AN OVERVIEW OF THE REGION

When a country decides to invest time, energy, and resources to reduce the effects of natural disasters, it must take into account the relationship between the desired outcome and its own capabilities and limitations. The level of economic, political and cultural development of a society determines the type of disaster management it should pursue. This chapter presents an overview of the human and physical environment of the countries of the Region of the Americas where disasters strike frequently and violently. Although Canada and the United States form part of this Region, for the purpose of this publication we are speaking of the developing countries and territories of Latin America and the Caribbean

Unlike the myriad, distinct societies and economies found in Africa, or throughout Asia or Europe, the majority of people of Latin America share a common language, religion, arts and customs due to strong Spanish and Portuguese influence. Likewise, in the larger Caribbean islands, the Spanish have had extensive impact, but African, British, Dutch, East Indian, and French influences also prevail. Despite a large degree of homogeneity, divisions persist between the descendants of immigrants and the mestizo and indigenous populations, which provide a source of social tension and economic inequality.

THE PEOPLE AND THEIR HISTORY

Desire for wealth brought on conquest and colonization that, beginning in the 15th century, profoundly affected the societies and cultures of the indigenous people. Only a partial picture of the civilizations that flourished in the Americas prior to conquest by the Spanish remains today. However, manifestations of these cultures in the forms of architecture, the arts, engineering, mathematics, and astronomy have survived, many of their achievements are still prototypes of excellence today.

The geographical diversity of the Region contributed to the development of diverse cultures. These people were very familiar with the natural hazards of their world; earthquakes, volcanoes, floods, landslides, and hurricanes affected their lives, and the forces of nature had divine significance (see Box 2.1). The fact that pre-Columbian structures still survive in the South American plateau, the Pacific coast, and the jungles of Central America and Mexico, bears witness to building measures that resisted all types of natural phenomena.

The conquest, begun in 1492, destroyed the native civilizations and social structures and replaced them with a social system similar to that of feudal Europe. Through this system, the colonizers obtained the labor necessary for working the plantations and for mining

Box 2.1

THOSE WHO WERE SAVED . . . POPULATED THE LAND

The following version of the creation myth of the Mapuche peoples in Chile shows elements common to many such myths. The people are born of a great cataclysm—of a powerful struggle between the natural forces of the sea and the earth. It is based on the features of the earth that define man's surroundings— tidal waves, earthquakes, and volcanic eruptions. Man and nature, religion, culture and society, life and death, live and inert objects, arise from this same moment of creation.

There in the sea, in its greatest depths
there lived a great snake called "Cai Cai."
The waters obeyed the orders of this great serpent
and one day they began to cover the land
There was another equally powerful serpent
who lived in the summit of the mountains.
The serpent "Ten Ten" told the Mapuches
to climb unto the hills
when the waters began to rise.
Many Mapuche people did not reach the hills
and were transformed into fish
The water rose and rose,
and the mountain floated and also rose and rose.
The Mapuches put pots over their heads
for protection from the rain and the sun;
and they said,
"Cai, Cai, Cai"
and they responded,
"Ten, Ten, Ten."
They made sacrifices and the water was calmed,
and those who were saved
came down from the mountain and populated
the land
And so were born the Mapuche people.

Adapted from Jose Bengoa, *Historia del Pueblo Mapuche*, 2nd edition, Santiago: Ediciones Sur, 1987.

huge amounts of gold and silver.

Settlers from Spain and Portugal arrived in the New World in sizable numbers and by the end of the 16th century had laid the groundwork for the cities that are the capitals today. European rule continued until the slave rebellion that secured Haitian independence from France in 1804. Napoleon's invasion of Spain and Portugal in 1808 lessened the hold of those countries on their colonies. Wars for independence followed, and by the 1830s almost all of the countries of Latin America had been liberated from European rule. However, after gaining independence many countries suffered civil war, dictatorship and militarism processes that have become commonplace throughout the Region during the 20th century.

As the major maritime link between Spain and her colonies, the Caribbean became the arena for the adventures of buccaneers and for numerous battles as colonial powers vied for territorial and commercial advantage. Partitioning of the region by the British, Danish, Dutch, French, and Spanish continued throughout the 17th and 18th centuries. In the mid-17th century, the colonial economy in the Caribbean, which had been based largely on the export of tobacco and cotton to Europe, shifted to one based on sugar, and labor for the sugar plantations was in turn dependent upon the African slave trade. This "sugar revolution" brought about a radical change in the demography, society, and culture of the islands.

