

## CHAPTER 13 SECTION 1

### Landforms

Europe stretches from the Atlantic Ocean to the Ural Mountains and from the Arctic Ocean to the Mediterranean Sea. Compared to the other continents, Europe is small. Within Europe's small area are a complex variety of landforms, islands, and peninsulas. Major islands include *Great Britain, Ireland, and Iceland*. Major peninsulas include the *Scandinavian, Iberian, Italian and Balkan*.

Europe can be divided into four major landform regions. These regions are the Northwest Highlands, the Northern European Plain, the Central Uplands, and the Alpine mountain system.

The **Northwest Highlands** is an ancient eroded region of rugged hills and low mountains. During the last ice age glaciers scoured the landscapes of Scandinavia and much of the British Isles. Glaciers also carved **fjords** along Norway's coast. Fjords are narrow deep inlets of the sea set between high rocky cliffs.

To the south lies the **Northern European Plain**. This broad coastal plain stretches from France's Atlantic coast all the way to the Urals. Many rivers flow across it before reaching the ocean. Large cities like Paris and Berlin are located on rivers in this region. Its many rivers, short distances, and smooth terrain have long made human contact relatively easy. These features have allowed culture groups to travel, trade and migrate throughout the region.

The third major landform region is the **Central Uplands**. This is an area of hills and small plateaus, with forested slopes and fertile valleys. It includes the Massif Central of France and the Jura Mountains on the French-Swiss border. The Central Uplands are an old eroded region also. The low mountains and hills in the region are often rounded. Many of Europe's productive coalfields lie in the Central Uplands.

The youngest of the four regions of Europe is the **Alpine mountain system**. It includes, the Alps, Europe's major mountain range. The *Alps* stretch from France's Mediterranean coast to the Balkan Peninsula. Many peaks reach heights of more than 14,000 feet, the Alps have large snowfields and glaciers. Avalanches are fairly common in the winter. People have crossed the Alps through mountain passes for thousands of years to trade and travel. Other ranges of Europe are the *Carpathian Mountains* of Czech and Slovakia. The *Apennines* in Italy, and the *Pyrenees* between France and Spain. It is believed that each of these ranges may have been formed by tectonic activity. Collision of the **African and European plates** forced the land to press upward. A subduction zone off the coast of southern Italy and Greece still create powerful earthquakes and volcanoes. Because it lies on a plate boundary, Iceland also experiences volcanic eruptions and earthquakes.

### Water

Europe is nearly surrounded by water. To the south lies the Mediterranean Sea. It is connected to the Black Sea by the narrow straight of *Bosporus*. Geographers consider this the dividing line

between Europe and Asia in the south. The other bodies of water that touch the coastlines of Europe are the Arctic Ocean, North Sea, and the Baltic Sea. The Baltic Sea is frozen about 6 months of the year.

Europe's long, irregular coastline has hundreds of good natural harbors. These harbors are generally located near the mouths of navigable rivers, making Europe ideally situated for trade by sea. A **navigable river** is one that is deep enough and wide enough for shipping inland. Canals have also been constructed to connect interior rivers to the coast. The *Rhine, and the Danube Rivers* stand out among Europe's most important rivers. Many cities and industrial areas line their banks, and barges carry goods along their courses. The Rhine also rises in the Swiss Alps. The Danube begins in the uplands of southern Germany. It flows about 1,800 miles eastward through about nine countries and empties into the Black Sea. Many of the rivers of Eastern Europe are filled with pollution because of the disregard of environmental concerns by communist governments during the Cold War. Since communism no longer exists in these countries because of the collapse of the USSR, cleaning up these rivers is a great challenge.

## CHAPTER 13 SECTION 2

### Climates and Biomes

Europe has three major climate types: marine west coast, humid continental, and Mediterranean.

The **marine west coast climate** is found along northern and western Europe. Frequent storms bring clouds and rain. Rainfall averages 20 to inches a year. Snow and frost can occur in the winter. Temperatures are mostly mild, and cloudy, drizzly and foggy are common.

Areas from interior Norway and Sweden south to the Black Sea have a **humid continental climate**. This climate has four distinct seasons, including a cold snowy winter and mild to cool humid summer. Winters are severe in parts of this climate region. Periodic summer droughts affect Hungary and Romania.

