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# *EACH* *FOR*

**General Overview Study**

*Subpackage 6*

# Latin America & Caribbean

**Coordinated by**  
**Stefan Alscher**  
**COMCAD-UNIBI, sub-package leader WP2-SP6**

***Contributors:***

Oscar Álvarez, Alberto Ángulo, Ana Ugalde (UPV-EHU)  
Ana Fernández, Maria Celia García, Marcelino Iriani, Guillermo Velázquez (UNICEN)  
Johannes Fruehmann, Jill Jäger (SERI)  
Stuart Leiderman (New Hampshire)

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## Introduction

The aim of this General Overview Study (GOS) is to present an overview of relevant data and information on environmental degradation and migration processes in the region of Latin America and the Caribbean (LAC), as well as data on the overall political, socio-economic, cultural and demographic context. A main challenge is to look out for the interrelation of environmental degradation and migration processes, i.e. to find environmental signals in migration data and vice-versa migratory signals in environmental data.

The GOS start with (1) an overview on the general context, followed by sections on (2) environmental degradation and (3) migration trends and patterns in the LAC region, which. The (4) conclusion tries to wrap up the findings in the prior sections, looking for the interrelation between environmental change and migration. Some “hot spots” are to be identified, where environmental degradation apparently led or will lead to an increase of (internal and international) migration flows. This will also serve as a basis and justification for the case-studies.

Each section starts with a general regional overview. More detailed information is presented for the countries selected for the case studies, namely Argentine, Ecuador, the Hispañola island (Haiti/Dominican Republic) and Mexico.

## 1. Overall context

### 1.1. Short overview of the region as a whole

Because of its vast extension, from the US-Mexican borderline down to the *Tierra del Fuego* in Patagonia, the Latin American subcontinent is a very heterogeneous region. The geography ranges from the deserts to tropical forests, from corals to cactus, from coastal flatlands to snow-covered mountains, from irrigated agriculture in semi-arid areas to the evergreen pampas in Argentina. While Spanish is the dominant language, also Portuguese, English, French, Creole and hundreds of indigenous languages are spoken. Due to its colonial history, the population is a mixture of different ancestries, among them the descendants of the indigenous population, of European colonialists and of African slaves.

But what is Latin America? The most common definition refers only to those countries and territories in the Americas where Spanish or Portuguese prevail: Mexico, most of Central and South America, plus Cuba, the Dominican Republic and Puerto Rico in the Caribbean (also called Ibero-America). Strictly speaking and in its original meaning, Latin America designates all those countries and territories in the Americas where Romance languages (i.e. languages derived from Latin, and hence the name of Latin America) are spoken: Spanish, Portuguese, but also French, and their creoles. This would include several Caribbean and South American countries and territories. Following this definition, the region would comprise 20 independent states (Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay, Venezuela).

The Caribbean comprises the Caribbean Sea, its islands (most of which enclose the sea), and the surrounding coasts. The region comprises 13 independent island states (Antigua and Barbuda, Bahamas, Barbados, Cuba, Dominica, Grenada, Dominican Republic, Haiti, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Trinidad &

Tobago), several islands of British, Dutch, French or US-dependency as well as those independent states and dependencies located at the surrounding coastlines.

The sub-package 6 of WP2 covers both Latin America as well as the Caribbean - and by this the whole region south of the US-Mexican borderline. Both regions are also taken together in the publications of several international organizations, such as the World Bank, the OECD and the United Nations Nevertheless, only a small number of countries will be studied in depth via case-studies. These are: Argentina, Ecuador, Hispaniola Island (Haiti, Dominican Republic) and Mexico.

## 1.2. Development, Population and Socio-Economic Trends

A general indication of the level of and progress with regard to development is possible both on the base of WDI and HDI databases. The following table presents some basic data from the WDI database on the LAC region in comparison with other regions as well as a comparison within the LAC region:

**Latin America & Caribbean: regional data from the WDI database**

	Population millions	Life expectancy at birth years	GNI per capita Atlas <sup>a</sup> \$	Primary completion rate %	Ratio of girls to boys in primary and secondary %	Child malnu- trition % under- weight 2000-05 <sup>b</sup>	Under-5 mortality rate per 1,000 2005	Prevalence of HIV, adults % ages 15-49 2005	Access to improved water source % 2002
<b>Latin America &amp; Caribbean</b>	<b>551</b>	<b>72</b>	<b>4,045</b>	<b>98</b>	<b>102</b>	<b>..</b>	<b>31</b>	<b>0.6</b>	<b>91</b>
East Asia & Pacific	1,885	71	1,630	98	99	15	33	0.2	79
Europe & Central Asia	472	69	4,143	92	96	5	32	0.7	92
Middle East & North Africa	306	70	2,198	89	92	15	53	0.1	89
South Asia	1,470	63	692	82	87	..	83	0.7	84
Sub-Saharan Africa	743	47	746	58	86	30	163	5.8	56
<i>Selected economies:</i>									
Argentina	39	75	4,470	100	111	..	18	0.6	96
Bolivia	9	65	1,010	101	93	8	65	0.1	85
Brazil	186	71	3,550	108	105	..	33	0.5	90
Chile	16	78	5,870	95	98	1	10	0.3	95
Colombia	46	73	2,290	98	104	7	21	0.6	93
Costa Rica	4	79	4,700	92	104	..	12	0.3	97
Cuba	11	77	..	94	110	..	7	0.1	91
Dominican Republic	9	68	2,460	92	111	5	31	1.1	95
Ecuador	13	75	2,620	101	..	..	25	0.3	94
El Salvador	7	71	2,450	87	100	10	27	0.9	84
Guatemala	13	68	2,400	74	91	23	43	0.9	95
Haiti	9	53	450	..	..	..	120	3.8	54
Honduras	7	69	1,120	79	109	17	40	1.5	87
Jamaica	3	71	3,390	84	104	4	20	1.5	93
Mexico	103	75	7,310	99	101	..	27	0.3	97
Nicaragua	5	70	950	76	103	10	37	0.2	79
Panama	3	75	4,630	97	109	..	24	0.9	90
Paraguay	6	71	1,040	91	101	5	23	0.4	86
Peru	28	71	2,650	100	103	..	27	0.6	83
Trinidad and Tobago	1	70	10,300	99	104	..	19	2.6	91
Uruguay	3	76	4,360	91	114	..	15	0.5	100
Venezuela, RB	27	74	4,820	92	104	..	21	0.7	83

Note: Figures in italics are for years or periods other than those specified.

a. Atlas method; see WDI Statistical methods. b. Data are for the most recent year available. c. Estimated to be lower middle income (\$826-\$3,225 or less). d. Included in the aggregates for lower-middle-income economies based on earlier data. 'e. d. Included in the aggregates for lower-income economies based on earlier data.

Source: 2007 World Development Indicators database, World Bank, April 2007.

(World Bank 2007)

On the one hand, this table shows that – in comparison to other developing regions – LAC is in general better off than other regions; but on the other hand also the high variety of **developmental stages** becomes obvious. The countries of the regions may be clustered into three groups: growing markets as Argentina, Brazil, Chile, Mexico and others characterized by a relatively high GNI per capita, medium economies like Colombia, the Dominican Republic or Ecuador and poor countries like Bolivia, Haiti and Nicaragua. According to the country classification used by the World Bank (so-called Atlas method, based on GNI per capita), Haiti is the only low income economy (GNI per capita 905\$ or less), while the majority of Latin American countries belong to the group of lower middle income economies (906\$-3.595\$). Some 12 countries are classified as upper middle income economies with a GNI per capita from 3.596\$ to 11.115\$, while none of the LAC countries belongs to the high income economies.

The economic crisis experienced by many of the region's countries in the first years of this century consolidated the negative trends that had been observed during the 1990s: persistent rises in **unemployment** and casual employment in low-productivity sectors with no social security or health benefits and falling or frozen real wages. However, the subsequent economic recovery in those countries and the high levels of regional growth recorded in the last five years has reversed some of those trends.

Many countries in the region have made some gains in **social indicators**. With 98 percent of the children completing primary school, the region has effectively reached the MDG goal of providing universal primary education to its children. The region has achieved a secondary school enrolment rate of 86 percent in 2005, an increase of 35 percentage points since 1991. Except in three countries, over 80 percent of the population had access to an improved water source in 2004. With over 90 percent of its children immunized against measles and DPT, the region has also made impressive gains in reducing child mortality. The child mortality rates declined from 54 per 1,000 in 1990 to 31 in 2005, the lowest child mortality rate among all regions.

Nevertheless, the region continues to struggle with its twin development challenges of boosting and stabilizing growth, while reducing **poverty** and inequality. According to the Population Reference Bureau 222 million people or 42,9% are poor, with 96 million or 18,1% living in extreme poverty. Furthermore: *“Poverty and inequity continue to be key issues in Latin America and the Caribbean. The region faces the greatest socio-economic inequalities in the world, and changes in the distribution of income during the period between 1990 and 2002 have been minimal.”* (PRB 2005) The countries with the highest **inequality** in the region (as measured with the Gini index in the UN Development Report) in 2006 were Bolivia (60.1), Haiti (59.2), Columbia (58.6), Brazil (58), Paraguay (57.8) and Chile (57.1), while the countries with the lowest inequality in the region were Nicaragua (43.1), Ecuador (43.7), Venezuela (44.1) and Uruguay (44.9).

Latin America's highly inequitable and intractable **income distribution** structure has historically been one of its most prominent traits. Latin America is one of the most unequal regions of the world with 10% of the richest of its habitants possessing 48% of income and 10% of the poorest possess just 1.6%. Inequality in the region is not only greater than it is in other world regions, but it also remained unchanged in the 1990s and took a turn for the worse at the start of the current decade. According to data from the most recent household surveys, several countries have improved their income distribution in recent years. Although small, these gains at least represent some progress with respect to the rigidity or even deterioration of distribution in earlier periods (CEPAL 2007).

Another indicator of human development is the **HDI** (Human Development Index) of the

UNDP, which is a measure based on indicators like life expectancy, literacy, education, and standards of living. According to the 2006 report, 12 LAC countries – many of them from the Caribbean – belong to the group of “high human development” (Barbados, Argentina, Chile, Uruguay, Costa Rica, Cuba, Saint Kitts and Nevis, Bahamas, Mexico, Trinidad & Tobago, Panama, Antigua & Barbuda). The rest of LAC countries fall into the group of “medium human development”, with the exception of Haiti (“low human development”). The overall regional HDI was 0.795 in 2004 – compared (OECD countries: 0.923; East Asia/Pacific: 0.760; Sub-Saharan Africa: 0.472).

The average adult **literacy rate** has steadily improved, from 85% in 1990 to 89% in 2000 according to UIS estimates. Most adult illiterates are women but parity in literacy is expected to be achieved by 2015. **Gender** disparities are significant in Bolivia and Guatemala, where fewer than 80 women are literate for every 100 men. Overall primary enrollment rate in the LAC region is 96.6%, while secondary is 80.8% (all developing countries: 82.1% and 59.8%); more girls than boys are enrolled in many countries (UNESCO/EFA 2004). Regarding to labor markets, the rate of female unemployment (2005: 11.8% urban) is nearly 50% higher than male (2005: 8% urban); informality is 12% higher for women.

Regarding **infrastructure**, coverage and quality have improved for most infrastructure services over the last decade, but gaps remain. LAC has now fallen behind in areas such as electricity, roads and fixed telephones, with only cellular telephony and access to safe water and sanitation facilities performing relatively well compared to other middle income countries. Coverage is lower in rural areas and large gaps between urban and rural remain: in Brazil, urban sanitation access is 83 percent, but just 35 percent in rural areas; and in Mexico the corresponding levels are 90 percent and 39 percent. (World Bank 2005)

The **European Union** is Latin America and the Caribbean’s **second-largest trading partner** and the first trading partner for Mercosur<sup>1</sup> and Chile. It has strengthened and consolidated its economic and trade links with the region, resulting in trade figures that more than doubled between 1990 and 2005. In 2005, EU imports from Latin America and the Caribbean totalled EUR 67.4 billion, and exports to the region amounted to EUR 58.2 billion. The main exports from LAC countries to the EU are agricultural products, transport equipment and energy. EU exports to the LAC countries are more varied, the main sectors being capital goods, transport equipment and chemical products. The EU has also been traditionally the leading investor in Latin America and the Caribbean – above all in South America, where European investment (EC 2007).

The **major trade blocs or agreements** in the region are the Mercosur and the Andean Community of Nations (CAN)<sup>2</sup>, both blocs forming part of the recently founded Union of South American Nations (UNASUR)<sup>3</sup>. Minor blocs or trade agreements are the G3<sup>4</sup>, CARICOM<sup>5</sup> and the Dominican Republic-Central American Free Trade Agreement (DR-CAFTA)<sup>6</sup>. However, major reconfigurations are taking place along opposing approaches to integration and trade; Venezuela has officially withdrawn from both the CAN and G3 and it has been formally admitted into the Mercosur (pending ratification from the Brazilian and

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<sup>1</sup> Mercado Común del Sur; member states: Argentina, Brazil, Paraguay, Uruguay

<sup>2</sup> Members: Bolivia, Colombia, Ecuador, Peru and Venezuela (in process of leaving the bloc)

<sup>3</sup> composed by the member states of Mercosur, CAN, plus Chile, Guyana, and Surinam (all countries of South America except the French département d’outre-mer French Guyana)

<sup>4</sup> Grupo de los Tres, members: Colombia and Mexico (Venezuela left the group in 2006)

<sup>5</sup> Caribbean Community; 15 full members, 5 associated members (dependent territories), 7 observers

<sup>6</sup> Members: Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras, Nicaragua, USA. In Costa Rica, voters will decide on membership in a referendum (scheduled Oct 7<sup>th</sup>, 2007)

Paraguayan legislatures). The president of Ecuador, Rafael Correa, has manifested his intentions of following the same path. This bloc nominally opposes any Free Trade Agreement (FTA) with the United States, although Uruguay has manifested its intention otherwise. On the other hand, Mexico is a member of the NAFTA<sup>7</sup>, Chile has signed a FTA with the United States, and Colombia's and Peru's legislatures also have approved a FTA and are awaiting its ratification by the US Senate.

While the US-led project of installing a Free Trade Area of the Americas (FTAA or ALCA) apparently shipwrecked in 2005, the most radical opponents of the US-free trade policy in Latin America (Venezuela, Cuba, Nicaragua and Bolivia) initiated an attempt of regional economic integration that is not based primarily on trade liberalization but on a vision of social welfare and mutual economic aid. The Bolivarian Alternative for the Americas (*Alternativa Bolivariana para las Américas*, ALBA) was initially proposed by the Venezuelan government as an alternative to the FTAA. Ecuador, Antigua & Barbuda, Dominica, Nicaragua and St. Vincent & the Grenadines also signed onto ALBA.

### 1.2.1. Argentina



With a land surface of 2.74 million km<sup>2</sup>, Argentina is the second largest country of Latin America (after Brazil). The country can roughly be divided into four regions: the fertile plains of the pampas in central Argentina, source of its agricultural wealth; the oil-rich plateau of Patagonia in the south; the subtropical flatlands of the Gran Chaco in the north, and the Andean mountain range along the western border with Chile

The total population is 40.9 million inhabitants (4<sup>th</sup> largest in the LAC region), with an annual population growth rate of 0.94% (2007 estimate). Population density varies enormously, from as low as 1 inhabitant per km<sup>2</sup> in the province of Santa Cruz to 14,000 inhabitants per km<sup>2</sup> in Buenos Aires (nationwide 14 inhabitants per km<sup>2</sup>). Population is also very inequality distributed, with as much as one third of it lives in the metropolitan area of Buenos Aires, and more than 60% within a 300 km-radius from the capital city. The crude birth rate is 16.53 births per 1,000 with a fertility rate of 2.13 children born per woman, while the death rate is 7.55 per 1,000. Argentina is the only Latin American country with a positive net migration rate (+0.4), meaning that more people immigrate than emigrate.

The median age of the Argentinean population is 29.9 years (male: 29 years, female: 31 years) and

<sup>7</sup> North American Free Trade Agreement between Canada, Mexico and the United States

the age structure is as follows:

0-14 years:	24.9%
15-64 years:	64.4%
65 years and over:	10.7%

The sex ratio is 0.974 male/female, with a life expectancy of 76.32 years (male: 72.6, female: 80.24). The infant mortality is relatively low, with 14.29 deaths per 1,000 births. The literacy rate is good, with an official 97.2 % of the population over 15 being able to read and write.

Within the Latin American region (without the Caribbean), Argentina has the highest rank in the UNDP human development index (38<sup>th</sup> position worldwide in 2005). Traditionally, Argentina has been the – or at least one of the – most developed countries in the region. During the period of military dictatorship (1976-1983), the Argentinean Junta took large loans with high interest rates from the IMF and private banking institutions, which together with an uncontrolled liberalization policy led to high inflation rates and the bankruptcy of around 400.000 companies during that period. Also the following democratic governments were not able to revert this situation. After three years of recession, the economy broke down in 2001, experiencing a decrease of the GDP, unemployment of more than 25% and a high increase of poverty. From 2003 onwards, economy recovered by spending control, increasing exports and expansive economic measures. Since then, the GDP per capita (PPP) has been growing annually by 9% and reached 15,200 USD in 2007, which in fact is the highest value in Latin America (without the Caribbean). Parallel to the economic growth, the unemployment rate has fallen continuously after the crisis, from 21.5% in 2003 to 14.8% in 2005 and 8.7% in 2007 (estimation). Nevertheless, 23.4% of the population still lives below the poverty line. The composition of the Argentinean economy by sectors is as follows:

<i>share</i>	<i>of GDP</i>	<i>of workforce</i>
Primary	6%	1%
Secondary	29%	23%
Tertiary	65%	76%

Argentina’s natural resources include the fertile plains of the pampas, but also reserves of copper, iron ore, lead, manganese, petroleum, tin, uranium and zinc. In 2007, the total value of exports reached 54.6 billion USD, and the total value of imports were of 40.3 billion USD, which means a trade surplus of 14.3 billion USD. Main export products are soybeans and derivatives (22.5%), petroleum and gas (20%), cereals (8.5%), vehicles (7%), other manufactured goods (11%), and bovine products (7%). Main trading partners are the Mercosur partners Brazil and Chile, as well as the United States and China. Regarding infrastructure, Argentina has 229,144 kilometers of roadways, of which 68,809 kilometers are paved, including 734 km of expressways.

In late 2005, the Argentinean government decided to liquidate the debt to the IMF in a single payment of 9.8 billion USD. This payment was partly financed by Venezuela, buying Argentinean bonds. Over the last years, Venezuela stayed the main credit supplier for Argentina (total debt estimated around 4 billion USD).

Due to growing emigration, the flow of remittances increased 100 million USD in 2000 to 920 million USD in 2007 (IDB 2007).