Gaining independence in the Caribbean has been a slower process than in the countries of Latin America. The fragmentation of the region by competing European interests and the small size of the islands have favored continued colonialism and dependency. By the mid-1950s, only Cuba, the Dominican Republic, and Haiti were independent. In the 1960s, Barbados, Guyana, Jamaica, and Trinidad and Tobago achieved independence, and other islands did so during the 1970s and early 1980s. At present, several Caribbean islands continue to have either territorial status or be closely associated to countries such as the Netherlands, the United Kingdom, and United States, or to be an integral part of a country, such as the French Departments.

GEOGRAPHY

Latin America and the Caribbean represent a sixth of the earth's land mass, with an extension of 11,263 km from Cape Horn to the southern border of the United States.

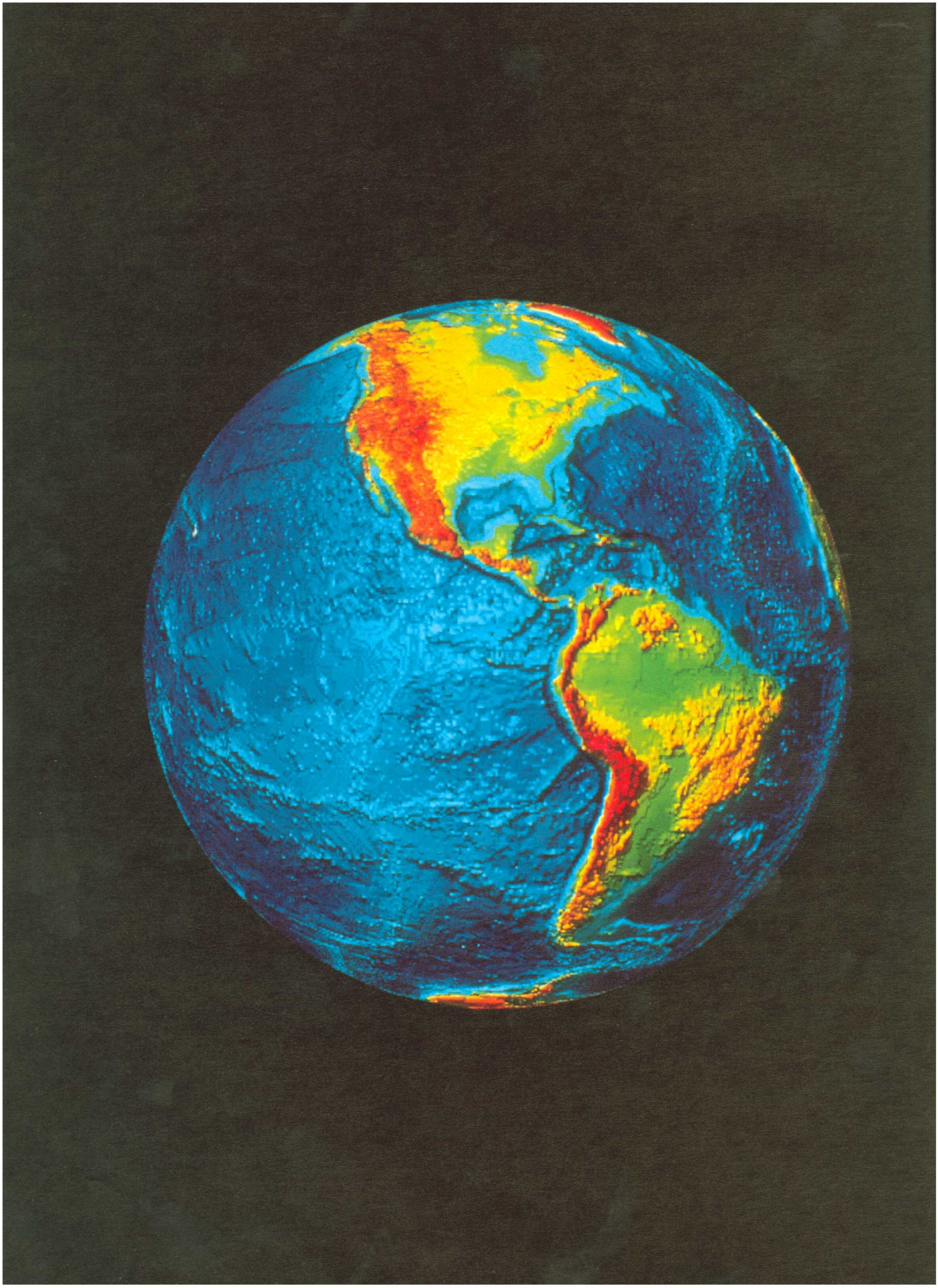
Mountains are the main geographical characteristic of the Region. These mountains are geologically responsible for much of the Region's wealth and many of its disasters. The Andes, Caribbean, and Central American mountains are seated where major tectonic plates interact, a feature that makes the Region highly seismic. To the south, the Andes emerge from Antarctica to form a mountain chain that is second only to the Himalayas in height, rising along the Argentine and Chilean borders to Mount Aconcagua (6,959 m), the highest peak of volcanic origin in the Western Hemisphere. In Bolivia and southern Peru, the Andes branch apart and enclose valleys and high plateaus, the *altiplano*. In Ecuador, there are two distinct ranges separated by basins; three ranges pass through Colombia, the easternmost continuing on to Venezuela.

