

## **Key Elements of Africa's Geographic Landscape and Climate Patterns**

Africa's history, not unlike that of any other continent, is intrinsically tied to the continent's geography. It is a region's natural features—its mountains, rivers, lakes, rainforests, deserts, etc.—that shape the ways in which human communities and societies develop over time. In the case of Africa, this relationship between the environment and humankind stretches back to the very beginnings of humankind. It is widely accepted that Africa is the locus of evolution of the first human beings. The natural environment as characterized by topography, geology, climate, geography, plant life, and animal life forms a distinctive setting in which human beings confront their daily lives. The encounter of challenges and opportunities presented by that natural environment leads to developments in all areas of human life such as agriculture and medicine. Therefore, understanding African history requires knowledge of the continent's geography. The following are some elements of Africa's geographic landscape and climate patterns that have influenced the historical development of the continent.

### **Plateau Continent**

With much of its land over 1000 feet in elevation, and few lowlands or mountainous areas, Africa is often called a plateau continent. The dynamics of plate tectonics account for Africa's unique relief features. 'High Africa,' the part of the continent south of an imaginary line running from northern Angola to northwestern Ethiopia, is characterized by plains and plateaus 1000 to 2000 meters above sea level. Prominent mountain ranges include the Drakensberg Mountains in South Africa and Lesotho, the Mitumba Mountains (Democratic Republic of Congo, Rwanda, and Burundi), the Kenyan Highlands, and the Ethiopian Plateau. Low plains typically below 500 meters in elevation characterize 'Low

Africa' to the north of the imaginary line.

For much of the continent, the coastline is separated from the interior by steep edges. This is particularly evident in southern Africa where the Great Escarpment forms a remarkable barrier between the coast and the interior. Low-lying coastlines leading to great plateaus present immense difficulties for travel into the interior and vice versa.

## **Rivers**

Africa is bestowed with some of the world's most impressive rivers. The Congo, 2914 miles long, and the Nile—with 4238 miles the world's longest river—have captured the imagination of European explorers and observers for many years. Other notable rivers are the Niger, Zambezi, Limpopo, Orange, Benue, and Volta. However, unlike other major rivers throughout the world such as the Rhine, Amazon, Mississippi, Ganges, and Volga, African rivers are not major waterways connecting the coast with the interior. As the rivers pass through the landscape, they eventually fall off the sharp escarpments as they make their way to the sea. This was a major obstacle to initial European incursions into the continent. Hence, most African rivers are extremely difficult to navigate as rapids and falls pose strict navigational limits. Rivers, then, do not serve as major transportation routes to the coast as in other world regions.

## **Coastline**

Africa's coastline is amazingly smooth with few indentations. There are narrow coastal plains running along the coastline that end abruptly at one of the escarpments. Central to Africa's coastline is the scarcity of natural harbors; natural developments have not created inlets allowing for deep-water vessels. This is not to say that there are no natural harbors at all; for example,

Freetown, Dakar, Luanda, and Mombasa benefit from good harbors. But overall, the coastline is not beneficial for sea transportation. Compared to Europe where the Mediterranean, Adriatic Sea, North Sea, and Baltic Sea allowed for experimentation with navigation due to calmer waters, most parts of Africa never developed sea-faring vessels, because the environment did not encourage it.

## **Climate**

The African continent is divided by the equator, which means that the climate patterns north and south of the equator echo each other. There are no wide fluctuations in temperature as tropical climate patterns dominate all of sub-Saharan Africa except the most southern part of the continent. The Intertropical Convergence Zone (ITCZ) is the principal weather determinant for Africa. It is the area where two high pressure systems—one over the south Atlantic carrying wet air and one over the Sahara carrying dry air—converge. The ITCZ's north-south shifts determine Africa's two seasons: wet/rainy season and dry season. The amount of rainfall a locality receives is primarily a function of its relative location with respect to the ITCZ. Whereas rainfall is evenly spread out over the entire year in other localities such as the US, in Africa rainfall is concentrated during the months of the rainy season. Such cyclical rainfall patterns present distinct challenges to farming.