## 1.2.2. Ecuador



Source: CIA World Fact Book

Even though Ecuador is not a large country (276,840 km<sup>2</sup>, i.e. only 10% of Argentina), there is a great variety of climatic and geographical zones: the Pacific Coastal area (*Costa*) with tropical and humid climate, the Andean highlands (*Sierra*) is temperate and relatively dry, and the Amazon basin (*Oriente*), characterized by climate of rain forest zones. The total population is 13.8 million inhabitants, with an annual population growth rate of 1.55% (2007 estimate). Population density is 53 inhabitants per km<sup>2</sup>, which is the highest density in South America and one of the highest in Latin America. The crude birth rate is at 21.91 births per 1,000 with a fertility rate of 2.63 children born per woman, while the death rate is 4.21 per 1,000. The net migration rate is -2.16 migrants per 1,000 inhabitants.

The Ecuadorian population is quite young, with a median age of 23.9 years (male: 23.4 years, female: 24.3 years) and the following age structure:

0-14 years:	32.6%
15-64 years:	62.3%
65 years and over:	5.1%

The sex ratio is 1.002 male per female, with a life expectancy of 76.62 years (male: 73.74, female: 79.63). The infant mortality is 22.1 deaths per 1,000 births. The literacy rate is regular, with an official 91 % of the population over 15 being able to read and write.

Ecuador is considered by the World Bank as a lower-middle income state. Within the Latin

American region, Ecuador is located in the middle field regarding the UNDP human development index (89<sup>th</sup> position worldwide). As Ecuador exports primary products as oil, bananas, flowers and shrimp, the economy is very vulnerable to fluctuations in world market prices. External factors like the El Niño weather phenomenon in 1997, a drop in oil prices in 1997/98, and global market instability, as well as internal factors like large fiscal deficits and expansionary money policy led to a severe economic and financial crisis in 1999 with an inflation rate of 52% and a devaluation of the national currency (Sucre) by 65%. In recent years, the economy recovered slowly, mainly due to expanded oil exports.

GDP per capita (PPP) was estimated to be 4,500 USD in 2006, which is one of the lowest value in Latin America and the Caribbean. The unemployment rate fluctuated around 10% over the last years, with nearly 40% living below the poverty line. Nevertheless figures usually fail in taking account of the informal economy, whose presence and percentage of the whole economic movement is unanimously supposed to be very high. The composition of the Ecuadorian economy by sectors is as follows:

<i>share</i>	<i>of GDP (2007)</i>	<i>of workforce (2001)</i>
Agriculture	10%	8%
Industry	35%	24%
Services	54%	68%

Ecuador received 209.5 million USD foreign aid in 2005, and 2.9 billion USD in remittances in 2006. Thus, remittances are the second largest financial inflow from abroad, after oil revenues (IDB 2007). In 2006, its external debt reached 18.1 billion USD. After winning a referendum on constitutional reform, leftist President Rafael Correa announced that Ecuador would no longer make repayments to the IMF nor deal with the World Bank.

In 2007, the total value of exports reached 13.3 billion USD, and the total value of imports were of 13 billion USD. Main export products are petroleum, bananas, cut flowers, shrimp, cacao, coffee, hemp, wood and fish. Main trading partners are the United States and South American countries like Peru, Colombia, Brazil and Chile. Ecuador has 43,197 kilometers of roadways, of which 6,467 kilometers are paved.

### 1.2.3. Hispaniola Island (Dominican Republic & Haiti)



Source: CIA World Factbook (left: Haiti, right: Dominican Republic)

Haiti and the Dominican Republic share Hispaniola Island (also called *Quisqueya*), being the second-largest (total: 76,480 km<sup>2</sup>; DR: 48,730; HI: 27,750) and most populous (total: 18,5 mio.; DR: 9,8 mio., HI: 8,7 mio.) island in the Caribbean Sea. Population density is an average of 241.5 inhabitants per km<sup>2</sup> (DR 200.3, HI 313.7), population growth rate of 1.47 in the Dominican Republic and 1.58 in Haiti.

The crude birth rate in the D.R. is at 22.91 and in Haiti at 35.87 births per 1,000 with a fertility rate of 2.81 children born per woman in the D.R. and 4.86 in Haiti, while the death rate is 5.32 per 1,000 in the D.R. and 10.4 in Haiti. In fact, in the Haitian case all these three rates represent the highest ones in the LAC region, which is a clear indicator for the development problems of Haiti. Another indicator for the underdevelopment in Haiti is the infant mortality rate, which is 63.83 deaths per 1,000 live births, compared to 27.94 in the D.R. Nevertheless, the net migration rate is higher in the case of the D.R. (-2.59 migrants per 1,000 inhabitants) than in the case of Haiti (-0.94).

Because of its high fertility, birth and death rates, the Haitian population is very young, with a median age of only 18.4 years (male: 17.9 years, female: 18.8 years), while in the D.R. it is 24.5 years (male: 24.3, female: 24.6 years). This is also reflected in the age structure of the island, as the following table shows:

	Dom.Rep.	Haiti
0-14 years:	31.8%	41.8%
15-64 years:	62.4%	54.7%
65 years and over:	5.8%	3.5%

The sex ratio is nearly the same in both parts of the island, with 1.04 resp. 1.03 males per female at birth. A high difference can be observed regarding the life expectancy at birth, which is 73 years in the Dominican Republic (male: 71.34, female: 74.87), but only 57 years in Haiti (male: 55.35, female: 58.75). Also the literacy rate reflects the unequal development in both sides of the island, with an already low 87% of the population over 15 being able to

read and write in the D.R., but only 53% in Haiti.

According to data from the Human Development Report of UNDP, the D.R. can be classified as a lower-middle income country (79<sup>th</sup> rank) and Haiti as a low income country (146<sup>th</sup> rank) in the 2005 ranking (published in 2007). Compared to 2004, the D.R. climbed up 15 ranks, and Haiti 8 ranks.

GDP per capita in the D.R. is 8,400 USD in 2007, compared to only 1,800 USD in Haiti, which is again the lowest in the Western Hemisphere and comparable to countries of Sub-Saharan Africa or the same as . After an economic downturn in 2004/05, the annual growth rate of GDP has been around 10% in 2006 and 2007 in case of the D.R., while the growth rate in Haiti has been only around 2% after stagnation in 2004 and recession in 2005. In Haiti, two thirds of the workforce work in the primary sector, while in the D.R. 58% work in the tertiary sector, with an important share of tourism (14% of total workforce).

<i>share</i>	<b>Dominican Republic</b>		<b>Haiti</b>	
	<i>of GDP (2007)</i>	<i>of workforce (1998)</i>	<i>of GDP (2004)</i>	<i>of workforce (1995)</i>
Agriculture	11.5%	17%	28%	66%
Industry	28.3%	24.3%	20%	9%
Services	60.2%	58.7%	52%	25%

The Dominican Republic received 77 million USD of foreign aid in 2005, while Haiti received an estimated 153 million USD. In 2006, the flow of remittances to the D.R. was 2.9 billion USD. Around 60% of the remittance flows come from the United States, the rest mainly from Spain, France and Italy. Remittances to the D.R. are bigger than combined Official Development Aid and Foreign Direct Investments, representing 9% of GDP in 2005. In the case of Haiti, remittance flows were 1.8 billion USD in 2007. External debt reached 8.6 billion USD in the D.R. (2006) and has grown constantly in the last years (1999: 3.7 billion, 2003: 6.6 billion), while foreign debt of Haiti has been relatively constant over the last 10 years (1 to 1.2 billion), reaching 1.3 billion in 2005 and 2006.

Unemployment rate is at 16% in the Dominican Republic. In the case of Haiti, official figures are not available, but widespread unemployment and underemployment can be observed. More than two-thirds of the labor force does not have formal jobs. Between 25% (2006, IndexMundi) and 42% (2004, CIA World Fact Book) of the Dominican population lives below the poverty line, in Haiti this share is as high as 80% (!).

In 2007, the total value of exports reached 6.8 billion in the D.R. (Haiti: 555 million USD), and the total value of imports was 12.9 billion USD (Haiti: 1.8 billion USD), i.e. both countries have a negative trade balance. Main export products of the D.R. are natural resources like ferronickel, gold, and silver, agricultural products such as coffee, cocoa, sugar, and tobacco, and growingly also consumer goods. In the case of Haiti, above all mangoes and coffee are exported. In both cases, the United States are the major trading partner. The D.R. counts with 12,600 km of roadways (6,224 km paved), while the total length in Haiti is only 4,160 km, of which 1,011 km are paved.

## 1.2.4. Mexico



Source: CIA World Factbook

With a land surface of 1,923,040 km<sup>2</sup>, Mexico is the third-largest country of Latin America and with 109 million inhabitants (2007) the most populous Spanish-speaking country worldwide. Geographically it can be divided into the mountain ranges of the Sierra Madre Oriental, Occidental, and Sierra Madre del Sur on the one hand and the coastal lowlands at the Pacific Coast, the Gulf of Mexico and at the Caribbean Sea at the other. Climatically, the Tropic of Cancer at the 24<sup>th</sup> parallel divides Mexico into the North with cooler temperatures in winter and the South with year-round fairly constant temperatures, varying solely according to the elevation. The climate varies from arid deserts over fertile plains and tropical forests to snow-covered mountains.

Population density in Mexico is 55 inhabitants per km<sup>2</sup>. Throughout most of the twentieth century Mexico's population was characterized by rapid growth. Even though this tendency has been reverted and average annual population growth over the last five years was less than 1%, the demographic transition is still in progress, and Mexico still has a large cohort of youths (median age of 25.6 years; male: 24.6 years, female: 26.6 years). The crude birth rate is at 20.36 births per 1,000 with a total fertility rate of 2.39 children born per woman, while the death rate is 4.76 per 1,000. The net migration rate is -4.08 migrants per 1,000 inhabitants, which is the highest in Latin America (except Caribbean). The age structure of Mexico is as follows:

0-14 years:	30.1%
15-64 years:	64%
65 years and over:	5.9%

The sex ratio is 1.05 male per female, with a life expectancy of 75.63 years (male: 72.84, female: 78.56). The infant mortality is 19.63 deaths per 1,000 births. The literacy rate is regular, with about 91 % of the Mexican population over 15 being able to read and write.

With a GDP (PPP) of 1.27 trillion USD, Mexico is the second biggest economy of Latin America (only Brazil has a higher GDP) (World Bank 2006) and the 11<sup>th</sup> largest economy worldwide. Mexico could be characterized as an “eternal threshold country”. It is the only Latin-American member-state of the OECD (since 1994), but despite economic growth and

participation in a free trade agreement with the USA and Canada, (NAFTA) socio-economic inequality is still widespread. Nevertheless, the country is considered as upper-middle income state. Regarding the Human Development Index, Mexico is in the upper field within the LAC region (52<sup>nd</sup> rank worldwide).

GDP per capita (PPP) was estimated to be 10,700 USD in 2006, which is one of the highest values in Latin America (after Argentina, Chile, Uruguay, and Costa Rica). After decades of an economic strategy based on import substitution industrialization, Mexico experienced a shift toward free market policies since the early 1980s. The first step in trade liberalization was the signature of the GATT (1986). The following PRI administrations (Salinas, Zedillo) increased speed in neoliberal reforms, above all through privatizations and the signature of the North American Free Trade Agreement (NAFTA, into effect since 1.1.1994). Also the conservative PAN-administrations under Fox and Calderón (actual president) continued with a neoliberal strategy in economic and fiscal policies.

The unemployment rate has been around 3% over the last years. Underemployment is estimated to be around 25%. 40% of the Mexican population is living below the poverty line. The composition of the Mexican economy by sectors is as follows:

<i>share</i>	<i>of GDP (2007)</i>	<i>of workforce (2003)</i>
Agriculture	3.9%	18%
Industry	26.3%	24%
Services	69.9%	58%

At a first sight, it becomes obvious that much more labor force is employed in the primary sector than this sector contributes to the overall GDP. High labor force shares in this sector are above all true in the southern and southeastern (less developed) states of Mexico.

While Mexico received nearly 1.2 billion USD of foreign aid in 1995, this amount decreased to 189 million USD in 2005.<sup>8</sup> Remittances play a much stronger role than foreign aid with annual inflows of more than 23 billion USD – which in fact is the second highest flow of remittances worldwide (behind India).

The total value of exports increased constantly over the last years and reached 248.8 billion USD in 2006, and the total value of imports was of 253.1 billion USD (both are the highest values in LAC). Main export products are manufactured goods, oil and oil products, silver, fruits, vegetables, coffee, and cotton. Trade with Mexico's two northern partners (USA and Canada) accounted for almost 90% of its exports and 55% of its imports. Mexico has a dense network of roads with a total of 235,670 km, of 116,751 km are paved (6,144 km of expressways).

### **1.3. Political context**

In the last decades, Latin America has been undergoing a difficult political and economic transition. Repressive military regimes of the past have been replaced by democratically elected governments. However, many of the region's new democracies are still incomplete and unconsolidated. During the 1990s, nearly all of the elected governments in the region have implemented controversial free market reforms, which in most cases increased economic

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<sup>8</sup> The high amount in 1995 was also linked to economic aid by the NAFTA partners USA and Canada after the Peso Crisis in 1994.

growth but at the same time did not reduce widespread inequality and poverty. The unfulfilled expectations of more welfare for broader parts of the population, together with widespread corruption and increasing crime levels, led to frustration in many parts of the continent. The disillusioning experiences with neoliberal reforms also made way for a new political shift to the left in Latin America. Nowadays, nearly all countries in the region – except Colombia, Mexico, and some smaller Central American and Caribbean states – are governed by parties of center-left (e.g. Argentina, Brazil, Chile) or radical left (like Bolivia, Nicaragua, Venezuela).

### **1.3.1. Argentina**

Argentina is a federal republic, divided into 23 provinces and one autonomous city (Buenos Aires). The directly elected president is both, head of state and head of government. The Argentine Constitution of 1853 mandates a separation of powers into executive (president and cabinet), legislative (senate and chamber of deputies) and an independent judicative.

Independence from Spain was declared in 1816 (after military campaigns following the May Revolution of 1810). Large-scale immigration from Europe and foreign investments led to the adoption of modern agricultural techniques, resulting in increasing prosperity in the late 19<sup>th</sup> and early 20<sup>th</sup> century – when Argentina became one of 10 richest countries worldwide. After internal struggles between Conservatives and Radicals, the government under Juan Perón (1946-1955) turned to protectionist policies and fostered national industrial development. In the following decades, political power was traded between weak civilian governments and the military – which in 1976 took over the power in a military coup. The *Junta* period lasted until 1983. Thousands of dissidents “disappeared” during the military dictatorship. After the defeat in the Falklands War, the Junta was discredited and democracy was restored in 1983. The following period, mainly led by president Carlos Menem, was characterized by neoliberal reforms, which – hand in hand with endemic factors – finally led to the economic crisis of 1998-2001 (see chapter 1.2.1.), accompanied by a severe political and institutional crisis. In 2003, Néstor Kirchner was elected president. The restructuring (and payment) of the external debt, re-industrialization, soft import-substitution and partial re-nationalization of some enterprises characterized his term. In December 2007, his wife Cristina Fernández de Kirchner, was elected president.

### **1.3.2. Ecuador**

Ecuador is a presidential republic with division of powers into legislative, executive, and judicial branch. Both parliament and government are elected by suffrage: minimum 18 years of age; universal, compulsory for literate persons of ages between 18 and 65, and optional for other eligible voters.

Ecuador gained independence from Spain in 1822 – and formed a sovereign state eight years later. The rest of the 19<sup>th</sup> century was characterized by instability and a rapid succession of rulers. After several conservative governments, the “Liberal Revolution” of 1895, the Radical Liberal Party came to power for several terms (1895-1911, 1912-25, and 1940-44), each time overthrown by military coups. The 1930s to 1960s were also marked by political instability, accompanied by military conflicts with Peru and domestic military interventions, which finally led to a coup d’etat in 1972, installing a military regime (Junta) until 1979.

Elections were held under a new constitution in 1979, but stability has not been a trait that can

define us the political context of this country during the last decades. A quick succession of presidents has occupied the main magistracy of the nation from 1996 until the 2005 riots that forced former president Lucio Gutiérrez to resign. Leftist president Rafael Correa is in term since January 2007.

### 1.3.3. Hispaniola

Officially, both countries of the island, the Dominican Republic and Haiti, are presidential republics with a power division into executive, legislative and judicative branches. The president is elected by popular vote and head of the state in Haiti, while head of state and of government in the D.R.. Both countries have two-chamber parliaments. In both cases, the national government (Haiti) or the president (D.R.) appoints the heads of the sub-national administrations (32 provinces in the D.R., 10 departments in Haiti). Both countries experienced a long history of political conflicts.

The island of Hispaniola was one of the first places where Christopher Columbus landed in 1492 and also became the first permanent Spanish settlement in the New World. It became a springboard for the conquest of the Caribbean and the American mainland. A plantation economy was installed and African slaves replaced the native population, which decreased rapidly due to infections and massacres by the colonizing Spaniards. The western part of the island was ceded to France in 1697 and a century later the whole island became a French territory in the Treaty of Basel.

In 1821, José Nuñez de Cáceres declared the colony's independence as the state of Haiti Español, but Haitian forces overthrew the Spanish part of the island just a few weeks later. A second attempt for an independent Spanish part followed in 1844. After years of political turmoil, the Dominican rulers signed a pact with the Spanish crown to restore the status as a colony (1861), which resulted in the War of Restoration, forcing the Spanish troops to leave the island in 1863. In 1906 the governments of the DR and the United States entered into a fifty-year treaty giving the US control on the customs administration. After extreme political instability, the US Marines intervened in the DR in 1916 and installed a military government. The Dominicans saw only six years of independent Dominican governance before Rafael Trujillo ruled a dictatorship from 1930 to 1961. Under his rule, an estimated 17,000 to 35,000 Haitians living on the Dominican side of the border were massacred with machetes within just five days in October 1937. After the assassination of Trujillo in 1961, a left-winged democratic government took office in 1963 but was overthrown again in the same year. Another US intervention in 1965 installed a Joaquín Balaguer as new president, ruling with repression until 1978. From 1978 to 1986, the Dominicans experienced another period of relative freedom under president Antonio Guzmán Fernández from the left-winged *Partido Revolucionario Dominicano* (PRD). In 1986, Balaguer won the elections and was re-elected in a fraudulent manner in 1990 and 1994. Political pressure led to new elections in 1996, won by Leonel Fernández from the liberal *Partido de la Liberación Dominicana* (PLD). Fernández has been elected again in 2004, defeating Hipólito Mejía from the PRD (president from 2000-2004). The next presidential elections are to be held in 2008.