The mountains of the Caribbean and of Central and South America are geologically young, with a great number of volcanoes. In Ecuador, for example, the central plateau is surrounded by more than two dozen volcanoes. The volcanic soil of this region is responsible for highly productive agriculture.

The location of the Andes near the Pacific coast assures that the longest rivers of South America flow toward the Atlantic and the Caribbean, and that rainfall is concentrated in the eastern lowlands. The Amazon, Orinoco, Paraná, Paraguay, and La Plata Rivers together drain more than 60% of the waters of the continent. The Amazon River Basin is the largest in the world, draining an area of approximately 7,500,000 square km. During rainy periods, severe flooding occurs in the primarily agricultural river areas and in important urban centers.

Coastal plains with warm, moist climates skirt both the Caribbean and the Pacific coast of the Central American Isthmus, and wet, forested lowlands are interrupted by mountainous areas, where some 80% of the population lives. Mexico is formed mainly by a high, arid central plateau enclosed by two mountain ranges.

Latin America contains almost 60% of the tropical forests of the world. But the level of deforestation is also the highest in the developing world: an estimated 1.3% of existing forests are cut each year. At the beginning of the 1990s an estimated 12% of the Amazon rainforest had been cut for timber and mining enterprises, and to increase land available for agriculture and livestock. Deforestation puts the region's biodiversity at risk, causes soil loss, increases the threat of landslides



and silting up of waterways, phenomena that are major concerns for the planners in the Region. Unfortunately, short-term economic gains continue to prevail over long-term environmental considerations.

The Caribbean islands form a broad arc that extends approximately 4,000 km north to south from Florida (U.S.A.) to Venezuela. The size of the islands varies considerably: Cuba, for example, has approximately 111,000 square km and more than 10.5 million inhabitants, while Anguilla has less than 350 square km and less than 9,000 residents. Although the islands have many characteristics in common, geographical diversity exists: from regions with exuberant flora and areas suitable for agriculture, to unproductive volcanic and coral islands.

The isolated upper parts of a chain of submerged volcanic mountains, which form the islands, are characterized by three principal types of topography:

- High and inaccessible mountains (of almost 1,200 m), such as the Blue Mountains in Jamaica, Mount Diablotin in central Dominica, the Soufrière Volcano in Saint Vincent, and the Northern Range in Trinidad, covered by dense forests and crossed by fast rivers;
- High plateaus like those in central Jamaica;
- Sedimentary coastal plains that originate along the slopes of the hills and mountains and form coastlines of sandy beaches.

Map courtesy of U S National Oceanic and Atmospheric Administration National Geophysical Data Center

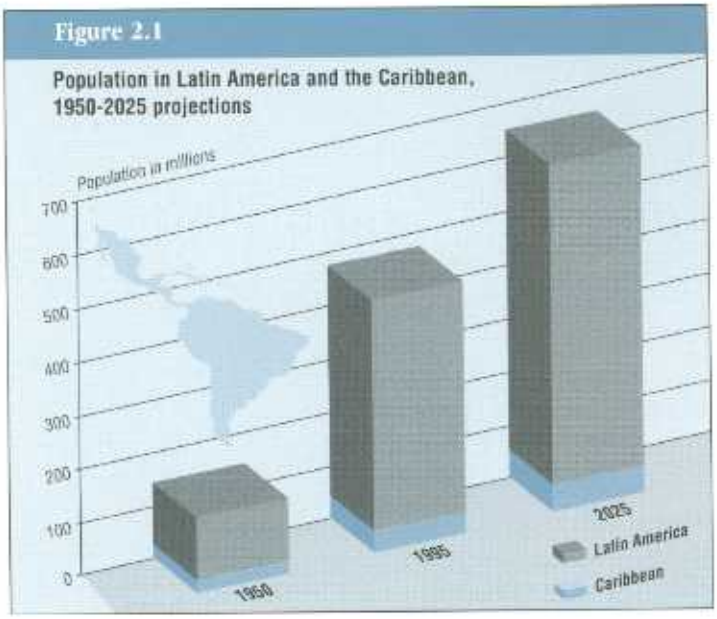
Some Caribbean islands have neither rivers nor any other natural source of potable water, as is the case in Anguilla, Antigua, Aruba, and Bermuda. Today these islands depend completely on desalinization plants or on collection of rainwater, or as in the case of Nassau, Bahamas, on the importation of over 50% of its drinking water.

