Bogotá

Poverty and informal housing abound in the southern half of sprawling metropolitan Bogotá, Colombia. Tens of thousands of Bogotá's materially impoverished residents live in very crowded neighborhoods. Basic urban services and amenities are slowly delivered to such areas, as the city government tries to keep pace with neighborhood expansion. Many new public schools were built by the city during the first decade of the 2000s in such neighborhoods in an attempt to provide opportunities for the neighborhood youth to obtain a good education and the chance to improve their living conditions. **Photo:** © Joseph P. Dymond.

chapter 11

Latin America

Tropical Forests and Deforestation

Deforestation, or the permanent clearing of forest vegetation, is a centuries-old land modification practice. Societies in all world regions and in both temperate and tropical latitudes used forest resources for fuel, shelter, and transportation. Dramatic increases in the permanent clearing of tropical rain forests in recent decades has caused significant alarm among a growing global body of scientists, medical researchers, government officials, and environmentalists. Global communities concerned with the potential loss of biodiversity, degradation of human health, and links to global climate change call on the governments practicing or permitting tropical deforestation to cease. Locally, where deforestation is taking place, governments, business communities, and farmers angrily retreat from the global community and assert their sovereign rights to resource use.

The controversy surrounding the permanent clearing of tropical forests is a prime example of the antagonistic relations that may form when globalization forces and local traditions or preferences work against one another. Complicating the struggle between the global and local in tropical deforestation is the fact that globalization forces are specifically one of the major causes of deforestation. Why is tropical deforestation such an emotionally charged issue? The answer is that it is difficult to communicate the scientific significance tropical forest biomes play in terms of global ecology, global climate, and human biology in a politically charged and economically challenged environment.

Tropical rain forests exist in tropical latitude regions where high temperatures and high levels of humidity year-round produce a fairly consistent precipitation pattern each month. The three most significant locations of tropical rain forest in the world are in Southeast Asia (see Chapter 6), Central Africa (see Chapter 9), and the Amazon River basin in South America.

Tropical rain forest is the dominant vegetation and climate regime in the Amazon River basin of Brazil and adjacent parts of its neighboring countries, including eastern Colombia, Ecuador, Peru, Bolivia, southern Venezuela, and the Guianas. Although other locations in Latin America contain similar vegetation and climatic conditions the Amazon dominates in size and global impact.

Tropical forests contain the highest plant and animal species diversity per unit of land of any ecosystem or biome in the world. Seventy percent of the world's known plant and animal species reside in tropical forests, with hundreds of distinct species existing in relatively concentrated areas. Contemporary global health care depends on the species diversity of tropical rain forests. Existing treatments and promising cures for various forms of cancer come from tropical forest species. Numerous human health issues and aging conditions may be treated, cured, or slowed through medicines derived from the tropical rain forest plants. Medical research communities assert the need to explore the unknown potential hidden in the diversity of tropical rain forest vegetation. International pharmaceutical research, development, and sales generate hundreds of millions in revenue from products related to tropical rain forests. The potential benefit of hundreds to thousands of species present in the tropics has yet to be identified. Permanent clearing could eliminate countless medicinal cures and treatments yet undiscovered.

Trees absorb carbon dioxide from the atmosphere and return oxygen to the atmosphere. Tree respiration takes place in the troposphere, the lowest level of the Earth's atmosphere, where humans live and breathe. Although the scientific community is far from a complete understanding of the relationship between carbon dioxide and the extent of global climate change, there is a consensus that warming is taking place and carbon dioxide is a material culprit. Removing huge tracts of tropical forest eliminates a primary source of oxygen and a mechanism for removing the carbon dioxide at the same time. Burning forests, or drowning them under dammed waters, both common practices in Latin America, contributes to the release of carbon dioxide and methane, both causes of global warming.

Tropical forests provide a number of local environmental stabilizers. Tropical forests hold moisture and release it into the local and downwind environment. They regulate stream flows and prevent downstream flooding. Tropical rain forests provide a source of water when global cycles bring drier periods to a region. Through the process of evapotranspiration, they provide humidity and rainfall to the region they inhabit as well as far downwind.

