Land: Latin America and the Caribbean

The Latin America and Caribbean region has the world's largest reserves of arable land with an estimated 576 million ha equal to almost 30 per cent of the total territory (Gómez and Gallopín 1995). The region also contains 16 per cent of the world total of 1 900 million ha of degraded land, taking third place behind Asia and the Pacific and Africa (UNEP 2000).

Priority issues in the region include: loss of agricultural area (caused by factors such as erosion, changes in agricultural practices and growing urbanization); land degradation (associated with compaction, leaching of nutrients and pollution); and land tenure (covering inadequate and inequitable distribution of land as well as lack of tenure rights).

Expanding the agriculture and livestock boundaries

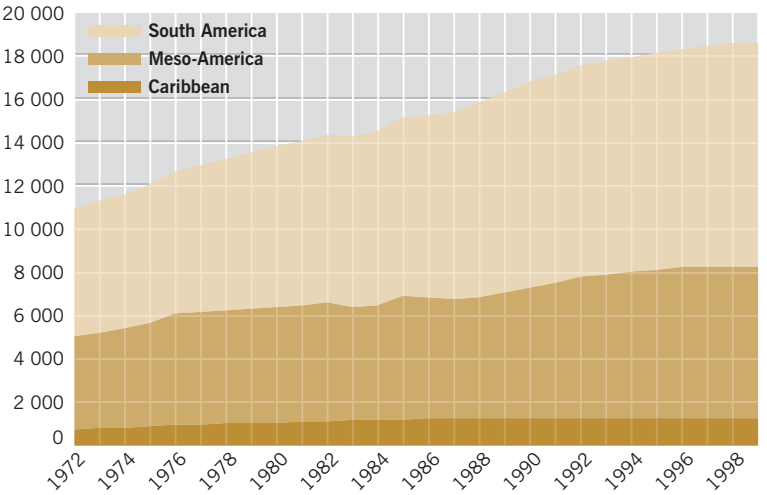
Agricultural expansion has intensified the use of natural resources and exacerbated many of the processes of land degradation. Over the past three decades, there has been an increase in arable land and grassland at the expense of forests. During 1972–99, the area of permanent arable land and cropland expanded in South America by 30.2 million ha or 35.1 per cent, in Meso-America by 6.3 million ha or 21.3 per cent and in the Caribbean by 1.8 million ha or 32.0 per cent (FAOSTAT 2001). The area under irrigation (see graph) also increased in the same period, resulting in greater agricultural production throughout the region. The expansion of permanent arable land on soils previously covered by forests is still the main cause of deforestation in the Brazilian Amazon (Nepstad and others 1999). Soybean production, mostly for export, has been the main driving force to expand the agricultural boundary in northern Argentina, eastern Paraguay and the central part of Brazil (Klink, Macedo and Mueller 1994).

The expansion of livestock production has also been a major driving force behind land conversion in the region. The process could not have been successful without the strong support of governments through the provision of tax incentives (the 'Legal Amazon' in Brazil), the construction of roads and the availability of skilled and cheap labour. For example, livestock companies in Bolivia leased land to peasants so that they could clear it for cultivation and then return it already cleared when their leases expired (Giglo 2000). Erosion, loss of nutrients, chemical pollution, salinization and the effects of meteorological and geological phenomena are major contributors to the different land degradation processes.

Land degradation

Erosion is the main cause of land degradation in Latin America, affecting 14.3 per cent of the territory in South America and 26 per cent in Central America (Oldeman 1994). Nutrient depletion is also a serious issue, largely driven by agricultural intensification.

