



**The Outlook for  
Agriculture and Rural  
Development  
in the Americas:**  
A Perspective on Latin  
America and the Caribbean

**2010**

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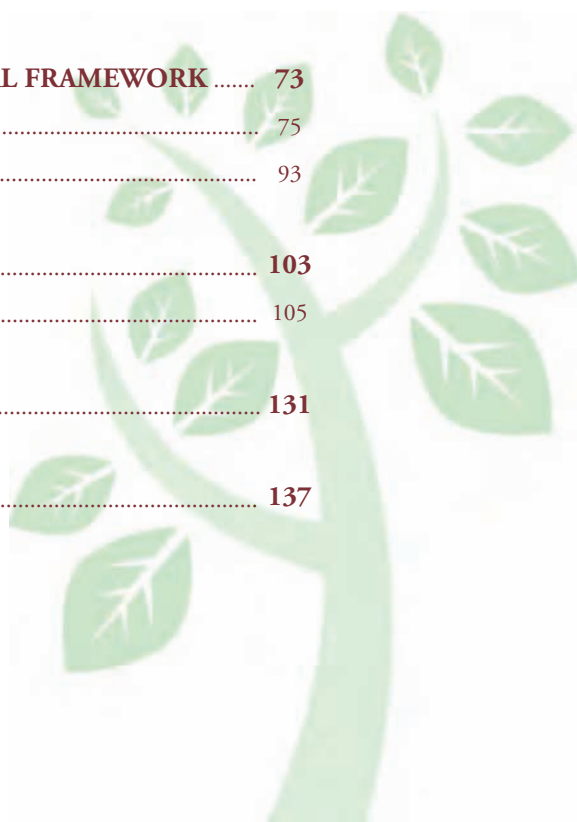
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# TABLE OF CONTENTS

<b>ACKNOWLEDGEMENTS</b> .....	<b>v</b>
<b>ACRONYMS</b> .....	<b>vii</b>
<b>FOREWORD</b> .....	<b>ix</b>
<b>EXECUTIVE SUMMARY</b> .....	<b>1</b>
<b>SECTION I: MACROECONOMIC CONTEXT</b> .....	<b>5</b>
Macroeconomic context .....	7
<b>SECTION II: SECTORAL ANALYSIS</b> .....	<b>13</b>
Sectoral context .....	15
Agriculture .....	25
Livestock .....	37
Capture fishing and aquaculture .....	49
Forestry .....	61
<b>SECTION III: RURAL WELL-BEING AND INSTITUTIONAL FRAMEWORK</b> .....	<b>73</b>
Rural well-being .....	75
Trade policy developments and outlook .....	93
<b>SECTION IV: AGRICULTURAL TRADE</b> .....	<b>103</b>
Agricultural trade: trends and challenges .....	105
<b>BIBLIOGRAPHY</b> .....	<b>131</b>
<b>STATISTICAL APPENDIX</b> .....	<b>137</b>





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# ACRONYMS

<b>AECID</b>	Spanish Agency for International Cooperation for Development
<b>BSE</b>	Bovine Spongiform Encephalopathy
<b>ECLAC</b>	Economic Commission for Latin America and the Caribbean
<b>FAO</b>	Food and Agriculture Organization of the United Nations
<b>GDP</b>	Gross Domestic Product
<b>G8</b>	Group of 8 Most Industrialized Countries
<b>GTZ</b>	German Agency for Technical Cooperation
<b>GVC</b>	Global Value Chains
<b>HPAI</b>	Highly Pathogenic Avian Influenza
<b>IDB</b>	Inter-American Development Bank
<b>IEA</b>	International Energy Agency
<b>IFAD</b>	International Fund for Agricultural Development
<b>IFPRI</b>	International Food Policy Research Institute
<b>IICA</b>	Inter-American Institute for Cooperation on Agriculture
<b>IMF</b>	International Monetary Fund
<b>IOT</b>	Input-output table
<b>IPCC</b>	Intergovernmental Panel on Climate Change
<b>ITTO</b>	International Tropical Timber Organization
<b>IUCN</b>	International Union for Conservation of Nature
<b>LAC</b>	Latin America and the Caribbean
<b>MDG</b>	Millennium Development Goals
<b>NARI</b>	National Agricultural Research Institute
<b>NFP</b>	National Forestry Program
<b>NGO</b>	Non-governmental Organization
<b>OECD</b>	Organization for Economic Co-operation and Development
<b>R&amp;D</b>	Research and Development
<b>SAM</b>	Social accounting matrix
<b>SFM</b>	Sustainable forestry management
<b>UN</b>	United Nations
<b>UNCTAD</b>	United Nations Conference on Trade and Development
<b>USAID</b>	United States Agency for International Development
<b>USD</b>	US dollar
<b>USDA</b>	United States Department of Agriculture
<b>WB</b>	World Bank
<b>WTO</b>	World Trade Organization





# FOREWORD

We are pleased to present the second edition of *The Outlook for Agriculture and Rural Development in the Americas: a Perspective on Latin America and the Caribbean*, jointly prepared by the Economic Commission for Latin America and the Caribbean (ECLAC), the United Nations Food and Agriculture Organization (FAO), and the Inter-American Institute for Cooperation on Agriculture (IICA). The purpose of the report is to contribute information and analysis to the complex decision-making process regarding agriculture and rural development in Latin America and the Caribbean.

The last two years have been marked by various types of shocks that have posed enormous challenges for the countries of the region ranging from a rise in food prices and the global financial crisis to natural phenomena such as the earthquakes in Haiti and Chile. The way in which this context adversely affects employment, poverty and productivity means that public policy assumes even greater relevance.

Precisely for that reason, in this issue we stress the importance of having the right public policy instruments to boost agriculture and rural development in Latin American and Caribbean countries amid a scenario of great regional challenges.

An array of countercyclical public policies has played a key role in attenuating the impact of the crisis on the poorest and most vulnerable, and there are signs of economic recovery in the region. Transversal and sector specific policies have played an important role in responding to the effects of economic and natural shocks. As was to be expected, the effects on the agricultural, livestock, fishing and forestry sectors varied depending on the type of product, location and production form.

Public policies are becoming more important in the context of a rapid transformation of supply-and-demand conditions in markets for primary goods, which have been affected by the opening of markets, innovation, environmental issues and changes in the production chain among other factors. The main challenge consists of mobilizing resources, strengthening institutions and creating innovative policy-implementation mechanisms.

Over the medium term, public policies are essential to:

- encourage agricultural expansion based on technological development rather than bringing more land under cultivation;
- adapt agricultural systems to climate change and mitigate its impact;

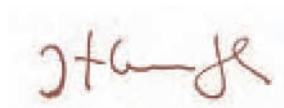
- reduce the environmental impact of large-scale livestock operations while using small-scale livestock farming to improve the food security of poor rural families;
- increase efficiency and competitiveness in the various levels of production and the value chain of fishing and aquaculture based on a long-term, eco-systemic and holistic approach;
- improve the possibilities for the forestry sector to contribute to the fight against climate change while taking advantage of its non-wood productive potential for purposes of economic development and the fight against poverty;
- diversify exports in order to reduce dependence on basic farm products;
- diversify non-farm sources of employment in rural areas;
- achieve sustainable and inclusive rural development.

We propose a longer range, more strategic and increasingly integrated vision of the agricultural sector relative to the rest of the economy and international markets. This perspective can help countries (re)define policies for the sector in a more strategic sense than is currently the norm among sector institutions.

Latin America and the Caribbean is going through a time that is both very challenging and propitious for conceiving a future of greater well-being based on new and innovative public policies.



**Alicia Bárcena**  
Executive Secretary, ECLAC



**José Graziano da Silva**  
Regional Representative, FAO



**Víctor Villalobos**  
Director General, IICA







## Executive Summary

The economic crisis of 2008-2009 had a major impact on Latin America and the Caribbean. Under the combined weight of a 1.8% reduction in GDP for 2009 and the intense price volatility experienced by agricultural products, food security in the region regressed to levels not seen since 1990-1992, with close to 52 million people undernourished. However, a generally favorable macroeconomic situation and the application of counter-cyclical policies have allowed the region to respond more quickly. We are starting to see the first signs of economic recovery as international trade begins to bounce back, especially on the level of exports to Asian emerging economies, and as labor markets revive.

However, the fundamental challenge facing Latin America and the Caribbean is how to consolidate the recovery with medium- and long-term economic development. ECLAC, FAO and IICA concur that the key to improving well-being is understanding that the agricultural sector is a complex system integrated into both international and local economies, dependent on climate change, linked through production chains with other economic sectors and boasting considerable poverty-reduction potential. By basing rural development policies on an integral view of the countryside and agriculture, these can achieve the hoped for socioeconomic impact, while contributing to the recovery and promoting economic development.

In order to address this complex scenario, this report is divided into four sections: the first deals with the main macroeconomic trends affecting the sector's performance; the second summarizes the structure, outlook and policy recommendations for the agricultural sector's four major sub-sectors: agriculture, livestock, forests and fishing/aquaculture; the third chapter discusses subjects related to rural well-being and

agricultural institutions; and finally, the fourth section discusses agricultural trade in the region, including recent trends and challenges, which is a topic of current importance and wide relevance for the sector.

### Section I – Macroeconomic context

In 2009, the effects of the crisis were strongly felt by Latin American and Caribbean economies, interrupting several years of relatively high rates of growth. The impact of the crisis on the region was most apparent in real economic indicators such as exports, unemployment and poverty. But the recent crisis appears to have had less of an effect than seen in previous crises and, despite the major export contraction observed in early 2009, a strong export recovery began to take place in the third quarter, powered by growing Asian demand for the region's products.

The region has started to emerge from the crisis faster than anticipated largely thanks to the macroeconomic reforms undertaken by countries in previous years and the renewed expansion of international demand. Nevertheless, given that international trade was the most important mechanism through which the crisis was transmitted to Latin America and the Caribbean, exporters in the region are understandably concerned about what will happen once the main importing countries begin withdrawing government stimulus. Other sources of uncertainty include foreign exchange rate volatility, the performance of international commodity markets and the sustainability of internal countercyclical policies.

## Section II–Sector analysis

**Sector context.** The economic crisis in LAC has had an uneven effect on the agricultural sector due to, among other factors, the impact of income-elasticity on demand, the varied effects on producers of higher prices for oil and petroleum derivatives and for agricultural commodities. The impact of the crisis from country to country also depends on sector-specific policies, the type of product, location and form of production. Due to the increased demand for raw materials, especially on the part of Asian economies, their prices are expected to remain above historical averages in the medium term. In this context of uncertainty, the sector's development depends on the definition of policies capable of regulating speculation and acting in a counter-cyclical fashion in times of instability.

**Agriculture.** A regional survey conducted in preparation for this report showed that 2009 agricultural production grew in 24 out of the 34 countries polled, while output fell in seven and was unchanged in three. The outlook for 2010 points to a major recovery in the agricultural output of most of the countries of the region, an expansion that is increasingly subject to climate factors, the performance of global demand (still affected by the recession), and, to a lesser extent, international prices. The weakening in 2009 of prices for the region's main agricultural commodities does not appear to have had an adverse effect on the 2010 production cycle. The combination of countercyclical policies and a recovery in prices that began in 2009 drove increased production that is expected to extend into 2010. Furthermore, the pace of expansion in the developed (slower) and developing (faster) economies raises expectations that LAC agriculture will resume the expansion achieved between 2000 and 2007.

**Livestock.** The region's livestock sector has grown by an annual average of close to 4% in recent years, twice the world average. Despite that expansion and excellent economic numbers, the region must respond simultaneously to three main challenges: the sector's enormous market

potential and ability to help satisfy growing global demand for meat and dairy products; the great environmental challenges that threaten supplies of natural resources needed for production; and, lastly, the acceleration of internal economic growth and the region's expanding development needs. The growth of the Latin American livestock industry has been export based, but domestic demand for products of animal origin is also expected to grow. Demand for beef, pork and poultry is projected to increase as the regional economy recovers and trade flows revive. The technology exists to increase productivity without degrading existing lands, but the rate of adoption is low because of the absence in many countries of policies for facilitating investment in the livestock sector.

In the near term, small-scale farmers need programs to help them survive the economic crisis or many will be forced into bankruptcy. Small-scale livestock production provides work and food security to millions of people in the region, but it needs to be strengthened. In order to increase productivity in a sustainable manner, producers need policies and stimulus that favor sustainable land use, and conservation of both water and biodiversity such as emissions reductions and improved animal health as a way to prevent zoonosis. The sector can perform a key role in climate change mitigation through improved productivity, but that entails overcoming policy and market deficiencies, as well as applying the right incentives. Although the livestock sector greatly contributes to food security and poverty mitigation, major policy and institutional reforms are needed in addition to public and private investment in order for small-scale farmers to take advantage of the opportunities posed by the sector's growth. The Latin American livestock industry has the opportunity to grow by satisfying internal markets and worldwide demand, but this increase in productivity must not come at the expense of the environment.

**Fishing and aquaculture** Industrial and artisanal capture fishing in the region has already reached or surpassed sustainable production levels for the main fish species. For that reason, increased catches are not expected in the near future.

Nevertheless, commercial and rural aquaculture retain their potential to satisfy growing demand for fishing products, which is concentrated primarily in Chile, Brazil, Ecuador and Mexico, and in select species such as salmon, shrimp, tilapia and carp. Most production, however, is for export.

In order to take full advantage of the region's excellent environmental conditions for cultivating hydrobiological species, there is a need to strengthen institutions, information, research, control, oversight, and monitoring systems as well as the protection of ecosystems and their resources. Recent approaches to managing fishing and aquaculture suggest the need to adopt integrated and eco-systemic policies so as to properly take into account the various factors that affect fishing and aquaculture performance. They also suggest the need to begin immediately strengthening local management capacities at all levels including environmental, social, economic and institutional aspects, among others.

**Forests.** The promotion of sustainable forest management and the establishment of forestry plantations are key to reversing the deforestation trend. Non-wood forest products and the environmental services provided by forests are important factors in the fight against rural poverty. The linking of forests into national economies as well as the demands of climate change mitigation, biodiversity conservation and poverty reduction have magnified the strategic value of forests for countries of the region. Forestry policies and institutions need to be strengthened in ways that afford the sector greater possibilities for contributing to the fight against climate change and rural poverty while also benefiting from new initiatives and financing mechanisms that seek to stop deforestation and stimulate biodiversity conservation.

## Section III– Rural well-being and institutional framework

**Rural well-being.** Poverty indicators for the region show that the effects of the crisis have been

most severe in rural areas. That trend began to emerge in 2008 and deepened in 2009. The effects are mixed on the level of rural employment. In countries with a greater percentage of employment in non-agricultural activities the effects tend to be adverse, while the impact on those with considerable agricultural employment depends on how the agricultural sector evolved during the crisis. An analysis of rural households and their income composition in various countries of the region produced three notable results: first, the importance of wages, especially from non-agricultural sources both for household income and poverty reduction; secondly, the importance of the diversification of production activities that broaden the rural population's job opportunities, especially in terms of payroll jobs; and, thirdly, the importance of transfers to poor people, including those from agricultural households, as a means to limit poverty rates.

**Institutional framework.** This chapter analyses some of the trade measures recently adopted in the region and discusses the main policy challenges. The downward trend in food prices since mid-2008 prompted many governments to loosen export restrictions imposed earlier. At the same time, the policy focus shifted from emergency measures to actions aimed at stimulating production in the agricultural sector and the consolidation of access to export markets. Policies to facilitate trade have also been reinforced especially with regard to inter-regional trade. Given the lack of progress in the WTO's Doha Round, some countries have focused their attention on negotiating Free Trade Agreements. Colombia and Peru finalized their negotiations with the EU in March 2010, and Central American countries are close to reaching a similar accord.

Despite the delays in the Doha Round, the multilateral trade system has proven to be of great value to participating countries, allowing them to adopt contingency measures and offering them a space for consultations that can help resolve conflicts. One of the main trade policy challenges today is to address all facets of food security without falling into protectionism or lowering incentives

for local producers. Solutions include lowering trade barriers, facilitating interregional trade and improving the workings of national markets.

## Section IV–Agricultural trade

**Trade.** This section analyses the dynamics of agricultural trade since 2005, a period marked by rising prices for basic products and their subsequent decline. The region's agricultural export revenues grew rapidly between 2006 and 2008. However, in quantitative terms agricultural exports grew only modestly and in some countries fell in response to a combination of adverse climate conditions and export restrictions. In 2009, the agricultural exports of most countries of the region decreased in both volume and value owing to lower prices and a

weakening of global demand even though agriculture performed better than other economic sectors.

Agriculture in the region continues to be based on a select group of basic products as a stable source of export income. Even so, there are some countries, especially in Central America and the Caribbean, that reduced their economic concentration and diversified their exports while others remain dependent on a few basic products, such as exporters of cereals and oil seeds. In order to reduce this dependence and take advantage of new trading opportunities, government support, investment and policies to promote innovation are required. For example, the public sector could assist agricultural exporters by establishing quality and safety certification systems for food products, developing market intelligence mechanisms and modernizing customs agencies.



A stylized graphic of green leaves and branches. The leaves are in various shades of green, some light and some dark, with simple vein patterns. The branches are thick and curved, also in green. The graphic is positioned behind the text and extends across the top and right sides of the page.

# **Section I: Macroeconomic context**





## Macroeconomic Context:

### From economic crisis to a strong recovery

#### • Early signs of regional recovery after the crisis

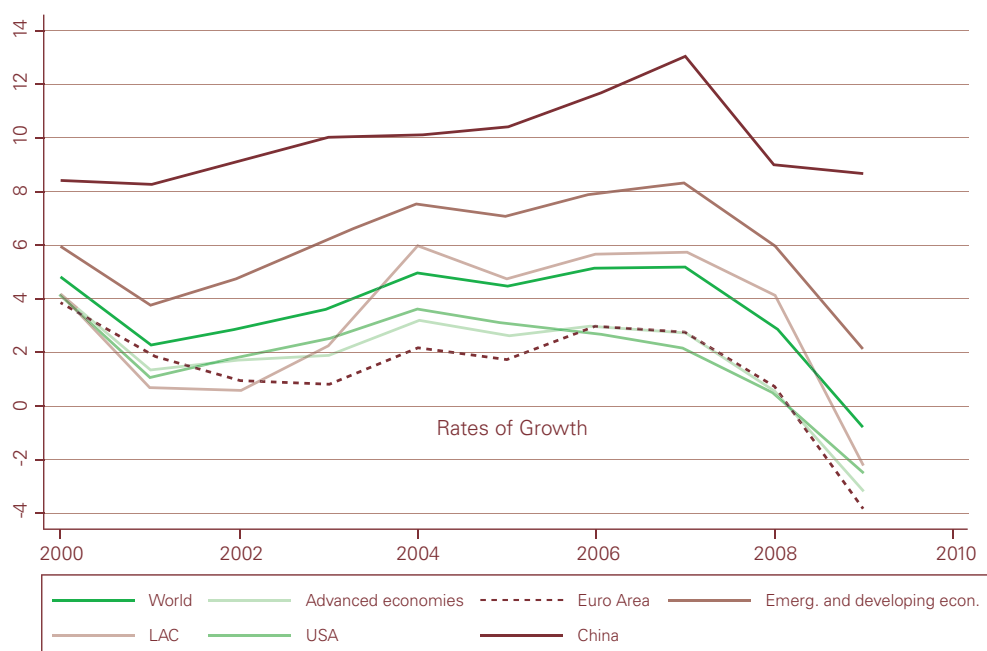
The impact of the 2008-2009 economic crisis on Latin America and the Caribbean was initially cushioned by the region's strong economic momentum, but by 2009 the crisis had taken a much clearer toll on regional GDP, snapping a six-year growth streak in which the region's economy had grown, on average, by more than 2% annually. Preliminary 2009 figures show that regional GDP fell by between 1.7% (ECLAC, 2009a) and 2.3% (IMF, 2010). But recent estimates anticipate a return to GDP growth in 2010 of between 3.7% (IMF, 2010) and 4.3% (ECLAC, 2009a).

Compared to the rest of the world, Latin America and the Caribbean remains in a similar position

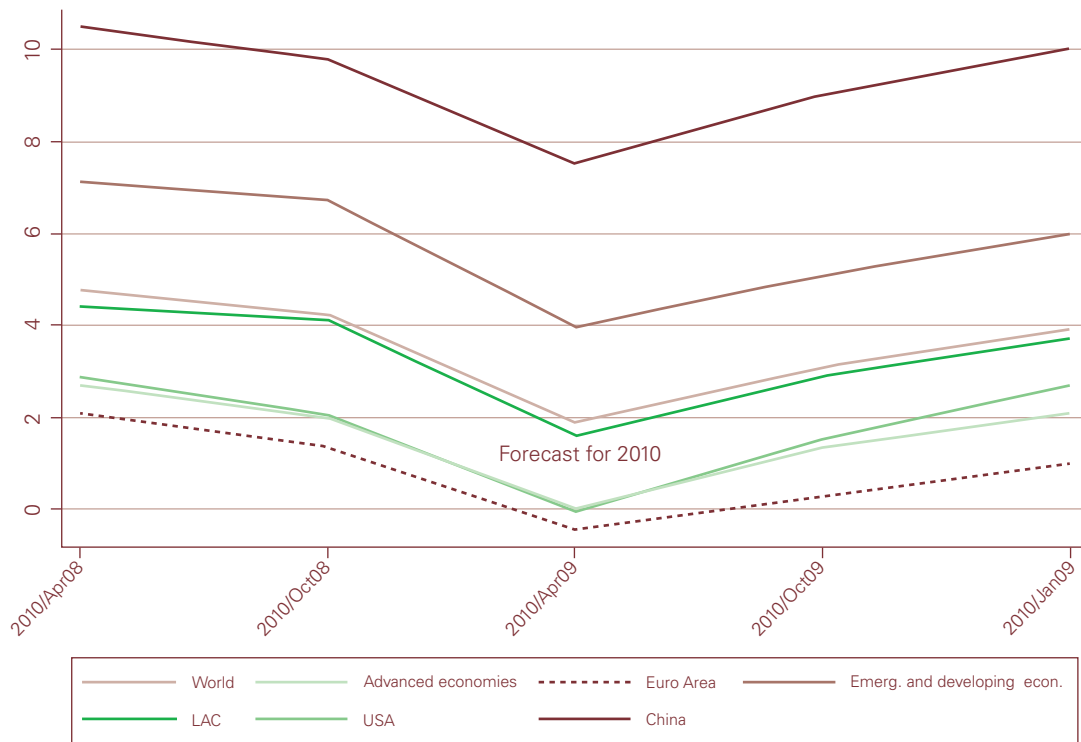
to that before the crisis, performing largely in line with the global average: stronger than developed economies but seriously lagging behind the average for emerging economies, especially China (see Figure 1). The strong growth in the region before the crisis broke – both in terms of macroeconomic performance and institutional reform – is one of the main factors allowing for the region's relatively fast paced recovery. Externally, the main driver of recovery is the strong demand from China, whose share of exports from Latin America and the Caribbean grew sevenfold between 2000 and 2008, as well as increasing prices for commodities exports.

A comparison of economic activity across sub-regions and countries shows that Caribbean economies were more affected than those of South and Central America, and that those of the Central American sub-region, especially Mexico,

**Figure 1 | GDP growth rates in constant values and projections (%)**



**Figure 1 (Cont).** | GDP growth rates in constant values and projections (%)



Source: IMF, World Economic Outlook Database, October 2009a

experienced the sharpest GDP losses in 2009. Furthermore, South America is expected to post the strongest growth in 2010 of any other region thanks to the relative size of its domestic markets and their export diversification with China accounting for a large share of exports (ECLAC, 2009a). South American countries are also less dependent than Central American countries on the U.S. economy, whose recovery began after those of Asian markets (ECLAC, 2009a).

### ● Poverty levels have been less affected than in past crises

The effects of the crisis in Latin America are most evident in indicators such as rising unemployment and poverty in 2009, which is a clear reversal of the positive trend seen in recent years. Although there are signs of a recovery getting underway in the fourth quarter of 2009 (ECLAC, 2009a), the decline in economic activity adversely affected both

the absolute levels and quality of employment. In 2009 the region's unemployment rate reached an estimated 8.3%, almost a full percentage point higher than the previous year, and unemployment rose across the region. Compounding the problem, growth in formal employment slowed and in some countries decreased, which would have been even more pronounced if not for increased public sector employment.

Poverty indicators reveal an increase of slightly more than 1% (or close to 9 million people) in the number of people living in poverty in the region in 2009, ending six consecutive years of reductions in this indicator. The increase is almost a quarter of those who rose above the poverty line between 2002 and 2008 on the strength of increased economic growth and income redistribution policies, among other factors (ECLAC, 2009b). But the recent crisis has apparently had less effect on poverty than past crises (in 1995, 1998-2000 and 2001-2002), as the region has displayed a newfound ability to sustain real wage levels and keep inflation low.

### ● Trade shows early signs of recovery

The global crisis that erupted in the second half of 2008 has been strongly felt in the region's economies especially in terms of trade both in volume and revenues. In 2009, exports from the region fell an estimated 23.4% with 60% of that contraction due to a decline in export prices (ECLAC, 2009a). This pattern, which has predominated among developing countries worldwide, has continued to worsen along with the region's terms of trade. The decrease in exports has been especially pronounced in the case of oil producing countries<sup>1</sup>, where exports fell by 34.4% year-on-year, followed by Mexico, Mercosur, and the mining countries<sup>2</sup>, all of whom saw exports contract by roughly 22%. Central American exports have been the least affected, falling by a relatively modest 8.6%. Intraregional exports have shrunk by a similar degree as total exports. By product category, the decrease in exports has been

more pronounced in mining and oil (-42.3%), and manufacturing (-25.4%), than in agricultural products which declined by 18.4% (ECLAC, 2009c).

Although exports fell in 2009, by the third quarter the contraction had bottomed out and a recovery began driven by Asian demand, especially China. In China and other Asian countries – a region that, according to ECLAC data from January to September 2009, overtook the EU as the second most important destination for Latin American exports – expansionary monetary policies made possible by fiscal surpluses in preceding years allowed for a quick recovery of demand that has benefited worldwide trade including Latin American exports. Indeed, China has been their number one export market for some countries in the region, such as Brazil and Chile, since 2008 (ECLAC, 2009c). Given that trade was the main mechanism through which the crisis was transmitted to Latin America and the Caribbean, the economic conditions in the region's main export markets are important in the context of economic recovery. For this reason, concerns about what might happen once the major importing countries, China included, begin to roll back their stimulus policies weigh heavily on Latin American exporting countries. Concerns also remain about whether demand will be able to sustain the economic recovery begun in recent months.

As for the region's most important market, the United States, and despite signs of recovery there in recent months, there are continuing concerns about whether an expansionary monetary policy will remain in effect given its high levels of public and private debt. Some EU countries, especially Mediterranean Eurozone countries, continued to show signs of recession in early 2010 as well as greater financial market volatility due to their considerable indebtedness, which makes it all the more difficult for them to implement countercyclical policies.

<sup>1</sup> Bolivia, Colombia, Ecuador and the B. R. of Venezuela.

<sup>2</sup> Chile and Peru.

- **Exchange rate volatility affects trade decisions**

The broad economic impact of the exchange rate, especially on trade, highlights the interdependency of fiscal and monetary policies adopted not only internally but also by trading partners or even countries that share the same political or economic context. Foreign exchange rate volatility within Latin American economies in the months after the crisis struck (rapid depreciation of the region's main currencies through March 2009, followed by appreciation during the rest of the year and into early 2010) was a result not only of internal factors in LAC countries such as the buying and selling of currencies and international trade, but also of the economic conditions of their trading partners and foreign investors. These included the United States' low interest rates and high fiscal deficit, an improved outlook in international capital markets and revived investor interest in emerging countries (ECLAC, 2009a). Exchange rate volatility, which is partly caused by economic uncertainty, affects decisions regarding imports, exports and investment, among other areas. This impact is especially hard felt in LAC countries with the greatest trade liberalization.

- **Economic recovery fuelled by countercyclical policies**

One of the unique aspects of this crisis has been the favorable situation that several countries in the region enjoyed at the outset both in macroeconomic and financial terms: sustained per capita GDP growth, a current account surplus and a declining deficit. Prior to the shock, most LAC countries had achieved stable economic growth, healthy monetary conditions, greater integration with international markets, low interest rates, free exchange rates, low levels of foreign debt, substantial international reserves and high levels of foreign direct investment. Furthermore, local financial systems were in much stronger conditions than in the previous decade.

The factors cited above have allowed for a quick and sustained response, albeit a differentiated one in the emergency policies employed. Thanks to the region's solid macroeconomic and financial fundamentals, consumption was the only component of regional demand that grew in 2009, while exports and imports, gross fixed capital formation and private consumption all declined. The rise in consumption showed how the countercyclical policies implemented by some countries helped stimulate the recovery. These countercyclical policies worked on multiple fronts, but at first they only sought to assure liquidity in the financial market both on the level of lending to private institutions and in expanding the activities carried out by public banks. As a result, the trade balance in Latin America and the Caribbean went from a 1.4% surplus of GDP in 2008 to an estimated deficit of 1.0% in 2009 owing to a drop in public revenues and an expansion of current and capital expenditures (ECLAC, 2009a). Partially as a result of these policies, but also thanks to an improving international scenario with higher trade flows and the normalization of financial markets, six of the region's major economies accounting for 90% of regional GDP were already enjoying an economic recovery in the third quarter of 2009.

- **From emergency policies to conditions for recovery**

The implementation of well designed policies is essential to the chances for recovery of the region's economies. In the real economy, meaning production, one of the main concerns on the part of governments was how to minimize job losses. Policies to boost employment included the financing of infrastructure and civil construction projects and of labor-intensive enterprises (such as small and mid-size companies and services), extending the coverage of unemployment insurance, sustaining transfer policies and subsidies for hiring young people, and worker training. Most of the countries of the region have also announced subsidies to poor families in an attempt to partially offset the effects of declining employment on consumption and living conditions (ECLAC, 2009a).

In terms of trade, situations and policies have varied greatly across the region. Some countries implemented restrictive measures to impede imports or exports of strategic goods such as food, while others tried to attract more imports by temporarily lowering tariffs on some products. In any event, border measures (tariffs, licenses and quotas) were the dominant theme perhaps due to the relative ease with which they can be implemented. Governments in the region also addressed the severe credit crunch brought on by the economic crisis with policies to increase trade financing (ECLAC, 2009c). Protectionist responses by no means dominated trade-related initiatives, but their presence underscores the need for coordinated actions that permit a response to the crisis without heightening uncertainty or market volatility.

In the coming months, consolidating the economic recovery in the region will remain the main policy challenge and success will largely hinge on the performance of international markets for goods, services and credit, as well as the domestic market. The evolution of oil prices and the weakening of fiscal conditions, partly in response to the countercyclical policies described above, are some of the variables that could affect the recovery. According to ECLAC (2009a), governments must commit themselves to broadly reducing deficits over the medium term and addressing long-term fiscal challenges with reforms that lead to more sustainable public finances.

## ● Outlook

The trends noted in the subsections above summarize the good news for Latin American and Caribbean economies, but also identify a number of issues that need to be resolved. Countries in the region are emerging faster than expected from the crisis, largely thanks to strengths they developed through macroeconomic reforms in recent years. The revival of international demand, combined with countercyclical policies, is leading to a fast paced recovery at a time when a lot of production capacity remains idle (ECLAC, 2009a). In the agro-livestock sector, this is an opportunity not just to consolidate changes in the sector made possible by surging demand from emerging

markets and heightened volatility in commodity prices, but also to implement structural changes in the sector.

In the coming years, world economic growth is expected to slow from 2003-2008 levels, which is a less favorable scenario for LAC countries especially those least able to support internal market growth. Meanwhile, there is no sign of abatement in commodity-market volatility. Dealing with slower market growth and the possibility of sudden adjustments in the prices of some of the region's main products is the most immediate challenge. Given the macroeconomic consequences – for example, on the level of inflation, terms of trade and external restrictions – the region's agricultural sector should become more integrated into the rest of the economy and also international markets for goods (especially biofuels), services and investment. Such an approach would help to define sector policies in a more strategic manner than is customary in agricultural institutions.

Identifying the links between financial markets and the real economy, through the supply and demand for goods, is crucial but insufficient. It is also necessary to develop mechanisms for addressing new factors that contribute to market volatility. In this regard, there is a pressing need to strengthen (or in some cases create) institutions and policies capable of regulating speculation, providing economies with some degree of predictability and acting in a countercyclical manner at times of intense market instability.

Regional agreements can play a role in the design and application of policies that facilitate a more dynamic recovery with long-term implications for national competitiveness. The crisis has demonstrated the importance of policies and state regulation for the efficient and transparent functioning of markets. The volatile nature of financial investments, and the speed with which both information and capital circulate internationally, require that regulation extend beyond national borders, which in turn demands increasing inter-governmental coordination. In the current scenario, there is much room for

formulating and implementing policies that will promote regional coordination in areas such as access to information, control over investments and the financial practices of firms and institutions. These are some of the areas where a lack of regulation was made painfully clear during the crisis and which have been the target of a social outcry for public intervention.

Public policies are also assuming ever greater importance in the context of rapid changing supply-and-demand conditions for primary goods. These include policies in areas such as market openness, innovation, environmental

issues, and value-added production chains. The main challenge facing LAC countries is the need to mobilize resources, strengthen institutions and create innovative mechanisms to fill the void in policy implementation. This is an opportunity that governments in the region cannot afford to let pass. There is a heightened social awareness of the importance of public policy, but policies must efficiently address social demands without compromising fiscal sustainability. Regional coordination can, in theory, help towards this goal by improving policy efficiency while at the same time generating synergies between countries and saving resources.





## Section II: Sectoral analysis





# Sectoral context: Agriculture, Livestock, Forestry, Fishing and Aquaculture

Sector-specific policies are needed to address economic uncertainty

## FACTS

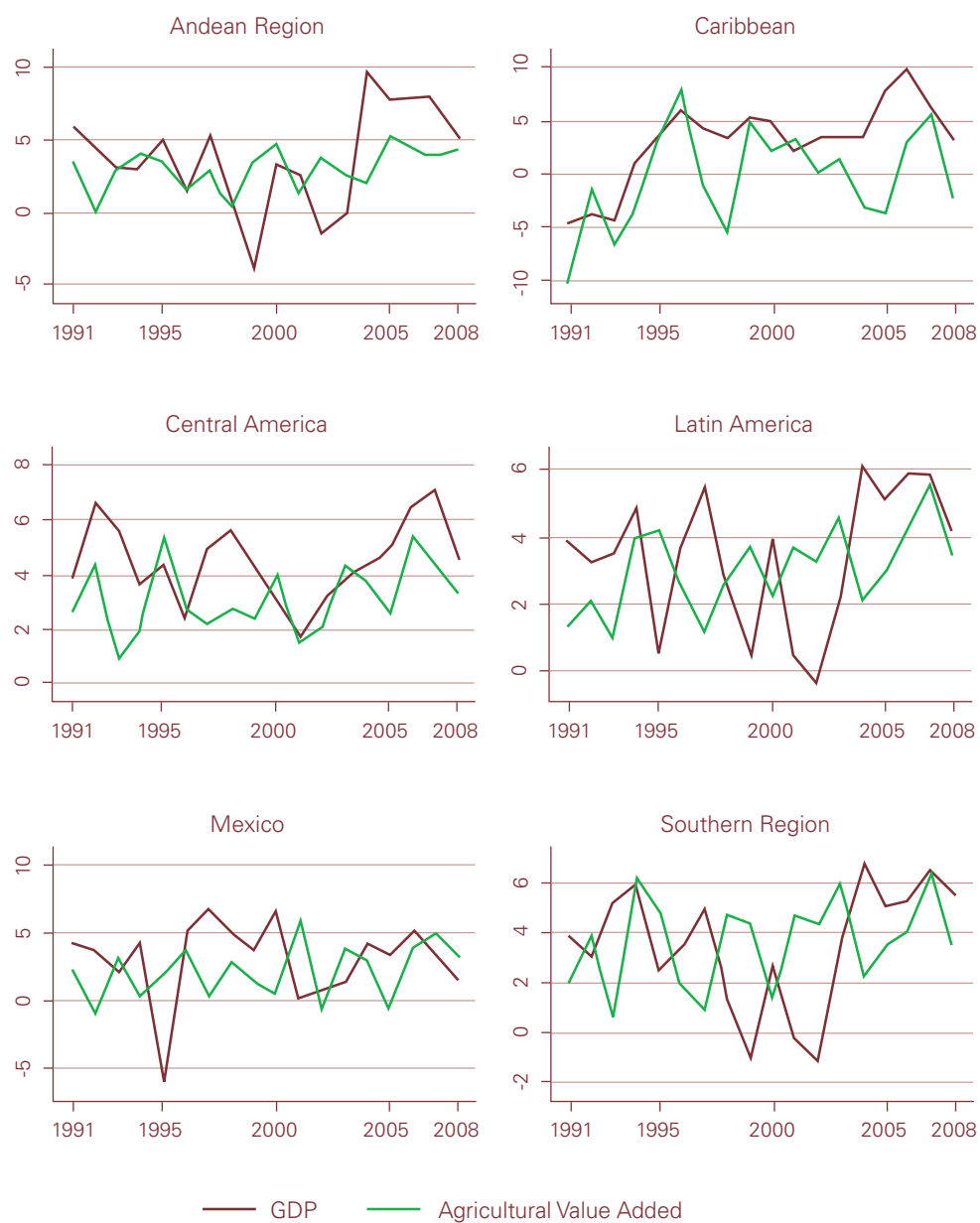
- The economic crisis has had an uneven impact on the agricultural sector across Latin America and the Caribbean. The differences between countries can be explained by factors including the varying degrees of income-elasticity in demand for agricultural products, the effect on producers of higher prices for crude oil and its derivatives, and the impact of sector-specific policies depending on the type of product, location and production process involved.
- During 2008-2009, the high degree of volatility in farm commodity prices raised issues in the sector such as the sustainability of higher food prices, the role of financial markets and speculation, as well as the relative advantages and disadvantages of higher prices for agricultural producers.
- Over the medium-term, raw material prices are expected to remain above historical levels as forecasts anticipate an expansion of demand in coming years, driven largely by demand from emerging economies.
- In response to increased market volatility, there is an important need to develop policies that regulate speculation and act in a countercyclical manner in times of economic instability. In the current context, investment in research and development by both the public and private sectors is key to lowering risks in the agricultural sector.

## • Sector evolution and performance

The agriculture-forestry-livestock sector accounted for approximately 5% of the region's GDP in 2008, but in some countries, such as Haiti (20%) or Paraguay (21%), it contributed more than 20% while in others, such as various Caribbean Island states, the sector's share of GDP was less than 2%. Figure 2, which tracks the evolution of annual GDP growth and agricultural value-added by sub-region since the early 1990s, shows that the sector performs in a countercyclical fashion to the general economy, tending to grow during broad economic downturns and vice versa during boom periods. This behavior is most striking in the Southern Cone, the Andean sub-region and in Mexico, but not so much in Central America and only in parts of the Caribbean.

There is evidence that in some countries of the region (Colombia, Honduras, Panama, the Bolivarian Republic of Venezuela and Dominican Republic) agricultural employment increased as a percentage of total employment in 2009, which is a sign of countercyclical behavior. However, in other countries (Chile, Costa Rica, Mexico, Trinidad and Tobago and Uruguay) the long-term trend of a reduction in the sector's participation in overall employment continued (ECLAC, 2009a). Furthermore, growth in the agricultural sector tends to be less volatile than GDP growth.

**Figure 2** | Evolution of GDP and agricultural value-added growth by sub-region (1991-2008)



**Source:** ADU/ECLAC, based on data from BADECON database

Table 1 shows that average rates of GDP and agricultural value-added growth in the previous decade varied by sub-region with the sector posting stronger growth than the overall economy

in Southern Cone countries. In Central America the sector lagged behind the economy and even decreased outright in the Caribbean by 0.7% in 2000-2008.

**Table 1 | GDP and agricultural value-added average growth rates by region and sub-region**

	2000-2008		2000-2005		2005-2008		2007-2008	
	GDP	Agricultural Value Added	GDP	Agricultural Value Added	GDP	Agricultural Value Added	GDP	Agricultural Value Added
Latin America and the Caribbean	3.6	3.5	2.6	3.1	5.2	4.1	4.2	3.6
Latin America	3.6	3.5	2.6	3.2	5.3	4.1	4.2	3.6
Caribbean	4.1	-0.7	3.9	-0.6	4.3	-0.9	2.3	-1.5
Mexico	2.3	2.5	1.9	2.2	3.2	3.0	1.3	3.2
Central America	4.4	3.3	3.5	2.7	6.0	4.4	4.4	3.0
Andean Region	4.8	3.4	3.5	2.9	7.0	4.1	5.2	4.7
Southern Region	3.8	4.3	2.6	4.1	5.7	4.7	5.6	3.7

Source: ECLAC

### • The impact of the crisis on the sector differs across the region

The 2008/09 economic crisis reduced regional GDP by 1.8% in 2009, the equivalent of a 2.9% per capita contraction. The reduction in economic output has negatively affected employment with the average unemployment rate for the region estimated at 8.3% in 2009. The numbers available for the agricultural sector confirm the mixed effect of the crisis (ECLAC, 2009a). Given the relatively limited income-elasticity in demand for food, the sector was expected to prove more resilient in the face of the global economic downturn than other activities. But risks normally associated with agricultural activity tend to be magnified,

both in terms of performance and solvency, by a credit crunch and more demanding lending requirements on the part of financial institutions, which can greatly restrict producer access to financial markets. This is also true of producers that do not directly depend on loans from financial institutions, but rather on credit from suppliers or buyers throughout the agricultural-production chain who also depend on support from financial markets (OECD-FAO, 2009).

Another sign of the crisis' heterogeneous effect on the agricultural sector is the uneven price performance of agricultural commodities following their dramatic surge in 2007-2008. International prices for some products hit bottom in the fourth

quarter of 2008, and have since recovered (Figure 3) as in the cases of rice and soy oil. Prices for maize and especially wheat, in contrast, continued a downward trend through the end of 2009. International beef prices, which failed to join the bonanza of 2007-2008, began to rise in early 2009, while those of poultry have remained largely flat throughout this period.

## ● Price Volatility

Trade flows in recent years have posed major questions about the price volatility of some agricultural products. According to IMF calculations (IMF, 2009a), between 2008 and 2009 most major agricultural crops experienced a degree of price volatility unseen for decades, although

**Figure 3 |** Raw material and food price indexes (annual 2000-2006 and quarterly 2007-2009)



Source: IMF, raw material data base, February 2010

volatility was less intense than that of some other commodities. In such a context, issues such as sustainability in the prices of some commodities, the role of financial markets and speculation, as well as the potential advantages or disadvantages posed by higher prices for agricultural producers have become central to the research agendas of governments, international bodies and academics.

Results suggest that in some cases the new pricing levels were achieved on the strength of emerging-market demand and the interaction between, for example, agricultural and energy production. However, such trends are recent and it is too early to fully discern their correlation with agricultural markets. Furthermore, controversy surrounds the effect of speculation on agricultural prices. Clearly, the volume of non-commercial trades on futures markets for agricultural commodities has expanded in recent years, but this is most likely due to the expectation of higher prices and is not the root cause of higher product prices (OECD-FAO, 2009).

Nevertheless, commodities prices began to rebound even as the world economic recovery was just getting underway, which is a departure from previous economic crises when it took some time before prices recovered. Historically low interest rates, which make it cheaper to build up inventories, along with expectations that demand will grow and the U.S. dollar will weaken, provide an incentive to invest in commodity instruments. A major difference from past crises is the extent to which emerging economies, especially China, are contributing to the demand for raw materials. Of course, given that these economies as a group have recovered faster than advanced economies, it is logical that the resurgence of demand for raw materials has preceded a consolidation in the global economic recovery (IMF, 2009a).

Since demand projections point to continuing growth in the coming years, raw material prices are also expected to remain high in relation to their historical averages. Futures, for example, show that traders expect prices for wheat, maize, and to a lesser extent soybean to climb in 2010

from their mid-crisis lows, but not to rebound to their highs of recent years (IMF, 2009a). Clearly, production must expand at some point and better coverage is needed to cope with sudden price and supply movements (such as those arising in response to shifts in climate conditions) to avoid major supply and political problems, especially in net food importing countries.

Volatility in international commodity prices also has major microeconomic consequences, especially in investment decision making by agricultural producers and others engaged in the agro-food production chain. Volatility exacerbates both international market uncertainty and the risks associated with agricultural activity which, combined with the structural changes being promoted by financial institutions, makes access to credit even tighter and more expensive. Agro-industries, which also serve as a major source of financing for agricultural production, often encounter equally unfavorable conditions for accessing credit and pass along at least some of those pressures to primary producers.

As previously noted, the global crisis struck when the economies of the region were enjoying favorable macroeconomic conditions, but it is not clear that the agricultural sector was in such a comfortable position (as mentioned above, the sector's performance relative to the broad economy has varied on a sub-regional level). In the years before the crisis, growth in Latin American agricultural exports tended to lag behind that of manufacturing, mining and crude oil (ECLAC, 2009c). This last product is a major input for agricultural activity that is used not only as a fuel source but also to produce fertilizers, an especially energy-intense industry. The upswing in oil prices in recent years has inflated fertilizer prices much faster than the rise observed in farm prices (Rodríguez, 2008), adversely affecting production costs and producer revenues.

Beyond the price volatility of inputs and agricultural products, farm producers are now facing a crisis-driven variety of policies that directly or indirectly affect the sector. The macroeconomic

factors affecting agriculture include monetary and fiscal policies adopted not only domestically, but also by major trading partners and countries sharing a specific political or economic context.

### ● From emergency policies to conditions for the recovery

The rise in prices of agricultural commodities and the economic crisis catapulted the sector into a prominent position not only in the eyes of public opinion, but also before international institutions and governments thanks to its potential to generate employment, its cushioning role during the economic downturn, its production chains in relation to other sectors, and its poverty-reduction ability. But given that the agricultural sector was expected to experience less of an effect from the crisis due to the demand characteristics of markets, sector-specific policies did not play a central role in the anti-crisis policies adopted by Latin American and Caribbean governments in 2009. According to information collected between February and September of 2009 (ECLAC, 2009d), of the 35 Latin American and Caribbean countries that announced crisis policies, 23 intended to implement policies specific to the agricultural sector (Figure 4). Of course, the announcement of new policies is no guarantee of their implementation, but it does offer some idea of where the sector ranked among government priorities in combating the effects of the crisis including the reduction in economic activity and the credit crunch.

The main policies for the agricultural sector tend to follow the direction of general policy with greater emphasis on measures designed to facilitate credit access and lower production costs through tax breaks and input-purchase subsidies. Credit is an especially crucial issue for



### BOX 1:

#### The link between financial speculation and agricultural prices

A number of analysts argue that speculation increasingly influences the prices of basic products. For example, Robles, Torero and von Braun (2009) conclude that speculative activities may have contributed to the rise in agricultural commodity prices in 2007/08. But others cite evidence that points in the opposite direction. Wright and Bobenrieth (2009) rule out financial markets as culprits in the price increases, drawing a comparison to previous periods of soaring prices. Essentially they argue that low reserves (along with growing demand for biofuels and changes in public policies) were the main price drivers. Financial markets potentially could have played a role by stoking demand for expanded reserves, but there is no evidence substantiating such a trend. Rose (2009) notes the increasing complexity of financial markets and the growing presence of those who know how to generate returns by investing in futures and options, employing strategies that are ever more sophisticated. But their analysis uncovers no clear connection between price evolution and investments in futures and options markets.

This remains an open debate. Movements in financial markets play a role, but it is secondary to the basic forces of supply and demand. However, the main lesson from the recent financial crisis is the way in which a lack of control mechanisms on the securities exchanges around the world contributed to a large extent to the speed and depth of the financial collapse in September 2008. That experience cries out for greater regulatory oversight of market traders, especially when dealing with excessive speculation in agricultural commodities.

Robles M., Torero M. and von Braun J. (2009) "When Speculation Matters", IFPRI Issue Brief, February 2009.

Rose F.S. "La inversiones en los mercados de futuros y de opciones de los Estados Unidos: estudio sobre incidencias posibles en los precios de los productos básicos". Joint Meeting of the Intergovernmental Group on Oilseeds, Oils and Fats (30th Session), the Intergovernmental Group on Grains (32nd Session) and the Intergovernmental Group on Rice (43rd Session). FAO, November, 2009.

Wright B. and Bobenrieth E. "The food price crisis of 2007/2008: Evidence and implications", FAO Food Outlook, December 2009.

