwestern Asia.

1.2.1. Location of Ethiopia

- The location of a country or a place on a map or a globe is expressed in two different ways. These are astronomical and relative locations (Figure 1.1).
- Astronomical location, also known as absolute or mathematical location, states location of places using the lines

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- Astronomically, Ethiopia is a landlocked country located between 3°N (Moyale) and 15°N (Bademe - the northernmost tip of Tigray) latitudes and 33°E (Akobo) to 48°E (the tip of Ogaden in the east) longitudes. The east west distance (15°) is longer than the north-south distance (12°). The latitudinal

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- First, as a result of its latitudinal extension the country experiences tropical climate and secondly due to its longitudinal extension there is a difference of one hour between the most easterly and most westerly points of the country. It is only for convenience that the 3 hours-time zone is used in all parts of

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- Relative location expresses the location of countries or places with reference to the location of other countries (vicinal), landmasses or water bodies. The relative location of Ethiopia is indicated in Table 1.1.

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Vicinal location	In relation to water bodies & land masses
Sudan to the west and northwest	In the Horn of Africa
South Sudan to southwest	In the Horn of Africa
Djibouti to the east	South of Europe
Somalia to the east and southeast	Northwest of the Indian Ocean
Eritrea to the north and northeast	In the Nile Basin
In the Nile Basin	

The implications of the location of Ethiopia

- **a.Climate:** The fact that Ethiopia is located between 3°N and 15°N (between the Equator and Tropic of Cancer) implies that the country has a tropical climate, though modified by its altitude. The location of Ethiopia relative to the Indian Ocean, the Atlantic Ocean and the African and Asian landmass has also various bearings on the climate of Ethiopia.

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- **b.Socio-cultural:** Ethiopia is one of the earliest recipients of the major world religions namely Christianity, Islam and Judaism due to its proximity to the Middle East, which was the origin of these religions. The linguistic and other cultural relationships, which Ethiopia shares with its neighbours, reflect the influence of location.

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- **C.Political:** The political history of Ethiopia has been considerably influenced by:
- Geopolitical considerations of superpowers.
- Adjacency to the Red Sea (a major global trade route).
- The Middle East geopolitical paradigmsAs a result, Ethiopia

1.2.2. Size of Ethiopia

- Ethiopia with a total area of approximately 1,106,000 square kilometers is the 8th largest country in Africa and 25th in the World. It extends about 1,639 kilometers East-West, and 1,577 kilometers North-South. About 0.7% of the country is covered by water bodies.

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- The size of Ethiopia also affects both the natural and human environment of the country. The advantages and disadvantages of the size of Ethiopia are indicated in Table 1.2.

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Advantages	Disadvantages
Possess diverse agro ecological zones	Demands greater capital to construct infrastructural facilities
Variety of natural resources	Requires large army to protect its territory
Own extensive arable land	Difficult for effective administration
Have larger population size	Difficult for socio-economic integration
Home for diverse cultures	
Greater depth in defense	

1.2.3. The shape of Ethiopia and its Implication

- Countries of the World have different kinds of shape that can be divided into five main categories: compact, fragmented, elongated, perforated, and protruded. These shapes have implications on defense, administration and economic integration within a country. Whether some kind of shape is advantageous to a country or not, however, depends on many other factors.

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- **Compact shape countries:**

The distance from the geographic centre of the state to any of the borders does not vary greatly. It is easier for defence, socioeconomic and cultural integration.

- *Fragmented shape countries:*

They are divided from their other

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- *Elongated shape countries:* They are geographically long and relatively narrow like Chile.
- *Perforated shape countries:* A country that completely surrounds another country like the Republic of South Africa.
- *Protrude shape countries:* Countries that have one portion that is much more elongated than the rest of the country like Myanmar and Eritrea.

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- There are various ways of measuring shape of countries. These measures are known as the indices of compactness. These indices measure the deviation of the shape of a country from a circular shape, which is the most compact shape. Since there is no country with absolutely circular shape, those approximating a circular shape are said to be more compact.

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- There are four most commonly used measures of compactness. These are:
- 1. The ratio of area of country to its boundary length: Area-Boundary ratio. The higher the A/B ratio, the greater the degree of compactness.

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- 2. The ratio of boundary length of a country to the circumference of a circle having the same area as the country itself: Boundary-Circumference ratio. It measures how far the boundary of a country approximates the circumference of a circle of its own size. Therefore, the nearer the ratio to 1 the more compact

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- 3. The ratio of the area of the country to the circumference of the smallest inscribing circle: Area-Circumference ratio. It compares the area of the country with the circumference of a circle that passes touching the extreme points on the boundary of the country. The higher the A/C ratio, the greater the degree of compactness.

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- 4. The ratio of the actual area of a country to the smallest possible inscribing circle: Area-Area (A/A') ratio. The area of the inscribing circle is the area of the smallest possible circle whose circumference passes through the extreme points on the boundary. Half-length of the longest distance between two

What is a Map?

- A map is a two-dimensional scaled representation of part or whole of the Earth surface on a flat body such as piece of paper, black board, wood or cloth.
- Map reading encompasses a systematic identification of natural features and

Importance of maps

- Provide the basis for making geographical details of regions represented i.e. the geographical facts of an area such as relief, drainage, settlement etc.
- Maps are powerful tools for making spatial analysis of geographical facts of areas represented.
- Maps are useful for giving location of geographical features by varied methods of grid reference, place naming etc.

