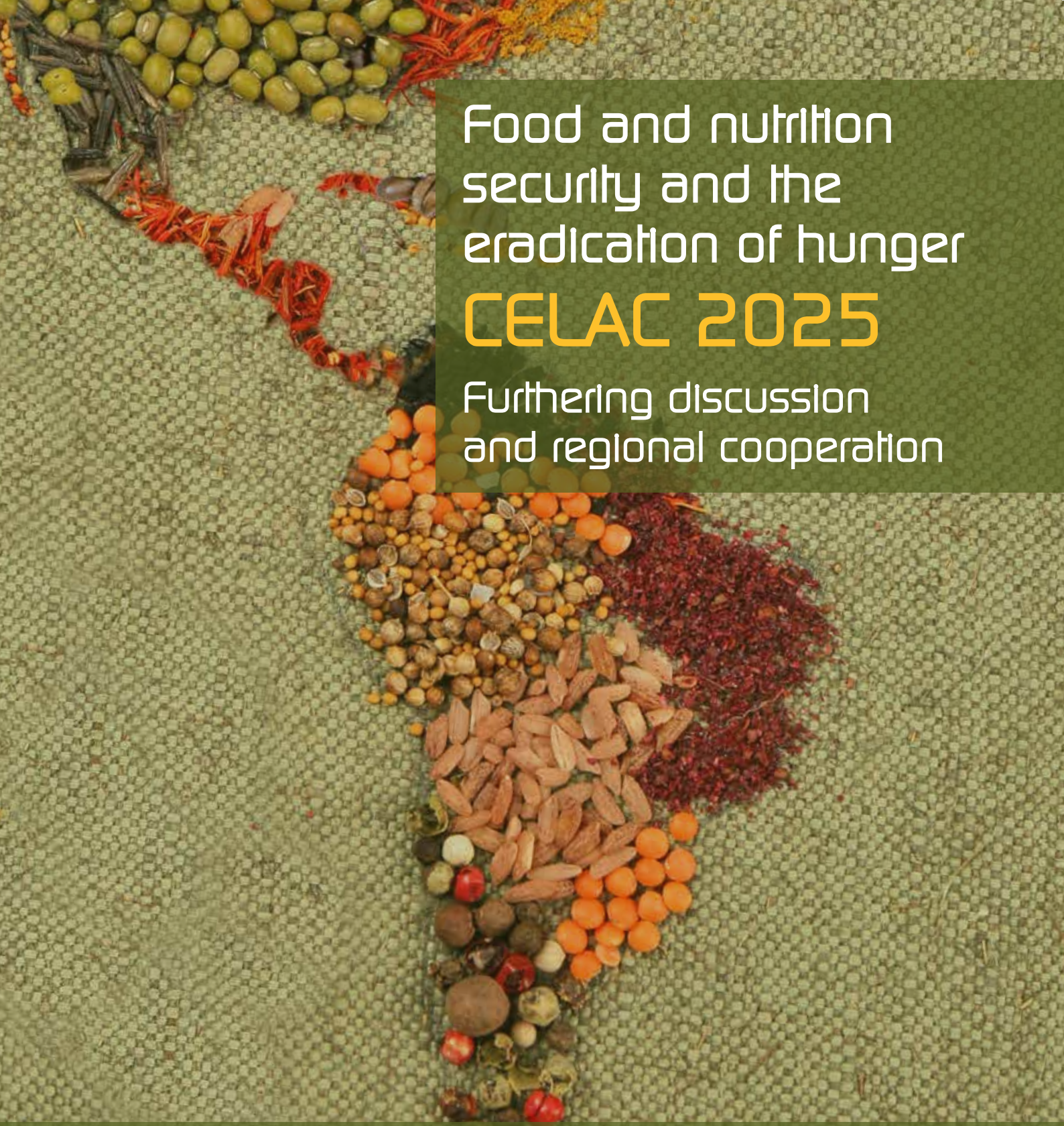

Food and nutrition security and the eradication of hunger

CELAC 2025

Furthering discussion and regional cooperation

UNITED NATIONS

ECLAC

Food and Agriculture Organization of the United Nations

ALADI

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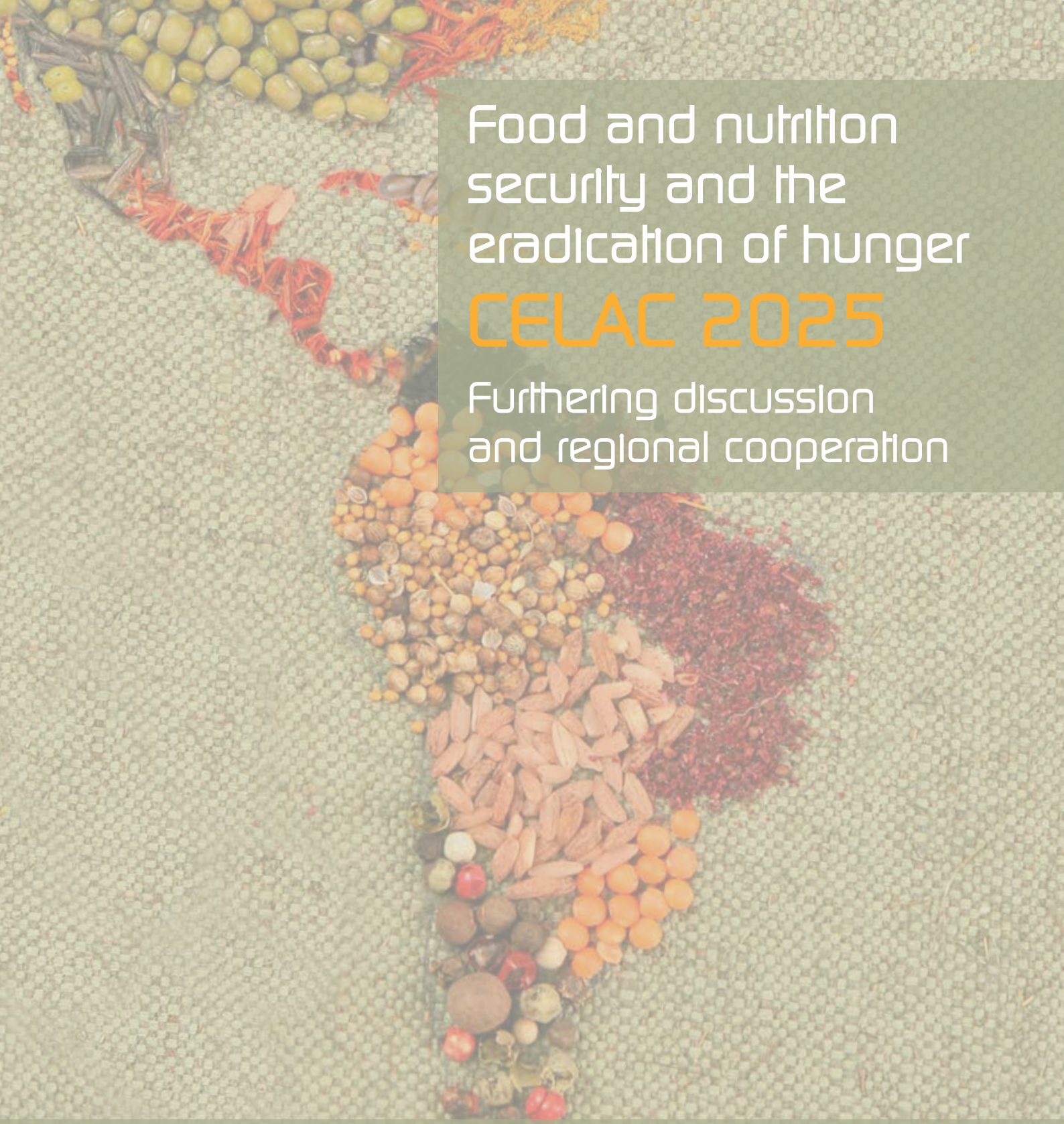

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This document has been prepared by the Economic Commission for Latin America and the Caribbean (ECLAC), the Food and Agriculture Organization of the United Nations (FAO) and the Latin American Integration Association (ALADI), as a contribution to the Pro Tempore Chair of the Community of Latin American and Caribbean States (CELAC), currently held by the Dominican Republic.

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Presentation

In 2016, the Dominican Republic assumed the Pro Tempore Chair of the Community of Latin American and Caribbean States (CELAC) and took on a considerable challenge: the 2030 Agenda for Sustainable Development, which was adopted in September 2015 and contains the Sustainable Development Goals. These include major economic, social, environmental and health targets for 2030, including Goal 2: "End hunger, achieve food security and improve nutrition and promote sustainable agriculture".

Latin America and the Caribbean has been a global pioneer in placing food and nutrition security high on the regional agenda by ratifying the CELAC Plan for Food and Nutrition Security and the Eradication of Hunger 2025. With support from FAO, ECLAC and ALADI, CELAC set itself the ambitious aim of eradicating hunger by 2025, which is even more demanding than the 2030 deadline established for the Sustainable Development Goals.

Nonetheless, this goal is not merely a whim of the region's countries. Latin America and the Caribbean can boast a successful track record in the process of eradicating hunger: it is the only region in the world that has halved both the proportion of people who suffer from hunger (the target set in the Millennium Development Goals) and their absolute number (the target set at the World Food Summit of 1996).

These positive results are a great precedent in view of the new challenges that CELAC has before it, because discourses that take for granted the region's fulfilment of the Sustainable Development Goals are totally unfounded. The Pro Tempore Chair sees the CELAC Plan for Food and Nutrition Security and the Eradication of Hunger 2025 as a cross-cutting tool for achieving the Sustainable Development Goals; and it thus encourages member countries to redouble their efforts to identify key policy areas that will make it possible to speed up and consolidate the process of eradicating hunger and tackle the twin burden of malnutrition in the region, in which overweight and obesity are increasingly adding to that scourge.

In its capacity as Pro Tempore Chair, the Dominican Republic commissioned this document from the organizations that have supported the implementation of the CELAC Plan for Food and Nutrition Security and the Eradication of Hunger 2025, as part of those efforts. The document reflects a growing concern identified by the Pro Tempore Chair: how will the region be able to continue the positive process of eradicating hunger and malnutrition in a context where climate change is increasingly evident and its effects on production systems are ever deeper and more glaring.

The palpable threat of this phenomenon will be seen strongly in food production; but it will also have repercussions on the wider economy and on the social protection and health systems. Although the countries of Latin America and the Caribbean will suffer differentiated impacts according to their nature, climate change will, without doubt, be a cross-cutting challenge that will need to be addressed in a decisive and coordinated way.

The need for coordination is precisely one of the main concerns expressed in this document, prepared jointly by FAO, ECLAC and ALADI for the Meeting on Food Security and Climate Change: Challenges and Opportunities for Latin America and the Caribbean, to be held in Santiago de los Caballeros (Dominican Republic) from 31 July to 2 August 2016. Climate change is a phenomenon that has multiple effects, which must therefore be addressed in a multisectoral and integrated way, taking advantage, in this case, of the cooperation tools that the CELAC Plan for Food and Nutrition Security and the Eradication of Hunger 2025 provides to the region's countries.

The Pro Tempore Chair hopes that this document will spur high-level discussions, enabling CELAC countries to address the aforementioned challenges, deepen cooperation both regionally and with our extraregional partners and continue the successful process of hunger eradication that Latin America and the Caribbean has been pursuing over the last few years. The CELAC Plan for Food and Nutrition Security and the Eradication of Hunger 2025 clearly represents a unique tool for the region's countries to attain the Sustainable Development Goals; and the discussion of the issues included in this document will be crucial for attaining the shared targets.

Andrés Navarro
Minister of Foreign Affairs
Dominican Republic

Foreword

This document has been prepared by the Food and Agriculture Organization of the United Nations (FAO), the Economic Commission for Latin America and the Caribbean (ECLAC) and the Latin American Integration Association (ALADI), at the request of the Pro Tempore Chair of the Community of Latin American and Caribbean States (CELAC), currently held by the Government of the Dominican Republic.

The document aims to provide the region's countries with up-to-date and timely information on the status of food and nutrition security; on the role in eradicating hunger played by the different areas such as agriculture, agrifood trade and natural resources management; and the possibility of successfully addressing the twin burden of malnutrition, in a context where the effects of climate change could threaten the progress achieved in Latin America and the Caribbean thus far.

Since the creation of CELAC, one of the priorities of the countries of the region has been to eradicate hunger and malnutrition. To that end, in January 2015, FAO, ECLAC and ALADI supported the adoption of the CELAC Plan for Food and Nutrition Security and the Eradication of Hunger 2025, the world's first policy document to place food and nutrition security at the centre of the public agenda.

The international community has established the 2030 Agenda for Sustainable Development, a road map that clearly reflects the breadth and urgency of the global challenges; and it has put combating inequality at the heart of that Agenda. Attaining the Sustainable Development Goals requires launching and consolidating specific instruments for their implementation. To that end, the region has created the Forum of the Countries of Latin America and the Caribbean on Sustainable Development as a regional mechanism to follow up and review the implementation of the 2030 Agenda for Sustainable Development, including the Sustainable Development Goals and targets, its means of implementation, and the Addis Ababa Action Agenda.

The Plan for Food and Nutrition Security and the Eradication of Hunger 2025 is a clear demonstration of the commitment of CELAC to sustainable development. FAO, ECLAC and ALADI will continue to support this and other initiatives of the region's countries, in the firm conviction that collaborative efforts by the States of Latin America and the Caribbean, united through CELAC, will make it possible to continue advancing and consolidating the path that the region has set for itself: to completely eradicate hunger and malnutrition in our countries.

Alicia Bárcena
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Chapter I

Food and nutrition security

Chapter I

A. Dimensions of food and nutrition security

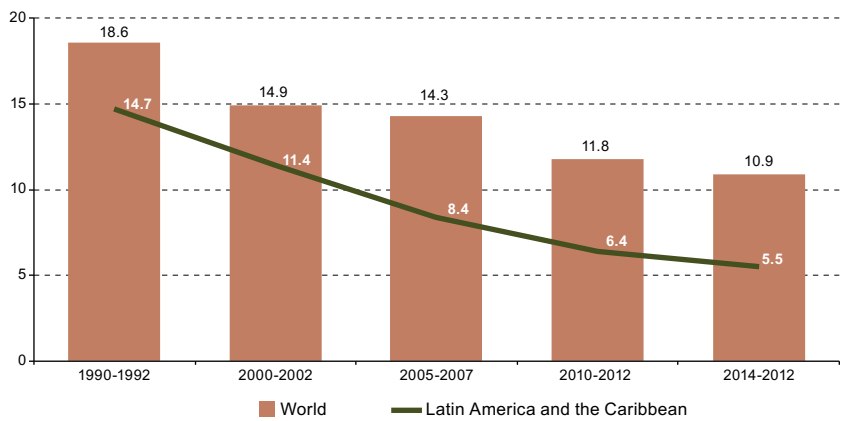
Food and nutrition security exists when all people have adequate physical and economic access to safe and nutritional food at all times for an active, healthy life. Food and nutrition security consists of: the availability of food of sufficient quantity and quality, produced domestically or imported; access to adequate and nutritional food, under conditions in which people have the physical and economic resources to buy it; biological use that brings about a state of nutritional health in which physiological needs are met, which entails access to safe drinking water, sanitation and medical care; and lastly, stability, a cross-cutting dimension that underscores the fact that appropriate food should be available at all times, with no risk that one of the dimensions could be affected due to crisis situations.

Great strides have been made in food and nutrition security in Latin America and the Caribbean in recent decades. The region is now in a good position to tackle the challenges of the 2030 Agenda for Sustainable Development.

The attainment of international hunger targets is encouraging, as seen in the progress made with respect to the Millennium Development Goals (MDGs) and the objectives set at the World Food Summit (WFS). However, attention is also needed at the country level and within countries, in order to identify gaps and target actions to help lock in and build upon the progress to date.

According to the latest estimates on undernourishment, the region has met target 1.C of the MDGs inasmuch as it reduced the proportion of people suffering from hunger from 14.7% in the three-year period corresponding to 1990-1992 to 5.5% in 2014-2016. The successful course charted by the region has also enabled it to meet the target set at the World Food Summit, to halve the number of people suffering from undernourishment during the period. Nevertheless, there are still over 34 million undernourished people in Latin America and the Caribbean.

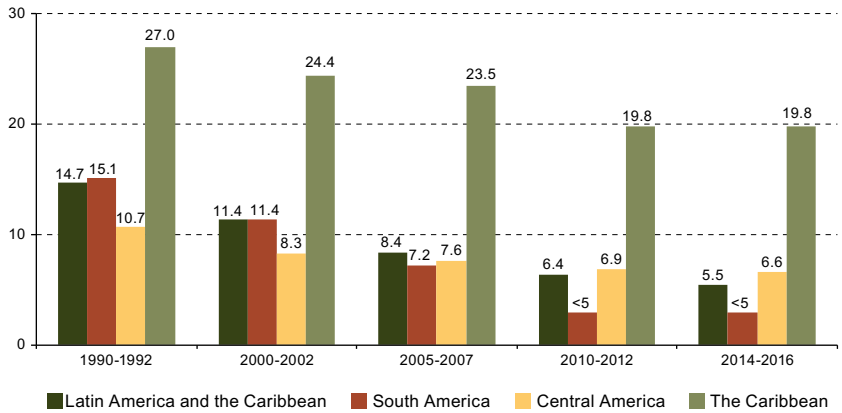
Figure I.1
Prevalence of hunger, 1990-2016
(Percentages)



Source: Food and Agriculture Organization of the United Nations (FAO)/International Fund for Agricultural Development (IFAD)/World Food Programme (WFP), *The State of Food Insecurity in the World 2015*, Rome, 2015.

South America has met the MDG and WFS hunger targets. The proportion of undernourished people in the subregion is now less than 5%. This outcome explains much of the success achieved by Latin America and the Caribbean, since two thirds of the region's population lives in South America. Central America made slower progress, reducing the number of undernourished people from 10.7% in 1990-1992 to 6.6% in 2014-2016. The Caribbean subregion made the least progress, reducing undernourishment from 27.0% to 19.8% over the same period.

Figure I.2
Latin America and the Caribbean: prevalence of hunger, 1990-2016
(Percentages)



Source: Food and Agriculture Organization of the United Nations (FAO)/International Fund for Agricultural Development (IFAD)/World Food Programme (WFP), *The State of Food Insecurity in the World 2015*, Rome, 2015.

Seventeen countries have attained the MDG hunger target (Argentina, Barbados, Bolivarian Republic of Venezuela, Brazil, Chile, Costa Rica, Cuba, Dominican Republic, Guyana, Mexico, Nicaragua, Panama, Peru, Plurinational State of Bolivia, Saint Vincent and the Grenadines, Suriname and Uruguay). Of these, seven have reduced the undernourishment rate to less than 5% (Argentina, Barbados, Brazil, Chile, Cuba, Mexico and Uruguay). Meanwhile, 11 countries have met the WFS targets: Argentina, Bolivarian Republic of Venezuela, Brazil, Chile, Cuba, Dominican Republic, Guyana, Nicaragua, Peru, Saint Vincent and the Grenadines and Uruguay.

Latin America and the Caribbean should make a strong push to completely eradicate hunger. The different realities in the countries demand different efforts. Some have not yet met the hunger targets (neither the WFS nor the MDG targets), but there are others in which, despite undernourishment rates below 5%, a large number of people remain at risk.

B. Vulnerability factors related to food and nutrition security

Latin America and the Caribbean, as a region, is a net exporter of food and an important supplier to global markets. It produces enough food to meet the caloric needs of its population, which includes grains as a staple of human consumption, but it has yet to ensure adequate access to and use of these resources.

The reduction of poverty and hunger has had a positive effect on nutrition, with significant improvements seen in child malnutrition indicators. However, as malnutrition related to dietary deficits has decreased, overweight and obesity rates have increased. This is due to excess caloric intake, sedentary lifestyles and changes in consumption patterns in favour of diets with less nutritional quality.

Rising food prices have a direct effect on food and nutrition security by reducing the purchasing power of households and the quantity and quality of food that they are able to buy. The poorest households are not only directly but also disproportionately affected because they spend a larger share of their income on food. Families in higher socioeconomic brackets are able to reduce spending in other areas to keep their diet stable.

Economic expansion, rising incomes, population growth and urbanization, among other factors, are posing increasing production and consumption challenges in food systems. Therefore, reducing the negative effects of development on the environment and natural resources, as well as mitigating climate change, is an imperative.

C. Current state of food and nutrition security in the region

1. Food availability

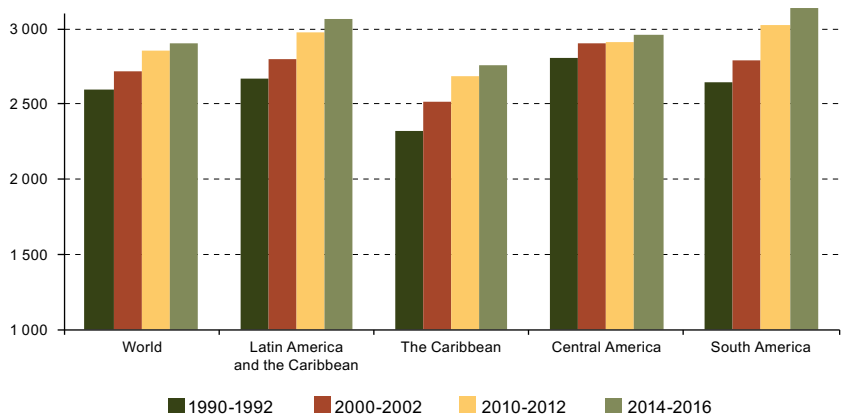
(a) Food supply

Food availability surpasses the minimum requirements in all the region's countries.

Latin America and the Caribbean has sufficient food to meet its caloric needs. Since the 1990s, caloric availability has increased in the region and worldwide. At present, the region exceeds the global average, with the FAO estimating a caloric supply of 3,069 calories per person per day in the 2014-2016 three-year period, or 15% more than in 1990-1992.

In South America, the food supply has grown by 19% to an average of 3,141 calories per person per day. Central America has 2,964 calories per capita, an increase of 5% over 1990-1992. In the Caribbean, food availability rose 19% in the period to 2,758 calories per person per day in the last quarter.

Figure I.3
Latin America and the Caribbean: caloric availability, 1990-2016
(Calories per day per person)

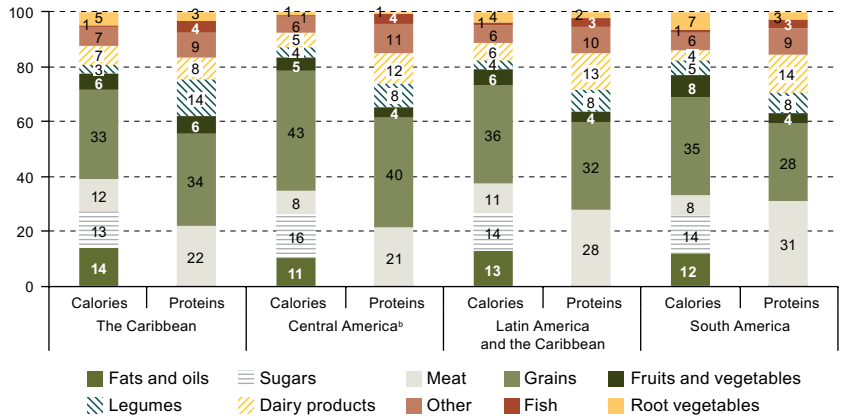


Source: Food and Agriculture Organization of the United Nations (FAO), *Regional Overview of Food Insecurity: Latin America and the Caribbean*, Santiago, 2015.

The increase in food availability has contributed to a more diversified diet, but challenges remain. Food grains were the main source of calories in the region in the 2009-2011 three-year period: 36% of the total caloric supply. At the subregional level, basic grains contribute 43% of calories in Central America, 35% in South America and 33% in the Caribbean. Compared with the early 1990s, the regional trend is towards less grains and sugars. Meanwhile, the proportion of calories that comes from meat has increased, as has the proportion from dairy products and to a lesser extent from fruits and vegetables.