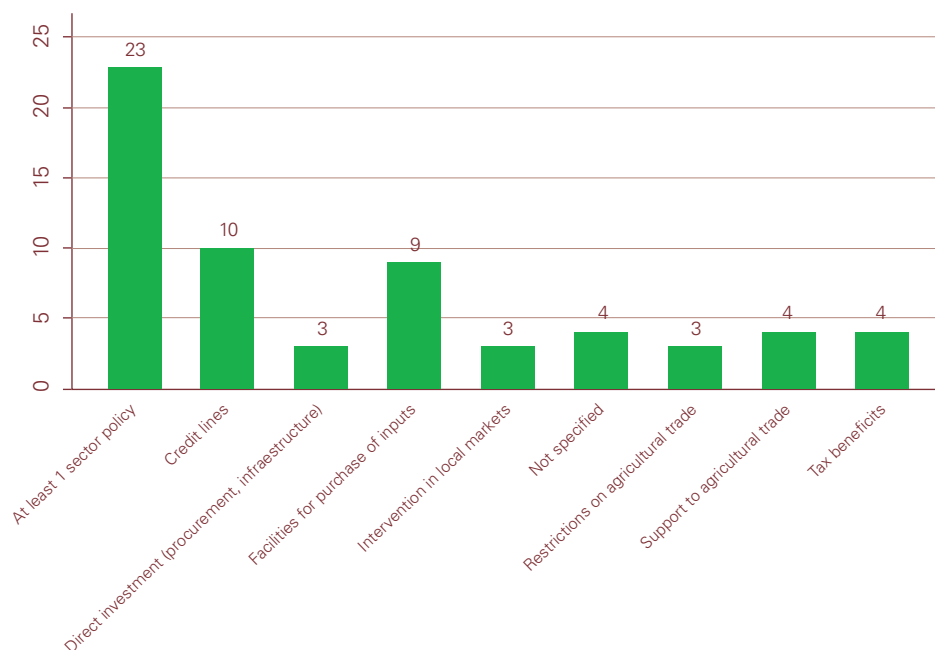


sub-sectors such as dairy and, given the specific characteristics of the current crisis, for those firms whose activity is primarily based on exports of raw materials or little-processed goods, which is to say agricultural commodities. Figure 4 also reveals that policies focused on trade support for agricultural products are more frequent than measures that seek to limit trade, which underscores the lack of a uniform trade policy in the region. Finally, direct public investment in the sector and intervention in local markets (inventory build-up or price controls) were less frequent than other policies, perhaps because they demand a greater degree of institutional development to function properly.

## ● Outlook

Identifying the links between financial markets and the real side of the economy, i.e. supply and demand, is important but insufficient. Mechanisms are needed that respond to new trends driving market volatility. There is also a need to strengthen (or in some cases to create) institutions and policies capable of regulating speculation, providing some degree of economic predictability and acting in a countercyclical manner at times of intense instability. In the specific case of food, traditional sources of volatility – climate conditions, environmental change and other production

**Figure 4** | Number of Latin American and Caribbean countries that applied anti-crisis agricultural policies, by type of policies, between February and September 2009



Source: ECLAC, 2009d

risks – must also be addressed. Here agricultural technology can play a decisive role in reversing the downward trend in research and development in the

sector, especially by committing the private sector. The dynamics observed in food markets in recent years should serve as an incentive for expanding

private investment and research, but public policies will always be needed to ensure that those trends do not act regressively, benefiting only a few producers and firms to the detriment of society.

The evolution of food prices is another key issue. The broad, yet mild, increase in prices seen since early 2009, and investor expectations for 2010, reveals a series of pending structural challenges in the sector. The gap between supply and demand is expected to remain tight in the coming years while the accelerated integration of agricultural and energy markets could increase the volatility of food prices. It is not clear just how the structural changes announced in recent months in regional and international financial markets will be consolidated, but it is possible that the weakening of returns on some assets – arising out of new regulatory and control measures – will act as a further incentive to invest in commodity markets, thus pushing prices higher. Such a development could have quite significant macroeconomic effects, including an erosion of the balance of payments, inflationary pressures and setbacks in the fight against poverty and food insecurity, especially in developing countries that are net food importers, including a number of Latin American and Caribbean economies (ECLAC, 2009a; IMF, 2009a; OECD-FAO, 2009).

Finally, there are many economic policy elements that can affect the performance of Latin American and Caribbean agriculture. These factors are by no means confined by national borders; on the contrary, it is most probable that external factors exert greater influence at least in those markets that are in some degree integrated into international trade and investment flows.

Agriculture, even in developing countries, is an activity increasingly integrated into local and international markets which is growing more complex, subject not only to the behavior of supply and demand in agricultural and biofuel markets, but also in markets that trade in related products. In the context of climate change, the effects of variations in climate conditions further complicate the sector's performance. This does not mean there is no room for sector-specific and local policies,

## BOX 2:

### The challenge of reconstruction in Haiti

*“ECLAC projected in late 2009 a 2% growth rate for the Haitian economy due in part to a certain reactivation of the agricultural sector and a reduction in the current account deficit (...), but not before warning of the country's vulnerability to natural disasters, with grave consequences not only of an economic nature but also in social and human terms \*\*.”*

The history of Haiti since independence has been constantly punctuated by critical events in both the political-institutional and socio-economic spheres, the most obvious legacy of which is the impoverishment of the country's people. Despite international cooperation, the flow of humanitarian aid and government efforts, Haiti ranks as the country with the lowest Human Development Index reading in the Americas. Located in a highly vulnerable part of the Caribbean, the country has suffered terrible destruction from natural disasters, whose frequency and intensity have greatly impeded development. The most recent such event, the earthquake of January 12, 2010, one of the most severe in the country's history, had a devastating effect on the nation's capital, Port-au-Prince, and surrounding areas, leaving more than 200,000 dead, many thousands more severely injured and disabled, and more than a million displaced. Material damages, especially on the level of infrastructure, the collapse of educational and medical services, productive activity and the extent to which commerce, banking, public administration and other sectors have been impaired further complicate the task of reconstruction. Authorities are especially concerned that the upcoming hurricane season in the Caribbean could deepen the post-quake crisis.

In the case of agriculture, an emergency relief and food production assistance program is underway as well as the integration of displaced communities\*\*, led by Joanas Gué with support from the

international community, IICA and FAO. This program includes short, medium and long term goals to increase the availability of food through actions that expand domestic production, create rural jobs, strengthen state capacities and improve income distribution for the almost 60% of Haiti's economically active population who directly depend on agriculture (ECLAC).

Beyond sector-specific efforts, Haitian reconstruction must address the country's high vulnerability to extreme events, further magnified by climate change, which demands the urgent regeneration of natural resources, especially forests, soil and water given the dependence of the economy on agriculture. The challenge of strengthening democratic institutions is even more daunting, making it harder to consolidate participatory mechanisms, a system of checks and balances, equity and social mobility. Environmental, social and economic sustainability as well as institutional development in Haiti now loom as two seemingly sine qua non conditions for national and international cooperation efforts to have a greater effect.

\* ECLAC: Haiti: Preliminary Overview of the Economies of Latin America and the Caribbean, 2009a.

\*\* A special emergency program to support food production in Haiti in response to the earthquake of January 12 and the integration of displaced populations. Ministry of Agriculture, Natural Resources and Rural Development. Meeting of Donors and Cooperation Agencies 27/12/2010. Source: ECLAC-FAO-IICA.

Source: ECLAC-FAO-IICA .

rather that such policies are indispensable in a context in which the main macroeconomic variables vary intensely and almost independently of the sector's performance. In this regard, sector-specific policies may contribute to uncertainty or, more desirably, help to diminish it. Therefore, policies are needed that recognize the sources of economic volatility while creating mechanisms and institutions capable of offsetting them.





## Agriculture<sup>3</sup>

The agriculture sector in the Americas survived the economic crisis relatively well and should take advantage of the recovery to consolidate its role as a strategic sector in global food security

### • Regional trends and short-term outlook

Owing to the trade liberalization of most economies in the Americas, the performance of Latin American agriculture is increasingly linked to the economic growth of developed countries. As a result, the recent economic crisis was quickly passed on to LAC countries<sup>4</sup>, negatively impacting their growth and especially the performance of the agriculture sector, which is ever more oriented toward international markets.

Price variations in basic food products combined with the economic crisis and subsequent contraction of international demand, led to lower overall agricultural production in North and South America in 2009 compared to 2008. The most affected countries were the United States, Canada, Mexico, Brazil and Argentina, which combined account for 81% of agricultural value-added production in the Americas and 82% of farm exports.

<sup>3</sup> The background information for this chapter was compiled through a survey of government officials from each country in an effort to discern the main trends in the sector in the absence of official statistical data for 2009 and projections for 2010. The survey results were supplemented with analysis of existing documents and study results, whose sources are listed in the bibliography at the end of the chapter.

<sup>4</sup> Asia, and especially China, have become increasingly important export markets for LAC countries with China now the leading destination of exports from Brazil and Argentina and the second most important for shipments from Costa Rica. The global-pacesetter recovery in Asia will accelerate the rate of expansion of Latin American exports to the region.



### FACTS

- The trend of higher prices for basic food products that peaked in mid-2008 favored net exporting countries of such products, primarily located in temperate climate zones, but had a detrimental effect on net importing countries.
- Countries whose food security was adversely affected adopted measures to mitigate the impact of higher food prices and launched programs to promote local production.
- The economic crisis in developed countries was quickly transmitted to Latin American countries, stunting growth in agricultural production and exports. But exports began to recover in 2009 and further improvement is expected in 2010.

Experiences were varied across Central America and the Andean region. Most of these countries that are geared toward an agro-export model strongly felt the negative effects of the global economic crisis. The Caribbean countries, on the other hand, took advantage of their limited exposure to agricultural exports and began promoting local production to better cover their domestic food consumption needs in future crises.

In fact, a survey conducted for this report revealed that in 2009 agricultural production grew in 24 of the 34 countries polled, declined in seven and was essentially unchanged in three.

Projections for 2010 point to a major recovery in agricultural production in most countries of the region, but those projections are subject to

1. How did your country's agricultural production perform in 2009 vs. 2008?			2. What is the outlook for your country's agricultural production in 2010 vs. 2009?		
	Responses	%		Responses	%
1 – Declined	7	21	1 – Will decline	3	9
2 – Was similar	3	9	2 – Will be similar	4	12
3 – Increased	24	71	3 – Will increase	27	79
TOTAL	34	100	TOTAL	34	100

**Source:** Survey results

an expanding array of climatic factors<sup>5</sup> and the evolution of global demand (still weakened by the recession), and to a lesser degree by international prices. For this reason, the drop seen in 2009 prices for basic farm products does not appear to have sapped momentum from the 2010 productive cycle<sup>6</sup>.

The survey asked about the main causes of changes in production of each country's three leading crops. The factor most frequently cited (46.6% of respondents), was the expansion in the planted land area, a clear

result of national land policies<sup>7</sup>. The second leading cause (32.5%) was climate change. Price variations came in third (28.6%). Interestingly, comparatively few respondents ranked technological change (9.5%) or even higher costs (15.2%), at a time when input prices rose significantly. There is evidence suggesting that farmers have cut back on their use of fertilizers and agro-chemicals precisely due to price considerations.

<sup>5</sup> For example, the El Niño phenomenon and other cyclonic effects seen in Central America and the Caribbean.

<sup>6</sup> Prices remain above those of 2000-2005 (see Figure 3).

<sup>7</sup> Respondents indicated that the expansion of land under cultivation reflected national policies (for example, food security or biofuel programs), but other factors may also be in play such as higher prices or a combination of factors.

3. What do you expect will be the main factor affecting production of your country's top three agricultural products in 2010? (number and % of responses citing each cause)								
Product	Demand	Price variations	Production costs	Amount of land sown	Technological change	Trade restrictions	Climate change	Others
Product 1	5	10	6	16	2	1	14	9
Product 2	11	10	5	18	5	1	14	8
Product 3	9	10	5	15	3	2	12	8
Share of total responses	23.0%	28.6%	15.2%	46.6%	9.5%	3.8%	32.5%	23.8%

Source: Survey results

The recovery in 2010 to-date has been faster in developing countries (those of LAC and East Asia) than in developed economies, which should expand demand for natural resource-based LAC products going forward. It is also probable that LAC imports will increase as income, financing and agro-industrial production recover.

Inflation may accelerate due to higher fiscal deficits, which have expanded under the impact of fiscal stimulus packages and the extent to which diminished economic activity has reduced tax collections. This may have a disproportional effect on the food segment and thus limit efforts to regain pre-crisis levels of food security and poverty alleviation.

### • Lessons from the food price and economic crises

Important lessons for agriculture in the region can be drawn from the crisis of higher food prices (during the first half of 2008) and the economic crisis (second half of 2008 and 2009).



### BOX 3: Food prices may outpace global inflation

During past periods of high inflation in LAC countries, food prices grew much faster than those of other goods, a tendency which was confirmed during the food-price shock of 2008. Overall, inflation has proven to be highly sensitive to food prices largely because in Central American, Andean and Caribbean countries a very high percentage of family incomes goes to food purchases compared to developed countries (in Central America the average is 35% and in the Dominican Republic 29.8% as opposed to only 14.9% in the United States and 15.8% in the European Union). \*

It is estimated that, as the U.S. economy recovers, food prices in that country will grow faster than inflation between 2010 and 2012, especially meat prices (USDA Outlook, 2010).

\* Data from the central banks of the respective countries.

### *Greater support for innovation needed*

As in any other sector, innovation is necessary in the agriculture sector to generate new opportunities to improve competitiveness. This leap forward demands increased investment in research and development. But in Latin America and the Caribbean, such investment has grown very slowly, as indicated in a joint report by the International Food Policy Research Institute (IFPRI) and the IDB (Stadds and Beintema, 2009). Between 1991 and 2006, value-added agriculture increased at an average annual rate of 3%, while investment in science and agricultural technology grew by just 0.67%.

Compared to developed countries' standards, R&D investment in the region's agricultural sector remains very low. According to the IFPRI-IDB study, R&D accounts for a mere 1.1% of value-added agriculture, as opposed to the average 2.5% of countries in the Organisation for Economic Cooperation and Development (OECD). Investment in agricultural R&D also varies greatly across LAC, running as high as 2% in Brazil and Uruguay, between 1% and 1.5% in Argentina, Chile and Mexico, and lower than 0.3% in El Salvador, Guatemala and Paraguay.

There is, therefore, much work to be done, especially if the region hopes to achieve the sort of enhanced competitiveness in agriculture that would increase structural coordination within the sector, integrate more small producers into global value chains and increase yields, thus contributing to global food security.

The international crisis revealed how important innovation is for penetrating value-added market niches, diversifying supplies and reducing economic vulnerability. Such innovations include the development of coffee micro-mills (see Box 4), the use of coffee blossoms to make perfumes and fragrances, and the use of crops for health products, among others.



#### **BOX 4:** Coffee producers survive the crisis investing in micro-mills

Costa Rican coffee producers currently obtain prices per quintal (46 kilos) that are as much as USD 100 higher than those on the New York Mercantile Exchange, thanks to the installation of micro-mills allowing farmers to process their own beans. In order to achieve these prices, the first major step producers took was to stop selling their coffee in cherry form to large-scale processing facilities and instead to install micro-mills in their small farms. In this way they can pulp, dry and peel the coffee beans in a manner that assures buyers a special or gourmet quality throughout the process from planting and picking all the way through to the milling of the beans.

The Costa Rican Coffee Institute (Icafé) reported that in the 1998/99 coffee season there were 94 millers in the country. By 2008/09 that figure had grown to 145 and practically all the new firms were micro-mills on small coffee farms built with support from a Ministry of Agriculture and Livestock (MAG) program funded through the National Program for Sustainable Agricultural Production.

Source: La Nación (Costa Rica), March 1, 2010.

### *Domestic markets are important as well as global markets*

Another important lesson from the crisis is a renewed recognition of the importance of the domestic market. The huge size of the domestic markets in the United States and Brazil helped farmers in



these countries survive the crisis, but many small countries had prioritized the expansion of export-oriented agricultural production, neglecting their local market. LAC countries should give greater importance to the domestic market as part of their national social safety nets.

Ironically, the continuing difficulties in bringing the Doha Round to a successful conclusion, as well as trade problems owing to ideological differences and protectionist policies may facilitate a greater appreciation for domestic markets. However, the recent WTO ruling on bananas that will benefit Central American and Andean exporting countries underscores the need for supranational rules and instruments that allow smaller countries to compensate for the bargaining power of more developed nations.

### ***Climate issues are important for agriculture***

There is a growing body of evidence showing that climate factors<sup>8</sup> are increasingly important to food security, the profitability of agro-business and levels of rural wellbeing. Various countries of the region were hit by droughts in 2009 and, with the El Niño weather phenomenon expected to continue in 2010, the Central American, Caribbean and Andean regions can look forward to more droughts. Heavy rains and flooding are also expected in countries with temperate climates to the north and south of the continent and also in some Andean zones. Compounding the problem are natural disasters such as the recent earthquakes in Haiti and Chile and their effects on both agro-business and infrastructure.

Climate change has exacerbated problems caused by a lack of attention to harvests, which are an indirect result of the crisis and the declining profitability of some crops<sup>9</sup>. These problems, combined with the ef-

fects of climate change, have resulted in a proliferation of pests and diseases that were believed to have been eradicated from the hemisphere, such as black sigatoka in the case of bananas (caused by the *Mycosphaerella fijiensis fungus*), which has broken out anew in the Caribbean, and emerging diseases such as the lethal citrus greening also known as Huanglongbing (HLB) or yellow dragon disease, caused by an incurable bacterial infection (*Candidatus liberibacter*) transmitted by the South American fruit fly, which threatens citrus production throughout the continent.

In addition, due to the multiplication and growth in habitats of certain insects as a result of climate change, the West Nile virus has spread throughout Latin America since 2009. Another effect related to product safety is the increasing frequency of disease outbreaks transmitted by fresh produce and meats, which will likely lead to stricter sanitary norms, certificates of origin requirements and other regulatory controls.

### ***Public and private investment must be increased***

The food crisis that fuelled the price spike in 2008 prompted government policies that sought to cushion the effect of higher input costs, as well as policies designed to stimulate domestic production for import substitution (in some instances, alongside trade restrictions). Furthermore, income support policies stimulated domestic demand. There are no precise estimates of just how much public agricultural spending grew as part of these counter-cyclical policies, but a major expansion took place in almost all LAC countries.

The prospects for a recovery in Foreign Direct Investment (FDI) are promising due to growing concerns on the part of countries and multinational firms alike to assure future supplies of food and resources. The extent to which demand for food is expected to outstrip supply (limited by restrictions on growth in the area of agricultural land and the incorporation of technological changes), constitutes an opportunity for greater investment, increased

<sup>8</sup> This refers to climate changes (i.e. long-term trends in climate variables) such as climatic variability and problems such as desertification. An example of this is the intensification of the El Niño/La Niña phenomena in recent years.

<sup>9</sup> For example, many farmers opted to cut back on fertilization, pest control or crop rehabilitation efforts in the case of some tropical crops (coffee, bananas) whose production costs rose even as their crop prices failed to climb during the price boom.

## BOX 5:

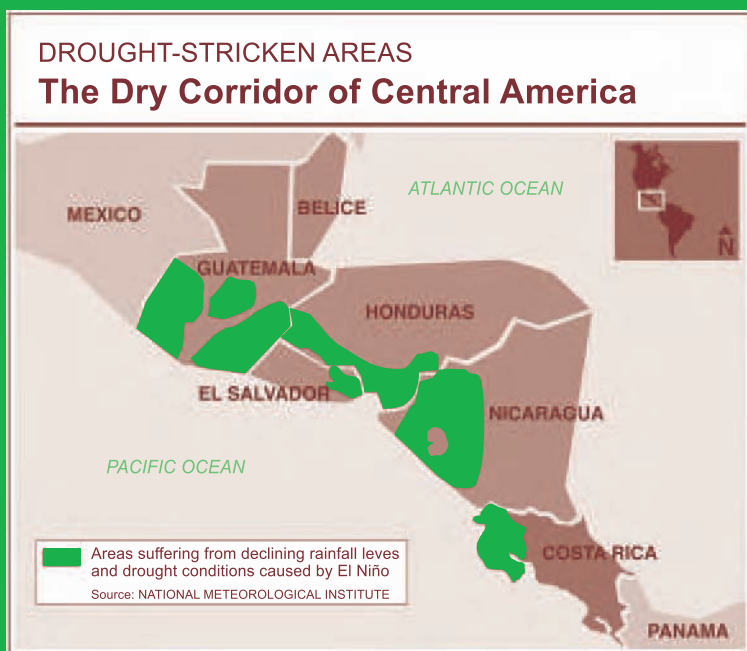
### Drought threatens food supplies in Central America but El Niño loses strength

The El Niño climate effect produced a significant reduction in rains during the months of July through September 2009, a key period in the crop cycle in what is known as the Central American Dry Corridor that extends through eastern Guatemala, northern Nicaragua and central-southern Honduras. Crop losses were not generalized, but they were especially severe for those farmers who depend entirely on their own harvests for subsistence. Reports suggest that losses in the case of maize, sorghum and beans (grains that are basic to the diets of such families) ranged from 50% to 100%. As a result, families were also unable to set aside seed grains for future planting, thereby aggravating the threat.

The international humanitarian group Action Against Hunger (known internationally as Action Contre la Faim, or ACF) estimates that within the Dry Corridor one million households survive on subsistence agriculture (planting on plots for family consumption). The United Nations Office for the Coordination of Humanitarian Affairs (OCHA) warned in December 2009 that famine threatens two million people including 110,000 children in Guatemala and southern Honduras.\*

However, forecasts are more promising for 2010. According to the Meteorological Institute of Costa Rica (IMN), the El Niño phenomenon is losing force as the latest readings suggest that Pacific-Ocean surface temperatures are receding to normal levels. Estimates suggest that El Niño will completely disappear between May and June of 2010, which bodes well for the Central American rainy season, which tends to get underway in May.

\* Another definition holds that the Central American dry corridor also extends through parts of Costa Rica (as indicated in the map below) as well as part of Panama.



Source: La Nación (Costa Rica), March 1, 2010

globalization and the consolidation of agro-business in the Americas with its vast natural resources. The development of biofuels will serve as an additional FDI lure as oil prices are expected to recover over the medium term.

### ***Consumption patterns and product competitiveness are changing***

Exporters have been able to position LAC agro-food exports in the markets of developed countries in response to changing consumer tastes and preferences. For example, exports of tropical fruits, gourmet coffees, and wines are little changed or continued to grow during the crisis even as consumer incomes and demand in developed countries ebbed. However, exports of other, “less essential” items such as flowers experienced significant declines in some countries.

A further depreciation of the U.S. dollar could adversely affect the competitiveness of LAC products in the European, Japanese and Chinese markets, with an especially pronounced effect on the output of temperate countries.

## **• Sub-regional trends**

### *The Caribbean*

Survey results suggest that agricultural production grew in 12 of 14 Caribbean countries in 2009, with the most significant increases reported by Grenada, Guyana, Jamaica, the Dominican Republic<sup>10</sup> and Cuba. In most countries this expansion reflects government policies to mitigate the impact of the crisis, producer reactions to price variations and an expansion of domestic demand<sup>11</sup>. Production was essentially flat in the Bahamas and Trinidad and Tobago, and other countries report reduced output for some of their

major crops (for example, cacao in Trinidad and Tobago, rice in Dominica and Guyana due to the combined effects of prices and climate, and coffee in Dominica in response to price effects).

The 2010 outlook is slightly less favorable with output growth expected in 11 of 14 countries, no change in three and a reduction in one with important changes compared to 2009. For example, growth is anticipated in The Bahamas and Trinidad and Tobago (with a robust recovery in production of vegetables and poultry products), as well as a significant decline in production in Guyana (between 5 and 10%), in the face of adverse climate conditions and a reduction in the planted area.

Climate change is cited as the leading factor of crop stagnation or reduction, followed by prices and costs (which caused a reduction in the planted area)<sup>12</sup>. Trade restrictions were cited as the cause of increased domestic production only in the cases of Cuba and specifically of poultry in Trinidad and Tobago. For most products, an increase in the planted area was stimulated by policy measures, higher prices and higher local demand.

### *Central America*

Central American countries adopted a regional plan to produce more grains in response to crisis-induced food security problems. Nevertheless, during the 2008/09 season production in most Central American countries declined with the exception of Belize and Nicaragua, which sustained significant growth rates (higher than 10% in Belize and 5% in Nicaragua). In Guatemala, production of maize fell due to adverse climate conditions, but bean production grew thanks to internal demand stimulus. In Panama, production of all three major products (rice, milk and maize), was affected by price variations, increased costs, adverse climate conditions and producer debt.

<sup>10</sup> Information for the first three quarters of 2009.

<sup>11</sup> Region-wide planting area is expected to grow for only five products and results suggest that only two countries will enjoy increased output for two crops in response to technological change.

<sup>12</sup> In addition we can cite the presence of black sigatoka affecting banana trees.

The 2010 outlook is for a recovery of agricultural production in all countries in the sub-region, although due to different causes and effects on the main crops of each country. El Niño-related droughts are expected to disappear by mid-year, coinciding with the normal onset of the rainy season, which should benefit regional agriculture.

#### *Andean Countries*

Agricultural production in the Andean sub-region grew in 2009 despite the global recession.<sup>13</sup> However, production declined in some cases: rice in Colombia due to production-cost issues; asparagus and avocados in Peru due to trade restrictions and climate factors, and yellow corn due to shifting demand; and flowers in Ecuador due to higher production costs. For the 2010 season all countries expect crop growth overall although at varying rates for their main crops.

#### *Southern Cone*

The Southern Cone's agriculture sector did not have a good year in 2009 except in Uruguay, where production increased 30% versus 2008 and in Paraguay (15%). Argentina and Brazil reported declines of 37% and 6.2%, respectively, while Chilean production was basically unchanged year-on-year. Climate conditions are a major factor in regional production, which is further complicated in Argentina by export taxes. However, the outlook for 2010 is positive, with notable recoveries expected in Argentina (38%), Paraguay (24%), Brazil (5.9%) and Chile (4%). Although production is likely to slow in Uruguay relative to 2009, the country is still expected to show a robust 16% growth rate.

Central America: Main crop output outlook for 2010			
Country	Products	Forecast	Probable causes
Belize	Beans, citrus	Increase	Prices, demand and yields (+)
	Sugarcane	Unchanged	Prices and demand (=)
Costa Rica	Coffee	Reduction	Costs (+) and climate (-)
	Sugarcane, Banana	Increase	Planted area (+)
El Salvador	Basic Grains	Increase	Government support and planted areas (+)
Guatemala	Sugar	Reduction	Planted area, climate (-)
Honduras	Maize and Beans	Increase	N/A
	Rice	Reduction	N/A
Nicaragua	Coffee	Reduction	Climate (-)
Panama	All	Increase	Input costs (-), government support (+)

**Source:** Surveys and official reports

<sup>13</sup> There is no information from B.R. of Venezuela available for 2009.

## North America

Agricultural production in North America declined in 2009 after having enjoyed the stimulus of high prices in 2008. This trend is not expected to change in 2010. The economic crisis and a drop in regional demand in this area of considerable intraregional agricultural trade had a negative affect on the sector's

performance as did a decline in exports as global demand receded.

The Mexican economy suffered the sharpest contraction of any LAC country with GDP plummeting 9.7% and 6.3% during the second and third quarters of 2009, respectively, compared to the

Andean Sub-region: Main crop output outlook for 2010			
Country	Products	Forecast	Probable causes
Bolivia	Soybeans	No change	Climate (-)
	Potato	Increase	Internal demand, climate (+)
	Maize	Increase	Planted area (+), prices
Colombia	Coffee, Flowers	Increase	Climate (+), Planted area (+)
	Sugarcane	Reduction	Climate(-)
Ecuador	Banana	Increase	Demand, prices (WTO ruling)
	Flowers	Reduction	Prices, demand and climate (-), costs (+)
	Rice	Increase	Government support (+)
Peru	Un-hulled rice	Reduction	Prices (-)
	Potato	Increase	Planted area and climate (+)
	Hard yellow corn	Increase	Prices, planted area and climate (+)
B. R. of Venezuela	White maize, rice and sugarcane	Increase	Costs (-), government support (+)

Source: Surveys and official reports

same year-earlier periods. The depth of the recession reflects the extent to which the economy is linked to that of the United States (IDB, 2010). Agricultural production also felt the impact of the crisis. Records show a reduction in the area of land planted with maize and beans in 2009, but this trend should be reversed in 2010. Nevertheless, maize imports are expected to surpass 9 million tons in 2010 and continue to increase going forward. The area of

sorghum and wheat, which both grew between 2008 and 2009, appears to have experienced a major decrease in early 2010. One crop with potential to grow is sugarcane now that the North American Free Trade (NAFTA) rules are being fully phased in. Furthermore, the increasing use of high-fructose corn sweeteners by the food and beverage industries in Mexico has freed up sugar producers to supply the U.S. market.

Southern Cone Sub-region: Main crop output outlook for 2010			
Country	Products	Forecast	Probable Causes
Argentina	Soybeans	Increase	Planted area (+) and climate (+)
	Maize	Increase	Climate (+)
	Wheat	Reduction	Planted area (-), climate (-), trade restrictions ext.
Brazil	Soybeans	Increase	Planted area (+), costs and technology
	Maize	Unchanged	Planted area (-), productivity and climate (+)
	Rice	Reduction	Climate (-), costs (-) Planted area (-)
Chile	Table grapes and apples	Increase	Prices (+) and climate (+)
	Wheat	Unchanged	Planted area (=)
Paraguay	Soybeans	Increase	Planted area (+), demand
	Cotton, sunflower	Reduction	Planted area (-), climate (-)
Uruguay	Soybeans, Wheat, Rice	Increase	Planted area (+)

Source: Surveys and official reports

## • Conclusions and policy recommendations

- The combined effects of anti-cyclical policy measures and a recovery in basic food prices provided incentives to expand regional agricultural production in 2010 and growth forecasts remain strong.
- The increasing frequency of adverse climatic events is becoming a major factor in the performance of the agriculture sector across the region.
- The slower recovery in developed economies and a faster paced rebound in developing countries create the expectation for LAC agriculture to resume the strong expansion seen in 2000-2007.
- The continued depreciation of the U.S. dollar could erode the competitiveness of LAC agricultural production in the EU and Asian markets.
- Future expansion of agricultural production should be based on increasing yields rather than expanded land use, but this requires greater public and private investment in agricultural research and innovation.
- Countries must make an effort to develop policies to help agricultural production adapt to the effects of climate change.



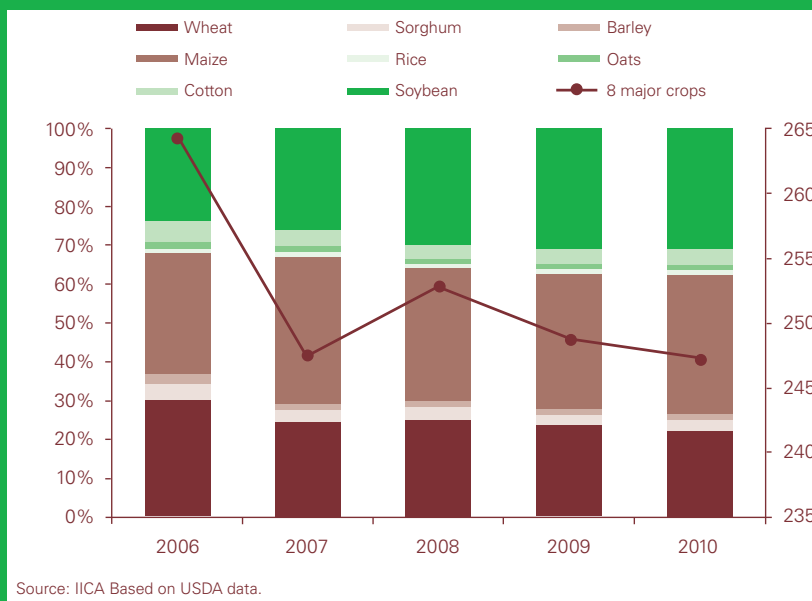
## BOX 6:

### Modest growth forecasts for the United States and Canada

In the United States, the area of land sown with its eight main crops has fallen since peaking in 2006\*, primarily due to cutbacks in the planting of soy and rice (see figure below). Some of the reductions in planted areas came as lower crop yields led farmers to rotate into other crops. Forecasts anticipate expanded planting of maize in response to demand from the growing ethanol industry and the food sector. Furthermore, corn prices are expected to continue strong albeit below the highs of 2007/08. In contrast, the amount of land for soy production is expected to shrink in part due to falling demand in the livestock sector and growing competition from South America. Wheat, the country's third crop in order of importance, is projected to increase slightly on demand from the food industry even as exports remain flat on stronger competition from the Black Sea region, primarily Russia.

Canada is expected to see a reduction in its main crops (wheat, maize and barley) and no change in the production of canola. Climate effects are expected to reduce the area of planted land and yields in the case of wheat. The projected drop in corn output is mild and associated with changing costs and a reduction in land area, while barley production is projected to fall on weaker prices and stiffer competition in international markets.

\* This could also be due to the downward trend in direct government payments stipulated in the latest Farm Bill (USDA, 2010). However, a recent IICA analysis of that bill (Donizetti, 2009), concluded that even when direct payments decrease, other programs such as ACRE (Average Crop Revenue Election) will ensure that aid tends to increase even in contravention of Doha accords on domestic farm assistance.









# Livestock

There are opportunities for Latin America's livestock industry to grow, but not at the cost of the environment



## FACTS

- The livestock sector is one of the most dynamic parts of the agricultural economy. It contributes 45% of the gross domestic product from agriculture in Latin America and the Caribbean with an annual value of USD 79 billion and represents 13% of total livestock production in the world. The sector has grown close to 4% annually in recent years, twice the global average of 2%.
- Livestock includes cattle, pigs, poultry, sheep and other farm animals. Beef and milk production is the most important in terms of value, accounting for 62% of total Latin American livestock production. Poultry production (meat and eggs) has also grown in the last decade, and now accounts for 30% of the overall livestock production value, led by Brazil and Mexico which are among the world's biggest poultry meat and egg producers, respectively. Pork production is in third place with 7%.
- Latin American and Caribbean countries account for 28% of beef production among leading beef producing countries in the world. Brazil is the largest, accounting for 56% of production in Latin America and the Caribbean in 2009, followed by Argentina (20%), Mexico (10.2%), Colombia (5.6%), Uruguay (3.3%) and Paraguay (2.3%). South America is the leading beef exporting region in the world, accounting for 41% of total world beef exports in 2009.
- The demand for beef products is growing 2.5% annually in Latin America compared to 0.5% in developed countries. The average Latin American household spends 19% of its budget on meat and dairy products.
- Latin America and the Caribbean accounted for 23% of world poultry production and 39% of poultry exports in 2009.
- Latin America and the Caribbean accounted for just 5.3% of world pork production in 2009, but it is a major pork exporter with 16% of world exports mostly from Brazil, which accounted for 74% of the region's pork exports.
- Brazil, Mexico and Argentina are the principal milk producers in Latin America and the Caribbean, accounting for 11.6% of total milk production among leading dairy producing countries. Argentina accounted for 3.6% of cheese exports and 9.5% of whole milk powder exports among major world dairy exporters in 2009.
- Land degradation and deforestation is widespread in the region due mainly to extensive cattle farming, which is the predominant system in Latin America, as well as soybean production in sensitive areas, with huge swathes of forest cleared for those purposes. The livestock sector is the main sector responsible for methane gas emissions, which contribute to global warming.

## FACTS (Cont.)

- In parts of Latin America and the Caribbean, intensive cattle production systems are being used as a means to increase productivity. Arguably, this could also relieve some of the environmental pressure including deforestation and pasture degradation in marginal areas. However, more intensive beef production puts the beef industry into increased competition with other livestock sectors for feed resources.
- Expanding the use of intensive production systems for poultry, pork, dairy production and now, to a lesser degree, beef, increases the potential for air and water quality problems due to excess nutrient accumulations in concentrated production systems.
- Governance of the livestock sector should be strengthened to ensure its sustainable development. The sector can play a key role in mitigating climate change by improving productivity. This should include addressing policy and market failures and developing and implementing appropriate incentives.
- Diseases, such as foot-and-mouth, classical swine fever, rabies, and new world screwworm are a constant threat to the livestock industry causing millions of dollars in economic losses.
- Zoonotic diseases also pose a threat to human health. The alarming increase in the number of such diseases, including the H1N1 influenza pandemic in 2009, is of global concern. Some 61% of contagious diseases come from animals and, of these, 75% are considered emerging diseases.
- The livestock sector has made an important contribution to food security and poverty alleviation. However, policy and institutional reforms as well as significant public and private investments are required for small landholders to take advantage of the opportunities offered by growth in the sector.

### • Recent Trends

#### *Balancing growth with environmental concerns*

With its large areas of pastureland, mild climate and production of inputs including feeds (grain, soybean) and fertilizers, Latin America has all the natural ingredients to be a major livestock producer. In fact, the region is the world's leading exporter of beef and poultry and the third largest pork exporting region. Given world demand projections, exports are expected to continue rising in coming years creating opportunities for local producers to expand their share in traditional markets and export to new markets.

Moreover, growth in grain and oilseed production in the region has enhanced the competitiveness of all its livestock industries.

On the demand side, economic growth and higher incomes are also driving up domestic demand for beef and other livestock products. Demand for food and especially meat is growing faster in developing countries than in developed countries due to higher rates of population and income growth (FAO, 2009a).

The recent economic crisis has caused a short term reduction in the prices of livestock products which

has cut producer margins. The long-term trend of increasing prices for feed is also hurting margins. However, as the world economy recovers livestock production and trade is expected to rebound along with producer returns.

Meanwhile, there are serious concerns about the impact of livestock production on the environment including deforestation, land degradation, loss of biodiversity and greenhouse gas emissions. Cattle production has huge environmental costs that are not often factored into the price of steak sold in North American or European supermarkets. In North America, the common practice of intensive cattle and dairy farming involves confining animals in feedlots and feeding them corn, soybean or other grains. In LAC, animals eat healthier and live more natural lives but extensive farming, as the name suggests, requires large areas of land for animals to graze. As a result, the number of cattle produced in the region per unit of land is very low – an average 0.7 animals per hectare – and could get lower if land degradation continues unchecked.

Part of the problem is that expanding crop production in South America is pushing cattle production into ever more marginal and environmentally sensitive areas while simultaneously increasing incentives for more feedlot production of beef with grains. Although forage-based beef production has a strong tradition in the region, there are growing market incentives for more intensive beef production systems and a growing recognition that feedlot production may be the most feasible way to increase beef productivity. Ironically, increased food, feed and biofuel demand for grain and oilseeds make the additional demand for cattle feed particularly inopportune. However, the ability of cattle to consume by-products and low quality feed resources may mitigate part of the increased crop demand. A careful balance is needed between cattle production in fragile environments and the alternative of using more feed for beef production.

More intensive beef production systems, along with concentrated pork and poultry production also bring other environmental challenges. Manure

management issues and water and air quality concerns are heightened in concentrated industrial production facilities.

Beef production is also affected by environmental problems, especially in the case of small producers. Small producers account for more than 60% of the total production of meat products in LAC including cattle, poultry and pigs while production of other animals including rabbits, goats, sheep, South American camelidae and guinea pigs is also an important source of food and employment in many rural communities. However, family farmers and small livestock producers are more vulnerable to climate change than commercial producers since they are usually forced to graze their animals on marginal land where environmental conditions, including water supplies and pasture quality, can be precarious.

Small livestock producers also tend to be more exposed than commercial ranches to the volatility of input costs and international food prices. For example, the recent relative increase in input prices compared to meat prices has reduced the comparative advantage of livestock production. Between 2004 and 2008, while average prices of beef, pork and poultry meat varied by 54%, -9% and 31% respectively, input costs grew by 380% for beef (mainly pasture fertilizers) and more than 85% for pork and poultry feeds. Although commodity prices have come down from the peak in 2008, it appears likely prices will stabilize at generally higher levels and be subject to increased volatility.

Higher grain prices in the long-term give ruminants (cattle, sheep and goats) the advantage over monogastric species (pork and poultry) due to the ability of ruminants to utilize a wider variety of feedstuffs. However, as previously noted, cattle are increasingly produced in environmentally sensitive areas and are pushed towards direct competition with other types of livestock production for feed. The economic opportunities created by growing meat demand and increased production potential must be weighed against the potential for serious and long term environmental degradation.

### ***Increased risk of animal diseases for small livestock producers***

Government-imposed sanitary and trade restrictions as a result of emerging diseases have squeezed cash-strapped small producers forced to comply with international norms in this regard. The spread of diseases is a major threat to small producers unable to afford veterinary attention or, in many cases, access to public health services that tend to be precarious in rural areas.

In South America, Foot-and-Mouth Disease (FMD) has had the greatest economic impact on the cattle and pork industries. The disease was eliminated from North America in the 1950s, but not in South America where the disease is still present. Chile is the only country in the region free of the disease without vaccinations. Uruguay is free with vaccinations while Argentina, Brazil, Paraguay, Colombia and Peru have free-areas with and without vaccination. Finally, the disease is endemic in Ecuador and B. R. of Venezuela, which have shown high rates of annual outbreaks, especially in 2009.

Zoonotic diseases such as bovine tuberculosis, brucellosis and rabies cause millions of dollars of lost productivity in animal production as well as presenting a human health hazard. Pests such as ticks and the New World Screwworm (NWS) also cause huge animal and productivity losses. Failure to control diseases and pests threatens access to export markets for meat producers. Part of the problem is that, unless a disease results in an outbreak or immediate threat to international markets, it is often ignored by governments. The result is that producers, especially small producers, continue to bear the cost of the disease in terms of lost productivity and lower economic returns.

After FMD, Classical Swine Fever (CSF) is the second most important disease for the swine industry and small holder sector in terms of sanitary and economic consequences. The resulting economic losses can be devastating especially due to decreased production, animal mortality, prevention/treatment costs, trade restrictions and negative impacts on food security.

Bovine Spongiform Encephalopathy (BSE), or mad cow disease, has also caused global concern because of its economic and commercial impact (USD 5 billion in North America since its first outbreak in Canada in 2003) as well as its potential to be passed from animals to humans. This disease is not present in LAC yet, but it could arrive with infected animals or animal products. Prevention is costly and requires coordination along the whole cattle production chain. FAO has provided technical support for veterinary services within the region since 2002 to help prevent the disease.

The Highly Pathogenic Avian Influenza (HPAI) H5N1 strain of 'avian flu' has not reached Latin America yet either, but outbreaks in Asia have increased monitoring of domesticated and wild birds in the region. Both poultry and pork sales have been affected by the recent outbreaks of bird and pandemic influenza AH1N1, misnamed swine flu, seriously affecting these sectors.

### **● Livestock outlook**

#### ***Increased efficiency and productivity needed to increase sustainable production***

The outlook for livestock production in Latin America and the Caribbean is promising due to the rising demand and prices for animal products worldwide, but the challenge going forward is how to increase productivity while reducing greenhouse gas emissions and minimizing deforestation.

Developed countries still consume far more meat per capita than the rest of the world, but developing countries are expected to drive global demand growth for meat in the coming decade. Most notably, China is expected to become ravenous for beef as incomes rise. This country represents a huge market; just one kilogram of meat consumption per capita in China is equivalent to Canada's current annual production. China currently meets most domestic demand internally and is not a major beef trader. However, China is unlikely to be able to keep up with domestic demand if beef consumption grows significantly, which means it could become a major beef importer.

The recent economic crisis reduced world demand for beef as consumers switched to cheaper alternatives like chicken or pork. However, according to the IMF (2010), the global economy is recovering faster than anticipated. As the recovery gathers steam and trade flows resume, demand for beef, pork and poultry is expected to rise.

Nevertheless, the negative impact of recent feed price shocks and the economic crisis on world beef production is expected to continue as higher feed prices lead to long-term adjustments in the beef industry. Once demand recovers, however, the price of beef is expected to rise 50% by 2017 (OECD-FAO, 2009). In the LAC region, beef production continues to expand in the major beef producing countries with the exception of Argentina.

The pork industry has been particularly hard hit by the economic crisis and the impacts of the Influenza H1N1 pandemic 2009. World pork production increased in 2009 but trade was sharply reduced by closed borders and consumer fears. Still, pork production in the LAC region continued to expand helping offset lower production in other regions, which is a trend that is expected to continue in 2010.

### *Beef*

Brazil currently dominates production and exports from the region and will likely increase production in the coming decade, partly by recovering degraded soils and intensifying beef production in cleared forest land. Brazil has taken advantage of its vast land area and rich natural resources to increase production of crops and meat. The beef industry is the country's primary forage user and continued development of cropland has forced the industry into undeveloped and more fragile environments. The rapid and often uncontrolled development of vast regions of Brazil for crop and livestock production has created tremendous environmental challenges that must be addressed.

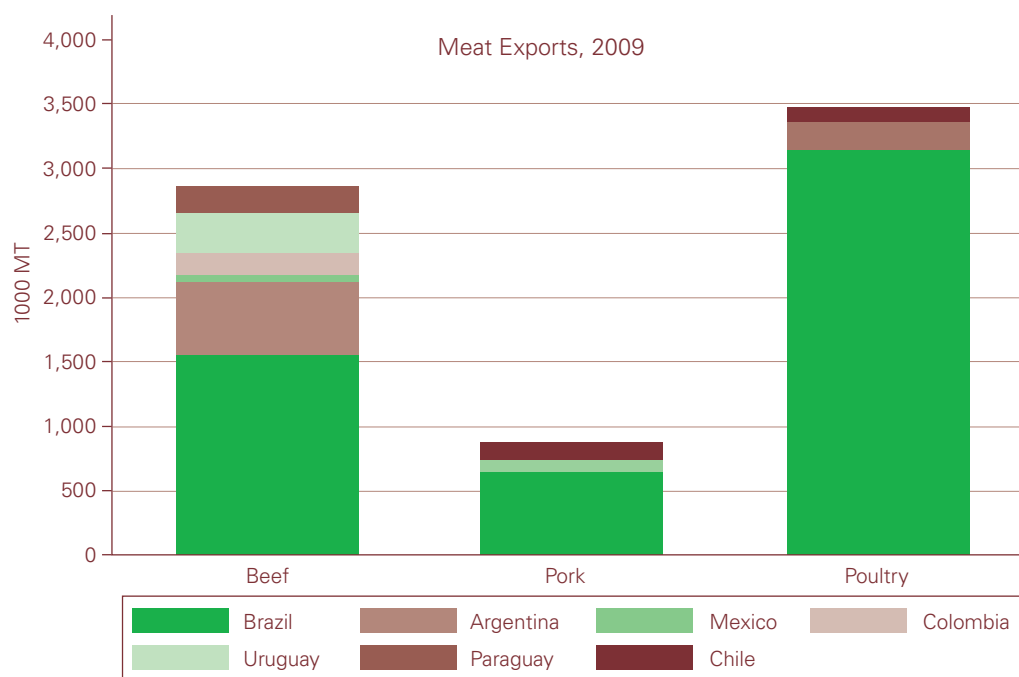
Brazil's large and growing grain and oilseed sector offers increasing opportunities for intensive beef production in feedlots. This could allow for different qualities and types of beef production as well as increased quantity and may open up additional export markets. Continued infrastructure development, especially transportation capabilities, is key to agricultural development in the region.

The second largest beef producer in Latin America is Argentina. The beef industry in that country has experienced considerable hardship in recent years. For more than a decade substantial land area in the Pampas has been converted from grassland into crop production, which has forced the beef industry to relocate further west and north into drier and more marginal areas. This trend accelerated in 2007-2008 with the dramatic increase in crop prices.

The Argentine government's concerns about managing inflation and ensuring domestic beef supplies have led to policies that restrict exports and control domestic prices. The result has been very low returns that have encouraged cattle herd liquidation. A severe drought since 2007 has further reduced forage production and contributed to poor cattle condition and productivity. Significant herd liquidation in 2008-2009 maintained beef supplies initially but a smaller herd size is expected to reduce beef production in 2010.

Although Uruguay is a small country, it is the third major beef producer in South America. Uruguay consumes large quantities of beef per capita, second in the world only to Argentina, but total beef production far exceeds domestic consumption. As a result, Uruguay exports the largest percentage of its beef production of any Latin American country (60% in 2009). Both the industry and the government are focused on maintaining export market access and competitiveness. By virtue of this focus, Uruguay has aggressively controlled diseases and implemented traceability systems, which allowed a quick recovery of market access following the last Foot and Mouth disease outbreak.

**Figure 5 |** Latin America and the Caribbean Account for Roughly 40% of World Beef and Poultry Exports



Source: USDA-FAS

Mexico is the eighth largest beef producer and consumer in the world and, as the fifth largest beef importing nation in the world, is the only LAC country that imports a significant quantity of beef. However, Mexico is a beef importer by virtue of its geographic location and unique relationship with the beef industry in the United States.

Colombia is a relatively new beef exporter in the region, but it is expected to gain market share in the future thanks to its recently obtained status as a Foot and Mouth disease-free country.

Given the extensive farming system practiced in most of LAC, livestock productivity per hectare is below the world average. But, as demand for exports increase, livestock productivity must improve for Latin America to maintain its market share.

The challenge is to increase production without using more land, especially because competition with biofuel and basic grains is strong in countries like Brazil and Argentina. Continued deforestation would only increase greenhouse gas emissions, potentially becoming a trade barrier for export if importers start to discriminate based on a product's carbon footprint, which is already happening in some countries.

