**Unit 7: Africa South of the Sahara**

**The Origin of African Landforms** This class activity encourages students to answer the question, “What type of landforms do you think you will find in this region?” before they look at a physical geography map of Africa.

To begin, revisit the tectonic plate and plate movement concepts you previously studied. Have students form small groups to review a plate movement map and answer these questions:

- What can you infer about Africa by studying tectonic plates?
- What types of African landforms are caused by plate movement?
- Why do you think those particular landforms are located in Africa?

Then have students brainstorm the landforms and bodies of water in Africa, where they are located, and what types of tectonic plate movement formed them. Revisit global wind patterns, areas of high and low pressure, and the effects of ocean currents on climate.

Have students compare the physical geography map and the maps of tectonic plate movement, wind patterns, and ocean currents to determine if their predictions were accurate. Then discuss the physical geography of Africa South of the Sahara, and correct any misunderstandings.
Dear Geography Teacher:

I have been to Africa recently, spending most of my time in Zimbabwe and Botswana. In Botswana, the animal life in the Chobe Game Preserve was spectacular. On a field excursion, we faced off with a bull elephant at a distance of 10–15 feet (3–5 m) who could have crushed us with one blow of his trunk. Fortunately, he was as interested in us as we were him. My heart was pounding! We visited Victoria Falls, certainly the most powerful waterfall in the world. The noise of falling water was deafening, you simply could not hear each other talk.

Regarding the physical landscape of Africa, “impressive” is not a strong enough word. We saw vast plains filled with giant herds of zebras, wildebeests, antelope, and buffalo. We flew over Kilimanjaro, Lake Victoria, and the Great Rift Valley. The physical geography of Africa seems as wonderful and spectacular as always. The only signs of environmental problems we saw were the forests that were being trampled and eaten by vast herds of elephants. These animals have few natural enemies and are now being protected from ivory poachers by the national government.

The human condition is a different story. The lack of proper medical equipment and medicine has doomed a vast number of Africans to an early death from HIV and AIDS. Diseases like malaria, as well as poverty, violence between ethnic groups, and the general low level of public sanitation have all contributed to the low life expectancy for most countries in Africa south of the Sahara. In contrast, the Africans I spoke to were quick with a smile, proud of their families, relatively detached from modern society, and able to survive on an annual income that would be a tiny fraction of that of any Western country. Africa’s urban life is changing, with international coffee houses and fast food restaurants dotting the main streets, and traffic jams and air pollution in some big cities. Africa is diverse, beautiful, intriguing, and definitely worthy of a visit.

Edward K. Keenan
Senior Author
What Makes Africa South of the Sahara A Region?

The three chapters of this unit introduce students to a region that covers most of the continent of Africa. The countries south of the Sahara share the following characteristics:

- A location almost entirely in the Tropics with a staggering variety of landforms
- The world’s fastest growing and youngest population
- Challenges balancing environmental concerns and human needs
- A struggle to improve the quality of life
- Political and economic difficulties caused in part by a colonial past

Why Study Africa South of the Sahara? Ask: What challenges do you think Africans south of the Sahara face? What have you heard in the news? (HIV/AIDS is an epidemic, killing millions of people. Ethnic fighting within countries has caused death and suffering to millions. Developing nations struggle to achieve economic growth under the burden of repaying debt, building their infrastructure, gaining access to safe water supplies, growing enough food to feed their people, establishing governments that are accountable to their citizens, and developing their natural resources without endangering the environment.)

Read former U.N. Secretary-General Kofi Annan’s quote: “Our continent, more than any other, suffers from the fact that the multilateral system is not living up to its potential. The world will not enjoy development without security, nor security without development, and will not enjoy either without respect for human rights.” Discuss with students what they think Kofi Annan means and how Africa’s challenges might affect them if left unsolved.

Activity: Unit Launch

Why Study Africa South of the Sahara? Ask: What challenges do you think Africans south of the Sahara face? What have you heard in the news? (HIV/AIDS is an epidemic, killing millions of people. Ethnic fighting within countries has caused death and suffering to millions. Developing nations struggle to achieve economic growth under the burden of repaying debt, building their infrastructure, gaining access to safe water supplies, growing enough food to feed their people, establishing governments that are accountable to their citizens, and developing their natural resources without endangering the environment.) Read former U.N. Secretary-General Kofi Annan’s quote: “Our continent, more than any other, suffers from the fact that the multilateral system is not living up to its potential. The world will not enjoy development without security, nor security without development, and will not enjoy either without respect for human rights.” Discuss with students what they think Kofi Annan means and how Africa’s challenges might affect them if left unsolved.
Why It Matters

Africa south of the Sahara presents a rich mosaic of ethnic groups who speak hundreds of languages. Over the past 60 years, a number of countries in the region have gained independence. Today they are working toward greater political and economic unity. They are also strengthening their voice in global affairs through such international organizations as the United Nations.

Visual Literacy

Ghana, birthplace of former U.N. Secretary-General Kofi Annan, is located in West Africa along the coast of the Atlantic Ocean. There, many women sell their wares, including shoes, gum, fried dough, ginger, salt, cocoa, cosmetics, and charcoal, among other things, at open-air markets such as the one shown above. In Ghana, women make up about 60 to 85 percent of the wholesale and retail trading industries, working mostly in the informal sector. They endure long hours, transportation difficulties, and can be subject to abuse and people demanding bribes. In Accra, an organization called Transaid seeks to improve opportunities and social conditions for female market traders. They are currently working to implement a transportation cooperative so that women traders can get to and from the market with their goods safely and more efficiently. Many women also borrow money from a micro-finance bank such as Women's World Bank Ghana to open or maintain small businesses.

More About the Photo

Current Events Online

Visit events.glencoe.com to bring news and current events into your classroom. McGraw-Hill's current events Web site features high-interest news stories with student-directed projects and activities.

Introduce the Region

Relative Location and Mental Mapping

Help students become familiar with the region and practice using relative location by playing a location game. Assign one or more countries to each student. Instruct students to write clues about the location of the countries they were assigned (Example: This country is east of Gabon. It borders the Central African Republic. It is west and north of another country that has a similar name and has a coastline on the Atlantic Ocean. Answer: Congo). Have students read these clues, one at a time, until a classmate can identify the answer.

btw by the way stuff you should know

Visit events.glencoe.com to bring news and current events into your classroom. McGraw-Hill's current events Web site features high-interest news stories with student-directed projects and activities.
Africa South of the Sahara

**Physical Geography** Africa south of the Sahara occupies the southern three-fourths of the continent of Africa. The area has a generally low elevation compared to other regions. Plateaus and low mountains tend to be found to the east and south. Some of these highlands end abruptly and plunge to low coastal plains that are very narrow. More extensive lowland areas lie to the north and west.

Two deep cuts in the land run from north to south in the eastern part of the region. Called the Great Rift Valley and the Western Rift Valley, these deep depressions show the effect of two of Earth’s tectonic plates pulling apart. Volcanic mountains are found nearby, and many low areas of the rifts have filled with water, forming a chain of lakes.

**Mountains** The region has few mountain ranges, and they are neither very long nor very high. Several small ranges, like the Wemmershoek Mountains shown here, are found in southern Africa.

**Plains and Plateaus** Seas of grass cover some of the lowland areas of Africa, like this part of the Masai Mara National Reserve in Kenya.

**Lakes and Rivers** The city of Djenné, Mali, sits along the banks of the Bani River, one of the tributaries of the Niger River, which winds through much of West Africa.

### Activity: Human-Environment Interaction

**Drawing Conclusions** Many countries in Africa south of the Sahara are rich in natural resources like gold, silver, copper, and diamonds. Direct students to the map on page 558 showing where these resources are located. As countries in the region struggle to achieve economic growth by developing these resources, they also struggle to preserve the environment from damage caused by mining, gas flaring (burning off excess petroleum products from oil wells), disruption of wildlife habitats, and so on. **Ask:** What are some specific ways countries could benefit from developing their own natural resources? (building roads and schools, improving health care, building better housing and more efficient factories, increasing their ability to trade for goods they do not have) **Ask:** Which is more important, development or the environment? Why? (Answers will vary.)
**Did You Know?**

- **Tallest mountain** Kilimanjaro, in Tanzania, is the highest point in Africa. On Tanzania’s borders are Lake Victoria, the second-largest freshwater lake in the world, and Lake Tanganyika, the world’s longest freshwater lake.
- **Long river** At more than 2,700 miles (4,344 km) long, the Congo River is one of the ten longest rivers in the world and the second longest in Africa. The river ranges widely in width, from approximately one-half mile to approximately ten miles wide. The Congo, along with all of its tributaries, provides more than 9,000 miles (14,484 km) of navigable water throughout Central Africa.
- **Continental coastline** Africa is the world’s second-largest continent, but its coastline is one of the shortest in total length at about 16,100 miles (25,905 km). This is due to the fact that the African continent has few gulfs, inlets, or bays.
- **Area** The region of Africa south of the Sahara occupies about 9.5 million square miles (24.6 million sq. km) of land. It is about three times the size of the contiguous United States.