Regionwide, one third of the protein supply is provided by grains, especially in the Caribbean and Central America. In South America, grains are also significant, but the main source of protein is meat.

Figure I.4
Latin America and the Caribbean: composition of the caloric and protein supply, on average, 2009-2011
(Percentages)[a]



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of FAOSTAT [online] http://faostat.fao.org/.
[a] Figures have been rounded and may not add up to 100%.
[b] Including Mexico.

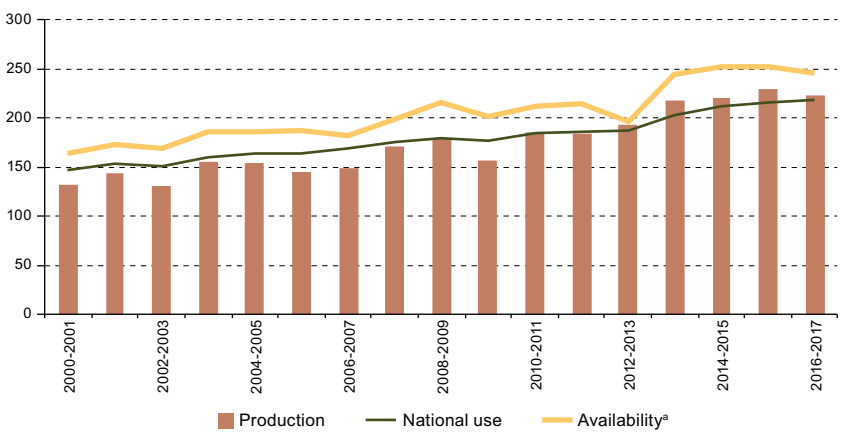
(b) Food production and agricultural growth

In recent decades, agricultural production has grown faster than the population, both in the region and around the world. This has meant an increase in the availability of agricultural products per person.

Grains are the most important source of food for human consumption in the region and worldwide. For the 2016-2017 season, Latin America and the Caribbean is expected to produce 224 million tons of grains (a 2.3% decline from the previous season). Despite this slight drop in production, the harvest is expected to surpass the five-year average.

Production has responded to the increase in use at the national level. Availability, too, has remained at good levels over the past several years.

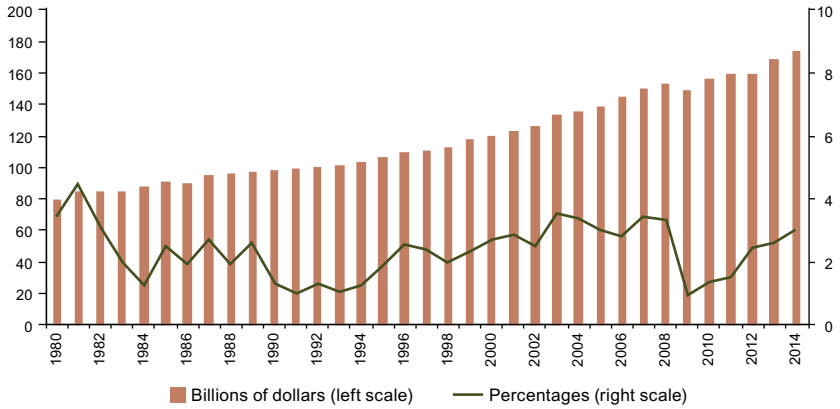
Figure I.5
Latin America and the Caribbean: grain market, 2000-2017
(Millions of tons)



Source: Food and Agriculture Organization of the United Nations (FAO), "Quarterly Food and Nutrition Security Report. January to March 2016", Santiago, 2016.
[a] Availability corresponds to production plus net imports added to stocks at the beginning of the period.

Responding to global demand for food, the agriculture sector has been expanding continuously in recent decades, and Latin America and the Caribbean has been on trend. Over the past 30 years, the region has seen a steady rise, on average, in agriculture value added.

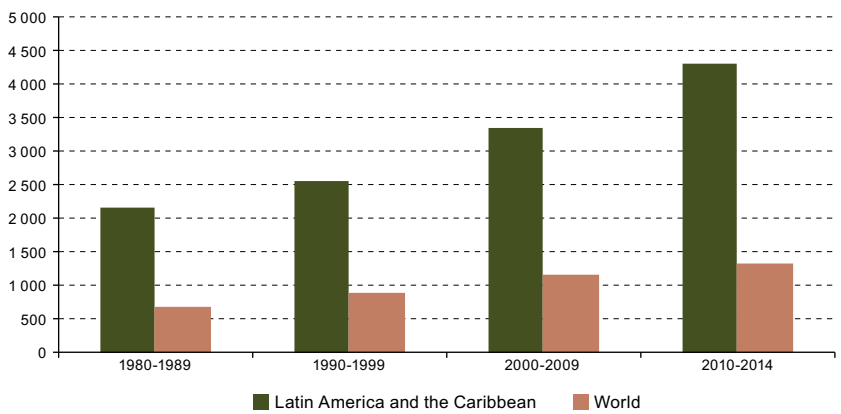
Figure I.6
Latin America and the Caribbean: agriculture value added, rolling average, 1980-2014
(Billions of dollars at constant 2005 prices and percentages)



Source: Food and Agriculture Organization of the United Nations (FAO), *Regional Overview of Food Insecurity: Latin America and the Caribbean*, Santiago, 2015.

The region accounts for nearly 7% of global agricultural value added and has a relatively large share of the global markets for certain agricultural products such as coffee (58% of global volume), soybeans (52%), sugar (29%), beef (26%), poultry (22%) and maize (13%). Although the farm sector's contribution to GDP has been shrinking with each passing year, agricultural value per worker has been increasing, to surpass the global average. Employment in the farm sector constitutes nearly 14% of total employment in the region.

Figure I.7
Agricultural value per worker, on average, 1980-2014
(Dollars at constant 2005 prices)



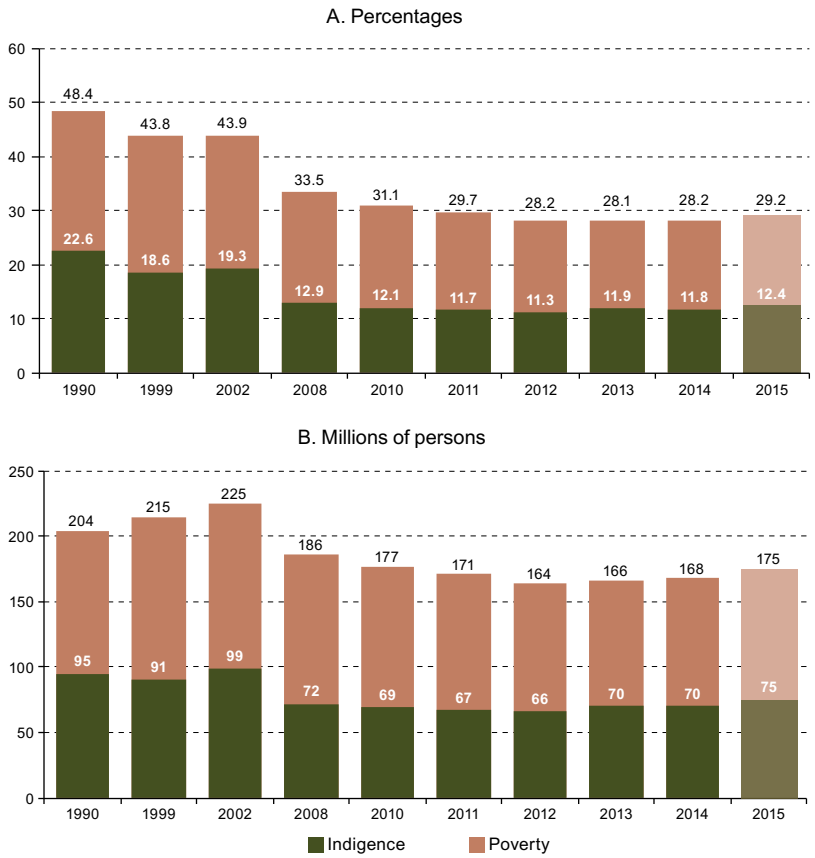
Source: Food and Agriculture Organization of the United Nations (FAO), *Regional Overview of Food Insecurity: Latin America and the Caribbean*, Santiago, 2015.

(c) Access to food

(i) Structural constraints on access to food

Between 1990 and 2012, there were major reductions in poverty and indigence in the region both in relative and absolute terms, but the trend shifted starting in 2013. In 2014, 168 million people were poor (28.2%) and 70 million were indigent (11.8%).

Figure I.8
Latin America and the Caribbean: poverty and indigence, 1990-2015
(Percentages and millions of persons)

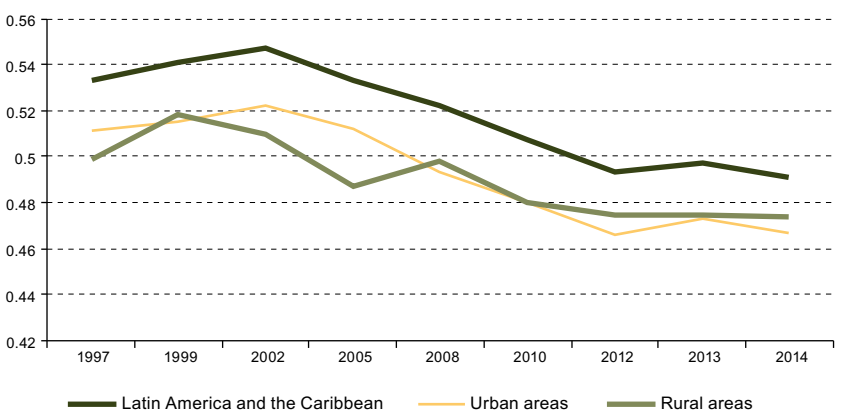


Source: Economic Commission for Latin America and the Caribbean (ECLAC), "Social Panorama of Latin America, 2015. Briefing paper", Santiago, 2016.

The estimates for 2015 indicate that five million people descended into extreme poverty and two million fell into poverty, a development that makes it hard to achieve social goals, such as food and nutrition security.

Income inequality in the region has been trending slightly downwards since the early 2000s. Nevertheless, it remains a challenge, considering that the region continues to be among the most unequal in the world, with a Gini coefficient of 0.491.

Figure I.9
Latin America and the Caribbean: Gini coefficient, 1997-2014



Source: Economic Commission for Latin America and the Caribbean (ECLAC), CEPALSTAT database.

(ii) Cyclical constraints on access to food

Food and commodity prices have been falling since mid-2014. According to the April 2016 index prepared by the International Monetary Fund (IMF), commodity prices are down 20% from one year ago, which has helped ease inflationary pressures in many of the region's economies. In several countries that have experienced currency depreciation, the loss in value has not been completed transmitted to the local economies. According to FAO data, since July 2014, food prices have continued on a downward path. Despite a slight uptick in April 2016 for the third consecutive month, prices are still approximately 30% lower than they were one year ago.

Inflation has varied across the region's countries. Falling prices for oil, food and other commodities in the global markets have helped reduce pressure on local prices, which has led to lower inflation, especially in Central America and Mexico. In contrast, the countries of South America are facing higher inflation than in the same month the previous year, partly due to depreciation in the local currencies, which has neutralized the effects of the decline in global commodity prices.

(d) Use of food

(i) Undernutrition, overweight and obesity

Income determines the ability to buy food and obtain access to health services. It is possible for food to be poorly used, contributing to undernutrition. The region has significantly reduced the rate of malnutrition caused by lack of food but this advance has been made alongside high rates of overweight. The phenomenon is known as "the double burden of malnutrition" and has become a widespread problem affecting 2.5 million children under five years in South America, 1.1 million in Central America and 200,000 children in the Caribbean. Meanwhile, stunting affects 3.3 million children under five years in South America, 2.6 million in Central America and 200,000 in the Caribbean.

Table I.1
Latin America and the Caribbean: prevalence of stunting and overweight in children under five years, by subregion, 1990-2015

A. Percentages

	Stunting						Overweight					
	1990	1995	2000	2005	2010	2015	1990	1995	2000	2005	2010	2015
South America[a]	21.3	18.4	15.8	13.6	11.6	9.9	7.5	7.5	7.5	7.5	7.4	7.4
Central America[b]	34.0	29.6	25.5	21.8	18.5	15.6	5.1	5.4	5.8	6.2	6.5	7.0
The Caribbean[c]	16.0	13.1	10.6	8.6	6.9	5.5	4.3	4.7	5. 2	5.7	6.2	6.8
Latin America and the Caribbean	24.5	21.4	18.4	15.7	13.4	11.3	6.6	6.7	6.8	7.0	7.1	7.2

B. Thousands of persons

	Stunting						Overweight					
	1990	1995	2000	2005	2010	2015	1990	1995	2000	2005	2010	2015
South America[a]	7.7	6.6	5.7	4.9	3.9	3.3	2.7	2.7	2.7	2.7	2.5	2.5
Central America[b]	5.5	5.0	4.4	3.7	3.0	2.6	0.8	0.9	1.0	1.0	1.1	1.1
The Caribbean[c]	0.6	0.5	0.4	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Latin America and the Caribbean	13.9	12.1	10.5	8.9	7.2	6.1	3.7	3.8	3.9	3.9	3.8	3.9

Source: Food and Agriculture Organization of the United Nations (FAO), *Regional Overview of Food Insecurity: Latin America and the Caribbean*, Santiago, 2015.
[a] Argentina, Bolivarian Republic of Venezuela, Brazil, Chile, Colombia, Ecuador, Guyana, Paraguay, Peru, Plurinational State of Bolivia, Suriname and Uruguay.
[b] Belize, Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua and Panama.
[c] Antigua and Barbuda, Bahamas, Barbados, Cuba, Dominica, Dominican Republic, Grenada, Haiti, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines and Trinidad and Tobago.

At the country level, the trend has been one of significant reductions in undernutrition in the region, but overweight has worsened in 13 of the 25 countries studied.

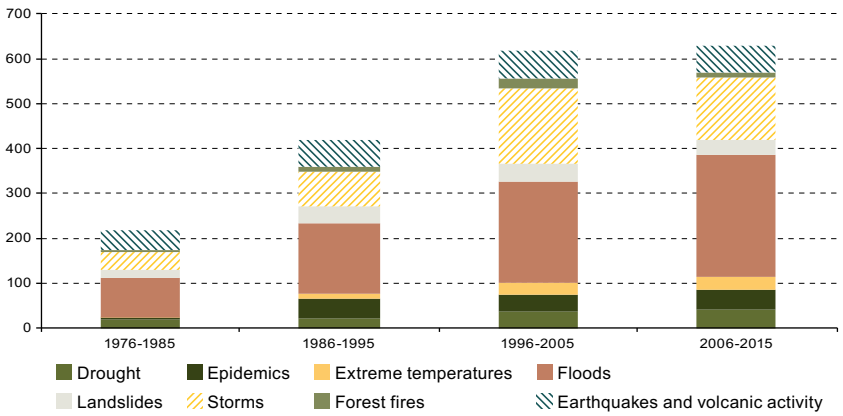
In the region, obesity in adults increased by 2.2 percentage points over four years, from 20.5% in 2010 to 22.7% in 2014, and it became more prevalent in all countries. The double burden of malnutrition imposes high social and economic costs and disproportionately affects the most vulnerable groups.

(e) Stability

(i) Risk factors for the stability of food and nutrition security

Latin America and the Caribbean has had a minor role in climate change through the emission of greenhouse gases, but it is particularly vulnerable to the negative effects of this phenomenon. Over the past 10 years, natural disasters have been occurring with increasing frequency. Flooding is the most common of these disasters in the region, which has also seen an increase in high temperatures and droughts over the past decade. In Central America and the Caribbean, the most frequent events are storms and floods; South America is most affected by the latter.

Figure I.10
Latin America and the Caribbean: frequency of major natural disasters, 1976-2015
(Absolute numbers)



Source: Food and Agriculture Organization of the United Nations (FAO), *Regional Overview of Food Insecurity: Latin America and the Caribbean*, Santiago, 2015.

Another cause of instability is food loss and waste, which reduces the quantity available for human consumption and reveals the inefficient use of productive resources in a context of rising demand for food and growing concern for environmental and social sustainability. In Latin America, 34% of food for human consumption is lost or wasted: 13.4% of losses occur during production; 7.5% during post-harvest; 5% during preparation and packaging; 4.1% during distribution; and 3.7% at the point of consumption. Food losses or waste total 223 kilograms of food per person per year, an amount that could feed 300 million people. In the various regions of the world, losses fluctuate between 296 kilograms per year (in North America and Oceania) and 126 kilograms per year (in South and South-East Asia).

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Chapter II

Nutritional situation in CELAC countries: global targets and associated variables

Chapter II

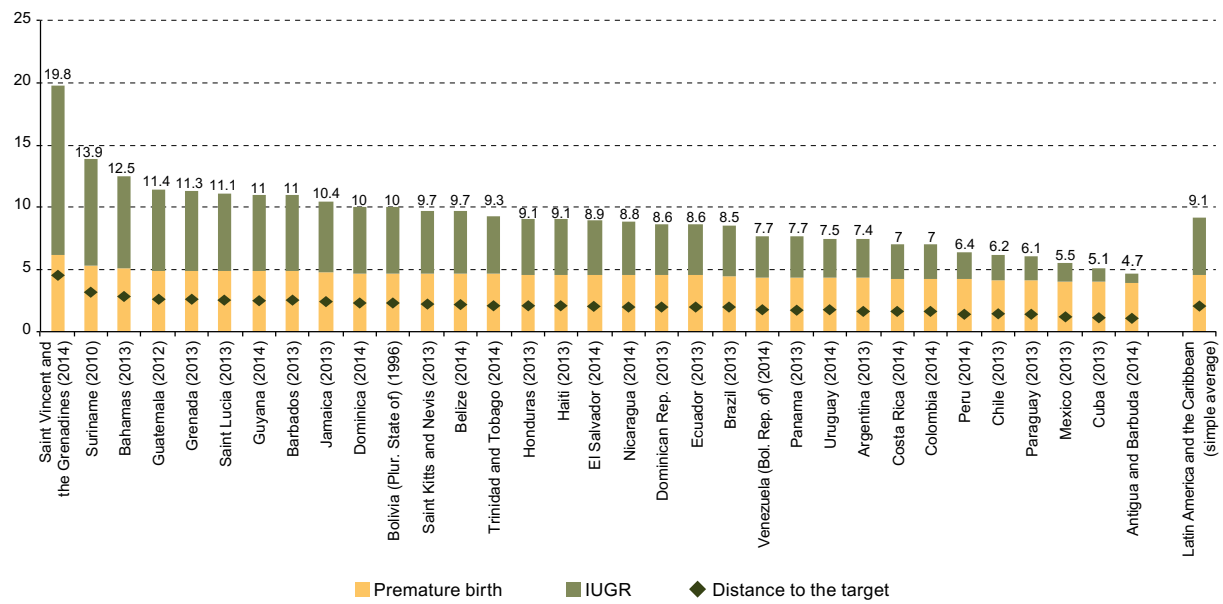
A. Undernutrition: stunting and underweight in the region

The prevalence of children with low birth weight (less than 2.5 kilograms) averages 9.1% in the region. The highest rate is seen in three countries of the Caribbean: Saint Vincent and the Grenadines, Suriname and the Bahamas. In Latin America, the highest rates are in the Plurinational State of Bolivia and Guatemala, and the lowest are in Antigua and Barbuda (4.7%) and Mexico (5.5%).

This problem is due in part to intra-uterine growth retardation (IUGR), which is associated with nutritional deficiencies and future development delays. The prevalence of low birth weight due to premature birth or other causes varies between 4% and 6%, while IUGR increases the aggregate rate to between 4.7% and 19.8%.

In order to make headway on reducing malnutrition, the target set by the World Health Organization (WHO)[1] is to achieve a 30% reduction in low birth weight, which means a decrease of 2 percentage points in the regional average for this indicator by 2025.

Figure II.1
Latin America and the Caribbean (33 countries): prevalence of low birth weight, intra-uterine growth retardation (IUGR) and distance to the WHO global nutrition target 2025[a]
(Percentages and percentage points)



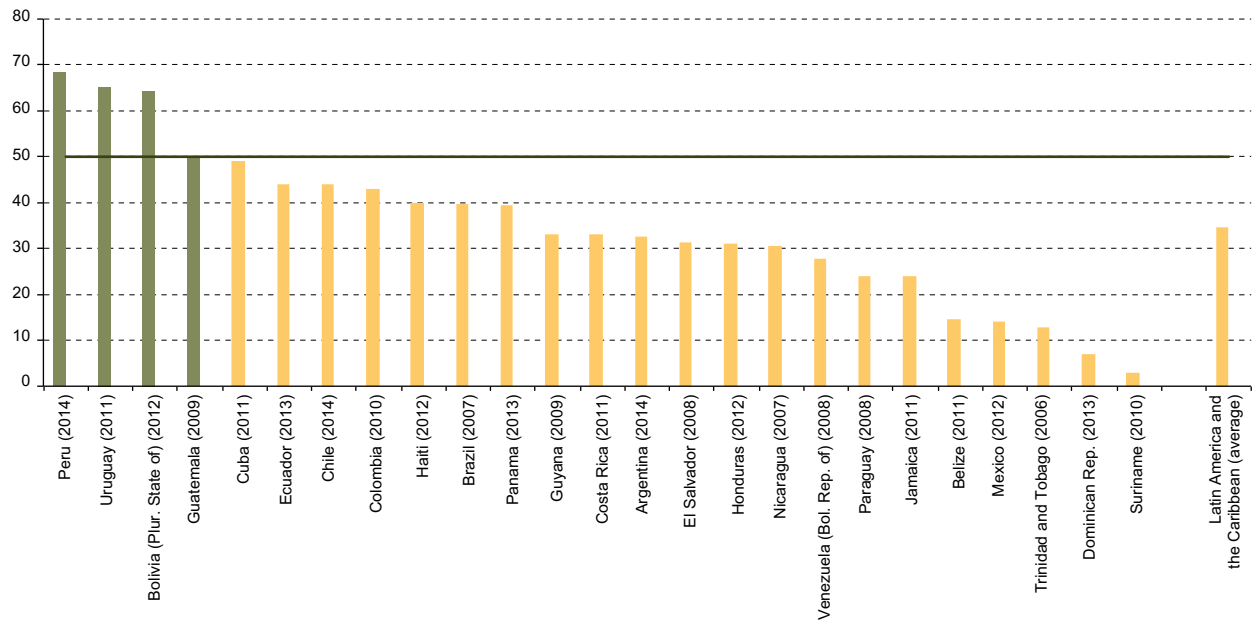
Source: Pan American Health Organization (PAHO), Regional Core Health Data Initiative and official country reports.
[a] Simple average.

[1] The World Health Organization (WHO) has set global nutrition targets for 2025 in order to move quickly on resolving the worldwide problem of the double burden of malnutrition (WHO, 2014).

Exclusive breastfeeding during the first six months of life is one of the proposed indicators for tracking malnutrition, given the importance of this practice for childhood development at a crucial moment in the life cycle, as well as its effect on reducing child mortality and morbidity (Black and others, 2013). In Latin America, exclusive breastfeeding is practised, on average, by 35% of mothers. Peru is an outstanding case, with more than 60% of mothers breastfeeding their infants exclusively up to six months.

According to the WHO targets for 2025, the countries are expected to achieve an exclusive breastfeeding rate of at least 50%, which means that several countries in the region have a large gap to close. According to the latest data, in addition to Peru, the target has already been met by Guatemala, the Plurinational State of Bolivia and Uruguay, while Chile, Colombia, Cuba and Ecuador are relatively close to meeting it. In contrast, the Dominican Republic and Suriname, with exclusive breastfeeding rates of less than 10%, are far from the target.