Irrigated area (1 000 hectares): Latin America and the Caribbean



The irrigated area in Latin America and the Caribbean has expanded at an average of nearly 2 per cent a year over the period 1972–99

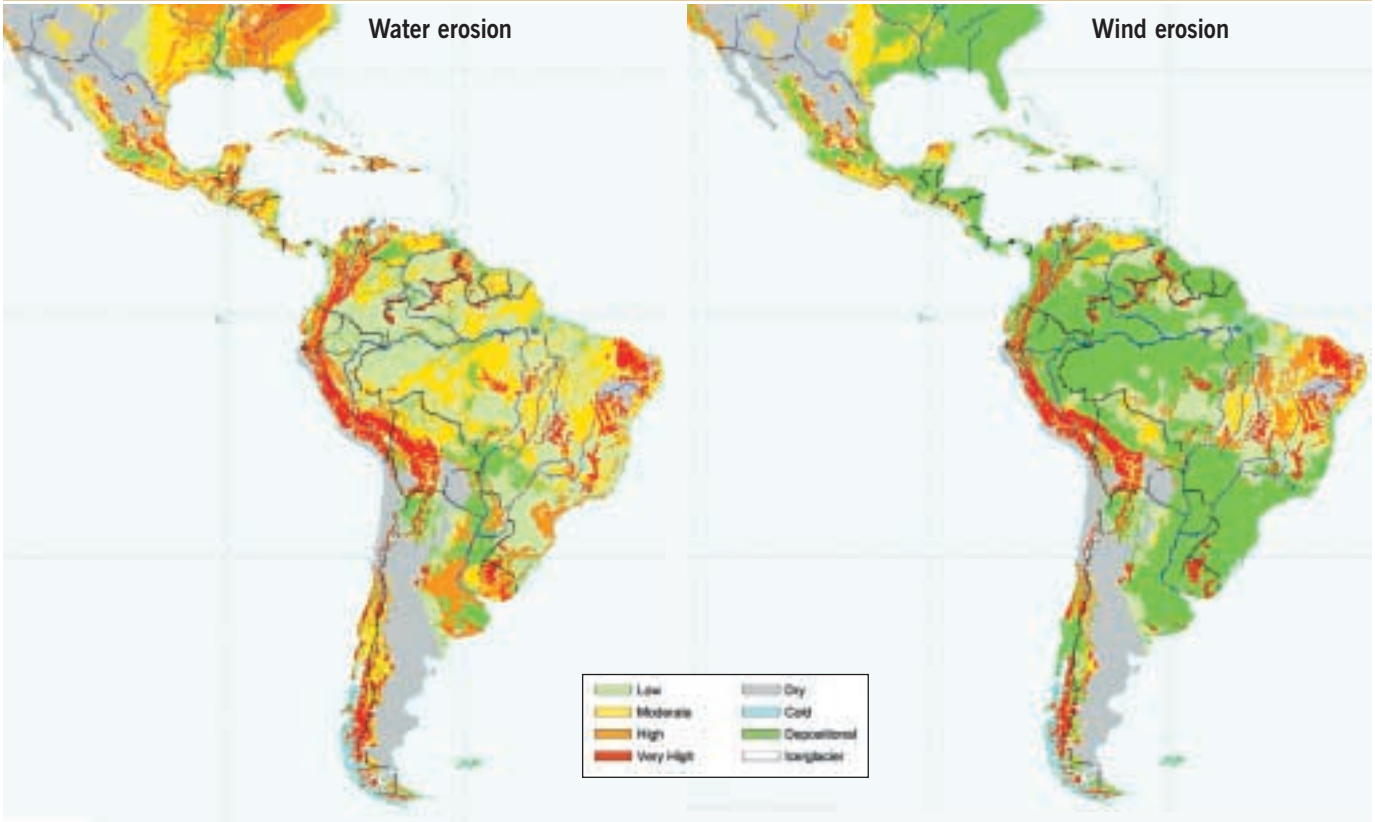
Source: FAOSTAT 2001

In South America, the depletion of nutrients from the soil had affected 68.2 million ha by 1980 (Scherr and Yadav 1997). This depletion has exacerbated poverty which, in turn, has contributed to greater environmental degradation and land deterioration.

Chemical soil pollution is increasingly significant given the intensification of agriculture and the use of pesticides during the past 30 years. Agricultural technology has increased production throughout the region but at a high cost to the environment. Of great concern is the impact of agrochemical pollution on soil and water and, as a consequence, on human health. Soil and water nitrification is linked to the use of chemical fertilizers which increased from 3.7 to 10.9 million tonnes during 1972–97 (FAOSTAT 2001).