CLIMATE

The climates and precipitation in Latin America and the Caribbean vary considerably The Orinoco basin of Colombia and Venezuela, the Brazilian plateaus, and parts of western Ecuador, contain savannas with well-differentiated wet and dry seasons On the other hand, broad sectors of Argentina, Chile, Paraguay, and southern Brazil have more temperate climates, with larger fluctuations in temperature. Annual rainfall in the Region varies between an average of 1,000 and 2,000 mm. One of the driest deserts of the world, the Atacama, is on the coast of Chile; Argentina, Bolivia, Brazil, Mexico, and Peru also have expanses of arid land and desert.

The Caribbean islands share a tropical climate with the Atlantic coast of the Central American isthmus. At sea level, the climate is relatively constant but then varies by elevation. Precipitation varies widely, depending on the topography of each island. The mountainous islands receive a great deal of rain, while flat islands of coral origin such as Antigua and Barbuda, Curaçao, and Turks and Caicos Islands are arid.

Figure 2.1



Figures 2 1 2 2 based on data from UN Population Division 1993

DEMOGRAPHIC TRENDS

Currently Latin America and the Caribbean have a population of 450 million inhabitants; according to UN estimates, by 1995 the population of the Region will reach 482 million, accounting for 61% of the total population of the Western Hemisphere. By the year 2025, the population of Latin America and the Caribbean will reach a projected 650 million (Figure 2.1)

Historically, the world's developing countries have had both high birth and mortality rates, which kept population growth in check. But in the last 40 years, advances in health care, sanitation, and education have contributed to reducing mortality of infants and children, resulting in increased population While in Latin America the growth rate has dropped from 3% in the 1950s, to 2.1% in 1994, a large proportion of the population is under 15 years of age, and females are just reaching the reproductive age, so the current growth rate is not expected to diminish substantially until the year 2020

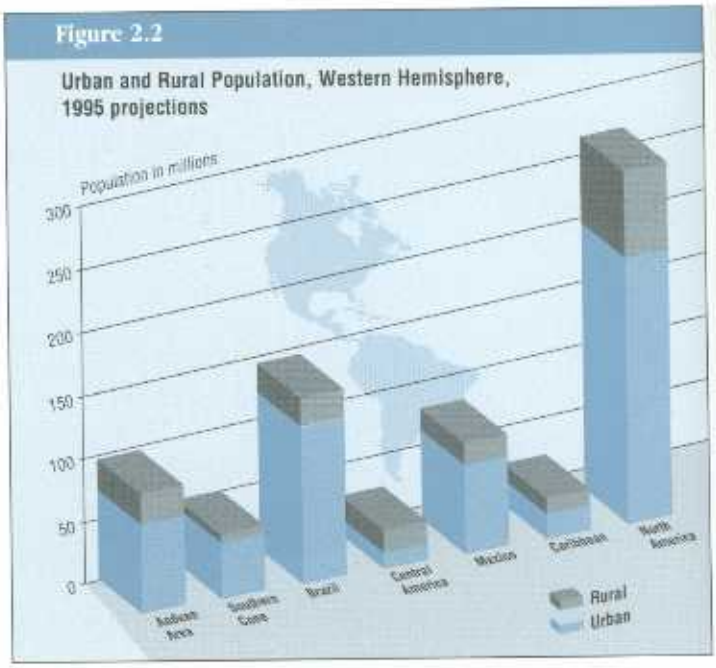
The 10 most populated countries of the Americas, including North America—Argentina, Brazil, Canada, Chile, Colombia, Ecuador, Mexico, Peru, Venezuela, and the United States—comprise 89% of the Western Hemisphere's total population. With the exception of Argentina, Brazil, and Canada, these countries are in the areas most vulnerable to seismic events in the Region.