High mountains, particularly the Alps, separate these first two climates from Europe's third major climate region to the south. Southern Europe has a **Mediterranean climate**. This region gets between 10 to 30 inches of a rainfall a year. Most rain occurs during the mild winter. Long, dry and sunny summers are typical.

Smaller climate regions are found in other parts of Europe. A Sub Arctic climate stretches across northern Norway, Sweden, and Finland. The northernmost parts of these countries, along with interior and northern Iceland, have a **tundra climate**. A small humid subtropical climate region is located south and southeast of the Alps. On the plateau of Spain is a **semiarid climate**.

Much of Europe enjoys mild climates. These mild temperatures are a result of the warm ocean current and warm air patterns associated with it, known as the **North Atlantic Drift**.

### Plants and Animals

Human activities have affected Europe's plant and wildlife severely. People there have hunted and cleared lands for farming throughout their history. The growth of cities has also changed the natural environment. Despite these changes, Europe can be divided into four major biomes.

Most of Europe lies within a **temperate forest biome**. Trees such as ash, beech, maple and oak are common.

In southern Europe the **Mediterranean scrub forest** exist because of the drier climate.

Large parts of northern and central Europe lie within the **boreal forest biome**. These northern forests make up most of Europe's remaining woodlands. Evergreen trees, such as pine, spruce, and firs provide most of Europe's timber for building and papermaking.

Far northern Europe has a **tundra biome**. The land in this cold treeless area is frozen most of the year. During the short Arctic summer, the tundra thaws, and many swamps and marshes form. Reindeer and foxes are among the tundra's mammals.

## CHAPTER 13 SECTION 3

### Forest, Fisheries, and Soil

Most of Europe's forestlands were cleared centuries ago. Clearing or overgrazing in ancient times destroyed nearly all of the Mediterranean area's original oak forests. Air pollution and acid rain have destroyed many more trees throughout the continent. Large areas of timber-producing forests exist in limited areas. **Reforestation** efforts have been made to replenish the timber that has been lost to years of over use.

Europeans have made good use of their farmlands. More than half of Europe's land area is used for farming. The best soils are found in the Northern European Plain. Farmers grow a wide variety of grains there and raise cattle, hogs, and sheep. Some of these soils developed from **loess**—fine grained, windblown soil that is very fertile. Such soils can keep their fertility for many years. In southern Europe, alluvial soils are particularly productive. River valleys like the Po in Italy and the Guadalquivir in Spain. River valleys are major farming centers. With the help of irrigation, these soils produce a wide range of crops.

Europe produces many crops, such as large amounts of grapes, olives, potatoes, flowers and wheat. Efficient methods and modern technology have made Europe's crop yields among the highest in the world. Farmers use chemical fertilizers to enrich the soil. They also rotate crops to maintain fertility. Modern machinery is used in planting and harvesting. Europe's former communist countries are behind in agricultural production because of the inefficient management of the communist command economy system.

Fishing has been an important part of the European economy. Europe's best fisheries are located in the North Atlantic and Arctic Oceans and in the North Sea. Coastal waters, where the warm North Atlantic Drift mixes with cold polar waters, are excellent fishing grounds. Iceland, Norway, Spain, and Denmark are major fishing countries.

## **Energy and Minerals**

To meet its current industrial and energy needs, Europe must rely on mineral imports. Europe's technologically advanced economies lack sufficient supplies of critical natural resources, such as oil, iron and other metals.

Europe does have large deposits of coal. Germany, the UK, and Poland have mined coal for hundreds of years. Germany's Ruhr coalfield is one of the world's largest. During Europe's industrial revolution coal and iron were essential to the creation of the steel and manufacturing industries. In the 1900s, oil replaced coal as the most important energy source.

Europe's main oil and natural gas deposits lie beneath the North Sea. These deposits were discovered in the 1960s. The UK and Norway benefit the most from these deposits.

Hydroelectricity is another important energy source. Most of Europe's countries have harnessed their rivers for this form of energy. France also produces ocean tidal power and solar energy. Iceland uses geothermal energy to produce electricity and to heat homes. France, Belgium, Bulgaria and Sweden use nuclear energy. Though there is always a concern over this type of energy use.

Other mineral resources in Europe include iron ore (France, Sweden, Luxembourg) uranium (France); lead and zinc are both found in large quantities in Spain. Marble, a stone used in building and sculpting is mined in Carrara, Italy.