Chapter 19: Technological Advances and Economics in the Global Age: 19-3a Technology and the Environment
Book Title: The Earth and Its Peoples: A Global History 7th Edition Update, AP® Edition
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19-3a Technology and the Environment

Two new technologies—the skyscraper and the automobile—transformed the urban environment even more radically than the railroad had done. At the end of the nineteenth century architects had begun to design ever-higher buildings using elevators and load-bearing steel frames. Major corporations in Chicago and New York competed to build the most daring buildings in the world, such as New York's fifty-five-story Woolworth Building (1912). A building boom in the late 1920s produced dozens of skyscrapers, culminating with the eighty-six-story Empire State Building in New York in 1932.

European cities restricted the height of buildings to protect their architectural heritage; Paris forbade buildings over 56 feet (17 meters) high. In the 1920s Swiss architect Charles Edouard Jeanneret (1887–1965), known as **Le Corbusier** (Professional name of architect Charles-Éduard Jeanneret, who led a modernist movement away from surface decoration and toward form following function. (*p.* 570)) (**luh cor-booz-YEH**), outlined a new approach to architecture that featured simplicity of form, absence of surface ornamentation, easy manufacture, and inexpensive materials such as concrete and glass. Other architects—including the Finn Eero Saarinen, the Germans Ludwig Mies van der Rohe (**LOOD-vig MEES fon der ROW-uh**) and Walter Gropius, and the American Frank Lloyd Wright—also contributed to what became known as the International Style.

Meanwhile, the edges of cities were spreading far into the countryside, thanks to the automobile. The assembly line pioneered by Henry Ford mass-produced vehicles in ever greater volume and at falling prices. By 1929 Americans owned five-sixths of the world's automobiles, or one car for every five people. Automobiles were praised as the solution to urban pollution; as they replaced carts and carriages, horses disappeared from city streets, as did tons of manure.

The most important environmental effect of automobiles was suburban sprawl. Middle-class families could now live in single-family homes too far apart to be served by public transportation. As middle- and working-class families bought cars, cities acquired rings of automobile suburbs. Los Angeles, the first true automobile city, consisted of suburbs spread over hundreds of square miles and linked together by broad avenues. Many Americans saw Los Angeles as the portent of a glorious future in which everyone would have a car. European cities that had inherited narrow streets from the premodern past adapted less easily to passenger automobiles. In the countryside, however, high-speed, limited-access expressways, called *autostrada* in Italy and *autobahn* in Germany, became sources of national pride for the regimes of Benito Mussolini and Adolf Hitler. Yet compared with the United States, private automobile ownership remained uncommon.

Technological advances also transformed rural economies. In 1915 Ford introduced a gasoline- powered tractor, and by the mid-1920s these versatile machines began replacing horses. Larger farms profited most from this innovation, while small farmers sold their land and moved to the cities. Tractors and other expensive equipment hastened the transformation of agriculture from family enterprises to larger businesses, or in the USSR to collective farms with state-owned tractor stations.

In India, Australia, and the western United States, engineers built dams and canals to irrigate dry lands. Dams offered the added advantage of producing electricity, for which there was a booming demand. The immediate benefits of water control—irrigated land, prevention of floods, and generation of electricity—far outweighed such negative consequences as salt deposits on irrigated fields and harm to wildlife that would eventually emerge.