URBANIZATION

Latin America and the Caribbean have undergone an accelerated process of urbanization in the past few decades With nearly 75% of the population concentrated in cities (see Figure 2.2), this Region has already surpassed the rest of the developing world in levels of urbanization. Fast expanding urban poverty is not only a problem by itself, but it places large numbers of people at risk during natural disasters

Of particular concern is the continuing growth, in number and size, of the so-

Figure 2.2



called megacities (cities with more than 5 million inhabitants) The service infrastructure of these cities is inadequate, and the additional resources needed to keep up with continuing demand are not available. By the year 2000, Mexico City is calculated to be the largest city in the world, with more than 26 million inhabitants; São Paulo (Brazil) will have an estimated population of 24 million, Rio de Janeiro (Brazil), 13 million, and Lima (Peru), more than 8 million. Other cities with accelerated growth are Santafé de Bogotá (Colombia) and Santiago (Chile).

Urbanization and Poverty

More than half the urban residents in the larger cities in Latin America and the Caribbean live in poverty today, and by the year 2000, it is estimated that 90% of the poor population of this region will live in urban areas. The residents of these peripheral urban areas often have low incomes, limited education, insufficient diets, and live in unsanitary and overcrowded conditions. Safe drinking water, the disposal of solid waste, decent housing, and transportation are particularly lacking in the marginal urban areas. Urban residents are exposed to increased levels of contamination, but the poorest often live on the outskirts of the city where factories are located and environmental protection is at its lowest levels Poor construction and the unplanned nature of these marginal settlements also expose their dwellers to the effects of natural phenomena such as landslides and flooding. The traditional social structure found in rural areas can be lost in the process of migration, and social instability becomes another risk for those living in urban settlements.

Figure 2.3

Population Density by Region, 1989

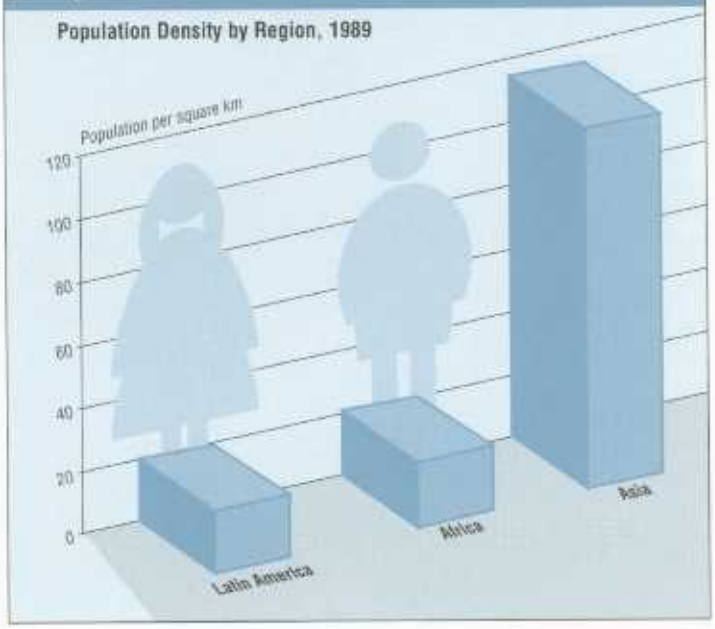


Figure 2.3 adapted from World Resources Institute 1990

The weight of poverty falls most heavily on certain groups. For example the indigenous population, approximately 30 million in Central and South America, makes up not only a significant portion of the rural poor, but also of the growing poor urban population Of all groups, they suffer the most from limited access to education, health services, and the possibility of economic mobility

Among the poor, women are seriously disadvantaged. They frequently support a heavier workload than do men and have lower levels of education and less access to paid employment. Children also suffer disproportionately, and the future quality of their lives is in danger because of deficient levels of nutrition, health care, and education.

Population Density

Population density is one of the factors that determines the severity of a disaster. In general, the relationship between territory and population density is favorable in Latin America (see Figure 2.3) Africa