Tropical soils are not nutrient rich like those of many temperate regions. The vegetation in the tropical forests stores the life-sustaining nutrients within its green cover, so that clearing the forest removes the local nutrient base and diminishes the potential for future species diversity. The vegetation keeps the local soil intact. In its absence, soil will wash through the watershed and out through the drainage system. The trees on poorer soils maintain their existence by circulating the nutrients without letting them enter the soil: when leaves fall, insects and fungi soon break them down so that roots near and above the surface can capture the chemicals again.

Government debt, crowded population densities in the east, millions of poor and jobless people, farmers with no land, and a wealth of natural resources prompted the Brazilian government to

Map of the Amazon River basin in Brazil and the extent of the tropical rain forest.

promote the development of the Amazon basin. The government is hoping huge mining projects located in forested areas will bring in foreign capital and ease Brazil's massive foreign debt. The government claims sovereign rights to exploit its resources however it deems appropriate. Brazilian political leaders assert the need to fully develop resources in order to reduce a debt structure that is so severe they are barely able to make the interest payments. Brazilian officials point to countries such as the United States, where unencumbered resource exploitation led to material wealth and prosperity. Many local and international environmental groups are calling for international reduction of Brazilian debt to help the country shift its development efforts away from the Amazon.

Development near mining operations leads to an influx of people to provide services. As supporting industries grow, more people move to the region. As roads are cut into the forest, farmers and ranchers settle along both sides. Poor farming practices coupled with the nature of the soils and vegetation often lead to rapid nutrient depletion, and the farms are either sold to large-scale enterprises or abandoned for new land. As new roads are built, new settlers move in, existing farmers move to more productive land, and the rain forest vegetation slowly disappears.

The government asserts such projects produce jobs that employ people who would otherwise have no work or income. People working the mines and providing services to the developing regions are grateful for the opportunities presented. In places where better soils coincide with a good local knowledge and where farmers are not too indebted, there has been some success in growing commercial crops of beans and vegetables. In most parts, the cut areas gave way to cattle ranching, but few cattle can be supported per hectare, and the carrying capacity soon declines.

Settlement in the Amazon River basin has often been uncontrolled, without proper surveys or understanding of the rain forest ecosystem, and often results in armed combat over land rights. The Brazilian government believes development of the region will lead to national stability and will diminish any border disputes neighboring countries may have over Amazonian lands. The Brazilian army remains a major influence on Amazonian development, but one that is seldom considered. Arising from the border wars that drained Brazilian manpower earlier in the 1900s, the military encouraged cutting of the rain forest for strategic reasons. When in power, military dictators instigated projects such as the Trans-Amazonica Highway and encouraged families to settle the area as part of the "great march westward." But neighboring countries fear a loss of their remote lands in the Amazon if Brazilian development pushes too far to the west.

The future of the tropical rain forest in Latin America will be determined by the ability of local and global governments to understand the ecosystem better and cooperatively look for egalitarian uses that may serve the needs of countries like Brazil while sustaining the global ecological and human health value of the rain forest system. Read the conflicting views presented here and consider how you might resolve this controversial and complex issue. Are there other factors for or against tropical rain forest resource use and deforestation you might include?

