

UNIT 7

Industrialization and Economic Development Patterns and Processes

Chapter 18 *Industrialization and Economic Development*

Chapter 19 *Development and Trade*

Chapter 20 *Changing Global Economy and Sustainability*

Unit Overview

Great Britain was the hearth of the 18th century Industrial Revolution. As people learned to use water power and coal energy to manufacture goods, they increased their agricultural productivity, population, and wealth. In the last two centuries, industrialization has diffused throughout the world.

Measures of Development

Since the start of the Industrial Revolution, people have developed statistical measures to describe changes in society. Some measure the total output of each country, the distribution of income, rates of childbirth, the percentage of people who can read, and the different opportunities available to males and females. Scholars use this information to create models or theories of spatial patterns of economic and social development in countries around the world.

Variations in Development and World Economy

The diffusion of industrialization generally increased trade and interdependence, which improved the standard of living for most people. However, many people lost their jobs, either because of the greater use of machines or the movement of work from one place to another. As people in some countries specialized in particular types of work, an international division of labor emerged. Industrialization also damaged the environment motivating many people to push for more sustainable practices.

ENDURING UNDERSTANDINGS

SPS-7: Industrialization, past and present, has facilitated improvements in standards of living, but it has also contributed to geographically uneven development.

PSO-7: Economic and social development happen at different times and rates in different places.

IMP-7: Environmental problems stemming from industrialization may be remedied through sustainable development strategies.

Source: AP[®] Human Geography Course and Exam Description. Effective Fall 2020. (College Board).

Industrialization and Economic Development

Topics 7.1–7.4

Topic 7.1 The Industrial Revolution

Learning Objective: Explain how the Industrial Revolution facilitated the growth and diffusion of industrialization. (SPS-7.A)

Topic 7.2 Economic Sectors and Patterns

Learning Objective: Explain the spatial patterns of industrial production and development. (SPS-7.B)

Topic 7.3 Measures of Development

Learning Objective: Describe social and economic measures of development. (SPS-7.C)

Topic 7.4 Women and Economic Development

Learning Objective: Explain how and to what extent changes in economic development have contributed to gender parity. (SPS-7.D)

A nation's growth depends, among other factors, on whether and how it educates and integrates its talent. Women make up half of the potential workforce available in any economy, and the efficient use of this talent pool is an important factor for growth, prosperity and competitiveness.

—World Economic Forum, “Gender Parity,” 2016



Source: Wikimedia Commons

Containers can be loaded from trucks or trains and stacked onto large ships via the cranes shown in the images. Containers have reduced break-of-bulk costs dramatically. (See Topic 7.2 for more on containerization.)

The Industrial Revolution

Essential Question: How did the Industrial Revolution facilitate the growth and diffusion of industrialization?

Economic activity and development have brought dramatic changes to the world. **Industry**, the process of using machines and large-scale processes to convert raw materials into manufactured goods, has stimulated social, political, demographic, and economic changes in societies at all scales. Industry requires **raw materials**, the basic substances such as minerals and crops needed to manufacture finished goods.

Growth and Diffusion of Industrialization

Before the 18th century, people made for themselves most clothes, tools, and other items they used. They bought only a few items, often textiles or metal goods, in a **market**, a place where products are sold. What they did buy was usually made by other families working in their own homes who had a contract to make products for a merchant. These small home-based businesses that made goods are called **cottage industries**. These industries depended on intensive human labor since people used simple spinning wheels, looms, and other tools.

Starting in the 18th century, a series of technological advances known as the **Industrial Revolution** resulted in more complex machinery driven by water or steam power that could make products faster and at lower costs than could cottage industries. Because the new machinery was so large and required so much investment money, or capital, manufacturing shifted from homes to factories. The replacement of labor-intensive cottage industry with capital-intensive factory production reshaped not only how people worked, but where they lived and how they related to each other spatially.

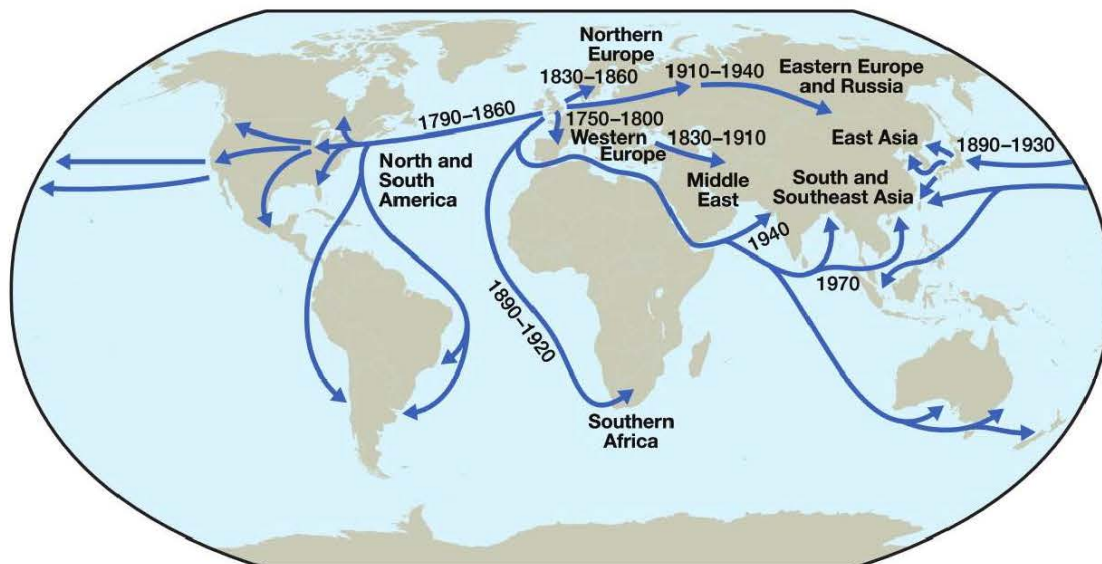
CHANGES IN MANUFACTURING DUE TO THE INDUSTRIAL REVOLUTION		
Characteristic	Cottage Industry	Factory Manufacturing
Scale of Production	Small	Large
Size of Labor Force	One family	Dozens to thousands
Method of Production	Human labor	Machines
Typical Building	House or small workshop	Factory
Capital Investment	Low	Large
Speed of Production	Slow	Fast
Efficiency	Low	High
Market	Local	Local and global

The Industrial Revolution spread throughout the world. However, cottage industries remain important, especially in less-developed countries. Many families survive by producing and selling items such as hand-woven fabric and rugs in both local and global markets. Wealthy consumers are willing to pay more for high-quality handcrafted products than they would pay for mass-produced items.

Diffusion of the Industrial Revolution

Starting in the mid-1700s, the Industrial Revolution diffused rapidly on a regional scale and then a global scale. From Great Britain it moved first to nearby France and the Netherlands. By the mid-1800s, industrialization had spread east to Germany and west to the United States. By the early 1900s, it had reached all of Europe, Japan, parts of China, and South America. Today, most of the world is industrialized.

DIFFUSION OF THE INDUSTRIAL REVOLUTION



The earliest adopters of the industrialization process were the countries closest to Great Britain. Explain the relatively short time it took for the diffusion to much more distant places such as North or South America? Was distance the only factor that determined if industrialization would be adopted by a country?

On the local scale, investors originally considered three main factors in choosing where to build a factory:

- energy resources to provide power, such as rivers or coal deposits
- minerals or agricultural products needed for producing goods
- transportation routes, such as roads, rivers, canals, and ports

As new forms of transportation and electricity were developed during the 19th century, industries became less dependent on the location of local coal supplies and companies could build factories in more diverse locations.

As factories grew larger, its location near a large workforce became more important. Hence, factories began to cluster in cities. These population centers also provided a market for the products made in a factory.

As the Industrial Revolution progressed, improvements in farm machinery and farming techniques—the Second Agricultural Revolution—increased agricultural productivity. Machine power replaced human and animal power. As a result, society needed fewer people to work on farms. These displaced farm workers moved to cities in search of work. Industrialization, then, promoted greater urbanization.

Growth of Cities and Social Class Changes

The growth of cities and factories reinforced each other. Factory work drew people to cities, who provided a market for factory goods. The greater availability of goods attracted more people. For example, London grew from one million people in 1800 to six million in 1900.

Such rapid urban growth brought problems. Old systems for handling human waste, burying the dead, and cleaning up horse manure were overwhelmed. Disease was rampant. Since people burned wood and coal to heat their homes and run factories, air pollution increased to harmful, even deadly, levels. At times, smog caused the normal death rate to double. Over time, people supported stronger government action—such as building sewers and regulating cemeteries—to protect public health.

Industrialization changed the class structure of society significantly. Before industrialization, most people worked with their hands, usually on farms or sometimes in a craft. A tiny elite class of people were wealthy landowners or church leaders. In between these two classes was a small class of merchants, clergy, and others who relied more on their knowledge than on their physical skills. With industrialization, this middle class expanded rapidly. Industry needed factory managers, accountants, lawyers, clerks, and secretaries. In addition, as the demand for workers who could read and write increased, so did the demand for teachers and professors. Class differences were stark:

- In rural areas, the mechanization of agriculture drove people away, but those who were able to stay benefited from the increased productivity.
- The urban working class who were employed in factories had hard and dangerous jobs, lived in crowded conditions in polluted areas, and often could not afford to purchase the products they made.
- People in the expanding urban middle class had more comfortable lives and enough income to purchase the low-cost manufactured goods.
- Some factory owners, bankers, and others in business in urban areas became extremely wealthy.
- Landowners often maintained their control of land, but they lost much of the influence in society to the rising business-oriented class.

Physical Changes in Cities

Cities grew both outward (horizontally) and upward (vertically). Horizontally, improvements in intra-urban transportation, such as trains, cars, and trucks, allowed cities to spread out farther from the downtown core. People could live farther from their workplace and still commute to work easily. At the same time, producers could transport food from the countryside into cities to feed a growing population.

Vertically, the development of elevators, stronger and more affordable steel, and techniques to construct stronger foundations combined to allow for people to construct taller buildings. As taller buildings made city populations more dense, public health measures became increasingly important.

Colonialism, Imperialism, and the Industrial Revolution

The Industrial Revolution built on the earlier rise of imperialism, a policy of extending a country's political and economic power. (See Topic 4.2.) As countries such as Great Britain and France industrialized, they desired to control trading posts and colonies around the world. They also looked to colonies to provide various resources:

- raw materials such as sugar, cotton, foodstuffs, lumber, and minerals for use in mills and factories
- labor to extract raw materials
- markets where manufacturers could sell finished products
- ports where trading ships could stop to get resupplied
- capital from profits for investing in new factories, canals, and railroads

By the early 1900s, several European countries and the United States had colonies around the globe. The development of imperialism made wealthy countries even wealthier, leading to a greater divide between the advanced, industrialized states and the underdeveloped, nonindustrialized states.

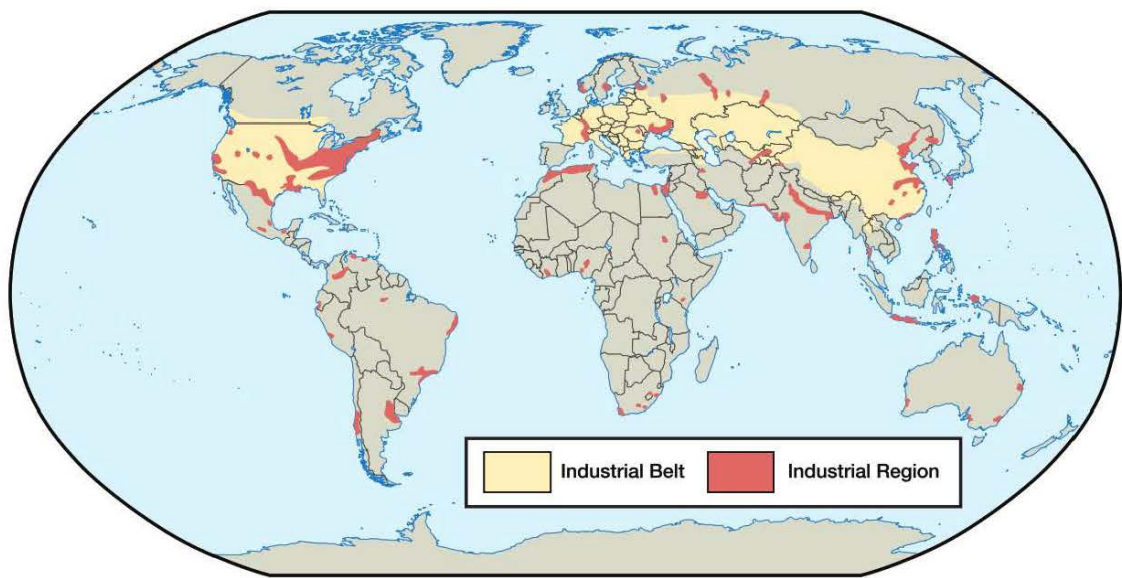
Major Industrialized Regions of the World Today

For most of the 20th century, industrialized regions were often found in large urban areas that provided a significant workforce and along coasts or rivers which provided easy transportation to global markets. Most were part of an **industrial belt** that stretched across the midlatitudes of the Northern Hemisphere. It included the northeastern and midwestern United States, much of Europe, part of Russia, and Japan.

However, near the end of the 1900s, these areas began to **deindustrialize**, a process of decreasing reliance on manufacturing jobs. As a result of improved technology, companies needed fewer employees to produce the same quantity of goods. Further, manufacturing companies transfer production to semiperiphery countries. In places such as China, India, and Mexico, companies could pay workers lower wages and avoid regulations designed to protect

workers and the environment. Workers in the deindustrializing core countries fought against this process, but with limited success. Regions that have large numbers of closed factories are called **rust belts**.

THE INDUSTRIAL BELT AND INDUSTRIAL REGIONS



The industrial belt is found in a strip of the midlatitudes in the Northern Hemisphere. What do most of the industrial regions have in common regarding their relative location? Why are they found in these relative locations?

REFLECT ON THE ESSENTIAL QUESTION

Essential Question: *How did the Industrial Revolution facilitate the growth and diffusion of industrialization?*

Reasons for Growth	Reasons for Diffusion

KEY TERMS

industry	Industrial Revolution
raw materials	industrial belt
market	deindustrialize
cottage industry	rust belt

Economic Sectors and Patterns

Essential Question: What are the spatial patterns of industrial production and development?

For decades, economists grouped jobs into three large categories that included almost all types of work. People either extracted raw resources (farming and mining), processed these materials into usable goods (manufacturing and building), or provided services (teaching and medicine). The category of providing services grew so large that economists divided it further, based on the type of services provided.

Geographers have focused on why some sectors of work are dominant in some regions and other sectors dominant in other regions. Why is any economic activity where it is? As part of this, they use locational analysis to evaluate the optimal location for a business to build a factory or other place of employment. For example, at a global scale, they study why most people in Ethiopia work in the extraction sector while most people in the United States work in the service sector. At the local scale, they study why one city has more jobs in software development than another.

Economic Sectors

Today, economists commonly divide a country's workforce into five sectors. The three main sectors are primary, secondary, and tertiary, with quaternary and quinary being additional sectors that were once part of the tertiary sector.

TRADITIONAL SECTORS OF THE U.S. ECONOMY		
Sector and Focus	Examples	Economic Characteristics
Primary extracting natural resources from the earth	<ul style="list-style-type: none"> Farming Mining Fishing Forestry 	<ul style="list-style-type: none"> Dominated the economy until the late 1800s Includes many high-risk jobs A small part of today's economy Few high-paying jobs Most jobs require physical skill
Secondary making products from natural resources	<ul style="list-style-type: none"> Manufacturing Building 	<ul style="list-style-type: none"> Significant growth from the 1840s to the 1960s Wages vary greatly
Tertiary providing information and services to people	<ul style="list-style-type: none"> Retail sales Medicine Housekeeping 	<ul style="list-style-type: none"> A small part of the economy until the mid 1900s Most people in the U.S. labor force today Wages vary widely

ADDITIONAL SECTORS OF THE U.S. ECONOMY		
Sector and Focus	Examples	Economic Characteristics
Quaternary managing and processing information	<ul style="list-style-type: none"> Financial analysis Software development Data science 	<ul style="list-style-type: none"> Small percentage of employees Most jobs require advanced education or technical skills High wages Considered part of the tertiary sector until recently
Quinary creating information and making high-level decisions	<ul style="list-style-type: none"> Research Top managers in corporations or government 	<ul style="list-style-type: none"> Very small percentage of employees Very high income Decisions can affect millions of people Considered part of the tertiary sector until recently

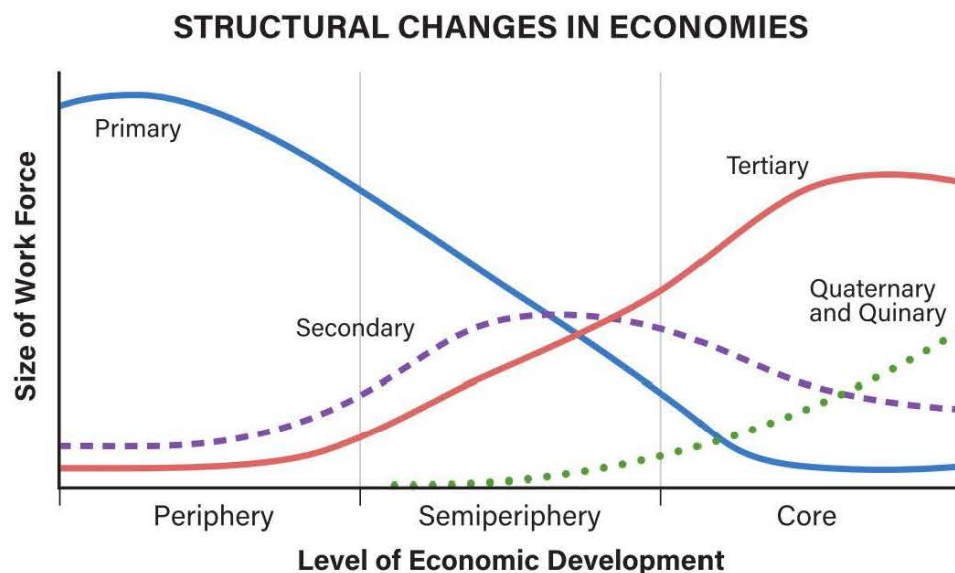
Identify which sector of the economy each of the following jobs best fits?