Figure II.2
Latin America and the Caribbean (25 countries): prevalence of exclusive breastfeeding to six months and WHO global nutrition target 2025
(Percentages)



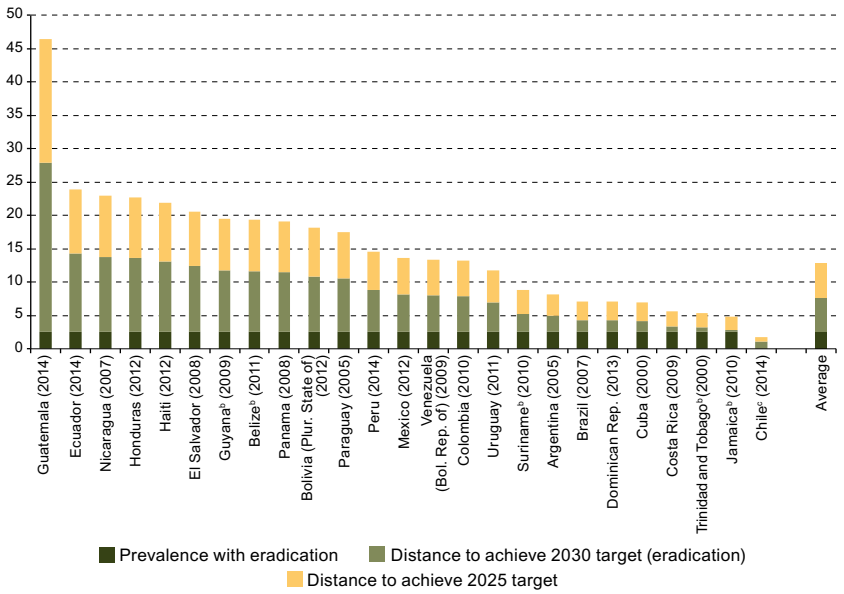
Source: World Health Organization (WHO), Global Health Observatory data repository; for Panama: Multiple Indicator Cluster Survey, 2013; for the Plurinational State of Bolivia: Health and Nutrition Assessment Survey, 2012; and for Uruguay: National Breastfeeding Survey, 2011.

A specific analysis of anthropometric indicators of stunting in children under 5 years finds that the prevalence varies from country to country. Guatemala has the worst rates, with over half of children suffering from stunted growth. It is followed by Ecuador, Nicaragua, Honduras, Haiti and El Salvador, all of which have rates above 20%.

Although stunting was not specifically targeted as part of the Millennium Development Goals (MDGs), in the present case of both the WHO nutrition targets and the Sustainable Development Goals (SDGs), it is the most important indicator. In order to meet the 2025 global nutrition target set by the WHO of a 40% reduction in stunting, a reduction of three million (5.2 percentage points) in the number of children who are stunted will be required. An even larger reduction will be needed in the case of the SDG 2030 target for eradication (prevalence of less than 2.5 percentage points),[2] since, on average, the region will need to reduce the rate by 10.9 percentage points.

[2] The parameter used to determine malnutrition is -2 standard deviations below the average for the reference population. All rates equal to or smaller than that number would reflect "normal" malnutrition or eradication.

Figure II.3
Latin America and the Caribbean (25 countries): prevalence of stunting and distance to the WHO global nutrition target 2025 and the Sustainable Development Goal target for 2030 (eradication)[a]
(Percentages)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official country reports and figures provided by the World Health Organization (WHO).
[a] Per capita weighted average.
[b] Estimated population based on the United Nations, World Population Prospects: The 2015 Revision.
[c] In the case of Chile, there is no eradication target, as the current rate is less than 2.5%.

Guatemala stands out as the country with the highest rate of stunting (46.5%) and also a high rate of exclusive breastfeeding (50%), which is not consistent with the expected correlation between the two indicators. Meanwhile, in Jamaica, the Dominican Republic and Trinidad and Tobago, all countries with low rates of stunting, fewer than 25% of mothers practise exclusive breastfeeding.

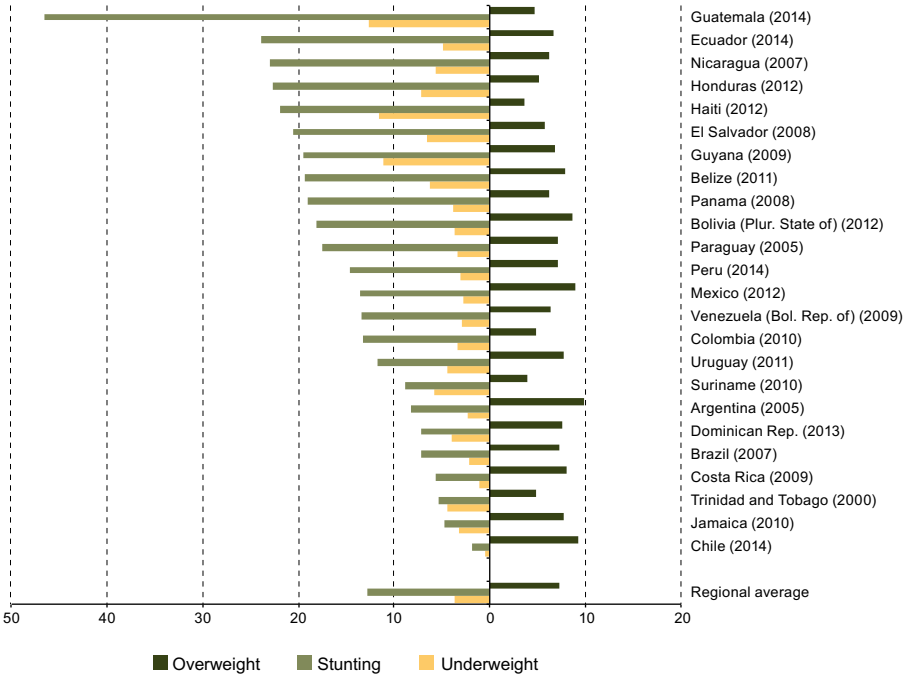
B. Overweight and obesity: evolution over time

In addition to undernutrition, the region's population increasingly suffers from overweight and obesity. Following a rapid demographic and nutritional transition, Latin America and the Caribbean is experiencing what is known as the double burden of malnutrition, with ongoing high rates of stunting alongside rising rates of overweight. Black and others (2013) estimate that between 20% and 25% of children and adolescents under the age of 19 years are overweight or obese.

Chile has succeeded in eradicating undernutrition, but faces one of the highest rates of overweight in the region, along with Argentina, Mexico and the Plurinational State of Bolivia. Argentina, Brazil and the Dominican Republic have very similar rates of stunting and overweight among children under the age of 5 years. Underweight is less prevalent than overweight in the majority of the region's countries.

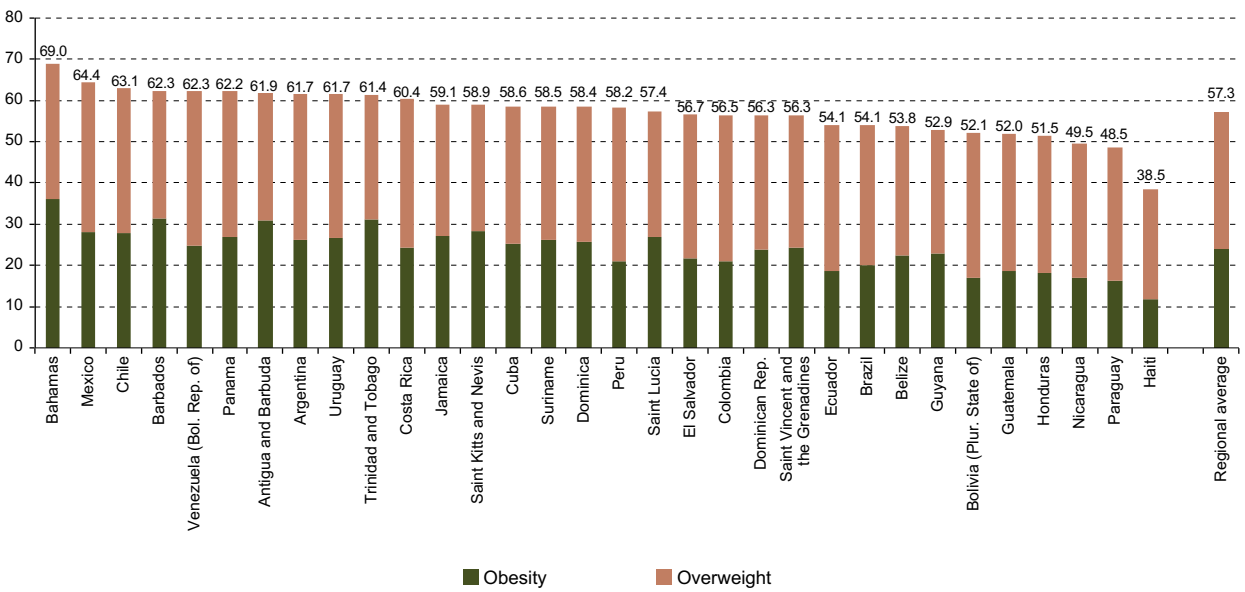
Given the intensifying pattern of this double burden, nutritional problems at both ends of the spectrum must be addressed from the start of life. This problem manifests at both the household and the individual level. For example, in Ecuador, the double burden of malnutrition plays out in 13.1% of households, with mothers who are overweight or obese and children under the age of 5 years who are stunted. At the individual level, the double burden can be seen in 2.8% of school-age children who are simultaneously stunted and overweight or obese (INEC, 2013). In the case of Colombia (Fonseca and others, 2014), the double burden of malnutrition is seen in 8.2% of households, with children who are stunted and at least one adult who is overweight, a rate that drops to 4.9% when only mothers are considered for the adult portion of the calculation.

Figure II.4
Latin America and the Caribbean (24 countries): prevalence of stunting, underweight and overweight in children under 5 years, around 2010[a]
(Percentages and percentage points)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official country reports, nutrition surveys conducted in the respective countries and figures provided by the World Health Organization (WHO).
[a] Latest available data.

Figure II.5
Latin America and the Caribbean (32 countries): prevalence of overweight and obesity among adults over 18 years, 2014
(Percentages)



Source: World Health Organization (WHO), Global Health Observatory data repository.

The problem of overweight and obesity affects not only children and adolescents but also adults, and rising rates have led to an increase in non-communicable diseases associated with an excess of macronutrients and a sedentary lifestyle. Region-wide, 57.3% of the population over 18 years was overweight or obese in 2014, with more women affected than men (61% and 54%, respectively).

Unlike the uneven pattern of undernutrition seen across the region, overweight and obesity rates do not vary much from one country to the next. The exception is Haiti, where more than 50% of the population is obese or overweight.

Within countries, malnutrition rates vary. As shown in table II.1, all anthropometric indicators of undernutrition are higher in rural areas. Meanwhile, in most countries with geographically disaggregated data, the incidence of overweight is highest in urban areas. Notably, this is not the case in Haiti, and in Brazil and the Dominican Republic, the differences between geographical regions are minor.

Table II.1
Latin America and the Caribbean (12 countries): prevalence of malnutrition by geographical area
(Percentages)

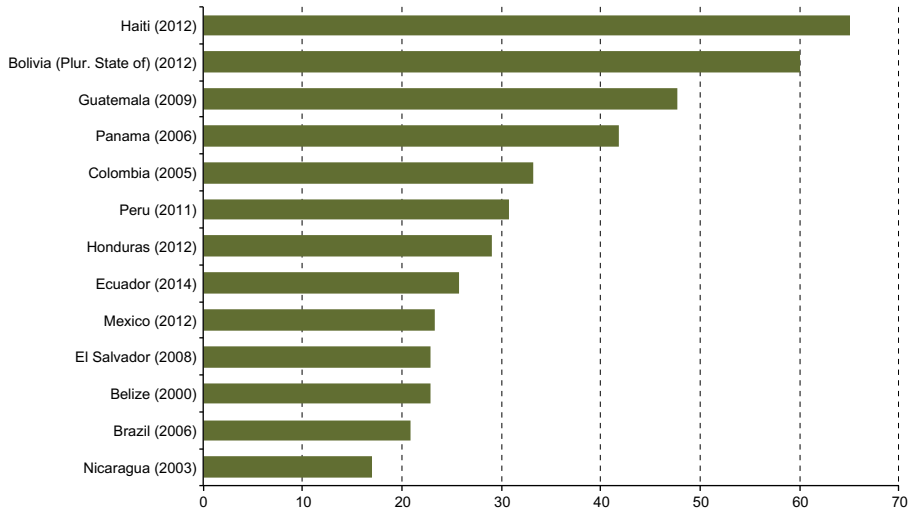
		Stunting	Underweight	Wasting	Overweight
Belize (2011)	Urban	15.7	5.4	2.8	9.8
	Rural	21.4	6.6	3.6	6.7
Brazil (2006)	Urban	6.9	2.0	1.4	7.3
	Rural	7.5	1.4	1.6	6.8
Bolivia (Plurinational State of) (2012)	Urban	14.2	2.8	1.3	...
	Rural	25.2	5.0	2.1	...
Colombia (2010)	Urban	11.6	2.9	0.8	5.0
	Rural	17.0	4.7	1.0	4.1
Dominican Republic (2013)	Urban	7.1	3.8	1.9	7.5
	Rural	6.4	3.8	2.5	6.6
Ecuador (2014)	Urban	19.7	4.14	1.47	7.0
	Rural	31.9	6.18	1.92	5.96
Guatemala (2009)	Urban	34.3	8.2	1.0	...
	Rural	58.6	15.9	1.6	...
Haiti (2012)	Urban	15.8	8.3	4.7	3.1
	Rural	24.7	12.9	5.3	3.8
Honduras (2012)	Urban	14.6	4.6	1.1	6.7
	Rural	28.8	9.0	1.5	3.9
Mexico (2012)	Urban	11.1	...	...	...
	Rural	20.9	...	...	...
Panama (2008)	Urban	10.5	2.4	1.4	...
	Rural	17.3	3.2	0.9	...
Peru (2014)	Urban	8.3	1.8	0.5	...
	Rural	28.8	6.1	0.7	...

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official country reports and figures provided by the World Health Organization (WHO).

C. Micronutrient deficiency

Recent studies on nutrition have pointed up the need to monitor the micronutrient status of children, in addition to taking anthropometric measurements to determine their nutritional status. Significant efforts are being made lately to collect this data but it is still largely unavailable in the region, which is an obstacle to evidence-based policymaking. Figure II.6 shows the prevalence of anaemia among children aged under 5 years. Although there is no single causal agent between the indicators, anaemia is a clear indication of the nutritional status of children inasmuch as a large percentage of cases of anaemia can be attributed to iron deficiency. Haiti and the Plurinational State of Bolivia face the biggest challenges in this regard, with anaemia affecting over 50% of children in those countries.

Figure II.6
Latin America and the Caribbean (13 countries): prevalence of anaemia among children aged under 5 years
(Percentages)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official country reports and figures provided by the World Health Organization (WHO).

Micronutrient deficiency has an impact on the health of boys and girls. According to Black and others (2013), an estimated 157,000 child deaths in 2011 were attributed to vitamin A deficiency and an estimated 116,000 deaths were caused by zinc deficiency. Consuming micronutrients is important for children before and after they are born. Other nutrients such as folic acid, iron, calcium and vitamin D are crucial during pregnancy. For example, insufficient folic acid is known to cause neural tube defects.

D. Other factors related to nutrition

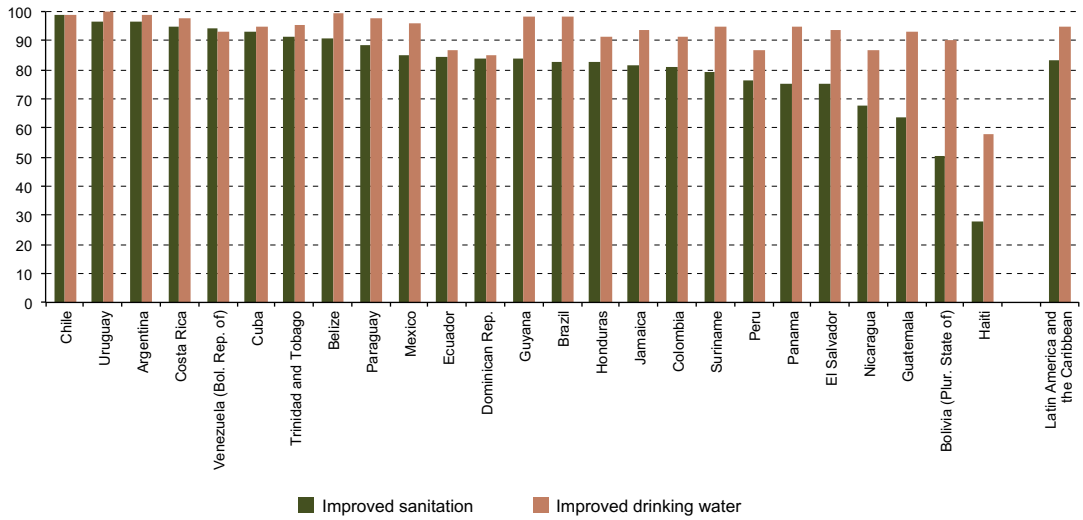
1. Access to safe drinking water and improved sanitation facilities

There are a number of factors that affect the nutritional situation of households, including access to sanitation facilities and drinking water in the home.[3] Nearly all households in the region's countries have access to an improved drinking water source. The country with the lowest coverage is Haiti, where fewer than 60% of households have access, followed by Ecuador, Peru and Nicaragua (87%) and the Dominican Republic (85%).

The situation regarding improved sanitation is more complex, and greater progress is needed. In this case, only eight countries have a household coverage rate over 90% (Chile, Uruguay, Argentina, Costa Rica, Bolivian Republic of Venezuela, Cuba, Trinidad and Tobago and Belize). Once again, Haiti faces the biggest challenge: only 28% of Haitian households have access to this type of waste removal system. The regional average is 83% of households.

[3] Access to safe drinking water and improved sanitation facilities is monitored by the WHO and the United Nations Children's Fund (UNICEF).

Figure II.7
Latin America and the Caribbean (25 countries): proportion of households with access to improved drinking water sources and improved sanitation facilities, 2015
(Percentages)

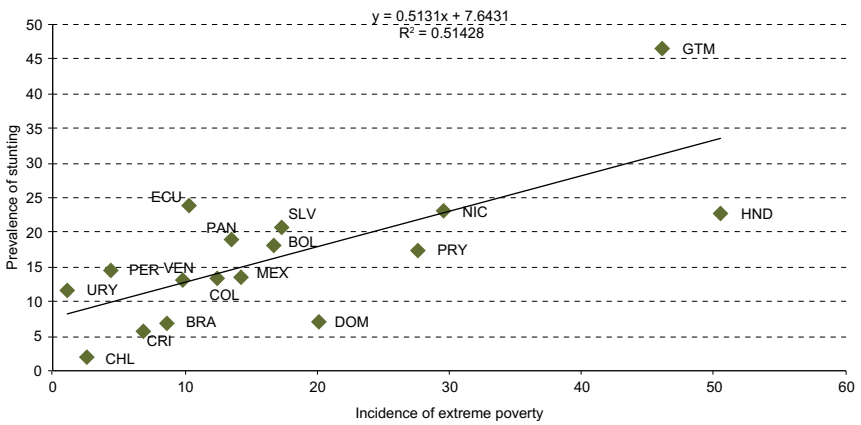


Source: Economic Commission for Latin America and the Caribbean (ECLAC), CEPALSTAT database.

2. Malnutrition and incidence of extreme poverty

The available information points to a direct relationship between nutrition and the incidence of extreme poverty: the countries with high levels of malnutrition also have high levels of poverty. Guatemala is the extreme case, with a stunting rate of 46.5% and an extreme poverty rate of 46.1%. Honduras, too, has a high rate of extreme poverty (50.5%), but its stunting rate is 22.7%, less than half the rate in Guatemala. At the opposite end of the spectrum are Chile, Costa Rica and Uruguay. Chile has the lowest levels of both indicators (under 5%). In Costa Rica, 8.1% of children are stunted and only 6.9% of the population lives in extreme poverty. In Uruguay, extreme poverty affects 1% of the population, and stunting is seen in 7.7% of children.

Figure II.8
Latin America and the Caribbean (17 countries): relationship between extreme poverty and the prevalence of stunting and overweight, around 2010



Source: Economic Commission for Latin America and the Caribbean (ECLAC), CEPALSTAT database, on the basis of official country reports and nutrition surveys conducted in the relevant countries.

Malnutrition manifests in different ways in different sectors of the population. Based on available data from official country reports, stunting disproportionally affects the lowest income quintiles.

3. Mortality and morbidity

One of the consequences of undernutrition is mortality. Table II.2 shows the under-five mortality rate per 1,000 live births and the prevalence of acute respiratory infection, acute diarrhoeal disease and stunting. The country with the highest mortality rate is Haiti, with 69 deaths per 1,000 live births.

Table II. 2
Latin America and the Caribbean (33 countries): under-five mortality rate and prevalence of acute respiratory infection, acute diarrhoeal disease and stunting

Country	Under-five mortality (per 1,000 live births)	Acute respiratory infection	Acute diarrhoeal disease	Stunting	Underweight
Antigua and Barbuda	8.1	...	...	...	...
Argentina	12.5	29.6	21.1	8.2	2.3
Bahamas	12.1	...	...	...	...
Barbados	13.0	...	...	...	...
Belize	16.5	...	...	19.3	6.2
Bolivia (Plurinational State of)	38.4	...	22.8	18.1	3.6
Brazil	16.4	43.5	9.4	7.1	2.2
Chile	8.1	...	...	1.8	0.5
Colombia	15.9	9.1	12.6	13.2	3.4
Costa Rica	9.7	...	...	5.6	1.1
Cuba	5.5	...	...	7.0	3.4
Dominica	21.2	...	...	...	...
Dominican Republic	30.9	10.1	18.0	7.1	4.0
Ecuador	21.6	9.1	11.8	23.9	4.8
El Salvador	16.8	28.0	14.0	20.6	6.6
Grenada	11.8	...	...	...	...
Guatemala	29.1	20.1	22.5	46.5	12.6
Guyana	39.4	6.0	9.0	19.5	11.1
Haiti	69.0	14.4	20.8	21.9	11.6
Honduras	20.4	12.8	17.8	22.7	7.1
Jamaica	15.7	...	...	4.8	3.2
Mexico	13.2	44.8	11.0	13.6	2.8
Nicaragua	22.1	...	...	23.0	5.7
Panama	17.0	...	...	19.1	3.9
Paraguay	20.5	...	...	17.5	3.4
Peru	16.9	16.8	12.1	14.6	3.1
Saint Vincent and the Grenadines	18.3	...	...	...	...
Saint Kitts and Nevis	10.5	...	...	...	...
Saint Lucia	14.3	...	...	...	...
Suriname	21.3	...	...	8.8	5.8
Trinidad and Tobago	20.4	...	...	5.3	4.4
Uruguay	10.1	...	...	11.7	4.5
Venezuela (Bolivarian Republic of)	14.9	...	...	13.4	2.9
Latin America and the Caribbean	17.9	20.4	15.6	12.9	3.6

Source: Economic Commission for Latin America and the Caribbean (ECLAC), CEPALSTAT database, Demographic and Health Surveys (DHS) and nutrition surveys conducted in the relevant countries.

Some studies have shown a correlation between the prevalence of acute respiratory infection, acute diarrhoeal disease and childhood undernutrition. Argentina, Guatemala, Haiti and the Plurinational State of Bolivia have rates of acute diarrhoeal disease surpassing 20% among children under 5 years. In this group, Guatemala, Haiti and the Plurinational State of Bolivia are among the countries with the highest levels of stunting, which affects over 15% of children. Yet, contrary to expectations, the two countries with the highest rates of acute respiratory infection —Brazil and Mexico— have low rates of undernutrition. The risk posed by nutritional problems in adulthood is related to non-communicable diseases and mortality associated with these diseases. The adult overweight and obesity rate is high in the region, at 57% among the population over 18 years. This leads to an elevated risk of contracting non-communicable diseases such as diabetes, hypertension, cancer and cardiovascular ailments, and it also has significant effects on the mental health of the population and is associated with low self-esteem and negative body image (Frone, 2008). Malnutrition has effects that extend throughout the life cycle, shaping the future of individuals who have experienced it. For example, a person who suffers malnutrition in childhood or youth faces an increased risk of obesity and its consequences, even when the person is no longer overweight (Lehnert and others, 2013). Likewise, children with high birth weights (over four kilograms) are at greater risk of subsequent obesity (Dietz, 1993).