The technology to increase productivity without degrading the land exists but the adoption rate is low in LAC because in many countries policies do not exist to facilitate investment in the livestock sector.



## ***Pork***

Pork is the most widely consumed meat in the world and is important across much of LAC. The LAC region includes two of the major pork producing and consuming countries (Brazil and Mexico) as well as three of the major pork exporting nations (Brazil, Chile and Mexico). Mexico is also the third largest pork importing country.

Pork production is even more widespread in small scale and subsistence type production systems. As a result, despite being the most consumed meat in the world, pork is the least traded of meats and international trade is dominated by a few countries. The volume of trade decreases rapidly as one moves down the list of major pork exporting countries.

Brazil is one of those major world players in pork and ranks as the fourth largest pork producer and exporter. In addition, Brazil is the fifth largest pork consuming nation. Rapid expansion of the grain and oilseed sector in the past decade has fostered dramatic development of Brazilian meat industries and pork is no exception. Increased global demand for grain and oilseed has increased costs and reduced returns for Brazilian pork producers but has not significantly changed the relative competitiveness of the industry as other countries have been similarly affected.

Although Chile ranks as a rather small producer and consumer of pork, per capita pork consumption in Chile is the highest in the region. Chile has a very modern, highly integrated pork industry that serves the domestic market and allows exports of over 25% of total production. The pork industry in Chile operates under very strict sanitary conditions, which has increased access to export markets. Chile will likely suffer some economic slowdown as a result of the large earthquake that hit the region in February 2010 but the potential impact on pork production, consumption and exports are not yet clear.

Argentina is a very small producer and consumer of pork compared to beef and poultry. However, the government has recently indicated an interest in promoting increased pork consumption in the country.

Mexico is the eighth largest pork consuming nation and the tenth largest pork producing country in the world. Pork consumption growth has outpaced production in recent years resulting in increased pork imports. As with beef, pork consumption is very price sensitive and close proximity to the large U.S. pork industry provides easy access to abundant supplies of low-price and popular pork products to supplement domestic production. As a result, Mexico is the third largest pork importing country and the only major importer in LAC.

Mexican pork production decreased in 2009 by a surprisingly small amount given the huge impact of the H1N1 outbreak. Despite sharply reduced consumer incomes, pork consumption in Mexico increased in 2009 as the small decrease in domestic pork production was offset by a 12% increase in pork imports. Low prices for imported U.S. pork resulted in substantial switching to pork at the expense of more expensive beef. Pork production is expected to increase in 2010 and pork imports will continue strong. Mexican pork consumption is expected to grow but this will be tempered by continued weak consumer spending.

## ***Poultry***

Poultry meat, as with pork, is widely consumed worldwide and is produced in a wide variety of production systems. Poultry production is dominated globally by the United States, China, Brazil and the European Union. Poultry meat is the most widely traded meat globally. Poultry production - both meat and egg - lends itself to home and small-scale production and many small countries produce a significant portion of their domestic poultry consumption. This is the case for many of the smaller LAC countries. LAC also includes three of the major poultry producing and consuming countries in the world (Brazil, Argentina and Mexico), three of the major exporting countries (Brazil, Argentina, and Chile) and two of the major poultry importers (Mexico and B. R. of Venezuela).

Mexican poultry production in 2009 was unchanged from the previous year. However, poultry consumption increased as consumers gave up more

expensive beef resulting in increased poultry imports. Production is expected to increase in 2010 to support increased consumption with only a small increase in poultry imports.

Argentina also ranks among major world producers and consumers of poultry. Poultry production and consumption increased in 2009 in part as a result of reduced beef consumption. Poultry production is expected to continue expanding in 2010 and consumption will grow in the face of sharply lower beef supplies. Argentina's poultry industry is globally competitive due to abundant local production of grain and oilseeds.

## ● Policy Recommendations

*A properly managed livestock sector can contribute to the environmental and economic sustainability of rural areas.*

Latin American countries need an environmentally and socially responsible policy framework for animal production and health to reduce the impact of livestock production on the environment and improve productivity.

Part of the reason such a framework does not exist is that governments, producers and consumers are ill-informed about interactions between livestock and the environment. Nor does it help that sustainable farming methods take longer to implement than the short-term political vision of most governments allows. In fact, short term political measures to reduce domestic prices or increase domestic food supplies, such as taxes on beef exports in Argentina, could have a detrimental effect on the industry in the long-term.

Governments must accept that sustainable livestock policies could have a short-term political cost because consumers may end up paying more for meat. That does not mean governments should give up, rather they should work to make consumers and producers understand the connection between livestock production and the environment so they value meat produced in a sustainable way.

It's a fact that the only contact many inhabitants of large LAC cities have with livestock is in the meat section of their local supermarket. Since people are alienated from their sources of food in general, there is less awareness and governments tend to neglect the needs of agriculture and livestock producers. In addition, the remoteness of livestock production in many areas, such as the Amazon basin and other poor rural areas in the region, makes it difficult, though not impossible, for governments to enforce regulations and health standards in these areas.

As markets develop, the initial focus of meeting consumer demand is largely based on the quantity and quality of the products and understanding consumer preferences. However, consumers are increasingly giving more attention to non-consumption or social attributes. In developed countries, there is a recent surge in interest in organic farming and consumers are demanding food that is produced with lower social and environmental impacts. This means that if Latin America wants to continue leading the world in beef exports in coming years, policies are needed that help producers increase productivity while at the same time lowering emissions, using available land more efficiently and improving safety and quality of food products.

There is also growing global attention paid to animal welfare issues. Ultimately, sustainable production hinges on the use of socially acceptable production practices. However, as previously noted, many consumers have little knowledge of the realities of animal production and education is needed to ensure that standards are reasonable and not excessively costly.

Sustainability is important given the mounting pressure on emerging countries and livestock producers to reduce their greenhouse gas emissions. Since access to animal products from developing countries could be affected by new global environmental agreements, it is important these countries begin to prepare now for this scenario.

Governments can also help producers reduce carbon emissions as a way of strengthening their negotiating position in trade deals. The livestock sector, through



methane emissions and deforestation, is the second major contributor to climate change after the energy sector in most countries of the region. But reducing methane emissions and increasing production without deforestation requires financial incentives and sustainable public policies.

### ***More investment needed in technology, research and development***

Governments can help livestock producers by investing in research and development through universities and public institutions. The technology for increasing productivity exists, but it must be adapted to local environmental conditions. To achieve this, public and private resources are needed for technology development and technical assistance

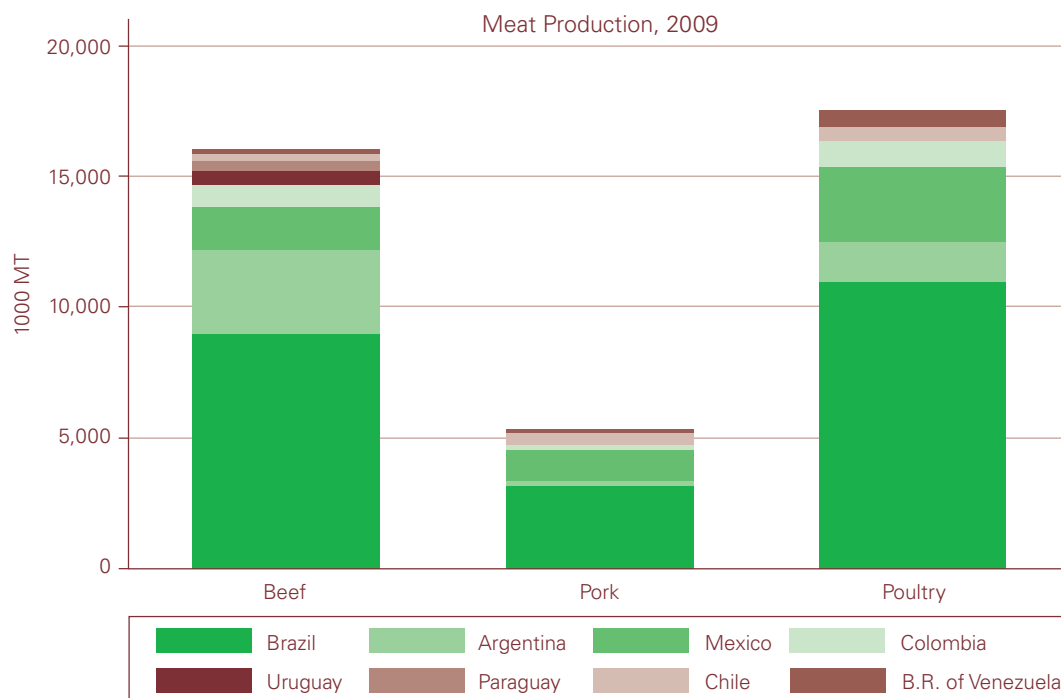
programs to teach farmers how to use the technology most efficiently at a local level.

In the past, investment in agriculture has focused on subsidies in rural areas but this can make farmers dependent on government assistance. In addition to subsidies, public investment should include low-interest loans and improved access to credit aimed at small producers as well as help entering new markets.

Governments could also help improve productivity and reduce environmental impacts simultaneously by paying producers for environmental services such as carbon fixation, restoring degraded land, water conservation and biodiversity.

Carbon fixation projects, which help offset carbon emissions from livestock production, can include

**Figure 6 | Beef and Poultry Production Far Exceed Pork Production in Latin America and the Caribbean**



Fuente: USDA-FAS

planting trees on pasture land and planting types of grass that capture more carbon and feed more animals. In this way, countries can reduce emissions, comply with possible future emissions limits and even participate in the international carbon market, for example through certifying carbon fixation projects as Clean Development Mechanism (CDM) projects able to sell carbon credits to foreign companies.

Universities and research institutions in the region and other parts of the world have developed a range of technologies to recover land degraded by livestock grazing and to facilitate the sustainable intensification of cattle farming using integrated agriculture-livestock-forestry systems. Latin American governments and universities should strive to increase international cooperation and strategic alliances with the private sector, in order to facilitate the transfer of knowledge and expertise in this area.

As regards the use of water, artificial irrigation is not common in LAC, over 90% of pastureland is rain fed, but rainwater can be used more efficiently. This can include building reservoirs to store water, installing drains to prevent floods, developing grasses and forage that are more tolerant to droughts, and using seasonal pasture land management techniques suitable to specific areas.

Paying farmers to increase biodiversity including flora, fauna and micro-fauna (soil microorganisms) would also help prevent deforestation and soil degradation, while diversifying the number of animal products for export and generating new sources of income through agritourism.

Universities can also play an important role in livestock productivity through the development of animal genetic resources better adapted to environmental conditions prevalent in tropical countries. Characterization and marker-assisted selection of animal genetic resources are key instruments to support breeding programs and sustainable livestock development. Developing crops tolerant to drought conditions, for example, can reduce the impact of climate change on livestock production.

### ***Small-scale livestock production contributes to food security and poverty reduction***

Family and small-scale livestock production are important for food security, poverty reduction and rural development in LAC. Small producers are especially important in non-exporting countries where they supply most of the domestic demand for meat and dairy products.

However, although meat consumption in the region is growing, it is still much lower than in developed countries. The participation of meat in the protein intake of low-income families in developing countries is just 22% compared to 60% in developed countries.

Public policies aimed at improving nutrition and food security should focus on small livestock producers to help them increase productivity and incomes. With this kind of support, producers can continue supplying a variety of animal products for consumption in vulnerable urban and rural communities.

In the short term, small-scale farmers need programs to help them recover from the economic crisis or else many may be forced out of business, taking jobs and food supplies with them.

But in the long term, public investment in price reporting and market information systems would help small producers who often have little information about the true market value of the products they sell. In many cases, the inherent information imbalance of buyers and sellers allows market intermediaries to exploit producers, who are further encouraged to produce in unsustainable ways in order to cut costs.

Urbanization is a major driver of meat demand (FAO, 2009a) and, given the previous point, there is an important role for governments in developing infrastructure that reduces marketing (time, place and form) costs and provides small producers with reliable access to markets. This includes transportation, processing and cold storage as well as financial and risk management services. This can

be accomplished by facilitating partnerships or the creation of clusters of producers to increase their production capacity and negotiating power.

To access new markets and boost productivity, producers need access to information and technology which they could obtain in exchange for environmental services, as mentioned above.

Finally, government and international community support is needed for regional programs to improve the livestock component of family and small-holder agriculture in Latin American countries, especially to ensure the continued production of animal species that are culturally and economically important to local communities.

#### ***Efforts to coordinate animal disease control among countries and small producers***

All too often, developing countries will create, sometimes inadvertently, dual animal health and food safety systems and focus efforts only on achieving sanitary conditions in industry segments and markets targeted to exports. This leaves behind domestic producers and consumers and creates additional enforcement challenges. Long term sustainability of export markets depends on raising domestic health and food safety standards to equivalent levels. After all, domestic producers and consumers deserve nothing less.

Funding and support for veterinary services is needed to prevent diseases and control outbreaks if they occur. Veterinary services should coordinate with public health services to better prepare for health emergencies and coordinate in the event of outbreaks of diseases such as BSE, NWS and avian flu, which can be transferred from animals to humans.

Large commercial ranchers also have an interest in ensuring that small producers have access to veterinary services because one infected animal can infect hundreds of others and affect the whole industry if not detected in time.

Better coordination is also needed at a regional level in the Southern Cone, the Andean countries, Central America and the Caribbean, to control animal diseases and prevent them spreading to other regions. Although regional agreements exist, a lack of political will means they are often not implemented properly.

Protecting livestock from trans-boundary (cross-border) animal diseases depends very much on public investment to help producers. Over the long term, improved sanitary conditions are key to continued development of the region's livestock sector. Ultimately, control of Foot-and-Mouth disease will open new export markets and reduce the economic gap in animal and meat values between FMD-free and FMD-endemic countries. Although the initial investment to eradicate FMD and other diseases such as CSF, NWS, BSE, is high, the long term cost of repeated outbreaks is undoubtedly higher. Not only is it costly to control disease outbreaks, but they expose small and large producers to increased volatility and risk that can threaten their economic survival. Sanitary conditions can be enhanced through better coordination between international animal health organizations and national veterinary services to stop diseases such as FMD from spreading between countries, causing a potential sanitary problem and millions of dollars in economic losses. International market pressures will continue to grow for animal identification and product traceability systems that are needed to ensure compliance with sanitary and food safety regulations.

International cooperation can also play an important role in the sustainable management of the livestock industry. International agreements exist on biodiversity, genetic resources, animal health, climate change, water and desertification amongst others but these need to be implemented at a local level.

International organizations can help by facilitating cooperation between countries and the exchange of information between research and technology institutions. FAO, for example, has developed

the technical and operating capacity to support governments in making decisions about the major challenges facing the livestock sector with an emphasis on developing countries.

## ● Conclusions

Latin America and the Caribbean face several key challenges simultaneously: the enormous potential of the region for expanded livestock production to meet growing global demand for meat and dairy products; the daunting environmental challenges that threaten the vast and unique resource base in the region; and finally internal economic growth and development needs.

The growth of Latin America's livestock industry is based on exports, but domestic demand for animal products is also expected to rise. The small-scale production of livestock provides jobs and food security to millions in the region, but it needs to be strengthened. The livestock industry is unsustainable in the long-term if productivity cannot be increased without negative environmental consequences.

To increase productivity in a sustainable way, producers need policies that reward sustainable land use, water conservation, biodiversity and emissions reductions as well as better animal health to prevent zoonoses.

Soft loans would help commercial producers to recover degraded land, create integrated sustainable agro-forestry-livestock systems and improve productivity. Small producers, in particular, need access to financing and technologies that help them improve productivity on existing land without being obliged to clear new land for grazing.

These policies could lay the groundwork for a sustainable and profitable livestock industry in the long-term but they require political will, strong institutions and cooperation between ministries, research institutions, non-governmental organizations and other stakeholders.

LAC's livestock industry has an opportunity to grow to meet world demand, but increasing productivity should not be at the cost of the environment. The technology and skills exist to do this but governments must invest more in the right areas and implement integrated agriculture-environment-rural development policies.



## Capture fishing and aquaculture

Industrial and artisanal capture fishing have reached a threshold of maximum, sustainable catches. Commercial and subsistence aquaculture still have significant potential to satisfy future demand, but fulfilling that potential depends on public policies that avoid environmental harm and optimize economic and social returns



### FACTS

- Peru and Chile dominate industrial capture fishing in the region with annual output of 7.0 and 4.8 million tons, respectively, ranking then among the top 10 fish producing countries in the world. Next on the list are Mexico and Argentina, which also report significant catches.
- According to many estimates, production from capture fishing has reached maximum sustainable limits in some of the principal fisheries (de Young, 2007). Consolidated volumes from industrial capture fishing in these countries have ranged in the past decade between 12 and 14 million tons per year. This output largely consists of small pelagic species with low commercial value that are used primarily in the production of fishmeal and fish oil.
- Commercial aquaculture has achieved notable and sustained growth over the past three decades. According to the most recent report on The State of World Fisheries and Aquaculture 2008 from the Food and Agriculture Organization of the United Nations (FAO), growth in aquaculture production in Latin America and the Caribbean (greater than 20% annual average), is three times the global average of recent years. However, the limited room for future growth in the supply of fish meals and oils, a fundamental component in fish diets, combined with higher prices for those inputs and for energy, as well as the rise in infectious disease outbreaks such as the one caused by the salmon anemia virus (ISAV) in Chile (the leading aquatic producing country in the region), foreshadow a possible short-term reduction in regional production. Nevertheless, sector growth expectations in the region remain above the world average as Latin America and the Caribbean possess the world's largest unexploited area environmentally suited for aquaculture.
- Artisanal fisheries (commercial and subsistence alike) remain a major source of protein rich foods, but their productive potential is increasingly limited by conditions prevailing in coastal and medium-altitude stocks that already show signs of depletion in most of the traditional target species. This development is reflected in the trend of capture fisheries moving further away from the coasts, which entails higher catch costs and risks to fishers.



## FACTS (Cont.)

- In many instances, subsistence artisanal fisheries, and micro and small-scale aquaculture remain outside the purview of public policies and sector development programs despite their important food and economic contributions to impoverished rural populations. Pressure on coastal fishing resources (especially tropical ones) continues to build in response to migratory processes, the search for employment alternatives (tourism, processing, etc.) and the development of more extensive commercialization networks. LAC production from continental fishing, 90% of which is concentrated in only six countries (Brazil, Mexico, B. R. of Venezuela, Peru, Argentina and Colombia), peaked during the decade 1996-2005 with average catches of approximately 550,000 tons per year, or 5.7% of global continental catches, and close to 3% of total catches in the region and 2.7% of total Latin American fishing production (including aquaculture). Subsistence extractive activities along the shores of rivers, lakes and reservoirs continue to develop using rudimentary techniques with low yields and scant support from sector policies.
- The diagnostic and recordkeeping systems for this segment of the region's capture fisheries are scarce, basic, and unreliable both for artisanal marine and continental fisheries, which is a serious weakness for policy decision making. This lack of information has led to a serious underestimation of the sector's contribution to national economies, food supplies, and employment as well as the social well-being of the poorest communities.
- As in the case of aquaculture, there is an abundance of unexploited rivers and lakes in the region whose productive potential and ability to improve rural well-being could be unleashed through proper institutional arrangements and proactive policies by local governments.

### • Trends

#### *Capture fishing peaks as aquaculture grows at a brisk pace*

The fishing and aquaculture sector is one of the fastest growing food industries worldwide, expanding at an average annual rate of more than 8% largely thanks to the boom in aquaculture during the past decade in Asia and South America. Aquaculture currently supplies approximately 50% of all fish, crustaceans and mollusks for human consumption and demand is outpacing global population growth (Fisheries and Aquaculture in Europe, 2009).

Industrial capture fishing in the region has been relatively stable in recent years, reflecting the extent to which the stocks of the main fisheries have reached maximum sustainable yields, which means no significant expansion of catches can be expected in the near future.

In Latin America, an estimated 2 million people depend on artisanal fisheries (FAO, 2006c), generating at least USD 3 billion in revenues. The techniques and strategies used in artisanal fishing are generally more selective than industrial capture fishing, and thus less harmful to aquatic ecosystems. This practice also consumes less fuel per unit of effort, making it more cost efficient in its use of natural

resources than high-tech industrial fishing, which is highly predatory and non-selective (Pauly, 2006).

Small-scale aquaculture, which is practiced extensively with limited resources in practically all countries of the region, provides jobs (direct and indirect), profit and protein – complete or partial – for an estimated 80,000 families (Flores-Nava, 2009<sup>14</sup>). But many of these micro-producers are located in remote areas beyond the reach of government support programs, leaving them to remain subsistence producers even though their combined production capacity could contribute significantly to their countries' economies if they were incorporated into value chains.

Aquaculture is a major contributor to the region's supply of animal protein (18.5% in 2006), a percentage that is probably higher than official figures suggest due to the general trend of underestimating and underreporting the contribution of small-scale and subsistence fishing (FAO, 2009b). Although Latin America and the Caribbean account for only 3% of global aquaculture volume, the region has shown the highest average annual growth rate of any region (22%), followed by the Near East (20%) and Africa (12.7%) (FAO, 2009b).

Despite the strong growth of aquaculture in the past two decades, it has not followed a uniform pattern of development in Latin America and the Caribbean. In most countries, aquaculture evolved from a rural and experimental phase into a promising industry capable of generating considerable export-driven foreign currency returns. The move from a rural or small-scale level to a commercial industry has not been easy or gradual, and has been plagued with setbacks such as disease outbreaks in Ecuador in the 1990s and more recently in Chile with the outbreak of the infectious salmon anaemia virus (ISAV). Nevertheless, commercial aquaculture has emerged in Chile, Ecuador, Honduras and Costa Rica – among others – more as a source of foreign currency revenues than of food, while in other LAC countries such as Mexico and Brazil aquaculture serves as a major source of food for local markets.

With the exception of salmon farming in Chile, shrimp farming in Ecuador, and most recently the production of carp, tilapia and shrimp in Brazil, commercial aquaculture is still in its infancy in most countries in the region with small production levels in global terms, but relative returns are considerable and potential output immense assuming that the necessary technological, institutional and financial advances can be achieved.

### *Regulation of capture fisheries and aquaculture in LAC*

Fishing-sector regulation is highly diverse and heterogeneous throughout the LAC region, ranging from countries with highly structured and centralized systems such as Peru, Ecuador and Chile, to systems in which authority is delegated to regional and municipal authorities as in Mexico, Brazil and Argentina.

Capture fishing and aquaculture production systems in some countries of the region are highly capital and technological intensive (salmon and shrimp farming), while those of other countries are labor intensive and less advanced technologically. In most countries, the public administration of capture fishing and aquaculture is managed at the deputy ministerial level (Peru, Chile, Ecuador Argentina, Panama and Mexico), by directorates (Honduras) or by public institutes (Costa Rica and Colombia). Only Brazil has a cabinet level position in charge of fishing after the creation in 2009 of its Ministry of Fishing and Aquaculture. Most countries have fishing and aquaculture laws that were drafted several decades ago and which mainly address offshore capture fishing with more of an emphasis on “regulating resources” than on managing fishing units or fishers (FAO, 2007; de Young, 2007). As a result, regulation retains a highly biological slant with little regard for economic and environmental issues. Most of the laws that govern the sector make mention of aquaculture or small-scale capture fishing in only a couple of articles despite the sector's huge contribution in economic and social terms and as a food source.

<sup>14</sup>Personal correspondence with the chapter's authors



The regulatory framework of several countries in the region includes support programs for artisanal fisheries and limited resources for aquaculture. However, sector policies are often based on unreliable information and efforts directed toward the unconditional transfer of resources to address low productivity and lack of competitiveness. This means that policies fail to focus on building capacities aimed at achieving productive and economic self-sufficiency.

LAC commercial aquaculture has developed with an export focus that is concentrated on a select few countries and species (salmonids, shrimp, tilapia and some mollusks and bivalves). This process was facilitated early on by policies that tended to promote capture fisheries and rural aquaculture, but which quickly evolved toward more liberal, minimally invasive policies that left the sector's development in the hands of the private sector. As a result, aquaculture was oriented primarily toward satisfying the demand of developed countries, taking advantage of highly suitable environmental conditions in the region's ecosystems, and the permissive institutional environment favored by public policies (Agüero, et.al., 2010).

State management of industrial capture fishing has kept its focus on regulating total catches through a range of mechanisms to control inputs and production (such as seasons, bans, total quotas and others), maintaining the industry's basic structure with a focus on traditional pelagic species for the production of meals and oils; exceptions include migratory fishes such as tunoids and, to a lesser extent, those species destined for human consumption (white fish, hakes, etc.).

Growth in small-scale capture fishing and rural aquaculture has stalled and they are given scant attention in the development policies of most countries of the region. Only the sector's most advanced and organized segment, traditionally known as artisanal fisheries, is the subject of growing government attention in response to continuing pressure from organized groups of producers.

Only in recent years have some governments of the region more decidedly set policies to reinforce environment safeguards. The motivation came in the form of ecological disasters brought on by inadequate planning, as well as international and local pressure from conservation groups. However, governments have been careful to create an investor-friendly climate (especially for foreign investment). As a result, according to recent data, approximately 84% of LAC aquacultural production is concentrated in four countries (Chile, Brazil, Ecuador and Mexico) and in only three species (salmonids, shrimp and tilapia), two of which (salmon and shrimp) are for satisfying gourmet tastes and not necessarily food needs.

### *Lack of information limits fisheries development*

While some countries have information and data systems that are, up to a point, appropriate for their main fisheries (Chile, Peru and Mexico), as well as enough trained professionals, the vast majority of countries have yet to develop a proper technical and scientific capacity or data and information systems that would make it possible to estimate and project fishery performance. Existing fishery statistics are generally out of date, inconsistent, unreliable and hard to access. Control, oversight and accountability systems are weak, inefficient and marred by a predominance of permissiveness and ultimately corruption.

This situation is even more critical for small-scale capture fisheries and rural aquaculture, and there are serious gaps in statistics and qualitative information about the sector, making it all the more difficult to fully assess and analyze the sector's limitations and potential, which is fundamental for making management decisions and effective policy design. Scientific research regarding the various aspects of this sub-sector is practically nonexistent or confined to very specific case studies in the best of instances, and there is practically no public investment for such purposes. Professionals and experts in matters of artisanal/small-scale fishing and rural aquaculture are far too few in number.



### ***Continental fishing and rural aquaculture potential not fully exploited***

The potential of continental fishing and rural aquaculture has not been analyzed, estimated or exploited. While the region's continental fishing has been the subject of extensive research, the information is disperse and the analysis is of a case-specific nature. Knowledge, therefore, remains speculative. Recent data from FAO (COPESCAL /XI/3 S, 2009) indicates that 73% of the continental fishing in the region is conducted by only three countries (Brazil, Mexico and B. R. of Venezuela) with total hauls of roughly 600,000 tons annually, and with strong prospects for development in river systems, reservoirs, coastal areas and mangroves. There is also important potential in the Amazon region where it is estimated that a mere 30% of aquatic species are exploited and there is an urgent need to provide job and food alternatives<sup>15</sup>. Subsistence capture fisheries continue to operate in Latin American rivers, lakes, lagoons, reservoirs and dams with little in the way of technology and investments. They generally supply local markets especially in inland and mountainous regions. There is no reliable information on the scope of their production and sales. However, there is considerable room for growth in such operations to the extent that it is possible to establish systems for assigning access rights in rural communities, and for promoting technical, administrative and financial-assistance programs.

The situation is similar for small-scale fishing communities in coastal zones. In this regard it is worth studying the experience of Chile's Benthic Resource Management Areas (AMERBs by their Spanish acronym). While controversy surrounds some aspects of the project's implementation, it provides an efficient alternative for granting access rights to fishing communities (whether coastal or rural) for benthic or stationary species such as abalone, sea cucumber or mollusks. Good management in this way also helps to avoid the traditional problem of the "tragedy of the commons" (Hardin, 1968).

<sup>15</sup> The Amazon Basin extends over an area of approximately 6,869,000 km<sup>2</sup> of Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, Suriname and B.R. of Venezuela. While some authors consider that catches are running at peak levels (Van Brakel, M. 2001), other estimates (Bailey and Petrere, 1989) calculate potential production of 900,000 tons/year, twice the approx. 450,000 tons of production recorded in 2006 (COPESCAL / XI/3 S, 2009).

It is useful to consider resources for ornamental fishing, which may not have much economic importance in the region but which is a vital income source for a significant number of families in countries such as Brazil, Peru, Colombia and Guyana, injecting several million dollars into local economies annually. But reliable statistics on sales of ornamental fish are hard to come by due to the wide range of methods used by countries to report and compile data, false declarations on export volumes and the wide array of names used for species or groups of species. The Commission for Inland Fisheries of Latin America (COPESCAL), during its 11th meeting on ornamental fishing held in Manaus, Brazil, in September 2009, reports a growing trend in the total export value of ornamental fish, which rose from an estimated USD 13 million in 2004 to USD 18 million in 2007, averaging USD 15.5 million annually over that period. This activity also provides approximately 5,000 direct jobs and about the same number of indirect jobs, with roughly 50,000 people benefiting from the industry. Given the scale of these numbers and the lack of reliable data, more research is needed on an activity which may hide major ecological imbalances given that this type of fishing has developed under conditions of relatively free access.

### **• Short and medium-term outlook: Current challenges**

Capture fisheries and aquaculture in the region face a wide range of problems largely arising out of bio-economic, environmental, institutional, techno-economic and social factors.

#### ***Biological-economic and environmental factors***

There is little room for growth in marine capture fishing hauls (whether industrial or artisanal), both on the global and regional level. Recent figures (see Box 7) indicate that greater hauls in the near future can come from a mere 20% of current stocks. Capture fisheries in Latin America, dominated by the production of small pelagics from Peru, Chile, Mexico and Ecuador, offer clear evidence that maximum sustained production levels have already



## BOX 7:

### Alarming overexploitation of fishing resources

The current situation of the world's fishing resources is dramatic. In its most recent report on The State of World Fisheries and Aquaculture 2008, published in late 2009, FAO said that 80% of the 523 fish stocks chosen on the basis of the availability of information have been classified as fully exploited or overexploited (or overexploited, depleted and recovering). Of that total, 52% were fully exploited, 19% overexploited, and 8% depleted or recovering. Therefore, no increase in their yields is expected in the near future. Only 20% of the remaining stocks would be capable of allowing for an expansion of current yields, but they are mainly species with lesser commercial value.

The number of fishing boats is now twice that of 1970, and the average haul per boat has fallen by approximately 40% despite technological advances in capture fishing equipment. This means greater effort and lower economic returns as well as a dangerous overexploitation of fishing resources. The World Bank and FAO have estimated these losses at approximately USD 50 billion a year. The fact that current marine catches could be made with half the effort, and consequent savings in energy and other resources (PROFISH, 2009), is a sign of the extent of overcapacity in the global capture fisheries fleet.

Source: Agüero, 2010. Lineamientos para un Plan de Ordenamiento de la Capacidad de Pesca en Ecuador. Consulting Report. FAO. Roma. March 2010, based on; Arnason R., Kelleher K., and Willmann. R (2008) The Sunken Billions: The Economic Justification for Fisheries Reform. Joint publication of the World Bank and FAO. ISBN 978-0-8213-7790-1.

been met (or even surpassed) and that further increases in catch rates could only be achieved in the near future at the expense of future yields and the overexploitation of existing stocks. Given that small pelagic species are the main input for the production of fish meals and oils, which in turn are the primary component of feed for commercial aquaculture, the historical growth levels achieved by

aquaculture in the past decade could be affected by rising production-input costs. Another major factor is the possible effect – as yet undetermined but probably negative – of climate change on stocks and yields. According to FAO (Sharp, 2004), climate processes and extreme meteorological events in marine waters will grow in frequency and intensity in the coming years. Due to the El Niño effect in



## **BOX 8:** Ecosystem vulnerability and aquaculture

The rapid expansion of aquaculture in some Latin American countries such as Chile, Ecuador, Brazil and Costa Rica, has awakened interest and criticism on the part of environmental groups that perceive a growing threat to ecosystems and resources.

One of the first reactions against the development of shrimp farming during the 80 and 90 came in response to the indiscriminate deforestation of mangroves to make way for shrimp ponds. In Ecuador, approximately 60,000 hectares of mangrove were cleared for shrimp farms. While this practice initially emerged in Southeast Asia, it blossomed in Latin America as shrimp farming grew into a highly profitable industry, especially in the excellent conditions that mangrove areas provide for harvesting larvae and supplying the proper water with which to cultivate this high-value species. Local government policies were oriented toward promoting “the development of mangrove areas through conversion,” awarding concessions at low costs and assigning a value of close to zero on the damage inflicted on ecosystems and the ecological functions they provide. The crisis of shrimp farming brought on by the Taura syndrome, and later by the White Spot syndrome virus, is evidence of the extent of damage caused to abandoned ecosystems. It has taken more than a decade to partially rebuild the shrimp industry in Ecuador, but the ecological damage and related costs have been assumed by the entire community.

A similar situation prevails in the case of salmon farming. Its rapid growth up until 2008 led to a lack of proper food and safety conditions and ova control systems, thereby facilitating the spread of epizootias such as that of the ISAV virus. This led to a grave crisis that has resulted in the loss of more than 20,000 direct jobs along with major social and economic consequences for the south of Chile and a significant curtailment of export volumes. Continuing problems are reported in relation to the improper use of antibiotics and coloring agents, which have a dramatic impact on the aquatic environment. Industry estimates say that it will take several years to recover to pre-ISAV levels. Nevertheless, concern about the adverse effects are not confined to fish pathogens and the indiscriminate use of pharmaceutical products, but also extend to possible changes to aquatic ecosystems and to landscapes, potentially harming tourism.

Tilapia farming is being closely watched by environmental groups given the voracity of that species which can escape from cages and negatively affect the local fauna. This was one of the reasons the Peruvian government gave for prohibiting tilapia farming for many years.

Aquaculture provides many benefits on the level of food, employment and foreign currency revenues, but under conditions of institutional weakness it can pose a major threat to the sustainability of ecosystems and their resources. There is a need to adopt eco-systemic criteria in the management and planning of coastal resources and their ecosystems, taking the interests of all parties into account (Soto, et.al., 2007).

the Southern Pacific, which has a vital influence on marine ecosystem productivity, the warming of ocean currents is expected to have a strong impact on surface waters in Latin America leading to changes in the distribution of fish and in seawater salinity.

In neutral scenarios, we can also expect to see catches of small pelagics remaining steady along with a rise in the price of fish meals, a situation already observed in 2009 and early 2010, when prices climbed to a record USD 1,800 in February, an 80% increase over the same month a year earlier ([www.pescaaldia.cl](http://www.pescaaldia.cl), 2009). The inevitable consequence of this situation, given the expansion of global aquaculture and the corresponding increase in feed demand, will be higher production costs unless significant alternative feed sources are discovered in the near future.

However, projections made by experts at the International Food Policy Research Institute (Delgado, et.al., 2003), and FAO (Wijkstrom, 2003; Ye, 1999) show that in scenarios in which capture fishing levels off or grows, by 2050 aquaculture could satisfy the global demand for fishing products left unmet by capture fishing. It is also important to consider climate aspects that could alter environmental conditions, such as how El Niño will affect the abundance, distribution, growth and availability of marine resources.

### *Institutional factors*

Among the main factors that explain the current extent of overexploitation of traditional capture fishing stocks are the prevailing conditions in terms of water access, ownership and the use of such rights. As long as property rights are unclear or ill defined (common or public property, free-access, etc.), and fishery units find fish prices attractive, they will continue to operate beyond the limits of biological renewability. In order to address this problem there is a need for institutional conditions to limit access or stop the expansion of fishing capacity.

The Code of Conduct for Responsible Fisheries calls upon countries to guarantee future generations will enjoy the largest possible supplies of fish by minimizing adverse effects on the environment, and jointly working to preserve and maintain aquatic resources and their habitat. The Code also calls on countries to use research results as the basis for defining planning goals while also setting target limits based on the best available information to ensure the link between applied research and fishing management.

But countries should be cautious about issuing a call to action when there is an absence of proper scientific information with which to set limits on capture fisheries, even when such decisions are designed to assure the proper and timely protection of resources (Precautionary Principle). When applying this principle, governments must take into account risks and uncertainties in relation to stock size, productivity and conditions, as well as the mortality distribution and impacts from fishing activities - including accidental catches - on non-target species and on the socio-economic environment.

Institutional weakness is by no means confined to capture fishing. Commercial aquaculture is also capable of subjecting ecosystems to pressures that exceed their capacity for a given period of time when farming operations are installed on a wide scale. The high, short-term returns available from certain types of farming such as shrimp or salmon encourage the industry to exceed sustainable levels. The worst outbreaks of viruses and other diseases to affect the fish and crustaceans of the region (Seagull Syndrome, White Spot Syndrome, Taura Syndrome, the ISA virus, etc.) also bring related problems of unemployment, shortfalls in foreign currency inflows and ecosystem destruction. For example, Ecuador's shrimp farming crisis at the end of the 1980's – during an industry expansion phase – arose due to a shortfall in natural larvae due to the indiscriminate clearing of mangroves to install new shrimp ponds. This damaging chain of events reflected institutional failures on the level of property rights. The emergence of the ISAV virus in Chilean salmon farming beginning in 2007,

which has resulted in a collapse of production (over 50%) along with the accompanying loss of jobs and broader economic repercussions, also came in response to the loss of institutional control and enforcement that tends to accompany an accelerated expansion of the industry.

Meanwhile, the growing “denationalization” of ecosystems in response to the rising profitability of commercial aquaculture is an issue that has yet to be properly studied. Control over a major percentage of salmon farming concessions in Chile (and indirectly their property rights) has been passed to large multinational firms through joint ventures or similar arrangements. The returns from the exports that these ecosystems generate are running at roughly USD 4 billion a year, a large percentage of which is pocketed by foreign partners or investors who pay only insignificant, nominal fees for licenses, permits, access rights or taxes. But the limited access to information about specific arrangements between local firms and their foreign partners makes it impossible to define the amount and final destination of these returns, and the rents that ecosystems and their resources generate for the host country. There is the additional problem of eventual externalities arising out of the congestion or overtaking of ecosystems in the context of weak institutional arrangements, making their internalization difficult. As a consequence, the potential social benefits in terms of employment, personal incomes and foreign currency inflows end up being absorbed on the country level by the environmental impacts and services, which are unevaluated and unpaid.

### *Techno-economic factors of capture fishing*

For more than a decade, excess capture fishing capacity has been recognized as one of the principal problems affecting the world’s fisheries (Mace, 1997). Today, the problems posed by that overcapacity remain one of the most dangerous trends for capture fisheries as they increasingly undercut the sustainability of stocks, as well as the food supplies and socio-economic benefits that fisheries can generate. In Latin America the problem of excess capacity both on the industrial

and artisanal levels, has not been fully appreciated. Worse yet, there is no clear awareness on the part of governments, decision makers or academics involved in research related to fishing governance in the region about the urgent need to attack this problem and analyze its implications (Agüero, 2007).

As a result of this lack of awareness, only a couple of countries in the region have implemented a national action plan for capacity management even though most countries are signatories to the Code of Conduct for Responsible Fisheries and the International Plan of Action for the Management of Fishing Capacity. Even though at the conceptual level several methods and tools have been developed to measure and assess capacity, on a practical level the design and implementation of alternative management policies has proven controversial as the effects are unevenly distributed among those involved in the fisheries industry. Therefore, such policies merit the establishment of participatory, transparent, equitable, gradual, global, precautionary and prioritized procedures through which to arrive at consensual solutions.

Latin America continues to lack the human and scientific capacity, as well as the information and data needed to effectively gauge and manage capture fishing capacity. Governments must recognize the urgent need to create the conditions essential for an effective governance of fishing capacity in their respective countries and display the sufficient political will and quick action that the problem demands.

The consequences of fishing overcapacity have been assessed in a World Bank study in collaboration with FAO (World Bank-FAO, 2008), that estimates global annual losses of approximately USD 50 billion, a figure that could be recovered by fishing countries through proper capacity management (see Box 7). Latin America’s excess fishing capacity competes for a fixed supply of resources (fish), thereby leading to lower productivity and considerable economic inefficiency. In response and in an effort to remain profitable, fishing fleets have responded by cutting labor costs, campaigning for greater subsidies and

seeking technological improvements. Only a few countries have managed to establish controls on fishing activities, the latter partially explains the flat-lining of fishermen's income, while the cost per captured unit rises and governments continue to pay subsidies.

### *Techno-economic aspects of aquaculture*

One of the most controversial aspects of aquaculture's development in the region is the increasing vulnerability of aquatic ecosystems as a result. The rapidly expanding and uncontrolled use of land and coastal areas not only precludes alternative uses but also generates dangerous pressures that jeopardize the structural and functional characteristics of those ecosystems.

The introduction of exotic species such as tilapia in Peru, Colombia and various Central American countries poses a potential risk to local fauna from possible escapes or, in the face of inadequate sanitary controls, the spread of diseases such as ISAV in Chile. These experiences indicate the need to reinforce and strengthen monitoring, control and enforcement systems not only in the case of marine capture fishing, but also with regard to aquaculture in the region.

Another issue that raises questions about medium- and large-scale commercial aquaculture such as salmon farming (involving salmon and similar species) is, in food terms, the very low rate of conversion of input to living biomass. Calculations from Chile's Terram Foundation show that in order to produce a ton of salmon you need approximately 7-8.5 tons of small pelagics (processed into meal at 20-22% yields), which represents a waste of proteins and resources from the perspective of the food needs of the poorest local communities (Fundación Terram, 2006).

### **• Main structural problems that hinder the sector's development**

The problems currently facing capture fisheries and aquaculture in the region vary in form and

complexity. For practical reasons, only some of these problems have been discussed in the sections above.

The nature, intensity and relative importance of each of the problems listed below varies from country to country and must be dealt with on a case-by-case basis. Similarly, the order of the following points is random with no regard for specific priorities or relative importance.

The most serious problems include:

- i. Low efficiency and weak production performance.
- ii. Social and industry organizations are not very representative and are guided more by individual than collective interests.
- iii. Little or no access to financing for productive or commercial enterprises as few credit systems incorporate risk capital or guarantees for those deemed uncreditworthy because of a lack of loan guarantees.
- iv. Major distortions in markets for goods, inputs, services and in value chains, often stimulated by subsidies that encourage inefficiency and a lack of competitiveness.
- v. Inefficient management (lack of technical capacities), highly politicized decision making, a short term perspective, a reactive management approach, weak controls and oversight, and corruption.
- vi. Weak, obsolete or incongruent institutional norms as well as opaque regulatory systems and an inability by governments to act based on regular inspections with proper geographic coverage.
- vii. Social participation in decision making is of a very partial and opportunistic nature and can be unrepresentative.
- viii. Possibly unjustified subsidies, tax exemptions and transfers.
- ix. Use of destructive methods, techniques and materials (cyanide, dynamite, and trammel net fishing, etc.) with undesirable environmental and eco-systemic impacts.
- x. Little or no connection with global markets or local value chains.
- xi. Deficient systems for traceability, quality and sanitary control, labor security, etc.



- xii. Overstocking and overfishing, as well as illegal, indiscriminate and unreported fishing. The lack of scientific data for evaluating fishing resources and determining the environmental load capacity.
- xiii. Bad fishing practices that hide the intention to catch “accompanying fauna” instead of the reported “target species.”
- xiv. Higher energy and input costs that make capture fishery and aquacultural activities economically unviable.
- xv. Poorly defined systems of access, use or ownership of resources and ecosystems.
- xvi. A lack of coordination in the management of fluvial, inter-area, shared and migratory fisheries.
- xvii. A lack of recognition of ancestral and historic rights.
- xviii. A lack of job alternatives for small-scale fishers and practitioners of rural aquaculture.
- xix. Income instability and fluctuations over time in the lives of fishermen and aquaculturers.
- xx. An absence or lack of social and healthcare benefits.
- xxi. Insufficient training and strengthening of related institutions.
- xxii. Inadequate assignment, distribution and absorption of international aid.
- xxiii. Absence of a specific regulatory framework for rural aquaculture and subsistence fishing.
- xxiv. Absence of research centers or institutes in the region for the promotion and development of small-scale capture fishing and rural aquaculture.
- xxv. Weak communication between communities of small-scale fishers in inland and rural waters with those engaged in rural aquaculture whether on a national or regional level as well as with those at the decision making level.
- xxvi. An absence of information and data systems for small-scale capture fisheries and rural aquaculture.
- xxvii. A short-term focus in the design of policies aimed at strengthening small-scale capture fisheries and rural aquaculture.
- xxviii. Minimal involvement by regional fishing organizations in matters of small-scale capture fishing and rural aquaculture.

## ● Conclusions and policy recommendations

The problems listed above, which pertain primarily to small-scale capture fishing and rural aquaculture,

demand urgent attention with an eco-systemic focus that addresses the well-being of humans and the environment alike. Such an approach affords a broader understanding of uses and the full range of users of aquatic ecosystems (including capture fisheries), and recognizes the need to reconcile the multiple objectives of those users in such a way as to ensure that future generations will have the same possibility of enjoying goods and services provided by these ecosystems. This approach also recognizes humans as an essential component of the ecosystem in which capture fisheries operate and emphasizes their interactions within the system. Finally, it aims to achieve a balance between various social objectives, taking into account the limited knowledge we have about the interactions between biotic, abiotic and human components of ecosystems.

Therefore, we recommend governments of the region:

- i. Improve efficiency and competitiveness at the various levels and links in the production and value chains in which a range of distortions clearly exist. Those of greatest concern include the poor food and safety conditions that are prevalent in the case of seaside processing of fishing hauls, the lack of proper cooling systems both for the short-term storage of capture fisheries and for refrigerated shipment to market, not to mention practices of intermediaries in small bays and harbors, and improper post-catch procedures, among others.
- ii. Change the focus of fisheries management from a one-dimensional view to an eco-systemic or holistic view and from short to long-term. Fisheries management has traditionally been focused on conservation of specific species but that approach overlooks multiple interactions between these species, the environment and other species. By contrast, an eco-systemic focus emphasizes the reconciliation of multiple interests on the part of both current and future generations and thus entails a much longer term perspective than one anchored to immediate concerns.
- iii. Resolve conflicts over the use of land, labor, capital, market access, etc. Ecosystems and their resources are susceptible both to multiple uses as well

as the multiple objectives of their users. Therefore, a conflict resolution system is needed to avoid costs and allow for more efficient management that is compatible with present and future interests.

iv. Improve scientific and technical know-how for management/evaluation, given that in most developing countries there is a lack of scientific knowledge and capacities with the limited resources available heavily weighted toward fish biology issues at the expense of economic, social, anthropological, institutional, cultural and technological concerns.

v. Develop territorial management plans (coastal, eco-systemic, etc.) based on viable usage as is done in agricultural and forestry systems, which use existing geographical and statistics systems to determine the various aptitudes of bio-aquatic areas and their resources.

vi. Improve credit access through public programs, educate professionals who conduct credit evaluations about the sector's potential, and encourage the

creation of funds and credit guarantees for small-scale fisheries to establish credit histories and create a permanent, rural financing mechanism.

vii. Diversify job opportunities for workers in capture fishing and aquacultural activities, allowing fishers to move from overexploited areas into alternative activities that do not threaten the sustainability of resources and their ecosystems.

viii. Harmonize policies regarding subsistence capture fisheries and rural aquaculture through a multi-sector focus that includes agricultural and industrial policies.

ix. Reduce the vulnerability of capture fisheries recalling their susceptibility to multiple unpredictable or random factors.

x. Promote the exchange of experiences and knowledge between countries with similar ecosystems and species.

xi. Improve communication and social participation channels in decision making.





# Forestry

Sustainable forest management: a vital balance for Latin America and the Caribbean



## FACTS

- There is a trend in Latin America, as occurred in the Mexico and Central America sub-region in 1996-2006, toward increasing wood production for use as fuelwood with volumes up to eight times greater than the production of industrial roundwood.
- The second generation of biofuels consists of cellulosic or lingo-cellulosic technology with enormous potential for energy production per unit of land. Production costs are expected to be similar to those of sugarcane-based ethanol by 2030, but with double the energy yield that can currently be achieved with sugarcane (30 dry tons per hectare).
- The Copenhagen Accord included the REED-plus initiative, which will broaden the scope of the original REED initiative designed to promote emissions reductions from deforestation and forest degradation. The REED-plus initiative adds the conservation of forest carbon stocks (natural forests), sustainable forest management and an increase in forest coverage (expanding forest carbon stocks). This is especially significant for the region considering that while the rest of the world expanded its forest cover by 93 million hectares between 2000 and 2005, forest cover in LAC was reduced by 24 million ha.
- According to the 2009 World Forestry Congress, the importance of forests that provide economically and environmentally valuable services such as drinking water, biodiversity conservation and carbon sequestration is not yet fully understood. In addition, the value of such services in both rural and urban areas has become increasingly vital to society.