A) Architect, B) Tailor, C) Fisher, D) Assembly line worker at a food processing plant, and E) Chief Executive Officer of the Microsoft Corporation

Employment Sectors and Economic Development

In 1800, nearly everyone in the United States worked in the primary sector, mostly in agriculture. As the country industrialized, the agricultural sector became mechanized and efficient enough to free up workers for other jobs, and the demand for people in the secondary sector increased. The primary sector began to decrease. Today, it is less than 5 percent. Employment in the secondary sector grew until it reached a peak in the 1950s, when it began to decline.

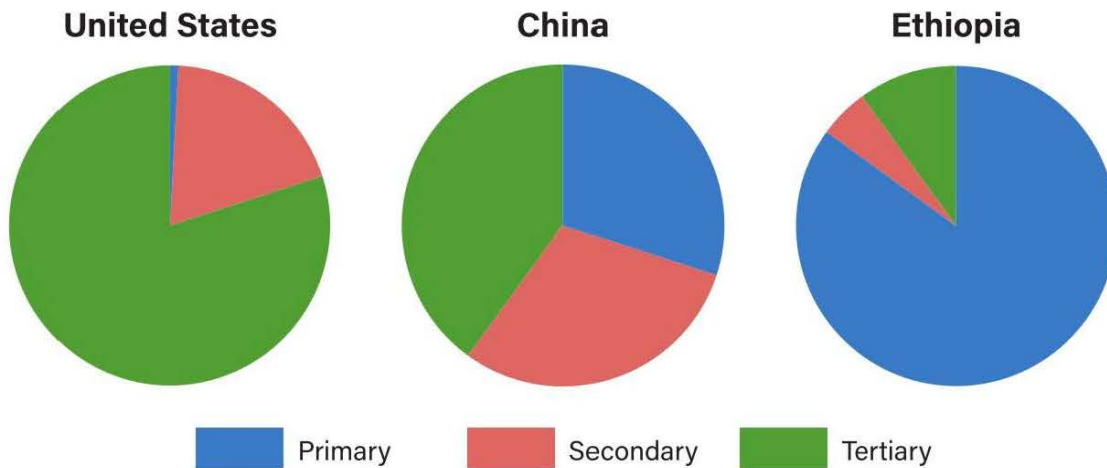
Since then, the economy has become *postindustrial*. (See Topic 7.6.) That is, most job growth has been in the tertiary sector. The shifts in the U.S. economy reflect what has happened in most highly industrialized economies today.



Division of labor varies by level of economic development. What happens to the percentage of workers in each sector of the economy as a country industrializes?

Because the distribution of labor by sector reflects industrialization, countries today have very different mixes in their economies. The following graph shows the percentages of people employed in each of the three sectors for Ethiopia, China, and the United States.

LABOR FORCE BY SECTOR (of selected countries)



The composition of the labor force changes as the level of economic development changes. Over the next 25 years will China's graph change to look more like Ethiopia's or the United States? Why do you think so?

The Multiplier Effect

As part of this shift, countries become wealthier because wages in the secondary sector are higher than those in the primary sector. In addition to higher wages, the secondary sector jobs also have a large **multiplier effect**, the potential of a job to produce additional jobs. The secondary sector has the greatest multiplier effect of all the sectors. For example, when an auto manufacturer expands a plant and adds 100 new jobs in a community, the new workers will have more money to spend on food, clothes, and movies, leading to the expansion of other businesses and jobs. Economists estimate that every dollar of demand for manufacturers' goods generates \$1.92 of demand for other services and products. In comparison, the respective figures for retail and wholesale activities are \$0.54 and \$0.58.

The multiplier effect also works in reverse. For example, over the past four decades in Flint, Michigan, General Motors has shut down several plants. Because of the reverse multiplier effect, far more people than just GM workers lost their jobs.

Governments in deindustrializing regions often attempt to replace lost manufacturing jobs with new quaternary and quinary jobs. Both types of jobs pay higher-than-average wages, and both can have a multiplier effect. Pittsburgh has used quaternary jobs to drive its rapidly growing economy. As research and high-tech jobs flowed in, entertainment, tourism, and education grew. One challenge of shifting from manufacturing to quaternary jobs is that many of the displaced workers do not possess the skills required for the new jobs. As a result, the displaced workers may end up in the expanding

tertiary sector, but usually at less pay than both secondary and quaternary sector jobs.

Theories on Industrial Location

Geographers have developed many models explaining the geographic distribution of economic activities. Because a model focuses on the key factors, it is useful for making predictions about how changing one factor affects the entire process.

Weber's Least Cost Model

In 1909, the secondary sector was growing rapidly in Europe and the United States. German economist Alfred Weber developed an influential theory, known as the **least cost theory**, to explain the key decisions made by businesses about where to locate factories. Weber proposed that factory owners would locate their factories where they could minimize their total costs by balancing three factors:

- minimizing transportation costs, such as getting raw materials to the factory and moving finished products to where they will be sold
- minimizing labor costs, such as the wages and salaries of employees
- maximizing **agglomeration economies**, the spatial grouping of several businesses to share costs, such as an access road to a public highway or development of a workforce with special skills

The Locational Triangle

Weber's model can be shown with a **locational triangle**. The three points of the triangle are the market for a good and two resources needed to make the good.

Bulk and Industrial Location Transportation costs were often closely related to the bulk (weight and size) of the objects being transported. Weber observed that some raw materials lose bulk during processing and some do not. For example, copper is embedded in heavy rock when first mined, but it loses bulk as it is processed. So copper production is an example of a **bulk-reducing industry**. These types of industry are also known as weight-losing, raw material-oriented, or raw-material-dependent industry.

Since transporting the extracted material is more expensive than transporting the finished product, a company can save money by moving production close to the sources of that raw material. It does not need to pay the cost of shipping the full weight of the material when only part of it is needed. Most mining, lumber, and agricultural industries are bulk-reducing. This helps explain why states known for their agriculture, such as Iowa, often have a significant number of jobs in food processing facilities.

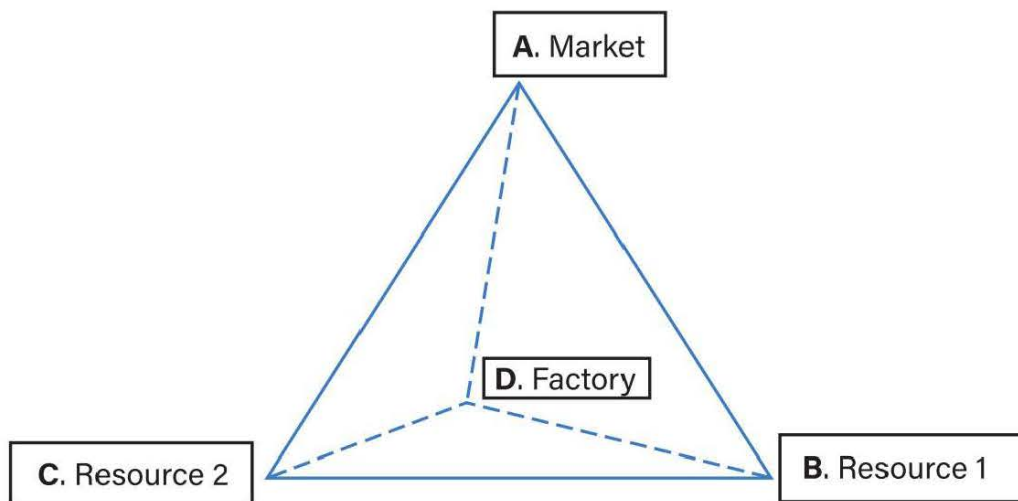
In contrast, soft drinks become bulkier as processing occurs. The heaviest component of a soft drink is water. Since water is ubiquitous (widely available),

companies try to add it as close to the market as possible, rather than pay to ship the weight of the water. These factories usually locate close to the market and are considered **bulk-gaining industries** (or weight-gaining, market-oriented, or market-dependent industries).

Products are commonly made of multiple bulk-reducing raw materials. Based on a locational triangle, these relationships can be identified:

- The manufacturing site (D) will be somewhere between the locations of the two raw materials (B and C).
- The intermediate location will be closer to the one that loses the greater percentage of its weight (C in this case).
- The finished product would then be shipped directly from the processing facility (D) to the market (A).

WEBER'S LOCATIONAL TRIANGLE



Weber's locational triangle. Considering the location of the factory at D relative to the two resources (B and C), which of the two resources loses the greater percentage of its weight when processed?

Sometimes the cost savings from either cheaper labor or from agglomeration economies could be greater than the savings derived from locating at the cheapest spot relative to transportation costs. In these cases, Weber recognized that business owners would benefit by locating where these other costs were less.

Applying Weber's Theory Like other models that simplify reality, Weber's model had the benefit of focusing attention on key parts of a complex process. However, this benefit came with limitations. In response to these limitations, later scholars refined Weber's model by adding other considerations to it. However, the basic model remains useful. It recognizes patterns that can help people make decisions about the spatial distribution of factories, offices, and all types of business that employ workers.

COMPARING WEBER'S THEORY AND REALITY

Issue	Weber's Assumption	Real Conditions
Uniformity of Area	The area considered is an isotropic plain, which means that human and physical geographic features are uniform throughout an area.	Isotropic plains rarely exist. Mountains, densely populated urban areas, and other features can alter the transportation costs.
Labor	Sufficient labor is available in fixed locations and it is immobile.	Automation reduces the need for labor. Labor is relatively mobile.
Raw Materials	Raw materials are found only in certain fixed locations.	Raw materials are often available in many locations. The <i>substitution principle</i> allows for alternative inputs.
Number of Products and Markets	There is one good produced, and it is for a single market in a fixed location.	Goods are sold in more than one location. Globalization may result in numerous markets.
Transportation Costs	Transportation costs are directly related to the distance of travel and to the weight of the items.	Cost per mile may decrease as the distance increases. <i>Space-time compression</i> can reduce the overall cost of transportation.
Influences on Location	Economic factors dominate the decision about where to locate a factory.	Emotional factors, such as tradition, a desire to have the factory close to where the owner lives, or the presence of existing facilities can influence where a factory is opened.
Significance of Costs	Owners want to minimize costs.	Owners maximize revenue and establish predictable future costs to generate profit.

Labor Costs

Weber's original least cost model did not differentiate among different types of labor. A company in a **labor-oriented industry**, or **labor-dependent industry**, is highly dependent on a workforce and will want to be near a source of those workers. Companies more dependent on a large quantity of labor will try to locate near a community with an available potential workforce. High-tech companies that depend on highly skilled workers in the computer or engineering fields often locate close to major universities.

Importance of Energy

The history of manufacturing demonstrates the importance of a source of power for machinery. The type of power influenced where factories were built:

- Waterpower was not mobile, so early mills and factories were located on streams and rivers.
- Coal could be transported, so companies had wider options about where

to locate factories. However, coal is bulky and expensive to transport. So, companies that needed vast quantities of coal also tried to locate near coalfields. Coal could also power a mobile engine, which made railroads practical. Companies became less dependent on water transportation.

- With the development of electricity in the late 19th century, power became even more mobile. It could move through wires at low costs for hundreds of miles so, the location of energy sources became less important.

Aluminum production relies on the raw material of bauxite, but it is an energy-oriented industry. Companies locate processing plants near low-cost sources of energy and ship the bauxite to the plant rather than process it near a mine where energy costs are high. Low-cost hydroelectricity in Canada and geothermal-electricity in Iceland results in large-scale aluminum processing in both countries.

Bulk, Containerization, and Transportation

The cost of shipping materials decreased dramatically in the last two centuries because of improved technology and methods. As the following table shows, various modes of transportation have various benefits.

COMPARISON OF TRANSPORTATION TYPES			
Mode	Speed	Capacity	Per Unit Cost
Airplane	High	Low	High
Train	Medium	Large	Low
Truck	Medium	Low	Medium
Pipe	Medium	Large	Low to Medium
Ocean Ship	Slow	Large	Low
River Barge	Slow	Medium	Medium

In addition to new technology, people have developed systems for speeding up the **break of bulk**, the procedure of transferring cargo from one mode of transportation to another. This is achieved through **containerization**, the system in which goods are loaded into a standardized shipping unit. The containers are **intermodal**, meaning they can be carried on a truck, train, ship, or plane. For example, a container might be loaded in a computer factory in China and not unloaded until after it has been carried by train to a port on the coast, transported across the ocean to the United States on a ship, taken by a truck to Dallas, and then finally delivered to a warehouse. By making transportation more efficient, additional regions of the world have been involved in the global trade network.

Significance of Government

Government policies and political stability influence location decisions in many ways. Tax dollars pay for much of the transportation network. Companies prefer to locate in countries and communities that are safe and peaceful, and have

predictable enforcement of laws and regulations. Additionally, governments from the local to the national scale offer tax breaks, subsidies, and other incentives to encourage companies to locate their factories in specific areas.

Other Locational Considerations

One refinement to Weber’s theory has been to allow for differences in industries. For example, the cost of raw materials is more influential for a steel plant than it is for a factory making high-end clothing.

Businesses use a hierarchy of locational factors in choosing where to build. The table below uses the example of a new factory being constructed in the United States that will market its product both nationally and globally. The primary location factors are used to pick a general region of the country (e.g. Southeast or state). Secondary factors are used to narrow down the location to a more specific location, such as a particular metropolitan area. Finally, another group of factors may be used to determine the exact site of the factory within a particular metropolitan area.

FACTORS IN LOCATING A MANUFACTURING FACILITY		
Scale of Analysis	Example	Examples of Site or Situational Factors
National	Southeastern United States	<ul style="list-style-type: none"> Proximity to the market of the densely populated northeastern United States Proximity to raw materials Availability of sufficient labor with the right mix of skills Lower than average wages for the United States Access to global transportation network through the Atlantic Ocean and the Panama Canal Adequate and affordable supply of power
Regional	Charleston, South Carolina	<ul style="list-style-type: none"> Favorable government regulations such as tax incentives Agglomeration economies from nearby factories Access to global and national transportation networks: Large airport, container ship port, 2 major rail lines and 3 interstate highways Local universities and tech schools provide skilled workers Lower than average energy costs for the United States High quality of education, recreational, affordable housing and medical facilities
Local	Industrial park site beside harbor	<ul style="list-style-type: none"> Large, flat piece of land that is easy to build on Adequate water and sewer lines Waterfront access and a dock available for ships Rail spur line connecting to the main rail system Good road system connecting to major highways and airport Adequate space for easy truck loading and unloading Adequate parking space for employees

other geographers have started with other assumptions. August Lösch assumed that businesses would maximize profits, even if it required higher costs. Harold Hotelling focused on locational interdependence, meaning that businesses choose a location based partially on where their competitors were located.

Additional Locational Considerations

In addition to the factors described above, other factors can shape locational decisions of other sectors of the economy. These refinements show how companies have become more flexible about their locations.

Online Businesses The development of high-speed internet service greatly increased online retail selling. Since some businesses don't rely on face-to-face interactions, they can be based anywhere. However, the location of distribution centers that fulfill orders need access to transportation systems and markets.

Companies that provide informational services, such as call centers, can locate their offices anywhere with good communications systems and a group of trained people who speak the language of their customers. Over the past two decades, hundreds of call centers that serve U.S. customers have been built in rural areas of the United States and Canada, as well as in low-wage countries such as India and the Philippines. However, because locational demands are minimal, these businesses are **footloose**, meaning they can pack up and leave for a new location quickly and easily.

Prestige To signal its prominence and wealth, a corporation might want to locate its main office for its top executives on the expensive upper floors of a skyscraper in a large city. These types of spaces, known as **front offices**, are designed to impress clients. However, the company might decide to locate the rest of its employees in less expensive office spaces, known as **back offices**.

Locational Decisions and World Systems Theory

On a global scale, decisions about where to locate factories, offices, and other businesses shape the wealth and power of countries. Economic historian Immanuel Wallerstein developed what is known as World Systems Theory. (See Topic 7.5.) He grouped countries into three categories:

- Core countries are highly industrialized and wealthy. Examples include the United States, Japan, Australia, and most of Europe. They have strong government support for economic growth, so businesses often locate their quaternary and quinary sector workers in these countries.
- Semiperiphery countries are those in the process of developing industry but are less wealthy than core countries. Examples include China, India, Brazil, and Mexico. Companies often locate factories in semiperiphery countries. As these countries develop, skills and wages increase, so they add more tertiary sector jobs and lose secondary sector jobs to lower-wage countries.

- Periphery countries are more reliant on producing raw materials than on industry. Examples include Bangladesh, Bolivia, Cambodia, and most countries in Africa. Poor infrastructure makes it difficult for these countries to attract jobs in any sector other than the primary sector.

REFLECT ON THE ESSENTIAL QUESTION

Essential Question: *What are the spatial patterns of industrial production and development?*

Identify the Three Elements of Weber's Model	Description of Each Element of Weber's Model

KEY TERMS

primary sector	bulk-gaining industries
secondary sector	labor-oriented industry
tertiary sector	(labor-dependent industry)
quaternary sector	break of bulk
quinary sector	containerization
multiplier effect	intermodal
least cost theory	footloose
agglomeration economies	front offices
locational triangle	back offices
bulk-reducing industries	

Measures of Development

Essential Question: What are social and economic measures of development?

The decisions by companies about where to locate factories, call centers, and other businesses shape each country's economic development. In addition, countries make decisions that affect their own prosperity. The opening quotation of the chapter highlights a key issue in making progress: using the talents of all members of society. Even into the 21st century, many countries restrict opportunities for ethnic minorities and women which slows economic progress. Having measurable data regarding the opportunities for all groups allows people to compare success of development attempts in various regions.

Measures of Development

Geographers use several statistics to indicate the overall wealth of a country and its people. Three of the most common are Gross Domestic Product (GDP), Gross National Product (GNP), or Gross National Income (GNI). These vary slightly, based on issues such as whether money earned by a U.S. citizen working in Korea should be credited to the United States or to Korea. However, they are all attempts to measure the total output of a country.

GNP and GNI The dollar amount of all goods and services produced by a country's citizens in one year is measured in the **Gross National Product (GNP)** and the **Gross National Income (GNI)**. These terms are very similar and often used interchangeably. They involve the money generated by citizens and businesses of a country, regardless of where the citizens are, or live, when money is earned. For example, the income of American citizens working in South Korea and the profits from an American-owned factory in Mexico would both count as part of the United States' GNP and GNI. The money made by Mexican migrant workers in a foreign-owned factory on U.S. soil would not count as part of the United States' GNP or GNI.