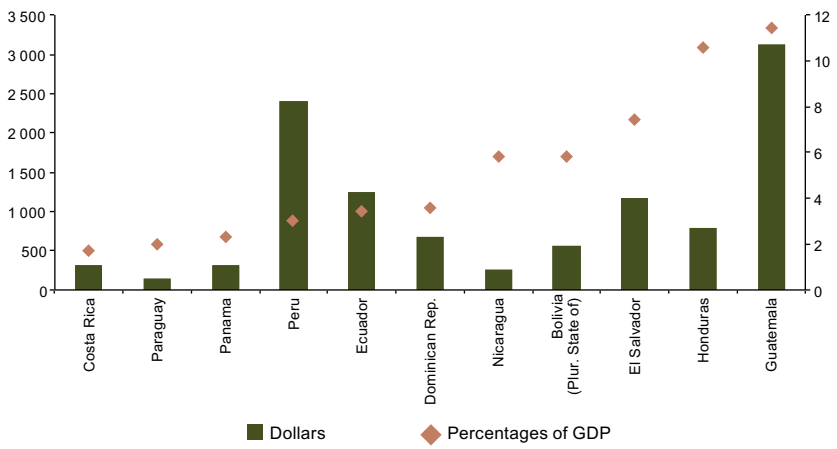
E. Costs of malnutrition

The impact of malnutrition on development and productivity is an issue of current concern. Studies conducted by the Economic Commission for Latin America and the Caribbean (ECLAC) and the World Food Programme (WFP) on the cost of hunger in Central America, the Andean countries and Paraguay found that undernutrition, measured as low weight for age, generated health, education, and productivity costs (Martínez and Fernández, 2009 and 2007). The highest cost is to productivity. Losses are also generated by potential investments that fail to materialize due to low levels of human capital among populations that have suffered childhood underweight. And in terms of economic cost, most of the burden is shouldered by the countries' productive sectors in the form of lost human capital.

Among the 11 countries studied, losses totalled approximately US$ 11 billion, or around 4.6% of aggregate GDP. The cost surpassed US$ 6.6 billion in Central America and US$ 4 billion in the Andean countries and Paraguay, or between 6.4% and 3.3% of GDP, respectively.

At present, ECLAC, together with WFP, is making renewed efforts to calculate the cost of the double burden of malnutrition, in line with the work done for the study on the cost of hunger. The findings are expected to supplement these analyses and shed more light on the economic losses that the region's countries and their population bear so long as this problem is not vanquished.

Figure II.9
Latin America: estimated total cost of underweight, 2004-2005
(Dollars and percentages of GDP)



Source: R. Martínez and A. Fernández, "The cost of hunger: Social and economic impact of child undernutrition in Central America and the Dominican Republic", *Project Document* (LC/W.144), Santiago, Economic Commission for Latin America and the Caribbean (ECLAC), 2008; and "The cost of hunger: Social and economic impact of child undernutrition in the Plurinational State of Bolivia, Ecuador, Paraguay and Peru", *Project Document* (LC/W.260), Santiago, ECLAC, 2009.

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Chapter III

Agricultural production and the role of family farming

Chapter III

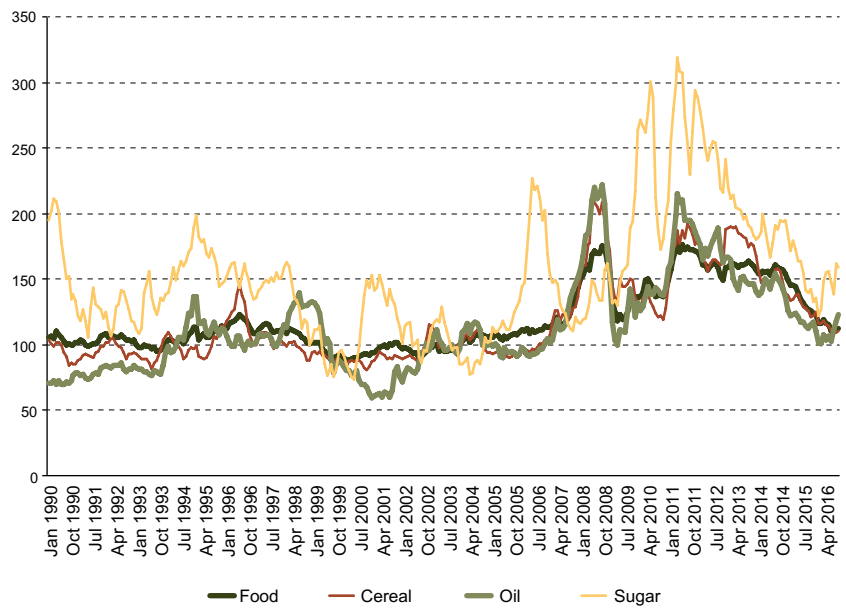
A. Food prices

Since the FAO Food Price Index[1] peaked in mid-2008 and between late 2010 and September 2011, it has shown a downward trend (particularly since March 2014) as a result of high production levels for cereals and oilseeds and the associated build-up of stock. The two peaks for the Index mark food price crises that were reflected in rising food insecurity, social unrest and surging inflation, particularly in the poorest countries where families spend the largest proportion of income on food.

Although the two recent crises were different in terms of the groups of products spearheading price increases (cereals in the first crisis and sugar in the second), both showed a high level of correlation between prices of various food groups. Indeed, during both crises the prices of all food groups tended to be higher than the average long-term price. The factors behind food price increases include climate, biofuel production and export restrictions in food product markets. What is less clear is the impact that speculation in commodity futures markets has on international food prices.

In the most recent price crisis that lasted until early 2012, the last two years of that period saw the most significant fall in the FAO Food Price Index since 1990. The aggregate index follows the pattern of the price index for cereals as the latter account for a large proportion of international trade. The most volatile foods are sugar followed by oil and cereal.

Figure III.1
FAO Food Price Index at constant values, 1990-2016
(Index: 2002-2004=100)

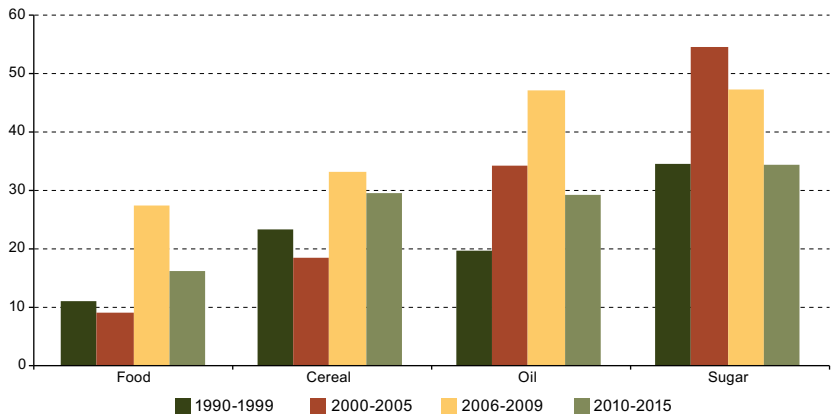


Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of figures provided by the Food and Agriculture Organization of the United Nations (FAO).

[1] The FAO Food Price Index is a measure of the monthly change in international prices of a basket of food commodities. It consists of the average of five commodity group price indices (meat, dairy, cereal, oil and sugar), weighted with the average export shares of each of the groups for 2002-2004.

Volatility in the FAO Food Price Index (measured as the annualized standard deviation in monthly logarithmic changes) is associated with the speed of price changes upward and downward. For the composite index, average volatility in 2006-2009 was 27.5% per year (which was three times higher than in the period 2000-2005). In two of the three food groups in question, the 2006-2009 period was the most volatile (except in the case of sugar). Although average volatility in the composite index between 2010 and 2015 did fall to an annual 16.2%, that remains higher than in previous periods.

Figure III.2
FAO Food Price Index volatility, 1990-2015
(Percentages)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of figures provided by the Food and Agriculture Organization of the United Nations (FAO).

One of the effects of food price volatility is the uncertainty for farmers, who tend to halt investment due to a lack of clear parameters about future profitability. This is particularly true for farmers with no access to credit markets. Volatility has a negative impact on agricultural production and profitability because it introduces production and trade risks that result in additional costs for producers. This is why high volatility is associated with low agricultural profitability, in turn bringing down production, investment and innovation, which then impacts agricultural productivity.

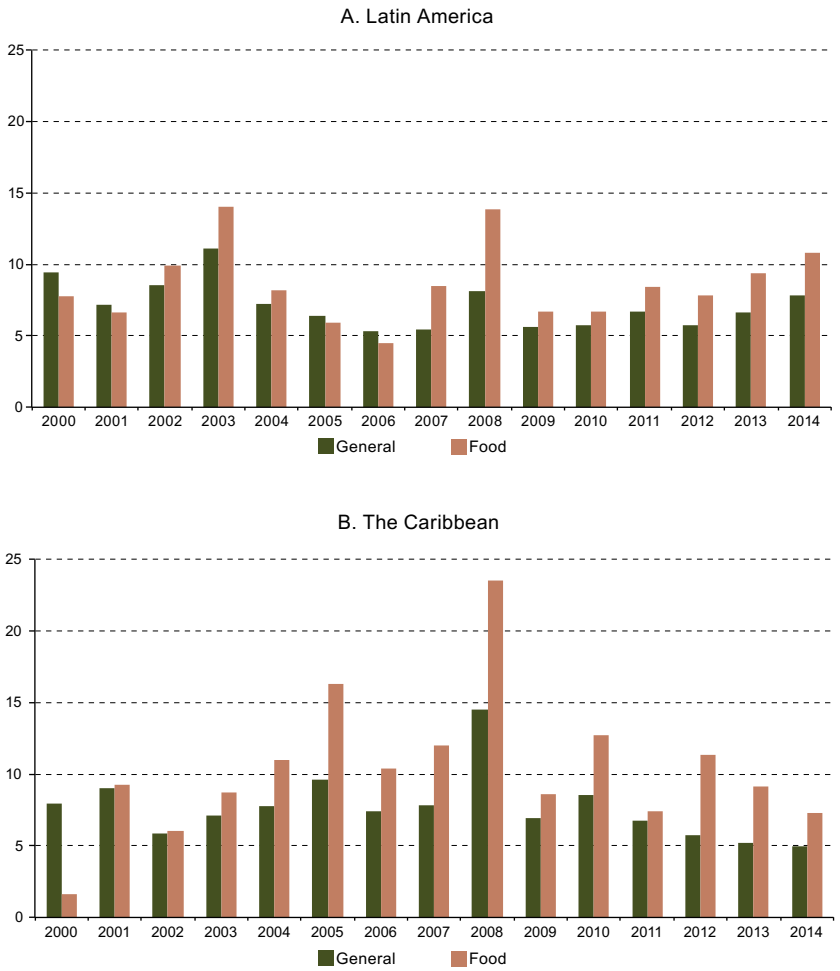
Notwithstanding the link between volatility and investment, the prices that are directly important to farmers are not necessarily the international ones but those from their own markets, which may be either local or international. Variations in international food prices are not automatically transmitted to local prices, but rather the process depends on a series of factors. Price stabilization policies, withholding of export tax and low market integration due to high transport costs and other market flaws do limit price transmission. Furthermore, major internationally traded products (such as rice) transmit their prices more readily to domestic markets compared with non-tradable or less commonly tradable goods. Countries that are more dependent on food imports usually experience more direct price transmission in their domestic markets than countries with greater domestic supply. There is also evidence that international price increases are transmitted to local markets more directly than price reductions.

Between 2000 and 2014, food inflation increased more quickly than general inflation nearly every year, especially in the Caribbean. In that subregion, the price crises in 2008 and 2012 caused a greater surge in national inflation than in Latin American countries. That fits in with the idea that the direct transmission of international price changes to domestic prices increases in proportion with the dependency on imports. Food inflation in Latin America continued to accelerate between 2012 and 2014 despite the reductions in the FAO Food Price Index from late 2012 and particularly since early 2014. The fact that international price reductions are transmitted less readily than price rises (due to rigid markets and transaction costs) has been widely documented in the literature.

Latin American countries and Caribbean countries have differing food supply situations in terms of their dependence on exports or the export of major surpluses in various product categories. This means that the impact of international price changes on local economies also varies considerably in the region, not only in the light of the different scale and speeds of price transmission, but also because a price pattern that benefits an exporter country could be to the detriment of an importer country, and vice versa. At the same time, each country has food consumer and producer groups that

suffer differently from the impacts of international prices. In any situation, however, poor people in rural and urban areas remain the most vulnerable to the negative effects of food price volatility as they are net buyers and spend up to three quarters of their income on food. Given their limited access to credit and low levels of savings, sudden variations in food prices have a massive impact on their immediate consumption capacity and level of food security.

Figure III.3
Latin America and the Caribbean: consumer price index and food price index, 12-month average variation, 2000-2014
(Percentages)

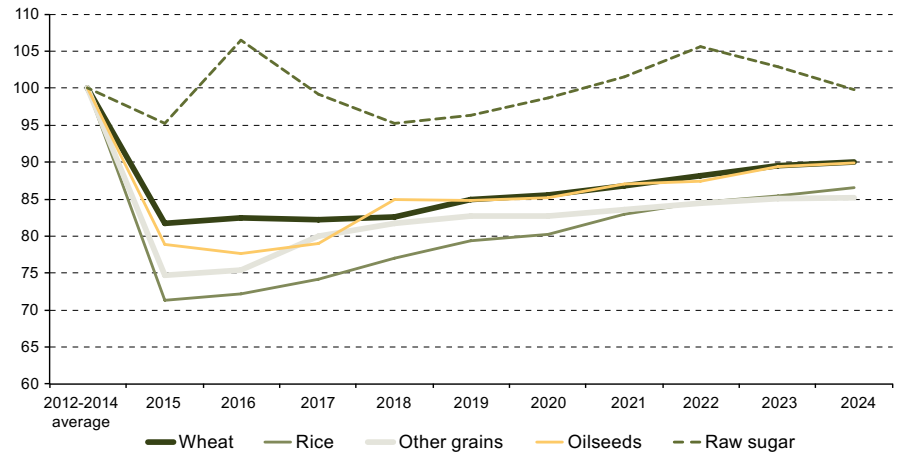


Source: Economic Commission for Latin America and the Caribbean (ECLAC), CEPALSTAT database.

From a broader perspective, volatility in the prices of agricultural raw materials comes at a cost for economies. This includes lost efficiency, reduced food and nutrition security, negative effects on the trade balance and fiscal revenues, decreased social well-being and high risk for farmers (particularly small-scale producers) as uncertainty increases about expected income. Economies' specialization in producing a few commodities is a major cause of instability in relation to terms of trade and increased exposure to external shocks —as in the case of recent food price crises.

Real food price projections for the next 10 years show a downward trend compared with the 2012-2014 averages, as the latter were particularly high owing to the peaks recorded in 2012. Compared with 2015 levels, wheat, rice, other grain and also oilseed prices have recovered to some extent. In contrast, sugar prices have remained higher than the average for 2012-2014, with a fairly volatile performance as a result of the production cycle in the main producer countries (in Asia in particular). Generally speaking, agricultural product prices are expected to remain above levels seen prior to the first price crisis in 2007-2008.

Figure III.4
Projections of international price indices for main foods, 2015-2024
(Index: 2012-2014=100)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of Organization for Economic Cooperation and Development (OECD)/ Food and Agriculture Organization of the United Nations (FAO), OECD-FAO Agricultural Outlook 2015-2024, Paris, 2015.

According to the analysis by the Organization for Economic Cooperation and Development (OECD/FAO, 2015), demand will be subdued by per capita consumption of staple commodities approaching saturation in many emerging economies and by a generally sluggish recovery of the global economy. The main changes in demand will come from developing countries, where population growth, increased per capita income and urbanization tend to increase the demand for animal protein instead of starchy foods. That is why meat and dairy prices, as well as oilseeds and other animal feed crops, are expected to increase faster than the prices of other basic foods. Furthermore, lower oil prices are pushing prices down, mainly through the impact on energy and fertilizer costs. In addition, projected oil prices mean that first-generation biofuel production is no longer profitable without rules on combining them with fossil fuels or other economic incentives. This in turn reduces the pressure on prices for sugar, maize and other crops used for biofuel production. Policies are not expected to lead to significantly higher biofuel production in either the United States or the European Union.

The lessons learned from the crises show that there is no universal recipe for tackling price volatility, but rather that the series of policies adopted by countries will depend on many factors including their level of exposure to external shocks, their net exporter or importer status, their own policy objectives and the availability of resources. An effective and efficient response to price volatility and food crises must include a long-term strategy to reduce consumers' vulnerability to food price rises and to reduce farmers' vulnerability to sudden falls in agricultural prices. The current time of decreased volatility and falling prices (while avoiding depressed prices seen in early 2000) is ideal for implementing policies to tackle structural problems with food production in the region.

It is essential for economic development policy to focus on matters such as inclusion of the poor, as poor people's access to food and their capacity to handle price volatility can only be improved by increasing their income. The most vulnerable population is in rural areas, and many people there are small-scale farmers (who are net food buyers). Strengthening policies that promote family farming would have a positive impact not only on the supply of local food but also the levels of access to such food for the most vulnerable.

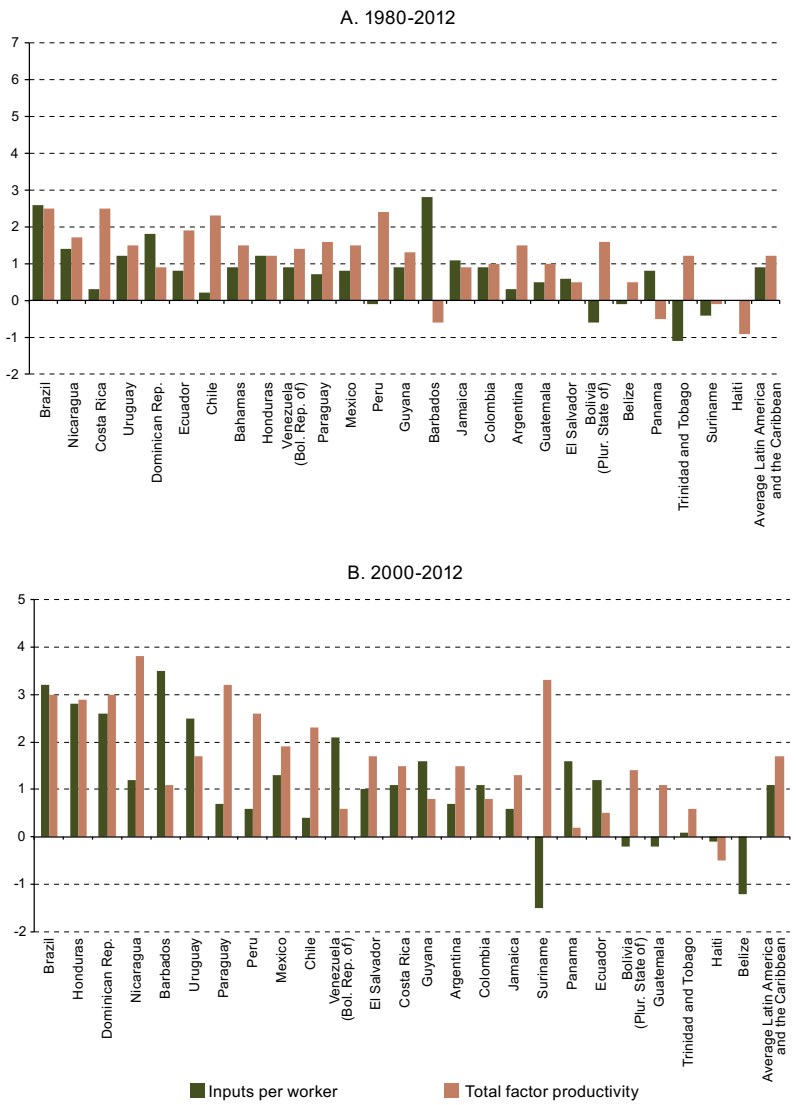
It is key to strengthen trade and regional integration mechanisms to reduce national vulnerability to volatile prices. National and territorial markets should be developed to reduce transaction costs for small-scale producers by creating efficient sales channels for fresh food that directly connect production with local demand. This can soften the impact that unexpected changes in international prices have on consumers and farmers.

B. Productivity and technical progress in farming

Agricultural productivity, measured as total factor productivity (TFP), is that part of production that is not represented by the quantity of inputs used in the production process. When the growth rate of agricultural production differs from the growth rate of various production process factors (land, water, labour, raw materials and energy), that difference is attributable to changes in the levels of productivity.

Between 1981 and 2012, agricultural production in Latin America and the Caribbean grew at an average annual rate of 2.1%, with 1.2% attributable to the increase in TFP and 0.9% due to increased usage of inputs per worker. Between 2001 and 2012, the annual growth rate in agricultural production was 2.7%, with a slightly higher TFP contribution of 1.7% and increased input usage per worker of 1%. According to the Inter-American Development Bank (IDB) (Nin-Pratt and others, 2015), TFP levels in the region in 1980 were 55% of those in OECD countries. This decreased to 50% between 1981 and 1990, only showing signs of recovery after 2005 and reaching 1981 levels by 2012. Despite the fact that rising TFP made a considerable and positive contribution to the increase in regional agricultural production, the increase was clearly insufficient to close the productivity gap with developed countries.

Figure III.5
Latin America and the Caribbean: components of the growth rate in agricultural production



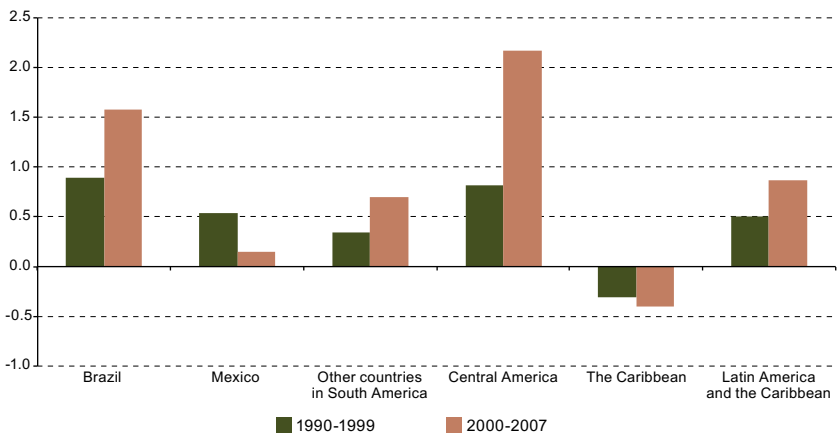
Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of A. Nin-Pratt and others, "Productivity and the performance of agriculture in Latin America and the Caribbean: from the lost decade to the commodity boom", *Working Paper Series*, No. 608, Inter-American Development Bank (IDB).

Given the huge diversity in agricultural production within Latin America and the Caribbean, calculating regional TFP as a weighted average based on each country's contribution to regional agricultural production does reduce the gap with OECD countries from 2000. Between 1981 and 2000, the weighted average of the region's TFP remained stable at 65% to 67% of that in OECD countries; in 2012 the percentage was 80% (Nin-Pratt and others, 2015). TFP growth in major regional producers (mainly Brazil, but also Mexico and Argentina) has been considerably higher than for the region as a whole over the past decade.