CONSERVE TROPICAL RAIN FORESTS	USE RAIN FOREST RESOURCES
Tropical rain forest (TRF) resources provide a sink for carbon dioxide. Burning TRF vegetation adds carbon dioxide to the Earth's atmosphere. TRF areas are a source of oxygen in the lowest levels of Earth's atmosphere, where humans live and breathe.	There is incomplete carbon dioxide data for Earth's atmosphere. Large portions of the Earth's surface are unreported. Ocean exchanges with the lowest levels of the Earth's atmosphere are more significant than TRF exchanges.
There is tremendous biodiversity in the plant life present in TRF ecosystems.	There is no conclusive evidence that partial TRF clearing will permanently change the biodiversity of the Earth as a whole.
Many medical treatments are derived from TRF products, and many disease cures come from TRF products, including current treatments and potential cures for cancer patients. Destruction may eliminate many undiscovered cures and treatments. TRF-derived pharmaceuticals earn billions internationally each year.	Medical treatments come from many sources. Many treatments and cures may be synthetically generated in laboratories and do not require the use of naturally growing species from TRF.
Governments permit the rapid clearing of TRF resources and sell them internationally, claiming rights to destroy domestic resources that impact the entire Earth. Yet the same governments may be corrupt and waste other resources and spend their cash foolishly.	Poor countries need to and have the right to use their natural resources for their own best interest. The wealthier countries of the world obtained high living standards by depleting much of their own and others' resources. Now those countries want to hold back countries with TRF resources.
Indigenous tribes and local people are displaced by TRF clearing. In some cases, bloody conflicts ensue while government officials turn a blind eye.	Growing countries need to push their frontiers and develop their resources. "Productive" members of society have a right to use land in a manner that will benefit them and their country.
TRF resources provide an increasing tourism revenue potential. Although some governments assert their ability to balance resource exports and development goals with conservation for tourism growth, few have shown a true commitment to achieving such a balance.	Governments have the right to determine how they will earn revenue from their resources. Governments of TRF resource-wealthy countries assert their ability to balance resource depletion and extraction with conservation and replenishment.
TRFs provide a natural habitat for species found only in this biome. Removing the TRF would eliminate habitat and cause permanent loss to global species diversity. Loss of species could alter the ecological balance of the Earth.	A good source of income in a debt-challenged country with a large, materially impoverished segment in its population is far more important than the conservation of a bird or a tree.

11.4 GLOBAL AND LOCAL CHANGES

The United States and Latin America

The United States staked its claim on Latin America by formulating the **Monroe Doctrine** in 1823, in which it asserted its role as the geopolitical leader of the Western Hemisphere and the Americas in particular. From the late 1800s, the United States intervened in the affairs of Cuba, Haiti, and the Dominican Republic on several occasions. The decline in the availability of British capital coupled with growing production in the United States led to a regional shift of economic dominance toward the United States in the early 1900s. During the later 1900s, the impact of two world wars, the depression of the 1930s, and political and corporate intervention from the United States caused most Latin American countries to look northward for trade, political support, and elements of popular culture, including fashion, motion pictures, music, and fast food. Miami, Florida, with its large Hispanic population, regional air and sea transportation networks, and growing banking and financial services sector, became a strong cultural link between the United States and Latin America in the second half of the 1900s.

Latin American connections with the United States strengthened in the 1990s. The acceptance by Mexico, the United States, and Canada of the North American Free Trade Agreement (see Chapter 12 Point-Counterpoint: North American Free Trade Agreement box on page 544) enhanced trade and business connections among them. By the end of the 1990s, a unique countertrend changed the dominant unidirectional flow of influence between the United States and Latin America. In the 1980s and 1990s, Latin American popular culture began to rival U.S. homegrown popular culture as the Latin-based segment of the U.S. immigrant population grew rapidly. Latin American influences in the restaurant industry thrived, and Latin American–influenced popular music topped the U.S. charts.

The Lost Decade

In the 1970s geopolitical events in the Middle East contributed to rapidly rising oil prices and diminished supply to world markets. Oil producers initially incurred increased revenues from the higher oil prices. They invested their revenues in European and U.S. banks. These petrodollars were urged on Latin American countries in the form of loans. Such loans were used to pay for oil imports in the nonproducing countries and major infrastructure projects in producing countries such as Brazil, Mexico, and Venezuela—and to improve some government officials' overseas bank accounts.

The recession in the more materially wealthy countries caused by the high oil prices led to weakened markets for products from Latin America and much higher interest rates on the loans. The combination of debts and falling export income caused many Latin American countries to default on debt payments by the mid-1980s, resulting in the 1980s distinction as the **Lost Decade.** The Brazilian government had to devote its large overseas trade balance generated by import-substitution industries, plus sales of mineral and farm products, to servicing its extensive international debts. Brazil's debt servicing reduced its ability to invest in domestic production, thereby dramatically diminishing economic progress. The high interest rates caused foreign investment and aid to dry up in the late 1980s, and debt liabilities forced countries to emerge from reliance on their internal markets.