GDP The dollar amount of all final goods and services produced within a country in one year is the **Gross Domestic Product (GDP)**. GDP is based more upon geography in the sense that it involves money generated by any business or person within a country. Only money earned in the United States, regardless of who earns it, will be used to calculate the United States' GDP. It does not matter if the money stays in the country where it was earned—the key is that the money was generated within the country. For example, the income earned by Mexican migrant workers, or the profits from a foreign-owned factory on U.S. soil, would count as part of the United States' GDP. This is true even if the

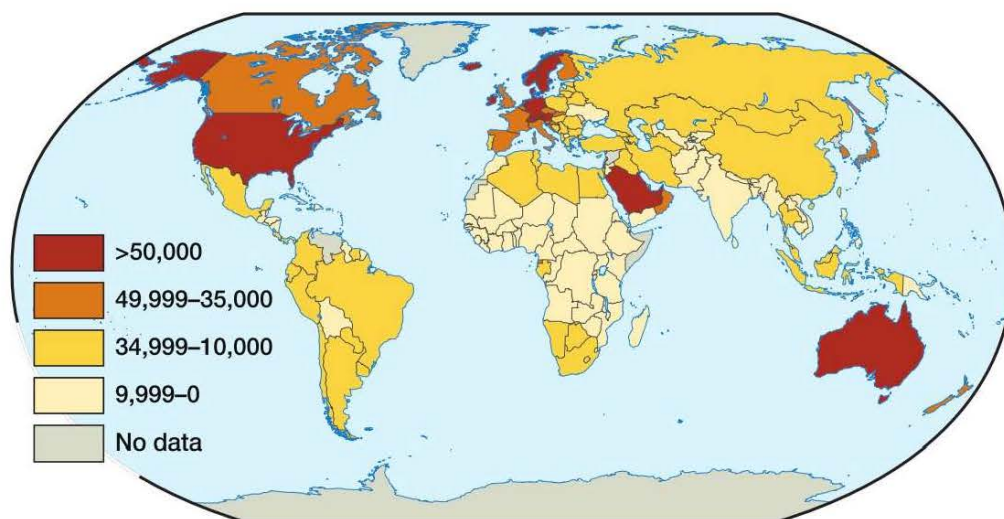
migrant workers sent much of their earnings back to family members in their home countries as **remittances**, or the profits from a foreign-owned company were leaving the country and going back to the home country.

Making Statistics More Useful To make comparisons among countries more useful, these statistics are adjusted in several ways:

- Countries use different currencies, so amounts are usually converted into U.S. dollars to make comparisons easier.
- The total size of a country's economy influences the total size of its output. To adjust for the number of people in a country, each country's total output can be divided by the country's total population. This produces an amount per person, referred to as **per capita**. For example, in 2019, the United Kingdom and India has similar total GDPs of approximately \$2.9 trillion but very different GDPs per capita. In the United Kingdom, it was about \$39,000. In far more populous India, it was about \$1,900.
- The prices people pay for identical goods varies from country to country because of transportation costs, the value of its currency, and other factors. To adjust for the variations in the prices of goods in various countries, economists use **purchasing power parity (PPP)**, a measure of what similar goods cost in different countries. For example, in 2016, the same collection of goods that cost \$1,000 in the United States, cost \$590 in the Czech Republic and \$1,620 in Switzerland. So, people with the same income in these three countries could afford more goods in the Czech Republic than in the other two countries.

All three measures of development are based upon money and it is generally accepted that the countries with the high GDP/capita, GNP/capita, or GNI/capita are wealthy countries and therefore highly economically developed, and those with low values are poor countries and not as well developed.

GDP (PPP) PER CAPITA, 2018



Source: Wikimedia Commons

There is a tremendous range of wealth in the world. In terms of the relative location, what do many of the countries in the lowest categories have in common? Explain how the relative location of these countries results in their low GDP per capita.

Terms of Development

The various economic measures reflect a continuum of the relative wealth and development among countries. People use various systems to categorize countries on this continuum. Each system focuses on slightly different traits of countries, so it uses slightly different terms. However, systems divide countries broadly into low-end, middle-range, and high-end categories. The table below summarizes some of these systems. World Systems Theory and Stages of Economic Growth will be discussed in more detail in Topic 7.5.

COMPARING TERMS FOR LEVELS OF DEVELOPMENT				
System	Low End		Middle Range	High End
Economic Level (based on GDP/capita)	Low income		Middle income	High income
Economic Development (based on overall economic characteristics)	Developing economies		Emerging economies	Advanced economies
Level of Industrialization (based on amount of industry)	Nonindustrialized		Newly industrialized country (NIC)	Postindustrial economy
Human Development Index (based on economic and social factors)	Low HDI		Medium HDI	High and very high HDI
World Systems Theory (based on the role in the world economy)	Periphery country		Semiperiphery country	Core country
Stages of Economic Growth (based on types of economic activity)	Stage 1: Traditional society Stage 2: Precondition for take-off		Stage 3: Take-off	Stage 4: Drive to maturity Stage 5: High mass consumption
Income Classification (World Bank designation)	Low income	Lower-middle income	Higher-middle income	High income

The vast number and variety of terms related to levels of development indicate the challenges of both trying to measure development and categorizing it. Suggest a reason why the Income Classification terms recently adopted by the World Bank can be considered as an improvement over the other sets of terms.

Other Measures of Economic Development

In addition to money, other economic variables are often used to determine a country's level of development. These include the sectoral structure of the economy, income distribution, the use of fossil fuels and renewable energy, and literacy rates.

Sectoral Structure of the Economy

The least-developed countries in the world have higher percentages of their labor force in the primary sector. (See Topic 7.2.) In contrast, more developed countries have higher percentages in the tertiary sector.

Another way to analyze an economy is to distinguish between the formal and the informal sectors. The **formal sector** is the portion of the economy that is monitored by government, so people in it follow regulations and pay taxes. This is the portion of economic activity measured by GDP, GNP, and GNI. The **informal sector** is the portion of the economy that is not monitored by government. It includes several types of economic activities:

- Some activities are done without any pay, such as cleaning your own house or cooking meals for a friend who is sick. Similar services done for money are part of the formal economy.
- Some activities are legal if reported to the government, but are often not reported. For example, restaurant workers can legally accept tips, but not reporting the income from tips on a tax return is illegal.
- Some activities are always illegal, such as drug dealing and identity theft.

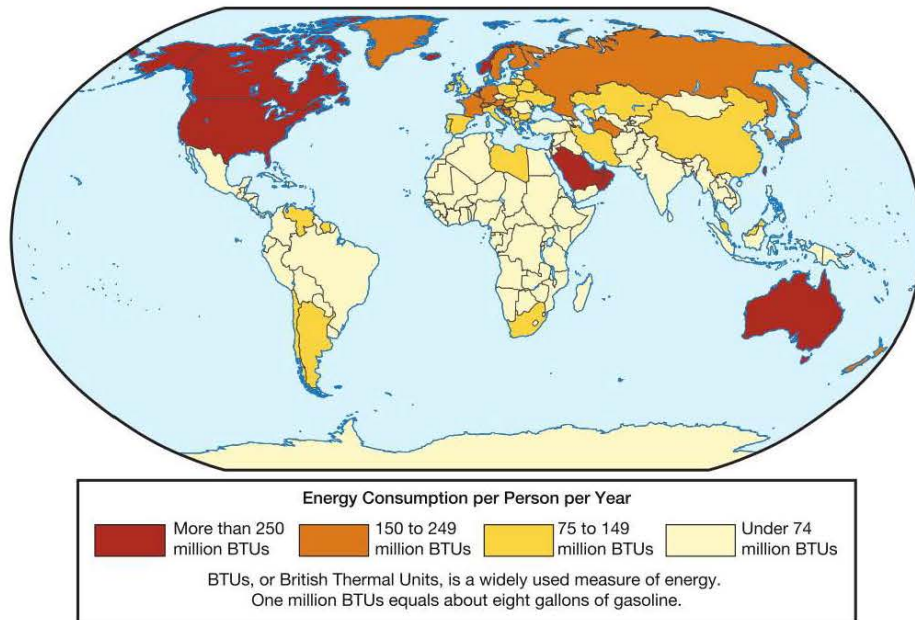
The informal sector is sometimes called the underground economy or the shadow economy. For many people in poor countries, participating in the informal sector allows them to survive. In general, the lower the level of development, the higher the percentage of workers involved in the informal sector. In some countries, it probably includes over half of economic activity. Economists who study the shadow economy estimate that it accounts for about 10 percent of the U.S. economy.

Energy Consumption

As people become more prosperous, they consume more because they can afford to purchase more goods and they live longer. For example, the United States includes about 5 percent of the world's population but consumes about 20 percent of all resources. The spatial pattern of consumption of energy is shown in the map on the following page. At current rates of consumption, a baby born in the United States will consume in his or her lifetime more than 200 times the energy resources as will a baby born in Bangladesh.

While the spatial pattern of consumption is strongly skewed toward the developed world, the environmental impact of the consumption is spread more broadly. Many natural resources used to manufacture goods are extracted and processed in semiperiphery countries and then consumed in the core countries. Consequently, the problems with mining and manufacturing plague poor countries. For example, mining is among the most dangerous jobs in the world, and manufacturing is responsible for significant air pollution. However, problems with using products, such as waste disposal, are more common in wealthy countries.

ENERGY CONSUMPTION AROUND THE WORLD



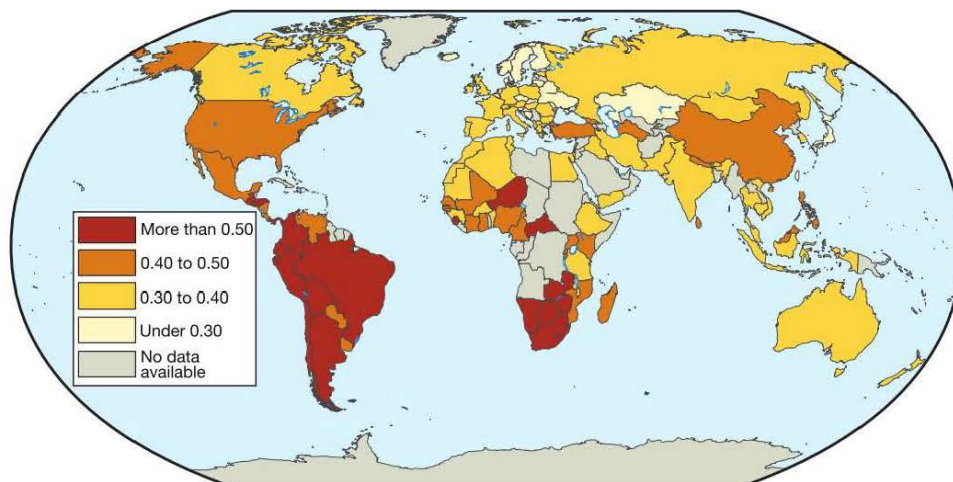
What regions of the world use the most and least amounts of energy?

Income Distribution

While per capita measures of wealth are useful for comparing countries, they do not reflect the distribution of wealth. South Africa and Paraguay have similar levels of GDP per capita but very different distributions of wealth. Paraguay has a much higher percentage of middle-income people, while South Africa has more people who are either very wealthy or very poor.

One measure of the distribution of income within a population is the **Gini coefficient**, sometimes called the Gini index. The values range between 0 and 1. The higher the number, the higher the degree of income inequality. A Gini coefficient of 0 would mean the population had no inequality—everyone's income was exactly the same. A Gini coefficient of 1 would indicate total inequality—one person had all the income in a population and everyone else had none.

GINI COEFFICIENT BY COUNTRY, 2017



What connection is there between the size of the middle class, industrialization, and the Gini coefficient?

In general, periphery and semiperiphery countries have higher Gini coefficients than do core countries. Often, this reflects the small number of middle-income people in a periphery and semiperiphery country.

Patterns of Economic Development

The spatial pattern of inequality reflects more general patterns of economic development. At a global scale, some regions are wealthier than others.

Africa and South America Many African states have growing economies, but average incomes remain low compared with more-developed countries. South America has both middle- and low-income countries. These continents account for about 20 percent of the world population but only about 8 percent of global GDP.

Asia The largest income gains in the past five decades have been in Asia. First Japan, and then South Korea, Hong Kong, and Singapore, adopted policies of strong government support for education and business, which promoted prosperity. More recently, China and India have shown impressive economic developments. Asia accounts for about 60 percent of the world population and about 37 percent of global GDP.

North America and Europe These regions have been relatively prosperous over the past century. With about 16 percent of the world population, they produce about 55 percent of global GDP. Western Europe and the United States have been the wealthiest parts of this region. Central America is mostly middle income with Mexico and Costa Rica becoming more prosperous.

Uneven Development at the Regional Scale Development can be very uneven within countries. In general, rural or peripheral regions of a country are often less developed than core urban areas. In China, the three wealthiest provinces are along the heavily urbanized Pacific Coast, while the poorest provinces are all in the heavily rural western region.

Social Measures of Development

Relying on just one statistic, or “single numberitis,” is not a reliable way to understand a country’s level of development. Several noneconomic factors also reflect development.

- The total fertility rate (see Topics 2.4 and 2.8) is the number of babies a woman is expected to have in her lifetime. It shows a negative or inverse correlation with wealth and development. That is, as income and development goes up, total fertility typically declines.
- The infant mortality rate (see Topic 2.4) is the rate at which babies die before the age of one. It also has an inverse correlation with development.
- **Life expectancy**, the number of years a person is expected to live, has a positive correlation with development. Life expectancy is also related to the availability of adequate health care. Poor countries that have invested in health care have increased their life expectancy.

- The **literacy rate** is the percentage of population that can read and write, usually at an 8th grade level or higher. In 2015, it topped 90 percent of the world population and 99 percent in highly developed countries. Most who were not literate were females living in less-developed countries.

The Gender Gap

Differences in the privileges afforded to males and females in a society are the **gender gap**. The size of the gender gap varies tremendously among countries. These differences might appear in educational opportunities, employment options, wages, voting rights, health care, political empowerment, property rights, the ability to drive a car, inheritance rights, or the right to make contraceptive decisions.

Gender Inequality Index (GII)

Since 2010, UN's Human Development Report has reported on the **Gender Inequality Index (GII)**, a composite measure of several factors indicating gender disparity:

- Reproductive health, which includes maternal mortality rates (death of a mother during birth) and adolescent (under 19 years old) fertility rates
- Empowerment, which includes the share of government seats held by each gender and the proportion of adult females and males with at least some secondary education
- Labor market participation, which includes the labor force participation rate of female and male populations aged 15 years and older

The composite score is a measure of the percentage of potential human development lost due to gender inequality. The table belows the GII for Switzerland, the United States, and Yemen. The GII for Switzerland indicates that the country lost only 2.5 percent of its potential human development as a result of gender inequality in 2019, while Yemen lost 79.5 percent.

GII WORLD RANKINGS, 2019 (for selected countries)		
Country	Rank in World	GII
Switzerland	1	0.025
United States	46	0.204
Yemen	162	0.795

Source: UN Human Development Report, 2019

The GII varies greatly among countries of different development levels. In which of these three countries would you expect the maternal mortality rate and the adolescent fertility rates to be the lowest?

A closer examination of data used to determine the GII for Switzerland, the United States, and Yemen reveals the discrepancies among the variables—shown in the table on the next page. Of particular significance are the share of seats in parliament and labor participation value. Women in Yemen are severely underrepresented in their governments, as well as in the labor force.

DIFFERENCES AMONG GII DATA, 2018 (FOR SELECTED COUNTRIES)			
2018 Values	Switzerland	United States	Yemen
Maternal Mortality Rate (Deaths/100,000 live births)	5	19	385
Adolescent Birth Rate (Births/1,000 for women ages 15–19)	2.8	19.9	60.4
Share of Seats in Parliament (Percent held by women)	29.3	23.7	0.5
Population with Some Secondary Education or More (Percent for ages 25 and older)	Female: 96.4 Male: 97.2	Female: 96.1 Male: 96.0	Female: 19.9 Male: 35.5
Labor Force Participation Rate (Percent for ages 15 and older)	Female: 62.6 Male: 74.1	Female: 56.1 Male: 68.2	Female: 6.0 Male: 70.8

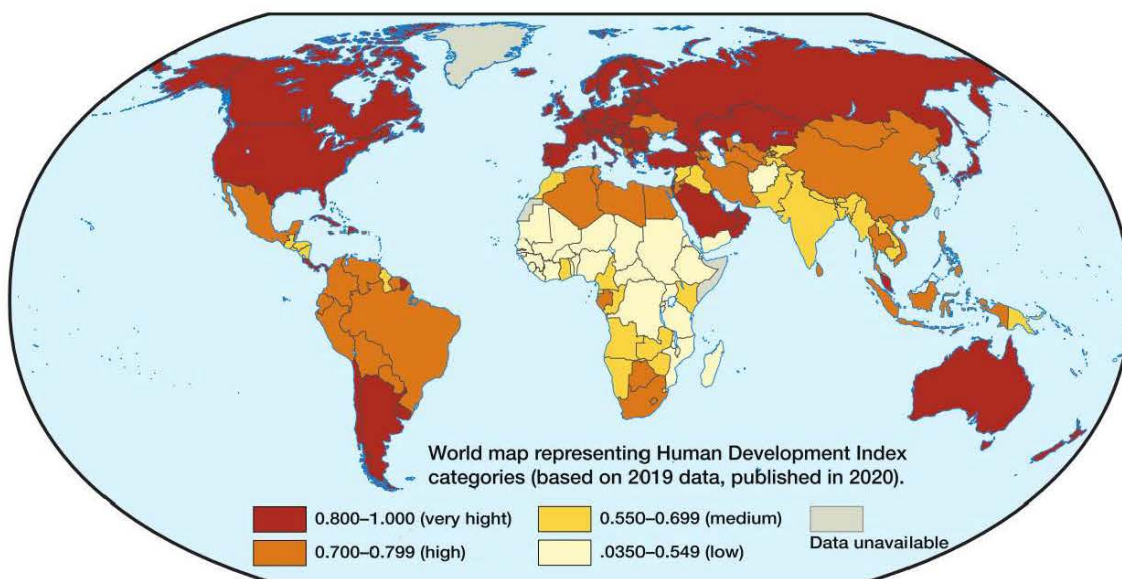
Source: UN Human Development Report, 2019

Notice the very large differences among the data for these countries. Where would a female have the greatest opportunity to study and to potentially earn a seat in the country's parliament?