Haiti, the French or Creole-speaking part of the island, suffered even more political turmoil as its Spanish-speaking neighbor state. After a long-lasting battle between French troops and Haitian slaves, independence was declared as early as in 1804. Haiti was the first country worldwide making effective the abolition of slavery. After decades of quasi-permanent political turmoil and insurrections, the US occupied the Haiti from 1915 to 1934. One of the darkest parts in Haitian history followed from 1957 to 1986, when the Duvaliers ("Papa Doc"

and “Baby Doc”) ruled as dictators, infamous for the Tonton Macoute militia (death squads). In the three decades of their dictatorships, many Haitians fled from the island, searching for exile above all in the USA and Canada. After the former priest Jean-Bertrand Aristide gained presidential elections in 1990 as first democratically-elected leader, a coup d’état led by Raoul Cédras overthrew his government, resulting in nearly 10,000 killed Haitians. Only international pressure (and the threat of a military US intervention) led to a restoration of the Aristide government (1994-96). A first peaceful and democratic transition of power followed in the 1995 presidential elections, when René Prével (a former ally of Aristide), was elected president. Prével stayed in office from 1996 to 2001. In November 2000, Jean-Bertrand Aristide won elections (boycotted by the opposition), but a violent revolt in late 2003 and early 2004 led to the resignation of Aristide. After two years of an interim presidency led by Boniface Alexandre, René Prével was elected again in February 2006 and is staying in office up to now. Food riots in April 2008 led to the dismissal of Primer Minister Jacques-Édouard Alexis.

### **1.3.4. Mexico**

Mexico is a federal presidential republic, with a strong executive (president, elected every 6 years + government appointed by president), a two-chamber legislative and a judicative. Its 31 federal states have autonomous power in many policy fields. The Federal District (Mexico City) has a special status, but has gradually obtained more powers in the last decade, including a directly elected major since 1998.

Mexico achieved independence from Spain in 1810 and established itself as a republic in 1822. Seven years after the Revolution of 1910, a new constitution was promulgated. From its founding in 1929 until the elections in 2000, the Institutional Revolutionary Party (PRI), which defines itself as preserver of the principles of the Mexican Revolution, dominated the country by means of its corporatist, authoritarian structure, which was maintained through patronage, corruption, and repression. Since the 2000 elections, the conservative National Action Party (Partido de Acción Nacional, PAN) is in power, but without counting of an absolute majority in the parliament. In many occasions, above all regarding economic and fiscal reforms, the PAN counts on the support by the former ruling party PRI.

In the elections of July 2006, the candidate of the center-left PRD Andrés Manuel López Obrador (also called AMLO) was seen as favorite in polls, but finally lost the election with a margin of only 0.58% (after a partial recount of votes). As several irregularities occurred during the elections and a total recounting of votes was denied, AMLO and his supporters accused the governing PAN of electoral fraud. They initiated a wave of demonstrations and blockades in the aftermath of the elections. In autumn 2006, the opposition installed a parallel “government” and proclaimed AMLO as “legitimate president” of Mexico. The official winner of the 2006 elections, Felipe Calderón (PAN), is not recognized by AMLO and his supporters.

Another “hot potato” in Mexican politics is the existence of several guerilla groups. The worldwide known EZLN (Zapatist Army of National Liberation) came to the light on January 1<sup>st</sup> 1994 – the same day that NAFTA came into force. The EZLN has its main base in indigenous communities in Chiapas (southeastern state, bordering with Guatemala), but has also grouped lots of supporters in civic organizations like the former FZLN and actual “La Otra Campaña” (The Other Campaign). Other guerrilla groups are the EPR (Revolutionary Popular Army) and ERPI (Revolutionary Army of the Insurgent People), both mainly active in the state of Guerrero.

## **1.4. Socio-cultural aspects**

### **1.4.1. Argentina**

The overwhelming majority of the Argentinean population is considered to have European (mostly Spanish and Italian) ancestry, with estimates varying from 86% (worldstatesmen.org) to 97% (CIA World Fact Book). Also census data, based on self-description, come to similar figures. Nevertheless, a study revealed that the genetic average structure of the Argentine population showed contains 79.9% European contribution, while the Amerindian contribution is close to 56% on either paternal or maternal lineage, meaning that more than the half of the population have some Amerindian roots also (Seldin et al 2006). Anyway, the indigenous population is one of the smallest in the whole LAC region with just over 400,000 people or about 1% of the total population.

Spanish is both, the official and mostly spoken language. Due to the existence of large communities of European or Arabic origin, there are about 1.5 million Italian speakers, 1 million speakers of Levantine Arabic and about half a million speakers of German. Furthermore, some indigenous languages, like Guaraní, Quechua and Aymara have are also spoken, but their number is quite short.

92% of the population is Roman Catholic (with less than 20% practicing), 2% Protestant, 2% Jewish, and 4% believes in other religions.

Regarding to the situation of the women, Argentina is presented to be one of the countries of LAC region in which gender equality is closer to European standards, mostly because of cultural and socioeconomic factors, being most of the population directly descendants of European immigrants. According to the World Economic Forum (2007), Argentina was located in the 33th position in the World ranking of Gender Equality, only preceded in LAC by Cuba, Colombia and Costa Rica. Anyway, not all the indicators are similar, for while Argentina presents the best ratios on access of women to education, health services and politics, it has also one of the highest gaps in average income between men and women performing the same work.

### **1.4.2. Ecuador**

65% of the Ecuadorian population is considered to be *Mestizo* (of mixed Amerindian and European ancestry), 25% Amerindian (indigenous), 7% Spanish and other European, and 3% Afro-American, mainly concentrated in the coastal areas of Ecuador.

Race (and along with it language and culture also, merging into a wider “ethnic ascription”) has been a dominant issue in Ecuadorian history to organize social structure. This situation has its roots in Colonial age, when both main populations, Whites and Indians, were legally ascribed to different and separate legislative corps (the “republic of Spaniards” and the “republic of Indians”, as it was known by the legislation of Spanish crown). So historically Whites -also known as *criollos*, that applies to those whites born in America- have dominated the social, political and economic key resources of Ecuador. Indians, and also *mestizos*, have usually been located at the bottom of the social structure, with less access to education, a lower level of income, and a non-legal but real separation from the highest levels of political power.

95% of the population is following the Roman Catholic faith (only 5% other religions). From 1950 on there has been a strong introduction of Protestant Christian churches, especially from the United States, but it has not been as successful as in other neighbor countries. There is also a very little but powerful Islamic minority in main cities, due to recent immigrations in the 20<sup>th</sup> century.

Spanish is the official and mostly spoken language, but also Amerindian languages (especially Quechua) are widely used, even though they are not yet recognized as official languages, notwithstanding there has been some pressure into this way in the latter years.

### **1.4.3. Hispaniola**

While the Dominican Republic has a mixed population (73% Mulatto, 16% white, 11% of African descent), Haiti is close to an ethnically homogenous country with 95% of the population of African descent and only few mulattos, mestizos, Arabs and Europeans. Even though over 80% of the Dominican population has some grade of African ancestry, most Dominicans identify themselves rather “mixed” than of African descent – in contrast to movements of African identity in other countries.

Spanish is the only and official language in the DR (French only spoken by Haitian immigrants). In Haiti, French and Haitian Creole are official languages. While French is used as principal written and administrative language, Haitian Creole is spoken natively by nearly all Haitians. Spanish is spoken in the border region with the Dominican Republic, but gains importance for trade activities with Latin American countries.

In the DR more than 95% of the population is Christian, mostly Roman Catholic, introduced by the Spanish missionaries since the conquest. The presence of Protestant groups, mainly introduced from the United States, has grown in the last years. In Haiti, the picture is a bit more mixed, with 80-85% Roman Catholics and 15-20% Protestants. Many Haitians also practice Voodoo in addition to Catholicism.

### **1.4.4. Mexico**

The overwhelming majority of Mexicans is of mixed (*mestizo*) Euro-Amerindian ancestry (around 60-75%). “White Mexicans” with European (mostly Spanish) ancestry represent about 9%. According to the National Institute on Geography, Statistics and Informatics (INEGI), the indigenous population of Mexico is just about 6.7% of the total population (defined as population speaking an indigenous language). Other figures are given by the National Commission for the Development of the Indigenous Peoples (CDI): it estimates the number of indigenous Mexicans about more than 12 million people (11.6%). The CDI includes not only the language, but also the place of origin and the ethnic identity into the classification. The CDI recognizes 65 ethnic groups, which are differentiated on the base of linguistic criteria. The biggest groups are the Náhuatl (2.4 mill.), Maya (1.5 mill.), Zapoteco (777 thsd.), Mixteco (727 thsd.) and Otomí (647 thsd.) (CDI 2000). All of them are descendants of the ancient Mesoamerican cultures. The highest presence of indigenous group can be found in south-eastern Mexican states like Chiapas, Oaxaca and the Yucatán Peninsula. Even though the Mexican constitution defines the country as a “pluricultural country”, there are still many unsolved issues between the indigenous population and the government.

The linguistic landscape of Mexico is as diverse as the ethnic composition of the population. The major language (even though not *de jure* “official” language) is Spanish, which is spoken by 97% of the population. The General Law of Linguistic Rights of the Indigenous Peoples, however, grants all indigenous minority languages spoken in Mexico, regardless of the number of speakers, the same validity as Spanish in all territories in which they are spoken, and indigenous peoples are entitled to request some public services and documents in their languages. Along with Spanish, the law has granted more than 60 languages the status of “national languages”. The most important indigenous languages are Náhuatl (1.4 mill. speakers), Yucatec Maya (760 thsd.), Mixtec (423 Thsd.) and Zapotec (411 Thsd.), followed by Tzeltal and Tzotzil Maya, Otomí and Totonac.

Even though Mexico is the second-largest country regarding the number of Catholics, the Mexican state is officially secularist. The separation between state and church dates back to the constitution of 1857 and was even more pronounced in the constitution of 1917, which is still in force. The government does not provide any financial contribution to the Church, and the latter does not participate in public education. In 1992 Mexico lifted almost all restrictions on the Catholic Church, including granting all religious groups legal status, conceding them limited property rights, and lifting restrictions on the number of priests in the country. Until recently, priests did not have the right to vote, and even now, they cannot be elected for public office. According to the census of 2000, 88% of Mexicans declare themselves as Catholics, 6% as Protestants and about 1% as Jehovah’s Witnesses. About 3% declared not have any religion.

Machismo is still widespread in Mexican society. Women are underrepresented in political institutions and other important charges. In the Maquiladora Industry, where women represent a high share of the labor force, discrimination against female workers is on the daily agenda. According to Human Rights Watch, “*Mexican laws do not adequately protect women and girls against domestic violence and sexual abuse. Some laws on violence against women run directly counter to international standards [...] .Legal protections that do exist are often not enforced vigorously. As a result, victims are often reluctant to report crimes and such underreporting in turn undercuts pressure for necessary legal reforms. The net effect is that sexual and domestic violence against women and girls continues to be rampant and shrouded in impunity.*” (HRW 2007a)

[Data from INEGI and CDI websites: [www.inegi.gob.mx](http://www.inegi.gob.mx); [www.cdi.gob.mx](http://www.cdi.gob.mx)]

## 2. Environmental Degradation

### 2.1. General overview

In Latin America and the Caribbean the main environmental issues are unplanned urbanisation, deforestation, land degradation, coastal degradation, marine pollution and regional vulnerability to climate change. Globalisation has led to increased oil and gas extraction, expanded use of arable land for monoculture, and the intensification of tourism, especially in the Caribbean.

#### 2.1.1. Argentina

Argentina can be divided in four geographical regions: The Andes, the North, the Pampas and Patagonia. The mountainous Andes extend north to south (including Aconcagua, 6969m, highest peak of the continent) and build the western boundary with Chile. The north is defined by the Chaco with dry lowlands and Mesopotamia. The rich central plains are grasslands divided into the dry Pampas (west) and the humid Pampas (east). Patagonia with rough mountains and a cold and windy climate lies in the very south of Argentina. The overall temperate climate is only interrupted by a (semi)arid north-south band and tundra/polar conditions in the high Andes and parts of Patagonia (EB 2007).

Argentina is a well developed country with rich natural resources, an export-oriented agricultural sector, and a diversified industrial base. The environmental problems are typical for an industrializing economy (CIA WFB 2007):

- heavy flooding
- earthquakes (mainly San Miguel de Tucuman and Mendoza)
- violent windstorms (pampas and northeastern regions)
- deforestation
- soil degradation
- desertification
- uncontrolled dumping of pesticides, hydrocarbons and heavy metals
- air pollution due to chemical agents from industrial sources (CIA 2007, NE 2007)

Floods are the major type of natural disasters in Argentina – in number, people affected and damage (Tab.1). The high numbers of people killed and injured by earthquakes is mainly due to one major event in 1944. Wind storms occur regularly and have additional effects on peoples' livelihoods by causing soil erosion (see also 3.2).

Disaster Type	Numbers	Killed	Injured	Homeless	Affected	Damage (US\$ 000s)
Flood	43	794	61	556.874	13.008.200	10.138.210
Wind Storm	16	255	602	6.630	122.400	75.000
Extreme Temperature	7	143	0	0	28.000	0
Earthquake	5	10.076	35.365	200	170.500	80.000
Wild Fires	5	32	2	750	152.000	100.000
Volcano	1	0	0	1.200	62.000	0
Epidemic	1	67	0	0	3,883	0
Slides	1	45	0	0	0	0

**Tab.1:** Natural Disasters in Argentina from 1944 to 2007 (EM-Dat)

## 2.1.2. Ecuador

Ecuador is situated in western South America, bordering the Pacific Ocean at the equator and located between Colombia and Peru. The land area is 283,560 sq km and the length of the coastline is 2,237 km. The climate is tropical along coast, becoming cooler inland at higher elevations and tropical in the Amazonian jungle lowlands. The land area is characterized by coastal plain (*costa*), inter-Andean central highlands (*sierra*), and flat to rolling eastern jungle (*oriente*). The altitude ranges from 0m at the Pacific coast to 6,267 m at the peak of Chimborazo. The main environmental problems are:

- deforestation;
- soil erosion;
- desertification;
- water pollution;
- pollution from oil production wastes in ecologically sensitive areas of the Amazon Basin and Galapagos Islands

There is a heavy reliance on agriculture that not only leads to the exploitation of many field workers, but also to an unstable economy that is strongly affected by climatic variability and change. Therefore, the people are extremely vulnerable to droughts and bad crop years. Climatic extremes are more common, planting times have become unpredictable, and alternating floods and drought wreak havoc on farmers. The impacts of climate change and desertification, although felt nationwide, have been most marked in the provinces of Loja and Manab' where thousands of families have been forced to migrate due to prolonged droughts. Increased deforestation follows their arrival in other provinces where they practice the same forms of land-use that have created deserts in their places of origin.

In addition the country is exposed to numerous natural hazards: earthquakes, volcanoes, landslides, floods and periodic droughts. As Table 1 shows, in terms of the number of people affected floods, droughts and earthquakes are the three major natural hazards. In terms of the number made homeless, earthquakes and floods cause the most damage.

**Table 1: Natural disasters in Ecuador (1904- 2006)**

Summarized Table of Natural Disasters in Ecuador from 1904 to 2006

	# of Events	Killed	Injured	Homeless	Affected	Total Affected	Damage US\$ (000's)
<b>Drought</b>	2	0	0	0	634,000	634,000	0
avg per event		0	0	0	317,000	317,000	0
<b>Earthquake</b>	16	11,336	486	214,867	182,950	398,303	1,535,000
avg per event		709	30	13,429	11,434	24,894	95,938
<b>Epidemic</b>	11	999	0	0	159,678	159,678	0
avg per event		91	0	0	14,516	14,516	0
<b>Flood</b>	22	889	259	115,436	1,461,582	1,577,277	561,570
avg per event		40	12	5,247	66,436	71,694	25,526
<b>Slides</b>	12	1,099	120	180	81,156	81,456	500,000
avg per event		92	10	15	6,763	6,788	41,667
<b>Volcano</b>	10	6	13	7,200	539,670	546,883	160,975
avg per event		1	1	720	53,967	54,688	16,098
<b>Wild Fires</b>	2	0	0	0	800	800	0
avg per event		0	0	0	400	400	0

Created on Aug-1-2007. - Data version v03.07

Source: EM-DAT: The OFDA/CRED International Disaster Database, [www.em-dat.net](http://www.em-dat.net) - Université catholique de Louvain - Brussels – Belgium

### 2.1.3. Hispaniola (Dom.Rep. / Haiti)

Haiti and the Dominican Republic together form the island Hispaniola, which lies between the Caribbean Sea and the North Atlantic Ocean. The general characteristics of the two countries are shown in Table 1. Both parts of the island are characterised by deforestation, soil erosion and inadequate supplies of potable water. The 2005 Environmental Sustainability Index of the World Economic Forum ranked the Dominican Republic 119 out of 146 nations; Haiti, at 141, was the only country in the Western Hemisphere ranked lower.

**Table1: General Characteristics of Haiti and the Dominican Republic**

	<b>Haiti</b>	<b>Dominican Republic</b>
Land Area	27,560 sq km	48,380 sq km
Coastline	1,771 km	1,288 km
Terrain	mostly rough and mountainous	rugged highlands and mountains with fertile valleys interspersed
Environmental problems	extensive deforestation (much of the remaining forested land is being cleared for agriculture and used as fuel); soil erosion; inadequate supplies of potable water	water shortages; soil eroding into the sea damages coral reefs; deforestation
Population	8,706,497	9,365,818 (July 2007 est.)

As the following tables 2 and 3 show, the island is also exposed to natural hazards:

Table 2

Summarized Table of Natural Disasters in Dominican Rep from 1930 to 2007							
	# of Events	Killed	Injured	Homeless	Affected	Total Affected	Damage US\$ (000's)
<b>Drought</b>	1	0	0	0	240,000	240,000	5,000
avg per event		0	0	0	240,000	240,000	5,000
<b>Earthquake</b>	2	76	15	0	2,000	2,015	0
avg per event		38	8	0	1,000	1,008	0
<b>Epidemic</b>	4	38	0	0	1,252	1,252	0
avg per event		10	0	0	313	313	0
<b>Flood</b>	15	823	3	3,092	1,459,445	1,462,540	45,220
avg per event		55	0	206	97,296	97,503	3,015
<b>Wild Fires</b>	3	0	0	0	0	0	1,000
avg per event		0	0	0	0	0	333
<b>Wind Storm</b>	19	4,319	11,076	478,000	2,120,550	2,609,626	2,605,210
avg per event		227	583	25,158	111,608	137,349	137,116

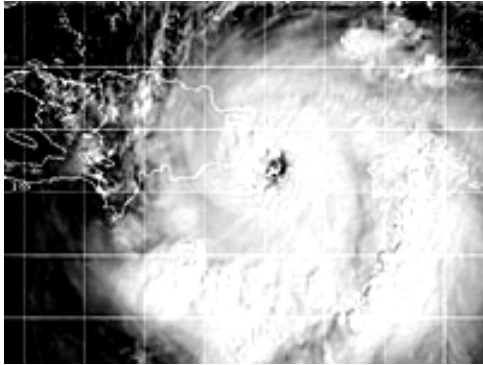
Created on Aug-8-2007. - Data version v03.07 Source:"EM-DAT: The OFDA/CRED International Disaster Database, www.em-dat.net - Université catholique de Louvain - Brussels - Belgium" \*Events recorded in the CRED EM-DAT. First Event: Sep/1930, Last Entry: May/2007.