Structural Adjustment

The GNI PPP (Figure 11.15) and consumer goods ownership data (Figure 11.16) for Latin American countries reflect a wide range, from economic giants such as Brazil to materially impoverished countries such as Honduras. The current global connections of many economies in the region are partially a legacy of past economic institutions and international relations and partially a response to 1990s changes in governmental approaches to participation in the world economy. Elected governments came to power everywhere (except Cuba), and emphasis shifted from inward-looking policies to the need for cooperation. The older policies that focused on government-run industry and the protection of domestic products through tariffs, quotas, and red tape, or **protectionism,** involved high levels of government intervention

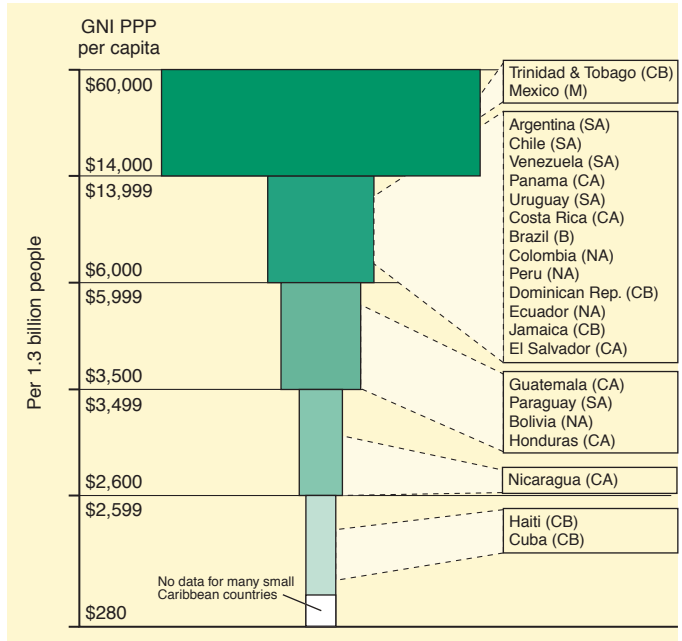

FIGURE 11.15 Latin America: Country Average Incomes Compared. The countries are listed in the order of their GNI PPP per capita for 2008. Subregions are indicated parenthetically. M=Mexico; CA=Central America; CB=Caribbean; NA=Northern Andes; B=Brazil; SA=South America. No data for many small Caribbean Basin countries. **Source:** Data (for 2008) *World Development Indicators 2010*, World Bank.