## Recent trends<sup>16</sup>

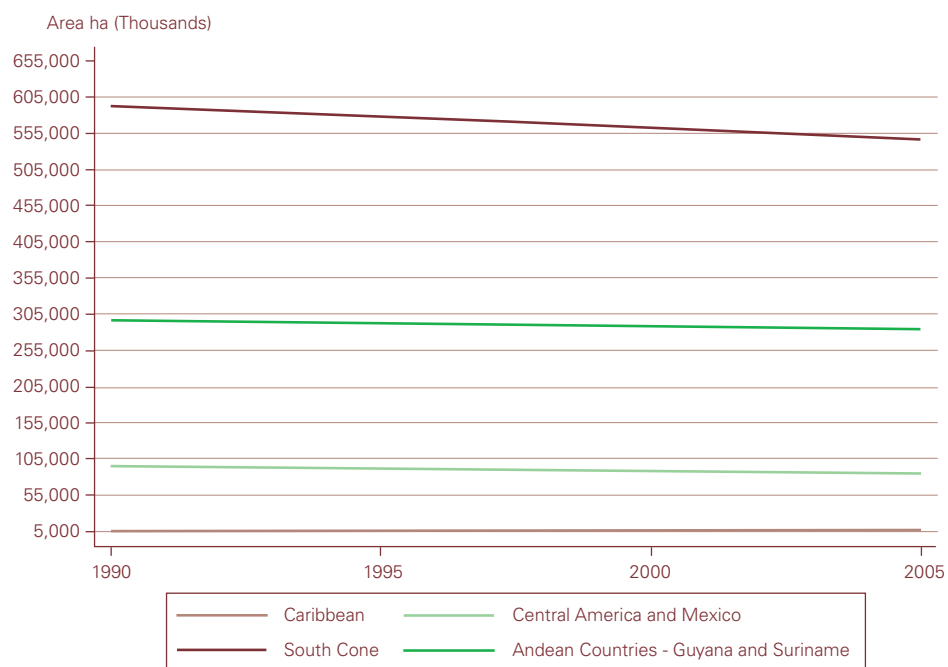
*While the world's forest cover continues to expand, the area of forest cover in Latin America and the Caribbean is shrinking*

Wood production is not the only cause of decreasing forest cover in Latin America (FAO, 2006a), other economic sectors are also responsible for deforestation. For example, the agro-livestock sector has cleared more land in response to rising demand for food by a growing population at home and abroad, while the transport, mining and energy industries have also cleared vast areas of forest.

The world's forest coverage expanded by 93 million hectares (Mha) between 2000 and 2005, while in Latin America and the Caribbean it fell by 24 Mha (FAO, 2006b; FAO, 2009c). This suggests that LAC experienced average annual losses that were, on average, 300,000 ha/year greater than in the decade 1990-2000. Only the Caribbean sub-region managed to expand forest coverage by an average 54,000 ha/year in this period, thanks to programs for the reforestation and recovery of degraded areas in countries like Cuba. In South America, however, forest cover was reduced with the exception of Chile and Uruguay, which expanded their coverage.

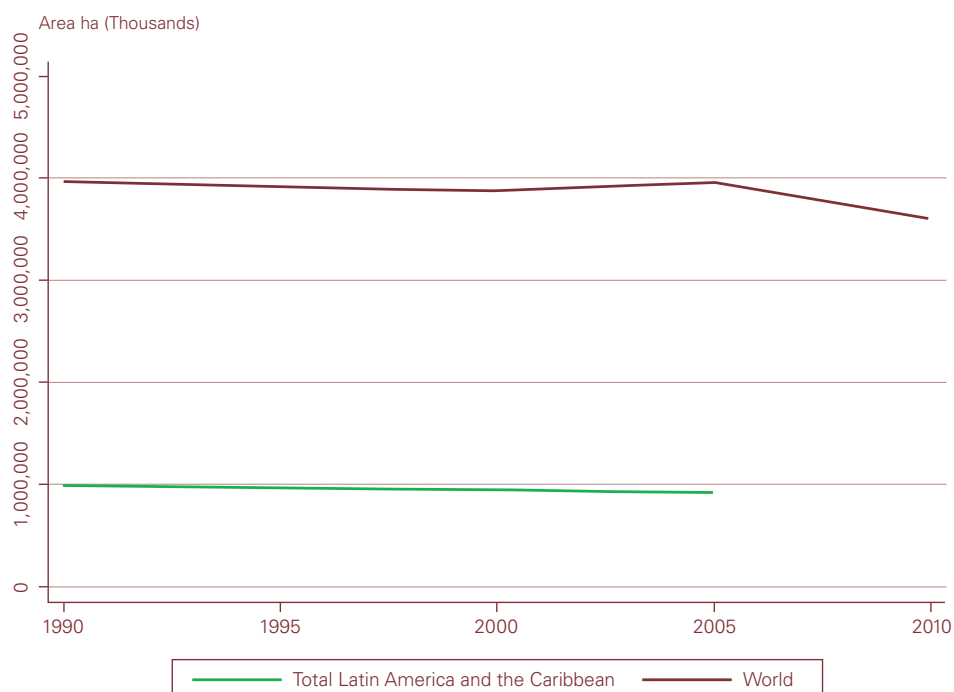
<sup>16</sup> The geographic sub-regions that are the subject of this analysis are:  
**Caribbean sub-region:** Anguilla, Antigua and Barbuda, Dutch Antilles, Aruba, Bahamas, Barbados, Bermudas, Cuba, Dominica, Grenada, Guadalupe, Haiti, Cayman Islands, the Turks and Caicos Islands, Virgin Islands, the British Islands, Jamaica, Martinique, Montserrat, Puerto Rico, Dominican Republic, Saint Kitts and Nevis, Saint Vincent and the Grenadines, Saint Lucia, Trinidad and Tobago.  
**Mexico and Central America sub-region:** Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama, Mexico.  
**Southern Cone sub-region:** Argentina, Brazil, Chile, Paraguay, Uruguay.  
**Sub-region of the Andean countries-the Guyanas and Suriname:** Bolivia, Colombia, Ecuador, Peru, B.R. of Venezuela, Guyana, French Guyana, Suriname.

**Figure 7 | Variations in forest coverage by sub-region**



Source: Global Forest Resources Assessment, 2005

**Figure 8 | Variations in forest coverage in Latin America and the Caribbean vs. the World**



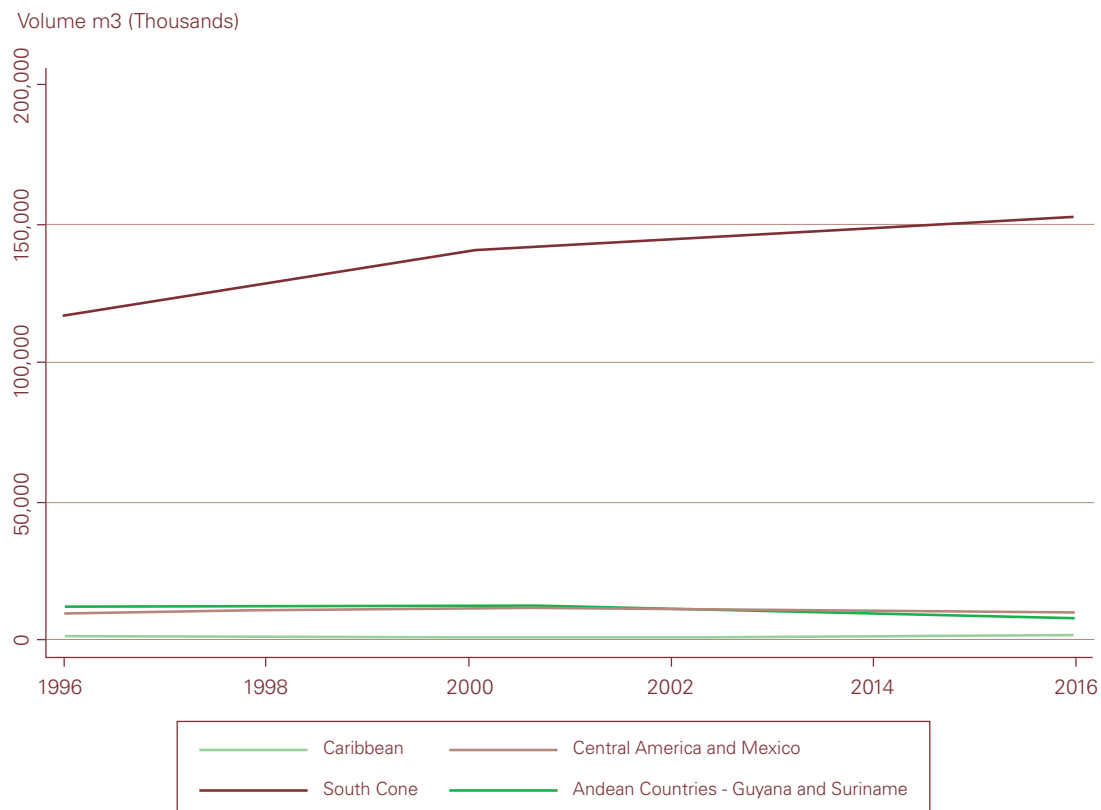
Source: Global Forest Resources Assessment, 2005

### Positive and negative signals in the wood sector

Production by volume of industrial roundwood and fuelwood offer both positive and negative signals in Latin America and the Caribbean. In the period 2000-2006 production of fuelwood in all LAC sub-regions grew considerably faster than production of industrial roundwood. Annual production of industrial roundwood and fuelwood

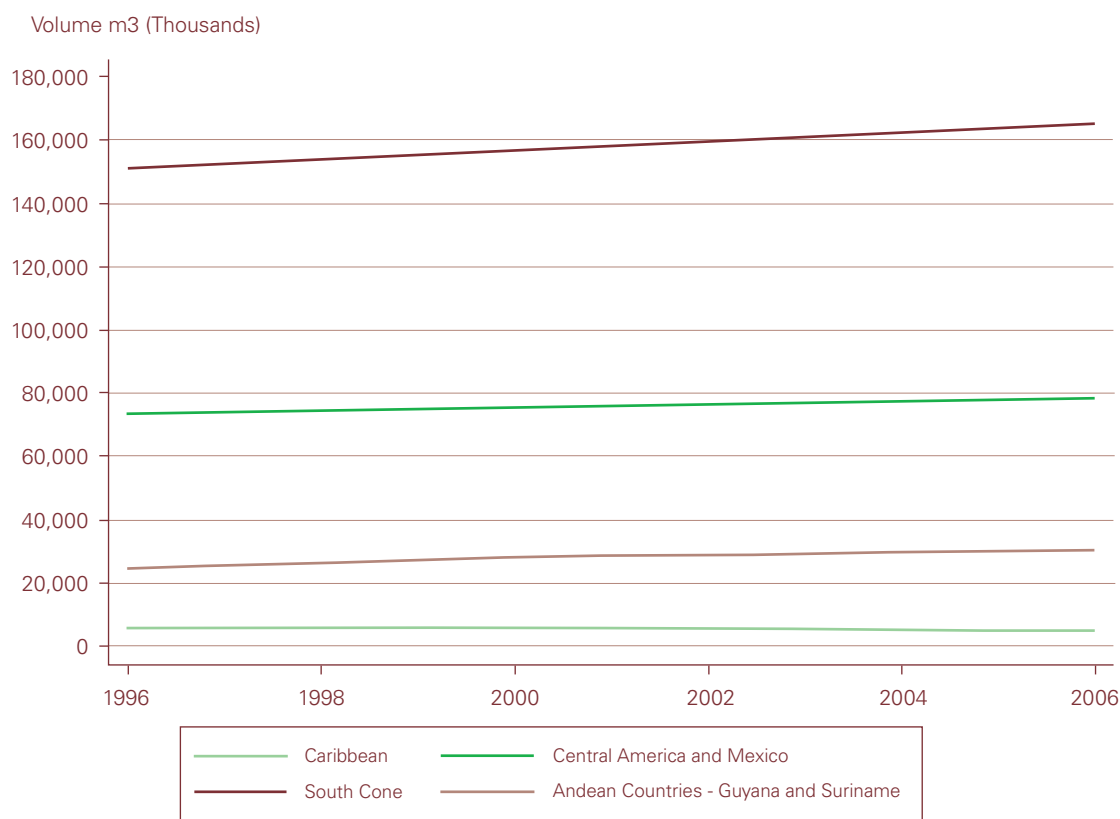
grew 0.5% and 0.8%, respectively, which is in line with global averages of 0.5% and 1.0%. The largest production volume was recorded in the Southern Cone sub-region where growth of 1.4% per year in the production of industrial roundwood increased total annual production to 151.7 million metric tons in 2006 from 139.9 Mmt<sup>3</sup> in 2000, while annual fuelwood production grew an average 0.9% per year to 165.3 Mmt<sup>3</sup> from 157.0 Mmt<sup>3</sup>.

**Figure 9** | Sub-regional trends in industrial roundwood production



**Source:** Global Forest Resources Assessment, 2005

**Figure 10 |** Sub-regional trends in fuelwood production



**Source:** Global Forest Resources Assessment, 2005

LAC's global competitiveness in the production of sawn wood, panels and wood pulp, paper and press board is mostly concentrated in the Southern Cone sub-region. During the decade 1996-2006, production of sawn wood grew a mere 0.1 % per year worldwide and started to decrease from 2006. But LAC is experiencing a clear growth trend and production grew 2.4% per year during the same period. In parallel, consumption fell by -0.2% per year worldwide, but expanded by 0.5% per year in LAC although the pace began to slow from 2004.

During 1996-2006, worldwide production of panels rose by an average of 7.7% per year including growth of 13.9% in LAC where production

increased in all sub-regions. Consumption in LAC also outpaced world growth, surging 16.4% a year compared to 7.9% annual growth globally.

In the same period, the production and consumption of pulpwood in LAC grew an average 6.5% and 3.1% per year, respectively, which is considerably greater than the corresponding global averages of 1.3% and 1.4% per year. In 2002-2006, pulp exports grew 1.5% per year worldwide and 8.3% per year in LAC. The production and consumption of paper and cardboard in LAC also grew 4.8% and 5.5% per year, respectively, outpacing world average growth of 2.9% and 2.8% per year.

***There is a lack of country data on the forest sector's contribution to overall economic output and job creation***

In the case of *forestry imports and exports*<sup>17</sup>, only the Southern Cone sub-region developed a competitive forestry industry and grew its trade surplus in 1996-2006. In 2006, Chile's forestry imports totalled USD 2.46 billion and exports reached USD 9.63 billion. The other sub-regions reported a trade deficit in the forest sector with exports having practically flat-lined and import growth trending higher. LAC's share of global forest-product exports during the decade 1996-2006 varied between 4% and 5% per year. The data suggests that the sector is not export oriented, but instead is based on domestic markets with notable exceptions such as Guyana and Chile.

The forest sector's share of the Southern Cone's GDP averaged 2.2% in 2006 (FAO, 2009c), with Paraguay at the high end (3.6%) and Argentina at the low end (0.8%). In the Andean countries, the Guyanas and Suriname it was 1.8%, followed by Central America and Mexico (1.3%), and lastly the Caribbean at 0.4%. Statistical averages show that the sector does not weigh significantly in sub-regional economies, but the country leaders are Guyana (4.1%), Paraguay (3.6%), Brazil (2.8%), Bolivia (2.7%) and Chile (2.6%).

In 2006, an estimated 1.8 million people were formally employed in LAC's forestry sector, of whom 33% were engaged in the production of industrial roundwood and 66% in the manufacture of timber, pulp and paper (FAO, 2009c). LAC accounted for 13%<sup>18</sup> of the total 13.71 million forestry jobs worldwide in 2006. But the forestry sector's real contribution to the LAC economy is much greater when jobs in the informal sector are also considered. Fuelwood production – which in 2006 totalled an estimated 279 Mmt<sup>3</sup> in LAC – involves jobs such as the transport and distribution of fuelwood to largely rural markets that are not

included in national statistics. A 2001 estimate of forestry sector employment in LAC distinguishes between formal employment (2.7 million) and informal employment (5.6 million), for a combined total of 8.3 million jobs (FAO, 2006a).

***The area of protected natural areas has increased in Latin America, but greater effort is needed to ensure the conservation of biological diversity***

Although an estimated 12% of the world's forests have been designated as Protected Areas, according to Categories I through VI of the International Union for Conservation of Nature (IUCN), and 20% of these areas are in the Americas, experts meeting at the II Latin American Congress of National Parks and Protected Areas concluded that more areas need to be protected (CAF, 2008). New conservation policies in some countries have helped support the creation of protected areas and the financing of their sustainable management. The Constitutions of Argentina, Colombia, Ecuador, Guatemala, Peru and B. R. of Venezuela make direct references to protected areas while those of Chile, Costa Rica, Cuba and El Salvador reference them indirectly. The remaining countries tend to have in place norms for the handling and administration of protected areas.

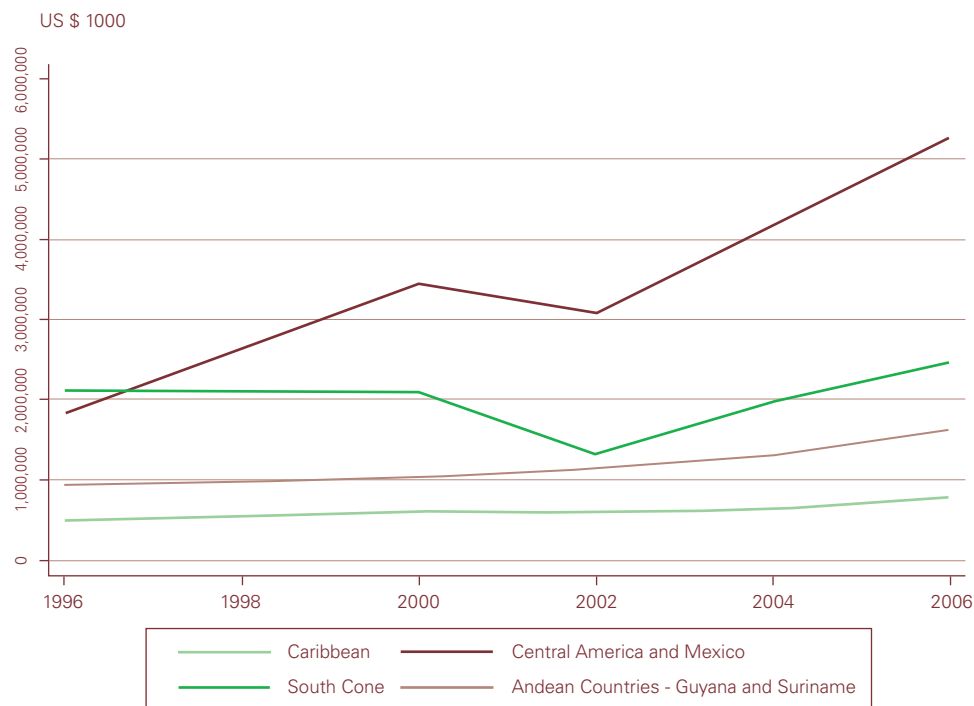
According to the IUCN, in 2006 protected areas in LAC totalled 2,826 and covered a total area of 107.9 Mha. The Andean countries, the Guyanas and Suriname represent 56.8%, or 61.2 Mha, of these areas, while 38.4% (41.4 Mha) is in the Southern Cone, 3.6% (3.8 Mha) in Mexico and Central America and 1.3% (1.3 Mha) in the Caribbean. On average, 22.7% of the Caribbean's total forest area is protected, 4.7% in Central America and Mexico, 7.5% in the Southern Cone, and 21.5% in the Andean countries, Guyanas and Suriname. A mere 37% of protected areas in LAC have management plans approved by the local authorities. Argentina, Colombia and Chile have approved such plans for more than 50% of their protected areas.

Information on budget designations to finance the management of protected areas in LAC is scarce

<sup>17</sup> Includes industrial roundwood, sawn timber, wood panels, paper and cardboard.

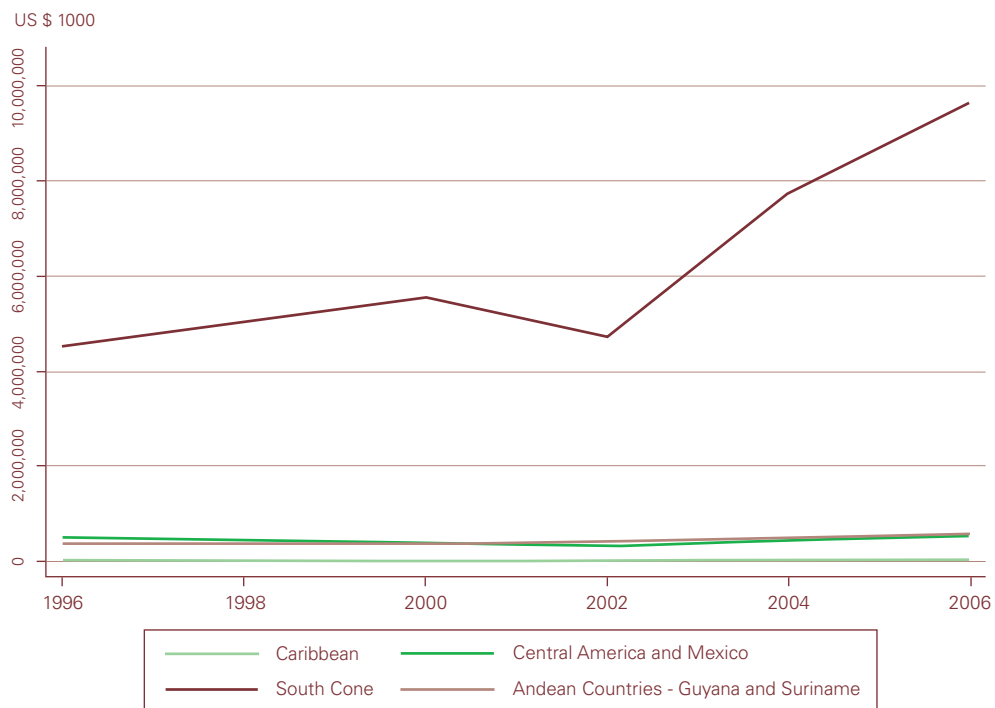
<sup>18</sup> Does not include employment generated by activities in the fields of forest management, non-wood forest products and forest environmental services.

**Figure 11 | Forestry sector imports by sub-region**



Source Global Forest Resources Assessment, 2005

**Figure 12 | Forestry sector exports by sub-region**



Source Global Forest Resources Assessment, 2005

and spotty. With data compiled between 1996 and 2007, the CAF (2008) estimated that international cooperation in LAC has financed slightly more than 50% of such budgets. Between 2001 and 2006, national budgets for this purpose averaged USD 11.9M in Brazil, USD 47.8M in Cuba, USD 17.2M in B. R. of Venezuela, USD 12.2M in Peru, USD 12.1M in Costa Rica, USD 8.0M in Colombia, USD 7.1M in Chile, USD 4.3M in Guatemala, USD 3.2M in El Salvador, USD 274,000 in Paraguay and USD 70,000 in Mexico. But the national budget per hectare of protected area tells a different story. El Salvador led the way with USD 51.30, followed by USD 18.90 in Cuba, USD 6.50 in Costa Rica, USD 1.10 in Brazil, USD 0.98 in Argentina, USD 0.70 in Colombia, USD 0.04 in Paraguay and USD 0.003 in Mexico. These numbers speak to obvious obstacles in obtaining the proper personnel and infrastructure for protected areas.

## • Short and medium term perspectives

### *The promotion of sustainable forest management and forest plantations are key to reversing the trend of rising deforestation*

Sustainable Forestry Management (SFM) could help protect forests in Latin America if the necessary financial resources are made available for its implementation. In LAC there is an abundance of both explicit and implicit policies for promoting SFM. However, the lack of economic resources for its implementation and ignorance about its importance are common obstacles in LAC countries. Given the lack of local initiatives, *Forest Certification* has emerged as an international market-based initiative to promote SFM. In the last seven years, the area of SFM forests certified by this scheme in LAC grew an average 31.7% annually from 3.7 Mha in 2003 to 190 Mha in 2009. The greatest areas of certified forests are in Brazil (4.3 Mha), Bolivia (1.7 Mha), Uruguay (0.93 Mha), Mexico (0.8 Mha) and Peru (0.6 Mha). But the highest average annual growth in certified areas was achieved in Argentina (108.7%), Panama (90.3%), Nicaragua (76.8%) and Colombia (61.6%).

Awarding *forest concessions* to companies and organizations could also serve as a major driver for SFM, assuming that local governments enjoy optimal institutional conditions for monitoring and enforcement. LAC is already familiar with forest concessions led by Peru<sup>19</sup>, which has 556 concessions covering 7.1 Mha; Guatemala<sup>20</sup>, which gave concessions covering 500,000 ha to 12 communities and two private companies; Suriname, with three concessions covering 1.4 Mha; Guyana, also with three concessions covering 2.6 Mha; and Brazil, which has awarded eight multinational forestry firms concessions covering 2.3 Mha of forests<sup>21</sup>.

In LAC, *forest plantations* are primarily oriented toward wood production. In the last two decades, there has been a regional growth in the area of forest plantations, from 8.6 Mha in 1990 to 12.2 Mha in 2000 and 15.0 Mha in 2009<sup>22</sup>. But the growth varies greatly by sub-region and country. In 2005, Uruguay had the greatest share in the region (50.9%), while in geographically larger LAC countries the percentage of land dedicated to such plantations was less than 4%, except in Chile which had 16.5% of the total. Apart from the Southern Cone, there has been no significant growth in output from commercial forest plantations in LAC sub-regions despite the comparative advantages some countries have to offer.

### *Non-wood forest products and environmental services provided by forests are important in the fight against rural poverty*

There is a strong link between the production of Non-Wood Forest Products (NWFPs) and the fight against rural poverty. An excellent example is Bolivia, where chestnuts account for 45% off the

<sup>19</sup> <http://gestion.pe/impres/ noticia/hay-44-concesiones-forestales-riesgo-anuladas/2010-01-25/13961>

<sup>20</sup> <http://www.portalforestal.com/informacion/noticias/2995-las-concesiones-forestales-a-las-comunidades-ayudan-a-evitar-la-deforestacion-en-guatemala.html>

<sup>21</sup> Source for Suriname, Guyana and Brazil: internet source cited by Israel Acosta.

<sup>22</sup> Data provided by Dr. Carlos Marx Carneiro.

country's forest exports, generating roughly USD 70 million in revenues for the national economy (FAO, 2009c). Another example is Chile, where exports of NWFPs in 2008 were around USD 71 million. There are many other examples from LAC countries as well.

Despite the importance of NWFPs, the short and medium term outlook for these products is basically unchanged, which is compounded by a lack of statistical information needed to grasp their relative importance in the region's economy.

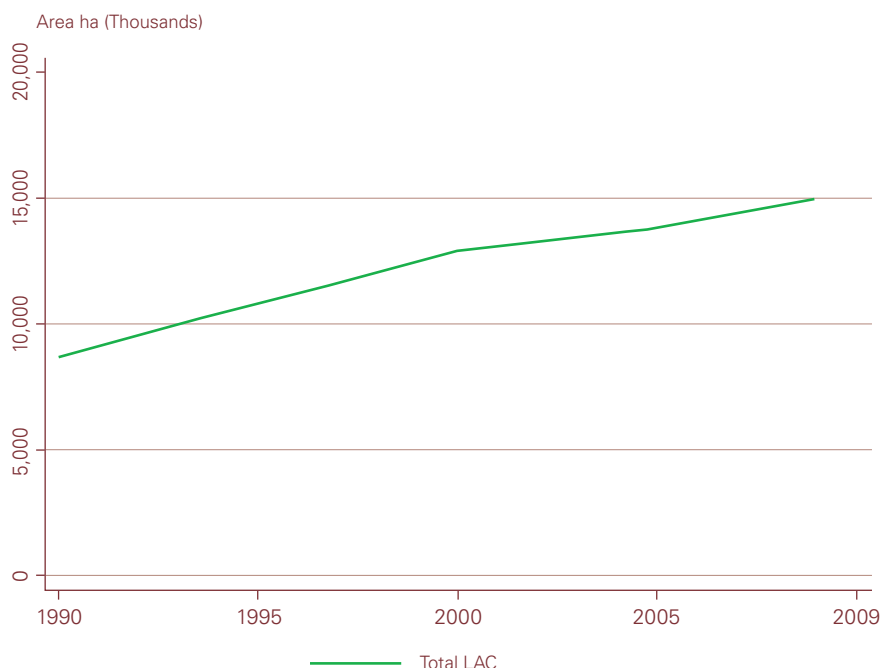
Although the market for environmental services has expanded in the past decade (CIFOR 2006; ITTO, 2003), many projects remain limited in their scale and scope. Nevertheless, there are examples of environmental services that are

being marketed in LAC countries and generating revenues. Global demand for environmental services, especially related to water supplies, is expected to double or triple in the next 50 years, mainly in developing countries. Therefore, the short and medium term outlook is for growth in demand for environmental services from LAC, especially in the protection of drainage basins and the regulation of water usage.

***Linking forests with solutions to global problems greatly enhances their environmental and socioeconomic value***

The forest sector, including forest plantations, NWFPs, environmental services and protected areas, could play a major role in the fight against poverty in the short and medium-term by

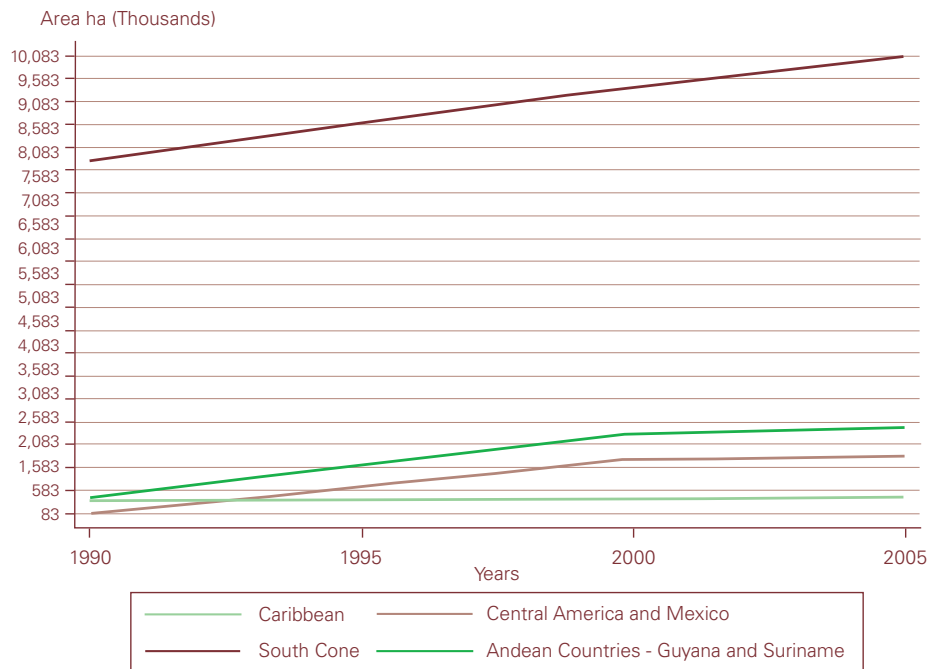
**Figure 13 |** Forest plantation trends in Latin America and the Caribbean



Source: Global Forest Resources Assessment, 2005



**Figure 14 |** Forest plantation trends in LAC sub-regions



**Source:** Global Forest Resources Assessment, 2005

generating employment. Growth in plantation activity is already a source of rural job creation. A project simulation in Ecuador to create one million hectares of commercial plantations showed that by the fifth year of planting 50,000 ha/year, some 23,000 planting and management jobs will have been created as well as 70,000 indirect jobs (Tomaselli, 2009). The potential for job creation exists, but countries must explicitly include the forest sector when defining and implementing anti-poverty strategies.

To take advantage of new global financial incentives that support forest sector activities oriented toward biodiversity conservation and a reduction in greenhouse gases, new national strategies are needed to attract private investment in forest plantations. Countries with comparative advantages in the availability of land and a strategic location relative to major markets – such as Colombia, Peru and Mexico, which along with

Brazil and Chile make up a group of countries “financially integrated for commodities exports” (IMF, 2009b) – have the potential for achieving greater forest sector development in the medium term. B. R. of Venezuela could be added to that list.

An initial link between forests and biodiversity conservation has already been made in LAC through the designation of 67.5 Mha of strictly protected forests (IDB, 2000), as defined by the IUCN, in which the implementation of SFM has been relatively successful in protecting biodiversity. To the extent that more forest areas are defined as protected areas, the benefits of conservation will increase. The creation of private protected areas is an extremely important forest conservation mechanism in countries like Brazil, but owners need economic incentives to increase the number of such areas.

Regarding forests and climate change, a recent study has shown that the combination of global warming (nearing 2°C), forest fires and a 20% deforestation of original forest cover are undermining the Amazon's water system (World Bank, 2010). The study concludes that the area of Amazon rainforests will shrink by as much as 25% by 2025 and 33% by 2075, as a result of these factors.

In contrast to the view that fuelwood consumption would diminish through the substitution of other types of fuels, the current trend points to growth both in the region and globally. Over the short and medium term, large industrial complexes will be supplied with wood supplies from so-called energy plantations, especially in Brazil. In rural homes and small enterprises, fuelwood from natural forests will remain the principal energy source and demand will continue to expand in line with demographic growth and the lack of other affordable sources of fuel.

Finally, changes are taking place in the ownership of forest lands, which could lead to changes in wood markets and the supply of wood products (Fiacco, 2010). Major corporations with investment funds for forest management have been working since the 1980s, expanding their funding from institutional investors from roughly USD 4 million in 1980, to USD 1.4 billion in 1990 and USD 6.5 billion in 1997.

## ● Policy recommendations

### *The forest sector has huge potential to reduce greenhouse gas emissions*

Forest deforestation contributes 20% of the world's total greenhouse gas emissions and the same industry uses highly polluting fuels. One option to make the industry greener is for forestry companies to supplement their regular fuel supplies with their own wood production. The wood pulp industry has been doing this for some time, but this requires policies that create an environment

conducive to change and mechanisms for funding research and development in wood fuels as in the case of pellets. One approach that could facilitate such policies is the adoption of a National Climate Change Policy, already being considered by some countries, which would set nationwide targets and commitments from industries, including the forest sector. For example, in December 2009 Brazil passed a law which fixed a national target of lowering greenhouse gas emissions by between 36.1% and 38.9% by 2020.

### *The real potential of Non-Wood Forest Products and their positive impact on the economy is unknown*

Foods, oils, resins, barks, fungi, seeds, medicinal plants and materials for making furniture and artisan crafts are all forest products. But despite the social and economic importance of such products, there is a lack of production and statistics that could help many of these products to expand from artisan-level to larger-scale production and move beyond the confines of local consumption to potentially reach larger markets. Brazil's Annual Plan for Community and Family Management, which is geared towards improving forest statistics, was launched at the end of 2009 and will benefit 18,000 families in 87 municipalities in seven Amazonian states. The Plan's mission is to stimulate sustainable forest management that combines the production of both wood and non-wood products. Most LAC countries lack such a formal mechanism that is indispensable to the proper collection of NWFP statistics.

### *National policies should facilitate the creation and management of Protected Areas in order to maintain biodiversity*

Experts at the II Latin American Congress of National Parks and Protected Areas in Bariloche in 2007 noted the extreme divergence in the way protected areas are managed from country to country. These areas are directly mentioned in some national constitutions and indirectly in

others while some countries have adopted specific norms for the handling and management of such areas and others have no such rules. The simple fact of decreeing a protected area and adopting related policies has contributed to a reduction in the illegal exploitation of forest resources and of squatting in these areas. It is highly advisable to adopt explicit policies at the highest level in order to improve biodiversity conservation.

***Policies to stimulate rural development can help control deforestation arising from the cultivation of illegal crops***

Thousands of hectares of tropical forests have been destroyed for the purposes of growing illegal crops. One approach, employed in Colombia, is a Family Forest Guard program in rural areas. It was launched as part of that country's National Development Plan and was implemented in 2003. It seeks to engage rural workers, indigenous and Afro-Colombian communities in environmentally strategic ecosystems in areas that have been affected or are at risk of being taken over by such crops. The social, economic and environmental benefits of this policy can be summarized as: reducing the production of illicit drugs; generating a source of legal income for thousands of families that receive technical assistance and training for the

sustainable use of forests and agro-forestry; and recovering degraded forest areas while promoting the sustainable production of wood and non-wood products and ecotourism.

● **Conclusion**

The Southern Cone's forest industry for sawn wood, wood panels, pulp, paper and cardboard is an example of the planning, development and consolidation needed to achieve competitiveness in global markets.

At both the regional and country level, society has begun to appreciate the important linkages between forests and the economy, climate change mitigation, biodiversity conservation and poverty reduction as well as the strategic value of forests to socio-economic development and environmental conservation.

Forest policies and institutions must be reviewed and adapted in order to increase the sector's contribution to the fight against climate change and rural poverty, and to allow the sector to benefit from the new types of initiatives and financing mechanisms geared toward reducing deforestation and stimulating biodiversity.



A large, stylized graphic of green leaves and branches is positioned on the right side of the page, extending from the top to the bottom. The leaves are in various shades of green, and the branches are a darker green. The graphic is partially obscured by a dark red horizontal band.

# Section III: Rural well-being and institutional framework





# Rural well-being

The severe impact of the economic crisis on rural areas



## FACTS

- Poverty indicators suggest that the effects of the economic crisis were most severe in rural areas, a trend that emerged in 2008 and which appears to have deepened in 2009.
- The effects of the crisis on rural employment are mixed; in those countries where rural employment is mostly in non-agricultural activities the impact tends to be adverse and in those with a significant degree of agricultural employment the effects will depend on how the sector has performed.
- Poverty is higher among agricultural households and those that depend on transfers. In contrast, in most of the countries analyzed poverty is lower in households that combine insertion in agricultural and non-agricultural labor markets.
- In general, wage growth does more to lower poverty than a similar rise in income from self-employment and transfers. However, the poverty rate tends to be more sensitive to reductions than increases in transfers.
- The composition of transfers varies by country depending on the relative importance of pensions and remittances. Remittances are especially important in countries with high levels of rural poverty.
- As a result, the effects of the crisis were passed along to rural areas in two main ways: through wages, especially from non-agricultural jobs, and the remittance component of transfers.

The central theme of this chapter is an analysis of rural employment and income. The first section provides an overview of how poverty has evolved in the region with emphasis on the possible impact of the economic crisis on rural areas. The second section analyzes the changes that have occurred in the past decade in the structure of rural employment and the recent evolution of unemployment, using data from household surveys of a number of countries in the region. The following section includes estimates of the poverty rate in these countries and an analysis of the income profiles of rural households according to the participation of family members in the labor market. The chapter concludes by identifying issues of importance to rural development policies, especially during the recovery from the 2008/09 economic crisis.

### • Poverty and indigence: The impact of the crisis in rural areas

During 2003-2007, per capita GDP grew faster in LAC than at any time since the 1970s, with average annual growth of more than 3% (ECLAC, 2008). Thanks in part to that expansion, between 2002 and 2007 the number of people living in poverty in the region fell by 37.5 million and those in extreme poverty declined by 29.5 million, marking reductions of 9.9 and 6.8 percentage points in the rates of poverty and extreme poverty, respectively. That contraction occurred both on an aggregate basis and in rural areas (see Figure 15). For the entire region, estimates hold that rural areas accounted for 31.7% of the reduction in the number of poor (11.9 million people) and 40.0% of those who escaped extreme poverty (11.8 million). Proportionally speaking, the sharpest

reduction was in extreme rural poverty, which fell by 9.8 percentage points as opposed to declines of 6.8 and 5.4 points in the overall and urban rates of extreme poverty, respectively.

The effects of the economic crisis, which began to emerge in LAC near the end of 2008, produced changes in levels of poverty and especially of extreme poverty; whereas the number of poor in the region fell by 3.5 million people, the number living in extreme poverty grew by 2.8 million people. In proportional terms, the effect was most pronounced in rural zones, so while there was an absolute decline in the number of poor (0.8 million), the proportion of people living in poverty increased slightly (0.1%), because of population growth. The impact on extreme poverty was even more severe, with the number in this category rising by 1 million people in absolute terms and by 1.4 percentage points (Figure 15).

Country data for 2008 confirms the trend of rising poverty in rural areas, especially that of extreme poverty. Out of the nine LAC countries with information available at the time of writing this report<sup>23</sup> only Brazil, Peru and Uruguay showed a continued decline in rates of poverty and extreme poverty, both nationally and in rural areas. In the rest of the countries (Costa Rica, Ecuador, Mexico, Panama, Paraguay and the Dominican Republic) the rate of extreme poverty increased, in some cases significantly such as from 24.1% to 28.8% in Panama and from 24.6% to 29.0% in the Dominican Republic. Moreover, in some countries (e.g. Costa Rica, Panama and Paraguay) the increase in rural extreme poverty took place despite a reduction in the national and rural poverty rates.

As a result of the region's economic deterioration in 2009, shown by an estimated per capita drop in GDP of 2.9% (ECLAC, 2009a), the downward trend in poverty levels started to reverse and levels of extreme poverty, which had increased in 2008, accelerated. ECLAC estimates that in 2009 the number of poor in the region grew by roughly 9 million people and that 5 million more fell into

the ranks of extreme poverty, which is an increase of 1.1 and 0.8 percentage points, respectively (ECLAC, 2009b). The rural/urban breakdown of those numbers is not yet known, but it is safe to assume the setback was more pronounced in rural areas in keeping with the regional trend seen in 2008.

The expansion of poverty and extreme poverty in rural areas has major implications for meeting the first Millennium Development Goals. A 2008 ECLAC study noted that the goal of halving the number of people living in hunger had been practically met in urban areas but that progress in rural zones was only 60%. Furthermore, countries that reported the greatest progress in lowering national extreme poverty rates were those that had prioritized progress in rural areas (see Box 9).

### ● Salaried employment is increasingly important in rural areas

Table 2 provides a summary of how some indicators of employment in rural areas evolved between 2000 and 2008. Overall, the agricultural sector's weight in job creation fell in all countries (except for Ecuador with no significant change). By type of agricultural activity<sup>24</sup> there were no significant changes in the Dominican Republic, Paraguay and Mexico. In Costa Rica and Ecuador the percentage of wage earners rose as that of self-employed and unpaid family workers fell. The most notable change in Brazil was a rise in the proportion of self-employed and a reduction in unpaid family workers, but when these latter two categories are combined, no significant change can be discerned (roughly 74%).

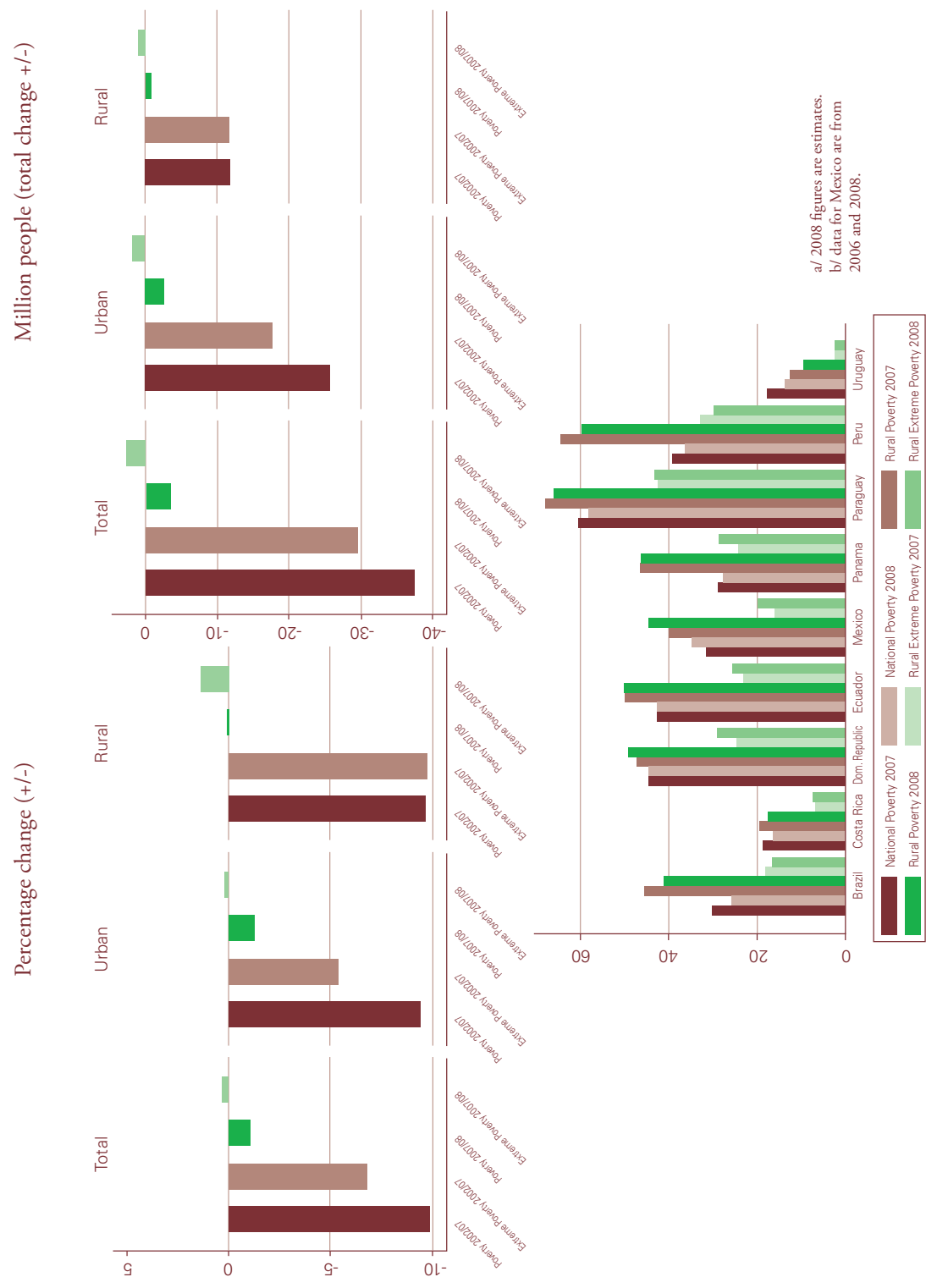
Changes are less pronounced in the non-agricultural sector. Mexico, Paraguay and Ecuador reported an increase in wage earners and a drop in the percentage of self-employed workers, but otherwise no country registered significant

<sup>23</sup> The nine countries are Brazil, Costa Rica, Ecuador, Mexico, Panama, Paraguay, Peru, the Dominican Republic and Uruguay.

<sup>24</sup> Type of activity refers to the form of insertion in the labor market whether as a wage earner, self-employed, unpaid family worker or employer. In the agricultural sector, the categories of self-employed and unpaid family worker can be equated to family agriculture.



**Figure 15 |** Latin America and the Caribbean: Changes in poverty levels, 2002-2007 vs 2007-2008 (Millions of people and % living in poverty and extreme poverty) and rates of national poverty, rural poverty and rural extreme poverty (%)



Source: ECLAC (2009b, Social Panorama) based on data analysis from household surveys

changes. These numbers suggest that the most significant trend in both the agricultural and non-agricultural sectors is toward an increasing percentage of wage earners and declining levels of self-employed and unpaid family workers.

As for employment trends by gender, the participation of women in the workforce grew in most countries or changed little. The most notable development by gender and age group is a reduction reported in all countries (minor in Paraguay) in the participation of men under the age of 30 engaged in the agricultural sector, but an increase in those over 50 (slight in the Dominican Republic). The same trend, although less pronounced, occurred in non-agricultural sectors (except in Mexico). For women, there are no clear trends in the agricultural

sector, but the number of women over 50 engaged in non-agricultural activities grew in Costa Rica, Mexico, Ecuador and Paraguay, and experienced no significant changes in Brazil or the Dominican Republic.

In all countries, male rates of rural unemployment are lower than their urban equivalents, and the same is true of women except in Costa Rica (Figure 16). This suggests that the quality of employment in the rural labor market may be a factor as important as the state of being employed vis-à-vis the urban labor market.

By gender, in both urban and rural areas, unemployment rates are greater for women than men with the exception of Mexico. Furthermore,



### **BOX 9: Progress in urban/rural areas towards the Millennium Development Goal of extreme poverty reduction**

“At the regional level, the rate of progress in rural areas is significantly less than in urban ones. Whereas the former are about 61% on the way towards achieving the target, the latter have already virtually attained it. This unfavorable pattern for rural areas is repeated in several countries, particularly those with low rates of progress nationally, such as Bolivia, Guatemala, Honduras and Nicaragua, but also in Colombia and Mexico, which have made more substantial progress. In contrast, several of the countries that have made most progress in reducing extreme poverty nationwide are also those that have made this a priority in rural areas. For example, Brazil, Chile and Costa Rica, which have already met the first MDG target or are very close to doing so, display progress rates in rural areas that are similar or superior to those in urban zones. This result suggests that prioritizing progress in a country’s rural areas can be a viable strategy when combined with pursuit of a general improvement in living standards.” (ECLAC, 2008).