**Teach**

**Critical Thinking**

**Identifying Central Issues**

In addition to the resources mentioned on this page, many African countries are rich in oil petroleum, and have struggled to make this resource benefit all of their citizens without creating negative environmental consequences.

**Ask:** Which countries in the region have oil? (Senegal, Nigeria, Cameroon, Gabon, South Africa, Sudan, Chad, Central African Republic)

**Ask:** How might a robust oil industry benefit citizens of African countries? (By boosting the economy, oil money might be available for health care, education, and infrastructure.)

Have students research why developing these resources has not yet improved the lives of people who live in those countries. Students should report on their findings and suggest ways oil resources could benefit all people in a country. 

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**NATURAL RESOURCES** Miners pan for gold in the Democratic Republic of the Congo. Africa is rich in precious gemstones, coal, and metals like gold, iron, and uranium.
AIDS in Africa  Like many regions in the world, people in Africa south of the Sahara are being ravaged by the spread of HIV and AIDS. About two-thirds of all adults in the world with HIV/AIDS live in this region. Nearly 19 percent of adults in South Africa are living with HIV. About 19.6 percent of the adult population in Namibia, 24.1 percent in Botswana, and 33 percent in Swaziland have HIV.

While the AIDS epidemic is most prevalent in southern Africa, there are other parts of the region where the epidemic is being reversed. Kenya, Uganda, and Zimbabwe have recently shown a decline in adult cases.

In order to bring as many forces as possible to bear against the disease, biomedical practitioners have formed alliances with traditional healers. These collaborations have proved valuable as people living with HIV seek treatment and counseling from “western” medicine and healers familiar with local culture and customs.
**ECONOMY** Most people in Africa south of the Sahara live by subsistence farming, but bustling cities like Lagos, Nigeria, are centers of business and industry.

**CULTURE** Ethiopian Christians march in a procession during a religious festival. Christianity was adopted in Ethiopia in the A.D. 300s.

**PEOPLE** There are a variety of ethnic groups in the countries of Africa south of the Sahara, including Uganda. In the past, many Africans identified with one ethnic group. Recently intermarriage and immigration have contributed to increased ethnic diversity in parts of Africa.

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**Critical Thinking**

Analyzing Information Ask: What are the benefits of subsistence farming? (People can grow their own food. Food may be free from pesticides or may be healthier and less expensive.) What are the negative aspects? (limited variety, no other food if crop fails)

For additional practice on this skill, see the Skills Handbook.

**Reading Strategy**

Identifying Ask: What does “subsistence” mean? Have students look up the dictionary definition and write a definition in their own words, including an antonym and an example.

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**Background: Historical Perspectives**

**The Scramble for Empire: Colonialism**

Beginning in the late 1800s, European countries began exploring and colonizing Africa, using military might to back up financial and political interests. Boundaries were drawn with little regard for ethnic groups or existing trading networks. Belgium’s King Leopold II wrote, “I do not want to miss a good chance of getting a slice of this magnificent African cake.”

At the 1884 Berlin Conference, European leaders met to divide the continent in much the same way. Often, boundaries were drawn as if the continent were a cake—even while the challenging interior geography sometimes prevented actual exploration of an area before it was claimed. As your students will read, the resulting boundaries have had a lasting effect on internal conflicts between ethnic groups over issues ranging from religion and leadership to control of access to water and farmland. Colonialism often led to the establishment of single-crop export economies in place of traditional farming and food production. This practice contributed to a legacy of dependency on fluctuating prices for crops, importing food, crippling debt repayment, and famine.
**Skill Practice**

**Using Geography Skills**
Using the physical map of the region, locate the Congo, Nile, and Niger Rivers. Have students use clues about elevation to predict in which direction each river flows. *(The Congo River flows northwest, west, then southwest; the Nile River flows north; the Niger River flows northeast then southeast.)*

**Critical Thinking**

**Predicting** Tell students that tectonic activity is responsible for a major landform in eastern Africa. The Great Rift Valley is the result of tension pulling apart two sides of the African plate. Ask students to predict what this area will look like after thousands of years. *(This part of eastern Africa will split away from the rest of the continent.)*

**Background: Land and Climate**

**Tropical Regions** As students have studied in Unit 3 on Latin America, the lands bounded by the Tropics display some fairly typical characteristics. In Africa south of the Sahara the tropical region contains rain forests, scrub and thorn forests, savannas, and semievergreen and monsoonal forests. While temperature ranges in these areas remain fairly constant throughout the year, there can be dramatic variations in rainfall. Typically in the rain forests, rain falls consistently over the course of a year. But in the savannas and monsoonal forests, there are definite wet and dry seasons that can last as long as six months.
**Powerful Waterways**

The region’s major rivers move quickly through rapids and waterfalls or broaden into marshy inland deltas in lowland areas. As you study the maps and graphics on these pages, look for the geographical features that make the region unique. Then answer the questions below on a separate sheet of paper.

1. **How might rapids, waterfalls, and marshes affect the way people can use the region’s rivers?**
2. **Compare Victoria Falls to Niagara Falls. Which has the greater potential to generate energy?**
3. **Would you expect the Niger River to have as many waterfalls as the Zambezi River? Why or why not?**

**Comparing Waterfalls**

- **Victoria Falls**
  - Height: 121.9 feet (37.0 meters)
  - Width: 97.9 feet (29.8 meters)
  - Water Volume: 132 million gallons (500 million liters per minute)

- **Niagara Falls**
  - Height: 107 feet (32.7 meters)
  - Width: 175 feet (53.3 meters)
  - Water Volume: 52 million gallons (190 million liters per minute)

**Water Volume at Victoria Falls**

- **Victoria Falls**
  - 132 million gallons (500 million liters per minute)

- **Niagara Falls**
  - 45 million gallons (170 million liters per minute)

**Did You Know?**

- **Tropical Africa** Much of Africa lies within the Tropics, the area between the Tropic of Cancer and the Tropic of Capricorn. Africa has the largest tropical region of any continent in the world.

- **Chad** The Tibesti Mountains cover an area of more than 50,000 square miles (129,500 km²) and reach more than 11,000 feet (3,353 m) high, making northwestern Chad one of the world’s most rugged and inaccessible places.

- **Zambia and Zimbabwe** Although the Scottish explorer, David Livingstone, named Victoria Falls after Queen Victoria, its African name, Mosi-oa-Tunya, means “The Smoke that Thunders.”

- **Tanzania** This country includes the islands of Mafia, Pemba, and Zanzibar. It is slightly larger than twice the size of California.
Critical Thinking
Making Generalizations
Have students look at the political map of the region. Ask: What seems to be the relationship between the location of small countries compared to large ones? (Small countries tend to be on the coast in West Africa.) Why do you think this is? (These might have been the first explored by colonists. Geography may have made it easier to explore them and draw boundaries.)

For additional practice on this skill, see the Skills Handbook.

Skill Practice
Using Geography Skills
Ask: How many countries in the region can you label on a map from memory? Have students label a blank political map by using a word bank or by filling in a number of major countries.

Working Together: New Partnership for Africa’s Development (NEPAD)
Tell students that NEPAD is an organization of African leaders, supported by the United Nations, who have created a framework for addressing underdevelopment and poverty. The framework includes regional cooperation and integration, ensuring peace and security, improving infrastructure, diversifying exports, increasing trade and foreign investment, improving health and education, and protecting the environment. NEPAD’s primary objectives are to eradicate poverty; to place African countries, both individually and collectively, on a path of sustainable growth and development; to halt the marginalization of Africa in the globalization process and enhance its full and beneficial integration into the global economy; and to accelerate the empowerment of women.
Colonial Legacy

In the late 1800s, much of Africa was colonized by European powers. As you study the maps and graphics on these pages, look for political features that make the region unique. Then answer the questions below on a separate sheet of paper.

1. What patterns of colonial rule do you see? How many countries were colonized by the French?
2. When did most countries in the region gain independence? How stable would you expect governments in the region to be? Why?
3. How many countries are landlocked? How might that characteristic affect their economies?

Did You Know?