## **Vegetation**

Rainfall patterns affect vegetation zones and agricultural possibilities. In Africa, generally, areas with high annual rainfall are tropical rainforests (8% of Africa's landmass), mid-range annual rainfall areas are grassland and savannah regions (52%), and low annual rainfall areas are deserts (40%). People living in the same ecological zones tend to cultivate the same crops.

Hence, the need to trade agricultural products does not exist. Rather, the existence of vegetation zones gave rise to long-distance trade as people became aware of different crops grown elsewhere. Those communities who lived at the intersection of ecological zones typically controlled the trade and benefitted from their geographic location. Consequently, early African states formed at such environmental overlaps.

## **Soil**

African soils are extremely poor. Soil fertility is, in part, determined by the soil's humus (decayed plant and animal matter) content. In African soils the humus levels are very low. The reasons are fast rates of oxidation due to high temperatures, lack of winter which causes a constant decaying of plant and animal matter, and heavy rainfalls that tend to wash away humus. The amount of humus in African soil is 1.8% on average. In temperate climate zones the amount of humus in soil is much higher, for example 10 – 12% in Ohio.

Hence, the extremely low nutrient levels in African soil have ramifications for agriculture. For centuries, people were forced to practice swidden (shifting) agriculture. Also known as slash and burn agriculture, it required vegetation to be burned down with the burnt plant matter providing nutrients to the soil. This created a thin layer of fertile soil. The cleared area remained fertile for a period of 3-5 years. After that time period, people moved on to a productive land and start over. As a result, many African societies did not have a concept of land ownership.

The poor soil is also responsible for the continued use of traditional agricultural technologies by most African subsistence farmers. Small hoes are preferred over large plows, because a plow tends to dig too deep, thereby bringing infertile soil to the surface.

It is important to note that some areas in Africa, most notably the highlands of Kenya, Tanzania, Rwanda, and Burundi, defy this general pattern of African soil quality. There, nutrient rich soils exist allowing for much higher agricultural crop yields. This, in turn, explains the higher population densities in these areas.

## **Disease**

Africans contend with environmental diseases; the continent's natural environment poses distinct challenges to human communities. African children are more likely to die at a young age than any other children in the world. Hence, lower life expectancies may be directly linked to the continent's disease environment. While clearly detrimental to individual lives, the disease environment has offered unique paths of development over the millennia of human existence in Africa. The three most problematic diseases which are transmitted through insects are yellow fever, malaria, and trypanosomiasis (sleeping sickness).

Malaria is transmitted by the anopheles mosquito (60 of the world's 200 species of anopheles mosquito are endemic to Africa). Historically, 50% of African children under the age of 5 died from malaria; past the age of 5, and the experience of repeated bouts with the disease, some level of immunity is provided through blood hemoglobin. One can contract the disease over and over again. In the absence of a vaccine and clear treatment successes, malaria continues to be the most deadly disease in Africa. Recently, the wide distribution of mosquito nets has led to some reductions in infection rates.

The second of Africa's major diseases, yellow fever, is far less deadly. Much like chicken pox, it presents itself much more severely in adults than children. African children who contract the disease gain immunity for life. There is a vaccine for yellow fever and proven treatment protocols.

Both malaria and yellow fever protected Africans from outside invasions. Europeans have no resistance to malaria or yellow fever. Therefore, when they arrived in Africa in the 15th century, they died in large numbers. Malaria, especially, proved to be a formidable obstacle to European colonization intentions at that time in history. Some European exploration teams saw 50–70% of their men succumb to malaria. Consequently, Europeans came to trade but quickly lost interest in exploring the interior of the continent. This, of course, changed in the 19th century when Europeans were acquainted with quinine, which provided some resistance to malaria.

Trypanosomiasis primarily affects animals but some forms of it are fatal to humans as well. This disease is transmitted by the tse tse fly; it is only found in regions with more than approximately 40 inches of rainfall per annum. People living in those ecological zones protect themselves by clearing vegetation around their villages and houses. Trypanosomiasis is significant to Africa's history, because it prevents people from engaging in pastoralism and using draft animals for agricultural cultivation. Most cattle, sheep, and horses are highly susceptible to the disease. Agricultural and military developments (horses) were directly influenced by the existence of trypanosomiasis.