The Human Development Index (HDI)

Since money alone does not reflect human well-being, in 1990, a group of researchers led by Pakistani economist Mahbub ul Haq released an alternative measure of development. The **Human Development Index (HDI)** combines one economic measure (GNI per capita) with three social measures (life expectancy, expected years of schooling, and average years of schooling). The composite score for each country will range between 0 and 1, with the higher values representing greater levels of development.

HUMAN DEVELOPMENT INDEX, 2018



Source: Wikimedia Commons

The majority of countries with the highest HDI scores are core countries. Which continent has the most countries with very low HDI?

While most countries rank similarly on GNI per capita and HDI, some rank quite differently, as the chart on the following page shows.

Women and Economic Development

Essential Question: To what extent have changes in economic development contributed to gender parity?

Females account for slightly less than half of the world's population, yet they account for far less than half of the world's earnings. Much of their work is not measured because it is unpaid work done for their family, such as raising children and cooking. When women do work in the formal sector, they are often paid less than their male counterparts. This loss of economic potential slows progress toward improving the standard of living. Many countries are trying to expand education for females so they can become fully engaged in economic development.

As countries become more developed economically, the roles open to women often change. In general, higher development and higher status for females are correlated. The Gender Inequality Index (GII) is often used to measure inequality and helps monitor changes in equity over time.

Barriers to Gender Equality

The GII chart in Topic 7.3 shows gender equity at the country scale. Within countries, urban areas often have higher gender equity than rural areas. Overall, conditions are improving but obstacles to gender equity for women still exist:

- Cultural barriers often inhibit participation in the economy. (See Topics 3.2 and 3.7.)
- Lack of educational opportunities can reduce employment options. (See Topic 2.8.)
- Limited access to loans and other resources makes starting or expanding a business difficult. (See Topics 5.10 and 5.12.)

Wages for women have increased in recent decades, but there still is a global disparity in the wages between men and women, even with comparable work. In the United States, if a man and a woman do the same type of job, a man would typically make a salary that is 17.5 percent higher than a woman.

The Glass Ceiling Another trend reflecting employment discrimination toward women is that women rarely obtain upper-level jobs in companies, the civil service, or in governments, particularly in developing countries. The situation has been improving in recent years in developed countries, but the “glass ceiling,” as it is often called, remains. If a country reaches a stage where the glass ceiling ceases to exist, the standard of living will rise tremendously for all of its citizens.

In top levels of corporations and in politics, women often must overcome cultural attitudes that cause people to not see them as leaders. Women such as former British Prime Minister Margaret Thatcher, U.S. Vice President Kamala Harris, and General Motors Company CEO Mary Barra are examples of women who became part of the quinary sector.

Increased Opportunities for Women

Women have made progress toward gender equality despite the significant obstacles they face. Governments of many countries, transnational corporations, non-governmental organizations, and international organizations, such as the United Nations, have aided the efforts to reduce gender inequality.

Transnational Corporations One reason for the expanded employment opportunities for women has been the efforts of transnational corporations. As these businesses have opened more factories in developing countries, they often employed women because they were available and would work for lower wages than men. Another key reason for increased female participation in the labor force is because of very low birth rates. Countries such as Japan and Singapore would face severe labor shortages if women were not accepted as an integral part of the labor force.

Increased educational opportunities for females during the past two decades also prepared more women to work outside their homes. Globally, more than 250 million additional women joined the paid workforce between 2006 and 2015. Many women who previously had low-paying domestic jobs as servants, childcare providers, and store clerks began earning significantly more in manufacturing jobs.

NGOs and Microloans Several programs enacted by governments and international non-profit agencies, known as **non-governmental organizations** (NGOs), empower women to find jobs outside the home. One example of how NGOs have helped women is through **microcredit**, or **microfinance** programs, to provide loans often to women to start or expand a business. The most well-known of these is the Grameen Bank, founded in Bangladesh in 1983. These programs have been particularly active in South Asia and South America. The repayment rate for these loans has been unusually high—more than 98 percent.

The success of microcredit programs resulted in several changes to societies where the loans are available. The increased financial clout of women gave them more influence in their homes and communities. And as working women have more voice in childbearing decisions, more money to pay for contraceptives, and less need for additional children, birth rates have decreased. Women's increased wealth also allows for the children to be better nourished, which has helped to reduce child mortality.

Sustainable Development Goals for Women The United Nations established a series of goals in 2015 to encourage sustainable development. Many targeted areas to improve the lives of females. The creators of these goals recognized that gender equality will lead to economic development. (See Topic 7.8 for more on Sustainable Development Goals and their effects on women.)

REFLECT ON THE ESSENTIAL QUESTION

Essential Question: *What factors have contributed to gender parity?*

Social	Economic

KEY TERMS

non-governmental organizations (NGOs) microcredit (microfinance)



GEOGRAPHIC PERSPECTIVES: NEIGHBORHOODS FOR NEW CLASSES

Prior to the Industrial Revolution that began in the mid-18th century, most people in Europe were farmers who lived in rural communities. A few were wealthy nobles who lived on estates or in the centers of cities. With industrialization, though, the number of people in the middle class grew tremendously and a new class of factory workers emerged. Where would they live?

Middle Class

As industrialization began, most members of the growing middle class lived and worked in urban areas, but in widely scattered locations. Some could afford to live in the center of the city. Others lived in new areas built on the outskirts of an urban area. And some lived above their shops, wherever they were located. The spatial distribution of the middle class made building a sense of unity in the new class difficult.

Working Class

The other type of job that greatly expanded in numbers was working in factories. People doing these jobs became known as the working class. They found housing in less-desirable urban neighborhoods located outside the central business districts. The spatial dimensions of their lives—toiling side-by-side in large groups in factories and living near each other in distinctive neighborhoods—created strong social bonds among them. These bonds led them to form labor unions, which gave them power to push for higher wages and better working conditions.

1. Which of the TWO rapidly expanding social classes was larger?
2. Explain why the working class resided in a more spatially concentrated pattern than the middle class.



THINK AS A GEOGRAPHER: DEFINING DEVELOPMENT

The Human Development Index illustrates the level of development of countries using both economic and social measures. Immanuel Wallerstein asserted that the inter-regional interaction between economically developed (core) countries and economically developing (periphery) countries was the primary influence on the global economy. Wallerstein believed the core countries had more disposable income to invest in new technologies and to train higher-skilled labor, while peripheral countries provided more low-skill, low-wage labor.

The following chart shows some of the data used to calculate the HDI score for several countries. Use it to answer the questions that follow.

HDI DATA FOR SELECTED COUNTRIES, 2015			
Country	Life Expectancy at Birth (in years)	Expected Years of Schooling	Income per Capita
Japan	83.5	15.3	\$36,927
United States	79.1	16.5	\$52,946
Brazil	74.5	15.2	\$15,175
Bangladesh	71.6	10.0	\$3,191
India	68.0	11.7	\$5,497
Haiti	62.8	8.7	\$1,668
Nigeria	52.8	9.0	\$5,341

Source: United Nations Development Programme, Human Development Reports

1. Using the data above, which countries demonstrate characteristics more closely aligned to be a part of the global economic core?
2. Identify ONE of the countries in the chart above that would be considered in the global economic periphery.
3. Explain why life expectancy is an important indicator of development.
4. Describe the pattern that exists between years of schooling and income per capita.

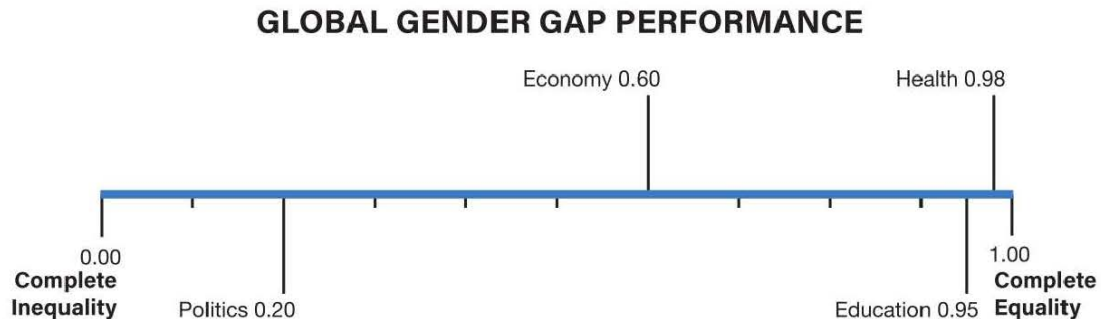
CHAPTER 18 REVIEW

Industrialization and Economic Development

Topics 7.1–7.4

MULTIPLE-CHOICE QUESTIONS

Question 1 refers to the following graph.

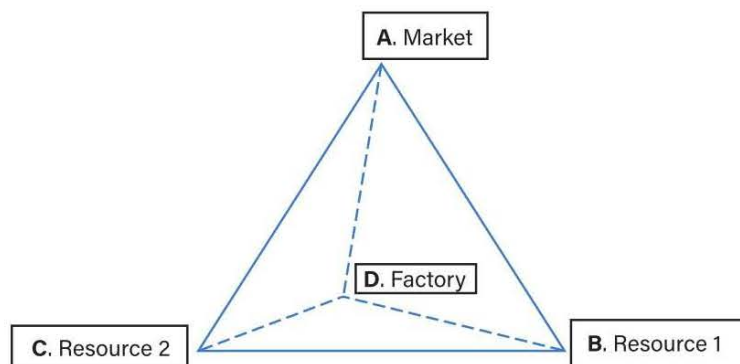


Source: Based on data from the World Economic Forum, "The Global Gender Gap Report 2015."

1. The two areas that have the largest degree of gender inequality are
 - (A) health and politics
 - (B) health and education
 - (C) economy and politics
 - (D) economy and education
 - (E) economy and health
2. The question most likely studied using the Gini Index is whether
 - (A) a country is moving closer to gender equality
 - (B) religious traditions influence educational achievements
 - (C) climate influences the infant mortality rate
 - (D) push or pull factors are more influential on migration
 - (E) the income distribution influences economic growth
3. The Industrial Revolution's greatest impact on the social structure was
 - (A) a significant increase in the percentage of upper-class citizens
 - (B) the growth of a large middle class
 - (C) a large increase in the percentage of people in the primary sector
 - (D) a significant decline in the percentage of middle-class citizens
 - (E) the development of the wealthy nobility

4. Which is the best example of a footloose activity?
- (A) A steel mill
 - (B) An auto assembly plant
 - (C) A call center
 - (D) A large research university
 - (E) An aluminum smelter
5. Fishing, farming, forestry, and mining are part of the
- (A) primary sector
 - (B) secondary sector
 - (C) tertiary sector
 - (D) quaternary sector
 - (E) quinary sector
6. Which statement best demonstrates why purchasing power parity is useful in comparing income and wealth in various countries?
- (A) The euro is worth about \$1.05.
 - (B) A pair of blue jeans that cost \$27 in Pakistan cost \$40 in Laos.
 - (C) Inflation is 2 percent higher in Indonesia than it is in Peru.
 - (D) Unemployment is 2 percent higher in Israel than it is in Japan.
 - (E) Germany's national debt is twice as high as Panama's.

Question 7 refers to the diagram below.

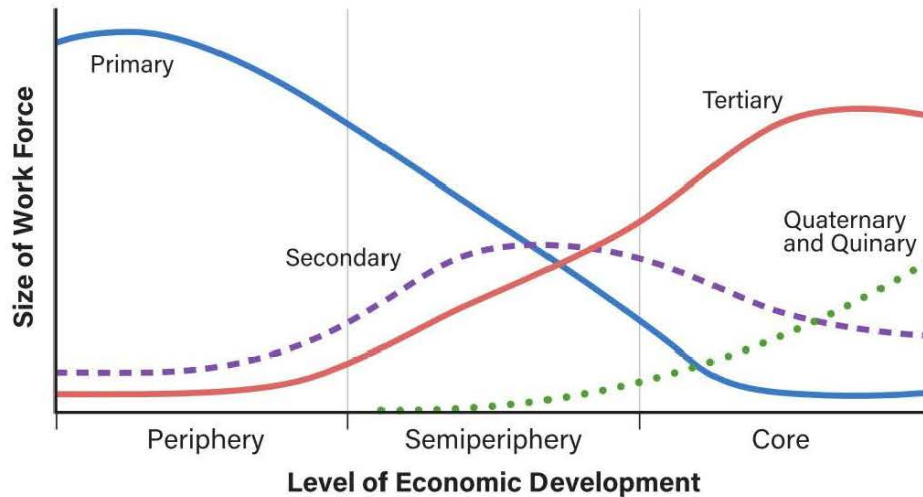


7. The diagram illustrates the optimal location of a factory for which of the following scenarios?
- (A) A bulk-reducing raw material-oriented industry
 - (B) An energy-oriented industry
 - (C) A market-oriented industry
 - (D) A bulk-gaining raw material-oriented industry
 - (E) A labor-dependent industry

FREE-RESPONSE QUESTION

1. One way to analyze a region's economic system is by the type of jobs people perform there. Use the diagram below to answer the questions that follow it.

STRUCTURAL CHANGES IN ECONOMIES



- (A) Identify the category of jobs and give a specific example of a job that is most common in preindustrial countries or regions.
- (B) Describe the types of jobs in the secondary sector of the economy.
- (C) Explain why the percentage of the workforce in the secondary sector often declines as a country becomes more developed.
- (D) Describe an additional economic impact on a local community when jobs are lost in the secondary sector.
- (E) The number of people employed in the secondary sector in the United States has declined since 1975, but the overall production of goods has increased. Explain how this statement could be true.
- (F) Describe tertiary sector jobs.
- (G) Explain the benefit of quaternary sector jobs.

CHAPTER 19

Development and Trade

Topics 7.5–7.6

Topic 7.5 Theories of Development

Learning Objective: Explain different theories of economic and social development. (SPS-7.E)

Topic 7.6 Trade and the World Economy

Learning Objective: Explain causes and geographic consequences of recent economic changes such as the increase in international trade, deindustrialization, and growing interdependence in the world economy. (PSO-7.A)

Globalization, the increasing integration and interdependence of domestic and overseas markets, has three sides: the good side, the bad side, and the ugly side.

—Panos Mourdoukoutas, "The Good, the Bad, and the Ugly Side of Globalization," *Forbes*, 2011



Source: Wikimedia Commons

The Three Gorges dam is an infrastructure project designed to generate hydroelectric energy for China. (See Topic 7.6 for factors that influence interdependence and the world economy.)

Theories of Development

Essential Question: What are the theories of economic and social development?

Why have some countries of the world become so much wealthier than others? Geographers and others have proposed several theories of development to answer this question. Underlying it is a more general issue about equality. Can all countries grow equally prosperous, or will the world always include a mix of more- and less-wealthy countries?

Theories of Development

Topic 7.3 described various social and economic measures of development and systems for grouping countries based on these measures. While the measures and systems vary, most show that Australia, New Zealand, Japan, South Korea, and most countries of North America and Europe are more developed than most of Africa, parts of Asia, and South America. Two of the best-known theories explaining these differences were developed by Walt Rostow and Immanuel Wallerstein.

Rostow's Stages of Economic Growth

In 1960, American economist Walt W. Rostow developed a *modernization theory* that focuses on the shift from traditional to modern forms of society. He called it the **Stages of Economic Growth model**. Rostow assumed that all countries wanted to modernize, and that all would, though at different speeds. He saw economic development as a linear progression in which countries moved from one stage to the next until they reached the fifth and final stage—high mass consumption.

Like the Demographic Transition Model (DTM), the Stages of Economic Growth theory is a generalization based upon how the United States and western Europe evolved, and both identify distinct stages. However, they differ fundamentally. The DTM is a population model that focuses on changes in the number of people in a country. Rostow's theory is an economic model that focuses on how people live.

Rostow suggested that different inputs and levels of investment were required to allow countries to move from one stage to the next. The theory suggests a system for development—do this, then this, and eventually the economy of a country will become developed. The key characteristics associated with each stage are listed in the chart on the following page.

ROSTOW'S STAGES OF ECONOMIC GROWTH		
Stage	Characteristics	Examples
1. Traditional Society	<ul style="list-style-type: none"> ▪ Depends upon primary sector activities (farming, fishing, hunting) for subsistence ▪ Uses limited technology ▪ Carries out local or regional trading ▪ Enjoys limited socioeconomic mobility 	<ul style="list-style-type: none"> ▪ English colonies in North America in the 17th century ▪ Medieval Europe ▪ No entire country is at this stage today
2. Preconditions for Take-Off	<ul style="list-style-type: none"> ▪ Improves infrastructure (roads, electrical grid, water systems, etc.) ▪ Improves farming techniques and shifts toward commercial agriculture ▪ Exports agricultural and raw materials (international trade) ▪ Diffuses technology more widely ▪ Starts individual socioeconomic mobility 	<ul style="list-style-type: none"> ▪ United States in the early 19th century ▪ Nigeria today ▪ Afghanistan today
3. Take-Off	<ul style="list-style-type: none"> ▪ Develops major technological innovations ▪ Starts industrialization and primary sector begins to shrink ▪ Spreads entrepreneurial mentality ▪ Begins to urbanize ▪ Initiates self-sustaining growth 	<ul style="list-style-type: none"> ▪ United States, mid-19th century ▪ Japan, late 19th century ▪ Bangladesh today
4. Drive to Maturity	<ul style="list-style-type: none"> ▪ Creates new industries while strengthening existing ones ▪ Improves energy, transportation, and communication systems ▪ Sees economic growth greater than population growth ▪ Invests in social infrastructure (schools, hospitals, etc.) 	<ul style="list-style-type: none"> ▪ United States, late 19th century ▪ Germany, early 20th century ▪ Brazil today
5. High Mass Consumption	<ul style="list-style-type: none"> ▪ Spends money on nonessential goods (consumerism) ▪ Purchases of high order goods become common ▪ Desires to create a more egalitarian society ▪ Supports a strong tertiary sector 	<ul style="list-style-type: none"> ▪ United States, early 1920s to present ▪ Japan, mid-1950s to present

Notice the types of changes that have to occur to allow for a country to transition from one stage to the next. What would be a major concern if all countries reached the stage of high mass consumption?

Criticisms of Rostow's Model

In spite of being one of the most influential economic models of the 20th century, some experts have expressed concerns about Rostow's model. Critics of Stages of Economic Growth model argue it has several weaknesses.