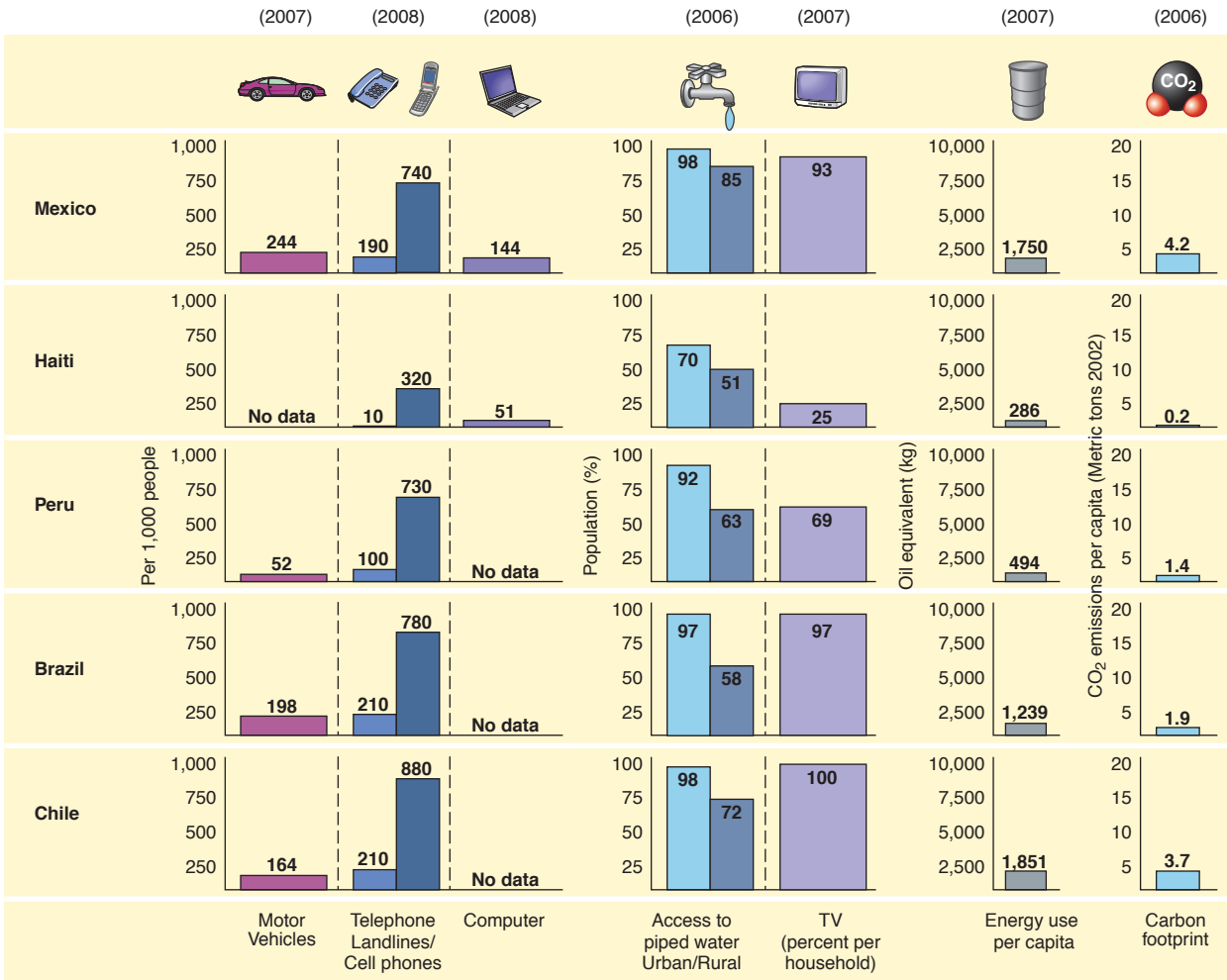

FIGURE 11.16 Latin America: Ownership of Consumer Goods, Access to Clean Water, and Energy Usage. Contrast conditions in materially wealthy, moderately wealthy, and very poor countries. **Source:** Data (for 2006, 2007, 2008) from *World Development Indicators 2010*, World Bank.

and highlighted the lack of capital available for internal investments. These policies gave way to those of structural adjustment, urged by the World Bank and the International Monetary Fund, encouraging less government spending, more foreign investment, and more exporting industries. The new policies also opened markets to foreign products and privatized government corporations. Structural adjustment policies were partly forced on Latin American countries as a means of reducing debt burdens incurred during the 1970s and 1980s. As with other simplistic approaches to development, this economic restructuring that was superimposed on the Latin American regional culture was subject to potential disasters—as Mexico found in 1994–1995, when its economy opened too rapidly, sucking in imports and capital investments and creating a huge trade imbalance.

Global Cities

Although many cities in Latin America interact and trade on a global level, the region's two giants, Mexico City and São Paulo, are the dominant forces responsible for inserting the Latin American region into globally connected world systems (Figure 11.17). Both Mexico City and São Paulo have populations of 18–20 million people. Extensive rural-to-urban migration, migration within the metropolitan areas, and high rates of natural increase created very dynamic urban populations for both cities, challenge demographers in determining exactly how many people reside in each. Rapid economic development in both Brazil and Mexico led to dramatic growth in the largest cities of both countries. The decrease in nationally controlled industries with a corresponding increase in private investment opened a floodgate for the larger cities to establish connections with the industries, governments, and investors of cities, countries, and regions throughout the world.

Both Mexico City and São Paulo have diverse populations, with each housing people from all regions of their respective countries. The cities are representative of the different dialects, social customs, religious practices, and regional pride existing throughout Mexico and Brazil. The expanse of trade and interaction with multinational corporations from all world regions, as well as relationships with

remotest parts of the country. Slow economic development and feelings of political and cultural isolation contributed to the Zapatista uprising in the region.