Brazil was the Latin American country to post the largest increase in agricultural production between 1981 and 2012 (5.1% per year), although with a slightly larger proportion attributable to use of inputs (2.6%) than to TFP (2.5%). The countries in the region that have achieved TFP increases of over 2% per year in the same period (Costa Rica, Peru and Chile) presented little variation in intensity of input usage. In more recent years, most of the region's countries saw an increase in the contribution of TFP to higher agricultural production, while Brazil continued to display a slightly higher contribution of inputs per worker. This trend is attributable to the fact that Brazil's agricultural frontier is still expanding (with the possibility of incorporating new farmland) and the rise in capital stock per worker. Increased capital stock appears to be behind the growing contribution of input usage in several Central American countries such as Panama, Honduras, Costa Rica and El Salvador (where there is limited expansion of the agricultural frontier).

The literature identifies two main sources of TFP growth: (i) technological progress (or the expansion of the technological frontier) measured as the TFP growth of the most efficient producers worldwide or in a benchmark group; and (ii) technical efficiency (the level of dissemination and adoption of new technologies), which pushes the least efficient producers towards the border or their maximum production potential.

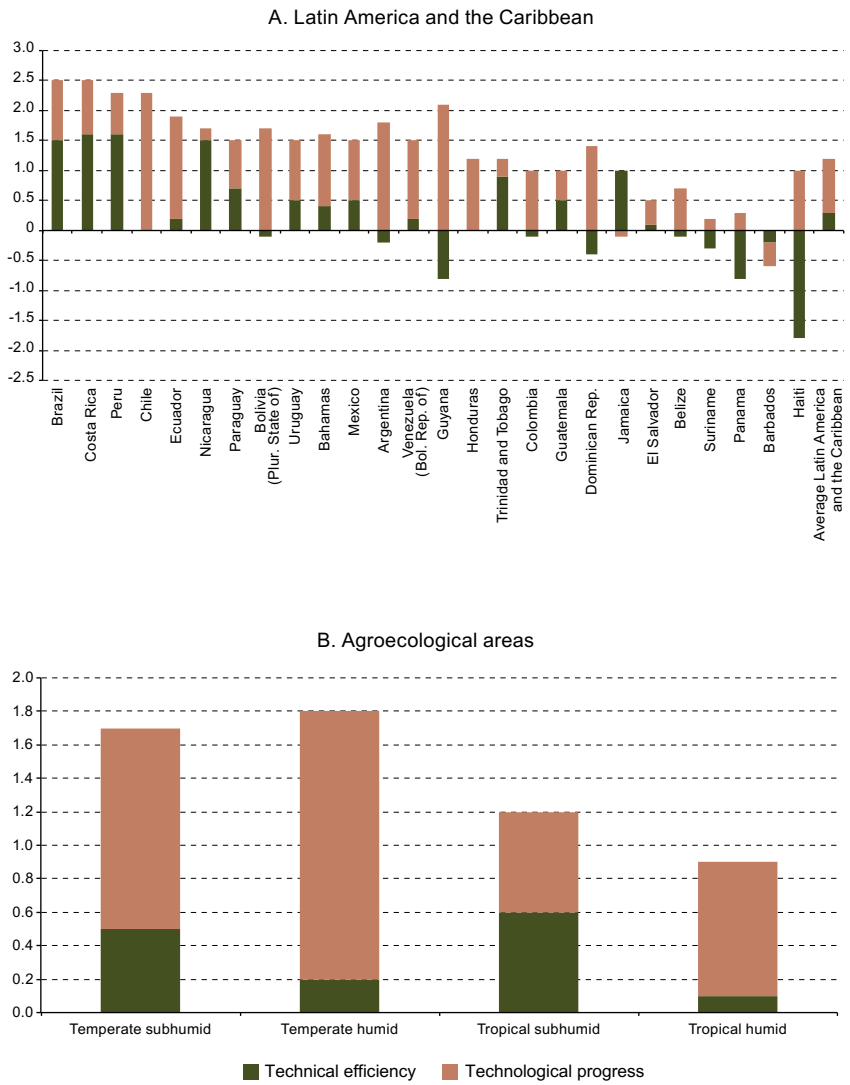
Figure III.6
Latin America and the Caribbean: growth rate of gross capital stock in the agricultural sector
(Percentages based on constant 2005 prices)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of Food and Agriculture Organization of the United Nations (FAO), FAOSTAT.

Figure III.7A shows the contribution of the two elements to TFP in Latin American and Caribbean countries between 1981 and 2012. Interestingly, for the region as a whole the contribution of technical progress (TFP growth globally) is responsible for three quarters of the increase in regional TFP, while efficiency increases within countries were responsible for the remaining quarter. This shows the importance of global technological supply for TFP growth in Latin America and the Caribbean. There are, however, major differences within the region in terms of the contribution of various components to TFP growth. Generally speaking, countries with greater TPF in the period 1981-2012 (in the far left of figure III.7A) performed better in terms of efficiency. This is because the contribution of technological progress, which tends to depend on the international situation, is more homogeneous among countries than the contribution of technical efficiency, which is defined from within each country.

Figure III.7
Components of the growth rate in total factor productivity, 1981-2012



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of A. Nin-Pratt and others, "Productivity and the performance of agriculture in Latin America and the Caribbean: from the lost decade to the commodity boom", *Working Paper Series,* No. 608, Inter-American Development Bank (IDB).

Having said that, not all countries derive equal benefit from an expansion of the global technological frontier. That benefit basically depends on the convergence between the country's type of production specialization and the areas in which international technical progress takes place. In other words, the probability of a country benefiting from technological progress increases in direct proportion with the relevance that the areas of new technological development have for national production. Given the agroecological specifics of agricultural production, this convergence is particularly relevant in explaining why a country does or does not benefit from an expanding technological frontier. In this sense, Latin American and Caribbean countries with a temperate climate have benefited more from global technical progress in agriculture than tropical countries. The contribution of efficiency to TFP growth is more or less equivalent in temperate and tropical countries (with differences maintained depending on whether they are humid or subhumid). However, the contribution of technical progress is significantly higher in temperate countries, which is the predominant climate in developed countries that spearhead the expansion of the global technological frontier.

While there is no information on TFP trends and components by type of product and agricultural producer, extending the argument above suggests that prevailing production methods and categories from developed countries may be able to harness global technological progress more readily to improve productivity. This highlights at least

two extremely relevant points for food security: (i) there are fewer technologies available to be adopted or adapted for family farmers to produce basic foods for local consumption in the poorest countries; (ii) combined with low local investment in research and development and the cumulative nature of technological progress, this means that the productivity gap between poor countries and developed countries will tend to widen.

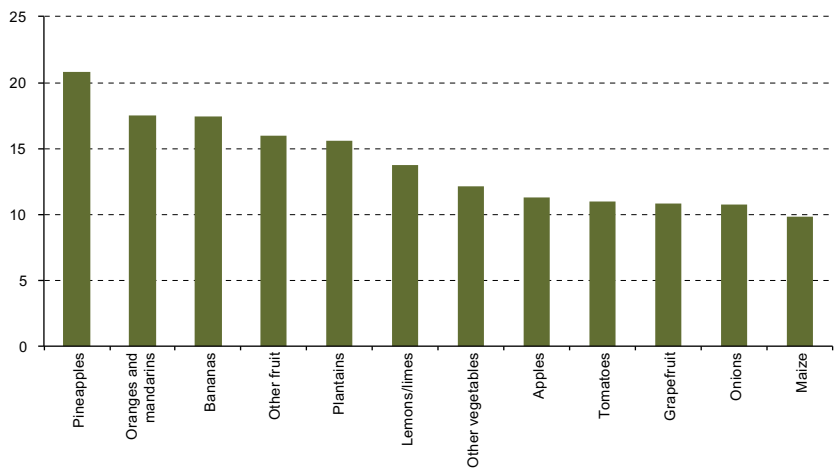
Many humid tropical countries, which is the predominant agroecological area in Latin America and the Caribbean, are among those posting the highest TFP in the region. Rather than being dependent on international technical progress as a source of increased productivity, such countries have generated domestic capacities and have joined with similar countries to generate innovations suited to their contexts and needs. Learning from the institutions, instruments and capacities developed by those countries could be useful for designing and implementing strategies to help the region improve agricultural efficiency.

It is essential to strengthen national information systems to truly understand how national innovation policies, regional partnerships and the expansion of the international technological frontier affect efficiency and production in small-scale farming. Series of values for production and use of inputs used to calculate TFP trends are not available by producer or by region within countries. Agricultural censuses are not available for all of the region's countries and where they exist they are carried out once a decade. Furthermore, most of the region's agricultural censuses do not provide information on quantities produced or production values but only on crop areas.

1. Food wastage

The expectation of increasing agricultural production is to improve food supply and famers' incomes. However, there are other ways of generating a more stable and accessible food supply, with the most obvious example being reducing waste throughout the food production chain. FAO (2011) estimates that roughly one third of food produced for human consumption is lost or wasted globally. In Latin America, fruit and vegetables are the most affected by such wastage.

Figure III.8
Latin America and the Caribbean: food waste,[a] 2000-2013
(Percentages of domestic supply)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of Food and Agriculture Organization of the United Nations (FAO), FAOSTAT.
[a] Production minus exports plus imports, on average.

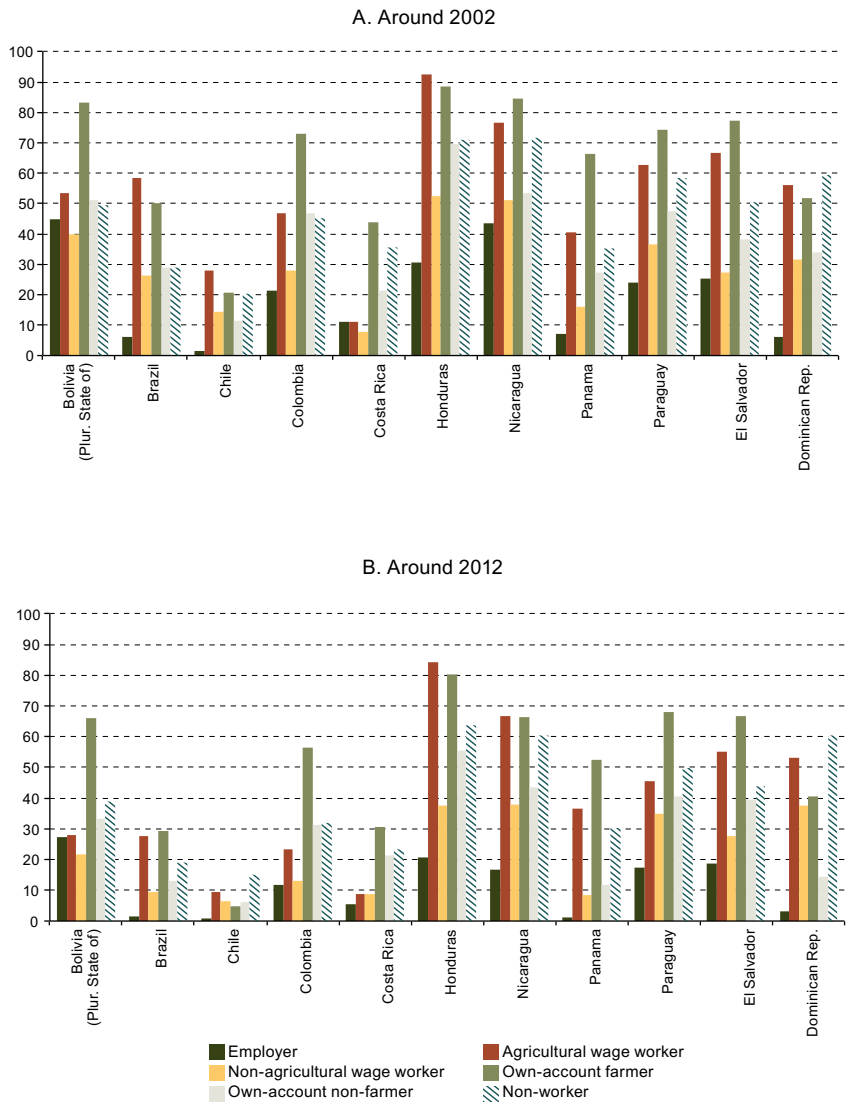
In medium- and high-income countries food is to a significant extent wasted at the consumption stage, while in low-income countries food losses occur early on and in the middle of food supply chains. The causes of food losses and waste in low-income countries are mainly connected to financial, managerial and technical limitations in harvesting techniques and storage facilities in difficult climatic conditions, infrastructure and marketing systems. Given that many small-scale farmers in developing countries live on the brink of food insecurity, reducing food waste could have an immediate and significant effect on their lives. Reducing food wastage can potentially increase the efficiency of the entire food chain and should be used as a strategy that complements increases in productivity as a way of ensuring a stable and sustainable food supply. Reducing food losses should be a policy priority for this sector.

C. Household income: status and role of family farming

Family farming or own-account farming accounts for most of the region's food production (particularly considering food production for the domestic market alone). According to FAO estimates (2015), Latin America and the Caribbean has 16.5 million family farms (80% of the total). With over 60 million people employed therein, such farming is the main source of agricultural and rural employment. This category of farmers has the highest levels of poverty and uses household resources for production and vice versa (with a high percentage of self-consumption and self-employment). Increasing the income of family farmers not only improves their access to a varied and balanced diet (beyond self-consumption) but also optimizes their ability to reinvest in agricultural production and boost rural employment.

Insofar as the poor spend much of their income on food, increasing their revenues can have immediate effects on household food security. If income comes from secure working arrangements, families can improve their level of food consumption and their quality of life. In the long term, access to paid and stable work also enables households to invest in better nutrition, health and education. Such investment in human capital helps to improve productivity and general economic performance, with a multiplier effect on labour demand over time.

Figure III.9
Latin America (11 countries): poverty rate by status of head of household
(Percentage of total households)

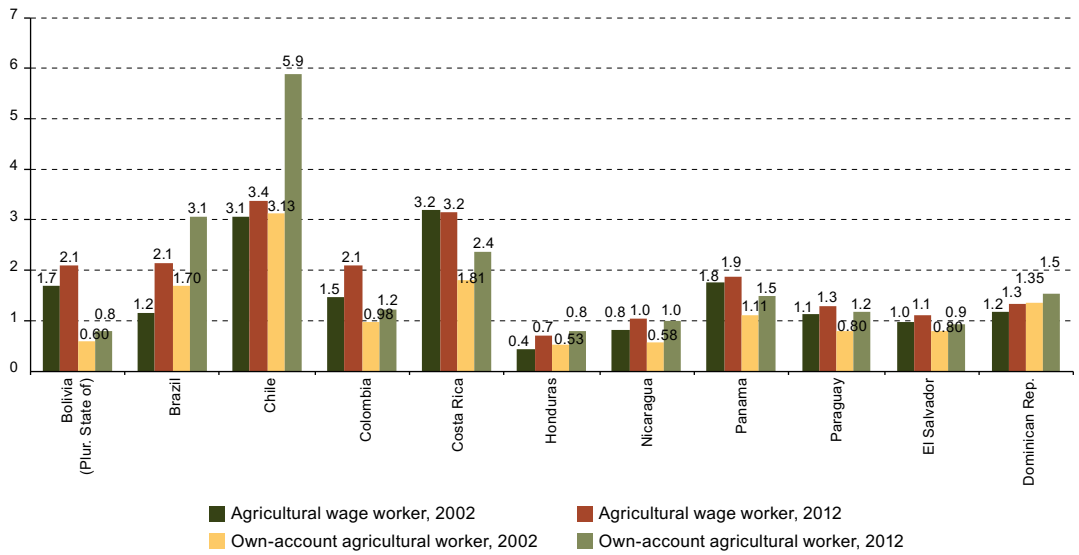


Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of special tabulations of household surveys.

Although there are major differences among countries, agriculture-related employment categories had the highest levels of household poverty in early 2000. In most countries with information available, agricultural own-account workers had the highest levels of poverty with over 80% of households affected at the beginning of the decade in the Plurinational State of Bolivia, Honduras and Nicaragua. In around 2012, poverty levels in agriculture-related categories dropped in all countries. Agricultural own-account workers saw poverty levels drop in Chile and Brazil in particular —countries that both have renowned policies on family farming inclusion and support.

There has been an increase in average income for agriculture-related employment categories, with rises in income for all wage workers and own-account workers in agriculture, with the exception of those in only one category. In countries such as Brazil, Chile, Honduras and Paraguay, the relative increases were significant.

Figure III.10
Latin America (11 countries): monthly household income per capita, by type of household, 2002-2012
(Multiples of the national poverty line)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of special tabulations of household surveys.

Despite such progress, ECLAC estimates that 46% of men and women in rural areas remain in poverty, with almost 28% living in extreme poverty. By way of comparison, in urban areas the rates are 24% for poverty and 8% for extreme poverty. Most of the region's rural population is economically dependent on agriculture: not only plant and animal production but forestry, fishing and aquaculture. The strategies that family farmers use to overcome poverty include diversifying production and improving market access, combined with non-agricultural rural employment for one or more members of the household. Remittances and income transfers through public programmes are also important.

To ensure the viability of such production diversification and market access strategies, there must be public policies that promote family farming and boost job creation and income generation at the rural level (FAO, 2015). Joining markets in a sustainable and equitable way is made viable through the regular supply of good-quality products, producer organizations, availability and access to production services and conducive rules and institutions. One prerequisite for quality supply is the implementation of good practices throughout production chains. This first link in safety management needs to be supplemented by infrastructure, standards and promotion and dissemination policies to make as many producers as possible part of formal trade.

In the long term, greater investment in agriculture is one of the recommended responses to improve food and nutrition security as it has a positive impact on food supply and farmers' income. Increased investment in the sector could help to raise food production through the development of more diversified and resilient food systems. Agricultural investment would also have to ensure that it successfully increased labour demand —and not only for agricultural employment. Increasing agricultural productivity generates economic opportunities in other tradable and non-tradable sectors, including the provision of inputs for infrastructure, food production and trade.

Many of these activities require a level of skill that is usually beyond the average schooling of the region's farmers (which amounts to just over four years of study). However, the level of remuneration of some such activities is also above average agricultural incomes (as well as being less seasonal and unpredictable). These activities, such as creating agro-industrial, agritourism or rural services SMEs, bring together innovation, business development and adding value to agriculture to boost and diversify local economies. As a result, enterprises linked to increasing agricultural productivity and efficiency can promote the participation of rural young people and help them to stay in the countryside.

The inclusion of rural young people in society and the economy is one of the major policy challenges for countries of the region. FAO (2015) calculates that almost 19 million young people aged 15 to 29 years are part of the economically active rural population, and most of them work in unskilled and low-paid jobs. Investing in the education and professional skills of rural young people and giving them the opportunity to apply their knowledge and entrepreneurial capacity in their own environment makes them participants in and leaders of the process of structural change towards more efficient and sustainable agriculture in Latin America and the Caribbean.

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Chapter IV

Trade

A. Trade in the region
B. Food imports
C. Food exports
D. Tariff protection
E. Trade agreements and preferences

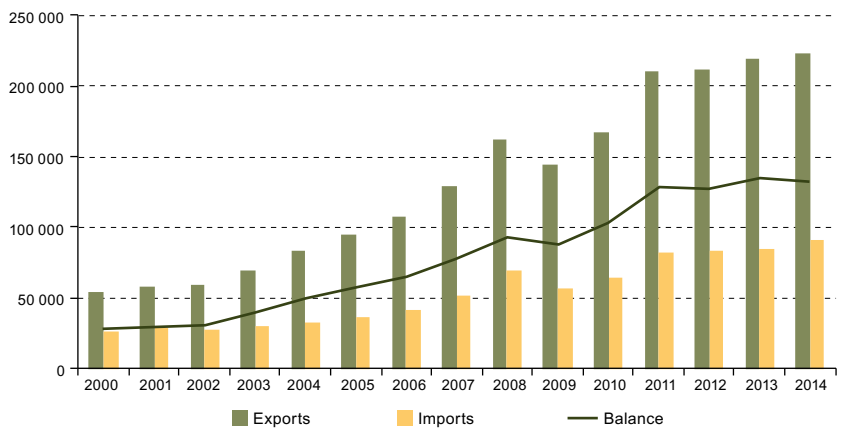
Chapter IV

A. Trade in the region

The Latin America and the Caribbean region runs a substantial food-trade surplus; and since 2000, this positive balance in the region's food trade with the world has been growing, partly thanks to the gradual rise in food prices during the period. In 2014, the region's food exports surpassed US$ 222 billion, equivalent to 21% of its total exports. Its imports of food products totalled US$ 90.5 billion, 8% of its total imports), resulting in a surplus of US$ 132 billion. In 2014, while the region's total exports declined by 2.1% in value terms, its food exports grew by 1.4%.

Since 2008, the region's share in world food exports has held steady at around 15%. This proportion is more than double its share in global exports of all goods, which is less than 6%. Thus, the region —and particularly South America— has established itself as one of the world's main food suppliers, thanks to its abundant endowments of land, water resources and biodiversity, its wide variety of climate conditions and outstanding business capacities in that industry. This position is a strategic asset since recent projections see the world's population growing by 32%, from 7.349 billion to 9.725 billion, between 2015 and 2050.[1] This will coincide with a significant expansion of the middle classes in various developing regions —a process that will open up major opportunities for exports of higher value added food products.

Figure IV.1
Latin America and the Caribbean: food trade with the world, 2000-2014[a]
(Billions of dollars)



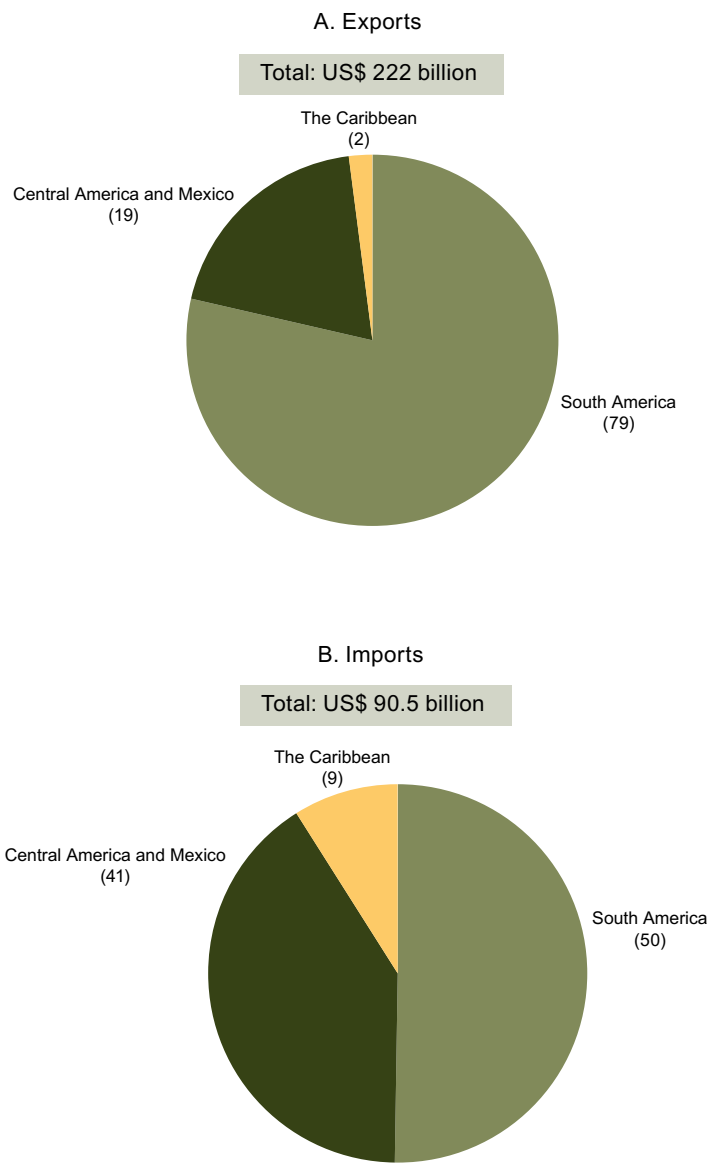
Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of United Nations Commodity Trade Statistics Database (COMTRADE).
[a] Foods include all products in classified in chapters 1 to 24 of the Harmonized Commodity Description and Coding System.