- **1960** Zulu Chief Albert John Lutuli of South Africa was the first African to win the Nobel Peace Prize. He was recognized for his leadership and his struggle against apartheid.
- **1984** Anglican Archbishop Desmond Tutu, a leader in the anti-apartheid movement in South Africa, won the Nobel Peace Prize. His goal is the establishment of “a democratic and just society without racial divisions.”
- **1993** Nelson Mandela and F.W. de Klerk were co-winners of the Nobel Peace Prize. Mandela had been imprisoned from 1962 to 1990 for his anti-apartheid leadership, but was later elected South Africa’s first black president. F.W. de Klerk was the former South African president who worked with Mandela to end apartheid.
- **2001** Kofi Annan and the U.N. received a joint award—the Nobel Peace Prize—for their work for a better organized and more peaceful world.
- **2004** Wangari Maathai of Kenya won the Nobel Peace Prize for her work as an environmental activist. Her movement resulted in Kenyan women planting more than 30 million trees to combat deforestation.
Growing Crisis in the Land

Though famous for its tropical rain forests, the region has many areas with dry climates and poor soils. As you study the maps and graphics on these pages, look for environmental features that make the region unique. Then answer the questions below on a separate sheet of paper.

1. What type of vegetation dominates the northern portion of the region?
2. Which parts of Africa south of the Sahara are most vulnerable to desertification?
3. Compare the two maps. What relationship can you see between vegetation and risk of desertification?

VEGETATION: Africa South of the Sahara

DESERIFICATION

Background: People and Culture

What Life is Like Without Safe Water

Approximately 102 of every 1,000 babies born in Mali die before their first birthday, in part due to diseases like diarrhea and cholera which are often caused by contaminated drinking water. In many countries, villagers must walk several miles each day to reach wells and then carry water back to their homes. Lack of clean water kills approximately 4,500 children around the world each day. Organizations like USAID work with local leaders in Africa to find ways to provide and store clean water. For more information visit www.usaid.gov and look up World Water Day.
### Country Profiles Africa South of the Sahara

<table>
<thead>
<tr>
<th>Country</th>
<th>Capital</th>
<th>Area</th>
<th>Population</th>
<th>Life Expectancy at Birth</th>
<th>GDP Per Capita*</th>
<th>% Urban</th>
<th>Literacy Rate (%)</th>
<th>Years of Compulsory Education</th>
<th>Phone Lines/Cell Phones (per 1,000 people)</th>
<th>Internet Users (per 1,000 people)</th>
<th>Flag &amp; Language</th>
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<tbody>
<tr>
<td>Angola</td>
<td>Luanda</td>
<td>481,355 sq. mi.</td>
<td>17,100,000</td>
<td>46 yrs.</td>
<td>$8,800</td>
<td>57</td>
<td>67.4</td>
<td>6</td>
<td>6/69</td>
<td>11</td>
<td>Portuguese</td>
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<tr>
<td>Benin</td>
<td>Porto-Novo</td>
<td>112,622 sq. km.</td>
<td>17,100,000</td>
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<td>6/69</td>
<td>11</td>
<td>French</td>
</tr>
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<td>Botswana</td>
<td>Gaborone</td>
<td>481,355 sq. mi.</td>
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<td>$8,800</td>
<td>57</td>
<td>67.4</td>
<td>6</td>
<td>6/69</td>
<td>11</td>
<td>Portuguese</td>
</tr>
<tr>
<td>Burkina Faso</td>
<td>Ouagadougou</td>
<td>218,544 sq. km.</td>
<td>17,100,000</td>
<td>46 yrs.</td>
<td>$8,800</td>
<td>57</td>
<td>67.4</td>
<td>6</td>
<td>6/69</td>
<td>11</td>
<td>French</td>
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<tr>
<td>Namibia</td>
<td>Windhoek</td>
<td>182,816 sq. mi.</td>
<td>17,100,000</td>
<td>46 yrs.</td>
<td>$8,800</td>
<td>57</td>
<td>67.4</td>
<td>6</td>
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<td>6</td>
<td>6/69</td>
<td>11</td>
<td>Portuguese</td>
</tr>
</tbody>
</table>

*The CIA calculates per capita GDP in terms of purchasing power parity. This formula allows us to compare the figures among different countries.

### Skill Practice

#### Reading a Chart
Have students study the Country Profiles charts on pages 503–507. **Ask:** Which country is the most densely populated? (Mauritius at 1,658 people per square mile (640 per sq. km)) Which is the next most densely populated country? (Rwanda at 1,039 people per square mile (410 per sq. km)) Have students compare data on life expectancy, literacy rate, and per capita GDP in these two countries. (Students should answer that the two countries vary greatly. Rwanda has a lower life expectancy and a lower per capita GDP than Mauritius. Rwanda also has a lower literacy rate.) Ask students to formulate theories about why the rates are so different.

#### Crisis in the Land: Water Stress
Water stress occurs when the demand for water exceeds the available amount. Effects include contamination, poor sanitation and health problems, insufficient water for crops and livestock, and inadequate reserves. Water stress is caused by poorly maintained infrastructure, drought, and conflicts over storage and distribution. These conflicts can result from corrupt governments and the residual effects of national boundaries that do not coincide with water supplies. More economically developed countries such as Egypt and South Africa have a disproportionate number of dams for water storage compared to other countries, particularly those in the Sahel. Students who wish to can research what steps could be taken to make sure that everyone in the region has access to enough water. For more information visit the Council on Foreign Relations Web site [http://www.cfr.org](http://www.cfr.org).
### Country, Capital, & Area

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<tr>
<th>Country</th>
<th>Capital</th>
<th>Population &amp; Density</th>
<th>GDP Per Capita*</th>
<th>% Urban</th>
<th>Literacy Rate (Yrs)</th>
<th>Years of Compulsory Education</th>
<th>Phone Lines/Cell Phones (per 1,000 people)</th>
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<th>Flag &amp; Language</th>
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<td>CONGO, DEMOCRATIC REPUBLIC OF THE CONGO</td>
<td>Kinshasa</td>
<td>68,700,000</td>
<td>78 per sq. mi., 50 per sq. km</td>
<td>$300</td>
<td>33</td>
<td>67.2</td>
<td>8</td>
<td>NA/48</td>
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<td>Brazzaville</td>
<td>3,700,000</td>
<td>28 per sq. mi., 11 per sq. km</td>
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<td>60</td>
<td>83.8</td>
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<td>DJIBOUTI</td>
<td>Tamatave</td>
<td>21,400,000</td>
<td>174 per sq. mi., 67 per sq. km</td>
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<td>48</td>
<td>48.7</td>
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<td>14/121</td>
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<td>Malabo</td>
<td>900,000</td>
<td>101 per sq. mi., 39 per sq. km</td>
<td>$3,700</td>
<td>87</td>
<td>67.9</td>
<td>10</td>
<td>14/56</td>
<td>13</td>
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<tr>
<td>ERITREA</td>
<td>Asmara</td>
<td>5,100,000</td>
<td>131 per sq. mi., 50 per sq. km</td>
<td>$700</td>
<td>21</td>
<td>58.6</td>
<td>8</td>
<td>9/9</td>
<td>16</td>
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<td>ETHIOPIA</td>
<td>Addis Ababa</td>
<td>23,800,000</td>
<td>271 per sq. mi., 105 per sq. km</td>
<td>$1,100</td>
<td>33</td>
<td>29.5</td>
<td>6</td>
<td>3/20</td>
<td>5</td>
</tr>
<tr>
<td>GABON</td>
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<td>1,500,000</td>
<td>15 per sq. mi., 6 per sq. km</td>
<td>$14,200</td>
<td>84</td>
<td>63.2</td>
<td>11</td>
<td>28/470</td>
<td>48</td>
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<tr>
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<td>54</td>
<td>40.1</td>
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<td>29/163</td>
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<td>271 per sq. mi., 105 per sq. km</td>
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*The CIA calculates per capita GDP in terms of purchasing power parity. This formula allows us to compare the figures among different countries.

**Note:** Countries and flags are not drawn to scale.

### Activity: Using the Country Profiles

**Drawing Conclusions** Ask students to explain the correlation between life expectancy in the region and factors that might cause it. For example, have students choose two factors they think might be essential and explain the basis of their theory. Then, have students test their theory using at least five examples from the Country Profiles chart. **Ask:** Do the examples support your theory? Are there other statistics on the chart that might better account for life expectancy? Ask students to brainstorm other factors that are not shown on the chart which might have an impact on life expectancy in a country.
### Activity: Using the Country Profiles

**Analyzing Information** Ask students to use the Country Profiles to determine whether there is a relationship among literacy, years of compulsory education, and income. Have students find the three countries with the highest and lowest GDP per capita income. **Ask:** Is there a correlation between income and years of education? If so, why? If not, why not? Have students find the three countries with the highest and lowest years of compulsory education. **Ask:** Is there a correlation between years spent in school and literacy rates? Have students theorize about any relationships they find, using additional countries if needed. For example, are some countries more effective at teaching their students to become literate than others? What factors might account for this? Students may be encouraged to do additional research into specific countries to find more answers. For example, is there a difference in how teachers are trained or how schools are funded? Have students report their findings in an oral presentation.