Table 3

Created on Aug-8-2007. - Data version v03.07 Source:"EM-DAT: The OFDA/CRED International Disaster Database, www.em-dat.net - Université catholique de Louvain - Brussels - Belgium" \*Events recorded in the CRED EM-DAT. First Event: Nov/1909, Last Entry: May/2007.

In terms of the total number of people affected, in the Dominican Republic wind storms

(hurricanes) and floods are causing most of the damage, while in Haiti wind storms (hurricanes) and droughts cause the most damage. Millions of people are affected by these natural disasters, and hurricanes also lead to many homeless people.



*Hurricane George going into the Dominican Republic (Sept. 22, 1998).*  
[http://www.Hispaniola.com/dominican\\_republic/info/nature\\_climate.php](http://www.Hispaniola.com/dominican_republic/info/nature_climate.php)

The Dominican Republic has been hit by 11 hurricanes in almost 80 years. Historically, big hurricanes have been widely spaced out through the years and for the most part have hit the less populated south-western and western coasts of the Dominican Republic. In the D.R., Hurricane Georges in September 1994 brought strong winds and very heavy rains, along with a 7 foot (2 m) storm surge. Nearly 10 hours of continuous rainfall resulted in mudslides and flooding of rivers across the mountainous country, damaging many cities along the southern coastline, including the capital. Strong winds downed and uprooted trees across much of the country. Thousands of houses were destroyed and the entire country was without electricity during the aftermath of the storm. Most impacted by Hurricane Georges was the agricultural industry. The areas hardest hit by the hurricane coincided with the country's main crop-growing areas, including the provinces around Santo Domingo. After a severe drought in 1997, extreme rainfall damaged around 1,900 km<sup>2</sup> of food crops, including various types of vegetables, fruits, and roots — some of the country's main diet food. Substantial amounts of tobacco and sugar plantations, the country's most important export crop, were severely damaged. The extreme flooding caused great losses in the poultry industry, an important economy in the area. The Dominican Republic had to import significant amounts of rice and other crops to compensate for the losses.

Upon reaching Haiti, Georges was a weakened hurricane, but it still brought heavy rainfall across the entire country. The capital city of Port au Prince was largely unharmed, with the exception of flooding in low-lying coastal areas, damaging the main commercial port. The rest of the country, however, experienced a significant number of mudslides due to deforestation along the mountains. These mudslides destroyed or severely damaged many houses, leaving 167,332 homeless. Damage was greatest along the northern coastline from Cap Haitien to Gonaives due to the flooding and mudslides. Lack of electricity led to a total disruption of Haiti's water supply system. In all, 209 people died in Haiti.

Like in the Dominican Republic, the agricultural sector suffered extreme damage. After a severe drought in 1997, Georges's severe flooding stopped any chances of recovering quickly. Most of the country's significant crop land, including Artibonite Valley, suffered total losses. Up to 80% of banana plantations were lost, while vegetable, roots, tubers, and other food crops were ruined. In addition, thousands of small farm animals were either killed or lost. Total agricultural losses amounted to \$179 million (1998 USD, \$210 million 2006 USD).<sup>[1]</sup> The country requested food assistance in the aftermath of the hurricane to alleviate the serious losses.

## 2.1.4. Mexico

The geographical location of Mexico is sometime defined as North America, sometimes as Central America, bordering the Caribbean Sea and the Gulf of Mexico between Belize and the US and bordering the North Pacific Ocean between Guatemala and the US. The land area is 1,923,040 sq km and the total length of the coastline is 9,330 km. The country is characterized by high, rugged mountains, low coastal plains, high plateaus and desert. The climate varies from tropical to desert. The country has important natural resources: petroleum, silver, copper, gold, lead, zinc, natural gas, timber.

The main forms of environmental degradation are:

- scarcity of hazardous waste disposal facilities;
- natural fresh water resources scarce and polluted in north,
- inaccessible and poor water quality in centre and extreme southeast;
- raw sewage and industrial effluents polluting rivers in urban areas;
- deforestation;
- widespread erosion;
- desertification;
- deteriorating agricultural lands;
- serious air and water pollution in the national capital and urban centres along US-Mexico border;
- land subsidence in Valley of Mexico caused by groundwater depletion.

Natural hazards include tsunamis along the Pacific coast, volcanoes and destructive earthquakes in the centre and south, and hurricanes on the Pacific, Gulf of Mexico, and Caribbean coasts. This is demonstrated in Table 1, which shows that in terms of the number of people affected, economic damage, number of disasters and number of homeless, hurricanes are the most significant type of disaster. Earthquakes and floods are the next most significant in terms of the number of people affected since 1929.

Disaster Type	Numbers	Killed	Injured	Homeless	Affected	Damage in US\$ (000's)
Drought	5	0	0	0	65,000	1,400,000
Earthquake	27	10,677	33,287	112,275	2,556,577	4,691,000
Epidemic	2	68	0	0	11,525	0
Extreme Temperature	16	1,185	0	16,000	16,000	82,600
Flood	46	4,081	659	165,990	1,503,344	1,491,900
Slides	8	223	0	120	320	0
Volcano	10	1,120	500	15,000	161,908	117,000
Wild Fires	3	83	0	0	0	83,200
Wind storm	65	5,021	1,979	616,250	6,246,315	12,326,300

**Tab.1: Disasters in Mexico (1929 -2006), Source:"EM-DAT: The OFDA/CRED International Disaster Database, [www.em-dat.net](http://www.em-dat.net) – Université catholique de Louvain - Brussels – Belgium"**

## 2.2. “Hot spots” of environmental degradation & vulnerability

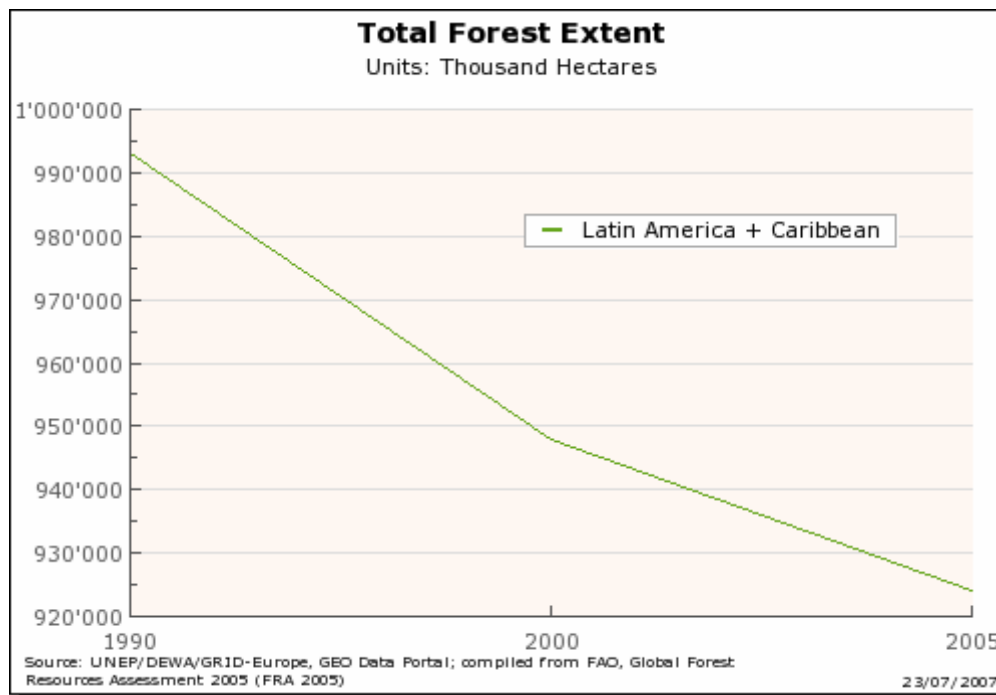
### Urbanisation

Migration into urban areas is a major driver of environmental pressures. Three-quarters of the population now live in cities and by 2020 it is expected that this number will rise to 80 percent. Thus, Latin America and the Caribbean (LAC) have the highest urbanisation level in the developing world. Urbanisation leads to deforestation, land degradation, loss of biodiversity, soil and water contamination and air pollution.

### Deforestation

In the 1990s almost 50 million hectares of forest were destroyed in LAC. The rate of loss was twice the global rate. The losses continued in the subsequent 5 years but at a slightly lower rate (Figure 1). Almost half of this loss occurred in Brazil. Deforestation is a result of conversion of forests to agricultural land, urbanisation, land speculation and wood harvesting for fuel and timber, and forest fires.

**Figure 1: Total Forest Extent in LAC**



Deforestation reduces the quantity and quality of water resources and results in increased soil erosion and sedimentation of water bodies, as well as severe degradation or loss of biodiversity.

### Land degradation

According to UNEP (2003) around 313 million hectares in the LAC region, around 16 percent of the land area, are degraded. The degradation is more severe in Mesoamerica, where 26 percent of the land area is affected. Erosion is the main cause of land degradation, but gradual intensification of agricultural production is another important factor in soil nutrient exhaustion. Desertification affects 25 percent of the region as a result of natural changes and deforestation, overgrazing and inadequate irrigation. In South America about 68 million hectares are affected by soil nutrient loss, fertility is decreasing in northeastern Brazil and northern Argentina, while other critical areas are found in Mexico, Colombia, Bolivia and Paraguay. Salinisation of agricultural soils as a result of irrigation is particularly significant in Cuba, Argentina, Mexico and Peru (UNEP 2003). Chemical soil contamination is also

increasing mainly as a result of growing use of fertilizers. Total fertilizer consumption in LAC in 2000 was four times greater than in 1970, with Brazil accounting for 50 percent, Mexico for 15 percent and Argentina for 8 percent.

### **Coastal degradation and marine pollution**

More than half of the population in the LAC region lives within 100 km of the coast. A 1996 estimate of global threats to coastal ecosystems indicated that 50 percent of the coastline in South America were under threat from cities, ports and other infrastructure (e.g. for tourism)(WRI and others 1996). Mangrove loss ranges from 67.5 percent in Panama and 64.7 percent in Mexico to 24.5 percent in Peru (Burke and others 2001). In the Caribbean as a whole, 61 percent of coral reef area is under medium or high threat from sediment, marine and land-based sources of pollution, and from overfishing. Coastal groundwater contamination and depletion are occurring throughout the region, at great economic cost (UNEP 2003).

Some 86 percent of total sewage in the region goes untreated into rivers and oceans (UNEP 2003). Oil pollution is also high, especially in the Gulf of Mexico and Brazil. Overfishing is a major source of concern. The regional marine catch peaked in 1994. Regional fisheries then fell to 50 percent of the peak level in 1998 and while they subsequently increased again to 85 percent of the 1994 level, there were clear warning signs of overfishing. The greatest impact of these fluctuations has been on small species (anchovy, sardine and mackerel) in the Humboldt Current Large Marine Ecosystem.

Aquaculture reached about 7 percent of the world's total value in 2001 with a concentration in Chile (51 percent) and Brazil (19 percent). Aquaculture develops at the expense of mangroves, estuaries and salt marshes.

### **Vulnerability to Climate Change**

Climate change in the region will have impacts on sea-level, rainfall and drought occurrence (IPCC 2001). Scenarios also suggest more pronounced droughts and floods associated with El Nino events. Figure 3 shows the current impacts of El Nino events in the region.

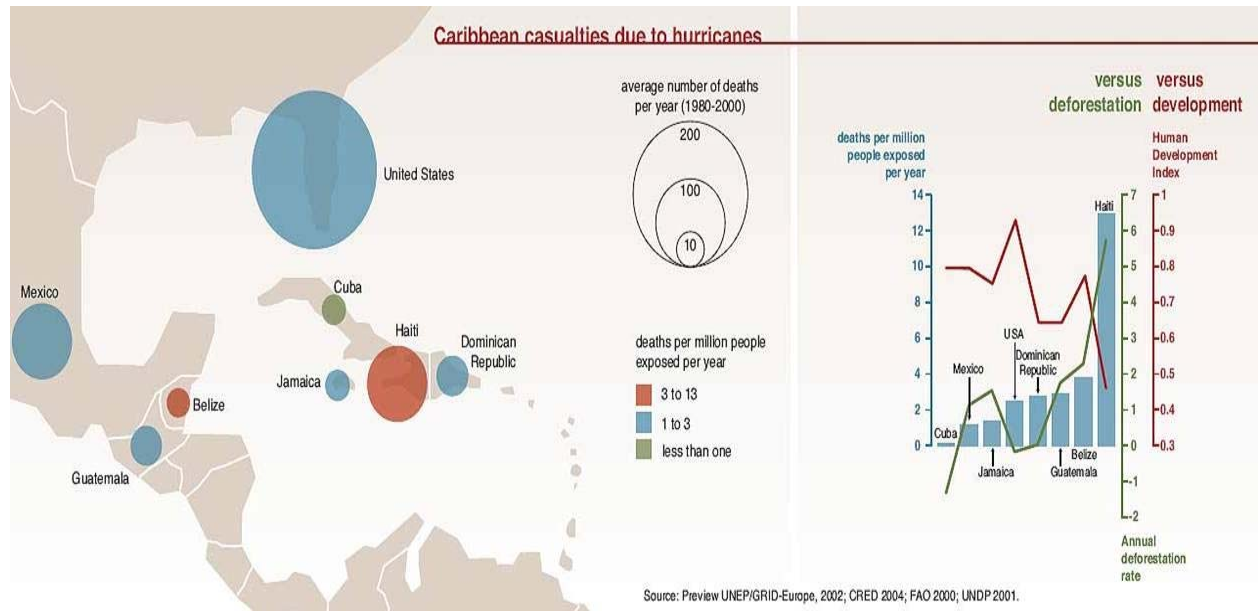
The tropical rainforests in Mesoamerica and the Amazon area are particularly vulnerable to climate change. Mangroves and coral reefs in the Caribbean, mountain ecosystems in the Andes and wetlands in the region are also vulnerable (UNEP 2003).

An increased occurrence of extreme climatic extremes has been observed in recent years. The incidence increased by 100 percent in Central America and grew by almost 60 percent in South America between 1987-1997 and 1998-2005. Loss of human life more than tripled in Central America and rose even more in the Caribbean islands and South America (6.5 times). Economic damage doubled in Central America and grew by almost 80 percent in South America and 50 percent in the Caribbean islands (Garea and Gerhartz 2006). The average number of deaths per year due to hurricanes is shown in Figure 2. Environmental degradation plays an important role in increasing vulnerability to hurricanes (Box). Tropical storms and hurricanes in the Caribbean region have increased since 1987. Hurricanes Jeanne and Ivan in September 2005 and Dennis in July 2005 killed 2825 people in the Caribbean region and affected more than one million more people. Hurricane Stan in October 2005 left 1600 dead and 2.5 million affected persons in Haiti, Central America and Mexico (EM-DAT 2005). In South America, flooding and landslides had huge impacts in the 2000 – 2005 period, with the consequences in Bolivia, for example, including 250 dead and 415000 affected.

Rising temperatures, land cover modification, changing precipitation patterns and shrinking health expenditures are leading to the re-emergence of epidemics that used to be under control in the LAC region (UNEP 2003). In particular, the increase of mosquito vectors was dramatic

between 1970 and 2002 (UNEP 2003). Chagas is another significant disease transmitted by insects. It is endemic to the region and commonly associated with changes in vegetation cover, such as deforestation in the Amazon region. Some 18 million people in the LAC region are infected with the parasite and 100 million in the region are estimated to be at risk (WHO 2005).

**Figure 2 Caribbean casualties due to hurricanes**



**Box: Environmental degradation makes the impact of hurricanes worse**



In 2004 Hurricane Jeanne claimed more than 2 700 victims in Haiti, while in the Dominican Republic less than 20 lost their lives. This is not coincidence. Dominicans are on average 4 times richer, better prepared in terms of education and training, and benefit from improved infrastructure and housing. Another factor is environmental degradation. The Dominican Republic has over 28 per cent of forest cover while Haiti has reduced its forest cover from 25 per cent (1950) to 1 per cent (2004). The photograph shows the border between Haiti and the Dominican Republic. Haiti is to the left and the Dominican Republic is the greener area to the right

(<http://svs.gsfc.nasa.gov/vis/a000000/a002600/a002640/>). This environmental aspect is significant because many victims drowned or died in mudflows, phenomena strongly influenced by the land cover.

**Fig.3: Regional climate impacts associated with El Niño (UNEP 2003)**

## Regional climate impact associated with *El Niño*

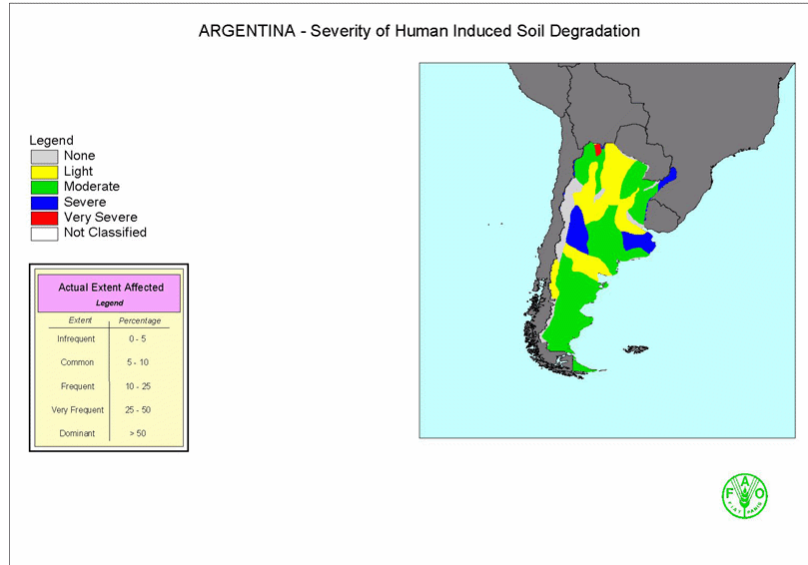


### 2.2.1. Argentina

#### Soil degradation and desertification

Soil degradation is a problem in Argentina, but human induced degradation is mostly light to moderate (Fig.1). Two regions in northern Chaco are rated (very) severe, one of them (the north-east end of Argentina) is the Iguazu National park. Land use in this region has dramatically changed in the last 30 years, even though the changes are much more severe in neighbouring Brasil and Paraguay (Annex 1).

