

Summary

KEY ISSUE 1

Where Is Industry Distributed?

The concept of manufacturing goods in a factory originated with the Industrial Revolution in the United Kingdom.

LEARNING OUTCOME 11.1.1: Describe the locations of the principal industrial regions.

- Most of the world's industry is clustered in the three regions: Europe, North America, and East Asia.

THINKING GEOGRAPHICALLY 11.1: What are the principal manufacturers in your community or area? How have they been affected by increasing global competition?

GOOGLE EARTH 11.1: Coalbrookdale, England, is considered the birthplace of the Industrial Revolution, because a factory here was the first to produce high-quality iron using coal. What structure, visible in 3D, was the first in the world to be made of cast iron?



Key Terms

Acid deposition (p. 414) Sulfur oxides and nitrogen oxides, emitted by burning fossil fuels, that enter the atmosphere—where they combine with oxygen and water to form sulfuric acid and nitric acid—and return to Earth's surface.

Acid precipitation (p. 414) Conversion of sulfur oxides and nitrogen oxides to acids that return to Earth as rain, snow, or fog.

Air pollution (p. 412) Concentration of trace substances, such as carbon monoxide, sulfur dioxide, nitrogen oxides, hydrocarbons, and solid particulates, at a greater level than occurs in average air.

Apparel (p. 410) An article of clothing.

Biochemical oxygen demand (BOD) (p. 417) The amount of oxygen required by aquatic bacteria to decompose a given load of organic waste; a measure of water pollution.

Break-of-bulk point (p. 402) A location where transfer is possible from one mode of transportation to another.

Bulk-gaining industry (p. 400) An industry in which the final product weighs more or comprises a greater volume than the inputs.

Bulk-reducing industry (p. 398) An industry in which the final product weighs less or comprises a lower volume than the inputs.

Chlorofluorocarbon (CFC) (p. 413) A gas used as a solvent, a propellant in aerosols, a refrigerant, and in plastic foams and fire extinguishers.

Cottage industry (p. 395) Manufacturing based in homes rather than in factories, commonly found prior to the Industrial Revolution.

Ferrous (p. 398) Metals, including iron, that are utilized in the production of iron and steel

Fordist production (p. 422) A form of mass production in which each worker is assigned one specific task to perform repeatedly.

Greenhouse effect (p. 412) The anticipated increase in Earth's temperature caused by carbon dioxide (emitted by burning fossil fuels) trapping some of the radiation emitted by the surface.

Industrial Revolution (p. 395) A series of improvements in industrial technology that transformed the process of manufacturing goods.

Just-in-time delivery (p. 423) Shipment of parts and materials to arrive at a factory moments before they are needed.

Labor-intensive industry (p. 408) An industry for which labor costs comprise a high percentage of total expenses.

KEY ISSUE 2

Why Are Situation and Site Factors Important?

Manufacturers select locations for factories based on assessing a combination of situation and site factors.

LEARNING OUTCOME 11.2.1: Identify the two types of situation factors and explain why some industries locate near inputs.

- Situation factors involve minimizing the cost of shipping from sources of inputs or to markets.
- A location near sources of inputs is optimal for bulk-reducing industries.
- Industries that extract a large amount of minerals tend to be bulk-reducing industries.

LEARNING OUTCOME 11.2.2: Explain why some industries locate near markets.

- Bulk-gaining industries, single-market manufacturers, and perishable products companies tend to locate near markets.

LEARNING OUTCOME 11.2.3: Explain why industries use different types of transportation.

- Trucks are most often used for short-distance delivery, trains for longer trips within a region, ships for ocean crossings, and planes for very high-value packages.
- Some firms locate near break-of-bulk points, where goods are transferred between modes of transportation.

LEARNING OUTCOME 11.2.4:

Describe how the optimal location for steel production has changed.

- Steel production has traditionally been located near inputs, but the relative importance of the two main inputs—coal and iron ore—has changed.
- Some steel production, especially minimills, is now located near the markets.
- Industries that extract a large amount of minerals tend to be bulk-reducing industries.

LEARNING OUTCOME 11.2.5:

Explain the distribution of motor vehicle production.

- Because they are bulk-gaining products, most motor vehicles are assembled near their markets.
- The distribution of motor vehicle production has changed because the distribution of buyers has changed.

LEARNING OUTCOME 11.2.6: List the three types of site factors.

- The three site factors are labor, capital, and land.
- A labor-intensive industry has a high percentage of labor in the production process.

LEARNING OUTCOME 11.2.7: Explain the distribution of textile and apparel production.

- The clothing industry is a labor-intensive industry.
- Three steps in production are spinning, weaving, and sewing. Most spinning and weaving occur in low-wage countries, but some sewing occurs in developed countries near consumers.