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- Maps are used on various disciplines like land use planning, military science, aviation, tourism, marine science, population studies, epidemiology, geology, economics, history, archaeology, agriculture etc.
- Map makes storage of the

Types of Map

- There are many types of maps according to their purpose and functions. For the purpose of this course, topographical and statistical maps are considered.

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- **i. Topographical maps:** Topographic maps depict one or more natural and cultural features of an area. They could be small, medium or large scale depending on the size of the area represented. Contents of topographical maps depend on purpose of a map, scale of a map, date of compilation, and nature of the land represented.

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- **ii. Special purpose/statistical maps:**
These are maps, which show distribution of different aspects such as temperature, rainfall, settlement, vegetation etc.

Marginal Information on Maps (Elements of Maps)

- Marginal information is shown on a map to enable the reading and interpretation of the geographical information of an area represented. This includes:
 - a. **Title:**
 - b. **Key (legend):** It is the list of all conventional symbols and signs shown on the map with their interpretation.

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- **iii. Scale:** It is the ratio between the distance on the map and the actual ground distance
- **iv. North arrow:** It is indicated with the north direction on a map
- **v. Margin:** Is the frame of the map.
- **vi. Date of compilation:** It is a date of map publication.

Basic Principles of Map Reading

- In developing map reading abilities and skills, certain basic principles must be applied by the map-reader to translate map symbols into landscape images. Map Readers must have ideas about the symbol and also the real World (landscapes). Every map symbol must be visualized by the reader to read a map.

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- The first symbols introduced should be those, which refer to landscape features of which the reader already has some images. Map symbols should be introduced as needed.
- Secondly, knowledge of directions is an important principle in reading maps. One of the basic functions of maps is to help us to orient ourselves and to locate places on the earth. Unless a reader knows the basic

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- Before locating features using a map, north (the north arrow) should be determined and the readers should have practice in finding this direction. Next they should learn to read direction on a specific map and the location of the features shown on the map in relation to one another.

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- Maps are covered in a series of lines that make up a grid. The lines have numbers accompanying them that allow you to accurately pinpoint your location on a map. Once you have located where you are, the grid system makes it simple to give an accurate description of your location. This description, which will be a series of numbers, is known as a grid reference.

CHAPTER TWO

THE GEOLOGY OF ETHIOPIA AND THE HORN

- **2.1. Introduction**
- Geology is an Earth science that studies the evolution of the earth, the materials of which it is made of, and the processes acting upon them. Much of Geology is concerned with events that took place in the remote past when no one was around to witness them and with features which are far beneath the earth's surface where no one can see them.

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- A great deal of geological understanding must, therefore, be obtained by inference, using clues from what can be seen and what can be measured. There are many such clues not only the rocks and landforms which can be observed and studied at the Earth's surface,

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- but also those provided by indirect methods such as geophysics (e.g. studying earthquake waves which can penetrate deep beneath the Earth's surface), geochemistry (analysis of the detailed composition of rocks which can give clues as to their origin) and geochronology (methods for

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- The earth's continents were once bunched up together in to a single huge continent called ***Pangaea***. The large super continent was then split into Gondwanaland where Africa is a part and Laurasia; and later into smaller fragments over the last million years. These then drifted apart to form the present arrangement of continents.

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- Australian Climatologist **Alfred Wegener** proposed the hypothesis that the continents were once assembled together as a supercontinent, called the Continental drift Theory.

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- Wegener's principal observations were:
- ***Fit of the continents:*** The opposing coastlines of continents often fit together.
- ***Match of mountain belts, rock types:*** If the continents are reassembled as Pangaea, mountains in West Africa, North America, Greenland, and Western Europe

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- ***Distribution of fossils:*** The distribution of plants and animal fossils on separate continents forms definite linked patterns if the continents are reassembled.
- ***Paleoclimates:*** rocks formed 200 million years ago in India, Australia, South America, and southern Africa all exhibited evidence of continental glaciations.

2.2. The Geologic Processes: Endogenic and Exogenic Forces

- Geology studies of how Earth's materials, structures, processes and organisms have changed over time. These processes are divided into two major groups: *internal* and *external* processes.

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- internal processes (endogenic) include volcanic activity and all the tectonic processes (folding, faulting, orogenesis (mountain building), and epeirogenesis (slow rising and sinking of the landmass). These processes result in building of structural

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- The external (exogenic) processes are geomorphic processes. They include weathering, mass transfer, erosion and deposition. They act upon the volcanic and structural landforms by modifying, roughening and lowering them down

2.3. The Geological Time Scale and Age Dating Techniques

- The geological history is divided into Eras. Each Era is divided into periods. The Eras are given names that indicate the kind of life that existed in them. For instance, the Paleozoic Era (ancient life) is the age of invertebrates, the Mesozoic Era (the middle life)

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- These geological time divisions basically differ from each other in such characteristics as the relative position of land and sea, the kind of climate and most important the kind of animal and plant life that developed and existed during that Era or period. Geological time is difficult to measure precisely.
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- The Earth is believed to have been formed approximately 4.6 billion years ago and the earliest forms of life were thought to have originated approximately 3.5 billion years ago. The first major boundary is defined by what was believed at the time to