**Reading Strategy**

**Reading a Chart** **Ask:** which two countries have the highest number of cell phones? (Seychelles, South Africa) Which countries have the least number of cell phones? (Chad, Central African Republic, and Niger)

**Critical Thinking**

**Drawing Conclusions** **Ask:** Which country’s flag and language are most similar to the United States? (Liberia) What reasons might account for this? Have students research the history of Liberia to discover the connection. (Liberia was founded in 1822 as a colony by free African Americans who wanted to return to Africa. The original Constitution was modeled after the United States. The capital, Monrovia, was named after President Monroe.)

For additional practice on this skill, see the Skills Handbook.
<table>
<thead>
<tr>
<th>Country, Capital, &amp; Area</th>
<th>Population &amp; Density</th>
<th>Life Expectancy at Birth</th>
<th>GDP Per Capita*</th>
<th>% Urban</th>
<th>Literacy Rate (%)</th>
<th>Years of Compulsory Education</th>
<th>Phone Lines/Cell Phones (per 1,000 people)</th>
<th>Internet Users (per 1,000 people)</th>
<th>Flag &amp; Language</th>
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<td>Maputo 22,000,000</td>
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<td>43 yrs. $900</td>
<td>29</td>
<td>47.8</td>
<td>7</td>
<td>4/62</td>
<td>7</td>
<td>Portuguese</td>
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<tr>
<td>Namibia</td>
<td>Windhoek 2,200,000</td>
<td>7 per sq. mi. 3 per sq. km</td>
<td>59 yrs. $6,300</td>
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<td>85.0</td>
<td>10</td>
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<td>31 per sq. mi. 12 per sq. km</td>
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<td>28.7</td>
<td>6</td>
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<td>Abuja 152,600,000</td>
<td>434 per sq. mi. 168 per sq. km</td>
<td>47 yrs. $2,300</td>
<td>47</td>
<td>68.0</td>
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<td>Kigali 9,900,000</td>
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<td>70.4</td>
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<td>84.9</td>
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<td>46/77</td>
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<td>Dakar 12,500,000</td>
<td>76,356 sq. mi. 315,950 sq. km</td>
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<td>39.3</td>
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</table>

*The CIA calculates per capita GDP in terms of purchasing power parity. This formula allows us to compare the figures among different countries.

Note: Countries and flags are not drawn to scale.

**Critical Thinking**

**Making Inferences**

Ask: Is it important to know how many people in a country have Internet access or use cell phones? What kind of information can we learn about a country by having this data? (Answers will vary, but students should note that this statistic points to a level of development approaching that of the West.)

For additional practice on this skill, see the **Skills Handbook**.

**Analyzing Information**

The information on the Country Profile charts was collected from the CIA World Fact Book, an Internet site with extensive data on every country in the world. Have students look at the chart and create five questions about things they believe they still need to know about a country before they can more fully understand what life is like for the people who live there. Ask students to choose five countries they would like to investigate in greater detail. Then, have students use the Internet to locate the CIA World Fact book. After reviewing the country profiles on the site, have students select three additional categories of data provided in the World Fact book that should be included in the Country Profile chart. Ask students to report on their decisions and explain their reasons.
<table>
<thead>
<tr>
<th>Country, Capital, &amp; Area</th>
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<th>GDP Per Capita*</th>
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<th>Literacy Rate (%)</th>
<th>Years of Compulsory Education</th>
<th>Phone Lines/ Cell Phones (per 1,000 people)</th>
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<th>Flag &amp; Language</th>
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<td>42,300,000/46 per sq. mi. 18 per sq. km</td>
<td>58 yrs.</td>
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<td>61.1</td>
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<td>1,200,000/181 per sq. mi. 70 per sq. km</td>
<td>46 yrs.</td>
<td>$5,100</td>
<td>24</td>
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<td><strong>Mali</strong></td>
<td>43,700,000/128 per sq. mi. 49 per sq. km</td>
<td>54 yrs.</td>
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<td>25</td>
<td>69.4</td>
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<td>$900</td>
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**Comparing Lands:** The region of Africa south of the Sahara is about three times the size of the contiguous United States.


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**Activity: Using the Country Profiles**

**Personal Writing** Have students choose which country they would like to learn more about. Students may be encouraged to find a country that is most or least like the United States. However, the country they choose should have English as at least one of its languages. Using the data on the chart or any additional data they research using the CIA World Fact Book, have students formulate five questions they would like to ask a person in that country. Questions should correspond to the data. Using the questions they have created, have students write a mock e-mail message or letter to a person their age in that country. Then, ask students to write a return letter from the perspective of that person answering the questions.

Or, students may wish to take on the perspective of that person and write a letter asking about life in the United States, using the data from the chart to formulate questions. Have students present their letters on a poster board and display them in the classroom. **BL OL**
## Chapter 20 Planning Guide

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<thead>
<tr>
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<th>AL</th>
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*Also available in Spanish

✓ Chapter- or unit-based activities applicable to all sections in this chapter.
- Interactive Lesson Planner
- Interactive Teacher Edition
- Fully editable blackline masters
- Section Spotlight Videos Launch
- Differentiated Lesson Plans
- Printable reports of daily assignments
- Standards Tracking System

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✓ Chapter- or unit-based activities applicable to all sections in this chapter.

*Also available in Spanish*
Chapter 20  Integrating Technology

Teach With Technology

What Glencoe products improve students’ vocabulary?
Vocabulary eFlashcards, ePuzzles and Games, and Vocabulary PuzzleMaker all build students’ vocabulary and help students understand key words and concepts from the textbook.

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Vocabulary eFlashcards help students review and test their recall of content vocabulary, academic vocabulary, and people, places, and events for each chapter. ePuzzles and Games help students study the key facts, concepts, and vocabulary introduced in each chapter. The Vocabulary PuzzleMaker lets you create word searches, crosswords, and jumbles that students can use to practice vocabulary.

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Geography ONLINE
Visit glencoe.com and enter WGC2630C20T for Chapter 20 resources.

You can easily launch a wide range of digital products from your computer’s desktop with the McGraw-Hill widget.

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<tr>
<td>• Nations of the World Atlas</td>
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<td>• Glencoe Graphing Tool</td>
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<td>• btw — Current Events Web Site</td>
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<td>• Web Activity Lesson Plans</td>
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<td>• Vocabulary PuzzleMaker</td>
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<tr>
<td>• Beyond the Textbook</td>
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</tbody>
</table>
Additional Resources

- **Timed Readings Plus in Social Studies** helps students increase their reading rate and fluency while maintaining comprehension. The 400-word passages are similar to those found on state and national assessments.

- **Reading in the Content Area: Social Studies** concentrates on six essential reading skills that help students better comprehend what they read. The book includes 75 high-interest nonfiction passages written at increasing levels of difficulty.

- **Reading Social Studies** includes strategic reading instruction and vocabulary support in Social Studies content for both ELLs and native speakers of English.

- **Content Vocabulary Workout** (Grades 6-8) accelerates reading comprehension through focused vocabulary development. Social Studies content vocabulary comes from the glossaries of Glencoe’s Middle School Social Studies texts. [www.jamestowneducation.com](http://www.jamestowneducation.com)

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**Biography**

The following videotape programs are available from Glencoe as supplements to Chapter 20:

- **Seven Wonders of the Ancient World** (ISBN 0-76-700401-9)

To order, call Glencoe at 1-800-334-7344. To find classroom resources to accompany many of these videos, check the following pages:

- **A&E Television**: [www.aetv.com](http://www.aetv.com)
- **The History Channel**: [www.historychannel.com](http://www.historychannel.com)

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**Reading List Generator CD-ROM**

Use this database to search more than 30,000 titles to create a customized reading list for your students.

- Reading lists can be organized by students’ reading level, author, genre, theme, or area of interest.
- The database provides Degrees of Reading Power™ (DRP) and Lexile™ readability scores for all selections.
- A brief summary of each selection is included.