**Table 2** | Rural employment indicators in six LAC countries between 2000 and 2008 (%)

	Costa Rica		Brazil		Mexico		Ecuador		Dominican Republic		Paraguay	
	2000	2008	2001	2008	2000	2008	2003	2008	2002	2008	2000	2008
<b>Distribution of rural employment</b>												
<b>Agricultural</b>	38.4	26.6	76.6	69.0	45.6	37.2	70.8	69.5	41.7	33.2	64.6	58.7
<b>Non-agricultural</b>	61.6	73.4	23.4	31.0	54.4	62.8	29.2	30.5	58.3	66.8	35.4	41.3
<b>Men /a</b>	74.9	70.5	62.9	62.6	68.6	65.6	64.6	64.6	77.3	73.2	69.1	66.0
<i>Agricultural /b1</i>	46.8	33.4	80.1	72.8	54.5	46.0	73.1	72.2	51.6	43.0	71.0	64.1
<i>Non-agricultural /b1</i>	53.2	66.6	19.9	27.2	45.5	54.0	26.9	27.8	48.4	57.0	29.0	35.9
<b>Women /a</b>	25.1	29.5	37.1	37.4	31.4	34.4	35.4	35.4	22.7	26.8	30.9	34.0
<i>Agricultural /b2</i>	13.1	10.5	70.8	62.8	26.1	20.3	66.6	64.5	8.2	6.6	50.3	48.1
<i>Non-agricultural /b2</i>	86.9	89.5	29.2	37.2	73.9	79.7	33.4	35.5	91.8	93.4	49.7	51.9
<b>Agricultural employment</b>												
<b>Men /c</b>	91.4	88.4	65.8	66.0	82.0	81.2	66.7	67.2	95.5	94.6	75.9	72.1
Younger than 30 years /d1	41.3	34.0	45.3	38.2	39.9	33.4	44.9	37.0	28.9	31.3	46.7	45.2
From 30 to < 50 /d1	39.7	40.2	31.3	34.6	32.1	34.4	28.8	31.9	39.5	36.4	30.6	28.1
Older than 50 /d1	19.0	25.8	23.4	27.2	28.0	32.2	26.4	31.2	31.7	32.3	22.6	26.8
<b>Women /b</b>	8.6	11.6	34.2	34.0	18.0	18.8	33.3	32.8	4.5	5.4	24.1	27.9
Younger than 30 years /d2	50.5	46.5	35.3	28.4	31.3	33.9	45.1	35.5	24.6	31.5	33.9	35.9
From 30 to < 50 /d2	39.2	44.5	36.9	39.0	42.9	38.4	30.5	34.4	31.4	45.2	39.9	35.8
Older than 50 /d2	10.3	9.0	27.8	32.6	25.8	27.7	24.4	30.0	44.0	23.2	26.2	28.3
<b>Non-Agricultural employment</b>												
<b>Men /e</b>	64.6	64.1	53.7	55.0	57.4	56.4	59.5	58.8	64.2	62.5	56.6	57.3
Younger than 30 years /f1	41.1	39.2	46.3	42.8	40.6	43.2	44.6	42.0	44.8	39.8	48.5	47.4
From 30 to < 50 /f1	47.4	46.4	41.4	43.5	43.2	42.1	40.1	40.3	43.4	44.0	42.9	38.7
Older than 50 /f1	11.5	14.4	12.3	13.7	16.1	14.8	15.3	17.7	11.8	16.2	8.6	14.0
<b>Women /d</b>	35.4	35.9	46.3	45.0	42.6	43.6	40.5	41.2	35.8	37.5	43.4	42.7
Younger than 30 years /f2	40.4	39.1	44.9	43.1	39.6	39.8	45.3	40.9	34.9	36.7	46.5	39.3
De 30 a < 50 /f2	51.5	49.9	45.2	46.0	46.5	43.9	40.5	42.3	51.5	50.3	40.0	44.7
Older than 50 /f2	8.1	11.0	9.8	10.8	13.9	16.3	14.2	16.8	13.6	13.0	13.5	16.0
<b>Agricultural employment</b>												
Wage earners/ c	59.1	66.0	22.7	23.7	39.9	39.1	31.6	37.4	13.9	14.2	13.6	12.4
Employers /c	6.6	8.6	2.5	2.3	5.0	10.7	4.4	4.1	2.1	2.9	3.3	2.6
Self-employed /c	26.5	21.2	44.8	52.0	34.6	31.7	33.1	31.3	79.3	79.8	54.4	56.8
Unpaid family members /c	7.9	4.1	29.9	21.9	20.5	18.4	30.8	27.2	4.7	3.1	28.7	28.1
<b>Non-Agricultural employment</b>												
Wage earners /e	70.9	71.9	69.5	70.1	60.4	68.9	61.1	63.4	52.8	53.0	51.5	57.9
Employers /e	5.4	7.4	2.2	2.4	4.9	4.0	2.6	3.2	1.3	2.0	4.3	3.6
Self-employed /e	21.8	19.1	23.1	22.2	27.1	19.9	30.2	27.6	44.4	41.4	38.2	31.0
Unpaid family members /e	1.9	1.5	5.2	5.2	7.6	7.2	6.2	5.7	1.4	3.6	6.0	7.3

a) % of total rural employment; b1) % of total rural employed who are men; b2) % of total rural employed who are women; c) % of total agricultural employment; d1) % of total agricultural employed who are men; d2) % of total agricultural employed who are women; e) % of total non-agricultural employment; f1) % of total non-agricultural employed who are men; f2) % of total non-agricultural employed who are women.

**Source:** UDA/ECLAC, based on household surveys analyzed by ECLAC

rural jobless rates for men tend to be very low (around 2% or less) in those countries where agriculture weighs heaviest in rural job creation, such as Ecuador (70%), Brazil (69%) and Paraguay (58%). In contrast, rates of unemployment, both for men and women, tend to vary less between urban and rural areas in countries where agriculture is less significant to rural job creation such as Costa Rica (27%), the Dominican Republic (33%) and Mexico (37%). In other words, a lesser degree of farm-related rural job creation favors a more even labor-market dynamic between rural and urban zones.

A comparison of unemployment rates in 2007 and 2008 provides an approximation of the initial effects of the economic crisis on rural employment (Figure 17). The results are mixed and, in general, coincide with the change in the growth rates of the agricultural sector or the aggregate economy, or both. For example, in the three countries where agriculture weighs the least in rural employment, the most significant correlation is with the direction of the general economy. Thus, rural unemployment grew in Costa Rica (on average and for men and women) and in Mexico (on average) at the same time as GDP growth slowed in 2008 compared to 2007; in Costa Rica, there was also a reduction in agricultural value added (-2.3%). In the Dominican Republic by contrast, rural unemployment declined despite a reduction in agricultural value added (-3.4%), but alongside substantial economic growth (5.3%) (ECLAC, FAO, IICA, 2009).

In the three countries in which agriculture plays the largest role in rural employment, unemployment rates coincide with the evolution of agricultural value added. Those rates fell in Brazil (average and among both men and women), and in Paraguay (average) alongside an expansion of agricultural value added that outpaced economic growth (8.2% vs. 6.1% in Brazil and 8.5% vs. 5.8% in Paraguay). In Ecuador, the average rate of rural unemployment experienced no significant change, nor was there a significant gap separating the growth rates of agricultural value added and GDP (5.4% and 6.4%, respectively).

In light of the results described above, it can be expected that the economic crisis of 2008-2009 also had a major effect on rural labor markets either as a result of the reduction in general economic activity (e.g. in countries in which most job growth is outside the agriculture sector) or of a contraction in agriculture (e.g. in countries in which agriculture is the main source of rural employment).

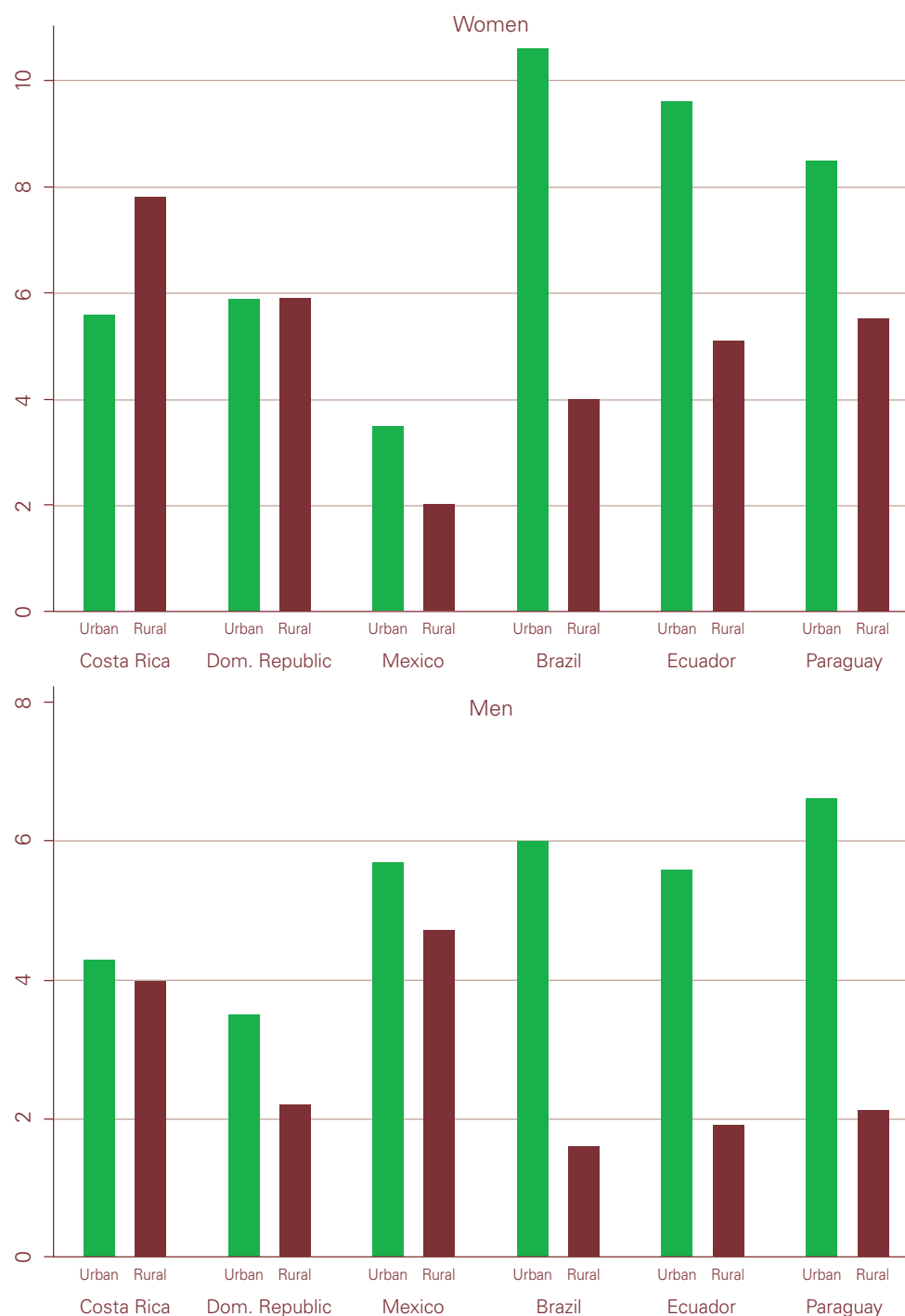
### ● Rural poverty is strongly linked to agricultural employment in most cases

In an effort to deepen the analysis of rural poverty, 2008 household survey results from six LAC countries<sup>25</sup> were analyzed, classifying rural households into four categories based on the occupations of their members: a) Agricultural households (all employed members of the household engaged in agriculture); b) Non-agricultural households (all employed members of the household engaged in non-agricultural sectors); c) Mixed (or multi-activity) households (members of the household are distributed between the agricultural and non-agricultural sectors); and d) transfer-dependent households (no household member is employed).

The greatest rate of poverty was found to be among agricultural households (Brazil, Paraguay and Mexico) and transfer-dependent households (Dominican Republic, Ecuador and Costa Rica). In all countries, the poverty rate is greater than the national average among agricultural households and below average among non-agricultural and mixed households. In the Dominican Republic, Ecuador, Brazil and Costa Rica, the lowest poverty rate is registered in mixed households, which is a sign of the importance of the non-farm rural economy as a supplement to income from farm-related activities. Only in Paraguay and Mexico is poverty less prevalent among non-agricultural households. Compared to the rural average, the poverty rate among transfer-dependent households is particularly high in the Dominican Republic

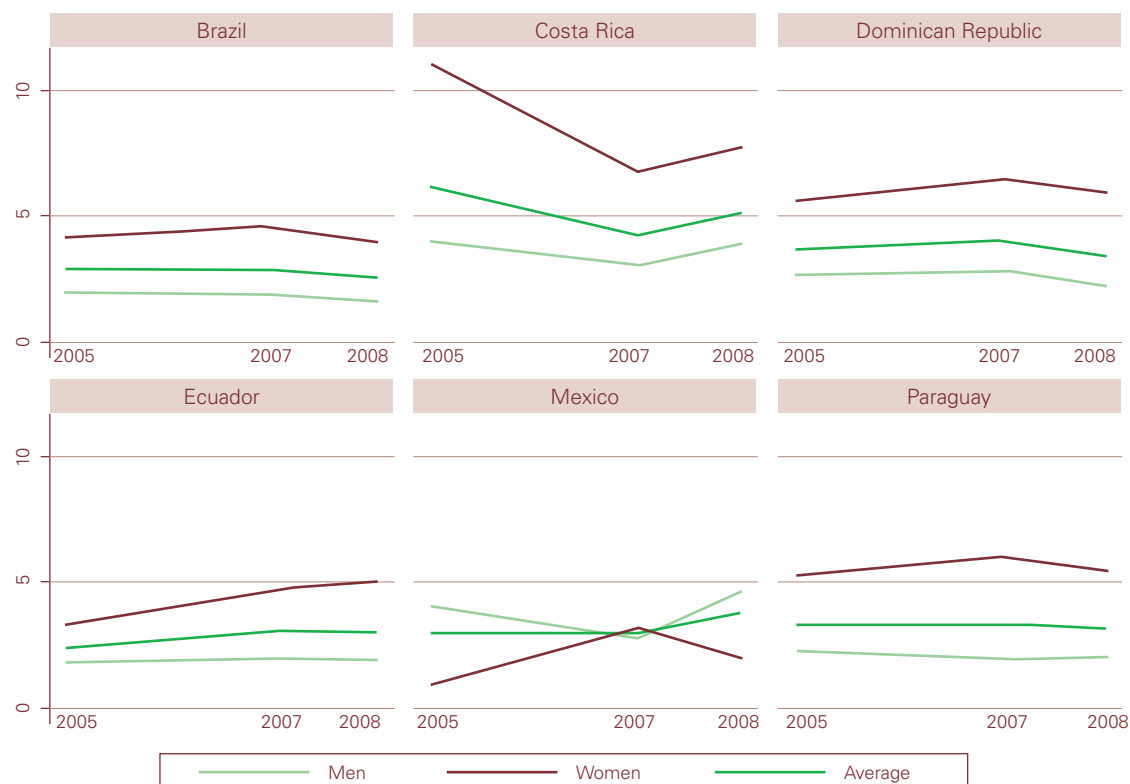
<sup>25</sup> The countries are Brazil, Costa Rica, Ecuador, Mexico, Dominican Republic and Paraguay. Those countries were chosen due to the availability of 2008 household survey data collected by ECLAC's statistics division.

**Figure 16** | Unemployment rates in urban and rural areas, by gender, in six Latin American and Caribbean countries, 2008 (%)



**Source:** UDA/ECLAC, based on household surveys analyzed by ECLAC

**Figure 17** | Rural unemployment by gender in six Latin American and Caribbean countries, 2005/06–2008



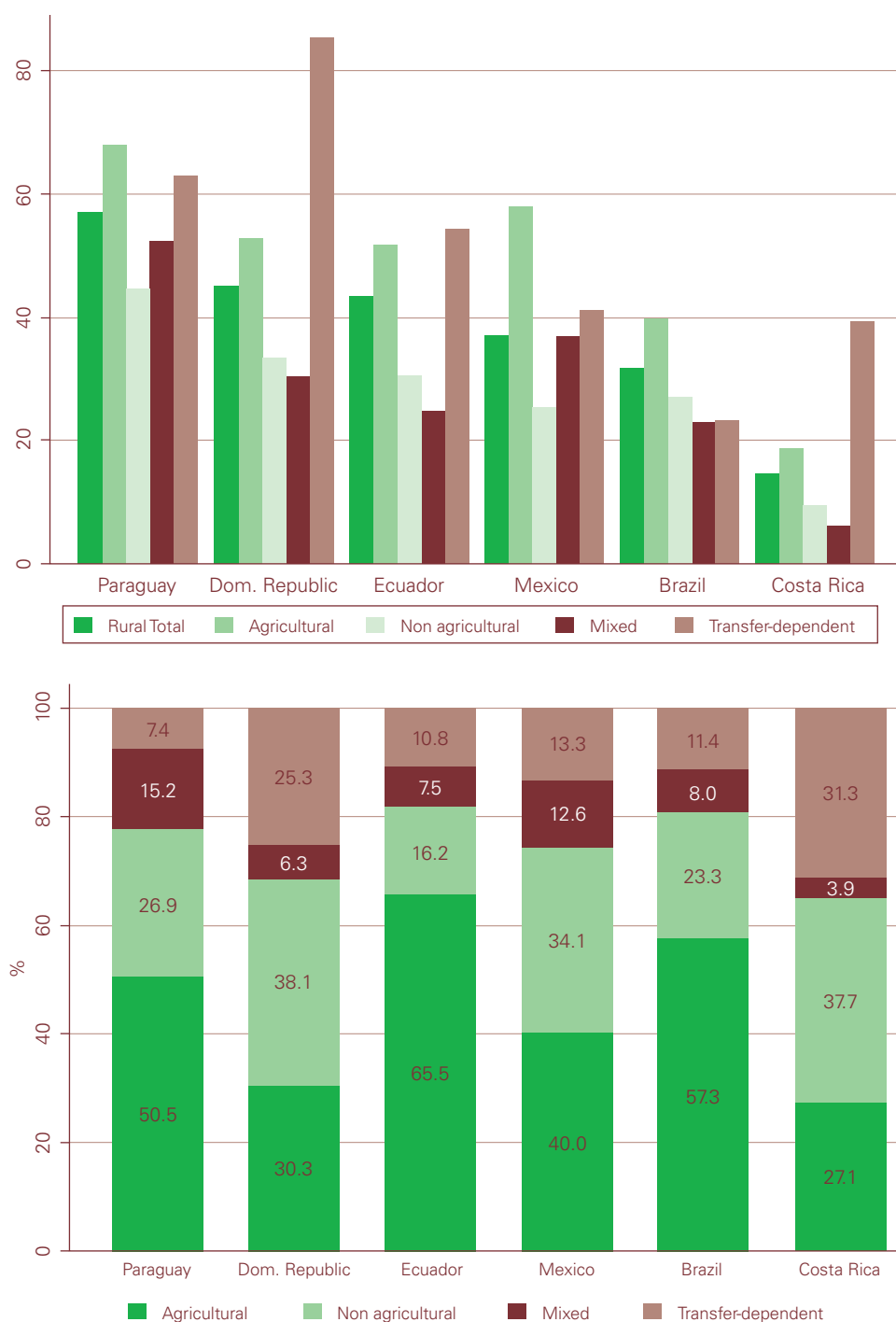
**Source:** UDA/ECLAC, based on household surveys analyzed by ECLAC

and Costa Rica. Especially noteworthy, however, is the low rate of poverty in transfer-dependent households in Brazil, while it accounts for the poorest group of rural households in Costa Rica (Figure 18).

Analyzing the relative distribution of poor households, the largest share usually corresponds to agricultural households (Figure 18). This group accounts for more than half of all poor households in Ecuador (65.5%), Brazil (57.3%) and Paraguay

(50.5%) and is also the most significant segment in Mexico (40%). In those four countries, therefore, poverty has an important agricultural component. Non-agricultural households account for most poor households only in the Dominican Republic (38.3%) and Costa Rica (37.7%), countries in which rural households are also the most numerous (more than 50% in both instances). In those two countries, transfer-dependent households account for a significant share of impoverished households: a quarter in the Dominican Republic and almost a third in Costa Rica.

**Figure 18** | Relative distribution of rural households and poverty rate (by typology of household) in six countries of Latin America and the Caribbean (%)



Source: UDA/ECLAC, based on household surveys analyzed by ECLAC

- **Wages and transfers are important to rural income generation**

Sources of household income are classified in three broad categories depending on whether they are agricultural, non-agricultural or transfers. In the former two cases, a distinction is made between three sources of income generation by form of occupation: a) wage income; b) income generated by those who are self employed and from unpaid family workers; and c) income generated from activities conducted by employers. Agricultural and non-agricultural households are both transfer recipients.

#### *Composition of income by typology of household*

Figure 19 summarizes the results of the composition of income by type of household. In most countries there are major differences between the household groups, especially between agricultural and non-agricultural. The most significant exception is Costa Rica, in which the percentages of income sources are similar across household groups. The most notable difference between agricultural and non-agricultural households is seen in the importance of wage income as opposed to own-account income. Wage income is significantly greater among non-agricultural households and own-account income greatest among agricultural households (except in Costa Rica); and these differences are most pronounced in Paraguay (8% vs. 58% wages and 63% vs. 22% own-account) and in the Dominican Republic (12% vs. 43% wages and 70% vs. 40% own-account).

In all the countries, wages are the main source of income for non-agricultural households and mixed households except in the Dominican Republic. A major contrast in the income profiles of agricultural households is shown between Costa Rica (the country with the lowest rate of rural poverty) and the Dominican Republic and Paraguay (the two countries with the highest rates of rural poverty). In Costa Rica, wages represent a greater percentage of income for agricultural

households (60%) but a lower share (15%) from self-employment. The opposite situation is true in the Dominican Republic and Paraguay: wages represent the smallest share of income for agricultural households (less than 15%) as opposed to income from self-employment (greater than 60%). Employer incomes are significant among agricultural households only in Mexico. Lastly, in all countries income from transfers is more important for agricultural households with that trend most pronounced in Mexico (26%) and Brazil (29%).

#### *Income composition by household poverty level*

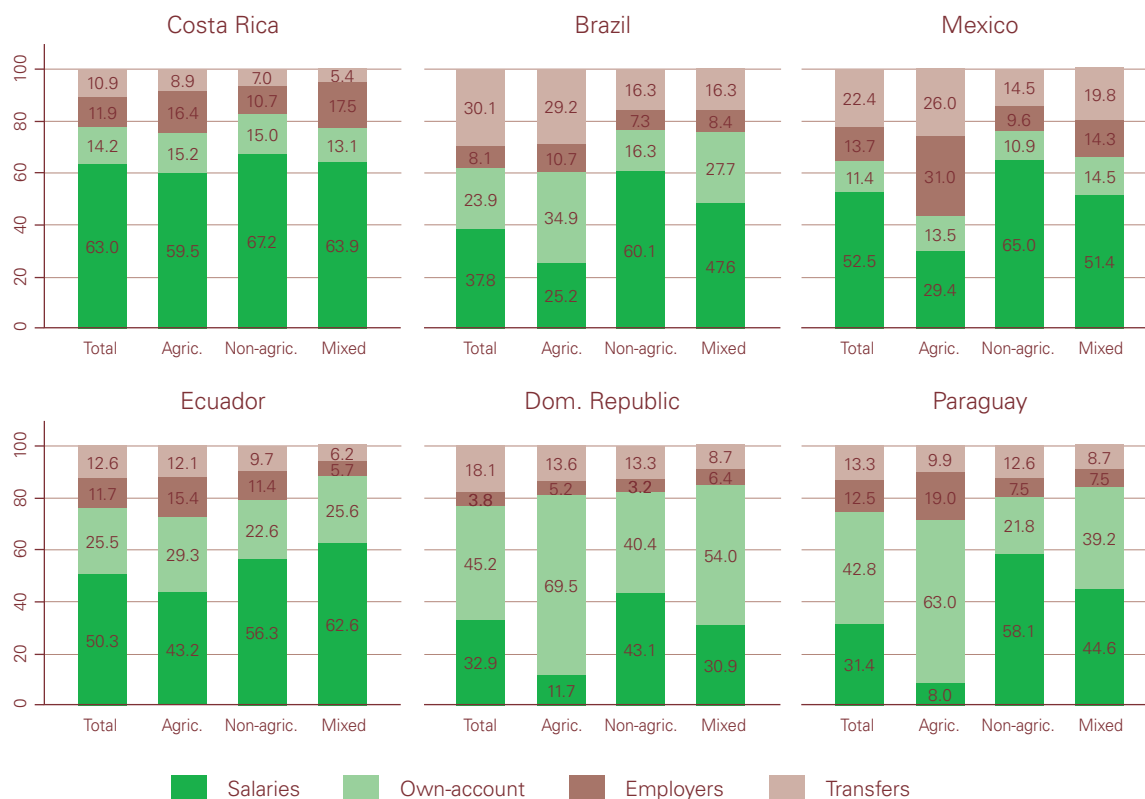
Income-profile results by poverty status are shown in Figure 20. Among poor households there is no defined pattern regarding primary income sources. Agricultural wage income is important in Brazil and Ecuador; non-agricultural wage income in Mexico and the Dominican Republic; own-account income is prominent in Paraguay, and transfers lead in Costa Rica and Brazil. Another key finding is that transfers account for more than 30% of income for poor households in Costa Rica, Mexico and the Dominican Republic.

The patterns are more obvious when comparing the relative importance of income sources between poor and non-poor households. Self-employed farm incomes are more important to poor households in all countries, as are agricultural wages (except in Costa Rica); non-agricultural wages are important to better off households (except in the Dominican Republic); and transfers are more important for poor households (except in Brazil).

The above results show the importance of both wages and transfers to rural incomes. Transfers are one of the principal income sources of poor households in all countries and wage income also plays a major role in five out of the six countries (with Paraguay the exception). In fact, in those five countries wages and transfers are among the two main sources of income for agricultural households. In contrast, self-employed activities,



**Figure 19** | Income composition of rural households, by household type, in six Latin American and Caribbean countries (%)



Source: UDA/ECLAC, based on household surveys analyzed by ECLAC

which in the case of agriculture can be taken as the equivalent of family agriculture, are one of the two main income sources for farm families only in Ecuador, the Dominican Republic and Paraguay (the three countries with the highest rates of rural poverty); and one of the two principal sources for poor households only in Paraguay.

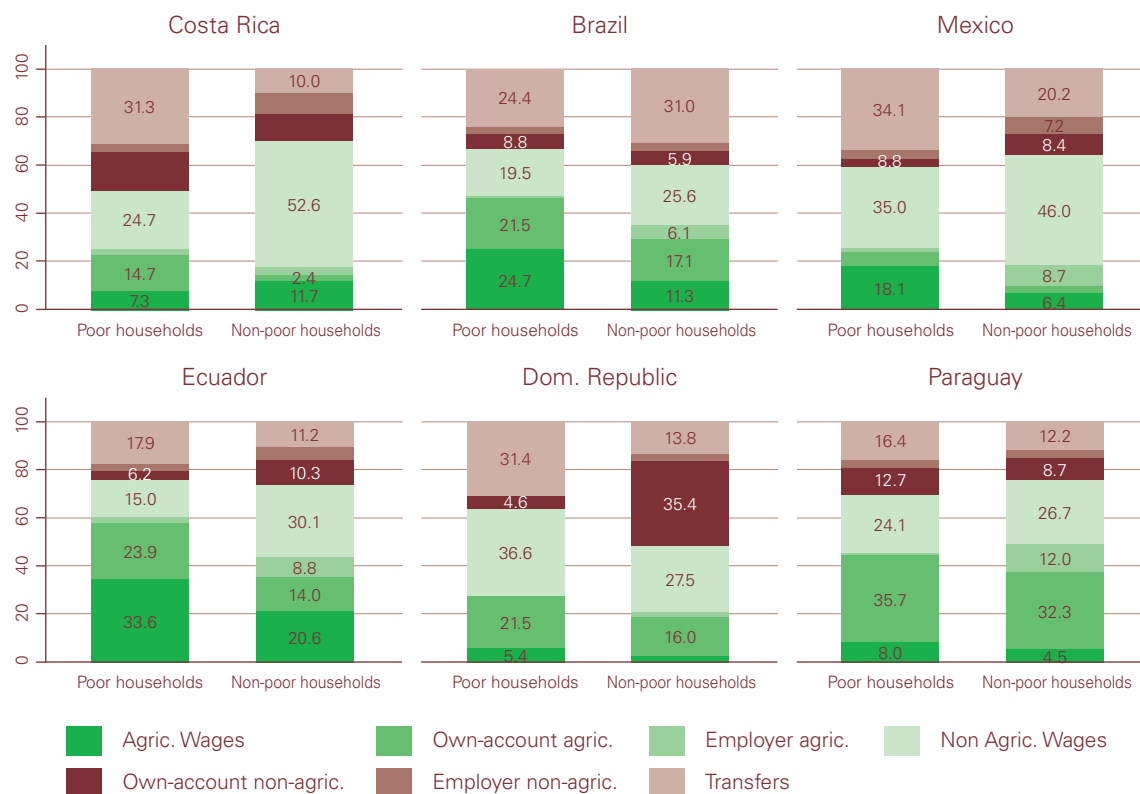
#### *Poverty sensitivity to changes in income sources*

The analysis continues with an evaluation of the sensitivity of poverty rates to variations in income sources (Table 3). The study compares increases

of 5% and 10% in wages (across the board and separately by agricultural and non-agricultural sources), and in both own-account income and in income from transfers. The simulations were for purposes of comparative analysis and assume that all other variables included in calculating poverty (e.g. prices) are constants.

The first aspect to underline is that in four out of the six countries the greatest reductions in the poverty rate occurred in a scenario of general wage-income growth, both 5% and 10%. The two exceptions were the Dominican Republic and Paraguay. In both countries, a 5% wage

**Figure 20 |** Income composition of rural, poor and non-poor households, in six Latin American and Caribbean countries (%)



**Source:** UDA/ECLAC, based on household surveys analyzed by ECLAC

increase had the greatest impact in the case of own-account income due to the importance of self-employment in both countries; however, in the Dominican Republic a generalized 10% expansion of wages has a greater effect than a similar increase in own-account income. In both countries a rise in own-account - especially in a 10% scenario - has a significant effect on poverty rates among agricultural households.

When comparing separate increases in agricultural and non-agricultural wages, in most countries the most important effect was due to an increase in non-agricultural wages, with the most dramatic differences in Mexico, the Dominican Republic

and Paraguay. Only in Ecuador was there a greater impact from growth in agricultural wages. In Costa Rica and Brazil, the effects of both agricultural and non-agricultural wage increases were very similar.

The effect of wage growth on poverty reduction is equal to or greater than that of rising income from transfers. This applies to all countries in the event of generalized wage increases and an increase confined to non-agricultural wages. Only in Mexico and Paraguay did the effect of greater transfers outweigh that of agricultural wages, both for 5% and 10% increases.

**Table 3** | Simulation of changes in the poverty rate among households for variations in income sources  
(% and percentage-point variations)

COUNTRY	Poverty rate	Percentage-point change											
		Wages		Agricultural wages		Non-agricultural wage		Own-account income		Transfers			
Household group		+ 5%	+ 10%	+ 5%	+ 10%	+ 5%	+ 10%	+ 5%	+ 10%	+ 5%	+ 10%	- 5%	-10%
<b>COSTA RICA</b>													
Rural poverty	14.7%	-0.3	-0.8	-0.3	-0.2	-0.2	-0.5	-0.2	-0.6	-0.2	-0.3	0.6	1.0
Agricultural	18.7%	-0.5	-1.0	-0.5	-1.0	0.0	0.0	-0.2	-0.9	-0.3	-0.4	0.1	0.1
Non – agricultural	9.6%	-0.3	-0.9	0.0	0.0	-0.3	-0.9	-0.3	-0.6	0.0	0.0	0.3	0.4
Mixed	6.2%	-0.3	-0.7	-0.3	-0.4	0.0	-0.3	0.0	-0.3	0.0	-0.1	0.0	0.0
Transfer - dependent	39.3%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-1.2	-1.6	3.2	6.6
<b>BRAZIL</b>													
Rural poverty total	31.8%	-0.7	-1.4	-0.3	-0.7	-0.4	-0.6	-0.3	-0.8	-0.2	-0.4	0.2	0.4
Agricultural	39.6%	-0.6	-1.4	-0.6	-1.4	0.0	0.0	-0.4	-1.0	-0.1	-0.3	0.2	0.3
Non – agricultural	27.0%	-1.0	-1.8	0.0	0.0	-1.0	-1.8	-0.4	-0.8	-0.1	-0.2	0.1	0.1
Mixed	22.9%	-1.2	-2.1	-0.5	-0.8	-0.7	-1.3	-0.4	-1.0	-0.2	-0.2	0.1	0.3
Transfer - dependent	23.4%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.3	-1.0	0.6	1.0
<b>MEXICO</b>													
Rural poverty total	37.0%	-1.3	-2.0	-0.2	-0.5	-1.1	-1.6	-0.5	-0.8	-0.9	-1.5	0.6	1.2
Agricultural	58.8%	-0.6	-1.5	-0.6	-1.5	0.0	0.0	-0.4	-0.8	-1.0	-1.5	0.8	1.1
Non – agricultural	24.2%	-1.8	-2.6	0.0	0.0	-1.8	-2.6	-0.7	-0.9	-0.5	-0.9	0.4	0.7
Mixed	38.2%	-1.5	-2.3	-0.3	-0.5	-1.3	-1.9	-0.4	-0.9	-0.9	-1.4	0.4	1.1
Transfer - dependent	41.2%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-2.6	-4.3	1.1	3.5
<b>ECUADOR</b>													
Rural poverty total	43.5%	-1.1	-2.2	-0.7	-1.5	-0.4	-0.8	-0.8	-1.5	-0.3	-0.7	0.5	1.1
Agricultural	51.7%	-1.0	-2.4	-1.0	-2.4	0.0	0.0	-1.0	-1.9	-0.2	-0.6	0.6	0.8
Non – agricultural	30.6%	-1.2	-2.4	0.0	0.0	-1.2	-2.3	-0.5	-1.1	-0.3	-0.7	0.5	0.9
Mixed	24.7%	-1.8	-2.9	-1.1	-1.2	-1.2	-1.6	-0.7	-1.3	-0.1	-0.5	0.2	0.4
Transfer - dependent	54.2%	0.0	0.0	0.0	0.0	0.0	0.0	-0.8	-1.2	-0.8	-0.9	0.0	4.9
<b>DOMINICAN REPUBLIC</b>													
Rural poverty total	45.1%	-0.4	-1.6	0.0	-0.2	-0.3	-1.4	-0.8	-1.5	-0.1	-0.4	0.5	0.6
Agricultural	52.6%	-0.1	-0.8	-0.1	-0.8	0.0	0.0	-2.1	-4.0	-0.2	-0.4	0.1	0.1
Non – agricultural	33.5%	-0.6	-2.6	0.0	0.0	-0.6	-2.6	-0.4	-0.8	0.0	0.0	0.1	0.2
Mixed	30.3%	-0.3	-0.7	0.0	0.0	-0.3	-0.3	-0.7	-0.7	0.0	0.0	0.0	0.0
Transfer - dependent	85.4%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.7	-2.2	2.9	3.3
<b>PARAGUAY</b>													
Rural poverty total	57.1%	-0.9	-1.6	-0.2	-0.5	-0.7	-1.4	-1.4	-2.4	-0.7	-1.0	0.2	0.5
Agricultural	68.2%	-0.1	-0.5	-0.1	-0.5	-0.1	-0.1	-1.4	-3.0	-0.8	-1.0	-0.1	0.1
Non – agricultural	44.6%	-1.2	-2.6	0.0	0.0	-1.2	-2.6	-2.0	-2.4	-0.6	-0.6	0.4	0.5
Mixed	52.6%	-2.5	-3.0	-1.1	-1.6	-1.8	-3.0	-0.5	-1.8	-0.3	-0.3	0.0	0.5
Transfer - dependent	63.0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-1.6	-4.2	1.9	3.5

Source: UDA/ECLAC, based on household surveys analyzed by ECLAC

The most noteworthy aspect of the increase in income from transfers, as one might expect, is its importance for the household group entirely dependent on this source of income. The most significant effects were recorded in Mexico, the Dominican Republic and Paraguay. It should also be noted that in all countries the second most pronounced effect was in agricultural households.

Generally speaking, therefore, wage growth tends to weigh more in poverty reduction than a similar expansion of own-account income and in transfers. However, the poverty rate is generally more sensitive to reductions than increases in transfers. A 10% decline in this income source expands the rural poverty rate by a full percentage point or more in Costa Rica (1.0), Mexico (1.2) and Ecuador (1.1), and considerably more so in households entirely dependent on this source of income.

An analysis of the importance of income from transfers includes a review of its composition whether from pensions, remittances or other sources (Table 4). The relative importance of remittances vis-à-vis pensions allows us to divide the six country sample into two groups<sup>26</sup>: on the one hand, Costa Rica and Brazil, where pensions are the dominant source (57.9% in Costa Rica and 98.6% in Brazil); and on the other, Mexico, Ecuador, Dominican Republic and Paraguay, where remittances outweigh pensions in the transfer mix.

There are also differences in pension- and remittance-income distribution between poor and non-poor households. Pension income largely goes to non-poor households, while remittance income, especially in the countries where remittances are most significant, goes more toward poor households: 53.0% in the Dominican Republic, 41.7% in Paraguay and 23.0% in Mexico. In these countries, therefore, a fall in remittances such as that seen during the recent crisis could have an important impact on rural poverty, especially in transfer-dependent households. In fact, in those three countries the

rate of extreme poverty between 2007 and 2008 increased from 24.6% to 29.0% in the Dominican Republic, from 42.5% to 43.1% in Paraguay and from 16.1% (in 2006) to 19.8% in Mexico, along with a reduction in remittances that began in the second half of 2008 and deepened in 2009.

### *Differences in average incomes by wage earner*

The preceding analysis is complemented by identifying differences in the average incomes of employed members in distinct household groups (Table 5). Three types of comparisons were made with the first between agricultural and non-agricultural wages. In all the countries average non-agricultural wage income per earner was greater than agricultural wage income, and that gap is greatest in the case of non-poor households. The differences fluctuate between 29% (Paraguay) and 63% (Costa Rica) in the group of non-poor households; and between 21% (Dominican Republic) and 44% (Costa Rica) among the poor.

The second comparison is between average non-agricultural wages and average own-account income in the agricultural sector. On this level the differences are more pronounced than those in the first case between non-poor households and even more between poor households with the difference in some cases wider than 100%. For example, non-agricultural wages are 5.7 times the own-account income of poor households in Mexico, 4.2 times in Brazil and 3.8 times in Ecuador.

The third comparison is within the agricultural sector between average wages and own-account incomes. In this case the most common result is for wages to surpass own-account income and the greatest gap is seen in Mexico, Brazil and Ecuador.

Results for the second and third comparisons point to adverse conditions of profitability for family agriculture (i.e. agricultural self-employment) in most countries of the region, especially among

<sup>26</sup> No data on remittances is available for Mexico.

**Table 4** | Composition of transfer income in rural areas of six Latin American and Caribbean countries, by poverty level (%)

	TOTAL	Pensions	Remittances	Others	TOTAL	Pensions	Remittances	Others
COUNTRIES	% of vertical column				% of horizontal row			
<b>COSTA RICA</b>								
Poor	13.8	9.3	6.5	21.5	100	39.0	2.0	59.0
Non-poor	86.2	90.7	93.5	78.5	100	60.9	4.6	34.5
Total	100.0	100.0	100.0	100.0	100	57.9	4.2	37.9
<b>BRAZIL</b>								
Poor	3.8	3.5	26.5	4.1	100.0	90.3	9.6	0.1
Non-poor	96.2	96.5	73.5	95.9	100.0	98.9	1.1	0.1
Total	100.0	100.0	100.0	100.0	100.0	98.6	1.4	0.1
<b>MEXICO</b>								
Poor	24.5	3.5	23.1	30.1	100.0	2.1	21.6	76.2
Non-poor	75.5	96.5	76.9	69.9	100.0	19.2	23.4	57.4
Total	100.0	100.0	100.0	100.0	100.0	15.0	23.0	62.0
<b>ECUADOR</b>								
Poor	33.2	4.7	13.0	45.7	100.0	2.3	7.2	90.6
Non-poor	66.8	95.3	87.0	54.3	100.0	22.9	23.7	53.4
Total	100.0	100.0	100.0	100.0	100.0	16.0	18.2	65.7
<b>DOMINICAN REPUBLIC</b>								
Poor	39.3	18.3	53.0	30.0	100.0	9.4	68.5	22.1
Non-poor	60.7	81.7	47.0	70.0	100.0	27.2	39.4	33.4
Total	100.0	100.0	100.0	100.0	100.0	20.2	50.9	28.9
<b>PARAGUAY</b>								
Poor	32.9	4.2	41.7	31.0	100.0	1.8	66.6	31.5
Non-poor	67.1	95.8	58.3	69.0	100.0	20.2	45.5	34.3
Total	100.0	100.0	100.0	100.0	100.0	14.2	52.5	33.4

Source: UDA/ECLAC, based on household surveys analyzed by ECLAC

poor households, compared to both agricultural and non-agricultural salaried employment. This situation is especially pronounced in Mexico, and to a lesser extent in Brazil and Ecuador.

The only two notable exceptions are Paraguay and Costa Rica. In Paraguay, average own-account agricultural income is higher than both agricultural and non-agricultural wage income

among non-poor households, while in Costa Rica the differences are less pronounced among poor households.

- **Key public policy issues: labor market reform, employment diversification and transfers**

The evidence given above allows us to draw three main conclusions:

*First*, the importance of wage income, especially from non-agricultural employment, both in terms of its weight in the composition of household income and its poverty-reduction effect

*Second*, the importance of diversifying production activities to broaden the range of employment options for those living in rural areas, especially in terms of salaried jobs. Two factors identified by the study illustrate this point: firstly, the lower poverty rate in countries with the greatest portion of non-agricultural employment and among mixed households; and, secondly, the higher poverty rate in countries with the greatest share of income generated from self-employment in agricultural activities.

*Third*, the importance of government transfers for the poor, including those from agricultural households, and their role in avoiding higher poverty rates.

**Table 5 |** Indicators of average income<sup>1</sup> disparities between employed members of rural poor & non-poor households, by type of household, in six Latin American and Caribbean countries  
(based on income per earner)

COUNTRY	Poverty level	Non-agricultural wage / Agricultural wage, A (b)	Non-agricultural wage / Agricultural wage, B (c)	Non-agricultural wage / Agricultural own-account, A (b)	Non-agricultural wage / Agricultural own-account, B (c)	Agricultural wage/ Agricultural own-account, A (d)	Agricultural wage/ Agricultural own-account, B (e)
COSTA RICA	Poor	1.44	2.47	1.72	1.45	1.20	0.59
	Non-poor	1.63	1.23	2.12	1.79	1.30	1.45
BRAZIL	Poor	1.24	1.62	4.19	2.71	3.38	1.67
	Non-poor	1.50	1.75	2.33	1.13	1.56	0.64
MEXICO	Poor	1.42	1.37	5.73	6.73	4.03	4.90
	Non-poor	1.60	1.44	2.74	3.25	1.71	2.26
DOMINICAN REPUBLIC	Poor	1.21	2.55	1.49	1.26	1.24	0.49
	Non-poor	1.32	2.95	1.22	1.31	0.92	0.44
ECUADOR	Poor	1.25	1.49	3.79	3.51	3.04	2.36
	Non-poor	1.61	1.75	2.36	1.51	1.47	0.86
PARAGUAY	Poor	1.40	1.81	2.79	2.23	1.99	1.24
	Non-poor	1.29	1.73	0.61	0.96	0.47	0.55

a. Based on average income by earner for the various income sources.

b. Comparison between agricultural households and non-agricultural households.

c. Comparison between predominantly agricultural mixed households and predominantly non-agricultural mixed households.

d. Comparison among agricultural households.

e. Comparison among predominantly agricultural mixed households.

**Source:** UDA/ECLAC, based on household surveys analyzed by ECLAC

These factors underscore the importance of three types of policies in rural areas: a) *labor market policies* that allow for an improved quality of employment and thus in income levels; b) *production development policies* that promote the diversification of non-agricultural sources of rural employment; and c) *social protection policies* to stop poverty rates from rising.

The first two types are essential to support the development of new production sources in rural areas, where agricultural is becoming less and less synonymous with rural. In addition, the importance of such policies is growing in a context of recovery from the economic crisis given their potential as catalysts for recovery and investment promotion programs in rural areas.







## Trade policy developments and outlook

Highly volatile agricultural prices, uncertain economic environment and the lack of progress in Doha pose new challenges for agricultural and trade policy



### FACTS

- Food prices have declined since 2008, which has prompted many governments in the region to ease export restrictions imposed during the food crisis.
- The economic crisis and persistent price volatility are the two major factors that determined government policies during 2009. The policy focus has shifted away from emergency measures towards enhancing agricultural productivity and consolidating market access for food products.
- Achieving food security is still a major challenge in many parts of the region where countries are reducing import barriers and adopting measures to facilitate trade in food products. Regional cooperation on agriculture and new modalities of intraregional trade are gaining momentum.
- Predictions for a possible conclusion of the WTO's Doha Round in 2010 are gloomy, since no material progress has been made in bridging the outstanding gaps since the collapse of talks in 2008, with the exception of an agreement on bananas between the European Union and Latin American producers.
- Negotiations between Central American countries and the European Union towards an Association Agreement advanced in 2009, and are likely to be concluded by April 2010. Colombia and Peru finalized negotiations with the EU in March.

### • Recent developments in trade policy

*Some trade policy measures that were adopted in a context of soaring food prices have contributed to a decline in global trade*

The agriculture sector, like other sectors of the economy, was strongly affected by high and volatile commodity prices during the price boom of 2006-2008 and the subsequent economic crisis. On the positive side, the governments of Latin America and the Caribbean took a proactive stance in facing the challenges posed by the unstable external environment and introduced a number of important measures that helped the agricultural sector to cope more effectively with the changing conditions in the world markets.

During 2007 and 2008, government efforts were focused on minimizing the negative impacts of soaring food prices on consumers with measures that included income transfer programs and attempts to lower domestic prices through export restrictions, reduced import tariffs and public-private agreements on prices. In some cases, countries also made direct interventions in food markets through the expansion of government purchases, building up buffer stocks, reactivating stabilization funds and price regulation (FAO, 2009d).

Trade measures adopted to deal with the consequences of steep price increases had an ambiguous effect on trade flows. Reductions in

import tariffs and other measures that granted greater market access to imported goods had a positive effect on regional and global trade. But other trade measures, such as export restrictions and increases in export taxes especially on wheat, corn and soybeans, had the opposite effect, contributing to the global slump in trade flows in 2009 (see *Special Section, Agricultural Trade: Trends and Challenges*). These policy changes were introduced with a view to boosting domestic supplies in an environment of food insecurity and, in many cases, were transitory in nature. However, by reducing global food supply, even temporarily, these measures put an upward pressure on already high international prices.

### ***Governments have eased trade restrictions imposed in 2007-2008***

In 2009 many countries continued with trade and production policies that were launched in the context of rising food prices a year or two earlier. Argentina continued applying measures that constrained grain exports, such as export taxes, export quotas, reference prices and the application of non-automatic licenses, which in particular affected wheat exports. However, as food prices leveled off, many of these measures underwent important transformations. In September 2009, the government lifted quantitative trade restrictions on wheat and maize after leading exporters and millers agreed to ensure adequate supplies for domestic markets. In exchange for a commitment from exporters to guarantee 6.5 million tons of wheat and 8 million tons of maize for domestic consumption, the government is granting export permits for the 2009/10 season. Moreover, wheat and maize export taxes are to be eliminated for small and medium-sized farmers.

Other countries also eased export restrictions in 2009, replacing quotas and prohibitions with more flexible arrangements, including public-private agreements or conditions to supply the domestic market before selling surplus abroad, as for example in the case of sugar and rice in Bolivia.

In July 2009, Ecuador lifted an export ban on maize and rice, but established export quotas.

### ***Food security is still a major concern***

As governments in the region continue to face food security concerns, especially caused by climatic conditions, many have taken measures to improve access to food for vulnerable groups, focusing on efforts to reduce prices of basic products. For example, in light of rising sugar prices in October 2009, Bolivia introduced a domestic price band for sugar. Mexico, affected by its worst drought in 60 years, realized public purchases of corn, while B. R. of Venezuela expanded operations of a government-run food outlet.

As part of these efforts, a number of countries continued with the reduction or removal of tariffs to facilitate imports of foods that comprise the basic consumption basket. Bolivia will allow duty-free imports of wheat and beef until April 31, 2010, and Colombia has set up a zero-tariff import quota for rice. Nicaragua extended the application of zero duty for a number of basic food products and Ecuador did the same for wheat and wheat flour imports. In February 2010, Ecuador also suspended an antidumping tariff on imports of over 1,000 products from Colombia. Costa Rica adopted a law in July 2009 that encourages purchases of locally produced beans and white maize, but allows tariff reduction on imports of these products if domestic production falls short of demand. These countries also continued facilitating trade within their sub-regional blocks. For example, in January 2010, the government of El Salvador implemented measures to ease imports of red beans from Nicaragua, simplifying the administrative procedures and providing financing to increase import volumes.