Salinization is a particularly significant form of soil degradation because it is difficult to treat and can lead to desertification. Salinization caused by irrigation affects 18.4 million ha in the region, particularly in

Vulnerability to water and wind erosion: Latin America and the Caribbean



Erosion is the main cause of land degradation in the region, affecting 14.3 per cent of South America and 26 per cent of Meso-America

Source: USDA 2001a and 2001b

Argentina, Brazil, Chile, Mexico and Peru (AQUASTAT 1997).

The problems of land degradation have been discussed in regional and international fora for several decades. Following the 1992 United Nations Conference on Environment and Development, work on new conventions and agreements started to seek regional and sub-regional solutions. For example, the secretariat of the United Nations Convention to Combat Desertification (UNCCD), together with UNEP and the government of Mexico, established a Regional Coordination Unit for Latin America and the Caribbean to coordinate the work of national focal points in preparing national action programmes. These actions encouraged several countries to set up similar programmes and have led to the creation of monitoring systems (UNEP/ROLAC 1999, Universidad de Buenos Aires 1999). The Amazonian Pact, the Sustainable Development Commission, the Central American Integration System and the Andean Pact are examples of sub-regional mechanisms that have paved the way for agreements and have promoted monitoring and control systems to prevent land degradation.

Land tenure

Land tenure problems include the concentration of ownership in a minority of the population and a lack of land titles that has its historical origin in the colonial system of land ownership and the simultaneous existence of large agricultural holdings and smallholdings. About 38 per cent of the rural population are smallholders and they manage 35.1 per cent of the land under permanent cultivation (van Dam 1999). Average farm sizes range from 0.41 ha in Ecuador to a little more than 1.5 ha in Brazil and Peru.

In spite of the numerous agrarian reforms and land distribution schemes introduced in Latin America, land tenure has not changed markedly; there is both a tendency to merge farms to make larger holdings and an increase in the number of smallholdings (van Dam 1999). Both processes have adverse environmental effects. In large farms, the land suffers from erosion and compaction due to mechanization, as well as

salinization because of improper irrigation and chemical pollution. Smallholdings increase deforestation, and lead to erosion and loss of soil fertility because they are used intensively without allowing for adequate fallow periods (Jazairy, Alamgir and Panuccio 1992).

The Sub–regional Action Programme for Sustainable Development of the American Puna, under the UNCCD secretariat, is developing an action plan for an area where natural resources are limited and there are problems of increasing poverty, migration and marginality (UNEP/ROLAC 1999). The land tenure question, poor land regulations and the elimination of incentives for agricultural expansion inspired the programme.

Environmental impact of the land tenure regime on soil conditions in Jamaica

As in the rest of Latin America and the Caribbean, the land tenure regime in Jamaica is inequitable and, on both large properties and smallholdings, few land conservation and recovery methods are used.

In the 1970s, agrarian reform favoured large properties in the form of cooperatives, based on the intensified use of crops, mechanization, an increase in irrigated area and monocropping. The environmental effects included soil erosion and compaction of soils from mechanization, salinization caused by deficient irrigation systems and chemical pollution.

One-quarter of Jamaica's territory was under cultivation in the 1980s, and more than 90 per cent of farms covered 4 ha or less. These smallholdings were concentrated in ecologically fragile mountain areas of low fertility. Agriculture was based on traditional methods, including slash-and-burn cultivation. Physical infrastructure and basic services were lacking, farmers received little or no credit and had little schooling.

The continued expansion of large agricultural properties and the marginalization of peasant farmers has meant that there are now fewer fallow periods and less crop rotation. Deforestation of mountainsides continues and there has been a reduction in the number of draught animals. In zones with smallholdings, soil degradation tends to increase, especially the loss of fertility from erosion, and this is reflected in a marked drop in production.

Sources: van Dam 1999 and Library of Congress 1987

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