**Leveled reading suggestions for this chapter:**

**For students at a Grade 7 reading level:**

- **A Walk Through A Rainforest: Life in the Ituri Forest of Zaire**, by David and Mark Jenike

**For students at a Grade 8 reading level:**

- **African Journey**, by John Chisson

**For students at a Grade 9 reading level:**

- **Ghana: A Study of an Economically Developing Country**, by Steve Brace

**For students at a Grade 10 reading level:**

- **The World of Power and Energy**, by Frank Ross

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**National Geographic**

**Index to National Geographic Magazine:**

The following articles relate to this chapter:


**National Geographic Society Products** To order the following, call National Geographic at 1-800-368-2728

- **National Geographic Atlas of the World** (Book).

Access National Geographic’s new dynamic MapMachine Web site and other geography resources at:

- [www.nationalgeographic.com](http://www.nationalgeographic.com)
- [www.nationalgeographic.com/maps](http://www.nationalgeographic.com/maps)
Physical processes shape Earth’s surface. Africa south of the Sahara is a region of dramatic landforms and great natural resources. A study of its physical geography will explain some of the processes that have shaped and continue to shape the diverse landscapes, climates, and vegetation of the region.

**Essential Questions**

**Section 1: The Land**

What kinds of physical processes have shaped the African landscape?

**Section 2: Climate and Vegetation**

What factors influence climate in Africa south of the Sahara?

---

**Focus**

**More About the Photo**

**Visual Literacy** The Great Rift Valley is home to a diverse array of elephants, giraffes, zebra, wildebeest, rhinos, and other endangered species. Animals and humans compete for limited land and resources. One challenge facing the area around the Great Rift Valley is balancing the needs of a growing population with the need to preserve species that face extinction due to poaching and loss of natural habitat.

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**Teach**

As you begin teaching this chapter, read the Big Idea out loud to students. Explain that the Big Idea is a broad, or high-level, concept that will help them understand what they are about to learn. Use the Essential Question for each section to help students focus on the Big Idea.

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**Section 1: The Land**

**Essential Question** What kinds of physical processes have shaped the African landscape? (plate tectonics including plate movement and volcanic eruptions) Point out that in Section 1 students will learn about the physical features and mineral resources of Africa south of the Sahara.
Comparing Information Use a Three-Tab Book to make a Venn diagram for comparing two major river basins in Africa south of the Sahara.

Reading and Writing As you read the chapter, gather information about the Niger and Zambezi Rivers, including location, length, direction of flow, and uses. In the appropriate place in your Foldable, note what is unique to each river and what they have in common.

Previewing the Region

If you have not already done so, engage students in the Regional Atlas and Country Profiles activities to help them become familiar with the general content of the region.

Dinah Zike’s Foldables

Purpose Students will use this Foldable to collect information about and then compare two major river basins in Africa south of the Sahara. The completed Foldable will help them prepare for assessment.

Geography ONLINE

Visit glencoe.com and enter code WGC2630C20T for Chapter 20 resources.

Section 2

Climate and Vegetation

Essential Question What factors influence climate in Africa south of the Sahara? (location, elevation, proximity to water or desert, wind currents) Tell students that in Section 2 they will learn how elevation and a tropical location influence both climate and vegetation in the region. QL
The Land

Africa south of the Sahara is known for its extraordinary physical geography. As science writer David Quammen describes, “Africa isn’t really a place; it’s a million places.” Flying low in a small aircraft, Quammen describes a place in Niger’s Air mountain region known as Arakao, where the winds bring mountains and desert together.

Voices Around the World

“Looking eastward toward the open desert, we see an amazing spectacle: dunes, towering dunes, piled up along the massif’s eastern face, like a herd of khaki dinosaurs stopped by a giant stone wall. Set in stark opposition to the dark peaks of Air, these are mountains of a much different sort—granular, graceful, silky textured, shaded gently in tones of tan and pale salmon, erected and sculpted into pyramid peaks and razor-edge ridges, swaybacks and rippling slopes, by the winds that have blown them in, grain by grain, across 150 flat miles from northeastern Niger.”

—David Quammen, “Tracing the Human Footprint,” National Geographic, September 2005
**Landforms**

**MAIN IDEA** Africa south of the Sahara is a region of step-like plateaus, rising to mountains and slashed in the east by a rift valley, which was formed by shifting tectonic plates.

**GEOGRAPHY AND YOU** What animals and landscapes do you associate with Africa south of the Sahara? Read to learn about the astounding variety of physical features in the region.

Africa south of the Sahara is an immense region covering about 9.5 million square miles (24.6 million sq. km). As the physical map on page 498 of the Regional Atlas shows, the region is bounded on the north by the Sahara and extends to the sea in all other directions.

**The Great Rift Valley**

An amazing natural wonder known as the Great Rift Valley stretches from Syria in Southwest Asia to Mozambique (MOH•ZAM•bik) in the southeastern part of Africa. A rift valley is a large depression in the Earth’s surface formed by shifting tectonic plates. Millions of years ago, plate movements created the system of faults, or fractures in the Earth’s crust, within which the Great Rift Valley lies. Volcanic eruptions as well as earthquakes helped create the valley’s striking landscape, and they continue to shape it today.

In East Africa, the Great Rift Valley forms two branches, with volcanic mountains rising at its edges and deep lakes that run parallel to its length. The main volcanic cones, among them Kilimanjaro, are located along the eastern branch. Lake Tanganyika, one of the deepest and longest freshwater lakes in the world, lies on the eastern branch. To the south is Lake Malawi, a mountain-rimmed lake that looks much like a fjord. Like the glacier-cut valleys of seawater in northern Europe, Lake Malawi lies well below the land surrounding it. It is also very deep: its bottom drops to more than 2,300 feet (700 m) at its deepest point.

**Diagram Study**

1. **Movement** What caused large fractures in the Earth’s crust, creating rift valleys? 
2. **Location** Which major lakes are located in the Great Rift Valley?

**Answers**

1. Rising magma combined with the crust being pulled apart.
2. Lake Victoria, Lake Tanganyika, Lake Malawi.

**Teach**

**Differentiated Instruction**

**Visual/Spatial** Instruct students to draw or sketch the formation of the Great Rift Valley as it is described in the text.

**Critical Thinking**

**Determining Cause and Effect** Ask: Why do you think two of the lakes in the Great Rift Valley are so deep? (They are the result of faults and dramatic plate movement.)

For additional practice on this skill, see the Skills Handbook.

**Hands-On Project**

**Chapter Project Step 1**

**Taking A Trip Through Africa**

**Step 1: Making a Travel Map** Pairs of students will plan a road trip in the region to find answers to the Essential Question using specific examples.

**Essential Question** Do physical features affect climate in Africa south of the Sahara?

**Directions** Write the Essential Question on the board, and tell pairs of students to use the physical map of Africa south of the Sahara on page 498 of the Regional Atlas to plan a road trip. Students should include a variety of physical features and other places of interest. You may wish to add criteria such as the number of miles traveled or places visited. Give each pair an outline map on which students will mark their route. Then tell them to label the sites and to number them in the order in which they will visit them. Afterwards, they should read the text and do research to learn about each location. All research should lead toward an answer to the Essential Question. Each pair should write and include pictures of sites and physical features whenever possible.

**Summarizing** Allow time for pairs to share what they have learned about the Essential Question while preparing for the trip. Pairs should use the information about climate in Section 2 to decide what to pack for the trip. (The Chapter Project continues on page 516.)
Differentiated Instruction

English Learners  Instruct students to create an illustrated dictionary definition of escarpment and cataract.

Critical Thinking

Making Inferences  Ask students to explain why the Ruwenzori Mountains are called “Mountains of the Moon” by people living near them. (Answers will vary but may include theories about snow and cloud cover shining in the moonlight.)

For additional practice on this skill, see the Skills Handbook.

Writing Support

Persuasive Writing  Direct students to write letters to a hypothetical committee studying the evaporation of Lake Chad. Students should select a point of view, either “Save Lake Chad” or seeing this as a natural development.

Caption Answer: plateaus

Additional Support

Activity: Economics Connection

Predicting Consequences  Ask: According to your textbook, what is happening to Lake Chad? (It is shrinking.) How is the problem defined? (The lake is threatened with extinction.) What are four main causes of this problem? (drought, global warming, irrigation, desertification) What economic benefits do people gain from using a lake for irrigation? (growing crops, watering animals)  

Answer: the Eastern Highlands

Mountains and Plateaus

Africa south of the Sahara is a series of plateaus that rise in elevation from the coast inland and from west to east. Ranging in elevation from 500 feet (152 m) in the west to 8,000 feet (2,438 m) or more in the east, the plateaus are outcroppings of the solid rock that makes up most of the continent. The edges of the plateaus are marked by escarpments—steep, often jagged cliffs. Most are located less than 20 miles (32 km) from the coast. Rivers crossing the plateaus plunge down the escarpments in cataracts, or waterfalls.