### ***Trade policy and macroeconomic stability***

Although many countries relaxed their trade barriers in 2009, the pressures on fiscal and current account balances triggered by the economic crisis prompted the adoption of new trade restrictions in some countries. When Ecuador was struggling with a difficult balance-of-payment situation in January 2009, it introduced far-reaching import restrictions. Ecuador took advantage of a World Trade Organization (WTO) safeguard that allows

member states with balance-of-payment difficulties to raise tariffs or impose import quotas to raise trade revenues. Although the safeguard mechanism is set out in the 1994 GATT agreement, few countries have utilized this provision. The WTO's authorization of Ecuador's import measures in June 2009 was the first such case in ten years<sup>27</sup>.

Changes in exchange rate policy have even bigger implications for trade flows as all import and export flows are affected. For example, in January the B. R. of Venezuelan government announced the devaluation of its currency, the Bolivar Fuerte, and introduced a dual exchange rate. Importers of food, medicines and other essentials are now permitted to buy dollars at a rate of 2.6 Bolivares Fuertes, which represents a 17% devaluation, but other sectors of the economy now pay 4.3 Bolivares Fuertes, which represents a devaluation of 100%. B. R. of Venezuela already has the highest inflation rate in the region and the devaluation could exacerbate it. To counteract this effect, the government is subsidizing staple foods and enforcing fixed prices on food sold in supermarkets. It also plans to increase wages 25% to maintain purchasing power.

### ***The economic crisis has intensified bilateral trade tensions***

On a bilateral basis, there have been cases of new barriers to trade. The B. R. of Venezuela halted food imports from Colombia in October 2009, while Brazil has restricted import licenses for wheat flour, wine and oil from Argentina to support its milling industry in the south of the country that

has been hurt by Argentine incentives for wheat flour exporters. On a similar note, Uruguay has complained that Brazil is delaying issuance of import licenses for Uruguayan dairy products. In February 2010, Chile imposed a temporary antidumping tariff of 22.2% on imports of Argentine wheat flour.

The countries have also intensified the use of phytosanitary standards to restrict imports. For example, El Salvador has been impeding imports of pork from Guatemala by applying such standards, while Panama is blocking imports of vegetables and fruits from Guatemala due to alleged pest risks. Argentina and Brazil are currently negotiating phytosanitary requirements for exports of apples and citrus fruits, and Uruguay is discussing sanitary requirements to enable exports of dairy products to the Brazilian market. Although many of these measures have been adopted in response to valid concerns over food safety and plant and animal health, an increasing number of these restrictions could be an indication of growing protectionism pressures in the context of economic difficulties faced by domestic producers.

### **• Trade policy outlook**

Against the backdrop of persistent price volatility, the uneven speed of economic recovery across the region and stalled multilateral trade negotiations in the Doha Round, countries are facing multiple challenges in adjusting their agricultural trade policies to create a favorable environment for growth.

### ***Multilateral negotiations: The Doha Round drags on***

The last round of Doha talks stalled in July 2008 primarily due to the failure of major players to reach an agreement on agriculture. In particular, there was a disagreement between India and the United States over the application of the Special Safeguard Mechanism (SSM), a tool which allows developing countries to raise tariffs to protect domestic producers from unexpected import surges and falling prices.

<sup>27</sup> The conclusions of the report presented by the Committee on Balance-of-Payments Restrictions, on 4 June 2009 included the following points:

- The trade measures applied by Ecuador covered about 8.7% of all tariff lines, affecting a volume of trade equivalent to some 23% of its total 2008 imports;
- Ecuador will replace most of the quantitative restrictions for price-based measures no later than 1 September 2009;
- Ecuador will progressively modify the level and scope of the measures as its balance-of-payments situation improves; and
- The Committee welcomed Ecuador's commitment to remove all trade measures for balance-of-payments purposes no later than 22 January 2010. (Instead, Ecuador is introducing a gradual tariff elimination. On January 23, 2010, the Government passed a resolution reducing the tariffs by 10% and will reevaluate the balance of payment situation every month to warrant further reductions).

The last WTO ministerial conference in November 2009 did not include negotiating sessions and focused on technical tasks. Agriculture negotiations resumed in February 2010, but did not produce any consensus on the main pending issues including SSM, sensitive products, tariff rate quotas, cotton subsidies and tropical products. These controversial topics were brought up in informal discussions but did not enter into formal negotiations. Failure to close gaps in trade talks and the difficulty of mobilizing political support for Doha in the United States leave the prospects of meeting the 2010 deadline for closing the round very dim.

Agriculture remains the most important and controversial issue on the Doha agenda. Several issues need to be addressed and concessions have to be made by major players in order to overcome the impasse. The EU and developing countries, led by Brazil and India, want the U.S. to improve its offer to reduce its generous domestic support for agriculture, which is laid out in the current Farm Bill. For its part, the U.S. is pushing for further reductions in tariffs and fewer exemptions from tariff cuts on sensitive and special products<sup>28</sup>.

Although multilateral talks have often resulted in a stalemate on critical agricultural issues, the WTO is nevertheless an effective venue for discussing and solving technically complex and politically sensitive trade issues, as was the case with the long running dispute over trade in bananas (see Box 10).

### *Uneven progress in negotiations with the EU across the region*

The lack of progress in Doha has been partly offset by advances in bilateral and regional trade negotiations in Latin America and the Caribbean, and in particular progress towards Association Agreements with the European Union.

Trade negotiations between the EU, Colombia and Peru ended in March with the resolution of a number of outstanding issues. This last of nine rounds focused on intellectual property issues, rules of origin, services and market access, especially with regard to preferential access for Colombian products such as bananas, sugar, rum, palm oil, candies and chocolate. The talks were launched in 2007 with the view to concluding an Association Agreement between the EU and the Andean Community as a block. The bloc-to-bloc talks eventually turned into bilateral negotiations due to differences among the Andean countries on intellectual property issues, biodiversity protection and the EU's banana tariffs<sup>29</sup>. Since July 2009, the negotiations have proceeded on a bilateral basis between the EU, Colombia and Peru, respectively.

In February, Central American countries<sup>30</sup> concluded another round of negotiations with the EU. Seven intensive rounds of negotiations since 2007 have resulted in important progress in practically all important topics. The eighth round, scheduled for July 2009, was postponed in the wake of the political situation in Honduras. When the talks resumed in February 2010, the parties discussed sanitary measures, environmental protection, energy and transportation, as well as cases of specific Central American products such as bananas, sugar and rice. Important concessions were obtained with regard to market access for shrimps and rum from Central America. Another important achievement for the Central American region is inclusion of a provision that allows any Central American country to request clarification and guidance on meeting EU standards and complying with regulations that could constitute technical barriers to trade. The negotiations are expected to be completed in April 2010. The pending trade topics include the use of special safeguards, agricultural subsidies, issues related to

<sup>28</sup> Special products that would not be exposed to wider market opening as part of special and differential treatment given to developing countries are those that are especially important for food security, livelihood security and rural development.

<sup>29</sup> Bolivia pulled out of the talks in 2007 and Ecuador in 2009.

<sup>30</sup> Apart from Guatemala, El Salvador, Honduras, Nicaragua and Costa Rica that participate fully in the negotiations process, Panama takes part in the talks as an observer and internal procedures are underway in both the EU and Central America in order to formalize its full membership in the negotiations.



## BOX 10: The end of the banana war

The Geneva Agreement on Trade in Bananas was signed by the European Union and Latin American banana suppliers with most-favored-nation status on December 15, 2009, creating a new structure and framework for exporting bananas to the European Union. This agreement includes obligations for all parties, which in the case of the EU consists of reducing its banana tariff from 176 Euros per metric ton to 148 Euros per ton by the end of 2010, and then reducing it gradually to 114 Euros per ton by 2017 if the Doha Round is concluded or by 2019 if it is not. The deal is part of the early harvest commitments of the EU in the framework of the Doha Round.

The banana agreement ended one of the most complex negotiation and legal processes in the multilateral trading system, involving multiple legal rulings by dispute panels, the Appellate Body and special arbitrators that took almost two decades. These negotiations took place between countries within the framework of the Uruguay Round and the on-going Doha Round. The dispute involved not only Latin American suppliers and the EU, but also countries in Africa, the Caribbean and Pacific (ACP) and the United States, as the source of an important part of Foreign Direct Investment in the region. The Latin American banana exporters with the biggest presence in Europe, Costa Rica and Ecuador, could be the main beneficiaries of the agreement, but much depends on the EU's transition from a protected market with quotas and tariffs to a market regulated only by tariffs, which will allow Latin American countries to obtain a greater market share.

At a time when the cooperation of the whole international community is needed to successfully conclude the Doha Round, the end of the banana dispute is a clear sign of the importance of this multilateral trade forum for all countries, but especially developing countries. The WTO's dispute settlement mechanism has helped resolve disputes in many areas, including agriculture, by finding common ground between countries. The end of the so-called banana war has contributed towards consensus building in the WTO and will help facilitate negotiations on other issues, including market access for tropical products, which is a priority for many Latin American countries.

rules of origin and geographic indications. Both agreements are expected to be signed at the Latin America–EU Summit in May 2010.

Less progress has been made, however, in talks between the EU and Mercosur countries with

16 negotiating rounds since 2000 yielding little consensus on the main issues. The talks stalled in 2004 and have been virtually frozen since 2006, hampered by some of the same issues impeding the Doha round: difficulties in dismantling the EU's farm subsidies and access



for European manufacturing goods and services to the Southern Cone markets. The parties had agreed to await further developments in the Doha round to proceed with the negotiations, but the bleak prospects for Doha's revival may open the possibility for reopening bi-regional negotiations.

***Implementing trade agreements poses the challenge of modernizing institutions and improving inter-agency coordination<sup>31</sup>***

For those countries that already have Free Trade Agreements (FTAs) with their major trading partners, the main challenge lies in adapting their national legislation to meet the commitments in the FTAs and implementing complementary measures to allow them to benefit fully from the new trading environment. For example, Chile and Costa Rica are implementing measures and programs to help agricultural producers take advantage of greater market access for their products, while at the same time using instruments laid out in the agreements to protect their most sensitive sectors.

For both Chile and Costa Rica, strategic positioning in the international economy is key to achieving their development objectives. Both countries have open economies and during the last two decades their trade policies focused on active participation in the multilateral trading system and negotiating FTAs, which has allowed them to diversify exports and markets. Efficient coordination amongst all actors involved as well as institutional reforms were needed to implement new legal frameworks under the FTAs.

The implementation of the Dominican Republic-Central America Free Trade Agreement (DR-CAFTA) in Costa Rica marked a turning point as it involved the approval of 11 laws and 23 regulations and decrees as well as

new mechanisms of working between public organizations and civil society. In Chile's case, to ensure efficient implementation of the FTAs, the General Directorate of International Economic Relations (Direcon) is working closely with other state agencies, such as the Office for Agricultural Studies and Policies (Odepa) of the Chilean Ministry of Agriculture, which has the mandate to develop agricultural policies, participate in the administration of FTAs and follow up on trade discussions in international forums.

The growing number of trade agreements signed by both countries has led to the creation of formal and informal coordination mechanisms in the area of agriculture and fisheries to meet the diverse challenges associated with the administration of free trade agreements. In Costa Rica, for example, there is consensus amongst the main actors that an urgent revision of the institutional framework for implementation of FTAs is needed. But there has been progress. Through its Executive Secretariat for Agricultural Sector Planning (Sepsa), the Costa Rican government, with the support of FAO, implemented the project '*Developing technical capacity for evaluating the competitiveness of agro-fishing products and the economic effects of trade*' which, although not yet fully implemented, has given recommendations for redesigning the country's trade administration system.

Chile already has policy instruments and financial resources to maximize the benefits of its trade agreements. For example, recognizing the need to meet product requirements in export markets, the government established the National Commission for Good Agricultural Practices (GAP), which encourages public-private cooperation and advises on policy reforms needed to incorporate the GAP methods in agricultural and fishing activities. In addition, since 1974 the Chilean Export Promotion Bureau (ProChile) has been identifying export opportunities and supporting exporters, mainly small and medium size firms. ProChile, and its 15 regional offices throughout the country, support companies in researching, penetrating and establishing themselves in foreign markets.

<sup>31</sup> This section is based on the work of Raúl Opitz, the head of the Trade Policy Department of the Office for Agricultural Studies and Policies (ODEPA) of the Chilean Ministry of Agriculture, and the conclusions of the Focus Group Meeting organized by IICA in February 2010 in Costa Rica with the participation of the Ministry of Agriculture and Livestock, the Ministry of Trade and the Inter-American Development Bank (IDB).

Chile, like Costa Rica, has achieved a solid position in its international trade relations. But both countries need a long-term agricultural development agenda which would build on their comparative advantages and focus on improving productivity, sanitary conditions and technological innovation. This agenda should also support the private sector in improving the quality of agricultural products to meet demands in domestic and foreign markets and upgrade the agro-industrial value chains, while also considering the rural and environmental impact of such upgrading. Costa Rica faces the bigger challenge of strengthening its institutions and agricultural policy instruments, however Chile's government also recognizes that to take full advantage of trade openness, liberalization "must be accompanied by more aggressive public policies that expand the productive base and diversify the export basket" (Direcon, 2009).

### *Advances in regional cooperation*

At the hemispheric level, the Summit of the Americas provides a venue for cooperation to meet the pressing challenges in agriculture and rural development. At the fifth Summit, held in April 2009, the final declaration committed the countries to developing and implementing policies and programs for food security, promoting investment in agriculture, prioritizing agriculture and rural issues in the national agenda, and emphasizing a multidimensional, multi-sector approach to agriculture and rural development.

This is by no means the first hemispheric agreement on agriculture. Between 2001 and 2009 five ministerial meetings on agriculture have taken place, resulting in the adoption of nine Hemispheric Ministerial Agreements as part of the process Agriculture and Rural Life in the Americas. The last agreement, signed in October 2009, adopted 15 strategic actions for the 2010/11 Hemispheric Agenda, including promoting investment in agriculture, strengthening

institutional capacity, and improving storage and food processing capabilities. The Inter-American Institute for Cooperation on Agriculture (IICA) acts as the Secretariat of this process.

Within the Latin America and Caribbean region, an action plan adopted by the Ministerial Meeting on Integration and Development (CALC) in November 2009 committed the countries to developing a regional approach for increasing productivity of the agricultural sector and coordinating food security initiatives. Similarly, at the Rio Group Summit in Cancun in February 2010, the countries issued a declaration that listed agriculture as one of the priority areas for cooperation and included an agreement to promote the development of productive capacities, technology and investment in agriculture. It also promised collaboration on increasing productivity and competitiveness of small and medium size producers.

Regional agreements provide an important framework for cooperation among countries, however the most concrete advances in regional integration and trade facilitation are taking place within the sub-regional blocks, in particular in Central America.

Central America is one of the sub-regions with the most dynamism in terms of its regional integration. Structural changes in international markets, the surge in commodity prices that preceded the global economic crisis and growing concern about the effects of climate change were the main issues addressed in the Central American Agricultural Policy 2008-2017 (PACA), approved by the Central American Agricultural Council (CAC). PACA created a roadmap for national and sub-regional initiatives and contains important guidelines to facilitate agricultural trade at the sub-regional level, particularly for strengthening and integrating information and market intelligence systems. It also promotes mechanisms to facilitate sub-regional integration in agricultural value chains, the harmonization of sanitary standards and the creation of

certification systems. A concrete step towards greater trade integration is the formulation of a regional strategy for the modernization of peripheral quarantine posts under the framework of the Central American Customs Union, which should be implemented by the end of 2010.

Among the CARICOM member states, there were three complementary agricultural policy initiatives launched between 2008 and 2009. First, the development of a Regional Strategic Development Plan (RSDP) for agriculture seeks to identify regional public goods as a critical underlying factor to regional economic integration. Secondly, the articulation and implementation of the CARICOM Community Agriculture Policy should act as a foundation for regional integration, agricultural development and food security in the region. Finally, in November 2009, the CARICOM countries started the process of formulating a Regional Food and Nutrition Policy.

### *New modalities of regional trade*

In addition to the conventional processes of regional integration, new mechanisms that facilitate agricultural trade at the regional level are being tested. In the Southern Cone, countries have moved towards greater economic integration with the establishment of a mechanism for trading in local currencies. The Local Currency Payment System (SML by its Spanish initials) has been functioning between Brazil and Argentina since October 2009, and Uruguay was expected to join the arrangement in the first quarter of 2010. Under the system, buyers and sellers can pay in their own currency instead of in U.S. dollars, eliminating some foreign exchange risks and facilitating trade.

In a similar effort to reduce reliance on the U.S. dollar in regional transactions, B. R. of Venezuela is setting up a system that uses a virtual currency to facilitate the exchange of goods between ALBA countries. In the first phase, the B. R. of Venezuela will use the system to import yellow corn, rice and beans and export bananas, coffee, corn flour

and orange juice, amongst other items. In January 2010, ALBA member countries also created an intergovernmental company for food purchase and distribution, known as the Gran-Nacional.

### ● **Policy recommendations**

The principal challenge of trade policy related to agriculture lies in simultaneously addressing food security concerns, stimulating production and increasing rural incomes. Countries should therefore focus on creating incentives to boost agricultural production to meet domestic demand, while at the same time avoiding protectionism that could constrain the global supply and distort incentives for domestic producers.

In the international arena, countries should push for the conclusion of the Doha Round by forging alliances at the regional level and striving to achieve consensus among countries with similar interests. The multilateral trading system has proved to be sufficiently flexible, allowing countries to adopt contingency measures in times of crisis. Greater market access for agricultural products would not be the only desirable outcome of multilateral negotiations. More importantly, it would consolidate the norms for international trade, making the system more reliable and predictable. It would also enhance the credibility of the Dispute Settlement Body of the WTO as a mechanism that facilitates consensus building on contentious issues, as was the case with the recent agreement on bananas.

Governments should also make sure that agriculture receives due attention in bilateral and bi-regional trade negotiations, especially with industrialized trading partners, and that the principals of special and differential treatment<sup>32</sup>, are applied with respect to market access for agricultural products. Rules for trade measures that allow protection of domestic producers in exceptional circumstances should also be well defined.

<sup>32</sup> In agricultural negotiations the purpose of special and differential treatment is to give special consideration to rural development, food security and livelihood security in developing countries.



Many countries in the region, especially those with small and open economies, already have FTAs with their main trading partners. Others continue receiving trade preferences. There is, therefore, only limited space for negotiating additional market access. Instead, countries should concentrate on benefiting from the FTAs by enhancing the competitiveness of the agricultural sector, increasing export volumes and diversifying exports. But these efforts should not divert resources from investment and policy measures that enhance productivity growth needed to ensure adequate supplies of basic foods to domestic markets.

Regional integration and cooperation have proven to be important tools in the context of uncertainty surrounding global markets for agricultural products, and there is a need for more concrete joint actions, harmonization of policies, and innovative mechanisms that facilitate regional trade.

## ● Conclusions

The decline of food prices since their peak in mid-2008 caused a reorientation of policy measures away from the immediate policy response, which

included export restrictions meant to boost the domestic supply, towards more flexible trading arrangements that balance the interests of consumers with those of producers.

Although prices have leveled off since 2008, they are still high relative to the previous decade and most analysts expect them to stay that way in the short to medium term. Determining an optimal trade strategy is not straightforward given the multiple sources of uncertainty that countries are facing: commodity prices continue to be highly volatile, the strength and the speed of economic recovery is unclear, and the Doha Round appears stalled.

This scenario brings new challenges for agricultural policy makers and new objectives of trade policies and strategies. The solutions, already being pursued by many governments in the region, include reducing trade restrictions and facilitating regional trade, expanding market opportunities for agricultural exports by negotiating and implementing free trade agreements and overcoming supply-side constraints in the agricultural sector by adopting complementary policies.



A stylized illustration of a plant with a thick, curved trunk and several large, pointed leaves. The plant is rendered in shades of green and brown, with some leaves appearing as white outlines against the background. The background is split into a dark red upper half and a green lower half, separated by a horizontal dotted line.

# Section IV: Agricultural trade





## Agricultural trade: trends and challenges<sup>33</sup>

Agricultural trade suffered less from the economic recession than other sectors and agricultural commodities continue providing a solid base for export earnings, although export diversification remains a major challenge



### FACTS

- The boom in commodity prices in 2006-2008 resulted in a sharp increase in the value of agricultural exports from Latin America and the Caribbean during that period. Exports of soybeans, soybean oil and maize registered the highest growth in value. In quantitative terms, however, agricultural exports grew modestly: 5.3% in 2007 and 1.3% in 2008. During 2007/08, significant growth was recorded in export volumes of wheat, maize and oil crops, but export quantities declined in 2008/09.
- As a result of the economic crisis, Latin American and Caribbean exports experienced a major slump in 2009, although the performance has been better than in other parts of the world. Agricultural exports recorded a less dramatic decline than exports in other sectors, but the performance across the region has been mixed. Some countries managed to increase exports of agricultural products in 2009 despite the sluggish global demand, thereby easing pressure on their balance of payments.
- Among the top exporters of agricultural commodities in the region, Brazil is the only country that succeeded in expanding both production and exports of its most important agricultural products. Argentina, on the other hand, is facing major challenges in sustaining supplies of wheat, maize and oilseeds due to adverse weather conditions and policy interventions amongst other factors. Argentina, Paraguay and B. R. of Venezuela registered the biggest slumps in the value of their agricultural exports in 2009.

<sup>33</sup> Various sources of trade data are used in the analysis. Wherever possible, COMTRADE data from the WITS database on import and export values are used. However, since for most countries the last year for which COMTRADE statistics are available is 2008, we supplement this information with trade data from official country sources for 2009. For trade volumes, we use the statistics of the Netherlands Bureau for Economic Analysis, which publishes most up to date information on the global scale. Finally, we use FAO Food Outlook data on import and export quantities for specific agricultural products.



## FACTS (Cont.)

- The changes in terms of trade across the region have reflected the volatility of international prices for commodities most commonly imported and exported by each country. Price volatility will continue to be a major factor determining export revenues and trade balances.
- The composition of Latin American and Caribbean agricultural exports has not changed much from 2000 to 2008, as the top ten traditional export products still account for approximately half of total agricultural exports by value. But diversification efforts have paid off in some countries. For example, Central American countries and Peru managed to decrease their concentration in export products, while many Caribbean countries diversified their export markets.

### *The impact of the economic crisis on trade*

The recent turbulence in international financial and commodity markets has slowed the rate of expansion of global trade, dropping from 7.1% growth in volume terms in 2007 to 2.4% in 2008 (Netherlands Bureau for Economic Analysis). This slowdown turned into a sharp decline of 13.2% in 2009 - the biggest downturn since the end of the Second World War. The main driver of the bust has been the reduction in aggregate demand across all major world economies. Other factors include the drying up of trade finance during the economic crisis and, to a lesser extent, increased protectionism in the form of new tariffs, non-tariff measures and subsidies to domestic producers.

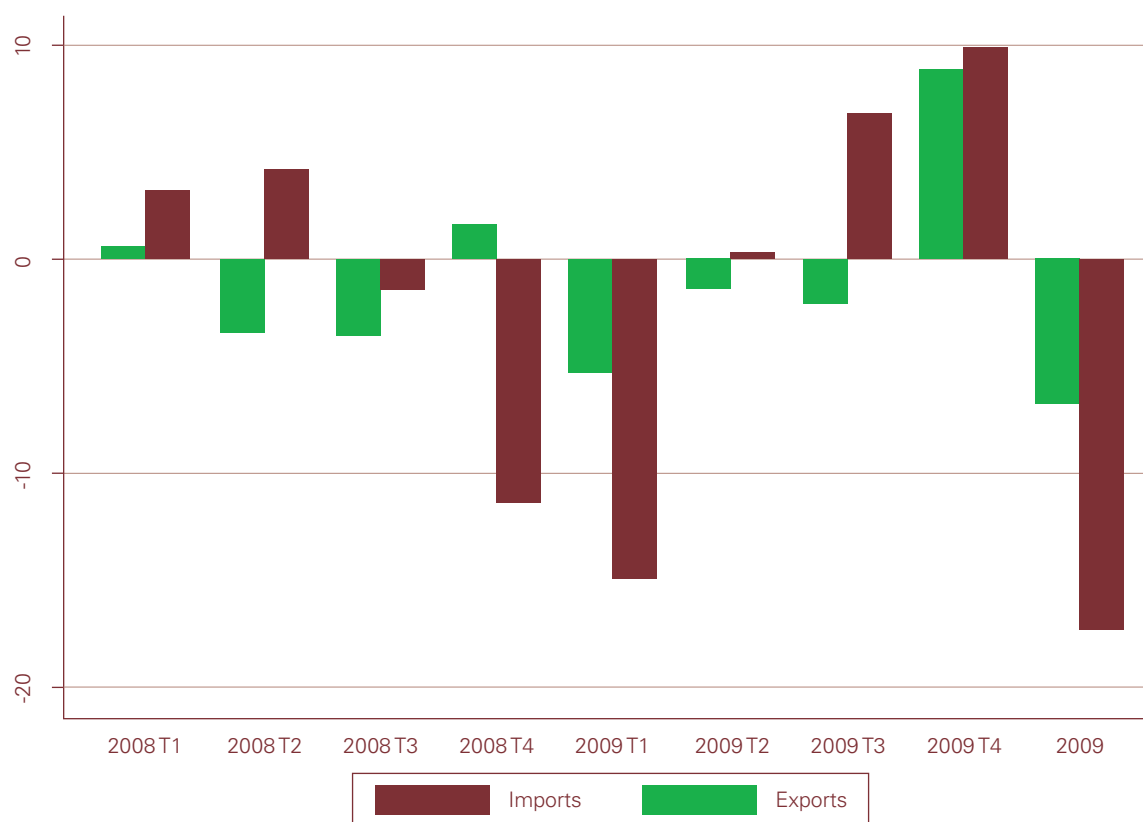
Global trade volumes fell sharply in the first quarter of 2009 but remained largely unchanged in the second, and recovered partly in the third and fourth quarters. In Latin America and the Caribbean the recovery occurred with

some delay relative to the rest of the world, as export volumes declined by 5.3%, 1.4% and 2.1% in the first, second and third quarters, respectively<sup>34</sup>. Positive changes occurred only in the fourth quarter, marking a strong recovery of 8.9% relative to the third quarter. Overall, Latin American and Caribbean exports contracted 6.8% during 2009, which is only half of the average reduction recorded at a global level. Exports from the region fell less than imports, which registered a 17.3% decline during 2009 (Figure 21) helping many countries reduce pressure on their balance of payments.

The value of exports from Latin America fell much more than quantities in 2009 (Figure 22). The Andean countries experienced the steepest fall at 36%, especially in exports to the United States. Among the Andean countries, the B. R. of Venezuela registered the largest decline in exports, explained primarily by the dramatic

<sup>34</sup> The reported changes are with respect to the previous quarter.

**Figure 21** | Latin America: Volumes of total exports and imports, % change relative to the previous period



**Source:** FAO-RLC, based on Netherlands Bureau for Economic Analysis data

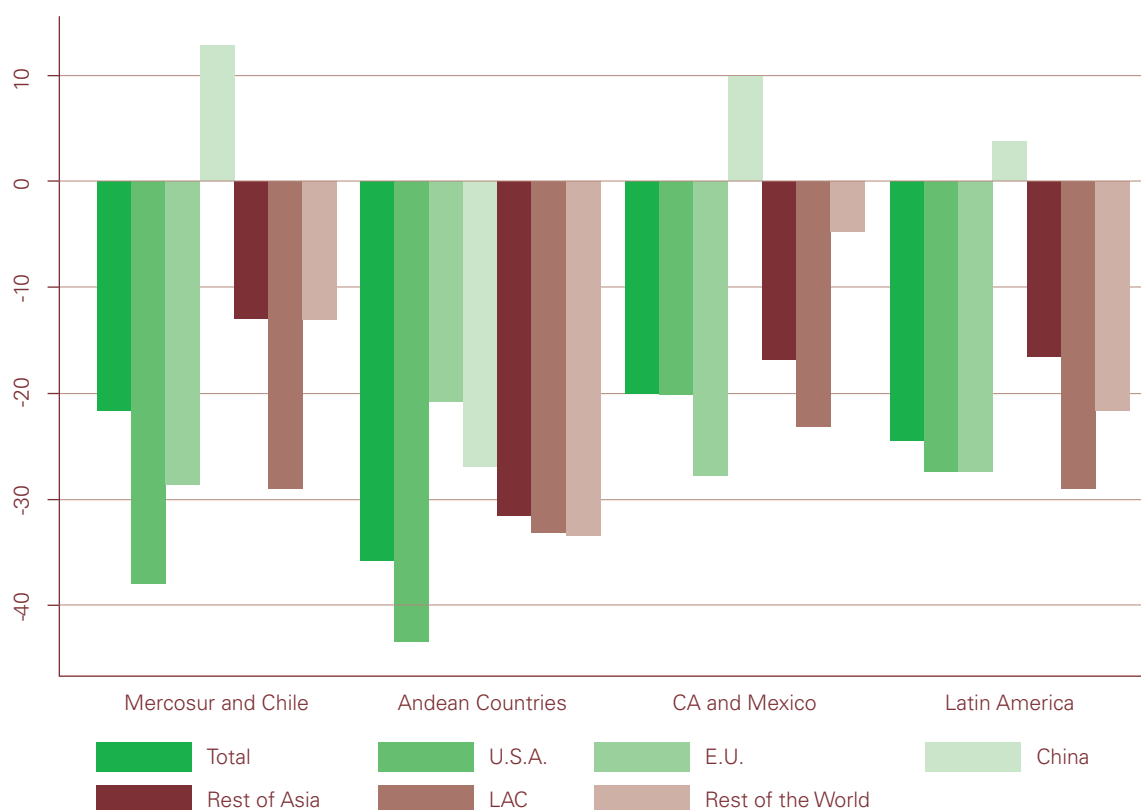
decrease in oil prices between 2008 and 2009. Central America and Mexico is the grouping that recorded the lowest decline (20%), owing almost entirely to the drop in Mexican exports, since exports from Central America performed much better. At the regional level, only exports to China grew during 2009 due to continued strong demand for commodities in that country. In particular, exports from Brazil and Chile to China, which is already their main export market, grew strongly in 2009 at 23% and 33%, respectively. Conversely, exports to all other destination markets fell. It is interesting to note that at the Latin America level, interregional

trade is the category that suffered the biggest decline, recording a 29% drop in exports.

### ***Strong growth in agricultural and food exports before the crisis***

Before the crisis struck, the value of exports of agricultural, forestry, fishery and food products from Latin American and the Caribbean had been rising steadily since 2000. The biggest changes took place in the food category, where exports grew 315% in 2000-2008. In comparison, during the same period the value of total exports from the

**Figure 22** | Changes in export values by sub-region in 2009, (%)



Source: ECLAC-DCII estimates based on official country data

region grew 254%, reflecting the growing share of food products in total exports. In 2007 and 2008 the combined value of agricultural, forestry, fishery and food exports increased by 21% and 23.8%, respectively.

By far the largest among these product groups were agricultural and food products, which constituted 7.5% and 11.2% of total 2008 exports from the region, respectively. Unprocessed forestry and fishing products each accounted for 0.1% of the total. The share of agriculture and food in total exports remained steady over the 2000-2008 period, although the share rose from 16.2% to

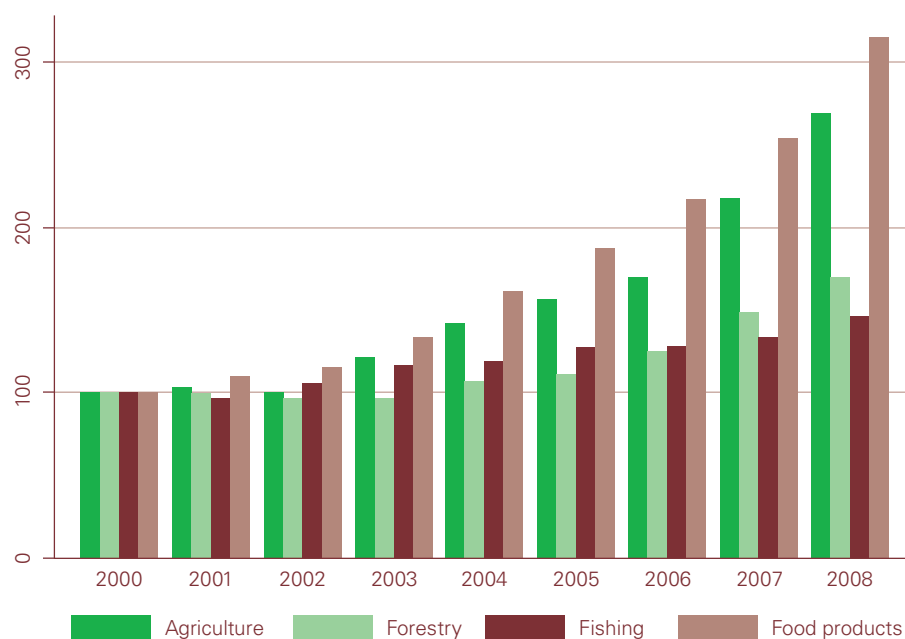
19.3% in 2007, presumably reflecting the rising food prices.

***Agricultural exports from the region performed better than other exports as economic activity slowed in 2008***

The slowing pace of global trade growth in 2008 affected the agricultural sector, which was also impacted by high price volatility, low levels of grain stocks and the growth of speculative activity in futures and options markets. Still, agriculture was the only economic sector with a higher growth rate

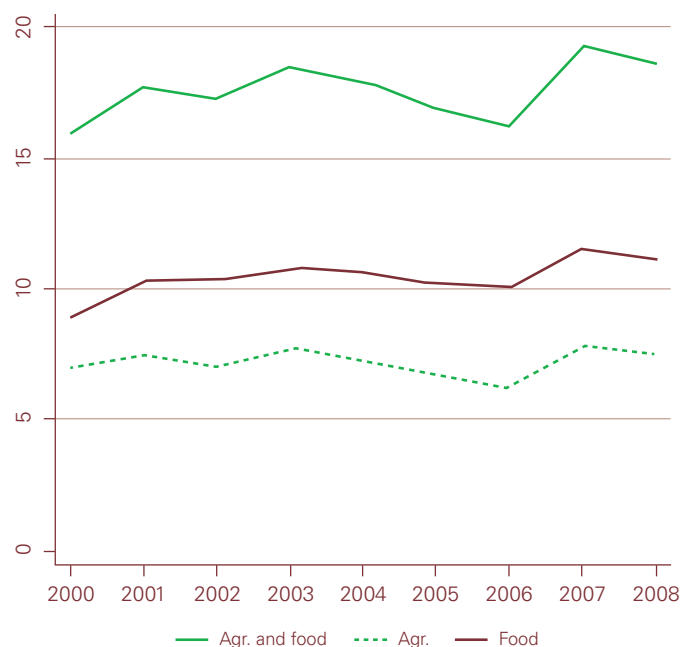


**Figure 23** | Values of exports from Latin America and the Caribbean (2000=100)



Source: FAO-RLC, based on COMTRADE data

**Figure 24** | Share of agricultural products and food in total exports by value (%)



Source: FAO-RLC, based on COMTRADE data

in export values in 2008 relative to the previous year. In fact, the average annual growth of global agricultural and food trade values in 2007-2008 was 19.9%, up from 11.5% in the period 2003-2006. This was also higher than the annual growth in total trade values during 2007-2008 (13.2%). In Latin America and the Caribbean, agricultural exports increased on average 22.4% a year during 2007-2008, up from 15.4% growth rate registered between 2003 and 2006 (Figure 25). To a large extent this expansion was the consequence of rapidly increasing agricultural commodity prices during the period, but also reflected the low elasticity of the demand for agricultural products with respect to prices.

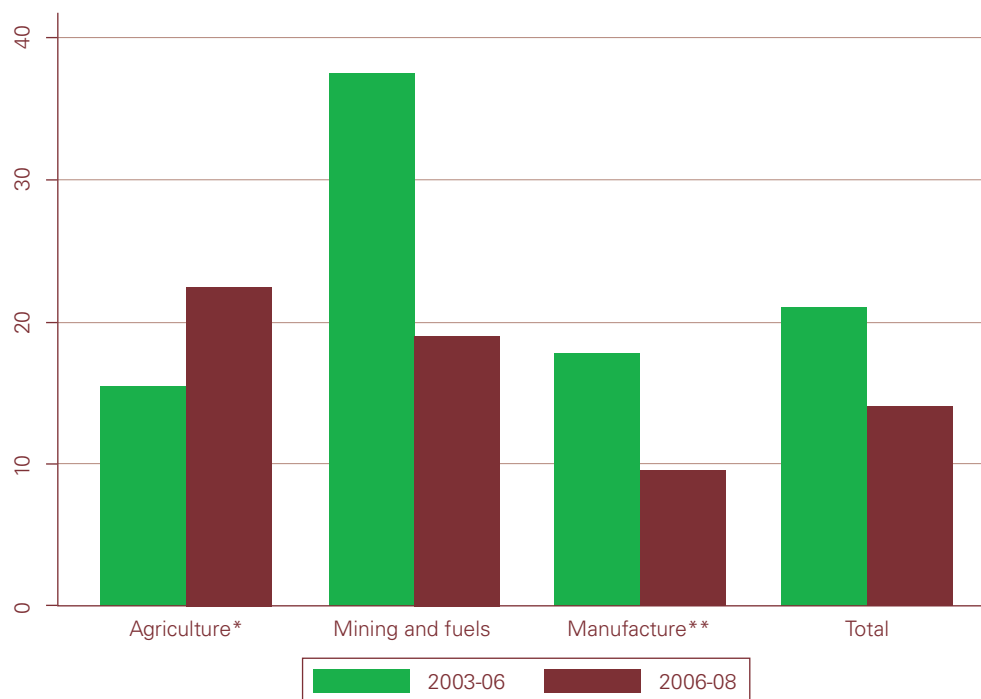
Recent trade figures show that during the trade crisis of 2009 agricultural exports performed

better than other export sectors. The value of agricultural exports from the region declined approximately 11.9% compared to 2008, while manufactures exports fell 20.4% and fuel and mining exports contracted 30.6%. This shows that the performance of agricultural exports prevented an even further slump in export earnings during 2009 and helped to contain the effect of the global crisis on LAC economies.

### *Widening disparities in agricultural export performance across the region*

When global and regional trade fell in 2009, most countries in Latin America and the Caribbean recorded much smaller declines in export values of agricultural products than in exports of other

**Figure 25** | Average annual growth in export values by economic sector, Latin America and the Caribbean (%)



\* Agriculture includes fisheries, forestry and food products  
 \*\* Manufacture excludes food products

**Source:** FAO-RLC based on COMTRADE data

sectors. In fact, some countries (Dominican Republic, Ecuador, Guatemala, and Uruguay) actually registered growth in agricultural exports (Table 6). The only countries where the agricultural sector recorded greater declines in exports than rest of the economy are Argentina, Colombia, Honduras and Nicaragua. In Argentina, agricultural export values declined by 38%, driven by a combination

of export restrictions and reduced production of several crops due to climatic conditions.

Overall, between 2006 and 2008, net importers of agricultural commodities suffered a deterioration in their agricultural trade deficit, while net exporters improved their trade balance (Figure 26). Net agricultural exports of the United States,

**Table 6** | Changes in export values by sector, 2009\* (%)

	AGRICULTURE	FUELS AND MINING	MANUFACTURE	TOTAL
Argentina	-38.4	18.2	-17.1	-21.1
Bolivia	-13.4	-32.3	-17.3	-28.7
Brazil	-4.6	-27.3	-26.8	-22.7
Chile	-9.0	-21.7	-23.1	-20.6
Colombia	-21.8	-9.7	-14.3	-12.8
Costa Rica	-7.5	0.0	-7.7	-7.6
Dominican Republic	60.9	-99.4	-11.4	-31.8
Ecuador	13.5	-40.5	-21.9	-25.5
El Salvador	-7.5	-39.5	-16.3	-16.5
Guatemala	10.9	-15.8	-12.3	-6.5
Honduras	-12.1	6.2	-12.9	-11.6
Mexico	-1.8	-38.7	-17.9	-21.2
Nicaragua	-15.5	-2.8	0.8	-6.6
Paraguay	-26.1	0.0	-33.2	-29.0
Peru	-11.8	-13.0	-28.0	-16.3
Uruguay	11.8	-23.1	-14.8	-9.4
B. R. of Venezuela	-39.5	-39.2	-44.2	-39.5
Latin America	-11.9	-30.6	-20.4	-22.7

\* preliminary estimates

Source: ECLAC-DCII estimates based on official country data

Guatemala and the countries of the Southern Cone increased substantially during the period. The U.S. in particular underwent an important transformation from the main net importer of agricultural products in 2006 to third net exporter in the region in 2008. On the other hand, Mexico and B. R. of Venezuela, already the principal net importers in the region, have become even more dependent on imports. Argentina and Brazil, the two main net exporters of the region, experienced an increase in net exports, although the drivers of this change were different. Argentina benefited primarily from the improvement in its agricultural terms of trade. Brazil experienced a deterioration in its agricultural terms of trade, mainly because of the steep increase in the price of wheat imported by Brazil from Argentina, but managed to increase the quantities exported.

***The changes in terms of trade reflected wide swings in commodity prices***

The changes in total terms of trade during the economic crisis reflected, to a large extent, the fluctuations in the prices of commodities and the composition of exports and imports of each country. As commodity prices peaked in 2008, major exporters of oil (B. R. of Venezuela, Ecuador and Colombia) and of agricultural products (Brazil, Argentina, Chile) experienced dramatic improvements in their terms of trade.

But in 2009 the reverse was true. As the prices of agricultural, energy and mining products declined from the second half of 2008, the terms of trade of net commodity exporters deteriorated. On the other hand, net importers of food and energy, for example in Central America, experienced an improvement in their terms of trade.

***Overall, the boom in prices did not trigger a major supply response in terms of quantities exported***

As shown in the Sectoral Context chapter of this report, agricultural prices have increased steadily

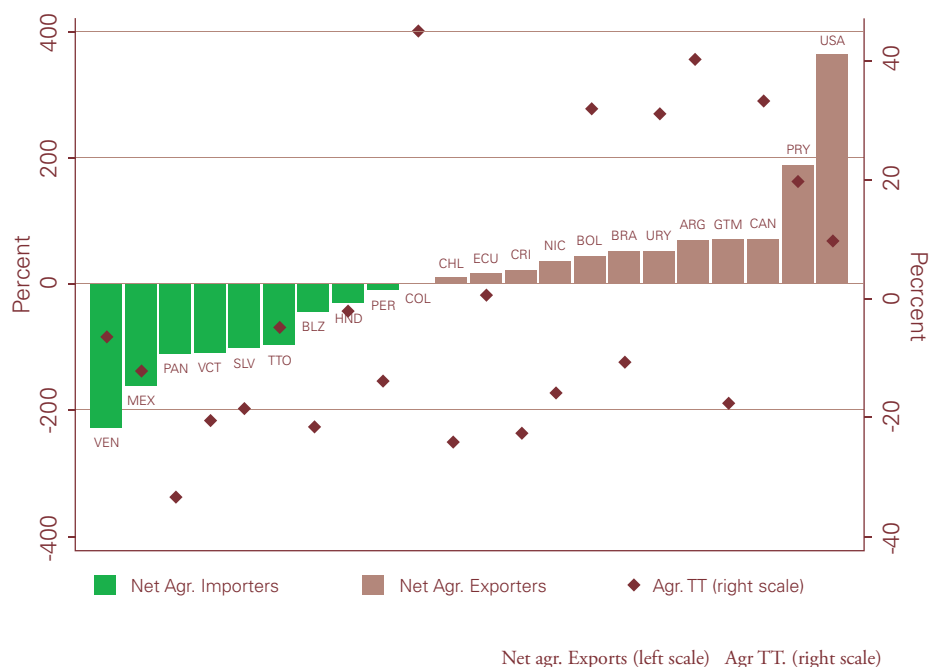
since 2004, with a particularly sharp upswing from mid-2007 to mid-2008, followed by a decline during the last half of 2008 and then an upward, although less dramatic, movement during most of 2009. In effect, towards the end of 2009 and in the first two months of 2010 prices remained well above the level before the price boom. For most products exported by the region the prices in the last quarter of 2009 were lower than during the 2008 peak, but remained 50% to 100% higher than 2000-2005 average prices. The question that naturally arises is how the price boom of the past five years has affected values and volumes of agricultural exports from the region.

Breaking down the changes in the value of LAC exports into volume and price components shows that most of the export value increase between 2006 and 2008 can be attributed to the price hike. While the value of agricultural and food exports increased by 21% and 23.8% in 2007 and 2008, respectively, in volume terms they grew only by 5.3% and 1.3%, respectively.

Thus, the price boom of 2006-2008 did not produce a major supply response in terms of agricultural exports from Latin America and the Caribbean. Export quantities increased only slightly in that period, far less than in the previous five years. This fact is further reinforced by analysis at the product level. Among the most important agricultural exports, soybeans, soybean oil, maize and beef demonstrated the largest increases in export values from 2006 to 2008 (Figure 29). In particular, soybeans and their derivatives demonstrated a strong growth in export values during the price boom, doubling between 2006 and 2008 and quintupling from 2000 to 2008.

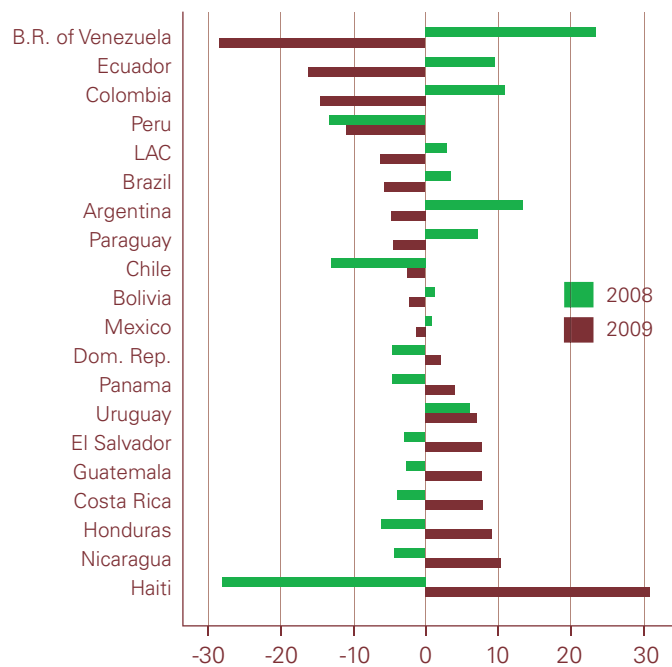
Other commodities showed lower, although still significant, increases in export values. For example, wheat and sugar exports almost tripled their value between 2000 and 2008. Coffee, which started recovering from a deep and prolonged price slump in 2005, has registered a strong growth in export values since then (Figure 30).

**Figure 26** | Changes in agricultural net exports and agricultural terms of trade between 2006 and 2008 (%)



Source: IICA based on COMTRADE data

**Figure 27** | Evolution in terms of trade, % change on the previous year



Source: ECLAC (2009a)

While most primary commodities showed rapid increases in export values during the price boom of 2006-2008, in quantity terms the performance has been mixed (Figure 31). Maize exports recorded the highest growth in quantities during the price boom, growing 54% and 35% in 2006/07 and 2007/08, respectively. Oil crop exports from Latin America, of which approximately 75% by value are soybeans, increased by 19% in the 2007/08 harvest period, but then returned to the level of 2006/07. In particular, Argentina's exports fell dramatically between 2007/08 and 2008/09. Volumes of wheat exports have been on a steady decline since 2006/07. Overall, it is evident that the dramatic increases in export values between 2005 and 2008 were driven mostly by higher prices and not by increased export quantities.

*Some countries managed to expand exports of key agricultural commodities, while others experienced a slump*

The performance of agricultural exports during the price boom and subsequent economic crisis varied by country. Diverging trends are observed in Argentina and Brazil, the two most important exporters of agricultural products in the region. Since the 2007/08 season, Argentina's exports of major crops (wheat, maize and oil crops) have steadily declined, explained in part by export restrictions and by declines in production due to adverse weather conditions. Government data published in February shows that in 2009 export quantities of oil crops declined by 59.6% (62.5% in the case of soybeans), hitting a record low. Brazil, on the other hand, has maintained a more

**Figure 28** | LAC agricultural and food exports, changes in prices and volumes (%)



Source: FAO-RLC, based on COMTRADE data and UN-ECLAC price indices

or less constant level of oilseed exports, with the exception of 2008/09 when exports increased by 17.1%.

On the global scale, wheat exports are forecast to fall sharply in 2009/10 to 117 million tons, down by as much as 16%, or 22 million tons, from the estimated volume last year (FAO, 2009e). This is in part explained by the decline in the drought-affected production from Argentina, the world's sixth major exporter and the largest exporter in the region. Argentine wheat production has been declining rapidly in the last three years, driven by adverse

weather conditions and reductions in the planted area in reaction to price and policy uncertainty. Between 2000 and 2007 Argentina produced 14.8 million tons of wheat annually on average, but only 8.4 million tons in 2008 (FAOSTAT). This meant that in 2008 Argentina accounted for only 38% of total LAC production, compared to 60% in the 2000/07 period. As a result, while the value of Argentine wheat exports increased by 26% in 2008 due to soaring prices, the volume of exports declined by approximately 13% and plunged approximately 40% in 2009 to the lowest level in over three decades.