Limited Examples The model was based on American and European examples, so it did not fit countries of non-Western cultures or noncapitalist economies.

Role of Exploitation Rostow's model led to poorer countries getting trapped in a state of dependency upon wealthier countries.

Bias Toward Progress The model suggested linear change, always in the direction of progress. However, developing countries often need the assistance, money, and technology of developed countries to develop. And in some cases, countries might regress in economic development.

Lack of Variation In his model, Rostow suggested all countries have the potential to develop, but there are significant differences among countries, such as physical size, population, natural resources, relative location, political systems, and climate, that affect their ability to develop.

Lack of Sustainability The model assumed that everyone could eventually lead a life of high mass consumption but failed to consider sustainable development or the carrying capacity of the earth.

Need for Poorer Countries Rostow's model failed to recognize that most of the countries which reached the stage of high mass consumption did so by exploiting the resources of lesser-developed countries. Countries that were still developing would have difficulty finding other countries to exploit.

Narrow Focus The model focused on domestic economies and did not directly address interactions between countries, specifically globalization.

Despite these criticisms, geographers, economists, and others continue to use the model to understand how countries have changed over the past two centuries. It has prompted people to think about economic and social change in a global context and challenged them to provide their own framework.

Wallerstein's World Systems Theory

In the 1970s, historian Immanuel Wallerstein proposed an alternative model to Rostow's, which he called the **World Systems Theory**. It is a **dependency model**, meaning that countries do not exist in isolation but are part of an intertwined world system in which all countries are dependent on each other. Dependency theory argues that colonialism and neocolonialism (see Topic 4.2) are the cause of global inequities. Both Wallerstein and Rostow attempt to explain the inequalities that exist between different countries and regions. World Systems Theory includes both political and economic elements that have significant geographic impacts.

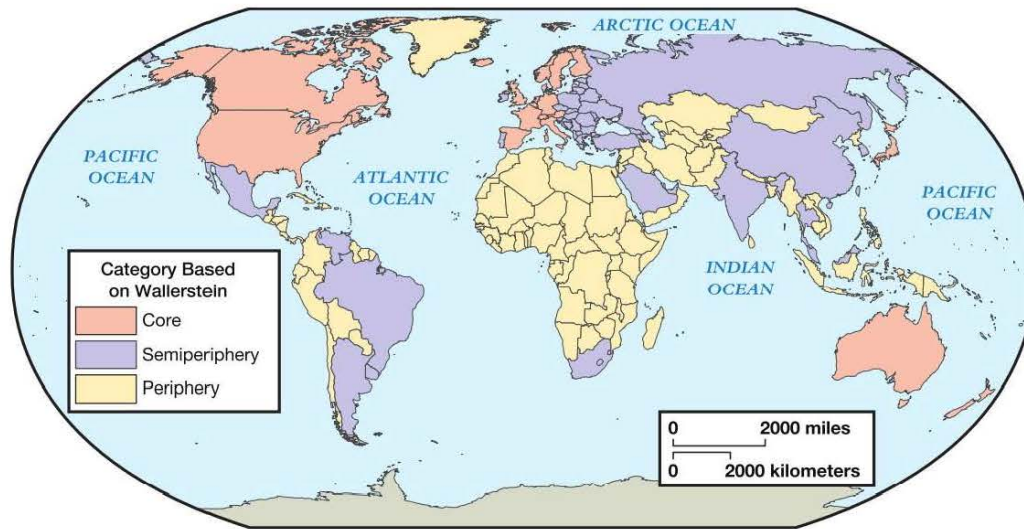
As mentioned in Topic 7.2, Wallerstein divided countries into three types—core, semiperiphery, and periphery. As a result, his theory is sometimes referred to as the **Core-Periphery model**.

WALLERSTEIN'S WORLD SYSTEMS THEORY		
Category	Characteristics	Examples
Core	<ul style="list-style-type: none"> ▪ Includes the economically advantaged countries of the world ▪ Includes the headquarters of most large multinational companies and banks ▪ Focuses on higher-skill, capital-intensive production ▪ Promotes capital accumulation ▪ Dominates semiperiphery and periphery economically and politically ▪ Locates factories and service centers in semiperiphery and periphery countries ▪ Benefits greatly from international trade 	<ul style="list-style-type: none"> ▪ United States ▪ United Kingdom ▪ Japan ▪ Australia ▪ Germany
Semiperiphery	<ul style="list-style-type: none"> ▪ Includes most middle-income countries, sometimes called emerging economies ▪ Provides the core with manufactured goods and services that the core formerly provided for itself ▪ Shares characteristics of both core and periphery 	<ul style="list-style-type: none"> ▪ China ▪ Mexico ▪ Brazil ▪ South Africa ▪ India
Periphery	<ul style="list-style-type: none"> ▪ Includes the least-developed countries ▪ Maintains many jobs in low-skill, labor-intensive production and extraction ▪ Provides the core and semiperiphery with inexpensive raw materials and labor ▪ Receives jobs but few profits from manufacturing ▪ Attracts jobs by having weak laws protecting workers and the environment 	<ul style="list-style-type: none"> ▪ Afghanistan ▪ Zimbabwe ▪ Bolivia ▪ Kenya ▪ Laos

Core Dominance Multinational companies, financial institutions, and centers of technology are mostly based in core countries, but they have significantly influenced the economies of semiperiphery and periphery countries. Businesses and governments in non-core countries borrow money to finance large-scale projects and purchase technology from core countries. Both processes increase the *dependency* of the periphery on the core.

Changing Categories Unlike Rostow's model, Wallerstein's model does not suggest that all countries can reach the highest level of development, nor does it explain how countries can improve their position. In contrast, it indicates that the world system will always include a combination of types of countries. But countries can change categories, moving in or out of the core. For example, in 1950, South Korea and Singapore were part of the periphery. By 2020, they were core countries. In 1900, Argentina was a core country. By 2000, it had become part of the semiperiphery.

THE WORLD SYSTEM



The majority of the core countries are in close proximity to each other. How can you account for the core status of Australia and New Zealand that are so distant from the other core countries?

Labor Trends Wallerstein's model provides a framework for analyzing the international division of labor by sector and location:

- Periphery countries are often where primary sector workers engaged in the extraction of raw materials and agriculture are located.
- Semiperiphery countries are often home to many workers in the secondary sector (such as factory workers) and in the tertiary sector (such as call center staff).
- Core countries include many tertiary sector workers and most quinary and quaternary sector workers.

Systems Theory at the Country Scale Wallerstein built his model for a global scale. However, geographers also apply it to smaller scales by identifying centers of power and dependency relationships. In the United States the core would be the major cities, such as New York and Chicago. The semiperiphery would be the manufacturing belt in the Midwest and parts of the South. The periphery would be the rural areas of the Great Plains and the West.

Criticisms of World Systems Theory

Much Rostow's model, the Wallerstein's model has its detractors.

Little Emphasis on Culture It focused heavily on economic influence—investments and purchases of raw materials—but it paid little attention to the pervasive influence of culture—movies, music, and television.

Emphasis on Industry It was based on industrial production, but many countries have postindustrial economies based on providing services.

Lack of Explanation It is of limited practical use, suggesting that countries can change their status, but it does not explain how.

Limited Roles It focused too much on the role of countries, governments, and corporations. As a result, it failed to recognize the role of organizations such as UN agencies and private, nonprofit charitable NGOs.

Commodity Dependence

Core countries have diversified export economies that rely on a variety of goods and services. In contrast, some semiperiphery and many periphery countries rely heavily on the export of **commodities**, raw material such as coffee, cocoa, and oil, that have not undergone any processing. A country has **commodity dependence** when more than 60 percent of its exports are raw materials.

Since the value of commodities rise as the degree of processing increases, the businesses and countries exporting unprocessed raw materials receive relatively low returns. As a result, there is a very strong correlation between commodity dependence and low levels of economic development.

More than half of the countries in the world are commodity dependent. They are most common in sub-Saharan Africa, Latin America, and the Caribbean region. Commodity-dependent countries (CDCs) are vulnerable to fluctuating commodity prices. Prices can suddenly drop for many reasons:

- a large, new supply of the commodity becomes available
- manufacturing companies finds a less-expensive substitute product
- consumer demand for the product made from the commodity falls

Some commodities, such as oil, are much more valuable than others. Even valuable commodities are vulnerable to wide, rapid price fluctuations. Between 2012 and 2020, the price of a barrel of oil dropped from \$109 down to \$41, then rose up to \$70 before falling to \$42.

The countries that have best weathered a downturn in oil prices have been those that have diversified their exports. For example, the United Arab Emirates was very dependent on oil revenues in the 20th century. The country's leaders recognized the risk in this and began to diversify its economy by expanding its transportation, financial, and tourist sectors, particularly in its major city, Dubai. When oil prices crashed around 2014, the country's economy was varied enough to withstand the potentially disastrous decline.

REFLECT ON THE ESSENTIAL QUESTION

Essential Question: *What are the theories of economic and social development?*

Development Theory	Explanation of Theory

KEY TERMS

Stages of Economic Growth model
World Systems Theory
(Core-Periphery model)
dependency model

non-governmental organization (NGO)
commodities
commodity dependence

Trade and the World Economy

Essential Question: What are causes and geographic consequences of recent economic changes such as the increase in international trade, deindustrialization, and growing interdependence in the world economy?

In the 21st century, countries are becoming increasingly interconnected. Vast improvements in transportation and communications over the past few decades have linked people throughout the world. The political, cultural, and economic processes of each region are linked with those of other regions, resulting in a degree of global interdependence not seen before. But as Panos Mourdoukoutas indicated in the chapter opening quote, globalization includes the good, the bad, and the ugly. Consider the impact of moving manufacturing jobs from core countries to semiperiphery and periphery countries:

- The good might be that in core countries, corporations can increase their profits and consumers can purchase goods at lower prices, resulting in more jobs in non-core countries.
- The bad might be that in core countries, factory workers often lose their jobs and, as a result of the multiplier effect, other people do as well.
- The ugly might be that in semiperiphery and periphery countries, laborers suffer from poorly regulated working conditions and entire populations are endangered by weak environmental regulations.

Trade and Interdependence

Trade occurs when one party desires a good or service that it does not have or cannot produce and another party has the desired good or service with which it is willing to part. Trade sometimes occurs through **barter**, a system of exchange in which no money changes hands. This is most common between individuals. In the book-turned-movie *To Kill a Mockingbird*, the main character, a lawyer, provides legal services to a poor farmer in exchange for bags of food.

Comparative Advantage and Complementarity

Trade usually occurs with an exchange of money. Parties tend to trade goods or services in which they have a **comparative advantage**, or the ability to produce a good or service at a lower cost than others. For example, China's workers receive lower wages than do U.S. workers, so Chinese companies can manufacture goods at a lower cost. This gives them a comparative advantage.

When a country has the income, goods, or services that the another country desires, they have **complementarity**. For example, Canada, with its cold winters and forests of maple trees, is a leading producer of maple syrup but it produces no coffee. Costa Rica, with its tropical climate and rugged terrain, is famous for its coffee, but it produces no maple syrup. Canadian merchants import coffee from Costa Rica while Costa Rican merchants import maple syrup from Canada.

When complementarity does not exist, trade is heavily weighted in one direction. For example, U.S. consumers desire and can afford to purchase many products made in China, yet Chinese consumers desire and can afford far fewer U.S. products. This trade imbalance has created political tensions.

Technology and Trade

One of the most significant changes in the world in the past several decades has been the increase in international trade. In the United States, trade increased from 5 percent of the total economy in 1960 to 28 percent in 2018. Globally, in 1970, trade accounted for about 27 percent of global GDP. In 2019, it accounted for 60 percent. A combination of changes in technology and changes in policies have promoted trade.

Larger and faster ships, containerization, improvements to major canals and new port facilities, and increases in air cargo have made moving goods less expensive. These transportation advancements have helped overcome the spatial barriers and distances that, for many years, minimized trade among distant countries. (See Topic 7.2.) They have had the effect of making the world seem smaller and people more interconnected.

The Internet increased the efficiency of trade and transportation information systems. Online sales have expanded markets for both consumers and producers resulting in increased demand and trade.

Government and Trade

Like improved technology, government influences trade. Over the past century, governments have increasingly taken steps to influence trade.

Policies Increasing Trade In the late 19th century and early 20th century, most industrializing countries, including the United States, imposed trade barriers to protect their young industries from foreign competition. As these countries grew wealthier, they adopted **free trade** policies, or laws, that reduced barriers to trade. Since the end of World War II in 1945, most core countries have promoted freer trade because of its benefits to corporations and consumers. Support for free trade was a cornerstone of **neoliberal policies**, a set of reforms that reduced government regulations and taxation. In the 1980s, U.S. President Ronald Reagan and U.K. Prime Minister Margaret Thatcher were leading advocates of neoliberalism.

Countries that industrialized in the late 20th century, such as China and other countries in East Asia, followed the pattern of the United States and

Europe. While developing, they restricted imports and promoted exports. As these countries developed, they reduced trade barriers.

Factors Decreasing Trade In recent years, trade barriers have often reflected political and economic decisions. Since 2016, the United Nations has used economic sanctions more than 30 times, mostly to pressure countries to reduce human rights abuses.

In 2018, the U.S. government increased tariffs on many Chinese-made goods sold in the United States. By making these goods more expensive for U.S. consumers, the government hoped Americans would buy more U.S.-made goods and China would relax its barriers on U.S. imports. China responded by reducing its purchases of U.S. farm products and increasing tariffs on U.S. goods. In 2019, the gap between U.S. imports from China and exports to China was almost identical to what it had been in 2016.

Another factor that can decrease trade is health problems. Just as globalization made trade of goods easier, it also provides pathways for diffusion of disease. In 2020, global trade decreased sharply because of COVID-19. The dangers of the virus caused factories to shut down, disrupted transportation networks, and reduced consumer demand for many products.

Government Development Initiatives

Because of the desire for economic development, governments at all levels provide various incentives to encourage the expansion of existing economic activities or the creation of new ones. The type of incentive varies depending upon the nature of the economic development and what level of government is supporting the development. In most cases, the government that provides the incentives insists the company which receives the incentive must achieve certain targets such as providing a certain number of full-time jobs. There are several common incentives used to stimulate economic development that are shown in the table below.

GOVERNMENT EFFORTS TO PROMOTE ECONOMIC GROWTH	
Type of Incentive	What Businesses Receive
Tax Breaks	<ul style="list-style-type: none"> ▪ A tax holiday (a temporary exemption from some taxes) ▪ A tax break for money invested in research and development
Loans	<ul style="list-style-type: none"> ▪ Forgivable loans (part or all of the loan doesn't have to be repaid) ▪ Money to borrow at below-normal interest rates
Direct Assistance	<ul style="list-style-type: none"> ▪ Land or building use free of charge ▪ Infrastructure such as roads and sewers paid for by government ▪ A subsidy for each full-time job created
Changes in Regulations	<ul style="list-style-type: none"> ▪ Legislation that weakens unions ▪ Legislation that reduces environmental rules
Tariffs	<ul style="list-style-type: none"> ▪ Taxes imposed on imported products make these products less attractive and domestically produced goods more attractive

These government incentives may be applied at different scales. For example, national, state, and county governments all may offer their own version of incentives.

Supranational Trading Blocs

Because of the increasing importance of trade, many countries have strengthened their relationships with their most important trading partners. This resulted in the formation of **trading blocs**, groups of countries that agree to a common set of trade rules. (See Topic 4.9.) Some examples include the U.S.-Mexico-Canada Agreement (USMCA), the Organization of the Petroleum Exporting Countries (OPEC), and **Mercosur** or *Southern Common Market*, which includes several South American countries.

The European Union (EU) is also a trading bloc, but it is unlike most other ones. It also has *open borders*, which means it allows free movement of people as well as goods from one country to another.

Most trading blocs occur within regions. However, the **World Trade Organization (WTO)** is a global organization. It was created in 1995 to monitor the rules of international trade by providing a forum for negotiating trade deals, settling disputes between its members, supporting the needs of developing countries, and helping companies follow similar international trade policies. As of 2020, the WTO included 164 member countries that accounted for 98 percent of global trade. Another 20 countries have applied for membership.

Manufacturing in Semiperiphery Countries

One aspect of globalization and trade has been that companies have moved industrial production from core countries to semiperiphery countries. The speed of phone and Internet communications means that decision makers of transnational corporations can easily maintain contact with the management of new processing plants in the semiperiphery world. The ease of transportation results in frequent travel between the head offices and the factories in the semiperiphery. The manufactured goods can also be easily shipped to markets in core countries and the rest of the world.

Impacts of Economic Interdependence

Increased interdependency has strengthened the links among the countries' economies. Growth in one country can result in new economic opportunities in other countries. For example, as China grew wealthier, it purchased more grains and meat from U.S. farmers, bought more cars from companies headquartered in the United States, and sent more students to U.S. colleges and universities. However, China's growing industries also competed with U.S. manufacturers, and many companies laid off U.S. workers and moved jobs to China.

Similarly, an economic downturn in one country can lead to economic challenges elsewhere. When the price of oil dropped in mid-2014, consumers everywhere enjoyed lower gas prices and manufacturers lowered their production costs on every product that used oil. However, economies in all oil-producing regions suffered:

- Oil companies lost revenue. For example, Royal Dutch Shell, based in the Netherlands, saw its earnings fall 80 percent from 2014 to 2015.
- Workers in oil related industries lost jobs. About 250,000 people across several occupations became unemployed.
- Governments in oil-dependent countries, such as Venezuela, lost tax revenue, forcing them to lay off employees and reduce services.
- Investors in energy industry companies saw the value of the holdings plummet. In the second half of 2014, the 24 energy producers in the Fortune 500 lost \$263 billion in market value.
- Workers for coal companies lost jobs. As coal could not compete with lower-cost oil, mines reduced production and laid off workers

Responses to Global Financial Crises

Numerous international financial institutions (IFIs) assist struggling countries with financing and provide professional advice on development. Most IFIs are partnerships among several countries. While all encourage development opportunities, some focus on particular regions or types of projects.

International Monetary Fund (IMF) The best known IFI is the **International Monetary Fund (IMF)**, which was created in 1945 to aid countries caught in need of financial assistance. Recognizing how quickly a financial crisis can lead to social and political instability, the IMF promotes economic stability for countries dealing with financial struggles. The assistance can take several forms from new, more manageable loans to assistance in overhauling the country's economic system. With 190 member countries, the IMF also works to promote monetary cooperation, facilitate international trade, increase employment, encourage sustainable growth, and reduce poverty.