Most African mountains dot the Eastern Highlands, an area that stretches from Ethiopia almost to the Cape of Good Hope. These highland areas include the Ethiopian Highlands as well as volcanic summits, such as Kilimanjaro and Mount Kenya. West of the Eastern Highlands, the Ruwenzori Mountains divide Uganda and the Democratic Republic of the Congo. Covered with snow and cloaked in clouds, they are also called the “Mountains of the Moon.” Moist air from the Indian Ocean creates the clouds that wrap around the Ruwenzoris.

Farther south is the Drakensberg Range in South Africa and Lesotho. These mountains rise to more than 11,000 feet (3,353 m) and form part of the escarpment along the southern edge of the continent.

Water Systems

MAIN Idea  Landforms and physical processes have influenced the region’s water systems, which include deep lakes, spectacular waterfalls, and great rivers.

Geography and You  In what ways have landforms affected the Mississippi River in the United States? Read to learn how the land has influenced the water systems in Africa south of the Sahara.

The land has influenced the region’s water systems in important ways. Lakes and rivers are located in huge basins formed millions of years ago by the uplifting of the land. The great rivers of Africa originate high in the plateaus and eventually make their way to the sea. Escarpments and ridges break the rivers’ paths to the ocean with rapids and cataracts. The broken landscape makes it impossible to navigate most of the region’s rivers from mouth to source.

Land of Lakes

As the map on page 513 shows, most of the region’s lakes, including Lakes Tanganyika and Malawi, are near the Great Rift Valley. Lake Victoria, the largest lake in Africa, is located between the eastern and western branches of the Great Rift. It is the world’s second-largest freshwater lake, after Lake Superior in North America. Lake Victoria is the source of the White Nile River. Despite its large size, Lake Victoria is comparatively shallow with a depth of only 270 feet (82 m).

Lake Chad, outside the Great Rift Valley in west-central Africa, is threatened with extinction. Although fed by three large streams, landlocked Lake Chad is shrinking. Droughts in the 1970s completely dried up the northern portion of the lake, and the water level continues to be shallow even during years when rainfall is normal. Because of the climate, much of the lake’s water evaporates. It also seeps into the ground. Other factors contributing to the shrinkage of Lake Chad include global warming, irrigation, and desertification. Desertification occurs when long periods of drought and land use destroy the vegetation. The land is left dry and barren, unable to support life. As Lake Chad shrinks, the desert expands on the dry lake bottom.
A Human-Made Lake
Lake Volta in West Africa ranks among the largest human-made lakes in the world. The lake was created in the 1960s by damming the Volta River south of Ajena, Ghana. The new lake flooded more than 700 villages, forcing more than 70,000 people to find new homes.

Although the dam was originally built to provide hydroelectric power to an aluminum plant, the people of Ghana today benefit from the lake in many ways. It supplies irrigation for farming in the plains below the dam and is well stocked with fish. The hydroelectric plant now also generates electricity used throughout Ghana.

River Basins
The Niger (NY•juhr) River is known by many names along its course, but all of them have roughly the same meaning—“great river.” The Niger is the main artery in western Africa, extending about 2,600 miles (4,183 km) in length. Originating in the highlands of Guinea, the river forms a great arc. It flows northeast and then curves southeast to the Nigerian coast. In addition to being important to agriculture, the Niger River is a major means of transportation.

This great river does not flow as one well-defined stream into the Atlantic Ocean. At Abob in southern Nigeria, the Niger splits into a vast inland delta, a triangular section of land formed by sand and silt carried downriver. The Niger Delta stretches 150 miles (241 km) north to south and extends to a width of about 200 miles (322 km) along the Gulf of Guinea.

The Zambezi River of south-central Africa also meets the ocean in a delta. The Zambezi flows 2,200 miles (3,540 km) from its source near the Zambia-Angola border in the west to the Indian Ocean in the east, where it fans out in a delta that is 37 miles (60 km) wide. The Zambezi’s course to the sea is interrupted in many places by waterfalls. At Victoria Falls, on the border of Zambia and Zimbabwe, the Zambezi plummets a sheer 355 feet (108 m).

Unlike most African rivers, the Congo River reaches the sea through a deep estuary (EHS•chuh•wer•ee), or passage where fresh water meets seawater. The Congo’s estuary is 7 miles (10 km) wide, and ships can navigate the deep water. The remaining 2,700 miles (4,344 km) of the Congo form a large network of navigable waterways for smaller boats. Some parts of the river, however, have rapids and waterfalls that present serious obstacles to traffic. The river plunges almost 900 feet (274 m) in numerous cataracts not far from where it meets the Atlantic Ocean.

Unusually for a river of its size, the Congo has no deltas that mark its entry into the sea. Instead, it flows through a vast delta—37 miles (60 km) wide—before reaching the Atlantic Ocean.

Creating Quiz Questions
Objective: Use the worksheet and the student text to create game show-style quiz questions.
Focus: Determine if the incorrect answers can be used to create a new question about Africa south of the Sahara.
Teach: Help students find information in the student text that would allow them to create new quiz questions.
Assess: Evaluate student questions for accuracy.
Close: Allow the class to participate in a game show-style quiz.
Natural Resources

**MAIN Idea** Mineral resources and water are among the region’s most abundant natural resources.

**GEOGRAPHY AND YOU** Where are mineral deposits located in the United States? Read to find out where mineral and water resources are located in Africa south of the Sahara.

The wealth of natural resources is not distributed evenly among the region’s countries. Mineral resources are abundant throughout the region. Nigeria, Angola, Gabon, Congo, and Cameroon have some oil reserves. Of worldwide oil reserves in 2009, about 5 percent were located in Africa south of the Sahara.

The economic activity map on page 558 shows that deposits of metals, including copper, iron ore, manganese, and zinc, are mined in the region. South Africa has about half the world’s gold. Uranium, usually found with gold, is also abundant there. South Africa, Botswana, and the Congo River basin hold major diamond deposits.

Water is an abundant resource in parts of the region. For example, areas in West Africa near the Equator receive abundant rainfall. However, controlling water for practical uses, such as irrigation and hydroelectric power, is difficult because rainfall is irregular and unpredictable. These challenges, combined with a lack of financial support, result in unused hydroelectric potential in parts of the region.

Solar power is another renewable energy source that has been harnessed in the region. Rural electrification programs, which involve installing small-scale solar power systems, continue to expand in some parts of the region.

**Reading Strategy**

**Summarizing** Instruct students to list all the reasons why hydroelectric power is hard to produce in the region.

**Skill Practice**

**Reading a Graph** Ask: Will the oil reserves of the other countries in the chart equal those of Nigeria? (No; the combined reserves would be about 35 billion barrels.)

**Assess**

**Geography ONLINE**

Study Central™ provides summaries, interactive games, and online graphic organizers to help students review content.

**Close**

**Speculating** Discuss with students how the physical features of the region could be used for economic development of the region.

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**SECTION 1 REVIEW**

**Vocabulary**

1. Explain the significance of: rift valley, fault, escarpment, cataract, desertification, delta, estuary.

**Main Ideas**

2. Describe the general pattern of Africa’s landforms—including plateaus and mountains—as you move from west to east across the continent.

3. Which mineral resources are among the region’s most abundant natural resources? Where are large deposits of these resources located?

4. Which renewable resources are important to the region?

5. Use a chart like the one below to identify and describe the ways in which landforms and physical processes have influenced the region’s water systems.

<table>
<thead>
<tr>
<th>Landforms</th>
<th>Physical Processes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lakes</td>
<td></td>
</tr>
<tr>
<td>Waterfalls</td>
<td></td>
</tr>
<tr>
<td>Rivers</td>
<td></td>
</tr>
</tbody>
</table>

**Critical Thinking**

6. Answering the Essential question What physical processes formed the Great Rift Valley?

7. Comparing and Contrasting How is the Congo River’s course to the sea different from that of most other African rivers?

8. Summarizing Information Why is much of the region’s hydroelectric power potential unused?

9. Analyzing Visuals Study the physical map on page 498 of the Regional Atlas. What do most of the countries with elevations of less than 1,000 feet (300 m) have in common?

**Writing About Geography**

10. Descriptive Writing Think about the physical features of Africa south of the Sahara. Write a paragraph describing how specific landforms affect the course of the region’s great rivers.