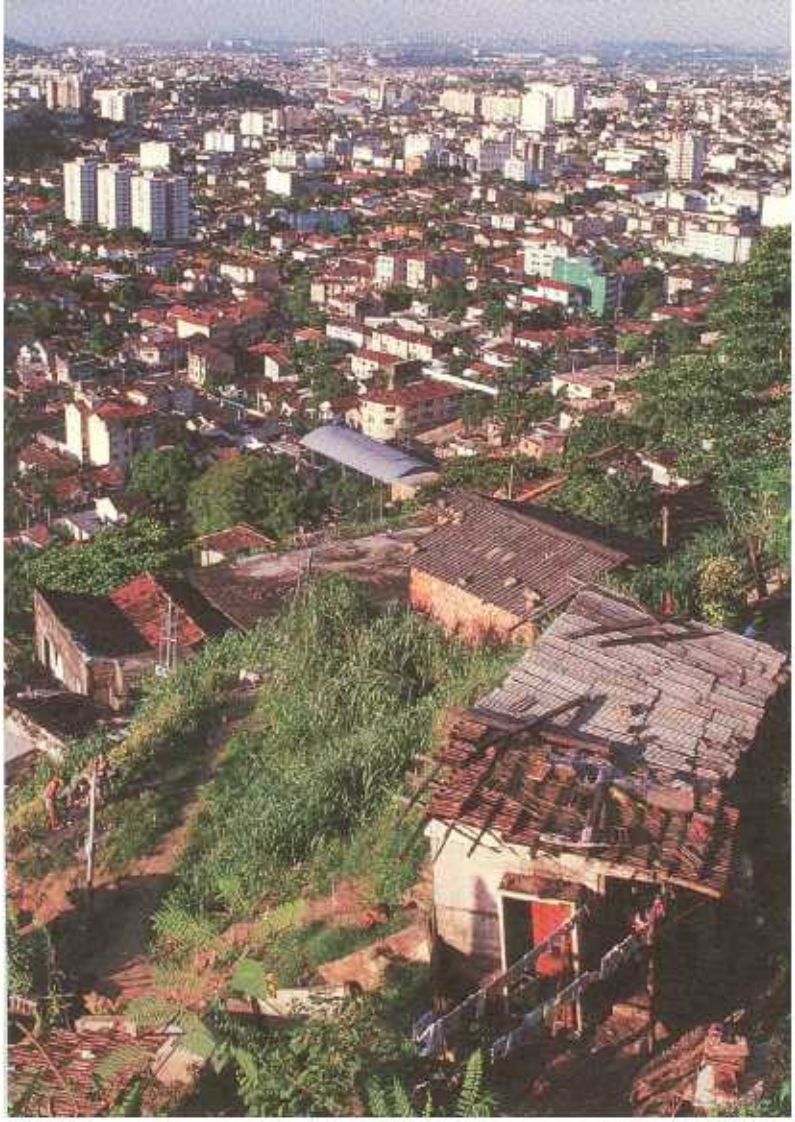


Photo Gaggero/PAHO

With the population of the Region's urban centers growing every day, fast expanding urban poverty is not only a problem in itself, but it places large numbers of people at risk during disasters.

has a density comparable to that of the Americas (an average of 21 inhabitants per square km), but the average is almost six times higher in Asia. However, the numbers in Latin America are national averages and can be misleading. For example, in Argentina and Chile, the density at the country level is not very high (13 and 18 inhabitants per square km, respectively), but 85% of the population is concentrated in urban centers. Among the most populated industrialized countries, Japan has 326 inhabitants per square km, and the Netherlands, 433. Barbados is one of the smaller islands of the Caribbean and has a density in excess of 600 inhabitants per square km; Puerto Rico's density is similar. El Salvador, the most densely populated country in Latin America, has some 257 inhabitants by square km.

Population Migration Between Countries

Population migration for economic reasons from Latin America and the Caribbean toward the United States and Canada is particularly widespread. Temporary or permanent population movements also occur for the same reasons between neighboring countries. Continuous population movement between many Caribbean islands, tied to the harvest of sugar, the tourist industry, and family liaisons is common. The impact of emigration in the countries of the Caribbean is strong. For example, it is estimated that in the mid-1980s, half of the Jamaican citizens lived outside of their country.

A major problem during the 1980s, and still today, has been that of refugees fleeing social violence in their countries. During the peak of political violence, an estimated 7%-10% of Central Americans were either displaced within their own countries or forced to cross borders, often without legal documentation. The recent political crisis in Haiti is a likely catalyst for another wave of undocumented migration.

PRODUCTION

The Region has extensive fertile land—such as that of the Argentine pampas—with abundant and high quality agriculture and livestock. Almost 9% of the fertile land of Latin America is under cultivation, and 28% is in pasture. One-fourth of the work force is in the agricultural sector. Although many farmers only produce at a subsistence level, there is also important commercial production of crops such as sugar, banana, citrus fruits, and grains. The Region has rich mineral deposits, particularly of copper (Chile and Peru have one-fourth of the world