**Fig.1: Human Induced Soil Degradation in Argentina (FAO 2007)**



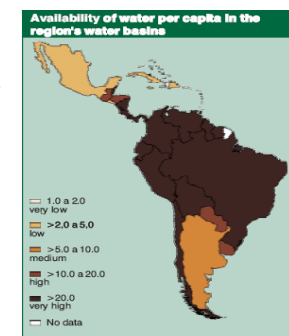
According to UNEP (2003) soil fertility is already lost in the northern parts of the country (i.e. aluminium toxicity) and soil in arid areas is affected by salinization due to irrigation. This leads to desertification which is particularly problematic along the arid strip that stretches from Paraguay to Patagonia along the east side of the Andes, but also in the dry Andean high plains (Fig.2). The main pressures for the vulnerable soils include overgrazing, poor irrigation techniques, deforestation and removal of vegetal cover for domestic uses (UNEP 2003). Beside that wind erosion is a major problem in the semiarid area of the Pampas where moving sand dunes threaten the land (CIESIN 2007). Note: The large salt lakes in western Argentina are of natural origin rather than human induced (CIESIN 2007).



**Fig.2: Climate of South America (World Book 2007)**

**Water shortage**

Argentina is the most arid country in South America, 60% of its territory is rated (semi)arid. Most of the water resources (85%) are concentrated in the La Plata basin (northwest) that covers only 30% of the country (UNEP 2003). Argentina is the only country in South America threatened by water stress, even though freshwater resources are high compared to several African countries (Fig.3). In 1998 average freshwater availability in Argentina was 7,453 m<sup>3</sup> per capita, but water demand is probably high as 80% of the industrial water demand in South America is coming from Argentina and Brazil (UNEP 2003). Water supply is threatened by uncontrolled dumping of pesticides, hydrocarbons, heavy metals (NE 2007). Hot spots of water shortage are regionally concentrated in the arid regions.



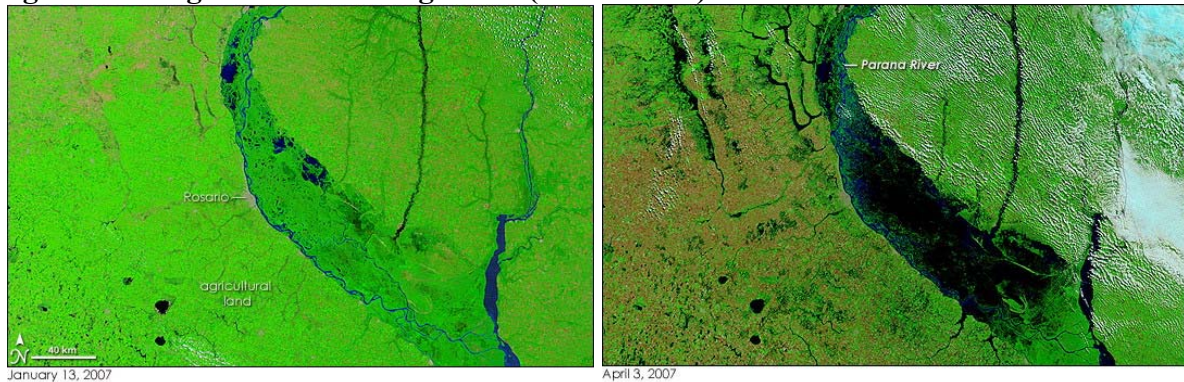
**Fig.3: Water availability in South America (UNEP 2003)**

**Flooding**

Floods occur very often in Argentina and cause huge damage (see 3.1/Tab.1). Flooding is concentrated on the Parana/Rio de la Plata river system in north-east Argentina. The Parana river is one of the longest rivers of South America. It originates in Brazil, cuts across Paraguay and empties into the Atlantic Ocean near Buenos Aires. The latest flood in 2007

affected nearly 4 million hectares and more than 70.000 people in two Argentine states when half of the average annual rainfall fell over northern Argentina in just a few days (NASA 2007). Two satellite images in Fig.4 show the dramatic changes around the city of Rosario.

**Fig.4: Flooding in Northern Argentina (NASA 2007)**



## 2.2.2. Ecuador

### Floods and droughts

El Niño, the Spanish name for "Christ Child", is the name given to the occasional development of warm surface waters in the Pacific Ocean along the coast of equatorial South America. El Niño occurs roughly every 2 to 7 years, usually around Christmas, and lasts usually for a few weeks or months. Sometimes an extremely warm event can develop that lasts much longer. In the early 1990s, a strong El Niño developed in 1991 that remained until 1995. The amount of anomalous rainfall and river flooding in the southern coastal region of Ecuador and northern Peru is an indicator of the strength of the El Niño events.

Figure 1 shows the relationship between the Southern Oscillation Index, which is closely related to the incidence of El Niño events and the rainfall in the coastal region of Ecuador. It illustrates the occurrence of El Niño events in 1983-84, 1991-92 and 1997-98. The coastal area of Ecuador were strongly affected by the flooding events associated with these three El Niño occurrences. According to official information (CEPAL) the economic losses after El Niño from 1997-98 were estimated at 1.9 billion US dollars; more than 100.000 ha of first-class agricultural areas were lost; road, telecommunication and water supply networks were heavily damaged and in most cases totally destroyed; thousands of jobs were also lost as a consequence; thousands of people lost their property; and more than 100 people lost their lives, most of them children.<sup>9</sup>

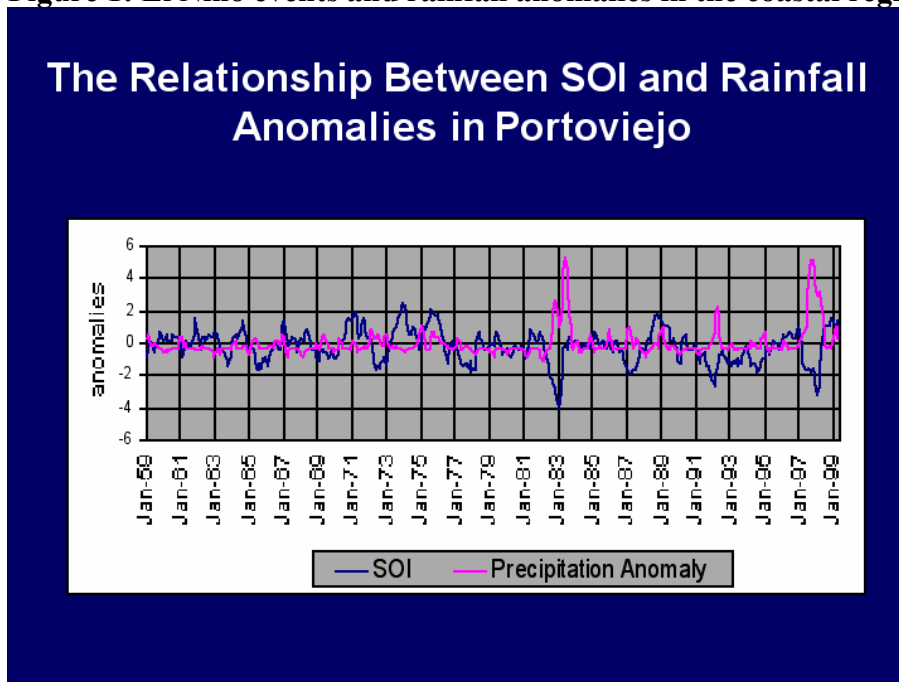
In 1997 Central Ecuador and Peru suffered rainfall more than 10 times normal, which caused flooding, extensive erosion and mudslides with loss of lives, destruction of homes and food supplies. Ecuador, Peru and Bolivia suffered serious malaria epidemics after heavy rainfall in the 1983 El Niño. The epidemic in Ecuador was badly exacerbated by displacement of population due to the flooding.<sup>10</sup>

In early 2006, heavy rains and extensive flooding in the coastal provinces of El Oro, Guayas, Los Ríos, and Manabí killed 16 people and affected 140,000 others, according to Ecuador's Civil Defense authorities. In addition, the U.N. World Food Program (WFP) reported that 55,000 people were displaced in the affected areas. The floods caused extensive damage to agriculture and disrupted the supply of clean water. (see map of affected area in appendix).

<sup>9</sup> [http://unisdr.unbonn.org/ewpp/project\\_viewer.php?project\\_id=156](http://unisdr.unbonn.org/ewpp/project_viewer.php?project_id=156)

<sup>10</sup> <http://www.who.int/mediacentre/factsheets/fs192/en/index.html>

**Figure 1: El Niño events and rainfall anomalies in the coastal region of Ecuador**

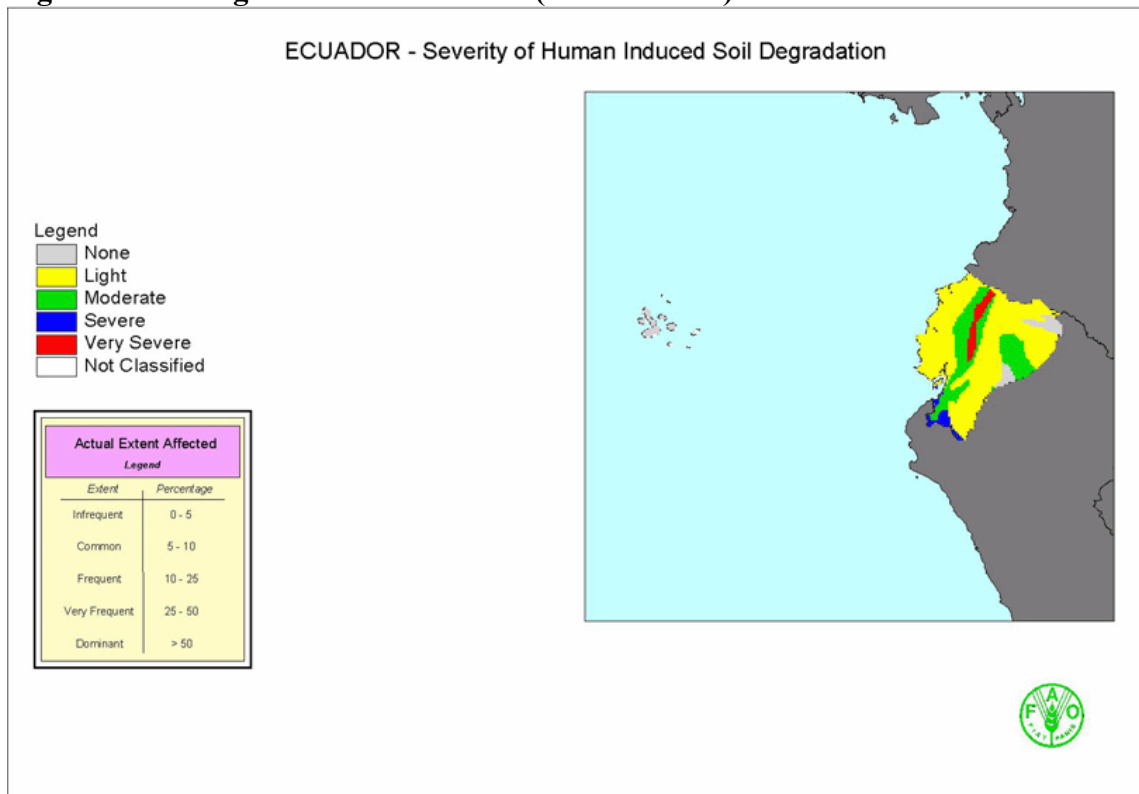


[http://www.rsmas.miami.edu/IAI/Inst1999/MiniProjects/WR\\_slds/sld007.htm](http://www.rsmas.miami.edu/IAI/Inst1999/MiniProjects/WR_slds/sld007.htm)

### Land degradation

Figure 2 shows the distribution of land degradation in Ecuador. Most of the country has light degradation and the area classified as “serious” is located in the central mountainous region of the country.

**Figure 2: Soil degradation in Ecuador (Source. FAO)**



## **Deforestation**

Ecuador has one of the world's highest rates of deforestation estimated at over 300,000 hectares (3%) per year<sup>11</sup>. In the interandean basin native vegetation has been practically eliminated since colonial times, replaced by crops, pasture, towns and cities, and exotic tree (eucalyptus and pine) plantations. This region suffers serious soil erosion problems and today only about 1 - 2% of its original forest cover remains, mainly at inaccessible high-altitude locations above 3400 meters elevation. Only about 5% of the rich forests of the coastal region remain, most have been destroyed in the last 50 years by logging, agroindustrial monocultures (banana, cacao, coffee, African palm) and colonization. In the province of Esmeraldas (in northwest Ecuador), the last unprotected old-growth forests on the coast are now being liquidated by the timber industry and cleared for huge plantations (thousands of hectares) of African palm which are currently responsible for the fastest deforestation rate in South America.

Over 70% of the coastal mangroves have been eliminated by the shrimp industry, which have also moved into Esmeraldas threatening the Earth's tallest and best conserved mangrove ecosystem and the traditional fishing communities which depend upon it for their subsistence. Since the early 1970's, about 30% of the Ecuadorian Amazon has been deforested and/or polluted and entire indigenous cultures, such as the Cofan and Huaorani, have been placed in danger of extinction as a result of the oil industry and accelerated colonization facilitated by the oil roads. In addition to all this, land traffickers and colonists are steadily removing the diverse forests of the Andean outer slopes and the menace of large-scale mining currently looms on the horizon. As a result, the Andes-Amazon and Andes-Choco of Ecuador are among the most threatened pristine forest ecosystems on the planet.

Watershed degradation by soil erosion and stream sedimentation, desertification and flooding are other easier measured consequences of deforestation which are taking their disastrous toll.

In the Andes the projected life-span and capacity of Ecuador's largest dam and hydroelectric generator (Paute) has been reduced by half due to sedimentation caused by deforestation in its watershed. During dry years electricity shortages in Ecuador's major cities are a result.

## **Water pollution**

Adequate sanitation and availability of clean water are paramount needs in Ecuador. Water problems are made worse by pesticide contamination from potato farming, banana plantations and cut flower farms. In rainy seasons, flooding and mudslides aggravate the situation. In addition, inadequate drainage systems and poor sanitation provide breeding areas for mosquitoes that carry malaria and dengue fever. Ecuador's gold, copper, lead, magnesium and other mines contribute to soil and water pollution, and direct handling of heavy metals such as mercury also creates environmental health hazards. Ecuador has also become a leading producer and exporter of shrimp and the aquaculture farms are also a major source of pollution.

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<sup>11</sup> Jefferson Mecham: Causes and consequences of deforestation in Ecuador. Centro de Investigacion de los Bosques Tropicales – CIBT <http://www.rainforestinfo.org.au/projects/jefferson.htm>

### 2.2.3. Hispaniola (Dom.Rep. / Haiti)

#### Deforestation

More than 98 per cent of Haiti's forests are gone, leaving no topsoil to hold rains. Even the mango and avocado trees have started to vanish, destroying a vital food source for the poor to make way for another necessity of the impoverished - charcoal for cooking. The satellite photo (Figure 1) shows that deforestation is greater in Haiti than in the Dominican Republic, where vast stretches of forest remain in the hands of a wealthy few.

The difference in vegetation also is reflected in the death tolls due to flooding and hurricanes. For example, the Dominican Republic lost just 19 people to Hurricane Jeanne, including 12 people who drowned in swollen rivers. In Haiti for the same storm there were over 2,700 victims.

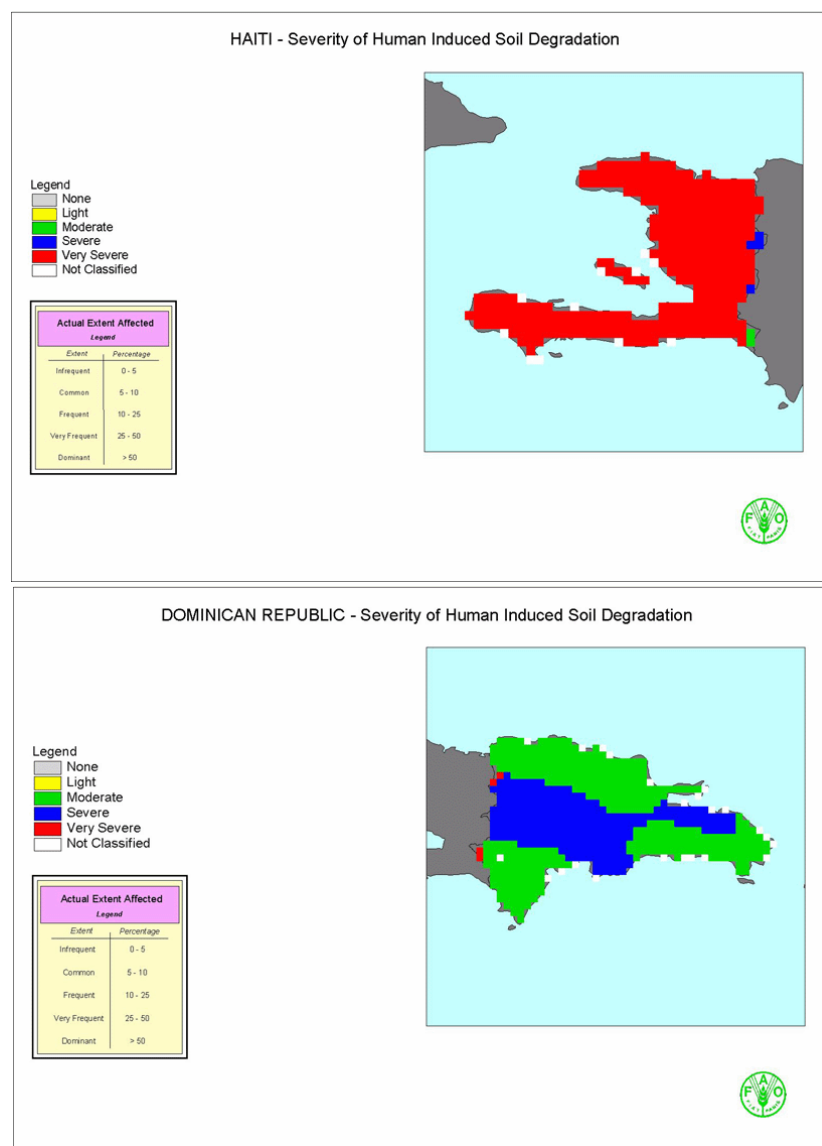
**Figure 2: Soil degradation in Haiti & the Dominican Republic**

In 1950, some 25 per cent of Haiti was covered with forest. In 1987, it was 10 per cent. By 1994, it was down to four per cent. Now, field work by international and Haitian scientists shows only about 1.4 per cent of Haiti's land is forested<sup>12</sup>. The Dominican Republic still had 28.4% forest coverage in 2000 and no recorded deforestation<sup>13</sup>.

#### Land degradation

Largely as a result of deforestation and the resulting soil erosion, soil degradation in Haiti is very severe over almost the entire country. In contrast, the degradation in the Dominican Republic is moderate in the coastal areas and severe in the central region (Figure 2).