Mexico City

Mexico City is by far the largest urban agglomeration in Middle America. Its site was a major population center before the arrival of the Spaniards and even before it became the Aztec capital. It continued to be the focus of road and rail networks within New Spain and independent Mexico. Mexico City is the political capital and media center of the country, and it has three-fourths of Mexico's manufacturing industry and nearly all of its commercial and financial establishments.

During the 1950s, 1960s, and 1970s, up to 1 million people per year migrated from rural areas in Mexico to metropolitan Mexico City. Housing supplied by government efforts combined with that from private construction, yet development projects could not provide adequate accommodation for almost one-third of the rapidly growing city's population. The city attracted rural migrants with the expectation of greater economic opportunities, better education, more diverse recreation and cultural choices, and more substantial health-care services. Squatter settlements exploded in many parts of the Central Valley of Mexico in and around the city. **Nezahualcóyotl** (Neza) is a sprawling municipality with more than 1.5 million materially impoverished people situated on the northeastern border of Mexico City. The municipality grew quickly in the 1960s and 1970s as poor rural migrants settled by the tens of thousands each year in makeshift, self-built housing. Parts of Neza were given municipal services like piped water and electricity while other areas remain without amenities. Garbage collection is conducted in part by donkey cart, and Neza has one of the highest crime rates in Mexico. Numerous ***cholos***, (a sometimes derogatory term) or youth gangs, formed in the 1990s, and gang-related crime remained a serious issue in Neza and other parts of metropolitan Mexico City in 2011.

The overall result of such rapid growth is a combination of overcrowding, congestion, and air and water pollution. The physical geography of the Central Valley of Mexico, coupled with the intensely crowded living conditions, makes the urban center one of the most polluted, in terms of air quality, in the world. Although residents of metropolitan Mexico City have greater access to health care than rural Mexicans, infant mortality rates and other social health indicators are some of the worst in the country due in large part to poor air and water quality. Depletion of underground water resources during the past several decades presents another problem for the city. Many areas within the urban system are subsiding, some more than 5 meters. Engineers struggle to stabilize historic structures that have been slowly sinking for decades. As job markets also failed to cope with the population explosion of the city, more than 50 percent of metro area laborers were working in the informal sector of the economy by 2006. Government efforts from the 1980s through the early 2000s to attract jobs and migrants to other regions in Mexico helped to slightly alleviate population pressure in Mexico City, but overcrowding and employment remain formidable challenges in the country's Federal District.

Economic Development and the Human Landscape

Mexico is by far the most economically developed of the countries of Middle America. In 2008 Mexico had a total GNI PPP that was more than 85 percent of Middle America's total GNI. Mexican GNI per capita is one of the highest in Latin America and near the top of the World Bank's upper-middle-income group. Ownership of consumer goods was well above that in the countries of Central America apart from Costa Rica (see Figure 11.16).

Mexico has a diversified economy with commercial farming, manufacturing, tourism and related services, and the oil and gas industries each playing a significant economic role.

Tourism is a major and growing source of income for Mexico, with 22.6 million visitors in 2008 (up from 17 million in 1990), which is millions more than anywhere else in Latin America. Mexico is a regional leader in developing a tourism industry and is one of the first Latin American countries to have a separate ministry of tourism with dedicated funds within its federal governmental structure. Mexico City, Pacific coastal resorts such as Cabo San Lucas, Mazatlán, and Acapulco, well-preserved ruins of Mayan city-states, and the Caribbean coastal resorts of the Yucatán Peninsula are major tourist attractions for Mexicans, Latin Americans, and visitors from North America, Europe, and Asia. Gang violence in Mexico's cities and drug trafficking-related crime, especially in northern Mexico, have not materially slowed the influx of international tourists to Mexican resort areas along the coasts and in upland areas of central Mexico.

Variations in the development of manufacturing define economic regions within Mexico. Nearly two-thirds of the Mexican population lives in the urban region surrounding Mexico City that includes Guadalajara, Veracruz, and León. The majority of Mexico's economic power and activity is centered in this megalopolis-type urban expanse, which is similar to the northeastern United States and to parts of Japan and Western Europe. Northern Mexico became the main growth area in Mexico's economy for new industrial development in the 1970s and 1980s, building on already established industries such as steel and iron production in Monterrey.