[1] United Nations, *World Population Prospects: The 2015 Revision, Key Findings and Advance Tables*, New York, Department of Economic and Social Affairs, 2015.

Food trade in Latin America and the Caribbean varies greatly between the different subregions and countries. The region's food exports are largely concentrated in South America. All of the countries of this subregion (except for the Bolivarian Republic of Venezuela) recorded surpluses in their food trade with the world in 2014. Brazil and Argentina, the region's two main food exporters, posted the largest balances accounting for 36% and 17% of the regional total, respectively.

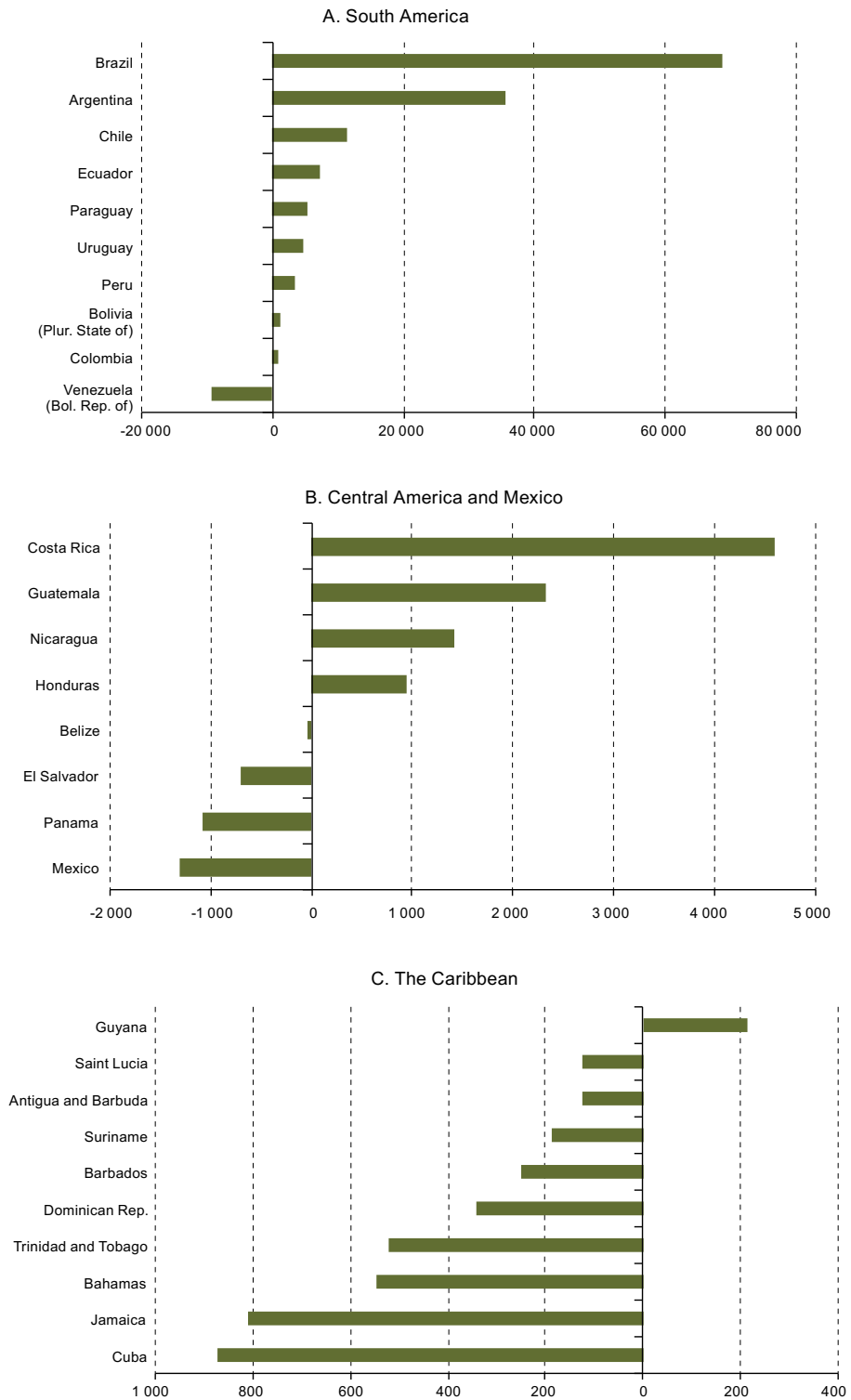
The situation is more varied in the Central America and Mexico subregion, whereas in the Caribbean, nearly all economies import more food than they export.

Figure IV.2
Lain America and the Caribbean: distribution of food trade by subregions, 2014
(Percentages)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of United Nations Commodity Trade Statistics Database (COMTRADE).

Figure IV.3
Latin America and the Caribbean (28 countries): food-trade balances, 2014
(Millions of dollars)

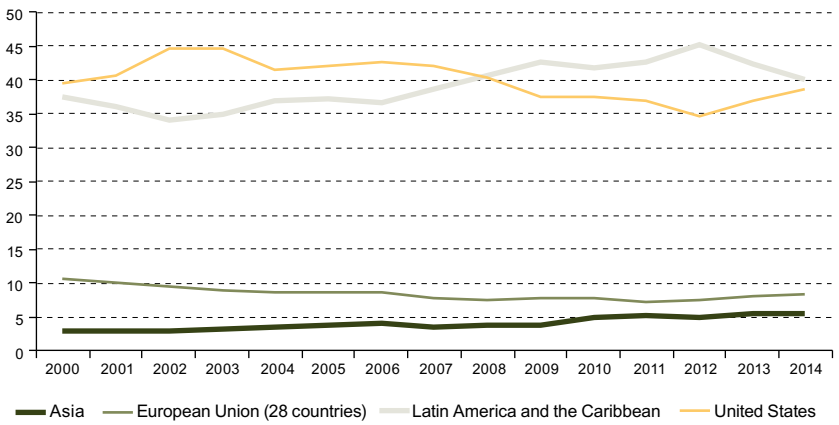


Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of United Nations Commodity Trade Statistics Database (COMTRADE).

B. Food imports

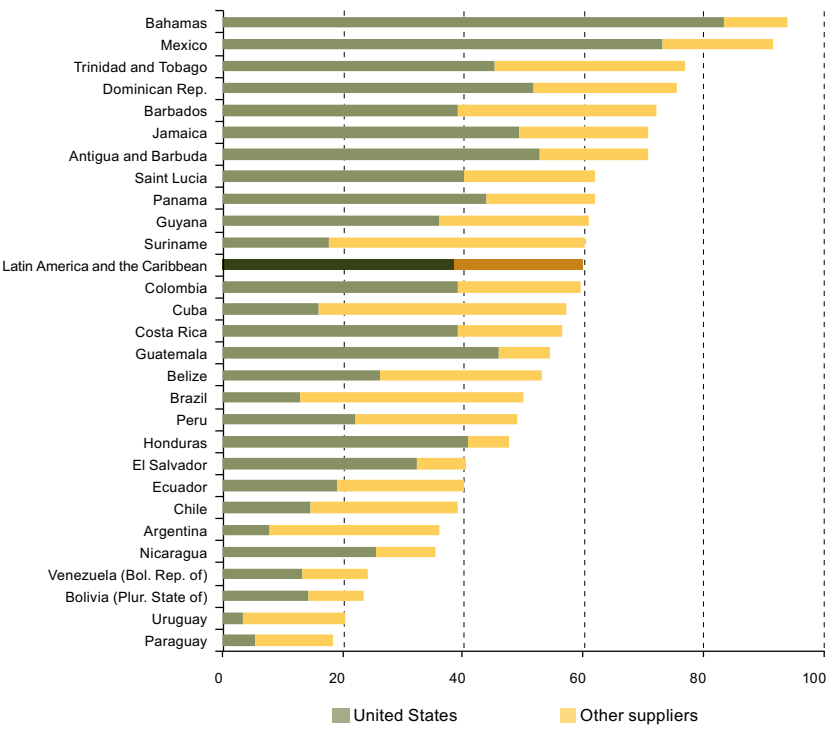
In 2014, countries within the region supplied 40% of Latin America and the Caribbean's food imports; while the United States was the second most important source with a 39% share. Suppliers from outside the region account for widely differing proportions of the food imports of individual countries, generally lowest in South America and highest in the Caribbean and Mexico. In the latter country (the region's leading food importer), 91% of imports come from outside the region, with 73% sourced from the United States.

Figure IV.4
Latin America and the Caribbean: share of selected partners in food imports, 2000-2014
(Percentages)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of United Nations Commodity Trade Statistics Database (COMTRADE).

Figure IV.5
Latin America and the Caribbean (28 countries): share of extraregional suppliers in total food imports, 2014
(Percentages)

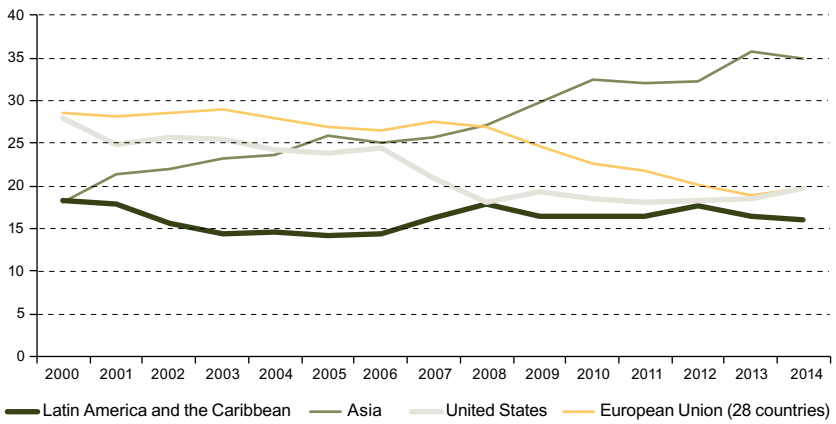


Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of United Nations Commodity Trade Statistics Database (COMTRADE).

C. Food exports

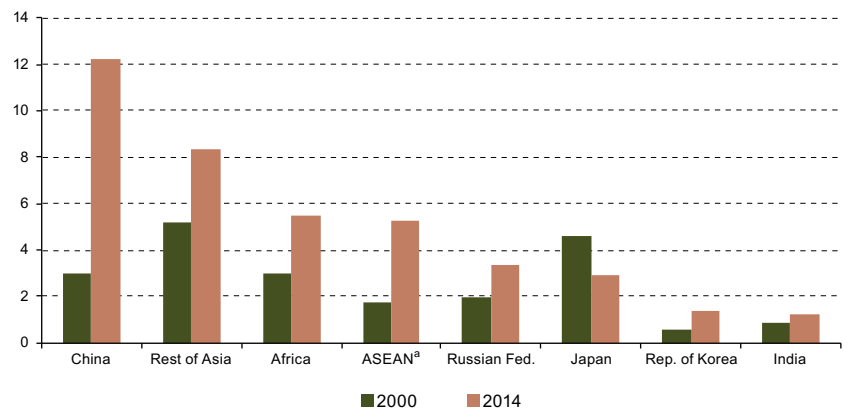
In a context where the value of regional food exports quadrupled between 2000 and 2014, the share of extraregional markets grew slightly, from 82% to 84%. Nonetheless, the distribution of the main destinations has changed considerably. Asia has practically doubled its share, from 18% in 2000 to 35% in 2014, to become the leading market for the region's food exports, displacing traditional partners such as the United States and the European Union. Within Asia, China's share has quadrupled from 3% in 2000 to 12% in 2014; but the market shares of countries such as members of the Association of Southeast Asian Nations (ASEAN), and the Russian Federation, have also increased substantially. Moreover, the share of Africa as a destination for food exports has almost doubled, from 3% in 2000 to 5.5% in 2014.

Figure IV.6
Latin America and the Caribbean: share of selected partners as a destination for food exports, 2000-2014
(Percentages)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of United Nations Commodity Trade Statistics Database (COMTRADE).

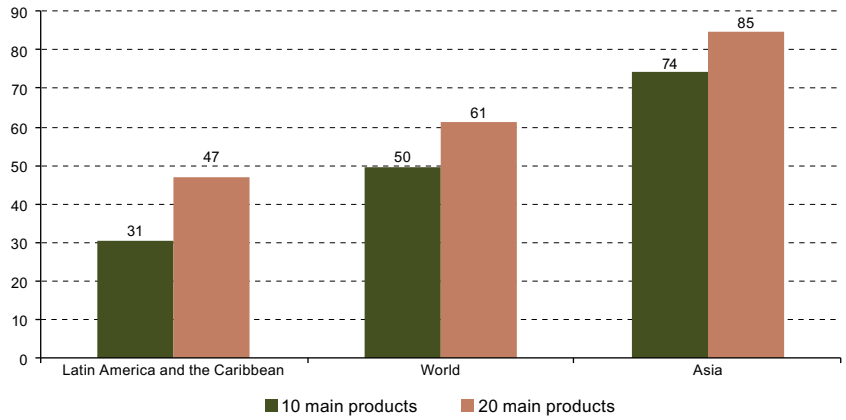
Figure IV.7
Latin America and the Caribbean: share of selected trading partners from Asia and Africa as destinations for food exports, 2000 and 2014
(Percentages)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of United Nations Commodity Trade Statistics Database (COMTRADE).
[a] Association of Southeast Asian Nations.

Whereas the region's food exports to Asia are more concentrated in product terms than its shipments to the world at large, the opposite is true of food trade between countries within Latin America and the Caribbean. The main food product exported by the region, soybeans, accounts for 14% of the value of its food sales to the world, and 31% of its shipments to Asia, but less than 3% of food exports within the region itself. In contrast, processed products, such as prepared foods, are among the leading items exported to countries in the region, but not to the world as a whole or to Asia.

Figure IV.8
Latin America and the Caribbean: share of the 10 and 20 main products in the value of food exports to selected destinations, 2014
(Percentages)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of United Nations Commodity Trade Statistics Database (COMTRADE).

Table IV.1
Latin America and the Caribbean: five main food-sector products exported to selected destinations, 2014
(Millions of dollars and percentages)

No.	Destination and product	Amount *(millions of dollars)*	Share *(percentages)*
	World		
1	Soybeans	31 079	14.0
2	Oilcake and other solid residues, resulting from the extraction of soybean oil	20 626	9.3
3	Coffee, not roasted; not decaffeinated	11 964	5.4
4	Raw cane sugar	10 090	4.5
5	Maize (not seed)	7 738	3.5
	Latin America and the Caribbean		
1	Oilcake and other solid residues, resulting from the extraction of soybean oil	1 741	4.9
2	Meat of bovine animals, frozen, boneless	1 274	3.6
3	Other food preparations	1 260	3.5
4	Maize (not seed)	1 206	3.4
5	Meat of bovine animals, fresh or chilled, boneless	1 049	2.9
	Asia		
1	Soybeans	23 664	30.5
2	Oilcake and other solid residues, resulting from the extraction of soybean oil	7 991	10.3
3	Raw cane sugar	4 998	6.4
4	Meat of bovine animals, frozen, boneless	4 477	5.8
5	Maize (not seed)	4 008	5.2

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of United Nations Commodity Trade Statistics Database (COMTRADE).

The range of food products that Latin American and Caribbean countries import from other counties within the region is very similar to those obtained from its leading supplier outside the region, the United States. Maize, wheat, soybeans, soybean oil cake, food preparations and the meat of bovine animals, fresh or chilled, are included on the list of the 10 leading products of the food sector that Latin America and the Caribbean imports both from within the region itself and from the United States. The main items that the region's countries import from the United States, but do not import in significant amounts from within the region, are pork, milk in powder, and meat cuts and offal of poultry of the *gallus domesticus* species, fresh or chilled.

Table IV.2
Latin America and the Caribbean: 10 main food-sector products imported from the United States and from the region, 2014
(Millions of dollars and percentages)

A. From the United States

No.	Product	Amount *(millions of dollars)*	Share *(percentages)*
1	Maize (not seed)	4 319	13.4
2	Wheat and meslin, other	2 494	7.7
3	Soybeans	2 025	6.3
4	Oilcake and other solid residues, resulting from the extraction of soybean	1 823	5.6
5	Meat of swine, hams, fresh or chilled	992	3.1
6	Other food preparations	975	3.0
7	Milk, powdered	911	2.8
8	Meat of bovine animals, fresh or chilled, boneless	867	2.7
9	Meat of fowls of the *gallus domesticus* species, cuts and offal, fresh or chilled	553	1.7
10	Other meat of swine, frozen	520	1.6
Subtotal (10 main products)		**15 478**	**47.9**
Total imports		**32 335**	**100.0**

B. From the region

No.	Product	Amount *(millions of dollars)*	Share *(percentages)*
1	Oilcake and other solid residues, resulting from the extraction of soybean oil	1 510	5.5
2	Other food preparations	1 161	4.2
3	Meat of bovine animals, fresh or chilled, boneless	1 058	3.8
4	Wheat and meslin, other	970	3.5
5	Soybeans	801	2.9
6	Maize (not seed)	779	2.8
7	Crude soybean oil	684	2.5
8	Malt of barley or other cereals, not roasted	608	2.2
9	Other preparations for animal feed	519	1.9
10	Crude palm oil	501	1.8
Subtotal (10 main products)		**8 591**	**31.1**
Total imports		**36 362**	**100.0**

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of United Nations Commodity Trade Statistics Database (COMTRADE).

The potential for substituting imports from outside the region with intraregional purchases varies according to the product. The region has significant shares in the global exports of some of the main food products that it imports from the rest of the world, particularly from the United States. For example, in 2015:

- Brazil and Argentina jointly accounted for 31% of world exports of maize (not seed).
- Brazil, Argentina, Paraguay and Uruguay provided 55% of world exports of soybeans.
- Argentina, Brazil, Paraguay and the Plurinational State of Bolivia supplied 65% of world exports of soybean oilcake.

- Argentina, Brazil, Mexico, Paraguay and Uruguay generated 18% of world exports of the meat of bovine animals, fresh or chilled, boneless.
- Brazil, Chile and Mexico produced 18% of world exports of other meat of swine, frozen.

In these cases, the potential for replacing extraregional imports with purchases sourced from within the region seems clear, and an analysis should be made of the factors that currently hinder that substitution (for example, geographical distance, tariff barriers, health or technical requirements, or quality differences).

In the case of other products that the region imports in large amounts from external suppliers, the possibilities for substitution by intraregional imports are currently limited:

- Only one country in the region (Argentina) is among the world's 10 leading exporters of other wheats and milk in powder, with a 3% share in both cases.
- No country from the region is among the 20 leading exporters of other food preparations; or the 25 leading exporters of hams; or the 30 leading exporters of cuts and offal of poultry of the *gallus domesticus* species, fresh or chilled.

Table IV.3
Latin America and the Caribbean (selected countries): exports to the world of selected food products from the major exporting countries, 2015
(Millions of dollars and percentages)

Product/country	Amount exported *(millions of dollars)*	Share in world total *(percentages)*	Ranking
Maize (not seed)			
Brazil	4 938	19.1	2
Argentina	3 059	11.9	3
Soybeans			
Brazil	20 984	41.2	1
Argentina	4 270	8.4	3
Paraguay	1 594	3.1	5
Uruguay	1 278	2.5	6
Soybean oilcake			
Argentina	9 675	37.0	1
Brazil	5 821	22.3	2
Paraguay	905	3.5	5
Bolivia (Plurinational State of)	513	2.0	8
Meat of bovine animals, fresh or chilled, boneless			
Brazil	689	4.6	6
Mexico	663	4.4	7
Argentina	507	3.4	9
Paraguay	462	3.1	10
Uruguay	356	2.4	12
Other meats of swine, frozen			
Brazil	1 116	11.2	3
Mexico	325	3.3	8
Chile	318	3.2	9

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of UNCTAD/WTO International Trade Centre, Trade Map database.

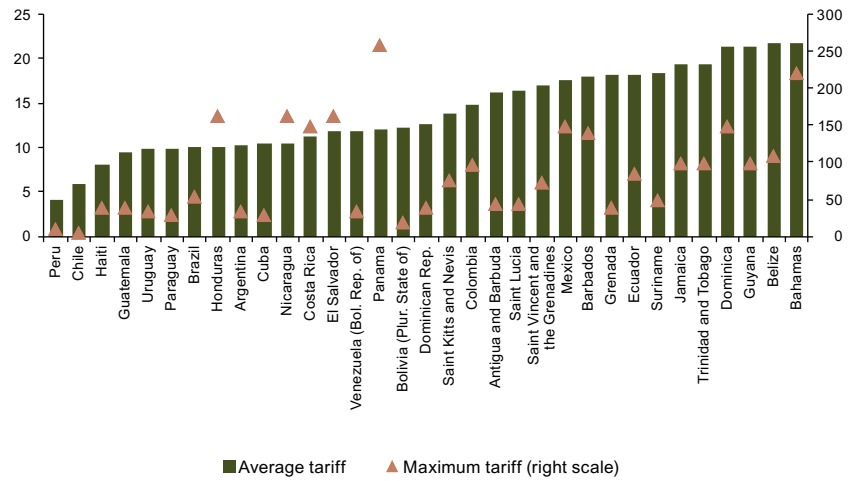
D. Tariff protection

Several of the region's countries maintain high levels of tariff protection for agricultural products. Although the region has greatly lowered its customs tariffs in recent decades, the protection levels applicable to agricultural products are still higher than for other products:

- In 15 of the region's countries, the average most-favoured-nation (MFN) tariff applicable to agricultural products is at least 15%.
- In 13 countries, the maximum MFN tariff applicable to the sector is at least 100%. The products with the highest levels of protection are generally meats, dairy products, sugar, rice, and certain pulses.
- In 15 countries, over 40% of all agricultural tariff lines are subject to an applied MFN tariff above 15%.

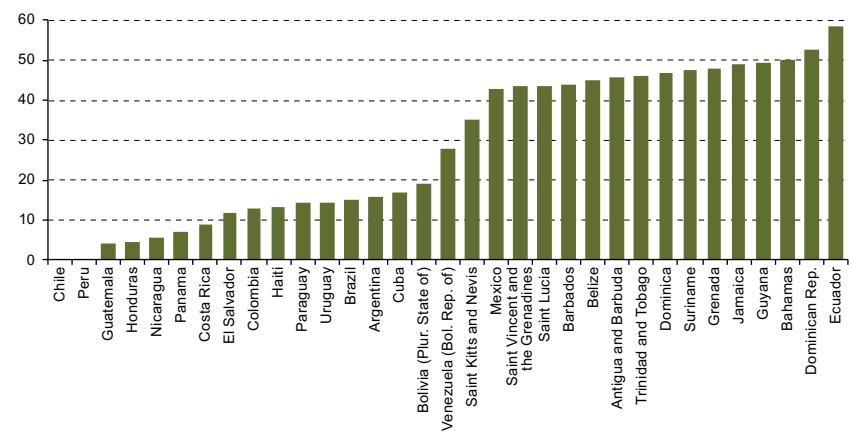
In general, the highest levels of agricultural protection are maintained in the Caribbean countries and in Ecuador and Mexico.

Figure IV.9
Latin America and the Caribbean: selected indicators of most-favoured-nation tariff protection for agricultural products, 2014
(Percentages)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of World Trade Organization (WTO)/United Nations Conference on Trade and Development (UNCTAD), World Tariff Profiles 2015, Geneva, 2015.