THINKING GEOGRAPHICALLY 11.2: To induce Kia to build its U.S. production facility in Georgia, the state spent \$36 million to buy the site; \$25 million to prepare the site, including grading; \$30 million to provide road improvements, including an interchange off I-85; \$6 million to build a rail spur; \$20 million to construct a training center; \$6 million to operate the center for five years; \$6 million to develop a training course; \$76 million in tax credits; \$14 million in sales tax exemptions; and \$41 million in training equipment. Did Georgia overpay to win the Kia factory? Explain.

GOOGLE EARTH 11.2: The largest steel works in the United States, the US Steel complex at Gary, Indiana, sits at the south end of Lake Michigan. How many modes of transport delivering raw materials to the plant can you see?



Maquiladora (p. 421) A factory built by a U.S. company in Mexico near the U.S. border, to take advantage of the much lower labor costs in Mexico.

New international division of labor (p. 420) Transfer of some types of jobs, especially those requiring low-paid, less-skilled workers, from more developed to less developed countries.

Nonferrous (p. 398) Metals utilized to make products other than iron and steel.

Nonpoint-source pollution (p. 416) Pollution that originates from a large, diffuse area.

Outsourcing (p. 420) A decision by a corporation to turn over much of the responsibility for production to independent suppliers.

Ozone (p. 413) A gas that absorbs ultraviolet solar radiation, found in the stratosphere, a zone 15 to 50 kilometers (9 to 30 miles) above Earth's surface.

Photochemical smog (p. 414) An atmospheric condition formed through a combination of weather conditions and pollution, especially from motor vehicle emissions.

Point-source pollution (p. 416) Pollution that enters a body of water from a specific source.

Post-Fordist production (p. 422) Adoption by companies of flexible work rules, such as the allocation of workers to teams that perform a variety of tasks.

Right-to-work law (p. 418) A U.S. law that prevents a union and a company from negotiating a contract that requires workers to join the union as a condition of employment.

Sanitary landfill (p. 414) A place to deposit solid waste, where a layer of earth is bulldozed over garbage each day to reduce emissions of gases and odors from the decaying trash, to minimize fires, and to discourage vermin.

KEY ISSUE 3

Why Does Industry Cause Pollution?

Industry is a major polluter of air, land, and water.

LEARNING OUTCOME 11.3.1: Describe the causes and effects of global warming and damage to the ozone layer.

- Air pollution occurs at global, regional, and local scales.
- At the global scale, the principal pollution is global warming, caused primarily by burning of fossil fuels in factories and vehicles.

LEARNING OUTCOME 11.3.2: Describe the causes and effects of regional and local-scale air pollution and solid waste pollution.

- Acid deposition is a major form of regional-scale air pollution. Sulfuric acid and nitric acid generated by burning of fossil fuels fall into bodies of water.
- Carbon monoxide, hydrocarbons, and particulates are the major forms of local-scale air pollution.
- Solid waste is typically placed in landfills or incinerated.

LEARNING OUTCOME 11.3.3: Compare and contrast point and nonpoint sources of water pollution.

- Point-source pollution originates from a specific place, such as a pipe, generated principally by factories and sewage disposal.
- Nonpoint sources are generated primarily by agricultural runoff.

THINKING GEOGRAPHICALLY 11.3: What are the major pollutants in or near your community?

GOOGLE EARTH 11.3: The world's largest electronics manufacturer, FoxConn, has a large complex in Longhua, Shenzhen, China. How many different FoxConn buildings are labeled in Longhua?



KEY ISSUE 4

Why Are Situation and Site Factors Changing?

Industry is on the move within developed countries, as well as to emerging developing countries.

LEARNING OUTCOME 11.4.1: Explain reasons for changing distribution of industry within the United States.

- Industry is moving from the North to the South within the United States.
- Lower labor costs and absence of unions are major factors in the migration.

LEARNING OUTCOME 11.4.2: Explain reasons for the emergence of new industrial regions.

- Some jobs have been transferred to low-wage countries as part of the new international division of labor.
- The BRIC countries (Brazil, Russia, India, and China) are expected to be the top industrial powers by the middle of the twenty-first century.

LEARNING OUTCOME 11.4.3: Explain reasons for renewed attraction of traditional industrial regions.

- Traditional industrial regions attract and retain industries that need skilled labor.
- Just-in-time delivery has increased the attraction of locating near consumers.

THINKING GEOGRAPHICALLY 11.4: What have been the benefits and costs to Canada, Mexico, and the United States as a result of NAFTA?

GOOGLE EARTH 11.4: If you fly to Ciudad Acuna, Mexico, several *maquiladora* plants can be seen on the northern edge of the city, near the U.S. border, along the Rio Grande River (Rio Bravo in Spanish). What is the distance from the *maquiladora* complex to the nearest border crossing?



Site factors (p. 398) Location factors related to the costs of factors of production inside a plant, such as land, labor, and capital.

Situation factors (p. 398) Location factors related to the transportation of materials into and from a factory.

Textile (p. 410) A fabric made by weaving, used in making clothing.

Vertical integration (p. 420) An approach typical of traditional mass production in which a company controls all phases of a highly complex production process.

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