---

**Answers**

1. Definitions for the vocabulary terms are found in the section and the Glossary.

2. Africa is made up a series of plateaus that rise higher as one moves from west to east. The mountains of the region are found in the eastern half of Africa.

3. copper, iron ore, manganese, zinc, gold and diamonds; South Africa

4. water and solar power

5. Lakes: depressions fed by streams and rivers; pulling apart of the rift valley.

Waterfalls: escarpments and ridges; uplifting of land. Rivers: high in plateaus making its way to the sea; uplifting of land.

6. shifting and spreading tectonic plates

7. It reaches the sea through a deep estuary where oceangoing ships are able to navigate. Most other African rivers are not navigable by large ships.

8. Rainfall is irregular and unpredictable and there is a lack of financial support.

9. river basins

10. Paragraphs will vary but should include that the great rivers originate high in the plateaus and make their way to the sea. Escarpments and ridges break the rivers’ paths to the ocean with rapids and cataracts.
Climate and Vegetation

In many places in Africa south of the Sahara, water is such a precious resource that rain and life are one and the same. Rain helps determine climate, and thus vegetation, in every part of the region. In the spring, when the vegetation of Tanzania’s plains has been fed by rain, a great migration occurs on the Serengeti Plain.

Voices Around the World

“From the top of Shifting Sands dune in the Serengeti Plain of Africa a million mammals are in motion. Wildebeests. Zebras. Gazelles. The plain is black with them. It is wildebeest calving season, and many of those giant bearded antelope have newborns trailing them. . . . From a distance the movement seems a serene and constant march toward the southeast, where recent rains have made pastures greener.”


Guide to Reading

Essential Question
What factors influence climate in Africa south of the Sahara?

Content Vocabulary
• leach (p. 516)
• savanna (p. 517)
• harmattan (p. 517)

Academic Vocabulary
• maximum (p. 516)
• undergone (p. 517)
• recover (p. 517)

Places to Locate
• Serengeti Plain (p. 517)
• Sahel (p. 517)
• Namib Desert (p. 518)
• Kalahari Desert (p. 518)

Reading Strategy
Organizing As you read about the landscape of Africa south of the Sahara, complete a graphic organizer like the one below by describing each geographical area.

<table>
<thead>
<tr>
<th>Area</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serengeti Plain</td>
<td>one of world’s largest savanna plains; animals, trees, grasses</td>
</tr>
<tr>
<td>Sahel</td>
<td>band of dry steppe from Senegal to Sudan; pastures of low-growing grasses, shrubs, acacia trees</td>
</tr>
<tr>
<td>Namib Desert</td>
<td>along the Atlantic Coast of Namibia; rocks, dunes, sparse desert plants</td>
</tr>
<tr>
<td>Kalahari Desert</td>
<td>eastern Namibia, most of Botswana, and part of South Africa; sand swept with few features</td>
</tr>
</tbody>
</table>

Blue wildebeest on the Serengeti Plain, Tanzania
Teach

Reading Strategy
Questioning  Instruct students to turn each factor that affects climate into a question. For example, “How high is the elevation?” or “What is the latitude?” in order to identify and comprehend the influence of these factors on climate. AL

Differentiated Instruction
Below Grade Level  Ask students to make a pictograph showing the levels of the rain forest and the plants that inhabit each level. BL

Answers
1. South Africa
2. Around the Equator is a tropical climate, as one moves north or south it gradually becomes steppe and then desert. Farther south it becomes Mediterranean in the southwest, and marine west coast and then humid subtropical along the southeast coast.

Tropical Climates

MAIN Idea  The region’s location in the Tropics near the Equator influences its climate and vegetation.

GEOGRAPHY AND YOU  Do you live in a region where warm climates dominate? Read to learn about the types of vegetation found in the tropical climate regions of Africa south of the Sahara.

In addition to rainfall, other factors such as ocean currents, prevailing wind patterns, elevation, and latitude often cause great variations in climate and vegetation. The climate map of Africa below shows those effects since much of the region lies in the Tropics and has tropical climate and vegetation areas.

Tropical Wet
Warm temperatures prevail in the tropical wet climate zone, located near the Equator. More than 60 inches (150 cm) of rainfall per year soak the dense forests. Rainfall amounts vary seasonally, but the tropical rain forests do not experience a truly dry season. Daily, rain falls on an amazing number and variety of life-forms.

Shrubs, ferns, and mosses grow together at the lowest level of the rain forest, which rises 6 to 10 feet (2 to 3 m). A layer of trees and palms reaching as high as 60 feet (18 m) tops this undergrowth. Arching over all is a canopy of leafy trees with a maximum height of 150 feet (46 m). Orchids, ferns, and mosses grow among the branches of the canopy, and woody vines link the trees in a tangle.

Soils in the tropical rain forest biome are typically not very fertile because heavy rains leach, or dissolve and carry away, nutrients from the soil.

Hands-On
Chapter Project
Step 2

Taking a Trip Through Africa

Step 2: Preparing for the Trip  Pairs of students continue planning for the trip through Africa they began planning in Section 1.

Directions  Write the Essential Question on the board. Then tell students to look for information in the section text and compare their maps with the map of climate regions in Africa south of the Sahara to determine what they need to pack for their trip. Students should also look for information about vegetation and animal life that will help them answer the Essential Question later in the chapter. Have each pair record their findings and decisions. They should also make a key for their map and color the relevant areas.

Putting It Together  Ask volunteers to explain what they are going to pack and why. Next, have each pair share what they have learned about the Essential Question while preparing for their trip. OL

(Chapter Project continues on the Visual Summary page.)
Nonetheless, various crops are still grown. Bananas, pineapples, cocoa, tea, coffee, and cotton are grown as cash crops on large plantations. As farmers clear more land to grow these crops, the rainforest is seriously threatened. Commercial loggers also diminish the rain forest.

**Dry Climates**

**MAIN Idea** The dry climates of Africa south of the Sahara are located in the north and the south.

**GEOGRAPHY AND YOU** Which regions of the United States have dry climates? Read to identify the problems causing areas of desert to increase in Africa south of the Sahara.

Away from the Equator, tropical climates fade into semiarid steppe areas, which finally give way to the driest climate region of all—desert.

**Steppe**

Separating the tropical dry savanna from the deserts of Africa is semiarid steppe. The table below shows how the steppe is a transition zone between the tropical dry savanna and the desert. In the south, this transition zone extends to the southern tip of the continent. The northern steppe is called the Sahel—literally, “shore” or “edge” in Arabic. This band of dry land extends from Senegal to Sudan.

The Sahel has pastures of low-growing grasses, shrubs, and acacia trees. On average, 4 to 8 inches (10 to 20 cm) of rain falls annually, mostly in June, July, and August. The rest of the year is very dry.

**Desertification**

Over the past 50 years, the Sahel has undergone much desertification. Some scientists claim that this is caused mainly by climate change that brings long periods of extreme dryness and water shortages. Lands managed well during drought periods can usually recover once rains return. Other scientists, however, believe that human land use and animal activities also contribute to desertification.

People strip trees for firewood and clear land for farming, while livestock overgraze the short grasses. As a result, the land is depleted, and topsoil is further eroded, reducing both the land’s productivity and its ability to recover from drought. By 2000, all African countries joined the United Nations Convention to Combat Desertification, committed to enacting laws protecting the environment and promoting sustainable development.

**The Steppe as Transition Zone**

<table>
<thead>
<tr>
<th>Region</th>
<th>Average Temperature</th>
<th>Average Number of Days with Precipitation</th>
<th>Highest Temperature Ever Recorded</th>
<th>Lowest Temperature Ever Recorded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tropical dry: Banga, Central African Republic</td>
<td>79°F 26°C</td>
<td>97</td>
<td>108°F 42°C</td>
<td>46°F 8°C</td>
</tr>
<tr>
<td>Steppe: Abéché, Chad</td>
<td>85°F 29°C</td>
<td>32</td>
<td>120°F 49°C</td>
<td>48°F 9°C</td>
</tr>
<tr>
<td>Desert: Agadez, Niger</td>
<td>84°F 28°C</td>
<td>17</td>
<td>122°F 50°C</td>
<td>30°F 1°C</td>
</tr>
</tbody>
</table>

Source: www.weatherbase.com
Critical Thinking
Making Inferences The primary source describes a winter dawn in the Kalahari. Ask: What is the warmest possible temperature it could have been? (32°F [0°C] because Godwin’s water is frozen) During which months of the year would this experience have happened? (June, July, or August are the winter months in the Southern Hemisphere.)