Maquila

More recently, parts of northern Mexico and towns along the U.S. border, from Tijuana in the west to Matamoros

in the east, experienced very rapid growth. After 1965 the ***maquiladora*** program made it possible for foreign-owned factories (*maquila*) sited in Mexico to import components for assembly without customs duties. Such factories used cheap local labor and took advantage of Mexico's fewer labor and environmental regulations to assemble goods that could be exported, duty free, across the Mexican border and back into the producing country (most often the United States). U.S. corporations involved in textiles, apparel, electronics, and wood products built their factories in these towns, where there was rapid growth through the 1990s. Asian and European corporations joined U.S. facilities in producing under *maquila* laws in the northern zone.

The concentration of so much economic activity along the border, however, brought increased air and water pollution. Medical research continues to indicate a strong correlation between the industrial expansion of the maquiladora region and increased rates of cancer and other diseases among the people on both sides of the Mexico-U.S. border. Both Mexico and the United States are implementing programs to reduce industrial pollution from both sides of the border.

The *maquila* industrial zone enhanced global connections, especially those established with the United States. A human landscape now exists in which the influence of U.S. popular culture produces a unique Mexican-U.S. cultural blend for people of the border zone. Mexicans in border towns may celebrate Halloween instead of *Día de Los Muertos* (Day of the Dead), they may cook meals that are hybrids of traditional Mexican and contemporary southwestern U.S. recipes, and they are increasingly using Spanglish, a Spanish-English hybrid, or English to do so.

The combined forces of the maquiladora program and NAFTA opened a floodgate of economic globalization in Mexico. Ford, GM, Nissan, IBM, Whirlpool, Kodak, and Caterpillar are just a few of the hundreds of major foreign companies operating within Mexico's borders. Furthermore, the irrigated northern coastal areas became a primary center of modern agriculture, producing winter vegetables for U.S. markets in addition to cotton, sugarcane, and rice.

Northern Mexico and the border region with the United States increasingly became a zone of gang violence, kidnapping, murder, drug trafficking, and intense fighting between drug cartels during the first decade of the 2000s (Figure 11.25). The U.S. Department of State issued a travel warning for northern Mexico late in the decade which remained in place in 2011. Although thousands of drug-related crimes occur in northern Mexico each year, those involving the contentious border relationship between Mexico and the United States seem to galvanize global attention. Two such events occurred in 2010. In March of that year, three people connected with the U.S. consulate in Juarez, Mexico, were shot and killed in a drug-related attack. Consulate officials were shot as they left a birthday party sponsored by the Consul (two children were also shot and survived the incident). In September 2010 a Texas man was shot and killed by Mexican "pirates" while he was riding jet skis with his wife on a lake that straddles the Texas-Mexico border. The "pirates" are believed to be affiliated with a drug cartel operating in the border region.

Oil and Natural Gas

While diversified urban–industrial economies develop in Mexico's center and north, the east coasts facing the Gulf of Mexico supply much of Mexico's wealth from large oil and natural gas fields. Although discovered early in the 1900s, this wealth was not effectively tapped until the 1970s, when oil went from 2 to 80 percent of Mexico's foreign exchange earnings. During the high-oil-price period of the late 1970s, Mexico borrowed heavily, and falling prices and demand coupled with very high interest rates in the 1980s left the country deeply in debt. Oil production had a major impact on the economy of the coastal area between Tampico and Campeche, and recent finds extended this affected area inland. During the 1980s new refineries and petrochemical industries were built. Oil formed less than 40 percent of exports by the early 2000s as more oil was used by growing industries within Mexico, and the products of those industries made up a higher proportion of exports.

The Mexican South

Southern Mexico is less developed than northern areas of the country and more reminiscent of the countries of Central America. Most of the region is remote and populated by

FIGURE 11.25 Mexico. Federal police officers and forensic workers inspect the crime scene where 5 people were shot to death on March 6, 2011, in the northern border city of Ciudad Juarez, Mexico. Cities such as Ciudad Juarez increasingly became zones of violent crime in the first decade of the 2000s due in large part to the increased influence of Mexican drug cartels on the cross-border drug trade from Mexico into the United States. **Photo:** © AP Photo/ Raymundo Ruiz.