Two recent examples of IMF interventions involve the destabilization of the Argentinian economy in 2018 and the COVID-19 crisis of 2020. In the case of Argentina, the IMF provided \$57 billion worth of loans to the country. In response to the COVID-19 pandemic, much needed emergency funding was provided to 76 countries.

Large-Scale Projects Many projects funded by IFIs involve multimillion- or even multibillion-dollar deals to build big projects, such as hydroelectric dams or new transportation systems. When successful, these projects can be extremely beneficial to a country's economy and to thousands of people.

However, large-scale projects are risky, and some do not work as planned. Failures can create additional problems for an already struggling country as it now must repay an even larger debt. Dependency theorists criticize periphery countries for borrowing money from the core. High debt-to-GDP ratios make periphery countries more dependent on core countries and defaults on loans increase potentially resulting in a debt crisis and larger economic problems.

Small-Scale Projects In contrast to these big loans, some NGOs focus on *microlending*. (See Topic 7.4.) Microloans are designed to help entrepreneurs with small-scale businesses by providing small loans, usually less than \$2,000.

REFLECT ON THE ESSENTIAL QUESTION

Essential Question: *What are causes and geographic consequences of recent economic changes such as the increase in international trade, deindustrialization, and growing interdependence in the world economy?*

Causes of Economic Changes	Consequences of Economic Changes

KEY TERMS

trade	neoliberalism
barter	trading blocs
comparative advantage	Mercosur
complementarity	World Trade Organization (WTO)
free trade	International Monetary Fund (IMF)



GEOGRAPHIC PERSPECTIVES: THE NEW GLOBAL WORLD

In an age of globalization, every problem affects multiple countries. In particular, the economic policies of the financially powerful core states have large spillover effects on semiperiphery and periphery economies. Geographers study how these effects diffuse from one place to another, and how globalization can make them more or less damaging.

Thailand's Fragile Prosperity

In 1997, a crisis in the periphery country of Thailand threatened first that country, then its neighbors, and eventually the rest of the world. Thailand's economy had been growing an impressive 10 percent per year for over a decade. However, it relied heavily on foreign investments, particularly from the United States and Japan, and high exports.

When the Thai economy started to slow, concern quickly spread. The Thai stock market crashed, and the currency lost its value. Many companies had trouble paying their employees and laid off numerous workers.

Diffusion and Distance Decay

What followed was the runaway hierarchical and contagious diffusion of market disturbances from one country to another. In line with the concept of distance decay, the ripple effect of Thailand's financial crisis hit its neighbors the hardest—Indonesia, Malaysia, Singapore, the Philippines, and South Korea. The interdependent economies of these countries then faced similar financial

woes. This crisis threatened to spread beyond Asian markets and create a global economic panic.

The Role of Globalization

This crisis—made worse by globalization—ended when the International Monetary Fund (IMF) stepped in and offered loans to the weakened countries. With these loans, confidence was restored and the economies began to grow again.

1. Applying the concepts of distance decay and diffusion, describe the patterns of impacts on other countries.
2. What are some of the impacts that could be expected if a Toyota Corolla manufacturing assembly plant in Mississippi shut down?

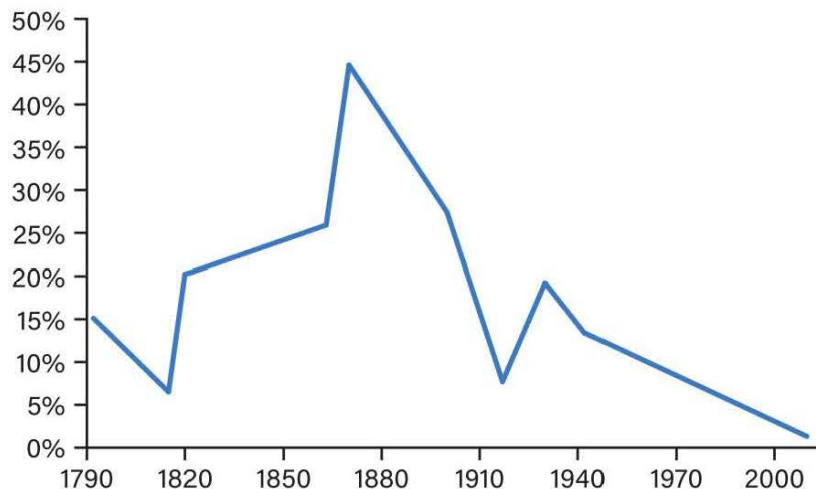


THINK AS A GEOGRAPHER: ANALYZE TARIFF INFORMATION

Geographers study patterns of interaction among people who live in different places. One of these interactions is trade in goods and services. Many non-core countries hope that trade will provide them an opportunity to create jobs and improve the lives of their citizens. The experience of the United States in economic development might provide a model for some countries to follow.

Use the graph showing average U.S. tariffs (taxes on imports) to answer the questions about the role of trade in economic development.

AVERAGE TARIFF RATE IN THE UNITED STATES, 1792 TO 2010



1. Describe the general level of tariff rates between 1792 and 1860.
2. How did tariff rates between 1860 and 1910 compare to earlier and later tariff rates?
3. Describe the trend in tariff rates since 1942.
4. Explain why the post-1990 data supports the adoption of neoliberal policies in the United States.

CHAPTER 19 REVIEW

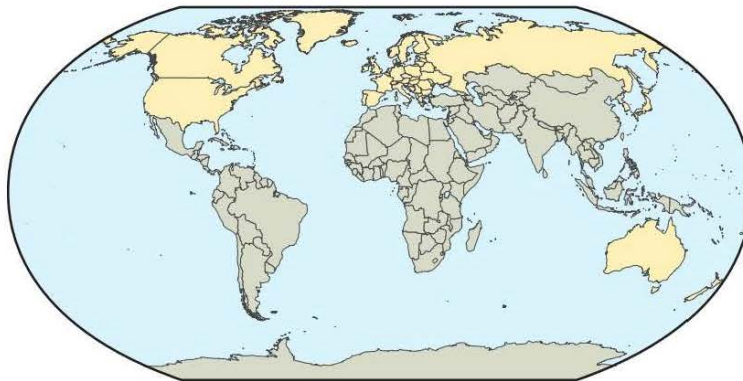
Development and Trade

Topics 7.5–7.6

MULTIPLE-CHOICE QUESTIONS

1. A developing country that exports nearly 75 percent of all its raw materials has
 - (A) a comparative advantage
 - (B) complementarity
 - (C) commodity dependence
 - (D) neoliberal policies
 - (E) locational interdependence
2. Based upon Wallerstein's World Systems Theory, which of the following countries best fits the description of a periphery country?
 - (A) Brazil
 - (B) Germany
 - (C) Mali
 - (D) China
 - (E) Japan

Question 3 refers to the map below.



3. Which phrase best describes the countries shown in the darkest shade?
 - (A) Periphery countries
 - (B) Semiperiphery countries
 - (C) Core countries
 - (D) Least-developed countries
 - (E) Developing countries

4. Which stage of Rostow's Stages of Economic Growth model does the United States best fit today?
 - (A) Preconditions for take-off
 - (B) Drive to maturity
 - (C) High mass consumption
 - (D) Take-off
 - (E) Traditional society
5. Modernization models such as Rostow's suggest that
 - (A) there will always be a combination of more developed countries and less developed countries
 - (B) owners of industries will always try to locate plants to take advantage of agglomeration economies
 - (C) geographic factors, such as the availability of natural resources, determine a country's level of development
 - (D) it is possible for all countries to reach a high level of economic development
 - (E) governments should not provide stimulus for economic development
6. Which of the following changes most directly increased globalization?
 - (A) Greater use of tariffs and other trade restrictions
 - (B) More frequent political disputes among world leaders
 - (C) Greater time-space compression
 - (D) Decreased use of containerization
 - (E) Decreased complementarity among countries

Question 7 refers to the map below.



7. Which organization illustrating globalization is shown on the map?
 - (A) Mercosur
 - (B) USMCA
 - (C) OPEC
 - (D) IMF
 - (E) NATO

FREE-RESPONSE QUESTION

1. Two theories of economic development are Rostow's Stages of Economic Growth and Wallerstein's World Systems. Rostow's theory argues that all countries can attain higher levels of development by progressing through a five-step process. Wallerstein argues that the world will remain divided among periphery, semiperiphery and core regions.
 - (A) Identify TWO countries or regions of the world on which Rostow's model was based.
 - (B) Using the Rostow model, explain why improving a country's infrastructure is a precondition for economic development.
 - (C) Describe the types of economic products that the periphery supplies to the core and semiperiphery.
 - (D) Explain the economic role that semiperiphery countries often provide for core countries.
 - (E) Explain why world systems theorists often argue that multinational corporations act as a neocolonial economic force.
 - (F) Describe ONE change that has increased gender equality in the past 20 years.
 - (G) Describe ONE challenge that societies still face in achieving gender equality.

CHAPTER 20

Changing Global Economy and Sustainability

Topics 7.7–7.8

Topic 7.7 Changes as a Result of the World Economy

Learning Objective: Explain the causes and geographic consequences of recent economic changes such as the increase in international trade, deindustrialization and growing interdependence in the world economy. (PSO-7.A)

Topic 7.8 Sustainable Development

Learning Objective: Explain how sustainable principles relate to and impact industrialization and spatial development. (IMP-7.A)

Anyone who believes in indefinite growth of anything physical on a physically finite planet is either a madman or an economist.

—Kenneth Boulding, economist, 1953



Source: Wikimedia Commons

Women complete the labor-intensive manufacturing of clothing in a maquiladora in Mexico. (See Topic 7.7 for maquiladoras and other changes in the global economy.)

Changes as a Result of the World Economy

Essential Question: What are the causes and geographic consequences of recent economic changes such as the increase in international trade, deindustrialization, and growing interdependence in the world economy?

Globalization is firmly entrenched as part of daily life, largely due to vast improvements in transportation and communication technologies. People no longer depend solely upon products made close to home or decisions made by local, or even national, politicians. The world is so interconnected that a any decision can have significant implications for people across the globe. In addition to the growing interdependency of countries and their economies, the types of jobs, in core, periphery, and semiperiphery countries has changed. The economic landscape has transformed from local to global scales.

The Changing Global Economy

To take advantage of improved transportation and communication, and in search of lower labor costs, companies have changed spatial distribution of manufacturing and business services. At the global scale, many companies have moved manufacturing plants from highly developed core countries, such as the United States, to less-developed periphery and semiperiphery countries, such as the Malaysia and Brazil. At the regional scale, factories in the United States have moved from the Northeast and Midwest to the Southeast and Southwest.

Outsourcing and Offshoring

To reduce costs, many companies use **outsourcing**, contracting work to noncompany employees or other companies. The contracted company might be less expensive because it specializes in the work and does it more efficiently. Or, it might pay workers lower wages or provide fewer benefits. Companies often outsource manufacturing work and administrative functions such as handling payroll and paying taxes.

As with multinational manufacturing companies, some tertiary and quaternary sector companies move their back offices to other countries, a process known as **offshoring**. Companies will locate services or manufacturing in other countries if the costs of doing business are lower and worth the risk of moving some operations overseas. Many software and manufacturing companies in the United States and Europe locate facilities in India and China to take advantage of the highly skilled but lower-cost labor.

Labor unions and government officials have pressured some companies into reshoring, returning jobs to the business's home country. Because of the multiplier effect (see Topic 7.2), this benefits others in the country as well.

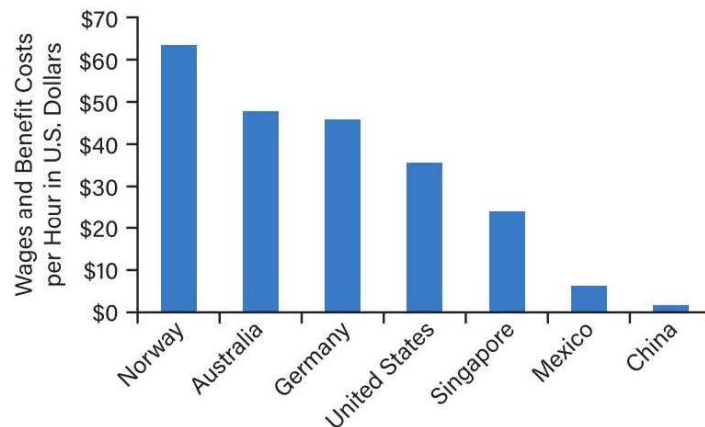
Sometimes companies will both offshore and outsource, as Boeing did with the 787 Dreamliner airplane. Boeing designed the planes in Seattle, the nose section was outsourced to a company in Kansas, wing tips were made in South Korea by Korean Air, wings were assembled by Boeing in Canada, and final assembly was done by Boeing outside of Seattle. The final product demonstrated outsourcing, offshoring, globalization, and the international division of labor.

Economic Restructuring

Globalization has increased competition among companies based around the world. In response, many have adopted new technology that needs fewer employees to operate. They also have shifted jobs from core countries to the periphery and semiperiphery ones with lower wages. As a result of these changes, many workers in core countries have lost jobs or had their wages cut.

While workers have suffered, consumers have benefitted. Lower production costs have resulted in lower prices for retail goods.

MANUFACTURING COSTS, 2012 (for selected countries)

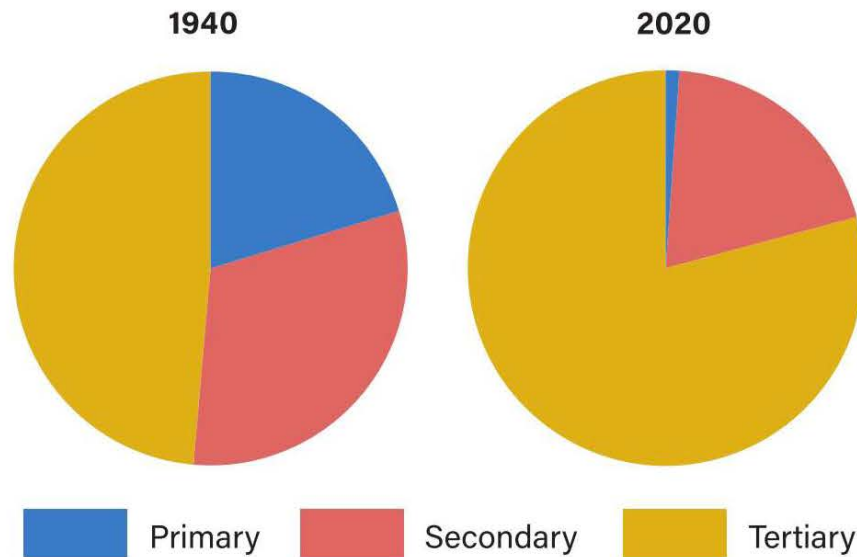


Based on the graph, how much more expensive are wages and benefits in Norway than in China? Wages and benefits are much cheaper in Mexico and China than in the United States. With the costs much less in China, why have so many U.S. companies chosen to locate in Mexico?

Globalization has created a **new international division of labor**, a changed system of employment in the various economic sectors throughout the world:

- In core countries, people design and develop products for the global market. Tertiary, quaternary, and quinary jobs have increased in the core.
- In semiperiphery countries, people often manufacture goods that are marketed in core countries. Consequently, employment in the secondary sector has increased. Employment in the primary sector has declined.
- Periphery countries, such as Bangladesh, Angola, and Papua New Guinea, have large primary sectors and export minerals and resources to core and semiperiphery countries for further processing and consumption.

STRUCTURE OF THE U.S. LABOR FORCE, 1940 AND 2020



The percentage of employees in all three sectors of the labor force has changed tremendously since 1940. Why has the percentage of workers involved in the primary sector dropped so drastically?

Basic and Non-basic Activities

Actions that create new wealth for a region are considered a **basic economic activity**. Most manufactured goods and commercial farm products are examples of basic activities. These products are usually sold beyond the area where the factory or commercial farm is located, so money from outside the area is used to purchase the products. This outside money is considered new money which makes the areas where the goods were produced wealthier and leads to additional growth through the multiplier effect. For this reason, basic activities are sometimes referred to as *city-forming activities*.

A grocery store is an example of a **non-basic economic activity** because it does not generate new money for the area. Instead, it allows for recirculation of the existing money in the area. Most people buy groceries near where they live, so the money spent is not new to the region. Non-basic activities are important since they provide services or goods such as food and clothing. However, they do not play a significant role in bringing money into the local economy, so non-basic activities are also referred to as *city-serving activities*. There is a limited multiplier effect for non-basic activities.

Community leaders in core countries are concerned about the loss of manufacturing jobs since they are often basic activities and generate new wealth. If a company relocates offshore, often the displaced workers find replacement jobs in the tertiary sector, which contains primarily non-basic jobs, and the community will lose out on much-needed new money.

Quaternary sector jobs are more desirable since they have higher salaries and are more likely to be basic activities with a greater multiplier effect. Consider a software developer or a research scientist. The products or information these workers produce will generate income from far beyond their own community, and thus, generate new money which leads to economic growth.

Transnationals, Multinationals, and EPZs

Businesses that operate in multiple countries are known as **transnational corporations** (TNCs) and **multinational corporations** (MNCs). Because of the jobs and wealth these corporations can bring to a country, government compete with each other to entice them to their shore. Over 100 countries in the world have attracted TNCs and MNCs by using special manufacturing zones, commonly referred to as **export-processing zones** (EPZs).

These EPZs offer foreign corporations major tax savings, inexpensive labor, fewer environmental regulations, well-serviced industrial sites, and proximity to good transportation networks that allow for easy delivery of raw material and shipping of finished products. EPZs are often near international airports, seaports, or land borders from where the products can be exported easily.

Tax Incentives One incentive that countries use in EPZs is tax breaks. Transnationals typically do not pay taxes on any item they import into an EPZ as long as these items are re-exported or used to make products for export. This regulation protects existing businesses that cater to the local market. For example, if a resident entrepreneur employs 20 people producing T-shirts to sell locally, a new T-shirt factory in the EPZ will not drive the resident owner out of business with cheaper products. The existing jobs in the locally owned factory will remain in addition to the jobs added by the foreign-owned factory.

Functions Initially, most of these special zones were occupied by factories that manufactured goods. However, some also acted as *transshipment* points (transfer containers) and recently, as sites for tertiary and quaternary sector activities. For example, the largest share of businesses established by TNCs and MNCs in India offer professional, scientific, and technical services.