Figure IV.10
Latin America and the Caribbean: agricultural tariff lines with most-favoured-nation tariffs above 15%
(Percentages of total agricultural tariff lines)



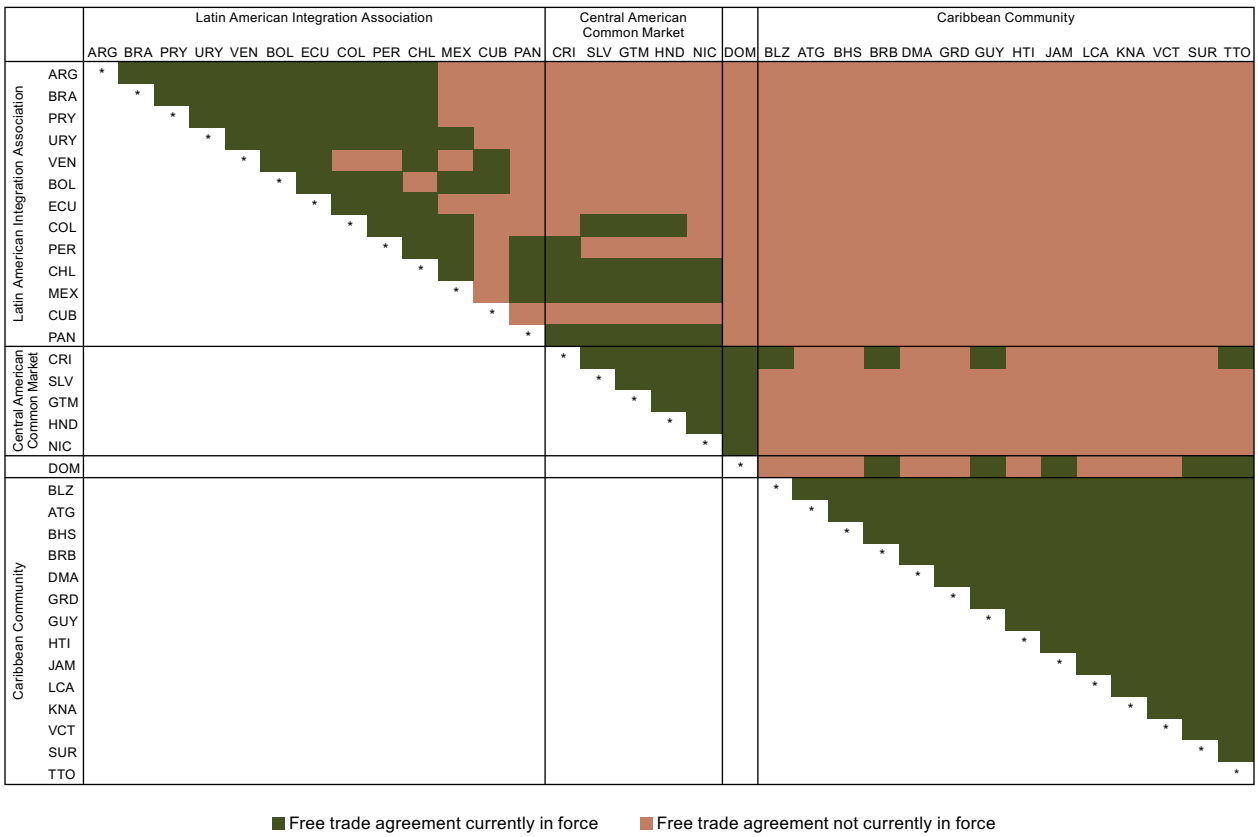
Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of World Trade Organization (WTO)/United Nations Conference on Trade and Development (UNCTAD), World Tariff Profiles 2015, Geneva, 2015.

E. Trade agreements and preferences

Latin America and the Caribbean has made significant progress in liberalizing intraregional trade in food products. Agreements on broad and deep liberalization —free trade agreements— cover 186 of the 528 bilateral relations between the region's countries, representing 35% of the total. The free trade agreements establish tariff reduction schedules that conclude with 100% preferences, thus giving exemption from tariff payments. The most sensitive products are excluded from tariff reduction programmes, and it is common to find some agricultural products among them.

The deepest liberalization processes in terms of food trade are concentrated within the different subregional blocks. The 10 bilateral relations between countries that are members of the Central American Common Market (CACM) are liberalized through this integration mechanism. Trade among the countries of the Caribbean Community (CARICOM), which encompasses a total of 91 bilateral relations, is also liberalized. Lastly, 52 of the 78 bilateral relations between countries that are members of the Latin American Integration Association (ALADI) are under free trade agreements, representing two thirds of the total.

Figure IV.11
Latin America and the Caribbean: bilateral relations between countries under free trade agreements, 2016



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of Organization of American States (OAS), Foreign Trade Information System (SICE) [online] www.sice.oas.org.

Nonetheless, the degree of liberalization is much less in trade between the different subregions. Only 33 of the 349 bilateral relations existing between Latin American and Caribbean countries belonging to different subregional groupings are covered by broad tariff-reduction agreements, representing just 9% of the total. For example, the CARICOM countries do not have preferential trade agreements with the South American countries, or with Mexico or Central America (except Costa Rica). In South America, only Chile, Colombia and Peru have broad preferential agreements with Central America and Mexico. In this context, the main "empty box" is the lack of broad preferential agreements between members of the Southern Common Market (MERCOSUR) on the one hand, and Central America

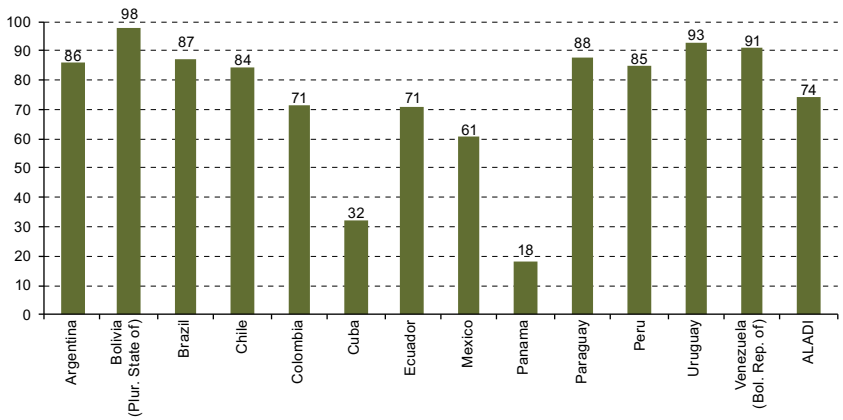
and Mexico on the other.[2] This means, for example, that food trade between Brazil and Argentina (the two leading regional exporters in that sector, in that order) and Mexico (the leading importer) do not benefit from preferential conditions. This contrasts with the duty-free access enjoyed by Mexican exports to the United States; and it largely explains why 73% of Mexico's food imports come from that country, compared with just 1.3% from Argentina and Brazil combined.

Within CACM and CARICOM, the coverage and depth of tariff preferences on food products is complete, and this is guaranteed to the extent that the respective free trade zones have been completed.

In the case of ALADI, although the coverage and depth of tariff reduction on food products varies in each bilateral relation, significant general progress has been made in both directions. In bilateral relations that have a bilateral or subregional agreement signed under ALADI, the tariff preferences for foods currently cover an average of 74% of the corresponding products.

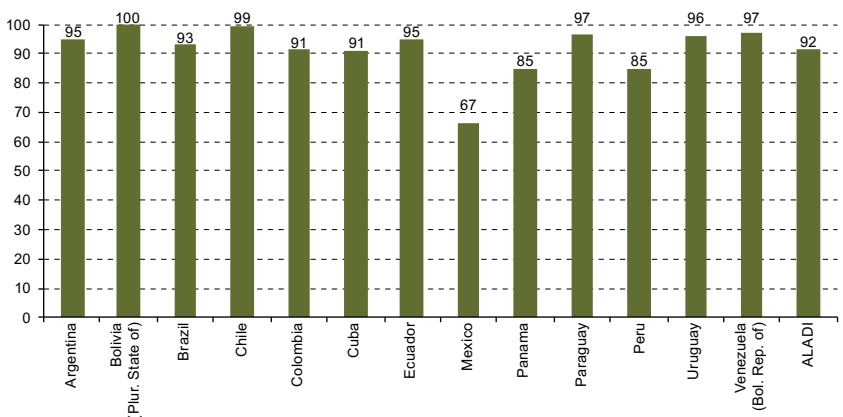
An analysis per beneficiary country shows that the majority enjoy tariff preferences on a large proportion of foods. The exceptions are Cuba and Panama, because the agreements in which they participate are generally selective.

Figure IV.12
Average coverage of agreements relating to food products in the Latin American Integration Association (ALADI), by beneficiary country, 2016
(Percentages of the number of food products)



Source: Latin American Integration Association (ALADI), 2016.

Figure IV.13
Average tariff preference for food products in the agreements of the Latin American Integration Association (ALADI), by beneficiary country, 2016
(Percentages)



Source: Latin American Integration Association (ALADI), 2016.

[2] An exception is the free trade agreement between Uruguay and Mexico that has been in force since 2004.

The average tariff preference in the ALADI agreements currently covers 92% of food products, which means that most trade is exempt from the payment of duties. These tariff preferences will be deepened somewhat further in the future because commitments already assumed involve tariff reduction schedules which, in some cases, have not yet run their course.

Food trade between members of the ALADI bloc is predominantly preferential. Since 2000, around 70% of trade between these countries has been conducted through preferential agreements.

Apart from preferential tariff arrangements, the forthcoming implementation of the Trade Facilitation Agreement of the World Trade Organization (WTO) could stimulate intraregional trade in food products, particularly perishable goods.

Figure IV.14
Importance of agreements on food trade between the countries of the Latin American Integration Association (ALADI), 2000-2014
(Percentages of the value of food trade)

Source: Latin American Integration Association (ALADI), 2016.

Table IV.4
Impact of selected trade facilitation measures on food trade

Provision	Impact
Risk management	Reduces the number of shipments subject to physical inspection.
Pre-arrival processing	Allows for the required import documentation to be submitted prior to the arrival of goods at the port or border post.
Electronic payment of duties, taxes, fees and charges	Facilitates the payment of duties, taxes, fees and charges.
Separation of release from final determination of customs duties, taxes, fees and charges	Goods can be released prior to the final determination of customs duties and other applicable charges.
Post-clearance audit	Audit by the Customs Administration to ensure compliance with the applicable laws and regulations will be done post-clearance.
Authorized operators	Special advantages (for example fewer physical inspections or documentation requirements) will be granted to firms that have a good track record of compliance with the applicable regulations.
Special measures for perishable goods	Including (among other things): (i) priority in physical inspections; (ii) release outside the normal business hours of the customs service; (iii) release in the facilities where the goods are stored.
Single window	Presentation of all required documentation at a single point.
Freedom of transit	The controls, formalities and documentation requirements for merchandise in transit will be limited to those necessary to identify the merchandise and ensure compliance with transit provisions. Countries are encouraged to provide physically separate channels or similar infrastructures for traffic in transit.

Source: Economic Commission for Latin America and the Caribbean (ECLAC).

Despite the progress achieved, there are still major tariff and non-tariff barriers to intraregional food trade. In terms of tariffs, the main challenge is to fill the "empty box" represented by the lack of broad preferential agreements between the MERCOSUR countries, on the one hand, and Central America and Mexico on the other. That situation, together with the free trade agreement signed by the second group of countries with various suppliers outside the region, creates unfavourable competitive conditions for South American exporters, particularly in relation to the United States. Equal conditions of access to those markets would provide a major incentive to the competitive substitution of imports from outside the region by intraregional ones. The successful conclusion of the ongoing negotiations for a broad trade agreement between Brazil and Mexico would be very good news for the expansion of intraregional food trade. Also in the sphere of market access, greater openness in the public procurement markets between the countries of the region would offer many opportunities.

Although the implementation of some trade facilitation measures requires major financial investments, for example in new technologies, in other cases, greater coordination between the different public entities involved in foreign trade is mainly needed. A gradual harmonization or mutual recognition of national standards on health, plant health, quality and labelling, among other issues, would reduce the barriers currently faced by Latin American and Caribbean food exporters in supplying different markets within the region itself. The cost of meeting multiple standards is particularly high for small and medium-sized enterprises (SMEs), so a move towards greater standardization would create favourable conditions for them to integrate into intraregional trade. The same would happen with the implementation of trade facilitation measures, since these would streamline the cross-border flow of food products. This, in conjunction with improvements in regional transport and logistics infrastructure, is particularly critical for promoting trade in perishable goods.

Some of the subregional integration schemes have already made considerable progress on standards and trade facilitation. Nonetheless, the invigorating effect of intraregional trade in food products would be much greater if the facilities that the members of each grouping have decided to grant to each other were extended to the other countries in the region. This logic underlies the "convergence in diversity" initiative between the Pacific Alliance and MERCOSUR, proposed by the Government of Chile in late 2014. Moving ahead with this proposal would provide a major catalyst to genuinely regional regulatory convergence.

The clearly extraregional orientation of food exports from Latin America and the Caribbean is expected to persist in the years to come, given economic and demographic projections. In particular, the relative weight of Asia and other developing regions, such as Africa, will continue to increase. Here it needs to be remembered that the income generated by extraregional sales can contribute to the region's economic growth and, hence, to food and nutrition security. The Latin American and Caribbean region has the potential to consolidate its position as one of the world's main food suppliers over the next few decades. The main challenge in this context is to diversify the regional export basket, from the current predominance of agricultural and fishery commodities, towards a greater presence of differentiated, high-value and sophisticated foods. This process will not be automatic; it will require industrial, scientific and technological policies explicitly oriented towards developing the necessary productive capacities, in partnership with the region's business and academic sectors. The effort will also need to stress environmental sustainability, given the urgent need to combat climate change.

Chapter V

Natural resources management and climate change

Chapter V

A. Biodiversity in the context of climate change and its influence on food security

Biodiversity plays a key role in the supply of food, fibre, fuels, genetic resources, water and so forth. It is also fundamental in the regulation services that are essential for life and human activities, particularly agriculture —such as water purification, pollination, soil formation, pest and disease control, regulation of temperature and humidity, protection against natural disasters, prevention of erosion and others.

Systems comprising a larger number of different components (species, actors, sources of knowledge, and so on) tend to be more resilient. Moreover, redundancy ensures that some components can make up for the loss or lack of functioning of others.

Rising temperatures have in many cases facilitated the invasion of ecosystems by exotic species that have driven out native ones, thereby changing the structure and function of the ecosystems and the development of commercial species or those used for food.

The main alternatives for adapting to changing climate conditions include maintaining and improving the natural conditions of ecosystems, which means maintaining and enhancing their resilience or capacity to recover or support the effects of climate change. Increasing the resilience of ecosystems and socioecosystems reduces humankind's vulnerability to disturbances and helps to reduce and mitigate the impacts on human activities and infrastructure. In addition, it is necessary to plan instruments taking a long view; promote thought on complex adaptive systems; foster knowledge and learning; promote polycentric governance and manage the variables of slow change and their interactions (CONANP, 2015).

How global change and climate change is addressed is crucial. There are virtuous circles and positive synergies, and others that are negative. For example, it has been shown that pesticide use has lethal and sublethal effects on species other than those that it is desired to control; and some of these, such as pollinators, have a positive role to play in the same crop. The alternative management of certain edible pests such as orthoptera could not only have a positive effect on agroecosystems but could also provide a strategy for raising the quality of human nutrition, particularly in zones where there are nutritional deficiencies or shortcomings in food production, and the presence of a heavy ancestral cultural baggage. Another way of increasing the consumption of that resource could be processing, exploiting the trend to make use of unconventional processed foods of different origin, both plant and animal.

Some species of coleoptera (such as beetles), othoptera (for example crickets) and lepidoptera (such as butterfly larvae) that are considered pests are also edible resources in different parts of the world. These can be controlled with techniques that are especially oriented towards sustainability of both the crop and the insects. Studies comparing the quality of the proteins obtained from certain edible insects with those of ruminants such as cattle and the rate of greenhouse gases produced by their relative mass, show that insects have better proteins, and their production or management causes less harm to the environment. Globally, over 1,000 insect species have been identified as being edible at some stage of their development. In the region, Mexico and Colombia are countries with very high levels of diversity of edible insects (177 and 41 species, respectively); and Central America and the Caribbean also have several species that make it possible to consume this type of resource (Cerritos, 2009).

Map V.1
Latin America and the Caribbean: edible insect species

• America, 264 species: 1. Mexico (177); 2. The Caribbean (8); 3. Central America (4); 4. Colombia (41); 5. Guyana (6); 6. Brazil (19); 7. Rest of South America (9).

Source: R. Cerritos, "Insects as food: an ecological, social and economic approach", CAB Reviews: Perspectives in Agriculture, Veterinary Science, Nutrition and Natural Resources, vol. 4, No. 27, 2009.

1. The contribution of wild pollination in food production

According to the report on pollinators, pollination and food production prepared by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES, 2016), nearly 90% of wild flowering plant species around the world depend, at least partly, on animal pollination. These plants are critical for the continued functioning of ecosystems, because they provide food, form habitats and provide other resources for a wide range of other species. More than three quarters of the world's leading types of food crops rely to some extent on animal pollination.

The volume of production of pollinator-dependent crops has increased by 300% over the last five decades, making livelihoods increasingly dependent on pollination. Up to 35% of agricultural production comes from crops that depend at least in part on animal pollination.

Pollinator-dependent food products of plant origin are important contributors to healthy human diets and nutrition. Pollinator-dependent species encompass many crops destined for the production of fruits, vegetables, seeds, nuts and oils, which supply major proportions of micronutrients, vitamins and minerals in the human diet.

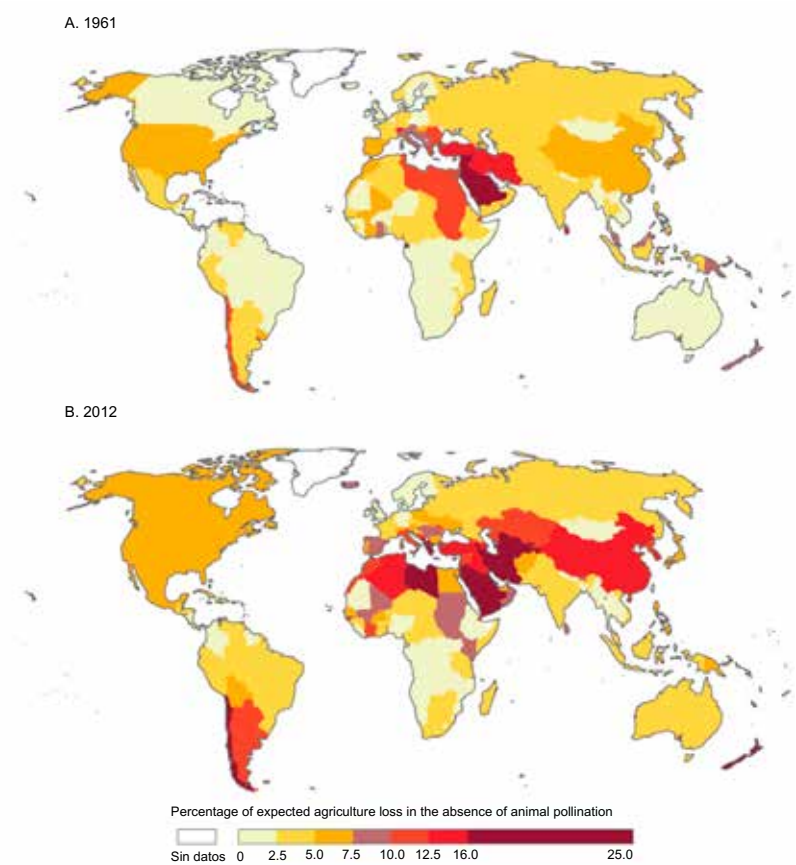
The vast majority of pollinator species are wild, including more than 20,000 species of bees, some species of flies, butterflies, moths, wasps, beetles, thrips, birds, bats and other vertebrates. A few species of bees are widely managed, including the western honey bee (*Apis mellifera*), the eastern honey bee (*Apis cercana*), some bumble bees, some stingless bees and a few solitary bees.

The contribution of wild pollinators to crop production is undervalued. A diverse community of pollinators generally provides more effective and stable crop pollination than any single species. Pollinator diversity contributes to crop pollination even when managed species (e.g. honey bees) are present in high abundance.

The presence and abundance of certain wild pollinator species have declined both locally and regionwide in North-West Europe and North America. Although a lack of wild pollinator data (species identity, distribution and abundance) for Latin America, Africa, Asia and Oceania preclude any general statement on their regional status, local declines have been recorded.

The distribution, abundance and seasonal activities of some wild pollinators (for example bumble bees and butterflies) have changed in response to the observed effects of climate change in the last few decades. In general, the repercussions of the current state of climate change on pollinators and agriculture may take several decades to reveal themselves, because ecological systems respond slowly (given their natural resilience capacity). The climate change adaptation responses that are implementable include wider diversity of crops and regional farming activity, together with the conservation, management, or selective restoration of habitats.

Map V.2
Reliance of agriculture on pollinators: expected loss in agricultural production volume in the absence of animal pollination, 1961 and 2012
(Percentages)



Source: Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), *Summary for policymakers of the assessment report of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services on pollinators, pollination and food production*, 2016 [online] http://www.ipbes.net/sites/default/files/downloads/Pollination_Summary%20for%20policymakers_EN_.pdf.

2. Centres of origin of cultivated plants

About 7,000 plant species have been cultivated for food since agriculture began some 12,000 years ago. At the present time, however, just 15 plant species and eight animal species supply 90% of human food. The prioritization of development, taking just a few varieties of commercial crops and livestock breeds, while neglecting varieties and races that are locally adapted, has resulted in biodiversity, and particularly genetic diversity, being lost at an alarming rate (CDB, 2007).

Climate change may affect plant growth and production by propagating the spread of pests and diseases. Other expected impacts include: increased exposure to heat stress; changes in rainfall patterns; greater leaching of nutrients from the soil during heavy rains; greater erosion due to strong winds; and more wildfires in drier regions.

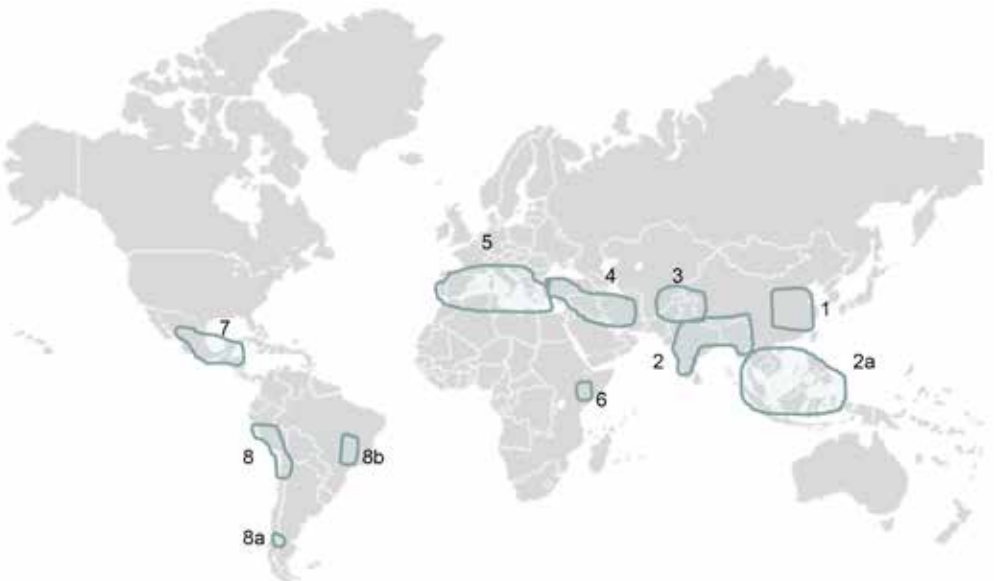
A case of adaptation based on genetic variability occurred in the El Triunfo biosphere reserve in the south of Mexico. In 2013-2014, the La Roya fungus (Hemileia vastatrix) devastated 30% of the sustainable coffee crop that was growing in this reserve. La Roya found favourable conditions for its propagation in old coffee trees and owing to the drastic climatic fluctuations, in terms of rainfall and temperature, that had occurred in the previous two years. Thanks to the fact that the organic coffee producer communities and cooperatives had been gathering information and preparing to face climate change since 2011, they worked to obtain seeds of coffee varieties that are resistant to the pest, compatible with organic certification, to renew the coffee plantations and to set up greenhouses for the production of shade trees of native species (CONANP, 2015).