Source of Figure 2: FAO AGL 2005



<sup>12</sup> [http://www.jamaicaobserver.com/news/html/20040922T190000-0500\\_66454\\_OBS\\_HAITI\\_S\\_DEADLY\\_FLOODS\\_BLAZED\\_ON\\_DEFORESTATION\\_POVERTY.asp](http://www.jamaicaobserver.com/news/html/20040922T190000-0500_66454_OBS_HAITI_S_DEADLY_FLOODS_BLAZED_ON_DEFORESTATION_POVERTY.asp)

<sup>13</sup> [http://www.grid.unep.ch/product/publication/download/article\\_tropCycl\\_Env.pdf](http://www.grid.unep.ch/product/publication/download/article_tropCycl_Env.pdf)  
P. Peduzzi; Tropical cyclones: paying a high price for environmental destruction

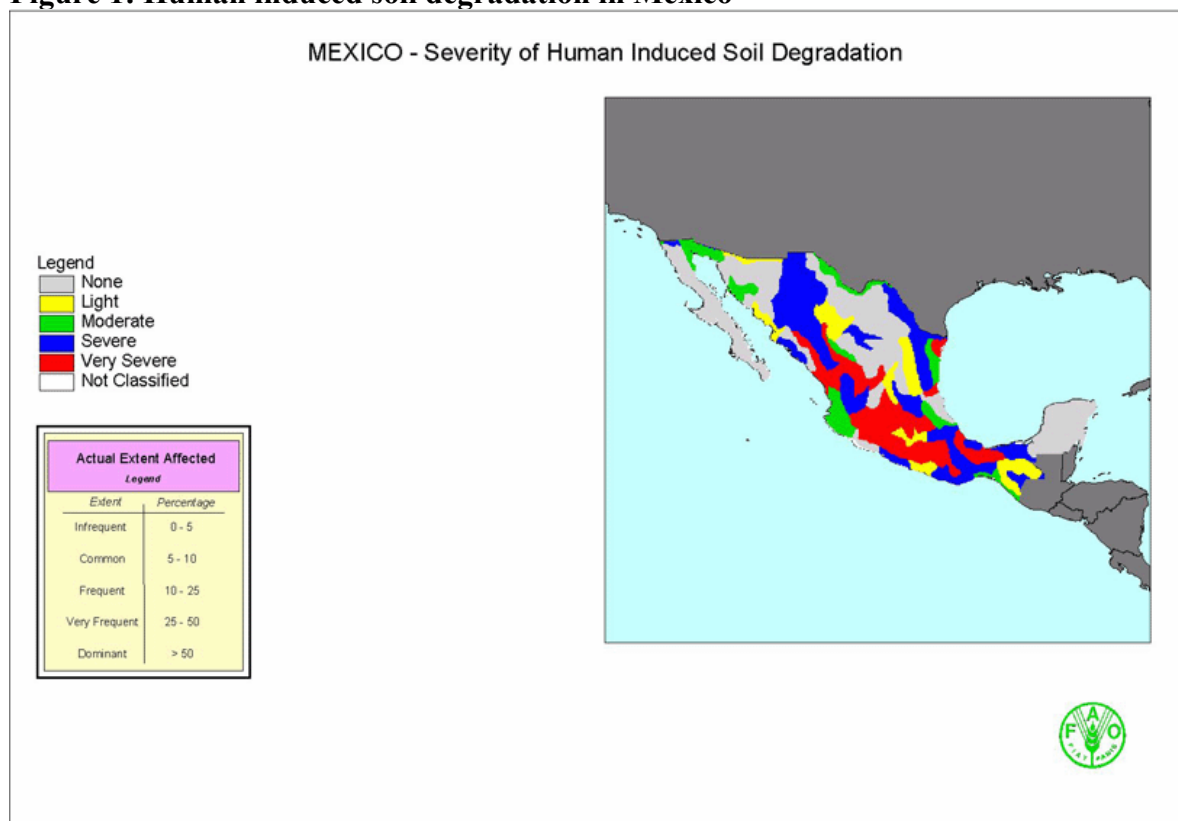
## Water and floods

As noted above, deforestation plays a major role in increased flooding. The major floods in May 2004 had major impacts on the villages Mapou and Fond Verrettes in Haiti, and the town of Jimani across the border in the Dominican Republic. Analysis of the Dartmouth Flood Observatory data archive, which dates back to 1986, suggests that major floods in the Dominican Republic/Haiti are now a near-annual event. Since 1986, twelve lethal events have impacted the island.<sup>14</sup> However – and in contrast to the severe floods – , both parts of the island are also affected by increasing water-shortages.

## 2.2.4. Mexico

### Land degradation and desertification

**Figure 1: Human induced soil degradation in Mexico**



Source: <http://www.fao.org/landandwater/agll/glasod/glasodmaps.jsp?country=MEX&search=Display+map+%21>

As shown in Figure 1, land degradation is severe to very severe in large areas of the country. More than 85% of Mexico is affected by desertification. Desertification in Mexico is a result of numerous factors: deforestation, overgrazing, overexploitation of aquifers, erosion, salinization, diminishing organic matter content, reduction of soil depth, and contamination. Soil destruction is particularly pronounced in the north and northwest, with more than 60 % of land considered in a total or accelerated state of erosion. Fragile because of its semiarid and arid character, the soil of the region has become increasingly damaged through excessive cattle-raising and irrigation with waters containing high levels of salinity. The result is a

<sup>14</sup> Timothy Gubbels and Robert Brakenridge: Flood Disaster Hits Hispaniola  
[http://www.intute.ac.uk/sciences/worldguide/html/869\\_articles.html](http://www.intute.ac.uk/sciences/worldguide/html/869_articles.html)

mounting problem of desertification throughout the region.

There is a significant geographic mismatch between water resources and population in Mexico; only 12% of the nation's water is on the central plateau where 60% of the population and 50% of the basic cropland are located. Most of the water withdrawals are for agriculture (78%), followed by domestic use (17%) and industry (5%).

### **Deforestation**

In 2001 the forest inventory for Mexico showing that over the previous seven years, the annual rate of deforestation rose to 1.1 million hectares. The previous rate of 600 thousand hectares per year was practically doubled. This placed Mexico second in the world in the loss of forests, behind Brazil. Between the years 1993 and 2000, a total of 7.8 million hectares were lost, distributed in the following way: the State of Campeche lost 100% of its forests (200 thousand hectares), Tabasco 58%, Chihuahua, 7% (576 thousand hectares), Yucatán 35% (272 thousand hectares), Querétaro 30% (44 thousand hectares) and Veracruz 22% (270 thousand hectares). The main causes for the disappearance of forests are the increased area devoted to agriculture and cattle-raising. These are driven by factors such as the North American Free Trade Agreement, foreign investment, large scale monoculture plantations and land tenure patterns (<http://www.wrm.org.uy/bulletin/54/Mexico.html>).

For example, tropical forests covered almost half of the state of Tabasco in 1940 but less than 10 % by the late 1980s. During the same period, pastureland increased from 20 to 60 % of the state's total area. Analysts reported similar conditions in other tropical sections of Mexico. Deforestation has contributed to serious levels of soil erosion in the whole country.

Between 5 and 7 million cubic meters of illegal logging is carried out each year in Mexico, comparable to the legal production of just over 7 million cubic meters. The urgent need for reforestation was illustrated when a landslide buried a bus in the central city of Puebla and killed 32 people, a tragedy that authorities themselves have blamed on intense logging operations in the area, which softens the soil and increases the likelihood of such natural disasters. (<http://desertification.wordpress.com/2007/07/18/planting-250-million-trees-in-mexico-olyecology/>)

## **2.3. Adaptation and state-capacities**

### **2.3.1. Argentina**

#### **Desertification**

In 2002 Argentina (beside 5 other countries of the region) approved their National Action Programme. On the national level there is a need for greater efficiency in administrating resources and combining efforts to combat desertification to conserve biodiversity and protect wetlands. On the regional level there are actions for harmonisation of regional public policies to combat desertification (UNEP 2003).

The "Great Chaco sub-regional action programme" involves Argentina, Bolivia and Paraguay and was initiated in 2000. Although the programme did not receive all the funds needed to carry out its activities, there is important progress. Actions include a Declaration of Cooperation for Sustainable Development, meetings of NGOs on desertification and poverty and micro-projects in locally, various, indigenous and agricultural communities (UNEP 2003).

## **Water**

The Inter-provincial Water Commission was established to avoid tensions caused by water use. It provides collective decisions on distributing flows for freshwater supply, irrigation, hydropower and water use for industrial mining and petroleum (UNEP 2003).

In 2002 the governments of Argentina, Brazil, Paraguay and Uruguay began to prepare a joint management framework for the water system of the Guarani Aquifer. The Guarani Aquifer system is one of the world's largest with reserves of approximately 40,000km<sup>3</sup> and an annual recharge of 160km<sup>3</sup>. The project adheres to principles of environmental sustainability and public participation (UNEP 2003).

### **2.3.2. Ecuador**

A major need, given the devastating effects of flooding during the El Nino events, is flood protection and early warning. However, efficient measures of flood protection are not expected to be implemented within the near future due to a weak state economy and the local economy not having recovered from the last disasters. There is considerable reliance on international aid when flooding occurs. (see for example [www.reliefweb.int](http://www.reliefweb.int))

Other activities are ongoing to address the effects of pesticide pollution from agriculture, including integrated pest management and new technologies.

### **2.3.3. Hispaniola (Dom.Rep. / Haiti)**

While in the Dominican Republic some efforts have been made to reforest areas affected by deforestation, such kind of programmes are doomed to failure in Haiti. Extreme poverty and lack of basic food supplies impede the conservation of reforested areas. Haiti is strongly dependant on international aid.

The government of the Dominican Republic developed some environmental programs in cooperation with NGO's and academics, but in many cases environmental policies had to stand back behind the priority of economic development.

### **2.3.4. Mexico**

President Felipe Calderón planted the first of a total of 250 million trees included in an environmental plan aimed at removing Mexico from the list of nations with the worst rates of deforestation. The army will cooperate in the task of planting trees and close to 7 million people, including members of farm cooperatives, day labourers and private owners of forest areas, will be paid by the government to protect and conserve the woodlands. Mexico has also developed a Biodiversity Action Plan to address issues of endangered species and habitats that merit protection. The country is also party to a range of international environment agreements, including the agreements on climate, desertification, biodiversity and ozone.

## **2.4. Environmental change and conflict**

### **2.4.1. Argentina**

The construction of a big pulp mill plant in Uruguay at the Uruguay river (border to Argentina) recently led to tensions between the two countries. Activists were blocking

international trade routes to stop the construction and Argentina took Uruguay to the World Court in The Hague in 2006, accusing it of violating a 1975 bilateral treaty by not giving enough information on the mill. Environmentalists argue that the plant would have negative impacts on water quality and tourism (MWC 2007).

Land degradation has increased poverty that again leads to greater environmental deterioration, a cyclical phenomenon that has been observed especially in silviculture and agriculture and results in high economical losses (UNEP 2003).

## **2.4.2. Ecuador**

There is quite a long list of examples of environmental issues leading to conflict in Ecuador. Some of the issues are transboundary – for example, the spraying of pesticides on coca plantations across the border in Colombia led to protests by farmers in Ecuador.

There are conflicts in Ecuador between environmental groups and farmers because of the use of chemical pesticides in potato farming. One research team found that there was an eightfold increase in the rate of reported pesticide poisonings in the San Gabriel region—from 21 cases per 100,000 persons to 171 per 100,000. The majority of these cases were men engaged in pesticide spraying. Further conflicts arise because of the oil sector operating in the Amazon region of Ecuador.

## **2.4.3. Hispaniola (Dom.Rep. / Haiti)**

One of the causes of conflict on the island is the water shortages mentioned in Section 2. For example, there were reports of a crisis when more than 60 communities were affected for over eight months in the provinces of Montecristi, Valverde, Santiago and Santiago Rodriguez. This generated violent protests. 12 communities in Monte Cristi blocked the roadway that links to Santiago and the border zone with tree trunks and other debris and burning tires, in demand of tap water supply<sup>15</sup>. T. Homer-Dixon used the island for one of his case studies on environmental scarcity and violent conflict.<sup>16</sup>

An interesting study has been carried out on the interdependence between the Dominican Republic and the United States in the area of environment and security issues, concentrating on the effects of the Dominican Republic's situation on the United States. The study deals with issues such as demography, economic change, Dominican-Haitian tensions, migration, governance, corruption and debt. Furthermore issues such as institutional weaknesses, environmental governance, the reoccurring electricity crises, natural hazards, land use planning and management; the hazards of slash and burn practices, tourism, the relationship between poverty and environmental degradation, and the specific problems related to the fact that the Dominican republic and Haiti are sharing one island but are two separate nations<sup>17</sup>. The study states:

*“The national security implications of environmental stresses are especially compelling in the case of the Dominican Republic, a poor island state vulnerable to natural hazards, with an*

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<sup>15</sup> <http://www.dominicantoday.com/app/article.aspx?id=19692>

<sup>16</sup> <http://www.library.utoronto.ca/pes/evidence/evid3.htm>

<sup>17</sup> Environmental Security in the Dominican Republic: Promise or Peril? A Pilot Case Study. *Foundation for Environmental Security and Sustainability* (May 2005)  
[http://www.fess-global.org/files/dr\\_esaf\\_exec\\_summary.pdf](http://www.fess-global.org/files/dr_esaf_exec_summary.pdf)

*economy moving from a centuries-old agricultural base toward the rapid expansion of tourism, and with increasing numbers of urban poor lacking clean water and basic sanitation. The migratory pressure from neighbouring Haiti – itself struggling with a near-collapse of its environmental resources – only serves to strengthen the linkage between environment and security.”*

#### 2.4.4. Mexico

Environmental degradation in Mexico has often been linked to the issue of migration. In a statement to the UN Convention on Desertification, it was estimated that 8 -10 million Mexican have migrated to the United States in recent years out of a total population of 91 millions ([http://www.unccd.int/publicinfo/pressrel/showpressrel.php?pr=press07\\_03\\_00](http://www.unccd.int/publicinfo/pressrel/showpressrel.php?pr=press07_03_00)).

After the end of the Cold War, when the topic of “environment and conflict” was raised, Mexico provided one of the first case studies. Homer-Dixon and Howard (1995) showed how a long period of rapid population growth, combined with deforestation, soil erosion, unequal patterns of distribution of cultivated land and particular social and economic circumstances created a context favourable to the violent Zapatista uprisings in 1994.

### 2.5. Scenarios for the future

#### 2.5.1. Argentina<sup>18</sup>

During the last decades, several climate changes have been observed:

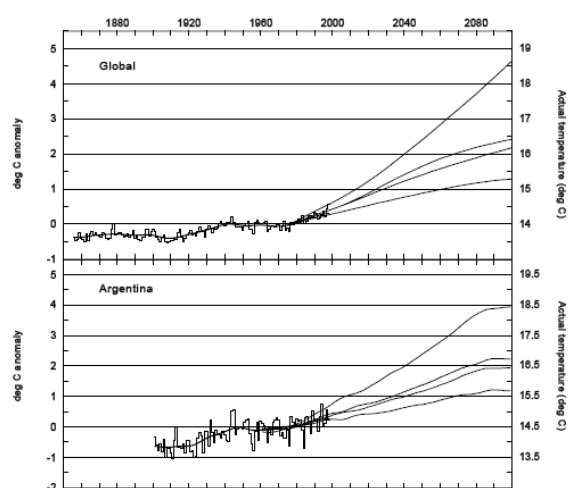
- Average temperatures in Argentina have increased 1°C during the 20th century.
- Annual average rainfalls increased in almost all the country, especially in the NW and W of the Pampa Húmeda region.
- The frequency of extreme rainfalls also increased in the center and east of the country
- The increase of average temperature has been also noticed in some spectacular outputs as the withdrawal of the glaciers in Cuyo and Patagonia.
- It has also been notices an increase of the flows of the main rivers, along with an increase of the frequency of floods in all the river bassins, with the only exception of those coming from San Juan, Mendoza and Comahue.

Climate scenarios for Argentina agree that

- the temperature will increase, but
- the changes in Argentina are minor compared to the global scenarios (Fig.5) and
- the north will warm faster than the south.

Of course the scenarios vary in the amount of

**Fig.5: Temperature Scenarios (Hulme 2007)**



<sup>18</sup> Todos los datos sobre cambios climáticos del presente informe, excepto los citados expresamente como pertenecientes a otra fuente, fueron tomados del documento oficial “2ª Comunicación de la República Argentina a las Partes de la Convención Marco de las Naciones Unidas sobre Cambio Climático” <http://www.ambiente.gov.ar/>

anomaly from a little more than one to almost 4 degree Celsius. Precipitation will overall change a little less, but all scenarios show a drying west (Andes) and a wetting east.

**Fig. 5.b. Areas in which rainfall will increase.**



This could lead to an additional stress on already limited freshwater availability in west-central Argentina, especially in combination with increasing water demand arising from larger urban populations and the expansion of irrigated agriculture and industry. (Hulme 2007). On the other side, northeastern and eastern regions will suffer the pressure of more hydric extreme events, as the average increase in the river flows will probably cause more floods (Fig. 5.b).

For the agriculture, the forecasts state that *“the new climate scenarios could led to a higher sensitivity of the crops, a loss in the activity due to floods, hydric erosion and less availability of water for irrigation”*. Agriculture represents the main economic activity of Argentina in its balance of payments.

## 2.5.2. Ecuador

There is some discussion about an increase in frequency and intensity of El Niño as a result of climate change<sup>19</sup>. This would have major implications with respect to flooding events in Ecuador.

The Latin America-Caribbean GEO published in 2003<sup>20</sup> looked at three scenarios for the LAC region: unregulated market; reforms (regulated market) and “great transitions”. The unregulated market scenario shows a rapid worsening of the environment. The regulated markets scenario shows that the use of technology and policy instruments reduces but does not eliminate the pressures on the environment and the vulnerability to extreme events still increases. The great transitions scenario shows many reversals of recent trends, but assumes institutional innovations and active participation by all sectors of society. GEO-LAC (2003, see below) concludes that the three scenarios contain important lessons for the region’s decision-makers. The most positive scenarios assume the adoption of comprehensive, equitable and long-term sustainable development policies, while the most negative results are linked to complete reliance on market mechanisms and to situations of polarisation, where the elite with power tends to become more and more separated from the majority of the population.

<sup>19</sup> Need to see whether there is anything on this in the latest IPCC full reports. It does not seem to be covered in the Summaries.