READING Check Answer: low-growing grasses, shrubs, and acacia trees

Assess

Geography ONLINE
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Summarizing Have students list and describe the various climates of the region.

SECTION 2 REVIEW

Vocabulary
1. Explain the significance of: leach, savanna, harmattan.

Main Ideas
2. How does its location near the Equator influence climate in Africa south of the Sahara?
3. Describe the dry climate regions in Africa south of the Sahara. Where in the region are they located?
4. Use a graphic organizer like the one below to explain the factors that contribute to desertification in the Sahel.

Desertification

Critical Thinking
5. Answering the Essential Question Describe how climate changes as you move away from the Equator.
6. Identifying Cause and Effect In what ways are people affecting Africa’s tropical rain forests?
7. Analyzing Visuals Study the climate map on page 516. Which areas of the region are characterized by highland climates? What physical features correspond to these areas?

Writing About Geography
8. Expository Writing Think about how rainfall affects Africa south of the Sahara. Write a paragraph explaining how precipitation defines climate and vegetation.

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Answers

1. Definitions for the vocabulary terms are found in the section and the Glossary.
2. Much of Africa has either a tropical or a dry climate due to its location near the Equator. Only a small area of southern Africa has midlatitude climates.
3. They are hot and dry with some vegetation adapted to the arid climate. They are located in the north of the region and the south of the region.
4. stripping trees for firewood, clearing land for farming, overgrazing, and drought
5. Tropical climates occur on or near the Equator. As one moves away from the Equator, these climates transition into dry climates.
6. clearing land to grow crops and logging
7. Ethiopia, eastern Africa, South Africa, and central Madagascar; mountains and high plateaus
8. Paragraphs should discuss differences in rainfall in tropical wet, tropical dry, steppe, and dry climates.
**Taking Notes** Challenge students to add at least two other facts under each topic in the Visual Summary. This will help them demonstrate what they have learned from reading the chapter. For example, under the Congo River, students could add that it drops 900 feet (274 m) as it approaches the Atlantic Ocean. Use this as a review activity with partners or as a game challenging students to find additional facts to complete their notes.

**Did You Know?**

Victoria Falls, considered the largest waterfall in the world, is also recognized as one of the seven natural wonders of the world. Slicing the border of Zambia and Zimbabwe, its powerful curtain of water dives 355 feet (108 m) into the Zambezi Gorge at a rate of 546 million cubic meters of water per minute. The falls have been described as ‘Mosi-oa-Tunya’ or ‘the Smoke that Thunders.’ Unlike Niagara Falls in North America, nobody has willingly attempted to ride down Victoria Falls in a barrel.

**Hands-On Chapter Project**

**Step 3: Wrap-Up**

Students will synthesize what they have learned in Steps 1 and 2.

**Directions** Write the Essential Question on the board. Ask a student to underline the most important words in the question. Next, have students name important characteristics of the region’s environment, and list them on the board. Place ideas that relate to the same category, such as climate or landforms, in a column. Then, ask students to name the category to which each type of fact belongs.

**Putting It Together** Continue the process by having students explain how the environment affects the ways Africans live and work. List them on the board. Be sure that students link each effect with the environment. Finally, have each student write a paragraph answering the Essential Question. For extra credit, challenge students to re-write the Essential Question in another way, or to create a new but related Essential Question for another trip through Africa.
CHAPTER 20

ASSESSMENT

Answers, Analyses, and Tips

Reviewing Vocabulary

1. **D** Choices A, B, and C have to do with rivers or water. The word *rift*, which means "crevasse" or "fault," is a hint that can be associated with the crevasse or crack that shifting tectonic plates can leave in the Earth's surface.

2. **B** Students should carefully consider the meanings of the choices and can find the answer through the process of elimination. An estuary is where freshwater meets salt water, a delta is land formed by deposits of alluvial soil at the mouth of a river, and rift valleys are huge cracks in the Earth formed by shifting tectonic plates.

3. **C** Once again, careful reading will eliminate the wrong choices. A dam blocks water. *Blow* refers to wind. To desertify something means to make it very dry with little vegetation. The question refers to a tropical rain forest, which is wet with much vegetation.

4. **A** This question may cause confusion because two of the answers are related and all four imply similar landscapes. Tundra can be eliminated since it is found in mountainous and arctic/subarctic regions; prairie can be eliminated because it is not found in tropical climates. Steppe is a transition zone.

Reviewing Main Ideas

5. **C** Most of Africa is made up of flat, expansive areas of solid rock called plateaus that extend from the coast inland. The edges of the plateaus form dramatic cliffs called escarpments.

6. **D** Of the lakes mentioned, Lake Chad is the only one affected by climate. Students may also associate that Lake Victoria and Lake Tanganyika are two of the world's most active and largest lakes, and are far from extinction.

7. **A** Of all the choices, only the Tropics are in the low latitudes. Polar regions lie at high latitudes.

8. **D** Tornadoes occur on the savanna, and the Sahel is located in the northern steppe, which receives little rainfall. There is no mention of hurricanes in the chapter text. Students should recall that one of the important topics of the section was desertification of the Sahel.

Reviewing Main Ideas

**Section 1** (pp. 510–514)

5. The escarpments near Africa's coasts mark the edge of ________.
   **A** mountains
   **B** rift valleys
   **C** plateaus
   **D** volcanoes

6. An African lake that is threatened with extinction from evaporation, global warming, irrigation, and desertification is ________.
   **A** Lake Malawi
   **B** Lake Victoria
   **C** Lake Tanganyika
   **D** Lake Chad

**Section 2** (pp. 515–518)

7. Much of Africa south of the Sahara lies in the ________.
   **A** Tropics
   **B** middle latitudes
   **C** high latitudes
   **D** polar regions

8. What is the main environmental challenge in the Sahel?
   **A** Rainfall is increasing, leading to serious flooding.
   **B** Hurricanes are becoming more numerous and stronger.
   **C** There is an increase in the number of tornadoes.
   **D** The area has undergone much desertification.
ASSESSMENT

Critical Thinking
Directions: Choose the best answers to complete the sentences or to answer the following questions.

9. What impact did the landforms of Africa have on explorers from Europe?
A It was easy to follow the major rivers far inland.
B Cataracts and a steep escarpment discouraged exploration away from the coast.
C Explorers could easily follow the rift valleys to penetrate the interior.
D Great mountain ranges blocked explorers from many parts of Africa.

Base your answer to question 10 on the map and on your knowledge of Chapter 20.

10. In which part of Africa are there major deposits of oil?
A southern Africa
B northern Africa
C eastern Africa
D western Africa

Need Extra Help?

Have students refer to the pages listed if they miss any of the questions.

Document-Based Questions
Directions: Analyze the document and answer the short-answer questions that follow the document.

David Livingstone was a Scottish missionary and explorer in Africa. Here is his description of the Kalahari Desert.

The quantity of grass which grows on this remarkable region is astonishing . . . It usually rises in tufts with bare spaces between, or the intervals are occupied by creeping plants, which, having their roots buried far beneath the soil, feel little the effects of the scorching sun. The number of these which have tuberous roots is very great; and their structure is intended to supply nutriment and moisture, when, during the long droughts, they can be obtained nowhere else. . . . The natives strike the ground on the circumference of the circle with stones, till, by hearing a difference of sound, they know the water-bearing tuber to be beneath. They then dig down a foot or so, and find it.

—David Livingstone, Missionary Travels and Researches in South Africa

11. How have plants adapted to the heat and dryness of the desert?

12. Describe how the native people of the region find water.

Extended Response

13. Describe what factors have contributed to the desertification of Africa south of the Sahara. What is being done to combat this problem?

14. Exploring the Big Idea
Describe the role that shifting tectonic plates have played in the formation of landforms in Africa south of the Sahara. What types of landforms have been created by these forces?

Critical Thinking
9. B Answer A can be eliminated since escarpments and cataracts made river travel difficult. Though D could be true, some mountains were part of the escarpments. Though C is possible, the rift valleys were located on the east side of the continent and did not penetrate deep into the interior.

10. D Students should read the map to see that the coast of western Africa has a cluster of oil derrick symbols.

Document-Based Questions
11. According to Livingstone, plants adapted to the heat and dryness of the desert by developing deep root systems.

12. Livingstone describes how people strike the ground in a circle until they can detect, through different sounds, where roots are found. The native people dig up the roots because they contain water.

Extended Response

13. Answers will vary but should include human factors such as overgrazing, deforestation, drought, and erosion. Laws have been enacted to protect the environment and promote sustainable development.

14. Answers will vary but should include rift valleys, mountains, volcanoes, lakes, and cataracts.