EPZs first appeared in the 1960s, and by 2015, 130 countries were home to 4500 of these special zones and employed an estimated 68 million people worldwide. Special manufacturing zones are known by different names—**special economic zones** (SEZs) in China, **maquiladoras** in Mexico, and **free-trade zones** (FTZs) in Singapore—but have similar functions.

In China, the original SEZs were situated in coastal cities near major ports, allowing easy access to international markets. First created in 1979, the Chinese government has increasingly used the incentives of SEZs to attract foreign trade and businesses.

Changes in Maquiladoras There was a surge of American-owned maquiladoras factories after the North American Free Trade Agreement (NAFTA) was signed in 1994. Maquiladoras are now the second-largest source of income in Mexico after petroleum. The maquiladoras were originally all positioned in a single district in northern Mexico, near the United States-Mexico border to minimize transportation costs into the United States.

In recent years, the number of maquiladoras has decreased due to the increased competition for these international corporations as more countries adopt the creation of EPZs as a development strategy. Despite the decrease, there are still approximately 3,000 foreign-owned factories and over 1 million employees working in Mexican maquiladoras.

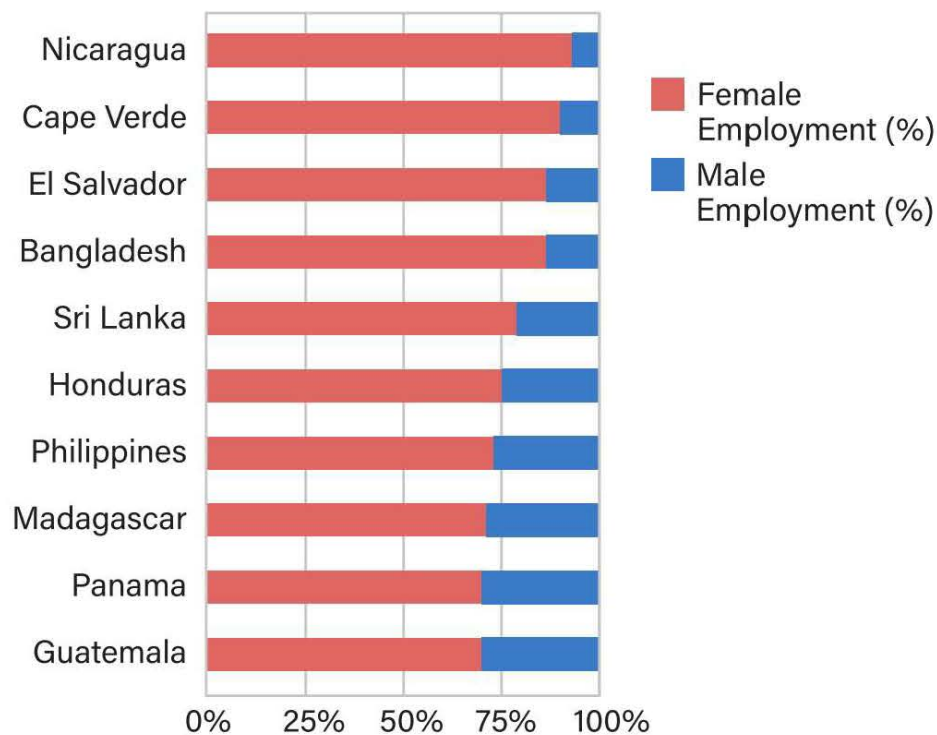
Free-Trade Zones (FTZs) These are locations where a foreign company can store, warehouse, transfer, or process without additional taxation or duties if goods are exported. Major seaport cities like Singapore, London, Amsterdam, and Hong Kong have FTZs. Similar to FTZs, but on a larger scale, are free-trade regions such as the European Union.

Ethics and Societal Changes Related to EPZs

People disagree about whether EPZs are ethical. Critics charge that the transnational corporations are taking advantage of the workers and paying them a fraction of what they would pay workers in their home countries. Proponents of EPZs believe that the wages are reasonable for the region and thousands of people, mainly women, have access to paid employment at better wages than would otherwise be available to them. In addition, low wages keep the cost of manufactured items low, which allows lower-income people to purchase them.

One of the most significant changes related to the development of EPZs is the role of females in society. Typically, the majority of workers hired in EPZs are female. As women earn wages, they become less dependent upon men and are more likely to be heard by government. In addition, birth rates decline as more women gain employment.

FEMALE WORKERS IN EPZs, 2007



Source: United Nations

Women dominate the labor force in most EPZs. Why are women much more likely to be employed in EPZs than men?

The Postindustrial Landscape

As the types of economic activities that exist in a region evolve, so does the economic landscape. Many wealthier core countries now have a **postindustrial economy**, one that no longer employs large numbers of people in factories but has people who provide services and process information. The shift from an industrial to a postindustrial economy changes the landscape of a country.

Post-Fordist Methods of Production

In the 19th century, production increased with the shift from a system of cottage industry to factory production with machines powered by water or coal. However, most products were still made individually.

Early in the 20th century, Henry Ford advanced productivity by developing the **assembly line**—in which an item is moved from worker to worker, with each repeatedly performing the same task. The use of assembly lines allowed companies to rapidly produce more standardized products and with less-skilled workers than ever before. This system of mass production, known as **Fordism**, changed manufacturing and became standard practice across industries.

As globalization increased, so did the need for flexibility from industries in the production process. In modern factories, the **substitution principle**, in which businesses maximize profit by substituting one factor of production for another, has been applied to the labor force. In the late 20th century, increased automation, or replacing workers with machines, allowed assembly line production to greatly increase. However, automation, also known as mechanization, has also forced many workers to become unemployed. The remaining workers are often trained to do more than one job, so they can rotate among a few different workstations during a day, reducing the risk of injuries. This industrial adaptability was the basis of the **post-Fordist** system.

Economies of Scale

Although expensive to install, mechanization saves a company money over the long term and creates *economies of scale* (see Topics 4.9 and 5.11) by allowing business owners to increase output with improved efficiency. Machines can work 24 hours a day without breaks or vacations, and they produce consistent, high-quality work. For example, U.S. industrial output doubled between 1984 and 2015, but industrial employment declined by one-third.

Just-in-Time Delivery

Auto assembly plants make use of **just-in-time delivery**, a system in which the inputs in the assembly process arrive at the assembly location when they are needed. This system reduces the expensive storage costs of extra inventory—but at the risk of running short on inputs. It works only if a factory owner has confidence in his or her suppliers, communications and transportation systems, and ability to accurately predict production needs.

Agglomeration Economies

In some cases, the location decision for one factory is dependent upon the location of other related factories, referred to as **locational interdependence**. Being near similar factories allows businesses to use the same services, such as transportation companies or accounting firms that might specialize in providing service to the industry. It also allows businesses to observe their competition and to occasionally hire away talented young employees from another company.

In addition, the finished product from one factory could be an input at another factory. In this case, it is a market-dependent situation. For example, an auto assembly plant is the market for the output from an auto parts factory. Consequently, the location of the parts factory is very dependent upon the location of the assembly plants.

Most businesses, whether they are secondary, tertiary, or quaternary businesses, locate in proximity to similar businesses to take advantage of **agglomeration economies**. (See Topic 7.2.) Large shopping districts are an example of agglomeration and the *gravity model*. (See Topics 3.3 and 6.4.)

Certain stores locating close together can be more attractive to customers because they have easy and efficient access to many products. The larger the mall, the more pull, or gravity, it will have to draw customers from farther away. Fast-food restaurants will often agglomerate, or cluster, on the corners of busy road intersections because each wants to be visible and accessible to potential customers. For factories, agglomeration is usually close to transportation systems, parts suppliers, or near available skilled workers.

Technopoles

Just as agglomeration economies can encourage the spatial grouping of manufacturing plants, stores, and offices, the same principles can apply to technology companies. A **technopole** is a hub for information-based industry and high-tech manufacturing. The proximity of companies allows for benefits such as the sharing of certain services and attracting highly skilled workers to the area. Often these technopoles are located near universities well known for their computer, mathematics, engineering, science, and entrepreneurial business programs:

- Silicon Valley, near the Universities of California-Berkeley and Stanford
- Route 128, near Harvard University and the Massachusetts Institute of Technology
- The Research Triangle, near Duke University, North Carolina State University, and the University of North Carolina, Chapel Hill
- The Technology Triangle near the University of Waterloo and the University of Guelph in Ontario, Canada

Because of the economic stimulus associated with the technopoles, they often act as **growth poles**, or **growth centers**. The concentration of high-value economic development in the growth pole attracts even more

economic development. Once the process starts, the cumulative causation effect means it tends to feed upon itself. Each time new businesses are attracted to the growth pole, the “magnet” becomes even stronger and attracts more businesses.

Growth poles often have **spin-off benefits**, or **spread effects**, which are positive economic outcomes beyond the growth pole. For example, farmers that are 100 miles away from a growth pole should have expanded markets in which to sell their produce, resulting in increased sales and profits. The *multiplier effect* (see Topic 7.2) of job creation is also another potential benefit.

The possible downsides of growth poles are the **backwash effects**, or negative effects on one region that result from economic growth in another region. A typical backwash effect is the loss of the highly educated young people from distant communities who migrate to growth poles for employment. As a result, the distant communities can face depopulation, loss of tax revenue, and the closure of various services.

In China, the impressive growth in prosperity for people in large urban areas in the eastern part of the country has pulled in people from rural areas in the west. One backwash effect of this has been that the rural western areas sometimes face a shortage of working-age people and those who care for elderly family members.

The Fate of Brownfields

The stereotyped image of a postindustrial landscape is one of deteriorating buildings surrounded by weeds, marked by broken or boarded-up windows, and rusting metal. These sites of abandoned factories are known as **brownfields**. Because of the rusting metal, the region of the United States hit hardest by deindustrialization—the Northeast and lands around the Great Lakes—is often called the **Rust Belt**. In reality, old buildings are usually torn down, so brownfields are often empty. (See Topic 6.11 for more on brownfields.)

Corporate Parks and Campuses

It is not just the existence, removal, or repurposing of old factories that typifies a postindustrial landscape. New service sector jobs also help to shape the postindustrial landscape. As a result of this growth, office buildings and other commercial spaces are more likely to be evident on the landscape. Increasingly, these office buildings congregate in **corporate parks**, or **business parks**, where they can take advantage of agglomeration economies.

Some very large corporations create their own corporate parks where they are the only tenant. Samsung has its headquarters, known as Samsung Digital City, in a park 13 miles south of Seoul, South Korea. The campus covers an area about equal to 40 city blocks. About 35,000 people work there, and it includes 135 buildings, of which four are large office towers. Other facilities include research laboratories, gymnasiums, swimming pools, medical offices, a heliport, daycare facilities, and housing for guests and visiting employees.

Working Remotely and COVID-19

The work people do and how they do it determines where they do it. While people in primary and secondary sector jobs often need to be present at their jobsite to tend crops or build homes, many workers in the tertiary sector do not. They can do their jobs anywhere they have a computer and an internet connection. As the U.S. economy has changed, more and more people have begun working from home.

This trend of working from home picked up momentum when the COVID-19 pandemic struck. By the spring of 2020, more people were working from home than ever before. If the trend to remote working continues, the built environment will change to reflect it:

- Central business districts will include fewer large office buildings, fewer parking lots for commuters, and fewer diners for workers eating lunch.
- Retail companies will close stores and replace sales clerks with online representatives and delivery people.
- Residential houses will identify areas dedicated to office space.

REFLECT ON THE ESSENTIAL QUESTION

Essential Question: *What are the causes and geographic consequences of recent economic changes such as the increase in international trade, deindustrialization, and growing interdependence in the world economy?*

Causes of Global Economic Changes	Consequences of Global Economic Changes

KEY TERMS

outsourcing	export processing zones (EPZs)	locational interdependence
offshoring		agglomeration economies
reshoring	special economic zones (SEZs)	technopoles
new international division of labor	maquiladoras	growth poles (growth centers)
basic economic activity	free-trade zones (FTZs)	spin-off benefits (spread effects)
non-basic economic activity	postindustrial economy	backwash effects
transnational corporations (TNCs)	assembly line	brownfields
	Fordism	Rust Belt
multinational corporations (MNCs)	substitution principle	corporate parks (business parks)
	post-Fordist	
	just-in-time delivery	

Sustainable Development

Essential Question: How are sustainability principles related to and impact industrialization and spatial development?

In the 21st century, many people, businesses, organizations, and governments around the world have begun to recognize and act on the dangers development poses to the environment. In 2015, the United Nations adopted a new vision that acknowledges resources are necessary for human life but also for economic prosperity. Some of the goals of this vision were to eliminate poverty, create prosperity, promote equality, and preserve the earth and its resources.

Sustainable Development

Using the earth's resources without doing permanent damage to the environment is **sustainability**. The goal of **sustainable development** is to address problems caused by depletion of natural resources, mass consumption of goods, pollution of air and water, and the impact of climate change. People can apply the concept at any scale:

- At the household scale, individuals might set thermostats to use less energy heating and cooling their homes.
- At the local level, city and town governments might operate composting programs and shopping malls might reduce unneeded lighting.
- At the country scale, the government might fund research into products that use less energy and industries might recycle their waste.
- At the global scale, countries might cooperate to protect ocean habitats for marine life.

Ecological Footprint and Consumption

A small percentage of the earth's population uses most of the resources and generates most of the waste products. For example, 7 percent of the world's population produces 50 percent of the carbon dioxide. In general, people with more wealth have a larger **ecological footprint**, or impact on the environment. One measure of an ecological footprint is how much land is needed to provide one person with resources and to handle the person's garbage.

For example, the ecological footprint per person in the United States is 20.0 acres. An American football field is 1.3 acres in size, so 5 billion football fields of productive land are needed to support consumption of the U.S. population. The world average is 6.4 acres.

ECOLOGICAL FOOTPRINT PER PERSON, 2017	
Qatar	36.1
United States	20.0
Germany	11.6
Brazil	6.9
Madagascar	2.2

Source: footprintnetwork.org

There is a wide range between countries. What factors account for the differences? Describe a reason why Qatar has such a high ecological footprint compared to other countries.

Resource Depletion

When people overuse resources, development becomes unsustainable. For example, farmers traditionally maintained the fertility of land by regularly allowing a field to lie fallow (unused). In recent decades, farmers have often used all available land every year. As a result, land has become less productive, a trend that cannot be sustained. To counter the loss of natural fertility, farmers have become more dependent on chemical fertilizers.

Similarly, people have depleted resources such as fossil fuels (coal, oil, and natural gas), forests, and fish in either particular regions or the world in general. This has prompted people to develop alternatives, such as solar and wind energy, tree farms, and fish farms.

Pollution

Pollution contaminates air and water with smoke, chemicals, and waste products. It has numerous causes:

- Some, such as volcanic eruptions, are natural events that humans do not influence.
- Some are a mixture of natural events and human actions. For example, dust storms occur naturally in some dry regions. However, they are more likely to occur after farmers have removed the deep-rooted natural vegetation that holds soil in place.
- Some are completely the result of human actions. For example, people pollute the air when they burn wood, coal, or oil. They pollute water when they dump waste from industries or allow farm chemicals to flow into rivers or lakes.

The Impact of Pollution Pollution has large impacts on plants, animals, and humans. According to the Global Alliance on Health and Pollution, in 2015, pollution caused 16 percent of deaths worldwide. Over 90 percent of these deaths occurred in low- or middle-income countries, and most who died were children. Pollution strains the economies of countries by increasing health care costs and causing people to miss school and work because they are ill or taking care of someone who is. The worldwide costs of pollution are estimated to be \$4.6 trillion annually, or around 6 percent of global economic output in a year.

Efforts to Control Pollution One reason pollution is difficult to control is because it spreads so easily. Often, the person or business causing the pollution is not the one who suffers its effects. The people who feel the affects of pollution might live hundreds of miles away from where it originates. In addition, pollution travels across political boundaries. Hence, one government has an interest in letting the pollution continue and a different government wants to stop it.

In the mid-1900s, pollution released by factories in the Midwest drifted eastward and mixed with water in the atmosphere. When it fell as “acid rain” it began destroying forests in New York and New England. The companies causing the pollution had no incentive to stop. The problems caused by the pollution were far from their factories. If one company voluntarily took the costly steps needed to pollute less, its production costs would increase, as would the prices it charged for its products. In a competitive market, it would risk losing sales and possibly going out of business.

The solution was to force every company to reduce emissions. Under pressure from organized citizens, the federal government passed stricter laws on air pollution. With the passage of the Clean Air Act in 1970 and its subsequent amendments, the country reduced the emission of six major types of air pollution by over 70 percent. Besides helping protect the forests, the act resulted in fewer premature deaths, fewer hospitalizations, and fewer days of school missed because of breathing ailments. Similarly, government regulations have made lakes, rivers, and drinking water cleaner than they once were.

Climate Change

Between 2011 and 2020, worldwide temperatures were the warmest on record. Organizations such as NASA, and the National Academy of Science, and the Intergovernmental Panel on Climate Change agreed that human actions were a major cause of climate change. Scientists also concluded that the rise in temperature contributed to more frequent and more destructive wildfires, hurricanes, floods, and droughts. They predicted that climate change would have widespread consequences in the future:

- Diseases once confined to areas around the equator could spread to new areas.
- Ocean levels could rise as glaciers melt, which will threaten the homes and safety of the 40 percent of the global population that lives near coasts.
- Refugee crises could become more common as more frequent floods and droughts cause millions of people to move in search of food, water, and safety.

At the current rate of greenhouse gas emissions, temperatures could be 3.2°C (5.8°F) warmer by the end of this century. Scientist believe that increase could be a low as 1.5°C if countries reduce emissions to levels based on international agreements. In general, core countries has been more able to reduce emissions than have non-core countries. Core countries have greater wealth to pay for cleaner technology and higher standards of living so they can

better absorb changes. In addition, many of the world's manufacturers have moved from core countries to non-core countries, which resulted in these countries increasing their greenhouse gas emissions.

Ecotourism

One example of sustainable development is **ecotourism**, travel to a region by people who are interested in its distinctive and unusual ecosystem. The money spent by ecotourists and the jobs created can provide incentives to people to protect these rare areas rather than convert them to agriculture or industry. It can also fund conservation efforts to protect these regions from damage by developments elsewhere. Some popular ecotourism sites include:

- rainforest wildlife in Costa Rica
- mountain gorillas of Rwanda
- coral reefs in Australia
- whale watching in Kaikoura, New Zealand
- new species of marine and terrestrial life on the Galapagos Islands
- fire and ice landscape (volcanoes and glaciers) in Iceland

Ecotourism is designed to be sustainable. However, carries risks. If too many people visit a fragile ecosystem, they can damage it even as they learn to appreciate it.