<sup>20</sup> [www.unep.org/geo](http://www.unep.org/geo)

**Scenarios from GEO-LAC (2003)**

Classification of rate of environmental deterioration in relevant scenarios			
DETERIORATION	Scenarios		
	MARKET (unregulated)	REFORMS (Regulated market)	GREAT TRANSITIONS (Sustainability)
Land degradation/desertification			
Deforestation			
Loss of biodiversity			
Air pollution			
Worsening of water stress			
Uncontrolled urban expansion			
Pollution of seas and coasts			
Vulnerability to extreme natural events			

Very rapid advance   
 Rapid advance   
 Moderate advance   
 Detention/reversal

**2.5.3. Hispaniola (Dom.Rep. / Haiti)**

A set of very interesting scenarios for the Caribbean has been produced by the GECaFS project<sup>21</sup>. The scenarios are based on those of the Millennium Ecosystem Assessment (see Box). These scenarios have different assumptions regarding socio-economic development. The assumptions regarding global environmental change are shown in the table below. The consequences are also listed in a table.

**Table 4.4 Assumed developments related to GEC in the Caribbean**

GEC DRIVERS (up to 2050)	Global Caribbean	Caribbean Order from Strength	Caribbean Techno Garden	Caribbean Adapting Mosaic
Climate Change: Temperature Mean	Global: Increase by 1.5 to 2.0 Degree Celsius Caribbean: Increase of 1.0 to 1.5 Degree Celsius			
Climate Change: Rainfall Mean / Var.	Global: Increase globally, but diverse spatial patterns Caribbean: Huge uncertainty, (potential: decrease in average, but increase in intensity)			
Extreme Weather: Tropical Depression, Storms, Hurricanes	Global: Increase with increase sea temperature (maybe) Caribbean: Uncertainty, (potential: increase in frequency) - no question that they continue,			
Sea level	Global: Increase by 25 to 30 cm Caribbean: Increase by 25 to 30 cm -> more storm surges, salt-water intrusion?			

<sup>21</sup> GECaFS (2006): A set of prototype Caribbean Scenarios for Research on Global Environmental Change and Regional Food Systems. GECaFS Report No. 2, 62pp, Wallingford, UK.

**Table 4.5 Assumed consequences related to GEC in the Caribbean**

<b>GEC DRIVERS (up to 2050)</b>	<b>Global Caribbean</b>	<b>Caribbean Order from Strength</b>	<b>Caribbean Techno Garden</b>	<b>Caribbean Adapting Mosaic</b>
Flooding	Continues to be frequent initially. Then, with economic growth, better preparedness at national level. Individual risk remains. Some land zoning introduced	No flood planning	More engineering solutions and techno-fixes. Also better forecasting technology reduces flooding impacts. Choice to invest in proactive management	More management, situation not worse, maybe improved. More local incentive for flood planning, many more small-scale retention areas. More 'use' of floodwater
Land Use Patterns	High land use intensity plus abandoned marginal areas. Agriculture not for staple food, but niche markets. New urban areas on 'good' agricultural areas. Some 'land zoning'.	At first like Global Caribbean, then shift, leads to mix: - use of marginal land to provide basic food needs - use of good land for cash-crop areas, follow profits / export	Specialized agriculture for niche markets. Land use highly intensive, very productive agriculture. Proactive land management	More 'integrated' agriculture, more use of current marginal. Also more small-scale, yet intensive, production of niche products. Current marginal lands are brought into production
Water availability & use	Increasing water demand, competition between sectors increases, water pricing	Limiting factor for agriculture. Strong competition for water between water use sectors. More water shortages	Desalination and water treatment improves, also for use in agriculture. Less water needed in agriculture	Better water management and new green technologies
Fish stocks & Marine Resources	More collaboration in region, leads to tighter management. Fish quota introduced	'Fish as you can' policy, no regulation, more fierce competition, negative feedbacks. High risk: over-fishing and collapse. Some selective & aggressive management to secure markets	Enhanced stock rehabilitation tech, e.g. aquaculture. More cooperative management	Focus on local issues, not common goods. Initial risk of fish stock depletion, could lead to coop for recovery: 'can go either way'
Pollution (Air, Soil & Water)	Enough pollution management to (just) sustain the system	High pollution, largely unmanaged	'Can go either way', additional pollution potential due to new technology, but better societal pollution management, often supported by technology. Polluter pays principle! However - some problems technology cannot fix	Relatively low pollution, More local solutions, pollution prevention

### 2.5.4. Mexico

The recently released report of IPCC's Working Group 2 concludes that it is likely that the area affected by drought will increase, leading to further land degradation. Furthermore IPCC concludes that it is likely that intense tropical cyclone activity will increase. Both of these impacts of climate change would have major effects in Mexico.

UNEP's GEO-4 has looked at four scenarios for the Latin American and Caribbean Region for the period until 2050. In the Markets First scenario, in which the neo-liberal paradigm and unregulated markets drive the developments, regional environmental degradation and pressures on natural resources grow. Crop and grazing land increases (see Figure in

Appendix), deforestation increases and chemical pollution has significant effects at local and national levels. The quality and quantity of surface and underground water diminishes as strong economic growth leads to an expansion of water supply (see Figure in Appendix). The vulnerability to climate change increases.

In contrast, in the Sustainability First scenario, sustainable and holistic approaches to agricultural practices become the norm. Although conflicts related to strategic natural resources persist, such as fresh water, hydrocarbons and biodiversity in border areas of South America, governments have effective capacity to prevent and manage the conflicts. A dynamic equilibrium in the use of natural resources is reached. Special attention to “water education” leads to a marked change in water-use behaviour. The growth of water withdrawals is slowed but the pressure on the region’s water nevertheless increases. Mechanisms to rehabilitate and rebuild affected and polluted ecosystems are implemented and protected area systems stop the loss and fragmentation of key habitats. The Sustainability First scenario shows how it would be possible to stabilise economic growth while significantly improving equity and environmental quality through proactive and comprehensive policies.

### **3. Migration processes**

#### **3.1. General Overview and Historical Development**

From the early times of colonization until the early 1970s, Latin America and the Caribbean attracted immigrants from around the world, especially from Spain, Italy, Portugal and Japan, but also other European countries. This pattern is reversed nowadays: instead of receiving immigrants, Latin America has become a region of origin of emigrants. According to a recent analysis of the CEPAL (2006) more than 25 million Latin American and Caribbean born citizens, or 13% of the world’s migrant population, live outside their home countries, out of which only 3 million are thought to have stayed within the LAC region. The vast majority are Mexicans (estimated 9 million). In the Caribbean, the majority of states have more than 20% of their population living abroad. Main destination for LAC migrants remains the US, followed by Spain, Japan and Canada. Other popular EU destinations for LAC migrants are the Netherlands and the UK (mainly for migrants of Caribbean origin) and Italy, France and Portugal. The Economic Commission for Latin America and the Caribbean has identified three major migration patterns in the LAC region:

- (1) Historical immigration into Latin America from overseas between the mid-nineteenth and mid-twentieth centuries, with a strong European component [but focused only in some specific countries, in which the socioeconomic and cultural impact of the immigration has been very high].*
- (2) Intra-regional migration, favored by socio-economic developments and structural factors, particularly during the period 1970-1990, which saw the highest rates of migration within Latin America.*
- (3) South-North migration flows, resulting in the loss of qualified workers in Latin America and the Caribbean, the emergence of immigrant communities, and the development of an economic potential associated with the remittances sent by migrants to their countries of origin. According to data published by the Inter-American Development Bank, Latin America received close to US\$23 billion in revenue from migrant workers in 2001. This figure is equivalent to one-and-a-half times the amount of interest paid by Latin American*

*countries to service their foreign debt in the past five years. It should be noted that most of this revenue originates from the poorest migrant workers and, in particular, from Latin Americans working in the United States (who account for 80 per cent of revenue) or in Europe, Japan and Canada (20 per cent of revenue).*

(cited from: Alvarado / Sanchez 2006: 101)

Additionally, from the mid-1970s into the 1990s, violent conflicts as the civil wars in several Central American countries also led to intraregional and international flows of political refugees and other fleeing from violent situations. The number of refugees and displaced persons reached around 2 million during the 1980s alone (IOM 1999). Only after the reestablishment of peace and the strengthening of democratic processes a large numbers of refugees and displaced persons returned to their countries of origin.

According to Padilla and Peixoto (2007), **Latin American migration to Europe** (and European migration to Latin America) can be divided into three historical phases: 1) colonial and post-colonial migrations; 2) political-exile migration during the period of authoritarian regimes in Latin America (1960 to 1990); 3) and contemporary waves of economic migration.

In the phase of colonial and post-colonial migration, millions of Europeans emigrated to Latin America. Between 1820 and 1932, more than 6 millions Europeans emigrated to Argentina and more than 4 million to Brazil. Migrants came mainly from Spain, Italy, and Portugal, but also – even though in a lower extent – from other European countries, such as Germany, Poland and Ukraine. In fact, on a first stage migrants came mainly from NW and Central European countries, and from 1880 on, the main focus of emigration moved to the South, involving Mediterranean countries.

In the second phase, Latin American dissidents were searching for a save haven during the authoritarian regimes in their home countries. Both, origin and destination of flows from LAC to Europe changed during this period. Besides the ex-colonial powers Portugal and Spain (which were not popular among political refugees for obvious reasons), other European countries like France, Germany, the Netherlands, Scandinavian countries, Switzerland and the United Kingdom became popular destinations between the 1960s and 1980s, above all for Argentineans, Brazilians, Chileans and Uruguayans. Many of the Latin American emigrants in this period were highly educated and therefore had lower problems of integration into the new host societies.

In the third and still ongoing phase of contemporary migration, a diversification of Latin American migration is observable, characterized by flows of both, highly qualified as well as unqualified Latin American immigrants In the 1980s, above all Spain benefited from the arrival of specialists from Argentina, Uruguay and other countries. In the course of the 1990s, the flow of Latin American migration to Europe has been mainly economic migration.

### **3.2. Main migration patterns, trends, and networks**

A study by Alejandro Portes and Kelly Hoffman (CMD 2004) reveals a series of major trends in the late 1990s that profoundly shaped regional flows. Public sector employment shrank across Latin America, as did opportunities in the formal economy, except in Argentina. Consequently, employment within the informal or small business sectors grew alongside rising poverty, even among workers. These and other trends affected the Andean region. A study by the UN Economic Commission for Latin America and the Caribbean (Solimano 2003) finds that political instability, weak state institutions, and continued conflict spurred by growing inequality and ethnic diversity have created inhospitable conditions for economic stability.

**Intraregional migration** flows have declined, but there is still a relatively large number of undocumented migration at the Southern Mexican border, which is mainly transit migration towards from Central America to the United States. The total number of Central Americans in the US increased threefold during 1980-1990 and doubled between 1990 and 2000. (SIEMCA 2004). Another exception is the case of Colombia, where people still attempt to escape the present conflict.

The Caribbean region, comprising 24 island states, has one of the highest net emigration rates in the world (some 72,000 persons emigrated annually between 1995 and 2000). While there is considerable intraregional migration, such as between Haiti and the Dominican Republic, most Caribbean countries have developed specific labor migration networks to the US and, even though to a lesser extent, to Canada. (IOM 2005). There are also some migration ties to the former European colonial powers, such as the UK, Netherlands and France.

In the case of South America, there are also some intraregional flows to the most economically developed countries, specially Chile (from Peru and Bolivia), Argentina (from Uruguay, Paraguay, Bolivia and Peru), or Brasil (from Uruguay, Peru and Colombia). These flows have not been constant during the years, as they are strongly dependent on the changes of the economic situation and currency exchange rates in both sending and receiving countries.

Regarding **displaced persons and refugees**, overall numbers have dropped and patterns have become less complex. While in the 1970s and 1980s military dictatorships and civil wars resulted in large flows of displacees and refugees, nowadays only the conflict in Colombia produces a high amount of this kind of forced migration (cumulative figure of 2-4 million people since the mid-1990s resp. mid-1980s, according to governmental sources in the first and NGO sources in the latter case). Slower numbers of internally displaced persons have been observed in Guatemala, Mexico and Peru. The “persons of concern” for the UNHCR totaled 765,400 in 2002 (UNHCR 2004), the second-lowest number after Oceania.

**Irregular Migration:** As in many other parts of the world, irregular migration in and out of the Latin American and Caribbean region is increasing. Well established migrant networks support irregular migration patterns, particularly to North America and southern Europe. These are increasingly useful in those cases where legal channels for entry are limited and selective. The most common flows of irregular migration are: (1) from Latin American countries directly to destinations outside the region, mainly the United States, Canada and Western Europe; (2) intraregional irregular migration (e.g. Central Americans to Mexico, Bolivians to Argentina), and (3) illegal entry into the region, mainly through the Caribbean and Central America, of migrants from other regions, above all from Chinese citizens in transit to the United States.

**Remittances:** Latin America and the Caribbean are among the main remittances recipient areas in the world, receiving about a third of global flows (estimated at \$ 40 Billion in 2004). The economic importance of these transfers is enormous: In El Salvador, the World Bank estimates that remittances made up for some 16.2 % of GDP (2004). In Ecuador (where the share of GDP is around 6%) and Colombia, remittances are estimated to be the second largest foreign currency earner after oil exports. Amid the surging migration from Latin America to the EU, important remittances corridors exist, for example, from Spain to Colombia and Ecuador and from Portugal to Brazil. (EC 2006).

**The gender dimension:** In the American continent as a whole, according to ECLAC/CEPAL estimates, there has been a shift from predominantly female migration to mainly male migration. However, restricting the analysis to cross-border migration between Latin American countries, a strong trend towards “feminization” of migration is observable.

ECLAC/CEPAL highlights the variations of the labor markets of countries of origin and destination. The predominance of male workers among Mexican migrants in the United States or among Bolivian migrants in Argentina is a result of the major demand for male workers in the agricultural and mining sectors in the receiving countries. In the case of a high demand in the service sector, including domestic work, the migration tends to be predominantly female.

### **3.2.1. Argentina**

Migration patterns in Argentina are characterized by mainly three types of flows: a) immigration to Argentina, b) emigration from Argentina, and 3) internal migration within Argentina. Before the economic collapse in early 2002, Argentina has been an attractive country of destination for labor migration from countries within the region, such as Bolivia, Chile, Paraguay and Peru. Many of these returned to their home countries after the crisis. In addition, some descendants of its earliest settlers, including many Argentine Jews and descendants of European immigrants, have left the country, taking advantage of the *ius sanguinis* citizenship systems to return to former countries of origin. In early 2003, Spain anticipated receiving nearly 400,000 applicants for citizenship from Argentina alone. Israel saw an increase in admissions from Argentina in 2002, when over 6,000 Argentines arrived, up 330 per cent from the previous year. Recent economic and political stability in Argentina, however, have stemmed outflows, which are now back to their pre-crisis level of around 1,500 departures in 2003 (MOIA 2004). According to data from the UN Population Division (2006, figures of 2005), the share of migrants (defined as foreign-born persons) of the total population 3.9% (1.5 million persons), which is the highest proportion in South (not Latin) America; except the special cases of French Guyana and the Falklands.

Regarding internal migration, regions of origin and destination were varying according to the type of predominating production. Lattes and Heals (1992) estimate that the spatial redistribution of internal migrants affected up to 1.1 million people in the 1960's, 639,000 in the 1970's and 441,000 from 1980 to 1991. Internal migrations traditionally have taken place in the following stages: of the rural area to urban small centers; then to bigger provincial or regional centers; being the last stage that of the big cities in the national level.

### **3.2.2. Ecuador**

Ecuador demonstrates the complexity of migration patterns in Latin America: a key destination country for intraregional migration, it is also a significant country of origin and transit. According to the Ecuadorian Central Bank, 550,000 Ecuadorians have emigrated in the last five years, which means about a fifth of the working population. At the same time, Ecuador has received a substantial number of Colombians through the northern borders, and Peruvians on the southern borders. Nevertheless, the share of immigrants among the total population is only 0.9% (stock of 114,000 persons) according to the UN Population Division (2006, figures of 2005).

The beginning of migration processes to other countries is linked to the lifting or weakening of immigration controls in host countries. Emigration of Ecuadorians abroad started timidly in the 1960's (Ramírez Gallegos & Ramirez 2005). The very first waves of international emigration from Ecuador led to the United States (Esquel 2007; also Gómez Quintero 2005). In 2003, 192,128 Ecuadorians were registered in the U.S. Census, being Ecuador the 10<sup>th</sup> Latin-American country by number of migrants in United States (Anuario 2003).

From the end of the 1990's, Europe has started becoming the new main destination for

Ecuadorian migration, displacing the U.S by 2005. *“As a result of the economic and financial crisis of 1998-1999, Ecuador saw a 30 per cent reduction in its gross national product (GNP) and a significant increase in poverty. Massive emigration has been the response. In the last six years, it is estimated that one million Ecuadorians have left the country, with many going to European Union (EU) countries—principally Spain and Italy—in search of better living conditions for themselves and their families.”* (IOM 2007a). After this date, migration rates have been negative, with a great increase in 2004. Within the EU, Italy and above all Spain are far away the most important places of settlement for Ecuadorians. In 1995, only 15% of total emigration from Ecuador was directed towards Spain (while 65% preferred the USA as destination); in 2003, patterns had changed dramatically: 53% selected Spain as host country. In 2006 there were 394,040 Ecuadorians living in Spain (Observatorio 2007).

Internal migration flows were strongly interlinked with the demand of labor force. In the early 1960's, the boom of the cocoa and the discovery of oil in the Amazonia started a high internal migration movement from rural to urban spaces (Tovar 2005). Scholars agree that these internal displacements are in the basis of the following international migrations from Ecuador abroad (Álvarez Velasco 2007). Nowadays, internal migration is mainly concentrated towards the two main cities: Guayaquil at the Pacific coast and the capital city, Quito. Furthermore, since 1970 there has been a huge colonization of the formerly almost depopulated Amazonian region, where main of the oil resources are located (Bonasewicz 1998).

Finally, it is necessary to remark that *“Ecuador is also a country of destination. During the last few years, the country has received approximately 250,000 displaced Colombians. Between 2000 and February 2006, 36,747 applications from refugees were received and 11,707 persons were granted refugee status.”* (IOM 2007a). In 2006 there were an amount of 9.851 Colombian refugees legally established in Ecuador. It is widely admitted that most of the Colombians that live undocumented in Ecuador, even though they have come escaping from a non-declared civil war between the government and guerrillas, do not register as refugees for fear of deportation (UNHCR 2006).

### **3.2.3. Hispaniola (Dom.Rep. / Haiti)**

In both countries, the Dominican Republic and Haiti, rural-urban migration is a widespread phenomenon, mainly to the capital cities (Santo Domingo, Port-au-Prince), but also to other urban areas. Migration is a coping mechanism in response to unemployment, poverty, and lack of opportunities. In Haiti, more than one out of five persons aged 15 or older were not born in the same region as that of their current residence.

Since the early twentieth century, the Dominican Republic has received both temporary and permanent Haitian migrants. This emigration resulted in a heavy loss of professional and personnel from urban and rural areas (Haggerty 1989). According to unofficial estimates, up to one million Haitians are living in the D.R., which means nearly a 10% of the total population of the D.R.. In many cases, Haitians in the D.R. are treated like second-class citizens. Evidence presented to the United Nations Working Group on Slavery revealed that the wages are miserably low and that working and living conditions failed to meet standards set by the two governments.