**Figure 29** | Evolution of LAC exports by value (2000=100)



Source: FAO-RLC, based on COMTRADE data

**Figure 30** | Evolution of LAC exports by value (2000=100)



**Source:** FAO-RLC, based on COMTRADE data

Government policies will have an important impact on this year's wheat exports from the region. In particular, reductions in export taxes and easing of quantitative restrictions in Argentina may result in a higher than expected exports.

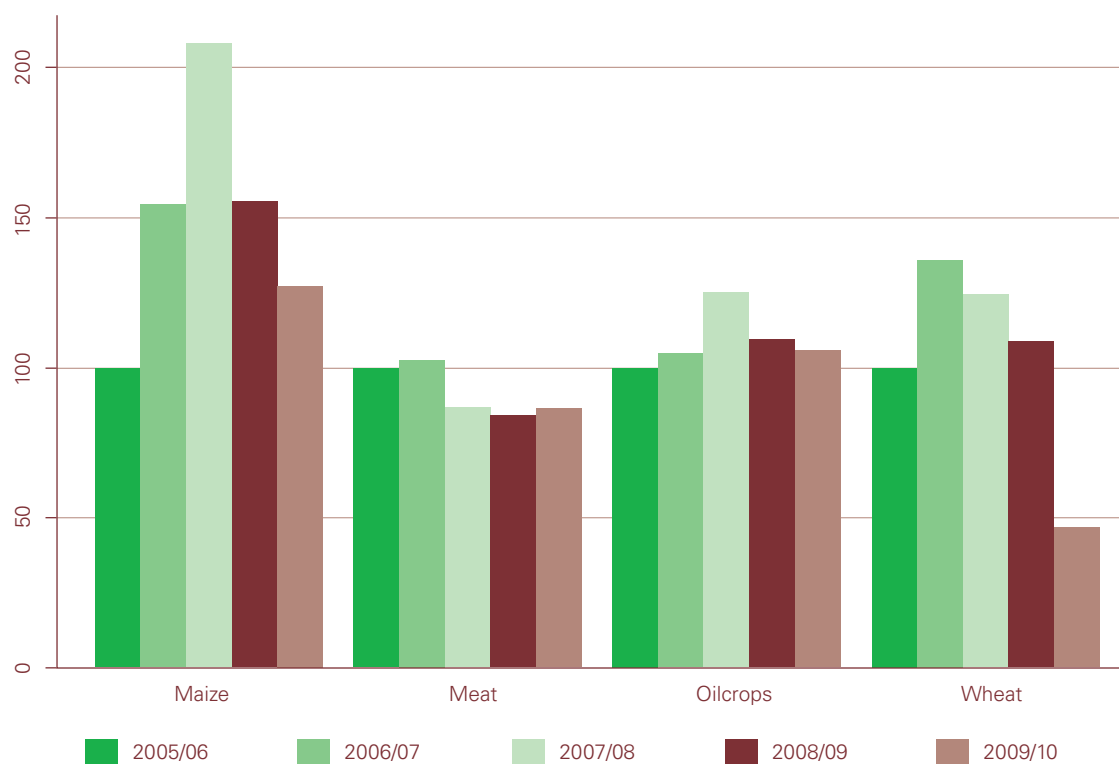
The Latin America and the Caribbean region is a net importer of maize, in particular reflecting the high demand in Mexico and Central America. But the exceptionally high export quantities in 2007/08,

primarily due to the growth of exports from Brazil, resulted in a temporary trade surplus. Higher import demand is expected in Mexico in 2009/10 driven by lower domestic production, while exports from the region are expected to decline following the previous year's reduced production levels.

In Brazil, 2009 maize output fell below the record of 2008, but exports are still expected to increase relative to last year due to sufficient domestic



**Figure 31** | Evolution of exports from Latin America by volume (2005/06=100)



**Source:** FAO Food Outlook, various issues

supplies and lower production in Argentina. Brazil continues to explore new markets for its maize exports. It now exports more within the region, to the Middle East and Central Asia than to its traditional EU market. Brazil has been able to capitalize on its freight advantage exporting to Malaysia, its fourth largest market, and Taiwan, its sixth largest market. Argentina, traditionally the largest exporter in the region, has been exporting declining quantities of maize since 2007/08, and in the 2009/10 season could end up exporting less than Brazil.

Bovine meat exports saw a small increase in 2007, driven by an expansion in Brazilian exports, but declined in 2008 and have since maintained approximately the same level. World exports of bovine meat in 2009 were expected to fall by 4.5%. Much of this decline in global exports reflected the poor performance by Brazil, the largest supplier, where exports were expected to drop by 16%. By contrast, strong performance was expected for Argentina, where exports were forecast to rise by almost 33% from the exceptionally low 2008 level (50% according to national statistics<sup>35</sup>).

<sup>35</sup> [http://www.indec.gov.ar/nuevaweb/cuadros/19/ipcext\\_02\\_10.pdf](http://www.indec.gov.ar/nuevaweb/cuadros/19/ipcext_02_10.pdf)  
[http://www.indec.mecon.ar/nuevaweb/cuadros/19/ipcext\\_02\\_10.pdf](http://www.indec.mecon.ar/nuevaweb/cuadros/19/ipcext_02_10.pdf)

**Table 7** | Evolution of oilseeds imports and exports by volume, million tons

	IMPORTS					EXPORTS				
	2005/06	2006/07	2007/08	2008/09	2009/10	2005/06	2006/07	2007/08	2008/09	2009/10
				<i>estim.</i>	<i>f'cast</i>				<i>estim.</i>	<i>f'cast</i>
Argentina	0.6	2.5	2.7	1.8	0.4	7.9	10.2	14.5	6.2	9.1
Brazil	0.1	0.2	0.1	0.2	0.1	26	23.8	25.7	30.1	24.3
Mexico	5.7	5.5	5.5	4.9	5.1	-	-	-	-	-
Paraguay	-	-	-	-	-	2.4	4.1	5.2	3.5	4.3
<b>LATIN AMERICA</b>	<b>7.8</b>	<b>9.9</b>	<b>10</b>	<b>8.5</b>	<b>7.2</b>	<b>37.2</b>	<b>39</b>	<b>46.5</b>	<b>40.9</b>	<b>39.3</b>

Source: FAO Food Outlook, various issues

Sugar exports performed strongly in 2008/09 and are projected to increase even further in 2009/10. Much of the expected rise would be on account of Brazil, the world's largest exporter, which is expected to ship 25 million tons, up 5% from 2008/09. Brazil will account for nearly half of global exports this season and should be among those to benefit most from the higher prices.

### *The risk of returning to commodity dependence*

Structural change including diversification of production activities and the export base has been on the agenda of Latin American and Caribbean economies since their emergence from the severe macroeconomic crisis that hit the region during the 1980s. Since then, the majority of countries have opted for a strategy of trade openness that combines unilateral liberalization with efforts to secure greater market access for key exports through trade negotiations. Latin American and Caribbean

economies have also strived to diversify their exports both in terms of markets and products. However, their performance has been mixed, and some countries managed to expand their export basket, while others continued exporting few traditional commodities.

Figure 32 shows the top ten agricultural and food products in LAC in 2000 and 2008 in terms of their share of total agricultural export revenue. In 2008, soybeans and their derivatives accounted for almost one quarter of all agricultural exports from the region, which is an even higher share than in 2000, when it was 17%. This category is followed by sugar, coffee and bovine meat, which each accounted for approximately 5% of the value of agricultural exports in 2008. Relative to 2000, the weight of coffee and bananas in the region's exports has been reduced, and the importance of soybeans, bovine meat and maize has increased. However, overall agricultural exports from the region continue to be heavily concentrated in a few commodities. The top ten products shown in Figure 32 accounted

**Table 8** | Evolution of wheat exports by volume, million tons

	IMPORTS					EXPORTS				
	2005/06	2006/07	2007/08	2008/09	2009/10	2005/06	2006/07	2007/08	2008/09	2009/10
				<i>estim.</i>	<i>f'cast</i>				<i>estim.</i>	<i>f'cast</i>
Argentina	-	-	-	-	-	7.5	11.3	9.4	8.1	1.8
Brazil	5.6	7.5	6.8	6.7	6.7	0.8	-	0.7	0.3	0.3
Chile	0.8	0.9	0.8	1	1.1	-	-	-	-	-
Colombia	1.3	1.3	1.3	1.3	1.3	-	-	0.1	-	-
Cuba	0.9	0.7	0.8	0.8	0.8	-	-	-	-	-
Mexico	3.5	3.6	3.5	3.4	3.4	0.4	0.5	0.5	1	1
Peru	1.7	1.3	1.6	1.5	1.6	-	-	-	-	-
B. R. of Venezuela	1.6	1.9	1.6	1.5	1.6	-	-	-	-	-
<b>LATIN AMERICA</b>	<b>19.2</b>	<b>21.1</b>	<b>20.3</b>	<b>19.9</b>	<b>20.3</b>	<b>9.2</b>	<b>12.5</b>	<b>11.4</b>	<b>10</b>	<b>4.3</b>

Source: FAO Food Outlook, various issues

for 55% of all agricultural exports and 10% of total exports in 2008.

With agricultural commodity prices on a sustained elevated level relative to pre-2005 prices, countries are facing a risk of reversing the progress towards greater export diversification. The growth in export values of processed, high value-added agricultural products has slowed since 2000. For example, in the case of cereals, values of exports of milled grains grew on average 32% annually between 1990 and 2000. Strong growth was also recorded in processed foods, such as starches, bakery and macaroni products. In comparison, cereal exports, that are eight times larger by value than exports of cereal-based food products, grew only 12.3% per annum in the same period. Between 2000 and 2008 this trend was reversed, however, and the exports of processed cereals and foods grew slower than the exports of raw cereals (Figure 33).

On the other hand, the opposite is observed in the case of fruits and vegetables. Exports of processed products grew slower than exports of raw fruits and vegetables between 1990 and 2000 and faster in the following eight years. These products present greater opportunities for diversifying into new market niches than the cereals sector.

Meat and dairy products both registered strong export performance in the 1990-2000 period. In particular, dairy products grew 56% annually. Since 2000 the growth rate fell to 17%. On the other hand, exports of meat increased the pace of growth from 17% annually in 1990-2000 to 24% in 2000-2008. Exports of both product categories grew faster than exports of livestock. Exports of processed and preserved fish also grew faster than unprocessed fishery exports in both periods, but both categories saw slower growth

**Table 9** | Evolution of maize exports by volume, million tons

	IMPORTS					EXPORTS				
	2005/06	2006/07	2007/08	2008/09	2009/10	2005/06	2006/07	2007/08	2008/09	2009/10
				<i>estim.</i>	<i>f'cast</i>				<i>estim.</i>	<i>f'cast</i>
Argentina		-	-	-	-	11.3	13.4	14.8	12.1	7.4
Brazil	0.5	1	1.2	0.9	0.5	1.2	5.9	10.7	6.9	8
Chile	1.3	1.4	1.6	1.4	1.7		0.1	0.1	-	-
Colombia	2.8	3.4	3.1	2.8	3.3		0.2	0.1	-	-
Mexico	5.9	8.9	9.5	7.9	8.5		-	-	0.1	0.1
Peru	1.4	1.4	1.3	1.4	1.6	-	-	-	-	-
B. R. of Venezuela	0.2	0.1	1.2	1.2	0.8		-	-	-	-
<b>LATIN AMERICA</b>	<b>17.1</b>	<b>22</b>	<b>23.4</b>	<b>20.8</b>	<b>21.6</b>	<b>13.1</b>	<b>20.2</b>	<b>27.3</b>	<b>20.3</b>	<b>16.6</b>

**Source:** FAO Food Outlook, various issues

Over the past decade important transformations of the export base took place, not only in terms of products, but also in terms of destination markets. To understand the dynamics of export diversification we use the Herfindahl-Hirshman concentration index<sup>36</sup>. In terms of product diversification, Peru, El Salvador and Nicaragua were most successful (Figure 34). Many countries also reduced their dependence on few export markets, most notably Paraguay, Honduras, the United States and a few Caribbean countries (Figure 35). Some countries, for example Colombia, Guatemala, Honduras and Nicaragua, managed to reduce export concentration in both products and markets.

<sup>36</sup> Herfindahl-Hirshman index is used as an indicator of concentration and for country *i* is calculated as follows:

$$H_i = \frac{\sum_{j=1}^n \left( \frac{x_{ij}}{X_i} \right)^2 - \left( \frac{1}{n_i} \right)}{1 - \left( \frac{1}{n_i} \right)}$$

where  $x_{ij}$  is the value of country *i*'s exports of product *j* (at 2 digit level of the Harmonized System),  $X_i$  is the total value of agricultural exports from *i* and  $n_i$  is the number of agricultural products exported by *i* (at 2 digit level of the Harmonized System).

In some cases, the advances in diversification of export products seems to be related to the initial composition of exports. Countries with a large share of cereals and oilseeds in total exports such as Paraguay, Argentina and Bolivia did not demonstrate large changes in export concentration between 2000 and 2008 (see Figure 36). But countries whose exports are concentrated in fruits and vegetables, such as Ecuador, Costa Rica and Honduras, showed an improvement in export diversification, witnessed by a reduction in the concentration index (see Figure 37).

**Table 10** | Evolution of bovine meat exports by volume, thousand tons

	IMPORTS					EXPORTS				
	2006	2007	2008	2009	2010	2006	2007	2008	2009	2010
				<i>estim.</i>	<i>f'cast</i>				<i>estim.</i>	<i>f'cast</i>
Argentina	4	1	3	2	10	480	511	353	501	341
Brazil	35	32	25	30	25	1850	2007	1625	1371	1576
Chile	160	170	30	150	130	10	15	19	10	10
Colombia	-	1	3	2	2	25	30	90	130	140
Mexico	372	375	398	277	307	38	40	36	38	39
Uruguay	10	10	4	3	3	470	381	372	283	291
B. R. of Venezuela	70	75	185	280	250	-	-	-	-	-
<b>LATIN AMERICA</b>	<b>766</b>	<b>800</b>	<b>759</b>	<b>859</b>	<b>837</b>	<b>3157</b>	<b>3227</b>	<b>2748</b>	<b>2645</b>	<b>2735</b>

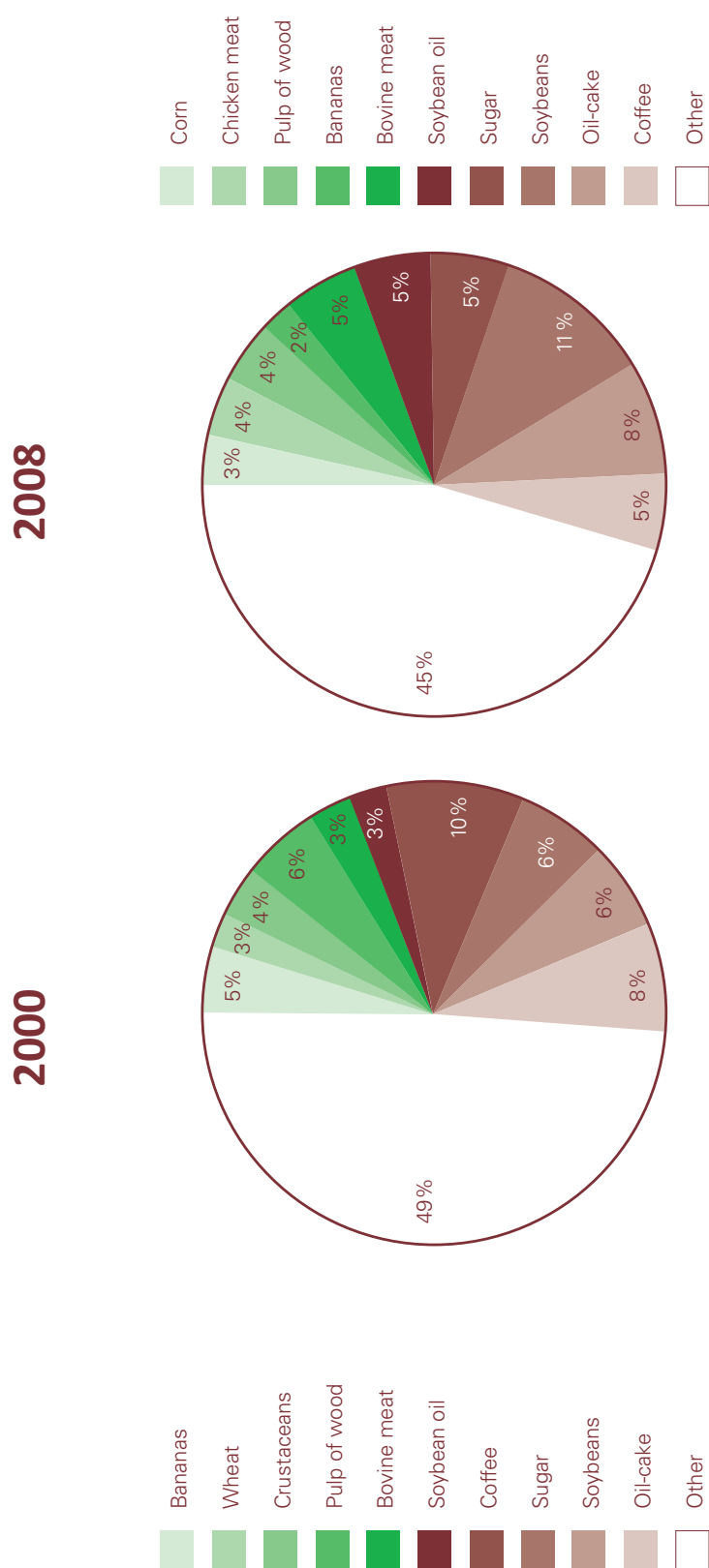
Source: FAO Food Outlook, various issues

**Table 11** | Evolution of sugar exports by volume, thousand tons

	IMPORTS				EXPORTS			
	2006/07	2007/08	2008/09	2009/10	2006/07	2007/08	2008/09	2009/10
			<i>estim.</i>	<i>f'cast</i>			<i>estim.</i>	<i>f'cast</i>
Argentina	-	-	-	-			0.5	0.5
Brazil			-	-	20.3	19.1	24.0	25.1
Colombia			0.2	-			0.6	0.7
Cuba	0.3	0.3	0.2	-	0.8	0.9	0.7	0.8
Dominican Republic	-	-	-	-	0.2	0.2	0.2	0.2
Guatemala	-	-	-	-	1.5	1.3	1.5	1.7
Mexico	0.4	0.3	0.5	0.4	0.5	0.5	0.7	0.5
Peru			0.1	0.2			0.1	-
B. R. of Venezuela			0.2	0.4			-	-
<b>LATIN AMERICA</b>	<b>2.3</b>	<b>2.3</b>	<b>2.2</b>	<b>2</b>	<b>26.6</b>	<b>25.4</b>	<b>30.1</b>	<b>31.5</b>

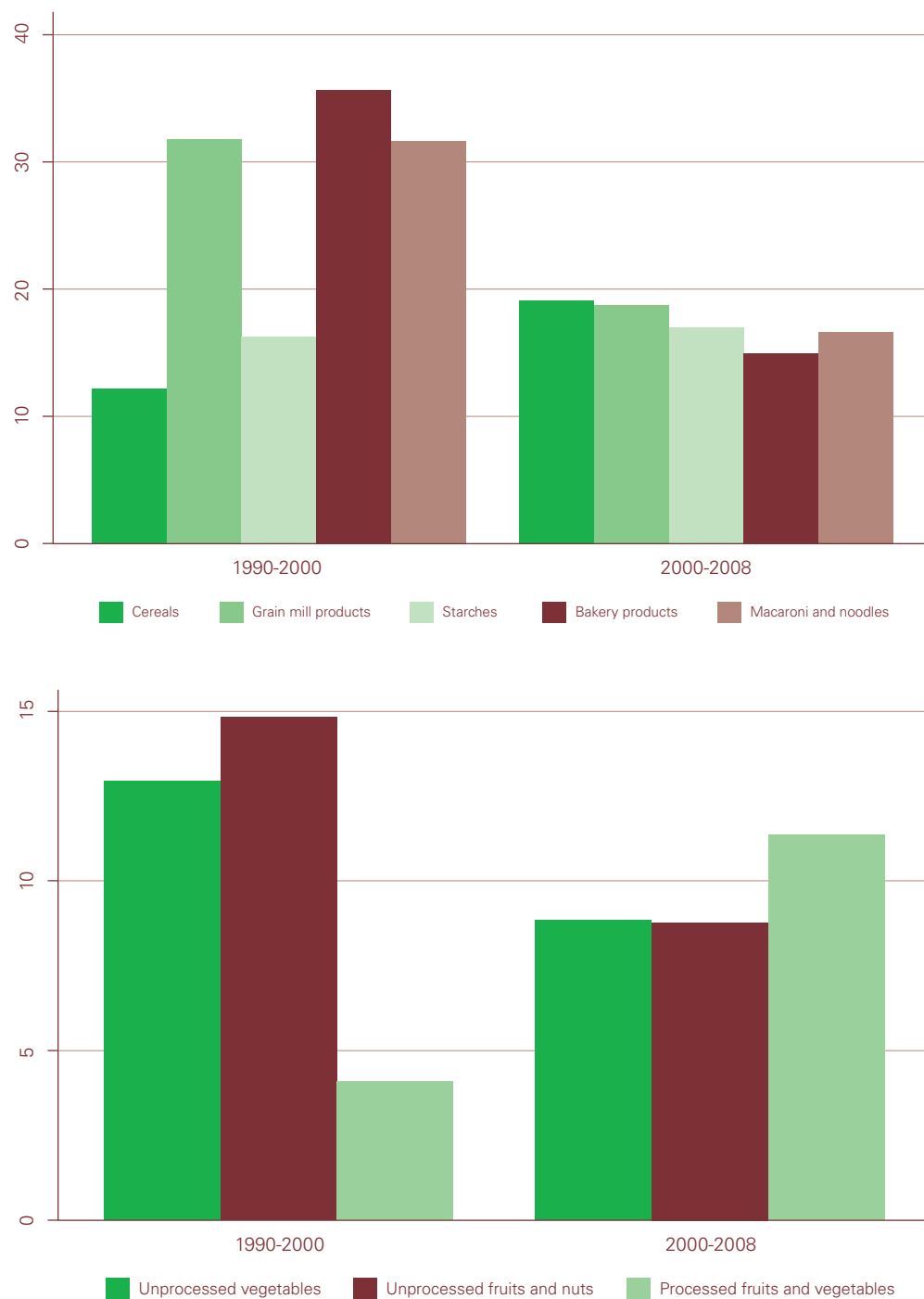
Source: FAO Food Outlook, various issues.

**Figure 32** | Share of top 10 agricultural products exported by Latin America and the Caribbean, % of total agricultural exports value

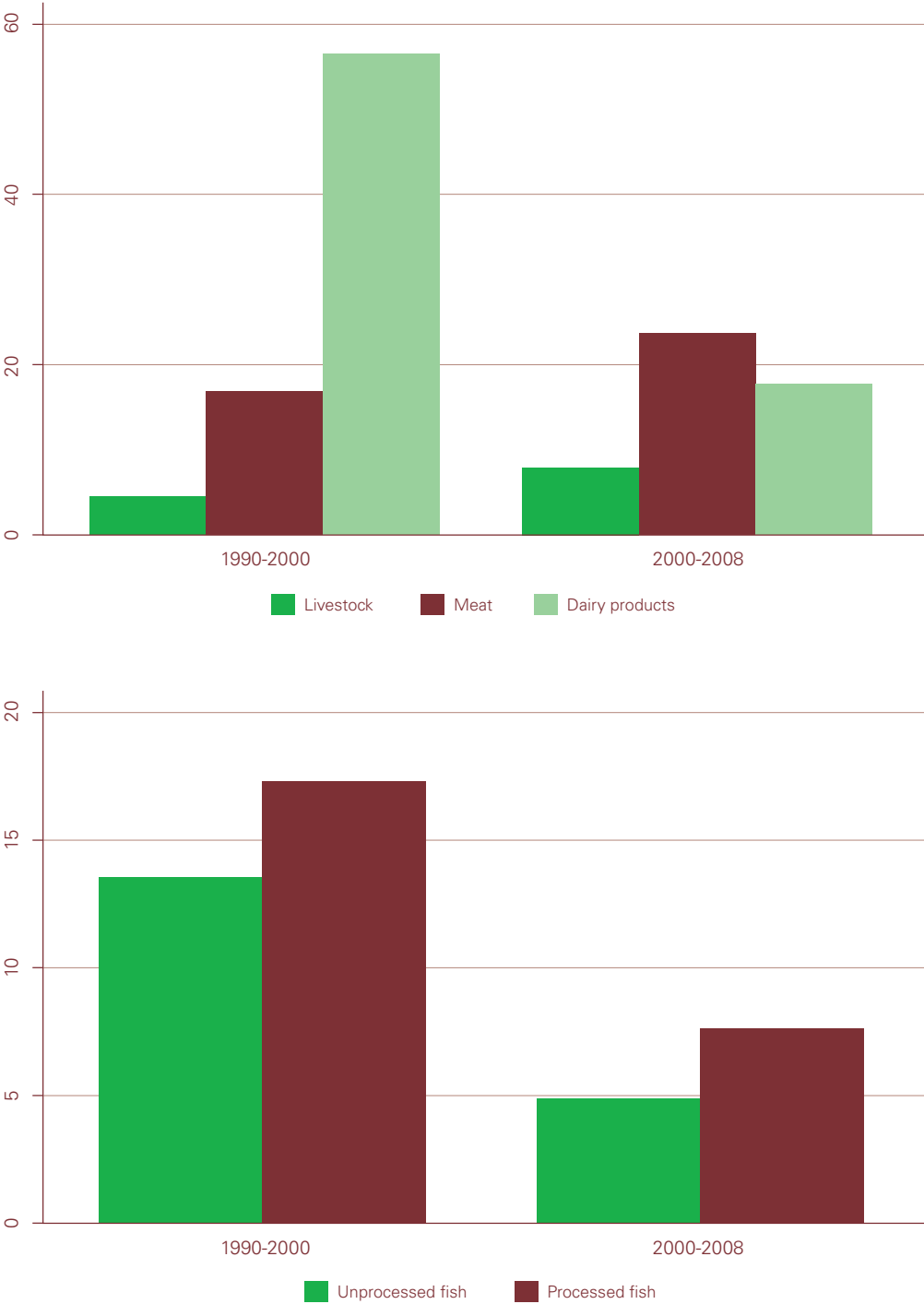


**Source:** FAO-RLC, based on COMTRADE data

**Figure 33** | Average annual growth in export values for selected raw and processed products (%)



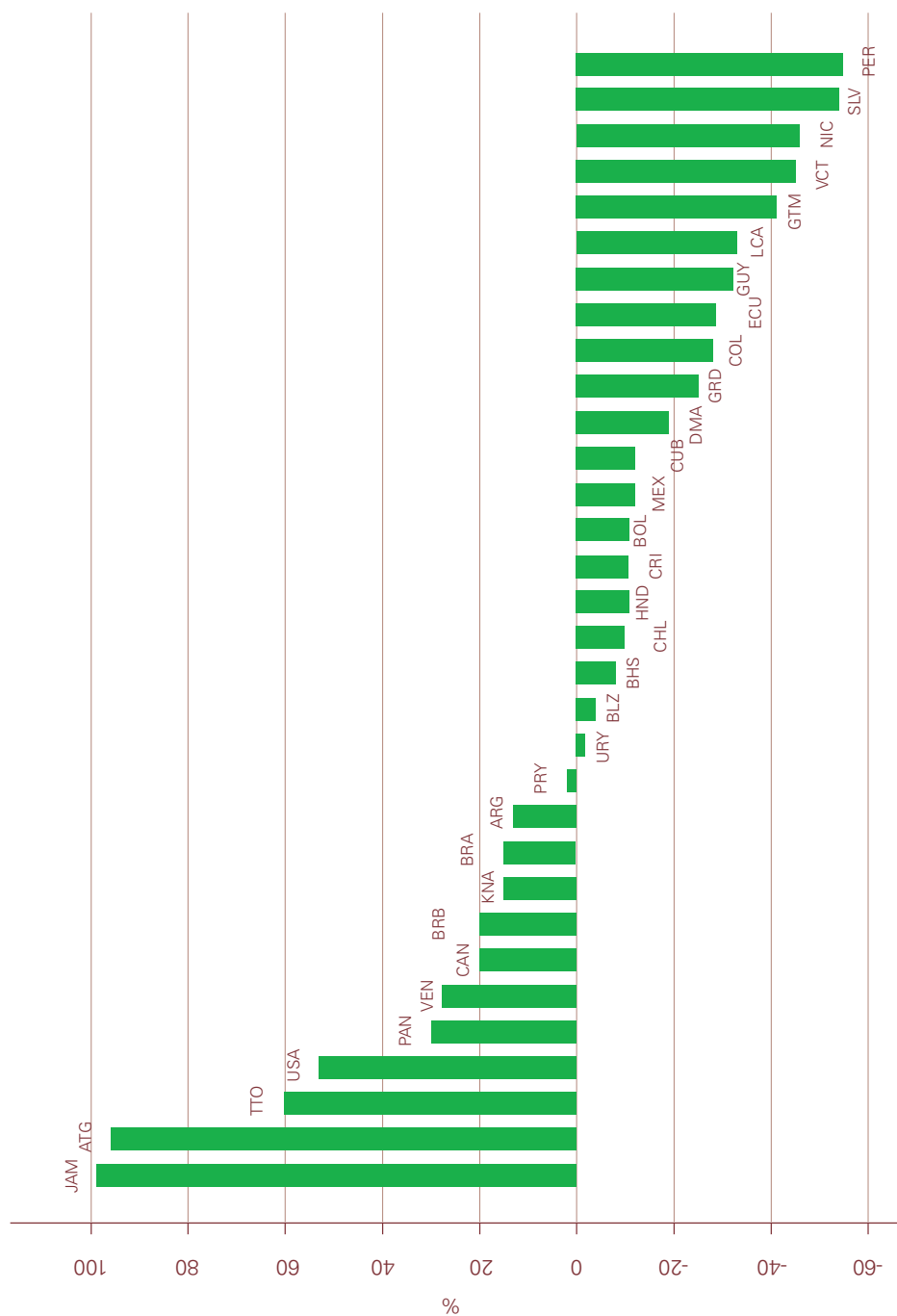
**Figura 33 (Cont.)** | Average annual growth in export values for selected raw and processed products (%)



Source: FAO-RLC, based on COMTRADE data

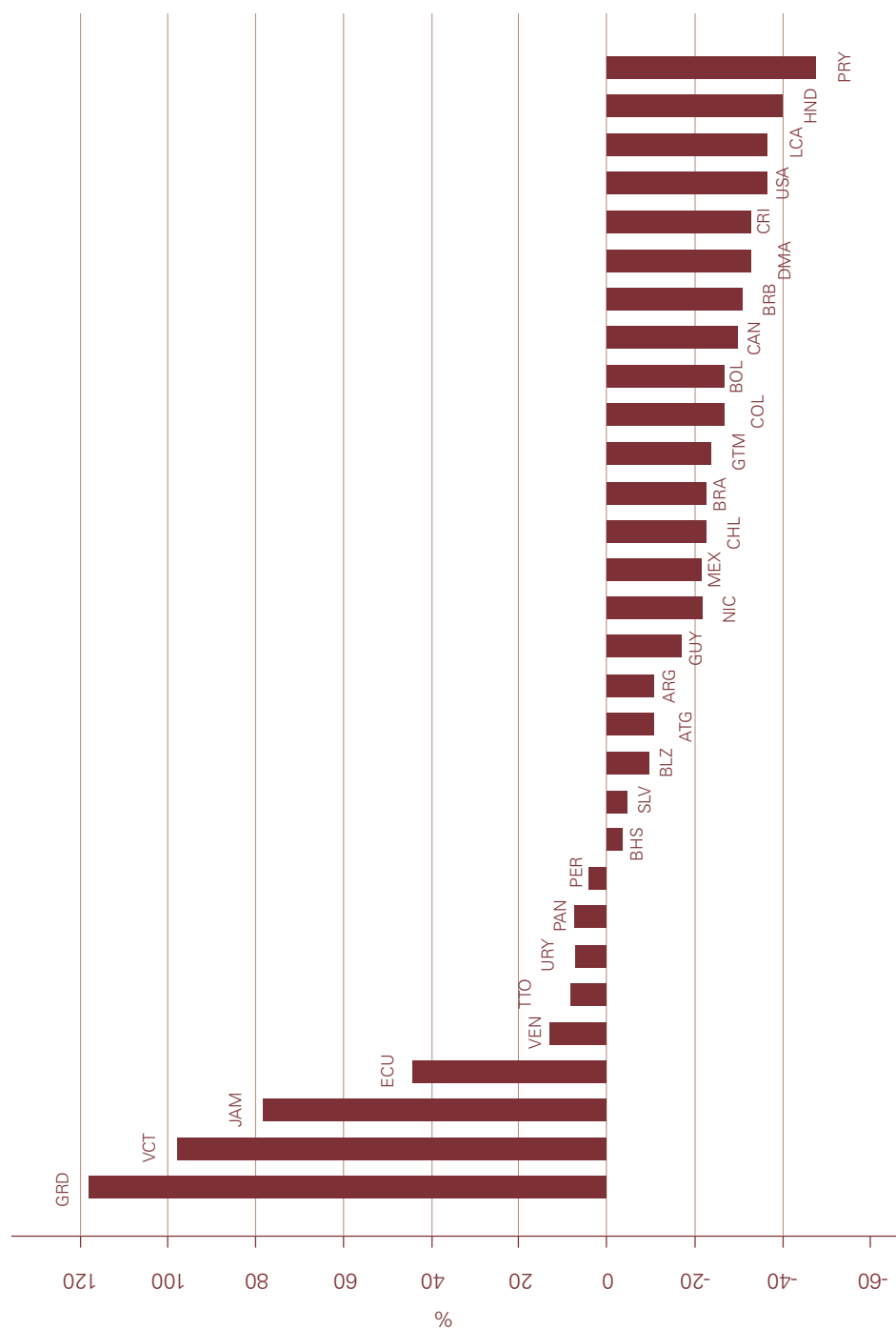


**Figure 34** | Change in the agricultural export concentration index (based on products) from 2000 to 2008 (%)



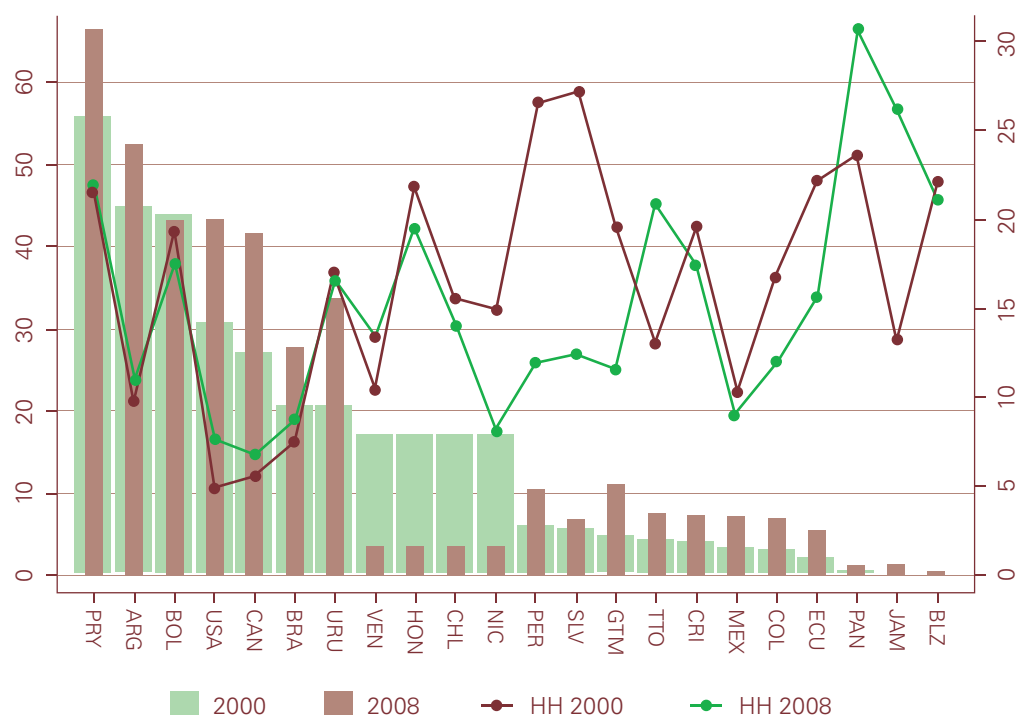
Source: IICA based on COMTRADE data

**Figure 35** | Change in the agricultural export concentration index (based on markets) from 2000 to 2008 (%)



Source: IICA based on COMTRADE data

**Figure 36** | Share of cereals and oilseeds in agricultural exports and export diversification



Source: IICA based on COMTRADE data

## • Conclusions

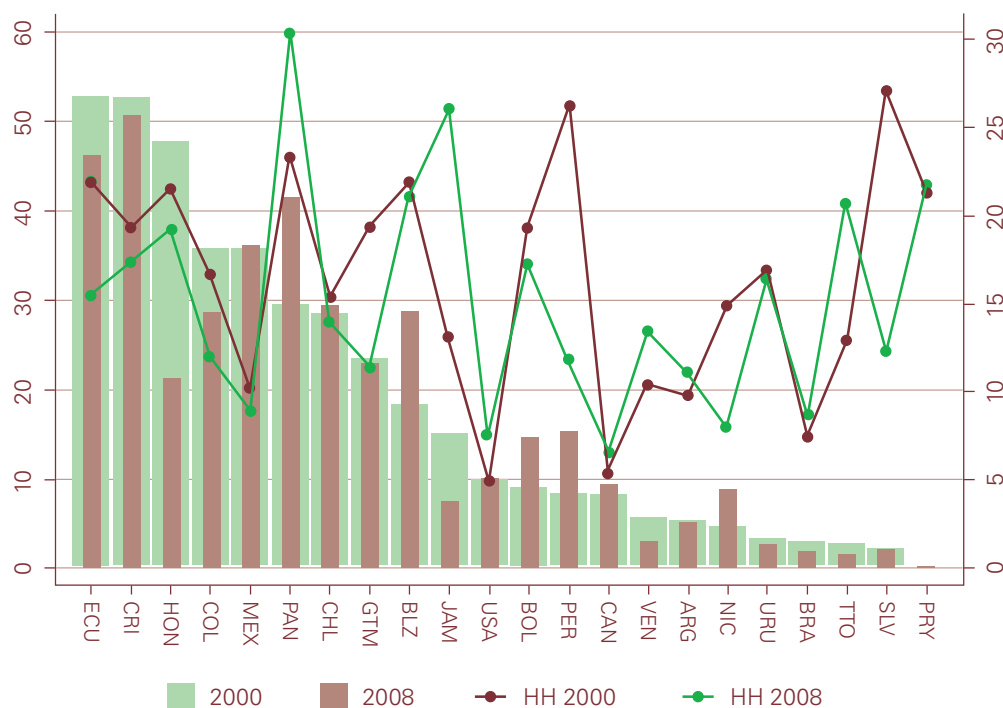
Latin American and Caribbean trade has been deeply impacted by the recent trend of high and volatile prices for agricultural commodities and the global economic situation. Values of agricultural exports increased rapidly between 2006 and 2008, mainly driven by soaring prices, and declined in 2009 due to the economic crisis, although the decline was smaller than in other sectors.

The Latin America and the Caribbean region continues relying on a handful of agricultural products as a stable source of export revenues, and has especially benefited from the strong demand for commodities in China. However, some countries,

in particular in Central America and the Caribbean, managed to diversify their exports in terms of products and markets. Others, in particular exporters of cereals and oilseeds, continue to depend on few commodities. With the currently sustained high commodity prices, countries that are net exporters of traditional products may lack incentive to pursue export diversification. But excessive reliance on these exports is not a sustainable strategy for economic development in the long run, as it creates dependency and vulnerability with respect to stability of trade revenues and incomes.

Agricultural exports from the region have the potential for transformation in terms of developing niches for high-value added and non-traditional

**Figure 37** | Share of fruits, root vegetables and tubers in agricultural exports and export diversification



Source: IICA based on COMTRADE data

products and exploring new markets. There is also room for greater differentiation within the traditional products through the use of geographic origins and branding strategies, as has been the case with coffee for example. The region needs to seize the opportunity for innovation and technical progress to increase the productivity of the agricultural sector and improve the quality and variety of export products. Latin America and the Caribbean's agrifood industry is a highly competitive sector with a tremendous potential for growth, but these opportunities are still largely unexplored.

Taking advantage of niche markets to explore new commercial opportunities requires strengthening of domestic institutions and the adoption of trade facilitation measures, such as establishment of systems for insuring quality and food safety standards, provision of market intelligence and modernization of customs. Moreover, there is a growing need to support small and medium producers that have export potential, for example by setting up price risk management mechanisms and encouraging collective action by producers to cut input and marketing costs.





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# STATISTICAL APPENDIX

This statistical appendix is a synthesis of a common data base and a series of indicators that are available at [www.agriruralc.org](http://www.agriruralc.org).

**Table A1. GLOBAL GROWTH PROJECTIONS**  
GDP annual growth rate. By groups of countries.  
(Developed countries. Both emerging and developing economies)

Group of countries	International Monetary Fund					
	2006	2007	2008	2009	2010	2011
World	5.1	5.2	3.0	-0.8	3.9	4.3
Developed economies	3.0	2.7	0.6	-3.2	2.1	2.4
Euro Zone	2.9	2.7	0.7	-3.9	1.0	1.6
United States	2.7	2.1	0.4	-2.5	2.7	2.4
Emerging and developing economies	7.9	8.3	6.0	2.1	6.0	6.3
Latin America & the Caribbean	5.7	5.7	4.2	-2.3	3.7	3.8
China	11.6	13.0	9.0	8.7	10.0	9.7
Group of countries	World Bank					
	2006	2007	2008	2009	2010	2011
World <sup>1</sup>	4.0	3.9	1.7	-2.2	2.7	3.2
World <sup>2</sup>	5.0	5.0	2.7	-1.0	3.5	4.0
High-income countries	2.9	2.6	0.4	-3.3	1.8	2.3
Euro Zone	2.9	2.7	0.5	-3.9	1.0	1.7
United States	2.9	2.1	0.4	-2.5	2.5	2.7
Developing countries	7.7	8.1	5.6	1.2	5.2	5.8
Latin America & the Caribbean	5.6	5.5	3.9	-2.6	3.1	3.6
China	11.6	13.0	9.0	8.4	9.0	9.0
Group of countries	DESA - United Nations					
	2006	2007	2008	2009	2010	2011 <sup>3</sup>
World	4.0	3.9	1.9	-2.2	2.4	[-0.8;4.4]
Developed economies	2.8	2.6	0.5	-3.5	1.3	
Euro Zone	3.0	2.7	0.7	-4.1	0.4	[-2.5;2.5]
United States	2.7	2.1	0.4	-2.5	2.1	[-0.4;5.5]
Developing economies	7.3	7.6	5.4	1.9	5.3	
Latin America & the Caribbean	5.5	5.6	4.1	-2.1	3.4	
China	11.6	13.0	9.0	8.1	8.8	[4.7;8.0]

**Sources:** International Monetary Fund. *Data bases from the World Economic Outlook at October 2009, and the World Economic Outlook update for January 2010.* World Bank. *Global Economic Prospects 2010.* Department of Economic and Social Affairs. United Nations. *World Economic Situation and Prospects. 2010.*

1. Aggregate by exchange rates.
2. Aggregate by purchasing power parity.
3. Range of results from simulations using the United Nations Global Policy Model under three different scenarios (for more details see World Economic Situation, Chapter 1). Euro Zone 2011 corresponds the Eastern European Group of Countries.

**Table A2. PROJECTED GROWTH IN THE AMERICAS**  
GDP annual growth rate by country

Countries	Rate of growth				Preliminary numbers/Forecasts			
	ECLAC		IMF		ECLAC		IMF	
	2007	2008	2007	2008	2009	2010	2009	2010
Antigua and Barbuda	9.1	0.2	6.9	2.8	-6.6		-6.5	-1.5
Argentina	8.7	6.8	8.7	6.8	0.7	4.0	-2.5	1.5
Bahamas	0.7	-1.7	0.7	-1.7	-3.9		-3.9	-0.5
Barbados	3.4	0.2	3.4	0.2	-3.6		-3.0	0.0
Belize	1.2	3.8	1.2	3.8	-0.5		1.0	2.0
Bolivia (Plurinational State of)	4.6	6.1	4.6	6.1	3.5	4.5	2.8	3.4
Brazil	5.7	5.1	5.7	5.1	0.3	5.5	-0.7	3.5
Chile	4.7	3.2	4.7	3.2	-1.8	4.5	-1.7	4.0
Colombia	7.5	2.4	7.5	2.5	0.3	2.5	-0.3	2.5
Costa Rica	7.8	2.6	7.8	2.6	-1.2	3.5	-1.5	2.3
Cuba	7.3	4.1			1.0	3.0		
Dominica	4.9	3.5	1.8	3.2	-1.5		1.1	2.0
Dominican Republic	8.5	5.3	8.5	5.3	2.5	3.5	0.5	2.0
Ecuador	2.5	6.5	2.5	6.5	-0.4	3.0	-1.0	1.5
El Salvador	4.7	2.5	4.7	2.5	-2.5	2.0	-2.5	0.5
Grenada	4.5	0.9	4.9	2.2	-5.0		-4.0	0.0
Guatemala	6.3	4.0	6.3	4.0	-1.0	2.0	0.4	1.3
Guyana	5.3	3.1	5.4	3.0	0.9		2.0	4.0
Haiti <sup>1</sup>	3.4	1.3	3.4	1.2	2.0	-8.0	2.0	
Honduras	6.3	4.0	6.3	4.0	-3.0	1.5	-2.0	2.0
Jamaica	1.4	-0.6	1.5	-1.0	-3.0		-3.6	-0.2
Mexico	3.4	1.3	3.3	1.3	-6.7	3.5	-7.3	3.3
Nicaragua	3.2	3.2	3.2	3.2	-1.5	2.0	-1.0	1.0
Panama	12.1	10.7	11.5	9.2	2.5	4.5	1.8	3.7
Paraguay	6.8	5.8	6.8	5.8	-3.5	3.0	-4.5	3.9
Peru	8.9	9.8	8.9	9.8	0.8	5.0	1.5	5.8
Saint Kitts and Nevis	2.0	4.6	0.9	2.4	-8.5		-2.0	0.0
Saint Lucia	2.2	0.8	1.7	0.7	-3.8		-2.5	-0.4
Saint Vincent and the Grenadines	8.4	1.1	7.0	0.9	-0.2		-1.1	2.1
Suriname	5.1	4.3	5.4	6.0	2.5		1.5	3.5
Trinidad and Tobago	4.6	2.3	4.6	2.3	-0.5		-0.8	2.0
Uruguay	7.6	8.9	7.6	8.9	1.2	5.0	0.6	3.5
Venezuela (Bolivarian Rep. of)	8.2	4.8	8.4	4.8	-2.3	2.0	-2.0	-0.4
Canada			2.5	0.4			-2.5	2.1
United States			2.1	0.4			-2.7	1.5
<b>Latin America and Caribbean</b>	<b>5.8</b>	<b>4.1</b>	<b>5.7</b>	<b>4.2</b>	<b>-1.8</b>	<b>4.1</b>	<b>-2.3</b>	<b>3.7</b>

**Sources:** ECLAC. Preliminary Overview of the Economies of Latin America & the Caribbean December 2009; IMF. World Economic Outlook Database October 2009.

1. Growth projections for 2010 contemplate the effects of the January earthquake and are based on the Assessment Report on the Haitian Earthquake Damage, Losses and Reconstruction Needs, prepared by the Government of Haiti with support from the World Bank, the IDB, the United Nations System and the European Union, March 2010.