UN Sustainable Development Goals

In 2000, the United Nations identified the most challenging barriers to development and eight key steps to overcoming them. Known as the Millennium Development Goals (MDGs), they helped countries with low levels of human development improve the lives of their citizens.

The UN released an analysis of progress toward meeting these goals, the Millennium Development Goals Report, in 2015. The report found that by focusing on very specific and globally accepted goals, countries had cooperated to lift nearly one billion people out of extreme poverty, reduce hunger, and increase the number of girls attending school. This global effort was the most successful anti-poverty program in history.

Despite the success of the MDGs, world leaders still had concerns over the environmental unsustainability of many practices. In 2015, after extensive consultation with representatives of the 193 member states, academics, scientists, private sector leaders, and humanitarian organizations the UN created a new set of goals to replace the MDGs. The 17 new goals were called the **Sustainable Development Goals** (SDGs). The SDGs were intended to finish the job that the MDGs has begun, but with more awareness of environmental challenges and ways to overcome them. As with the MDGs, the UN gave countries 15 years to achieve the goals.

The SDGs targeted all countries, whereas the MDGs had focused on periphery and semiperiphery countries. As summarized in the table below, countries did not make as much progress in the first five years as people in 2015 hoped for. When the COVID-19 pandemic hit in 2020, progress toward many goals virtually stopped. In several cases, gains made during the first four years were nullified as countries redirected funds to battle the pandemic. With hopes that progress would resume, officials began referring to the period starting in 2021 as the Decade of Action.

UN SUSTAINABLE DEVELOPMENT GOALS, 2016–2030	
Goal	Changes 2016–2020
1. End poverty in all its forms everywhere	Decline in poverty from 10 percent to 8.2 percent worldwide
2. Achieve food security, improve nutrition and promote sustainable agriculture	Increase of 60 million people who suffer from food insecurity since 2016
3. Ensure healthy lives and promote well-being for all at all ages	Increasing life expectancy and reducing common diseases but limited by COVID-19
4. Ensure inclusive and equitable quality education for all	Increasing access to education but 260 million school-age children not in school in 2018
5. Achieve gender equality and empower all women and girls	Fewer child marriages and more women in politics
6. Access to clean water and sanitation for all	Slight increase in percentage of people who have clean water and safe sanitation
7. Access to affordable, reliable, sustainable and modern energy for all	More access to electricity in poorer countries and more renewable energy use worldwide
8. Economic growth, productive employment and decent work for all	Stagnating or declining per capita income for 1 in 5 countries worldwide in 2019
9. Increase investment in infrastructure to achieve sustainable development	More investments in research, infrastructure, and mobile connectivity in non-core countries
10. Reduce inequalities within and among countries	Fewer inequalities at the national scale but within countries vulnerable populations at risk
11. Make cities and human settlements inclusive, safe, resilient, and sustainable	More people live in slums than ever before—up to 828 billion people in 2020
12. Ensure sustainable consumption and production patterns	Some progress globally but as population increases, current trends will not be enough
13. Combat climate change and its impacts	Minor reductions in emissions in core countries and increased emissions in non-core countries
14. Conserve and sustainably use oceans and marine resources	Progress in reducing illegal fishing but fewer sustainable fishing practices put species at risk
15. Protect and restore terrestrial (land) ecosystems and halt biodiversity loss	32 percent of countries on track, 50 percent making limited progress, 8 percent no progress
16. Promote just, peaceful, and inclusive societies	More than 70 million refugees in 2018—highest number in nearly 70 years
17. Improve global partnership for sustainable development	Increasing global partnerships in trade but limited by COVID-19

Sustainable Development Goals in Action

Each SDG addressed a major problem facing Earth's population, and the problems were seen as interconnected. Success or failure in meeting one goal would shape success or failure in meeting others. For example, achieving Goal 3 (ensure healthy lives and promote well-being for all) would require success in Goal 1 (poverty), Goal 2 (hunger), Goal 4 (education), Goal 5 (gender equality), and Goal 6 (clean water and sanitation).

Each SDG was broken down into more focused targets. For example, Goal 11 was to make cities and human settlements inclusive, safe, resilient, and sustainable. The writers of this goal recognized that development of public transportation projects was essential to meeting the goal. Only half of the world's population had convenient access to public transportation.

In many Latin American cities, many of the poorest people who most needed public transportation resided at the edge of the city where public transit often did not travel. Yet most of the potential jobs for these people were in the downtown area. If impoverished people had no public transportation, overcoming poverty became much harder.

An additional target of Goal 11 was to reduce the environmental impact of cities, specifically to improve air quality. Mexico City, one of the world's most polluted cities, opened a bus-based rapid transit system (BRT) in 2005 that used low-emission or electric buses. The stations were designed like train stations and the buses could be boarded like a subway, increasing capacity and efficiency. In addition, the buses had the flexibility of using dedicated bus lanes and roads so they cost less to develop and could reach many more people. Cities around the world began modeling their mass transit systems after Mexico City's.

REFLECT ON THE ESSENTIAL QUESTION

Essential Question: *How are sustainability principles related to and impact industrialization and spatial development?*

Sustainability Principles	Impact of Sustainability Principles

KEY TERMS

sustainability

sustainable development

ecological footprint

ecotourism

Sustainable Development Goals



GEOGRAPHIC PERSPECTIVES: ARGENTINA AND SOUTH KOREA

The economic fortunes of Argentina and South Korea have been influenced by their physical locations as well as their roles within global trading networks. Argentina is situated along the Atlantic Coast of South America, so trade with the East Coast of the United States is convenient. Korea is between China and Japan, two large markets.

Conditions in the Early 20th Century

A century ago, Argentina was a much wealthier nation than Korea (the country was not divided between North and South Korea then). Argentina's income per worker made it one of the top 10 economies in the world. Its industrial growth created significant pull factors, and migrants poured in from Europe, particularly Italy. Korea was a heavily agricultural country, and its income per worker ranked it toward the bottom quarter of all countries.

Conditions Today

Currently, about 60 percent of the workers in each country are employed in the service sector. Beyond that, the economies differ greatly.

Argentina, like many countries in Latin America over the past half century, suffered periods of massive inflation, military dictatorships, and heavy foreign debt. These factors combined with massive loan defaults and a poor development plans resulted in a collapsed economy in the 1990s from which the country is still trying to recover. Today, Argentina is a semiperipheral state that relies heavily on agricultural exports such as beef, fruit, and grains.

In contrast, Korea has been a success story of modern economic development, as have many countries in East Asia. Through a combination of intense education, heavy government subsidies, tough trade restrictions, and strong corporations, Korea focused on making products it exported. The plan worked. Today, Korea is a high-tech industrialized economy and exports—mostly manufactured goods—account for nearly half of its GDP. Its levels of health, wealth, and education rank it as a core state, with about 2 percent of its population involved in primary activities and about 40 percent in secondary activities.

1. Describe THREE reasons why Argentina dropped from being a core country to a semiperiphery country.
2. Explain South Korea's plan to improve their economic development.
3. Using one of the SDGs describe a process that South Korea could use to make their development sustainable into the future.



THINK AS A GEOGRAPHER: INDUSTRIAL GROWTH AT DIFFERENT SCALES

One way to understand the process of industrialization at different scales is to analyze the opening or closing of a factory. At the local, national, and global scales, starting up a new factory or shutting down an existing one will have economic, social, political, and environmental effects (ESPN). Consider potential impacts you have learned in this chapter and unit.

1. Review the chart and note the effect at each scale. Identify each effect as either economic, social, political, or environmental.
2. Describe an additional effect for each scale of analysis and identify it using ESPN (economic, social, political, natural/environmental).

IMPACT OF AN AIRCRAFT FACTORY		
Event	Effect	Additional Effects
Aircraft Factory Closes	Local: The amount of empty space in the community's industrial area increases.	1. Local
	National: The federal government funds a program to retrain unemployed workers.	2. National
	Global: The supply of aircraft decreases, which causes airplane prices to increase.	3. Global
Aircraft Factory Opens	Local: The unemployment rate decreases, and total income in the community increases.	4. Local
	National: Total federal tax revenue increases.	5. National
	Global: The supply of aircraft increases, which causes airplane prices to decrease.	6. Global

CHAPTER 20 REVIEW

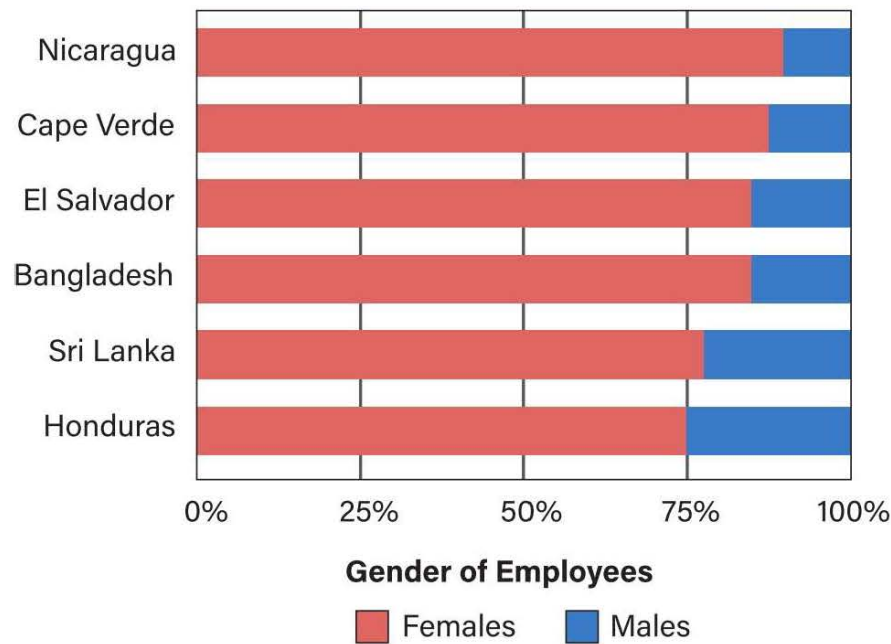
Changing Global Economy and Sustainability

Topics 7.7–7.8

MULTIPLE-CHOICE QUESTIONS

Question 1 refers to the following chart.

EMPLOYMENT IN SELECTED EXPORT PROCESSING ZONES



Source: International Labor Organization, 2007.

1. Which statement about the employment of men and women in EPZs is most clearly supported by the graph above?
- (A) Unemployment is probably an acute issue for men in these countries.
 - (B) Women make up the vast majority of each country's secondary sector employees.
 - (C) Men generally prefer to work in quaternary sector positions than in the positions found in these EPZs.
 - (D) The governments of these countries will be more likely to listen to the concerns of the women.
 - (E) Resource consumption by women working in EPZs will surpass that of men in these countries, causing great social change.

2. Silicon Valley is an example of a technopole because it
- (A) takes its name from the material used to make microchips
 - (B) demonstrates the concept of agglomeration economies
 - (C) is a center for developing new ideas that generate growth
 - (D) has attracted new universities to locate in the region
 - (E) reuses brownfield sites that were once industrial factories

Question 3 refers to the map below.

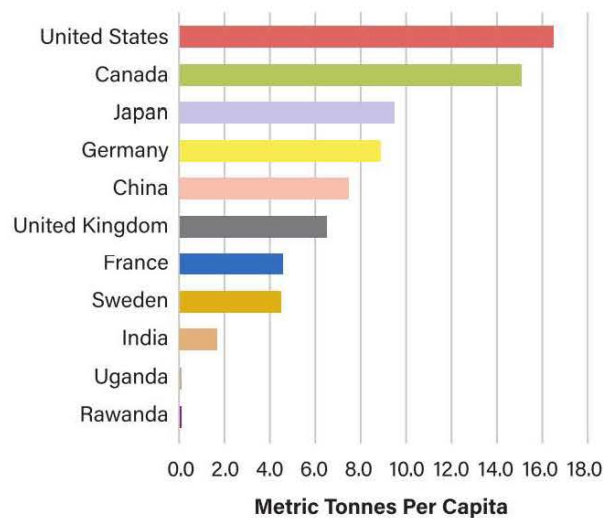


3. Which statement best describes the darker shaded region in the above map?
- (A) Growing prosperity in this region over the past several decades has had a spin-off effect on nearby regions.
 - (B) Industries in the region have a comparative advantage over ones in the South and Southwest regions in recent years.
 - (C) Brownfields are one sign of the economic recovery occurring in the region.
 - (D) The region is known as the Rust Belt because of the many closed factories in it.
 - (E) The region has always had a shortage of jobs in the secondary sector.
4. Which is most responsible for deindustrialization in highly developed countries?
- (A) Easy capital financing available in developing countries
 - (B) Low wages in developing countries
 - (C) Labor shortages in developed countries
 - (D) The lack of strong unions in developed countries
 - (E) The shortage of raw materials in developed countries

5. The main benefit for countries that host export processing zones (EPZs) is that these zones
- (A) create thousands of relatively high-paying jobs for their citizens
 - (B) increase availability of manufactured products for their citizens
 - (C) attract thousands of foreign workers, which results in millions of extra dollars in tax revenue
 - (D) increase opportunities for the citizens to work for American companies and to learn English
 - (E) provide an efficient way to increase imports from the United States

Question number 6 refers to the graph below.

CO₂ EMISSIONS PER CAPITA, 2017 (of selected countries)



Source: World Bank

6. Based upon the graph above, which of the following factors corresponds the most closely with the amount of CO₂ emissions per capita?
- (A) Gross Domestic Product of the country
 - (B) Size of the country (mi.² or km²)
 - (C) Amount of fossil fuels extracted in the country
 - (D) Population of the country
 - (E) Longitudinal position of the country
7. Which of the following business activities will have the greatest multiplier effect?
- (A) Growing grain crops
 - (B) Manufacturing cars
 - (C) Serving fast-food
 - (D) Raising fish in a fish farm
 - (E) Repairing computers

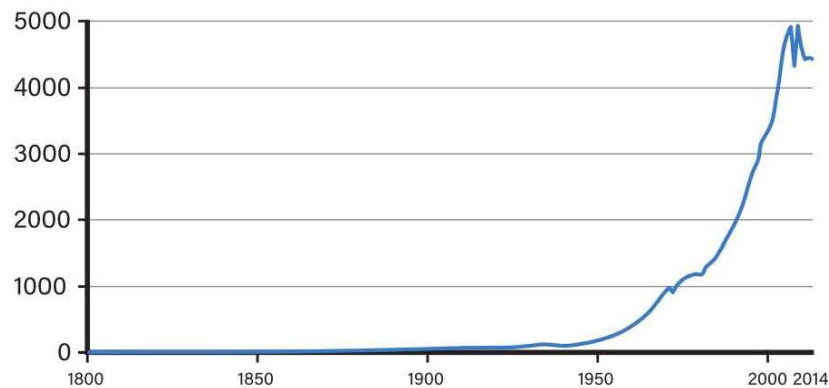
FREE-RESPONSE QUESTION

1. Neoliberal policies and greater complementarity have caused dramatic changes in global trade since the 1950s. National governments set the rules, but companies are the most common trading partners, not countries. The values in the table below are percentages of travel and communication costs using the 1930 costs as 100 percent.

COSTS OF INTERNATIONAL TRAVEL AND COMMUNICATION					
Cost	1930	1950	1970	1990	2005
Sea Freight	100	57	45	26	22
Air Passenger Transport	100	45	23	18	15
International Phone Calling	100	20	18	2	1

Source: Organization for Economic Cooperation and Development Economic Outlook, 2007

THE VALUE OF GLOBAL EXPORTS



Values reflects changes in the amount of trade compared to 1913. Trade in 1913 represented 100.

Source: Federico, G., Tena Junguito, A. (2016). "World trade, 1800-1938: A New Data-Set," EHES Working Papers in Economic History, n. 93.

- (A) Using the concept of complementarity, explain why companies in different countries trade with each other.
- (B) Use the table to explain the pattern of global exports in the graph.
- (C) Using a specific method of transportation, describe the benefit of using this mode of transportation for trade.
- (D) Describe how export processing zones (EPZ) or special economic zones (SEZ) work to lower the cost of trade.
- (E) Describe ONE positive economic impact of increased international trade on a local community.
- (F) Describe ONE negative economic impact of increased international trade on a local community.
- (G) Explain how women in developing countries often benefit from international trade.

UNIT 7 REVIEW: +

Connecting Course Skills and Content

APPLYING GEOGRAPHIC SKILLS

Applying geographic skills is critical for success on the AP Exam. For each skill listed write a one-paragraph response that illustrates your understanding of the question. Support your response with specific examples and evidence. Refer to the Unit 1 introduction (pages 3–7) for tips on how to apply geographic skills.

- 1C Explain TWO advantages of locating a car manufacturing plant in Ohio or Mexico that will sell the cars in the United States.
- 2C Using the U.S. Rust Belt as an example, explain how the multiplier effect can work in a negative way.
- 3D Using the Gini Coefficient and Human Development Index maps in Topic 7.3, describe one similar and one different spatial pattern.
- 4E Explain how the image of containers on page 446 relates to the concept of globalization and the new international division of labor.
- 5D Use examples to help explain the degree to which the concept of income inequality explains the different standards of living experienced by people at the international, national, and local scale.



WRITE AS A GEOGRAPHER: GIVE FULL EXPLANATIONS

Answers to free-response questions can be very basic—or they can be fully explained for additional credit on an exam. Consider the question, "Why did Chicago develop where it did?" The basic answer is that Chicago grew into a major city because it is located where two water transportation networks come together—the Great Lakes and the Mississippi River system. This is correct but basic. A fuller explanation would include claims that explain the context and the details to give significance to these basic facts. It would explain:

- the importance of water travel in the 1800s
- the wealth of food—wheat, corn, beef, and pork—produced in the Midwest
- the increasing demand in the East and Europe for food as industrial cities grew
- the increasing demand in the Midwest for manufactured goods produced in the East

For each question, write a basic answer in one or two sentences. Then list three additional points that would provide a fuller explanation.

1. Explain why purchasing power parity is a more useful refinement of gross national income.
2. Which criticisms of Rostow's Stages of Economic Growth model could also be made against Wallerstein's World Systems Theory?
3. What are the costs and benefits of sustainable growth?