Besides migration from Haiti to the D.R., there is a considerable migration flow towards the USA and Canada. Even before the recent troubles (junta after coup against Aristide in 1991), thousands of Haitians – especially the skilled and educated – had attempted to migrate to the U.S. and Canada, especially to the francophone state of Québec. In 2003, the US Coast Guard

picked up 2,000 Haitian boat people trying to reach US Shores, more than from any other Caribbean nation. Unlike Cuban nationals, Haitian refugees are usually immediately deported if they come to the attention of the US immigration authorities – but many still try, often moving first to other islands like the Bahamas (Shifferes/BBC 2004).

But also Dominicans are leaving their country. The first emigration wave from Dominicans to the United States began in 1961 after the assassination of dictator Trujillo. High unemployment and political repression led to further emigration from 1966 to 1978. This group of emigrants helped to establish a network for the subsequent arrivals. A third wave of emigration to the US started in the early 1980's, facing economic recession. Besides the United States and Canada, also Spain and Italy have become important destinations for Dominican migrants. According to data of the Spanish local registry (*padrón municipal*), around 65,000 Dominican citizens were living in Spain in 2007, compared to 25,000 in the year 2000 (INEbase 2008).

The UN Population Division estimates about 156,000 immigrants in the Dominican Republic and 30,000 in Haiti, representing 1.8% resp. 0.4% of the total population – figures which are in harsh contrast to the estimations of 500,000 to 1 million Haitians living in the D.R.. The migration rate is negative in both countries, with an annual average of 28,000 resp. 21,000 people leaving the country per year between 2000 and 2005 (UNDP 2006).

### **3.2.4. Mexico**

Increasing diversification of economic activities, above all the growth of Maquiladora industry along the US-Mexican borderline, have led to new patterns in internal migration. While in former times internal migration was mainly directed towards Mexico City and its metropolitan area, nowadays the northern Mexican states are the main destination area for internal flows. This dynamic also led to a migration pattern labeled as “stepping stone migration”, i.e. migrants from the southern and central parts of Mexico are first moving to the northern part of the Republic, close to the United States and with more facilities to cross the international border. Intensity of internal (or interstate) migration has maintained a relatively stable level since the 1950s. About one of each 100 Mexicans changes his place of residence by crossing the lines from one federal state to another. (CONAPO 2006).

Mexico is well-known as a main exporter of labor force to the United States. Of the 32.5 million foreign born covered in the Current Population Survey of March 2002, 9.8 million or 30 percent were from Mexico. It is also the single largest source of undocumented immigrants. There were an estimated 9.3 million undocumented immigrants in the United States as of March 2002. Of these, about 5.3 million or 57 percent were from Mexico. Between 1990 and 2002, the undocumented population from Mexico increased by about 250,000 to 300,000 per year on average. (Passel 2004)

Since the late 1990s a diversification of regions of origin in Mexico and regions of destination in the US can be observed. In Mexico, migration flows from southern, southeastern states and from the metropolitan area of Mexico City have increased, which can partly be explained by the effects of free trade (see subchapter on socio-economic developments). In the US, the traditional settlement areas of California, Texas, Illinois and Arizona still attract Mexican migrants, but a higher share is increasingly immigrating to other states. Nowadays, Mexican communities are present nearly all over the US.

As Mexican migration is mainly directed towards its northern neighbor (with dense migration networks connecting regions of origin and destination), flows to the **European Union** are

nearly insignificant. According to Eurostat data, just about 45,000 Mexican citizens live in the European Union – and about half of them in Spain (21,000).

Regarding transit migration, the Mexican southern border with Guatemala is an important crossing point for Central and South American migrants on their way to the United States. According to IOM, around 215,000 Central American were detained and deported by Mexican authorities in 2004. IOM furthermore reports that *“hundreds of smuggling organizations use the Mexican territory for their unscrupulous activities. At the same time, trafficking in persons has been increasing, exploiting Central American women and child migrants as well as through active networks in sex tourism locations.”* (IOM 2007b). The UN Population Division estimates around 644,000 immigrants living in Mexico, which is 0.6% of the total population. From 2000 to 2005, about 400,000 Mexican left their country each year (UNDP 2006).

Up to the second half of the 1990s, thousands of Guatemalan refugees found a safe harbor in Mexico, above all in the southeastern states of Chiapas, Tabasco and Campeche. According to UNHCR data, the number of refugees in Mexico decreased steadily since the mid-1990s (signature of Guatemalan peace accord in 1996): nearly 35,000 refugees lived in Mexico in 1996 – around 18,500 in 2000 and only 3,300 as of June 2007. The overwhelming majority of refugees came from Guatemala; another important country of origin has been El Salvador. The number of refugees from Colombia is nearly insignificant, with less than 100 per year. Asylum seekers also don't play any major role in migration statistics (161 in 2004 and 2005). (UNHCR 2005)

According to the International Displacement Monitoring Center (IDMC), the military response to the Zapatista insurrection in the mid-1990s resulted in about 35,000 internally displaced people from indigenous communities in Chiapas. Most of them returned home, but there are still about 10-12,000 IDP's. Paramilitary groups have not been disarmed or disbanded and rampant paramilitary activity continues to cause small-scale displacements in Chiapas (IDMC 2005).

### **3.3. Migration policies**

According to governmental declarations, the protection of citizens living abroad is a central issue in national migration policies of most LAC countries. This is also reflected in binational migration agreements (such as the agreement between Ecuador and Spain) or in the practical work of Latin American consulates, such as the expedited issue of identity documents for Mexican undocumented migrants in the US (so-called *“micas”*). For many LAC countries, emigration has a double positive function: on the one hand, it serves as an “escape valve”, i.e. emigration of young citizens reduces pressure on the internal infrastructure (education, labor market etc.), on the other hand flows of remittances have become a major source of income for national economies.

Controlling illegal migration and trafficking in human beings is also a significant challenge for Latin American authorities. Certain EU Member States are among the major destinations for trafficked prostitutes from Brazil or Paraguay. Increasing emigration and low social development have contributed to the fragmentation of family structures, with particularly dangerous consequences for children. The vulnerability of children to trafficking or to adoption without protection of the legal requirements and conformity to international standards is a matter of growing concern.

The following description of the relations between Latin America and the European Union in

migration affairs is taken from a paper of the DG External Relations of the European Commissions (EC 2006):

*“Co-operation and dialogue with third countries in the area of migration are based on the principle of partnership and the conviction that migration is a common challenge that needs to be addressed by countries of origin, transit and destination. The Commission has been active in making a range of policy proposals inter alia on issues such as integration of third country nationals, legal migration, the fight against illegal migration and trafficking in human beings as well as on how to foster the linkages between migration and development. A summary of relevant policy initiatives is contained in the Communication setting out the Commission’s contribution to the United Nations High Level Dialogue on Migration and Development.*

*The Political Dialogue and Co-operation Agreements between the EU and Central America and the Andean Community contain specific clauses on co-operation in the area of migration and re-admission. Given the enormous economic, political and social importance of the phenomena of migration for certain countries in LA, the issue has become a regular subject not only for relations with the countries of the Andean Community, but also for the bi-regional dialogue with Latin America and the Caribbean as a whole. Two EU-LAC expert meetings have taken place in preparation of the EU-LAC summits in Guadalajara (2004) and Vienna (2006). The most recent meeting in Cartagena de Indias (March 2006) issued conclusions and recommendations, endorsed by Heads of States in Vienna, for follow-up activities and exchange in the areas of treatment, rights and integration of migrants, on remittances, on new approaches to migration policies as well as on illegal migration and the fight against trafficking in human beings, thus providing a useful road map for future co-operation.”*

The increasing importance of Latin American migration to Europe may also be connected with the restrictive migration policy in the United States on the one hand and the relatively liberal entrance policy – visa-free travel agreements – for most Latin American nationals in the European Union on the other. Nevertheless it is important to mention, that the increased migratory pressure has led the EU to a progressive introduction of visa requirements for Colombia, Peru and Ecuador. Recently, it has also been suggested to include Bolivia on the Visa-list.

### **3.3.1. Argentina**

Most of Argentineans still tend to think in terms of immigration, more than emigration. Historically, there has been a correlation between military governments and restrictions to migrations on the one hand, and democratic governments and more freedom for migration on the other. Between 1976 and 1982, the military “*Junta*” just considered migration as a matter of public order, based in the notion of “national security”, viewing population movements as a threat for political stability. There were also several measures against illegal immigrants, forbidding them the access to primary services as education and health.

The crisis of 2001 put a breaking point in the succession of migratory policies in Argentina. For a first time, attention was put, not only in people coming to Argentina, but also in Argentineans going abroad. Some laws were implemented for increasing the protection of emigrants, intensifying the presence of Argentinean diplomatic officers in the main host countries. As the rules for Latin Americans to get into the European Union became more restrictive, many Argentineans opted increasingly to apply for some European nationalities, especially the Italian, but also the Spanish, German and other citizenships. These emigrants usually do not appear in the statistics of the destination countries as immigrants, but as nationals returning home.

### 3.3.2. Ecuador

The Ecuadorian policy on migration can be characterized by the following branches (Balancero in Tovar 2005):

- 1) Special programs and policies to curb and restrain emigration abroad, for example collaboration with Spain and the EU authorities in the control of migration. In 2001 a bilateral agreement was signed by both Ecuador and Spain on migration issues (García-Calvo Rossell 2006). This is the most exhaustive agreement on migration signed by Spain in the last decade, previewing among other questions the implementation of a more strict control on currents by the use of visas, as it is required by EU (Gratius 2005). Some argue that prior to this date, immigration from Ecuador to Spain was favored by the fact that no visa was required to travel between both countries (Anguiano Téllez 2002).
- 2) Local and regional programs, with the participation of the AECI (Spanish Agency for International Cooperation), to help families investing the incomes sent by migrants (<http://www.remesas.org>), for example micro-credits and other financial help for creating new small enterprises, specially in rural environments.
- 3) As long as these policies can become successful in stopping migration, programs to help want to-be migrants before, during and after they migrate out of Ecuador are also implemented, most of them by a special agency of the Ministry of Foreign Affairs (*Subsecretaría de Relaciones Migratorias*).
- 4) In 2005, the Ministry of Foreign Affairs subscribed an agreement with a consortium of organizations of indigenous and peasants in order to implement ways to protect the rights of the Ecuadorian migrants, especially in Spain, by the way of making diplomatic efforts to get the Spanish Law on Foreigners modified (OCIM 2005).

In July 2007 the Ministry of Foreign Affairs has published a brief on *Migratory Policy of Ecuador* in which the principal guidelines of it are underlined (*Política*, 2007, available at [www.mre.gov.ec](http://www.mre.gov.ec)). As this brief states, the respect on the human right of migrate freely is accompanied by the implementation of some legal instruments to “regulate” migratory flows. It also wants to reinforce the relationships between Ecuadorians abroad and their country of origin.

### 3.3.3. Hispaniola (Dom.Rep. & Haiti)

The authorities of the Dominican Republic are exercising a predominantly repressive migration policy towards the citizens of their neighbor state Haiti. Most Dominican officials deny the accusations of slavery, which have been mentioned in several reports of human rights organizations. Selective enforcement of deportation rules are heavily criticized in Haiti. Another problematic issue is the fact that many of the criminals of the 1991 coup d'état and the Duvalier dictatorship enjoy de facto political asylum in the Dominican Republic. Haitians are demanding the extradition of those criminals, but the Dominican government argues that they cannot be returned because there is no extradition treaty between the two countries.

As in other Latin American and Caribbean countries, migration policy in the Dominican Republic is mainly concerned with the protection of Dominican citizens living abroad. In the case of Haiti, such an infrastructure is missing for obvious reasons. Furthermore, the governments of the Dominican Republic and Spain signed an agreement on labour migration in 2001, which regulates the contracting of Dominican workers.

### 3.3.4. Mexico

*“Even when deliberately crafted and targeted, Mexico's emigration policies, especially those related to the United States, have historically been characterized by internal contradictions. While consistently confirming Mexicans' constitutional right to “free transit”, these policies have nevertheless sought to dissuade, balance, channel, administer, or encourage migratory flows according a given era's political, economic, and demographic forces.”* (Durand 2004)  
As a result, Mexican policymaking has witnessed five phases:

- (1) Early 20th century policies aimed at dissuading Mexicans from migrating: Mexican government tried to persuade those Mexicans who remained in the annexed territories (after the US-Mexican war 1846-48) to come to the Mexican “patria” (fatherland). In this period, emigrants were often considered as “traitors” to the homeland for working for and strengthening the northern neighbor instead of the own country.
- (2) Policy of negotiation during and after World War II: Nationalist President Lázaro Cárdenas negotiated an agreement with the US government, i.e. for the first time the Mexican state was organizing and channeling migration to the US (Bracero-Program)
- (3) “Laissez-faire” approach of the 1970s and 1980s: As the US-govt. cancelled the Bracero-Program unilaterally in 1964 and Mexico insisted without success to continue the agreement, the final result was an increase in undocumented migration at the US-Mexican borderline. The Mexican govt. chose to do nothing and to wait for development on the northern side of the border.
- (4) “Damage control” policy of the 1990s: During the negotiations of NAFTA, migration policies were excluded from the agenda; but at the same time, the Mexican govt. implemented some political means to improve attention, services, protection and reception of Mexican migrants. Main objective of these policies was to recover trust of the emigrants in the Mexican government (this has to be seen in the context of the electoral fraud of 1988).
- (5) Current stage of proposals and talks (“shared responsibility”): After the political change in the 2000 elections, the new PAN government redefined migration policy as a priority and started negotiation on an overall migration agreement with the US government. The negotiations first seemed to progress, but the terrorist attacks of 9/11 stopped the negotiation process. After reopening the talks, the focus shifted towards border security issues. As the US-Mexican bilateral relationship is asymmetrical, the northern neighbor is dominating the agenda.

## 4. Conclusion: Environmental degradation & migration

In all four cases, linkages between environmental degradation and migration processes can be observed – but the grade of influence of this factor in comparison to other factors has still to be researched.

In northwestern **Argentina**, droughts followed by unexpected floods have expelled people. The massive logging of the Amazonian and other forest regions of bordering countries and the Argentinean north for the sowing of soy, is likely to accelerate the climatic change, the system of rains and the disastrous consequences of the floods. By the indiscriminate deforestation of the whole northeast and northwest, the area of subsistence of hundreds of towns whose subsistence continues depending partly on the natural products will be reduced.

The displacement of population can also be aggravated by the intensification of the struggle on the use of the land, because of the spreading of new kind of crops to fulfill the demand for ecofuels. The advance of the frontier of agriculture-used lands to the detriment of natural

forests will destroy habitats and increase the vulnerability of some regions, in which natural forests are main providers of vital resources as water and will decrease the capacity of populations to earn a living and maintain the previous levels of life quality. The changes in the use of land will thus push people to migrate; these migrations will probably be mainly internal, going to regions and cities that had traditionally received most of internal population movements. This will also increase the inequalities on the geographical distribution on population. International migrations only would appear when the capacity of the internal labor market to cope with this problem get overran.

Even though **Ecuador** belongs to a region in which several natural hazards may occur – as earthquakes and volcanoes, as the country is located in the so-called “Fire Belt” of the Pacific, the main threat on environmental degradation is caused by droughts and the risk of desertification – soil degradation and erosion, deforestation, decrease of rainfall and available water, linked to the pollution of the main water sources. In fact, it seems that some of these natural and environmental factors have already been working in migration flows so far. No major and specific research has been done on the relationships of environmental issues and migrations in Ecuador, but in the available bibliography it is possible to find that some scholars point the reasons of the migration currents, not only in the traditional economic or social factors, but also in environmental changes and risks. Regions that show the highest rates of migration are also these that have mostly suffered the impact of environmental problems in their economy, mainly based on agriculture. Of course, also other factors are involved in this impact.

On the other hand, man-made environmental changes – as pollution – have not shown so far a great incidence in migrations or, maybe, an indirect relationship, because the most degrading areas are also the economic “hot spots” of the country, and thus they are attracting people, more than expulsing. Anyway, as there is also proved the existence of a step-migration in this regions -people that is emigrating abroad while immigrants from other regions of the country is arriving-, it is necessary to check the impact of possible environmental factors in both movements, in and out these regions.

A major environmental problem related to migration on the **Hispaniola Island** is deforestation, which is followed by soil erosion and increases the vulnerability of tropical storms on the other. An especially vulnerable region on the Dominican side of the island is the southwestern border region, a semi-arid region with forests in the mountain ranges. Some deforested parts have already undergone programs of reforestation after experiencing devastating landslides during the hurricane season. An indicator for a linkage between this kind of environmental degradation and migration could be the fact that this region is also one of the main regions of origin of Dominican emigrants – mainly in the case of migration to Spain. On the Haitian side of the border, the linkage between environmental degradation and migration is insofar obvious as nearly the whole territory is affected by soil erosion, resulting in very unfavorable conditions for agricultural production and therefore laying a groundwork for internal and international migration.

Earthquakes, storms, volcano eruptions, landslides and other natural hazards always occurred in **Mexico**, causing devastation, human suffering and internal displacement. After the earthquake in 1985 (8.1 Richter), causing the death of tens of thousands inhabitants of Mexico City, overall population numbers in the capital decreased – a clear indicator for internal outmigration. But in the course of the last decades, human-induced environmental degradation has reached (or even passed) critical levels. The levels of land degradation, deforestation and desertification have increased dramatically. According to research conducted by UNEP, about 85% of Mexican land suffers from land degradation and problems associated with desertification (Eger/Prem 2002). Mexico loses approximately 2,250m<sup>2</sup> of

farmland to degradation each year. The decreasing quality of lands leads to lower incomes and an increasing motivation to emigrate. Obviously, other factors – such as consequences of free trade policy – also play an important role. Also natural catastrophes like hurricanes or large-scale flooding did have a trigger-off effect for migration processes.

Generally, it is hard to distinguish between the effects of such long-term trends as environmental degradation on the one hand and the results of short-term variables that encourage emigration on the other: *“For example, rural Mexicans are reducing their dependence on farming non-irrigated lands. Some households reduce their dependence on farming by earning other income. Non-farm income can be generated by having one or more household members migrate seasonally to the US, or within Mexico, or having the entire household leave the rural area where it is established. Most economists believe that individuals and households change their behavior in response to price changes. If land degradation makes the land less productive, and if agricultural policy reform, plus trade agreements that promise different prices, change the outlook for particular crops, then land and crop prices will change, and rural households will respond, in part by migrating.”* (Migration News 4/95).

Wrapping up the above stated, there are indeed several indicators for a linkage between environmental change and migration. Nevertheless, research has to be done in order to look for more empirical evidence. An especially tricky point is the differentiation between purely environmental reasons for emigration and other, mainly economic factors.

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