**Table A3. INFLATION, BUYING POWER OF EXPORTS & REMITTANCES**

Countries	INDEX OF CONSUMER PRICES <sup>1</sup>						INDEX OF BUYING POWER OF EXPORTS OF GOODS & SERVICES <sup>1</sup> (2000 = 100)			REMITTANCES FROM ABROAD <sup>2</sup>		
	HEADLINE RATE			FOOD								
	Average inter-annual rate of change			Average inter-annual rate of change			Average inter-annual rate of change			Millions of dollars		
	2000-04	2005-08	2009	2000-04	2005-08	2009	2000-04	2005-08	2009	2007	2008	2009
Argentina	8.3	9.5	5.9	10.8	10.3	2.4	5.2	13.4	-10.2	920	955	853
Bahamas	2.0	2.5	2.5	1.8	4.2	4.9						
Barbados	1.6	6.2	3.3	3.3	8.6	6.2						
Belize										105	110	100
Bolivia (Plurinational State of)	2.9	8.1	3.4	2.2	12.4	3.9	19.7	15.3	-10.9	1,050	1,097	1,023
Brazil	8.7	5.1	4.9	9.2	5.7	5.8	11.7	8.6	-11.8	7,075	7,200	4,746
Chile	2.8	4.9	1.5	1.1	7.7	5.0	12.3	9.1	-8.7	850	880	756
Colombia	7.3	5.5	4.2	8.0	7.8	4.4	3.6	13.3	-11.9	4,520	4,842	4,134
Costa Rica	10.6	12.0	7.8	10.7	15.9	9.5	1.5	8.2	3.7	560	624	535
Dominican Republic	20.1	7.1	1.4	21.3	5.8	3.9	-0.8	-0.8	218.7	3,120	3,111	2,790
Ecuador	31.4	4.0	5.2	32.9	7.2	6.1	8.7	11.4	-19.4	3,085	2,822	2,495
El Salvador	2.9	5.1	0.6	2.6	6.8	-3.6	2.9	3.0	4.0	3,695	3,788	3,465
Guatemala	6.9	8.5	1.9	8.2	11.3	2.0	4.8	3.7	2.4	4,128	4,315	3,912
Guyana										424	415	356
Haiti	20.0	13.1	-0.3	21.5	15.3	-2.6	-1.9	-1.0	22.8	1,830	1,870	1,641
Honduras	8.8	8.2	5.5	6.3	10.3	3.6	8.2	-2.7	-0.1	2,561	2,701	2,483
Jamaica	9.3	-1.2	9.0	7.9	15.8	12.5				1,975	2,033	1,798
Mexico	6.0	4.2	5.3	5.5	5.8	8.7	1.3	4.8	-14.9	23,979	25,145	21,132
Nicaragua	7.3	12.4	3.0	6.1	16.4	3.5	7.9	6.1	10.3	990	1,000	915
Panama	1.2	4.6	0.4	0.5	6.8	5.8	1.2	8.4	5.3	320	325	291
Paraguay	9.1	8.7	2.6	10.3	13.3	1.5	3.3	22.9	-19.6	700	700	691
Peru	2.4	2.8	2.9	1.5	3.8	4.2	12.0	9.2	-13.6	2,900	2,960	2,665
Saint Lucia	1.9	4.0										
Suriname	70.9	10.4								115	120	103
Trinidad and Tobago	4.2	8.6	7.5	11.8	22.0	134.0				125	130	116
Uruguay	10.3	6.8	7.1	11.1	9.8	6.1	2.3	8.6	5.6	125	130	116
Venezuela (Bolivarian Rep. of)	20.8	19.9	28.6	25.1	28.7	30.5	1.6	13.2	-37.2	330	832	733
<i>Latin America</i>							4.7	8.1	-11.8			

**Sources:** 1. Economic Commission for Latin America & the Caribbean: Based on official information (Economic Indicators and Statistics - BADECON). Consulted 31, March 2010/ 2. Inter-American Development Bank. Study of Remittances 2009.

**Table A4. PRINCIPAL CRISIS-TRANSMISSION CHANNELS IN LATIN AMERICA & THE CARIBBEAN**

Countries	Base Unemployment Rate (1)			Index FOB Value of Export Goods Index			Index FOB Volume of Export Goods			Index FOB Value of Import Goods Index			Index FOB Volume of Import Goods		
	Average annual rates			2000=100 Average Annual Annual indicators			2000=100 Average Annual indicators			2000=100 Average Annual indicators			2000=100 Average Annual indicators		
	2003- 2005	2006-2008	2009 (2)	2001-2004	2005- 2008	2009	2001- 2004	2005-2008	2009	2001- 2004	2005- 2008	2009	2001- 2004	2005- 2008	2009
Argentina	14.2	8.9	8.8	110.8	202.1	209.4	110.0	148.0	146.5	65.0	164.3	157.6	66.6	141.6	139.8
Bahamas	10.4	8.1	12.4												
Barbados	10.0	8.1	10.0												
Belize	11.8	8.7													
Bolivia (Plurinational State of)	7.8	7.5	6.8	126.9	352.6	403.6	124.6	192.8	217.5	100.0	205.8	269.1	98.0	152.1	204.0
Brazil	11.2	9.1	8.1	130.8	279.0	280.3	132.5	187.1	176.6	95.9	205.6	229.6	95.9	142.6	150.7
Chile	9.6	7.5	9.8	118.0	304.6	269.8	117.0	148.9	146.3	106.9	245.8	229.2	112.5	202.3	199.9
Colombia	15.7	12.0	13.0	102.3	210.8	226.0	107.2	139.0	151.5	120.6	256.4	278.4	121.7	207.3	220.4
Costa Rica	6.8	5.2	7.6	97.8	146.5	153.1	104.6	153.0	165.2	113.4	194.8	190.7	115.8	172.4	181.5
Cuba	2.0	1.8					87.9	95.9	0.0				93.3	152.4	0.0
Dominican Republic	17.7	15.3	14.9	95.2	117.1	93.3	95.7	100.3	77.4	87.4	136.5	129.1	87.5	110.7	102.5
Ecuador	9.3	7.5	8.6	119.2	280.6	259.3	134.3	187.2	187.6	169.6	346.9	388.8	170.7	261.3	292.7
El Salvador (3)	6.4	5.7		104.7	133.8	134.1	108.0	121.1	119.4	112.5	163.9	145.4	115.3	140.1	128.3
Guatemala	4.8			113.4	166.4	183.3	120.8	141.1	145.7	133.1	209.0	200.9	133.6	157.0	147.4

Continues on next page.



**Table A4 (Cont.). PRINCIPAL CRISIS-TRANSMISSION CHANNELS IN LATIN AMERICA & THE CARIBBEAN**

Countries	Base Unemployment Rate (1)			Index FOB Value of Export Goods Index			Index FOB Volume of Export Goods			Index FOB Value of Import Goods Index			Index FOB Volume of Import Goods		
	Average annual rates			2000=100 Average Annual Annual indicators			2000=100 Average Annual Annual indicators			2000=100 Average Annual Annual indicators			2000=100 Average Annual indicators		
	2003- 2005	2006-2008	2009 (2)	2001-2004	2005- 2008	2009	2001- 2004	2005-2008	2009	2001- 2004	2005- 2008	2009	2001- 2004	2005- 2008	2009
Haiti				97.3	148.3	165.5	96.4	130.1	126.2	100.4	151.5	178.2	98.5	106.9	110.5
Honduras	7.4	4.3	4.9	115.6	164.6	159.3	143.8	167.6	156.5	120.0	207.2	203.2	134.5	170.3	167.0
Jamaica	11.5	10.2	11.3												
Mexico	4.9	4.8	6.8	101.2	154.6	136.8	101.4	122.4	108.8	101.0	153.1	134.4	100.1	126.9	111.9
Nicaragua	8.8	7.3		120.2	243.1	275.1	138.0	229.4	252.0	113.0	212.1	215.3	110.7	156.7	163.7
Panama	14.0	8.2	7.9	96.2	151.9	179.8	96.5	139.2	157.1	96.5	167.1	202.0	95.9	136.7	158.0
Paraguay	9.6	7.8		94.3	227.0	233.5	95.7	185.3	191.9	88.9	208.3	220.7	91.4	171.8	186.0
Peru	9.5	8.4	8.3	131.7	361.6	357.5	126.6	180.8	183.5	110.9	254.4	282.2	110.1	176.7	176.7
Suriname	8.9	12.1													
Trinidad and Tobago	9.0	5.5	5.1												
Uruguay	14.1	9.6	7.7	99.5	213.1	263.2	101.9	166.4	179.1	74.6	173.0	205.7	78.3	121.1	141.1
Venezuela (Bolivarian Rep. of)	15.2	8.6	8.0	89.7	212.6	164.3	90.8	89.0	74.6	89.1	225.4	228.1	87.2	184.6	185.3
Latin America & the Caribbean	10.1	8.0	8.3	107.3	199.4	186.7	108.4	137.3	128.8	99.4	180.5	176.5	99.4	143.9	138.8

Source: ECLAC. Preliminary Overview of the Economies of Latin America & the Caribbean December 2009.

Notes: (1) Argentina and Mexico urban areas; Bolivia, Costa Rica, Ecuador, El Salvador, Guatemala, Honduras, Nicaragua, Panama, Paraguay and Uruguay; urban total; Brazil six metropolitan areas; Colombia thirteen metropolitan areas; Peru, Lima metropolitan; Other countries, national total. (2) Argentina and Ecuador estimates based on data from January to September; Barbados from January to June; Brazil, Chile, Colombia, Mexico, Panama and B.R. of Venezuela from January to October; Honduras data corresponds to May; Jamaica average for January, April and July; Dominican Republic figure corresponds to April; Trinidad and Tobago, average for March and June. (3) Averages for 2003-2006 and 2007-2008, given the new methodology adopted in 2007 for the base jobless rate (non comparable data against previous series).

**Table A5. GROSS DOMESTIC PRODUCT & AGRICULTURAL VALUE ADDED**

COUNTRIES	GROSS DOMESTIC PRODUCT PER INHABITANT <sup>a</sup>			AGRICULTURAL VALUE ADDED AS % OF GDP			PERCENTAGE CHANGE IN GDP			PERCENTAGE CHANGE IN AGRICULTURAL VALUE ADDED		
	Constant dollars 2000			Percentage			Median interannual rate			Median interannual rate		
	2000/05	2005/08	2008 <sup>b</sup>	1995/99	2000/05	2008 <sup>b</sup>	2000/05	2005/08	2008 <sup>b</sup>	2000/05	2005/08	2008 <sup>b</sup>
Antigua and Barbuda	9039.8	10982.6	11340.6	3.4	3.2	2.7	4.2	7.4	0.2	1.8	3.0	2.7
Argentina	7328.4	9015.8	9691.0	4.6	5.0	4.3	2.0	8.0	6.8	1.9	3.2	-2.5
Bahamas	18242.1	18667.0	17916.0	2.2	1.9	1.3	1.2	1.1	-1.7	-0.7	-5.3	-5.8
Barbados	6831.7	7539.0	7652.3	5.4	4.6	3.7	1.3	2.3	0.2	-0.7	-1.1	0.3
Belize	3594.2	3900.5	3798.2	14.7	15.8	11.9	5.4	3.2	3.8	-5.8	-9.5	0.1
Bolivia (Plurinational State of)	1025.2	1115.5	1133.8	13.3	13.2	12.1	3.1	5.2	6.1	1.3	2.1	2.6
Brazil	3794.3	4197.7	4368.5	4.6	5.2	5.3	2.8	4.9	5.1	3.2	5.4	5.8
Chile	5221.1	5983.8	6115.4	5.0	5.4	5.4	4.2	4.1	3.2	1.5	2.6	2.1
Colombia	2469.1	2846.2	2983.3	9.4	9.4	8.5	3.9	5.6	2.4	2.1	3.5	2.6
Costa Rica	401.6	4913.8	5188.5	9.1	8.2	7.6	4.1	6.4	2.6	3.1	5.3	-1.4
Cuba	3014.7	3988.1	4362.9	6.7	5.9	4.1	5.0	7.8	4.1	2.2	3.7	0.6
Dominica	3911.5	4544.5	4842.8	16.7	14.7	12.7	0.7	4.9	3.5	1.3	2.2	10.1
Dominican Republic	2856.2	3406.0	3688.1	7.3	6.7	5.4	3.5	8.1	5.3	1.2	2.0	-3.4
Ecuador	1427.2	1655.9	1744.9	9.7	10.5	10.5	5.4	4.3	6.5	2.9	4.9	5.4
El Salvador	2306.8	2560.0	2676.9	10.4	9.3	10.4	2.3	3.8	2.5	4.6	7.8	7.3
Grenada	4300.9	4686.9	4765.3	7.6	6.0	4.9	2.2	1.1	0.9	7.8	13.4	11.1
Guatemala	1548.9	1640.8	1698.7	14.6	14.1	13.3	3.0	5.2	4.0	1.8	3.0	2.0
Guyana	795.2	848.2	901.7	32.2	31.2	26.0	0.3	4.5	3.1	0.2	0.3	-5.8
Haiti	403.0	388.5	391.3	25.7	22.4	20.3	-0.5	2.3	1.3	-0.3	-0.5	-5.7
Honduras	1213.0	1389.3	1452.0	14.9	14.0	13.1	4.7	5.6	4.0	3.3	5.5	3.4
Jamaica	3561.5	3705.4	3713.5	8.1	6.0	5.1	1.6	1.2	-0.6	0.7	1.2	-5.1
Mexico <sup>c</sup>	6435.9	6934.4	7092.0	4.95	3.9	4.1	1.9	3.3	1.3	2.4	4.0	3.2
Nicaragua	797.8	871.4	896.7	17.9	18.3	17.5	3.2	3.4	3.2	1.2	2.0	5.0
Panama	4068.5	5031.3	5687.9	6.6	7.2	5.8	4.3	10.4	10.7	2.5	4.2	7.9
Paraguay	1332.1	1437.6	1521.4	17.0	19.1	21.4	2.6	5.6	5.8	5.3	9.0	9.2
Peru	2154.5	2621.5	2923.6	6.9	7.6	6.7	4.2	8.8	9.8	3.7	6.2	7.1
Saint Kitts and Nevis	7343.1	8251.9	8560.4	3.1	2.5	2.1	3.3	4.0	4.6	0.0	-0.1	14.3
Saint Vincent and the Grenadines	3408.3	4150.5	4445.1	10.0	7.9	6.3	3.6	6.3	1.1	2.5	4.2	-6.5
Saint Lucia	4422.8	4910.5	4996.5	7.8	4.3	3.3	2.0	2.9	0.8	6.2	10.6	20.5
Suriname	1793.0	2036.5	2142.0	11.7	11.2	9.2	4.6	4.4	4.3	1.1	1.8	-5.0
Trinidad and Tobago	7597.4	10277.9	10963.9	1.7	1.0	0.5	7.9	7.0	2.3	1.6	2.6	10.7
Uruguay	5989.8	7313.3	8161.5	6.6	6.7	6.2	0.9	7.8	8.9	1.6	2.7	5.7
Venezuela (Bolivarian Rep. of)	4589.0	5490.6	5883.8	3.6	4.1	3.6	2.6	7.6	4.8	2.2	3.8	5.6
<i>Latin America &amp; the Caribbean</i>	4083.9	4612.5	4868.0	5.3	4.7	4.5	2.6	5.2	4.1	2.6	4.3	3.4
<i>Latin America</i>	4123.0	4651.1	4908.7	5.3	4.7	4.5	2.6	5.3	4.2	2.6	4.4	3.4
<i>Caribbean</i>	808.2	922.9	946.8	5.8	4.5	3.4	3.7	3.8	0.8	-0.2	-0.3	-2.2
<i>Central America</i>	1997.1	2260.2	2392.0	11.4	10.9	10.2	3.5	6.1	4.6	2.7	4.6	3.3
<i>Andean Region</i>	2641.4	3123.8	3347.7	6.7	7.2	6.4	3.5	6.9	5.1	2.5	4.1	4.4
<i>South</i>	4410.8	5033.9	5382.3	4.8	5.3	5.1	2.6	5.7	5.5	2.8	4.6	3.5

**Source:** Economic Commission for Latin America & the Caribbean: Based on official information (Economic Indicators and Statistics - BADECON). Consulted 31, March 2010.

**Notes:** a/ Corresponds to the average GDP value divided by the average population for the corresponding period. Population figures are mid year for each year. b/ Preliminary numbers. c/ The source of agricultural value added as a proportion of GDP in Mexico is Economistas y Asociados. The 2008 number is an estimate of 2009.

**Table A6. AGRICULTURAL & RURAL EMPLOYMENT**

COUNTRIES	PORTION EMPLOYED IN AGRICULTURE 1	LABOR INSERTION OF RURAL, ECONOMICALLY ACTIVE POPULATION 2. 3. 4 (percentages)									
		Employers		Farm wage earners		Non farm wage earners		Farm self employed		Non-farm self employed	
		1999/00	2006/08	1999/00	2006/08	1999/00	2006/08	1999/00	2006/07	1999/00	2006/07
Bolivia (99-07)	36.8	1.2	3.1	2.7	3.3	6.4	10.2	82.1	73.0	7.5	10.4
Brazil (99-08)	22.8	2.0	2.4	15.6	16.4	18.6	21.7	56.4	51.1	7.3	8.5
Chile (00. 06)	13.0	2.4	2.4	40.2	39.0	22.9	30.3	22.8	18.6	8.1	9.7
Colombia (99-05)	22.0	3.7	5.0	25.9	24.5	21.2	14.6	27.9	35.7	21.2	20.3
Costa Rica (99-08)	16.9	8.2	7.8	21.3	17.9	47.9	52.5	9.5	7.0	13.1	14.9
Dominican Republic (02-08)	15.9	1.7	2.3	5.5	4.5	31.1	35.6	35.0	27.6	26.7	30.0
Ecuador (08)	28.5		3.8		26.0		19.4		40.6		10.2
El Salvador (99-04)	20.7	4.1	3.2	20.2	21.2	30.6	35.1	26.3	20.9	18.8	19.5
Guatemala (98-06)	36.5	2.0	1.9	26.6	16.0	16.4	21.6	34.8	40.0	20.2	20.6
Honduras (99-07)	34.0	3.1	1.3	16.4	18.6	17.0	18.5	41.3	39.9	22.1	21.6
Mexico (02-08)	17.5	3.3	6.5	15.7	14.4	36.7	43.6	25.4	18.6	18.9	16.8
Nicaragua (98-05)	32.4	3.3	3.3	23.7	19.1	20.0	16.5	39.7	48.4	13.3	12.7
Panama (02-08)	17.0	2.0	2.0	14.2	14.1	25.9	30.7	39.3	36.0	18.7	16.3
Paraguay (99-08)	30.8	3.4	3.1	7.2	7.3	19.8	23.9	54.0	49.8	15.6	15.9
Peru (99-08)	32.0	6.4	5.4	10.9	10.1	8.5	12.1	62.2	59.5	12.0	12.8
Uruguay (08)			8.4		33.0		21.0		30.6		7.1
B.R. of Venezuela	10.6										

**Sources:** 1/ ECLAC. Statistical Yearbook 2009. 2/ ECLAC. Social Panorama 2009 (based on special tabulations of household surveys in respective countries). 3/ With a PEA minimum reference age of 15 years. 4/ By country data refer to the parenthetical indicators in the far right-hand column.

5/ Colombia and Nicaragua data correspond to 2005.

Table A7. POVERTY, EXTREME POVERTY &amp; MEDIAN INCOME

COUNTRIES <sup>1</sup>	RATE OF POVERTY 2 & EXTREME POVERTY (18 countries). (percentages)								MEDIAN MONTHLY HOUSEHOLD INCOME (17 countries) (poverty line multiples)					
	Countrywide Poverty <sup>3</sup>		Rural Poverty		Extreme Poverty Countrywide <sup>3</sup>		Extreme Poverty Countryside		Urban Zones			Rural Zones		
	2003/05	2006/08	2003/05	2006/08	2003/05	2006/08	2003/05	2006/08	2003/05	2006/08	2003/05	2006/08	2003/05	2006/08
	2003/05	2006/08	2003/05	2006/08	2003/05	2006/08	2003/05	2006/08	2003/05	2006/08	2003/05	2006/08	2003/05	2006/08
Argentina (04-06)	29.4	21.0			11.1	7.2			9.4	10.8				
Bolivia (04-07)	63.9	54.0	80.6	75.8	34.7	31.2	58.8	59.0	6.8	7.5	2.9	3.5		
Brazil (05-08)	36.3	25.8	53.2	41.2	10.6	7.3	22.1	16.5	10.8	12.9	6.3	7.6		
Chile (03-06)	18.7	13.7	20.0	12.3	4.7	3.2	6.2	3.5	13.9	14.6	11.1	13.1		
Colombia (05)	46.8		50.5		20.2		25.6		8.3		6.2			
Costa Rica (05-08)	21.1	16.4	22.7	17.5	7.0	5.5	9.0	7.3	10.7	11.7	9.8	10.4		
Dominican Republic (05-08)	47.5	44.3	51.4	49.1	24.6	22.6	28.8	29.0	7.9	8.0	6.2	5.8		
Ecuador (05-08)	48.3	42.7	54.5	50.2	21.2	18.0	29.2	25.6	7.4	7.6	5.8	6.1		
El Salvador (04)	47.5		56.8		19.0		26.6		6.7		5.2			
Guatemala (06)		54.8		66.5		29.1		42.2		8.8		6.3		
Honduras (03-07)	74.8	68.9	84.8	78.8	59.3	45.6	69.4	61.7	5.6	5.8	3.1	3.8		
Mexico (04-08)	37.0	34.8	44.1	44.6	11.7	11.2	19.3	19.8	8.9	9.1	7.1	7.6		
Nicaragua (05)	61.9		71.5		31.9		46.1		7.3		5.3			
Panama (05-08)	31.0	27.7	47.2	46.3	14.1	13.5	27.5	28.8	11.1	11.7	7.1	7.8		
Paraguay (05-08)	60.5	58.2	68.1	66.1	32.1	30.8	44.2	43.1	5.9	5.8	4.9	5.6		
Peru 4 (05-08)	48.7	36.2	70.9	59.8	17.4	12.6	37.9	29.7	7.5	9.2	3.5	4.9		
Uruguay (05-08)	18.8	13.7		9.4	4.1	3.4		2.4	8.1	8.4		9.0		
B.R. of Venezuela (05-07)	37.1	27.6	15.9	9.9										
Latin America 5 (05-08)	39.8	33.0	58.8	52.2	15.4	12.9	32.5	29.5						

**Source:** ECLAC, Panorama Social 2009 (based on special tabulations of household surveys in respective countries.)

1/ Data in parentheses refer to the years of the data for each country.

2/ Includes those who live below the indigence line or in a situation of indigence (extreme poverty).

3/ Argentina and Uruguay data correspond to Urban Total.

4/ The medium income figure corresponds to 2003

5/ Estimate for 18 countries of the region plus Haiti.

5/ Estimación para 18 países de la región más Haití.

**Table A8.** TRENDS IN PUBLIC AGRICULTURAL RESEARCH EXPENDITURES, 1981-2006

COUNTRIES	TOTAL EXPENDITURE				RATE OF CHANGE IN TOTAL SPENDING			
	(Millions of dollars PPP 2005)				Percentage			
	1981	1991	2001	2006	1981-91	1991-2001	2001-2006	1981-2006
Argentina	202.7	199	221.9	448.6	2.57	1.33	16.01	2.97
Belize	1	2.3	2.3	2.6	2.5	1.33	2.38	1.92
Brazil	1005.4	1432.5	1194.9	1224.1	2.99	-1.63	-0.66	0.58
Chile	58.2	65.6	124.3	98.1	5.54	6.71	-4.63	3.41
Colombia	104	135	176.3	152.4	3.73	3.92	-3.75	0.41
Costa Rica	13.4	20.9	26.7	29.9	-0.49	1.07	2.82	3.04
Dominican Republic	14.8	12.2	14.6	17.4	-1.99	1.83	4.17	-0.23
El Salvador	13.5	10.5	6	5.7	-2.27	-5.48	-3.32	-4.23
Guatemala	21.4	11.4	9	8.3	-1.43	-4.7	-2.04	-3.82
Honduras	5.5	15.8	13	11	14.6	0.68	-2.94	1.62
Mexico	517.6	369.2	437	517.6	-3.2	0.85	2.98	0.84
Nicaragua	11.6	14.6	22.5	24.1	1.28	4.03	-2.27	2.62
Panama	10.1	12.6	10.5	10	1.35	-0.68	-0.98	-0.92
Paraguay	2.8	3.4	2.6	3.1	-6.53	-3.41	1.54	-0.34
Uruguay	17.6	28.5	41.8	59.8	8.3	0.8	9.71	4.94
<i>Sample total (15)</i>	1999.7	2333.6	2303.5	2614.5	1.79	-0.12	2.56	0.99
<i>Total (26)</i>	2274.7	2697.5	2702.9	2983.7	1.86	0.02	2.14	1.05

Source: ASTI, March 2009. ASTI Summary Report

**Table A9. AVERAGE SHARE OF FOOD IMPORTS  
IN DOMESTIC CALORIC SUPPLY (percentages)**

COUNTRIES	2000/05	2005/08
Argentina	0.66	0.50
Barbados	78.21	83.15
Bolivia (Plurinational State of)	12.29	6.00
Brazil	9.42	7.78
Canada	9.40	10.27
Chile	25.46	33.61
Colombia	28.95	33.16
Costa Rica	48.58	49.58
Ecuador	18.21	22.03
El Salvador	51.24	48.51
Guatemala	43.28	44.48
Guyana	10.03	13.05
Honduras	21.32	32.63
Jamaica	67.59	72.56
Mexico	30.84	28.48
Nicaragua	23.29	25.80
Panama		52.23
Paraguay	3.21	1.69
Peru	30.73	33.64
Saint Vincent and the Grenadines	74.74	72.80
Trinidad and Tobago	69.16	73.66
United States	3.16	3.93
Uruguay	9.45	6.78
Venezuela (Bolivarian Rep. of)	34.71	33.57

**Sources:** Inter-American Institute for Cooperation on Agriculture based on official information from the United Nations (COMTRADE) and FAO (FAOSTAT).

**Table A10. PROPORTION OF CALORIC INTAKE FROM ANIMAL SOURCES AS A PERCENTAGE OF TOTAL CALORIES**

COUNTRIES	CROP BASED CALORIES AS A PERCENTAGE OF TOTAL CALORIES (%)	LIVESTOCK BASED CALORIES AS A PERCENTAGE OF TOTAL CALORIES (%)	FISH BASED CALORIES AS A PERCENTAGE OF TOTAL CALORIES (%)
Antigua and Barbuda	65.7	30.5	3.8
Argentina	71.0	28.6	0.4
Bahamas	69.3	28.8	1.9
Barbados	76.3	21.1	2.6
Belize	80.1	19.2	0.8
Bolivia (Plurinational State of)	80.7	19.1	0.2
Brazil	78.4	21.3	0.3
Canada	74.5	24.5	1.0
Chile	77.2	20.9	1.9
Colombia	82.9	16.7	0.4
Costa Rica	81.4	18.2	0.5
Cuba	90.6	9.0	0.4
Dominica	77.4	20.8	1.8
Dominican Republic	82.9	16.4	0.7
Ecuador	78.9	20.7	0.4
El Salvador	85.2	14.3	0.5
Grenada	71.8	25.1	3.1
Guatemala	91.0	8.7	0.2
Guyana	84.4	13.5	2.2
Haiti	93.0	6.6	0.3
Honduras	84.6	15.1	0.2
Jamaica	80.4	17.8	1.8
Mexico	80.6	18.7	0.7
Nicaragua	89.3	10.4	0.3
Panama	79.2	19.5	1.2
Paraguay	83.0	16.7	0.3
Peru	89.6	8.9	1.5
Saint Kitts and Nevis	71.4	26.4	2.2
Saint Vincent and the Grenadines	81.3	17.5	1.2
Santa Lucia	69.5	27.3	3.2
Suriname	87.6	11.1	1.3
Trinidad and Tobago	83.0	15.6	1.4
United States	72.8	26.3	0.9
Uruguay	75.9	23.7	0.5
Venezuela (Bolivarian Rep. of)	84.1	14.6	1.3

**Source:** Inter-American Institute for Agricultural Cooperation based on official FAO data (FAOSTAT).

**Notes:** data corresponds to 2005. Crop-based calories consumed through alcoholic beverages, cereals, fruits, tubers, root starches, stimulants, spices, sugarcane and sweeteners, sugar crops, nuts, vegetable oils and vegetables. Livestock-product calories are derived from animal fats, eggs, meat and milk (excluding butter).

**Table A11.** PROTEIN CONSUMPTION DERIVED FROM MARINE PRODUCTS AS A PERCENTAGE OF TOTAL PROTEIN INTAKE

COUNTRIES	PROTEINS DERIVED FROM FISH PRODUCTS (PROTEINS/CAPITA/ DAILY), G.	ALL PROTEINS CONSUMED (PROTEINS/ CAPITA/DAILY), G.	FISH-PRODUCT PROTEINS AS A PERCENTAGE OF TOTAL PROTEIN CONSUMPTION (%)
Antigua and Barbuda	14.1	82.8	17.0
Argentina	1.8	95.2	1.9
Bahamas	7.6	80.7	9.4
Barbados	11.3	90.4	12.5
Belize	3.5	75.3	4.6
Bolivia (Plurinational State of)	0.5	57.1	0.9
Brazil	1.6	85.1	1.9
Canada	5.9	104.2	5.7
Chile	7.7	86.5	8.9
Colombia	1.6	61.6	2.6
Costa Rica	2.1	70.6	3.0
Cuba	2.2	77.8	2.8
Dominica	8.3	90.5	9.2
Dominican Republic	2.8	54.2	5.2
Ecuador	1.4	57.2	2.4
El Salvador	1.9	66.3	2.9
Grenada	11.1	75.8	14.6
Guatemala	0.7	56.4	1.2
Guyana	9.7	81.9	11.8
Haiti	0.8	41.5	1.9
Honduras	0.9	66.2	1.4
Jamaica	7.6	77.3	9.8
Mexico	3.3	92	3.6
Nicaragua	1.1	59	1.9
Panama	3.9	69.3	5.6
Paraguay	1.2	67	1.8
Peru	5.5	72.2	7.6
Saint Kitts and Nevis	8.7	79.8	10.9
Saint Vincent and the Grenadines	4.9	74.9	6.5
Saint Lucia	12.6	94.2	13.4
Suriname	5.1	60.3	8.5
Trinidad and Tobago	5.9	69	8.6
United States	5.4	116.3	4.6
Uruguay	2.1	84.7	2.5
Venezuela (Bolivarian Rep. of)	4.8	66.6	7.2

**Source:** Inter-American Institute for Agricultural Cooperation based on official FAO information (FAOSTAT).

**Note:** Data corresponding to 2005. Fishing-product calories are derived from fish and seafood and other aquatic products.



**Table A12. ANNUAL ACCUMULATED GROWTH IN TRADE, BY SECTOR**

COUNTRIES	CROPS				LIVESTOCK				FISHING				FORESTRY			
	Exports (%)		Imports (%)		Exports (%)		Imports (%)		Exports (%)		Imports (%)		Exports (%)		Imports (%)	
	2000/05	2005/08	2000/05	2005/08	2000/05	2005/08	2000/05	2005/08	2000/05	2005/08	2000/05	2005/08	2000/05	2005/07	2000/05	2005/07
Antigua and Barbuda													1.7	0	1.7	0
Argentina	10.7	29.2	-4.1	53.4	18.6	10.5	-14.5	19.9	-1.2	14.1	-6.7	19.3	2	0.1	1.6	0.2
Bahamas		43.5		7.7		38.3		8.8		0.8		8.8	5.3	0	1.8	0
Barbados	4.5	10.1	5.6	10.8	7.1	0.4	6.5	7.8	-0.9	-17.5	8.8	3.8		0.2	1.6	0.3
Belize	11.5	1.5	1.2	19.3	29.6	-58.1	0.5	6.6	24.0	-22.1	-3.6	-8.8	1.5	0.1	1.5	0.2
Bolivia (Plurinational State of)	10.1	19.7	-1.1	27.3	2.5	-1.3	-4.2	2.2		211.5	-19.6	40.5	1.9	0.3	1.7	0.2
Brazil	17.4	21.6	-3.3	33.6	31.8	23.6	-13.0	23.4	11.1	-5.0	-1.1	30.4	2.1	0.2	1.7	0.2
Canada	7.2	25.4	9.2	15.3	4.7	6.9	2.5	15.9	5.7	0.9	3.8	7.6	1.7	0	1.8	0
Chile	8.8	18.8	6.6	35.6	35.3	12.0	14.5	11.0	10.2	9.4	16.0	39.6	1.9	0.3	2	0.3
Colombia	7.1	9.8	6.1	29.8	28.7	50.6	-11.3	26.2	-1.7	10.3	10.5	22.4	2.1	0.2	1.9	0.2
Costa Rica	5.6	14.0	7.4	31.5	10.3	10.9	1.5	24.7	-0.8	1.0	9.5	26.3	2	0	1.8	0
Cuba	-10.1		14.5		6.2		14.7		-1.7		6.1					
Dominica	-7.2	1.9	0.1	14.1		116.5	1.8	20.4	50.7	-26.5	2.2	6.3	1.8	0.4	1.1	0.2
Dominican Republic													3.2	0.3	2	0.1
Ecuador	10.1	15.2	16.4	20.4	-18.8	5.4	16.0	17.4	9.5	18.8	20.1	165.9	2	0.3	1.8	0
El Salvador	0.3	22.0	8.7	25.5	-0.6	19.8	6.0	18.1	26.8	20.1	39.0	-6.3	1.9	0.2	1.8	0.2
Grenada	-9.8	1.8	3.4	12.4	-17.5	57.1	4.3	11.4	-2.3	-4.1	4.2	16.3			1.7	0
Guatemala	2.7	20.6	13.6	22.7	4.3	16.4	10.0	12.9	-3.8	46.6	29.9	6.9	2.3	0.1	1.9	0.1
Guyana	6.3	7.8	6.0	23.1	9.6	5.1	6.0	3.8	2.9	2.3	-10.9	12.9	1.7	0.2	2.1	0
Haiti													0	0	1.7	0.4
Honduras	-1.6	20.5	-0.6	20.2	20.9	-0.1	7.6	22.3	32.0	77.2	21.5	14.0	1.2	0.5	2.1	0
Jamaica	0.0	19.0	6.9	22.6	-1.7	12.7	4.5	6.8	-3.5	-2.2	5.9	10.8	4.3	0	1.5	0.2
Mexico	7.9	12.4	8.7	19.9	6.6	2.7	6.2	12.1	-2.0	9.9	21.2	18.3	2.1	0.1	1.9	0.1
Nicaragua	5.8	15.8	4.1	31.8	13.8	26.4	-4.4	27.1	3.4	-4.9	-12.1	21.3	1.6	-0.4	2	0
Panama	3.5	12.8		25.5	1.2	-9.9		20.5	11.0	1.0		13.5	2.8	-0.1	1.9	0.2
Paraguay	16.6	46.5	-3.8	22.5	23.3	29.2	-1.8	19.9	27.3	-19.6	-2.3	36.7	1.6	0.1	2	0.1
Peru	16.3	23.1	10.5	23.9	45.2	27.7	3.3	19.2	7.0	13.6	18.7	-12.2	1.8	0	2	0.2
Saint Kitts and Nevis	-24.5	60.3	-0.2	14.8	-12.4	52.3	4.2	3.1	-4.5	85.4	1.1	21.7	1.7	0	1.7	0
Saint Vincent and the Grenadines	-6.1	2.5	1.9	25.0	16.4	7.6	7.0	11.0	-14.6	6.6	9.4	10.0	3.3	0.5	1.3	0.2
Saint Lucia	-0.8		4.8	10.6	140.2		6.5	9.6	-60.5		8.4	9.8			1.7	0.2
Suriname													1.8	0.1	2.3	0.5
Trinidad and Tobago	3.5	16.1	13.0	22.6	-8.5	15.0	5.4	23.2	-6.6	8.9	22.2	9.5	1.5	-0.1	2	-0.1
United States	4.6	23.1	8.4	11.7	-1.8	22.0	5.3	1.8	6.1	1.7	4.5	5.1	1.7	0.1	1.8	0
Uruguay	11.0	31.7	-5.4	30.0	17.0	17.8	15.0	15.0	5.8	14.3	8.2	38.4	2.1	0.2	1.6	0.2
Venezuela (Bolivarian Rep. of)	-9.2		1.8	36.5	-30.0		14.8	79.9	-14.8		-3.6	83.7	1.4	0	1.7	0

**Source:** InterAmerican Institute for Agricultural Cooperation, based on official United Nations data base (COMTRADE) and FAO.  
**Note:** HND. NIC. KNA the most recent period is 2005/07.

**Table A13. SHARE OF SECTORAL EXPORTS IN TOTAL GOODS EXPORTS**

COUNTRIES	CROPS		LIVESTOCK		FISHING		FOREST	
	2000/05	2005/08	2000/05	2005/08	2000/05	2005/08	2000/05	2005/07
Antigua and Barbuda								
Argentina	1.5	7.3	8.8	-8.2	-9.4	-5.3	1.79	-0.1
Bahamas		5.0		1.2		-26.2		-0.34
Barbados	2.5	6.4	5.0	-3.0	-2.9	-20.3		0.27
Belize	8.9	-8.4	26.6	-62.2	21.1	-29.7	1.41	-0.02
Bolivia (Plurinational State of)	-4.5	-9.9	-11.1	-25.7		134.5	1.52	-0.01
Brazil	0.5	2.7	12.8	4.4	-4.9	-19.8	1.65	0.01
Canada	1.3	15.0	-1.1	-1.9	-0.1	-7.4	1.59	-0.1
Chile	-6.8	-1.9	16.0	-7.5	-5.5	-9.6	1.5	-0.01
Colombia	-2.9	-9.5	16.8	24.2	-10.8	-9.0	1.79	-0.03
Costa Rica	-0.8	1.8	3.6	-1.0	-6.8	-9.8	1.82	-0.07
Cuba	-17.0		-1.9		-9.2			
Dominica	-3.2	4.5		122.0	57.2	-24.6	1.88	0.54
Dominican Republic								
Ecuador	-5.2	-5.4	-30.1	-13.4	-5.7	-2.4	1.6	0.08
El Salvador	-4.3	-13.5	-5.2	-15.0	20.9	-14.8	1.74	0.07
Grenada	9.9	-3.9	0.5	48.3	19.0	-9.5		
Guatemala	-9.2	0.1	-7.7	-3.4	-14.9	21.7	1.93	-0.03
Guyana	4.5	-8.4	7.8	-10.8	1.2	-13.2	1.7	-0.01
Haiti								
Honduras	-3.3	-11.4	18.7	-26.5	29.6	30.4	1.16	0.14
Jamaica	-3.5	2.0	-5.1	-3.4	-6.9	-16.2	4.13	-0.17
Mexico	2.5	1.7	1.3	-7.1	-7.0	-0.6	1.92	-0.01
Nicaragua	-1.4	-1.4	6.0	7.7	-3.7	-19.0	1.44	-0.48
Panama	0.0	6.8	-2.3	-14.7	7.2	-4.3	2.63	-0.12
Paraguay	0.9	5.9	6.7	-6.6	10.2	-41.9	1.25	-0.12
Peru	-3.5	1.3	20.5	5.0	-11.2	-6.6	1.35	-0.21
Saint Kitts and Nevis	-27.2	60.8	-15.5	52.8	-7.9	86.0	1.59	0
Saint Vincent and the Grenadines	-1.1	-7.6	22.6	-3.0	-10.1	-3.8	3.48	0.39
Saint Lucia	-11.9		113.4		-64.9			
Suriname								
Trinidad and Tobago	-10.5	-4.4	-20.9	-5.4	-19.3	-10.4	1.12	-0.2
United States	1.4	9.1	-4.9	8.2	2.7	-9.8	1.64	-0.02
Uruguay	1.4	10.0	6.9	-1.7	-3.4	-4.6	1.8	0.04
Venezuela (Bolivarian Rep. of)	-19.2		-37.7		-24.2		1.17	

**Source:** Inter-American Institute for Agricultural Cooperation, based on official United Nations data base (COMTRADE) and FAO

**Note:** HND, NIC, KNA the most recent period is 2005/'07

**Table A14. ACCUMULATED ANNUAL CHANGE IN PRODUCTION BY SECTOR.  
PERCENTAGES**

COUNTRIES	CROPS		LIVESTOCK		FISHING		FOREST	
	2000-2005	2005-2008	2000-2005	2005-2008	2000-2005	2005-2008	2000-2005	2005-2008
Antigua and Barbuda	1.19	4.34	2.17	2.77				
Argentina	2.89	4.79	2.07	0.42	-20.41	13.33	10.51	-2.80
Bahamas	4.02	-15.42	4.25	0.05	24.89	120.00	0.00	66.49
Barbados	1.47	0.83	5.61	-1.38			11.92	22.10
Belize	2.12	0.64	9.32	-2.28	198.19	-2.75	0.00	83.04
Bolivia (Plurinational State of)	3.17	3.39	3.10	-1.43	3.53	15.05	4.73	0.48
Brazil	5.64	12.62	5.69	5.26	-3.45	0.78	2.70	-2.21
Canada	2.59	3.12	2.84	-0.67	6.15	0.19	0.87	-2.83
Chile	3.36	-6.00	4.24	4.68	5.27	5.04	5.01	8.00
Colombia	2.74	0.49	4.15	7.45	-5.82	9.76	-0.97	-1.88
Costa Rica	0.93	-2.19	2.03	5.34	8.77	-5.17	-3.68	5.87
Cuba		3.02	-4.69	17.38	10.42	-2.93		
Dominica	-2.96	6.29	0.00	1.78	-22.45			0.00
Dominican Republic	4.45	-0.79	4.28	5.61	-9.08		-0.58	20.10
Ecuador	5.61	5.04	3.48	10.63	59.99	-32.02	2.50	0.76
El Salvador	0.36	6.22	2.05	3.94	1.49	-17.01	-1.67	0.11
Grenada	-4.32	4.35	0.45	0.11				
Guatemala	2.96	6.39	3.51	0.24	-64.72	3.01	2.07	2.15
Guyana	-0.18	-0.95	14.48	2.46	0.05	-19.75	2.75	1.43
Haiti	0.16	2.18	1.65	-0.53			0.35	0.38
Honduras	6.56	2.60	10.56	2.17	34.53	-1.46	0.15	-0.83
Jamaica	-0.58	8.07	4.42	-0.21	133.32	-56.57	-0.81	-0.39
Mexico	2.12	2.62	3.38	2.06	-0.59	9.88	1.15	4.02
Nicaragua	4.57	1.38	7.89	8.11	-2.49	-59.89	0.09	0.45
Panama	1.21	0.32	0.60	4.85	27.08	-11.69	-0.17	-0.47
Paraguay	4.84	10.43	0.66	2.71	20.08	-0.72	0.45	0.98
Peru	3.71	4.30	4.83	2.29	2.25	-13.10	0.33	2.96
Saint Kitts and Nevis	-4.19	2.13	-0.82	-12.56				
Saint Vincent and the Grenadines	1.82	1.30	-4.70	1.91				
Saint Lucia	-3.08	6.49	3.38	2.40	4.04	-18.77	0.00	0.00
Suriname	0.21	7.65	4.94	10.56	-9.27	-49.32	-0.63	-3.52
Trinidad and Tobago	0.38	4.09	7.57	1.60	-29.07		-1.66	-0.22
United States	1.34	2.87	1.21	2.52	8.53	-1.96	0.37	-2.04
Uruguay	4.52	10.16	4.61	0.01	-4.57	-10.43	18.04	10.12
Venezuela (Bolivarian Rep. of)	-0.35	0.80	-0.52	7.23	-21.39	-8.93	3.38	8.63

**Source:** Inter-American Institute for Agricultural Cooperation based on official FAO information (FAOSTAT).

**Table A15. USE OF LAND IN THE AMERICAS BY CATEGORY (1,000 HA)**

Country	Total land area *	Total agricultural land (SAT) *	Arable land and permanent crops (CACP)*	% CACP/ SAT	Pasture and prairie land (SPP) *	%SPP/SAT	Wooded area *	Protected areas **
Anguilla	9.0	...	...	...	...	...	5.5	
Antigua-Barb	44.0	13.0	9.0	0.7	4.0	0.3	9.4	
Antil Neerl	80.0	8.0	8.0	1.0		-	1.2	
Argentina	273,669.0	133,350.0	33,500.0	0.3	99,850.0	0.7	32,721.4	21515***
Aruba	18.0	2.0	2.0	1.0		-	0.4	
Bahamas	1,001.0	14.0	12.0	0.9	2.0	0.1	515.0	
Barbados	43.0	19.0	17.0	0.9	2.0	0.1	1.7	
Belize	2,281.0	152.0	102.0	0.7	50.0	0.3	1,653.0	800.6
Bermudas	5.0	1.0	1.0	1.0	...	-	1.0	
Bolivia	108,330.0	36,828.0	3,828.0	0.1	33,000.0	0.9	58,199.6	17,066.9
Brazil	845,942.0	263,500.0	66,500.0	0.3	197,000.0	0.7	471,492.0	70,530.0
Cayman Islands	26.0	3.0	1.0	0.3	2.0	0.7	12.4	
Canada	909,351.0	67,600.0	52,150.0	0.8	15,450.0	0.2	310,134.0	
Chile	74,380.0	15,762.0	1,753.0	0.1	14,009.0	0.9	16,235.8	14,334.9
Colombia	110,950.0	42,436.0	3,570.0	0.1	38,866.0	0.9	60,634.0	14,508.8
Costa Rica	5,106.0	2,750.0	500.0	0.2	2,250.0	0.8	2,397.0	1,355.8
Cuba	10,982.0	6,620.0	3,991.0	0.6	2,629.0	0.4	2,824.2	330.9
Dominica	75.0	23.0	21.0	0.9	2.0	0.1	45.5	
Dominican Rep.	4,832.0	2,517.0	1,320.0	0.5	1,197.0	0.5	1,376.0	1,052.9
Ecuador	27,684.0	7,412.0	2,415.0	0.3	4,997.0	0.7	10,458.2	
El Salvador	2,072.0	1,556.0	919.0	0.6	637.0	0.4	287.6	41.6
Grenada	34.0	13.0	12.0	0.9	1.0	0.1	4.1	
Guadalupe	169.0	44.0	24.0	0.5	20.0	0.5	79.3	
Guatemala	10,716.0	4,464.0	2,514.0	0.6	1,950.0	0.4	3,830.0	3,089.0
Fr Guyana	8,815.0	23.0	16.0	0.7	7.0	0.3	8,063.0	
Guyana	19,685.0	1,680.0	450.0	0.3	1,230.0	0.7	15,103.5	

Continues on the next page.

**Table A15 (Cont.).** USE OF LAND IN THE AMERICAS BY CATEGORY (1,000 HA)

Country	Total land area *	Total agricultural land (SAT) *	Arable land and permanent crops (CACP)*	% CACP/ SAT	Pasture and prairie land (SPP) *	%SPP/SAT	Wooded area *	Protected areas **
Haiti	2,756.0	1,690.0	1,200.0	0.7	490.0	0.3	103.4	
Honduras	11,189.0	3,128.0	1,428.0	0.5	1,700.0	0.5	4,335.2	3163.6***
Jamaica	1,083.0	513.0	284.0	0.6	229.0	0.4	338.2	
Malvinas	1,217.0	1,118.0		-	1,118.0	1.0	-	
Martinique	106.0	28.0	18.0	0.6	10.0	0.4	46.5	
Mexico	194,395.0	106,800.0	26,900.0	0.3	79,900.0	0.7	63,717.2	18,700.4
Montserrat	10.0	3.0	2.0	0.7	1.0	0.3	3.5	
Nicaragua	11,999.0	5,200.0	2,184.0	0.4	3,016.0	0.6	4,979.0	
Panama	7,434.0	2,230.0	695.0	0.3	1,535.0	0.7	4,288.8	
Paraguay	39,730.0	20,400.0	4,400.0	0.2	16,000.0	0.8	18,117.8	5,739.2
Peru	128,000.0	21,560.0	4,560.0	0.2	17,000.0	0.8	68,553.6	18,749.5***
Puerto Rico	887.0	189.0	99.0	0.5	90.0	0.5	408.4	
S Pedro Miguel	23.0	3.0	3.0	1.0	...	-	3.0	
St Vincent and the Grenadines	39.0	14.0	12.0	0.9	2.0	0.1	10.9	
St Kitts y Neris	26.0	5.0	4.0	0.8	1.0	0.2	5.3	
St Lucia	61.0	11.0	10.0	0.9	1.0	0.1	17.0	
Suriname	15,600.0	83.0	65.0	0.8	18.0	0.2	14,776.0	
Trinidad Tab	513.0	54.0	47.0	0.9	7.0	0.1	225.2	
Turks & Caicos	95.0	1.0	1.0	1.0	...	-	34.4	
US	916,192.0	411,158.0	173,158.0	0.4	238,000.0	0.6	303,407.0	
Uruguay	17,502.0	14,683.0	1,383.0	0.1	13,300.0	0.9	1,544.8	
B.R. of Venezuela	88,205.0	21,350.0	3,350.0	0.2	18,000.0	0.8	47,137.8	64,860.3
Virgin (UK)	15.0	8.0	3.0	0.4	5.0	0.6	3.7	
Virgin (USA)	35.0	4.0	2.0	0.5	2.0	0.5	9.1	
Americas	3,894,456.0	1,197,258.0	393,443.0	0.3	803,815.0	0.7	1,528,150.8	
LAC + Mexico	2,068,913.0	718,500.0	168,135.0	0.2	550,365.0	0.8	914,609.8	255,839.4

\* **Source:** FAO. FAOSTAT (year 2007).

\*\* **Source:** ECLAC. ECLACSTAT (year 2007; \*\*\* year 2006).