The conservation of a wide variety of genetic resources of crops adapted to the different conditions is a strategic asset for dealing with climate change and its effects. For example, varieties that are resistant to drought, heat or pest attacks could be the basis for developing crops that are adapted to the new climate conditions.

The wild relatives of cultivated plants also serve as gene pools; and the zones recognized as their centres of origin are strategic reservoirs for a changing future. The Latin American and Caribbean region is the centre of origin of some of the plants that form the basis of the world's food. The conservation of this agro-biodiversity is a key element of a climate change adaptation strategy, not only for Latin America and the Caribbean, but for the world as a whole.

The centres of origin of most currently cultivated plants (according to Nikolai Vavilov) start in the botanical areas or regions where powerful processes of type formation are active. These regions generally harbour a large number of endemic forms and characteristics, and they concentrate genetically related species or wild relatives. In addition, they are rich in plant species, including many edible ones; they have been inhabited by human populations since remote times, who accumulated knowledge on that diversity and implemented various management processes, generating the variation that is known today. Vavilov proposed eight centres of origin of cultivated plants, fundamental and ancient centres of agriculture in the world, as illustrated in map V.3.

Map V.3
Centres of origin of cultivated plants proposed by Nikolai Vavilov in 1935



Source: National Commission for Knowledge and Use of Biodiversity of Mexico, "Centers of cultivated plants" [online] http://www.biodiversidad.gob.mx/v_ingles/genes/centers_origin/centers_plants1a.html.
Note: 1. China; 2. India; 2a. Indo-Malayan region; 3. Central Asia (including Pakistan, Punjab, Kashmir, Afghanistan and Turkestan); 4. Near East; 5. Mediterranean; 6. Ethiopia; 7. Southern Mexico and Central America; 8. South America (Ecuador, Peru and Plurinational State of Bolivia); 8a. Chiloé; 8b. Brazil and Paraguay.

Table V.1
Example of cultivated species whose centres of origin are in Latin America

Southern Mexico and Central America (7)	South America (8, 8a and 8b) 8. Ecuador, Peru and Plurinational State of Bolivia:
Chili *(Capsicum annuum)*	Chili *(Capsicum annuum)*
Squash *(Cucurbita ficifolia)*	Squash *(Cucurbita maxima)*
Squash *(Cucurbita moschata)*	Tomato *(Lycopersicon esculentum)*
Sweet potato *(Ipomoea batatas)*	Lima bean *(Phaseolus lunatus)*
Lima bean *(Phaseolus lunatus)*	Common bean *(Phaseolus vulgaris)*
Common bean *(Phaseolus vulgaris)*	Peruvian ground cherry *(Physalis peruviana)*
Maize *(Zea mays)*	Andean potato *(Solanum andigenum)*
	Sweet cucumber *(Solanum muricatum)*
	Potato *(Solanum tuberosum)*
	8a. Chiloé *(Chile)*:
	Potato *(Solanum tuberosum)*
	8b. Brazil and Paraguay
	Cassava (manioc) *(Manihot esculenta)*

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information provided by the Argentine Council for Information and Development of Biotechnology (ArgenBio).
[a] The groupings and numbering of the areas correspond to the centres of origin of cultivated plants proposed by Nikolai Vavilov.

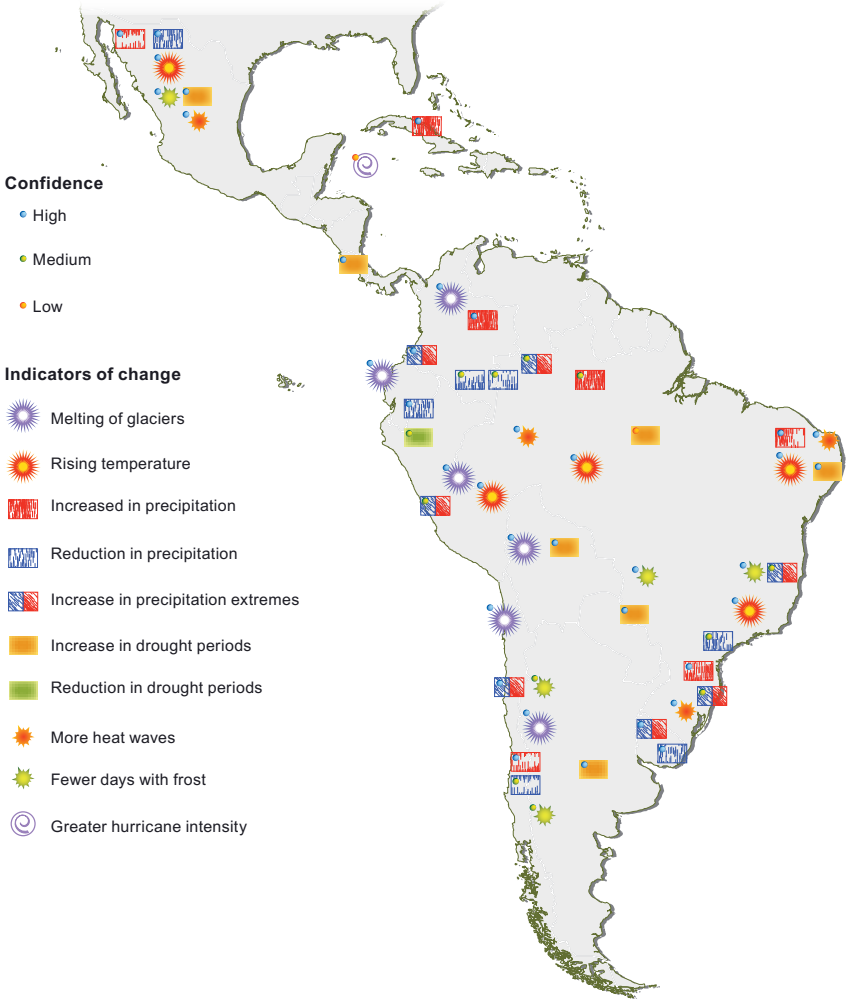
B. Climate change and agriculture

The impact of climate change in Latin America and the Caribbean will be considerable, owing to the region's economic dependence on agriculture, the low adaptive capacity of its population and the geographical location of certain countries. In the north-east of Brazil, part of the Andean region and Central America, climate change is expected to impact crop yields and local economies, and compromise food security. Also expected are displacements —in altitude and latitude— of the optimum zones for growing major species such as coffee, sugarcane, potatoes and maize, among others. Moreover, pressure of diseases and pests is forecast to increase, along with a reduction in the availability of water for food production and other uses in the semi-arid zones and tropical Andes. This is the result of the retreat of glaciers, reduced rainfall and increased in evaporative-transpiration in the semi-arid zones (Magrin, 2015).

According to existing models, agriculture in Latin America and the Caribbean is the economic activity most affected by climate change; and the countries whose crop farming sectors are likely to be hardest hit by climate change (Ecuador, El Salvador, Paraguay, Honduras, Nicaragua and the Plurinational State of Bolivia) are those that already have food security problems, according to information from the Food and Agriculture Organization of the United Nations (FAO) in 2015.

Although some of the region's countries have made progress in designing climate change adaptation plans for the agriculture sector, it is a major challenge. Without considering the necessary policy changes and in terms of financial resources alone, needs are estimated at around 0.02% of regional GDP per year (ECLAC, 2015a).

Map V.4
Latin America and the Caribbean: synthesis of climate change patterns projected to 2100



Source: United Nations Environment Programme (UNEP)/Economic Commission for Latin America and the Caribbean (ECLAC), *Gráficos vitales del cambio climático para América Latina y el Caribe. Edición especial para la CP16/CP-RP 6, México*, Bogota, 2010.
Note: The confidence indicators are based on the statistically significant coincidence in the sign of change in a given number of models (at least 80% of them for a high confidence level, between 50% and 80% for a medium level and below 50% for a low level of confidence).

Between 2008 and 2015, studies were made of the economics of climate change in various Latin American and Caribbean countries. The key objective of this regional initiative was to demonstrate the economic importance that climate change will have for societies, productive systems, and the natural heritage of the region's countries over the next 100 years, to provide national and local policymakers with a tool enabling them to incorporate the relevant costs and benefits in their analysis. In this framework, the potential impacts of climate change were evaluated, adaptation alternatives were studied, and projections of greenhouse gas emissions were analysed, along with the mitigation options for each country. A methodology inspired in the 2007 Stern Report on the Economics of Climate Change was used, with projections of changes in temperature and precipitations in the different regions of the countries based on climate models. The economic impacts were determined on the main sectors affected such as agriculture and food security, water resources, health and the impact on coastal zones, among others.

Map V.5
Latin America and the Caribbean: climate change impacts expected for 2050

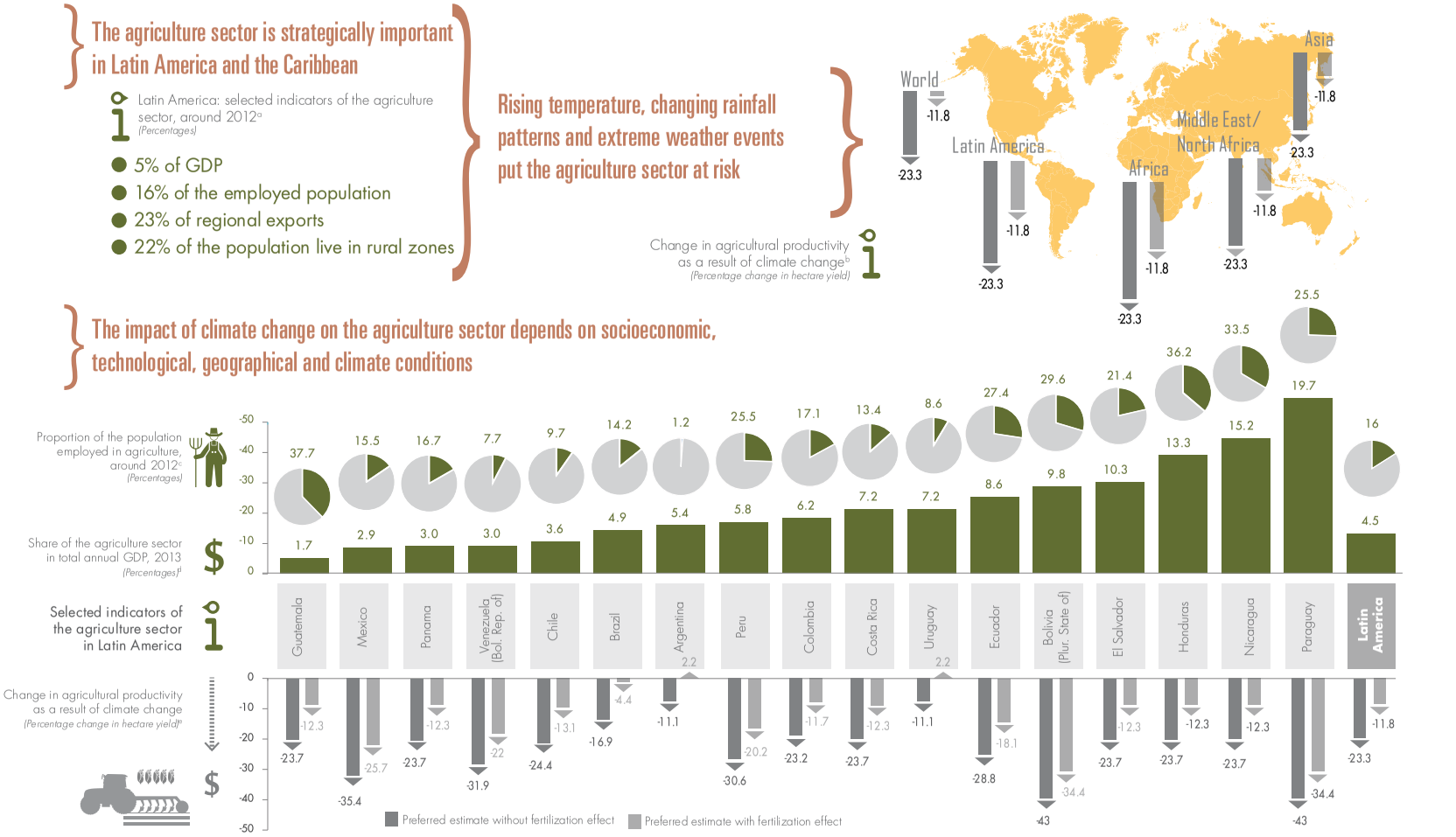
Source: United Nations Environment Programme (UNEP)/Economic Commission for Latin America and the Caribbean (ECLAC), *Gráficos vitales del cambio climático para América Latina y el Caribe. Edición especial para la CP16/CP-RP 6, México*, Bogota, 2010.

In the case of Central America, subsistence farmers account for 60% of the region's farmers. Projections in a very pessimistic scenario, with a greater increase in temperature,[1] show a growing number of departments in which hectare yields decline, both in maize and in beans, two of the main crops in the subregional diet.

[1] Up to the Fifth Assessment Report of the Inter-governmental Panel on Climate Change (IPCC) with the aim of providing comprehensive assessments of the state of scientific, technical and socioeconomic knowledge on climate change, its causes, possible repercussions and response strategies; there were different scenarios depending on variables such as population, economic activity, mitigation efforts, and so forth. The A2 family of scenarios projected the highest increase in temperature, and A2 the lowest. The A1B scenario characterizes a development of energy technologies with a balanced use of energy sources (both fossil and non-fossil). The B1 family of scenarios projects global solutions aimed at achieving economic, social and environmental sustainability, but in the absence of additional climate initiatives. Since the aforementioned report, four new emission scenarios have been defined, known as Representative Concentration Paths (RCP). These are characterized by their total radiative forcing (RF) for 2100, which varies between 2.6 and 8.5 W/m2. Most of the studies still relate to the previous scenarios.

Diagram V.1
Latin America and the Caribbean: economic impacts of climate on the agriculture sector

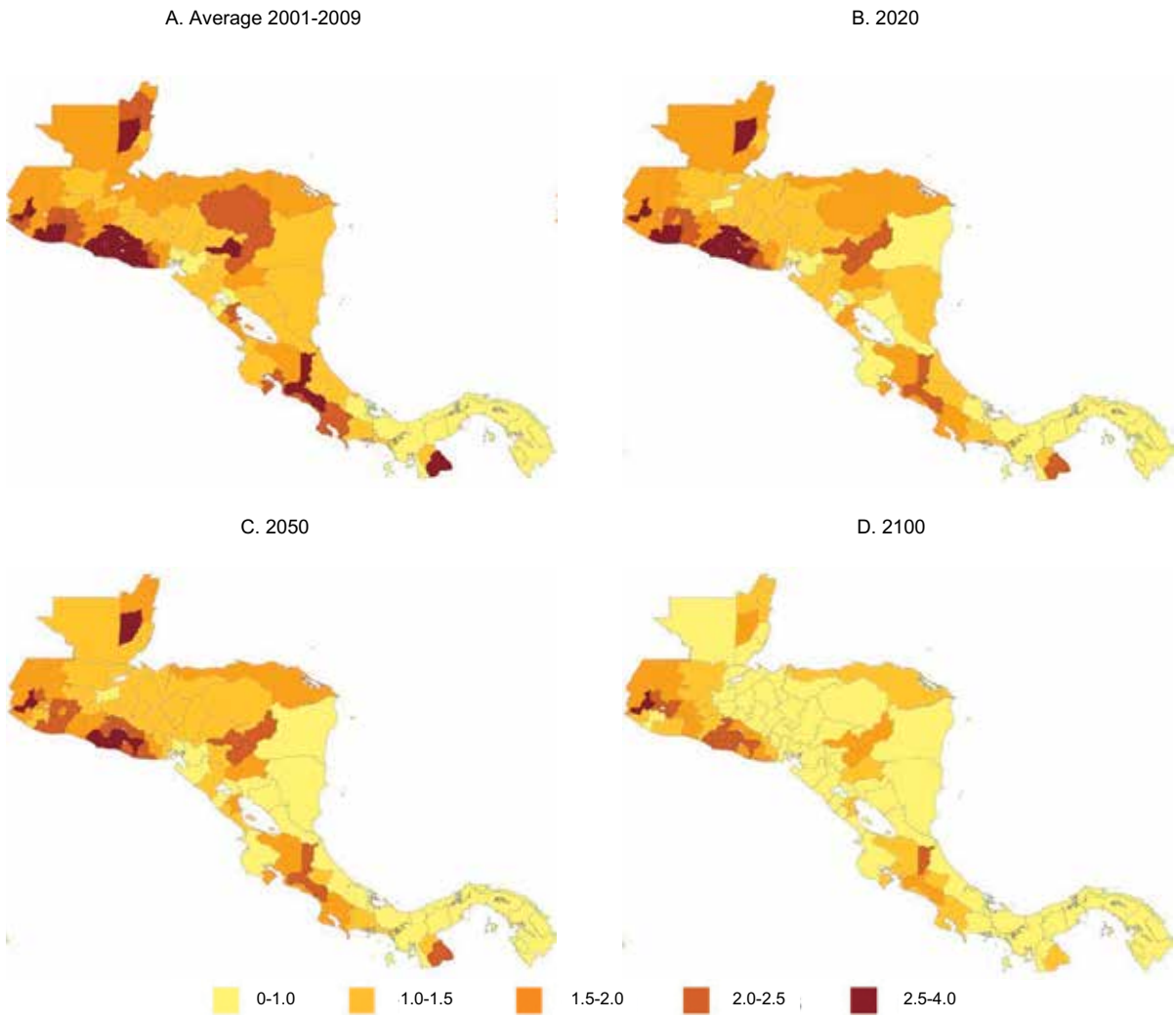
ECONOMIC IMPACTS OF CLIMATE ON THE AGRICULTURE SECTOR



▸ [a] ECLAC, CEPALSTAT. ▸ [b] Cline, W. (2008), "Global warming and agriculture", Finance and Development. ▸ [c] ECLAC, CEPALSTAT on the basis of household surveys. ▸ [d] ECLAC, CEPALSTAT on the basis of official country data. ✦ Includes crop-raising, livestock-raising, hunting, forestry and fishing. The figures for Argentina come from the World Bank. ▸ [e] Cline, W. (2007), Global warming and agriculture: impact estimates by country, Peterson Institute. ✦ The impact of climate change on the agricultural sector was calculated as a linear function of the preferred impact estimate for 2080 given in Cline (2007). The impact shown for Latin America and the Caribbean is a simple average. It is assumed that the impact given for Paraguay is the same as that shown under the heading "Other South American countries"; the impact for Uruguay is the same as for Argentina. ▸ [f] Values obtained from the World Bank. ▸ Some of the graphical elements included in this infographic were designed by Freepik.com.

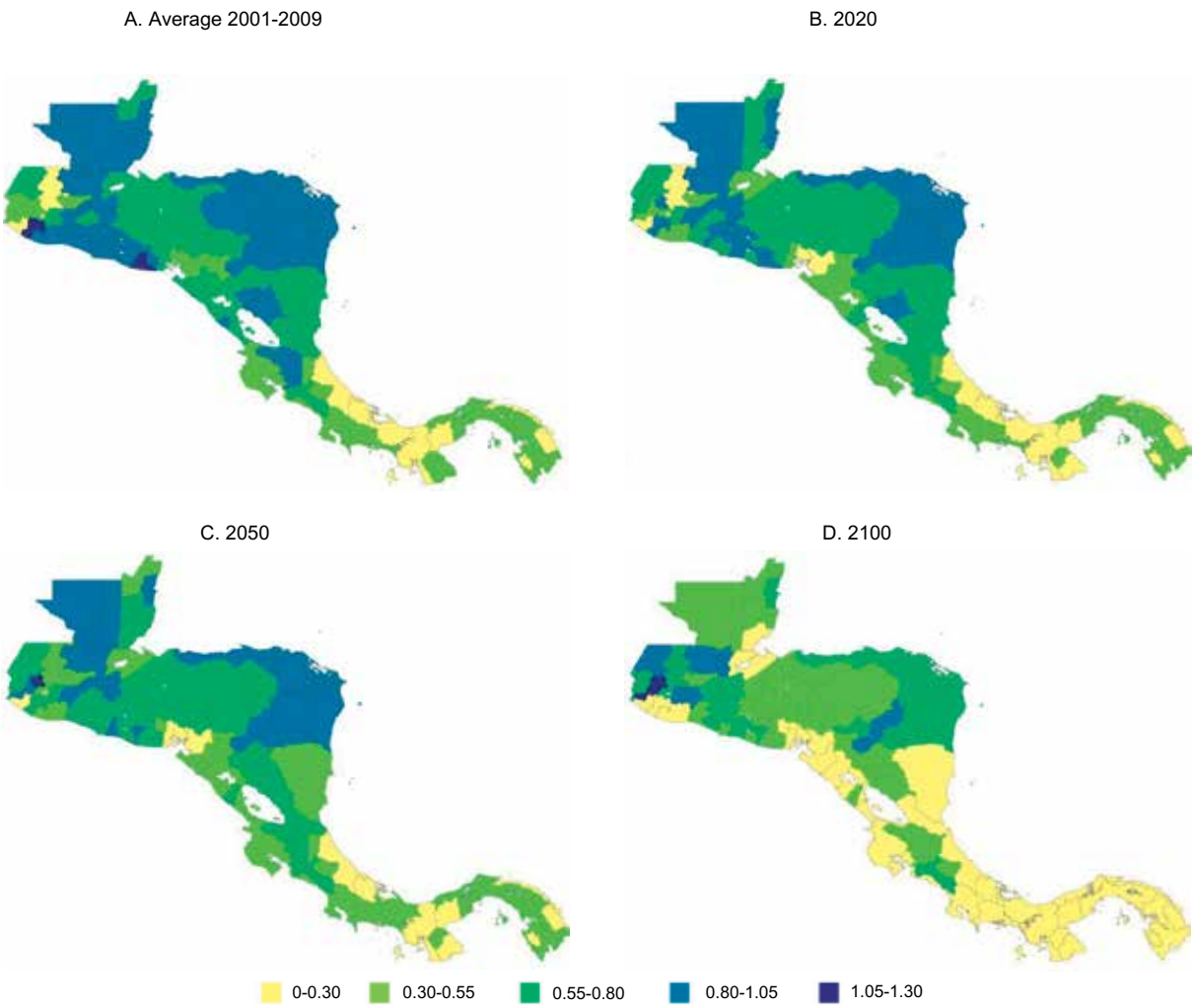
Source: Economic Commission for Latin America and the Caribbean (ECLAC).

Map V.6
Central America: maize yields by department, 2001-2009 average and scenario A2[a], up to 2100
(Tons per hectare)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), *Climate Change in Central America: Potential Impacts and Public Policy Options* (LC/MEX/L.1196), Santiago, 2015.
[a] Scenario A2 corresponds to the highest temperature increase scenario of the set of scenarios defined prior to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) (2014).

Map V.7
Central America: bean yields by department, 2001-2009 average and scenario A2[a], up to 2100
(Tons per hectare)



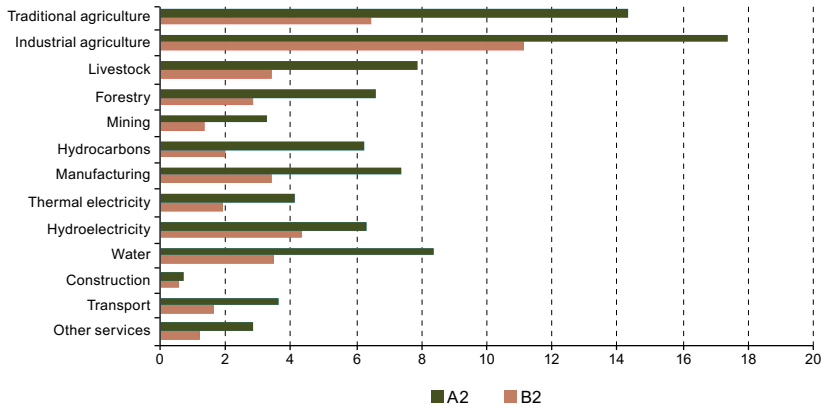
Source: Economic Commission for Latin America and the Caribbean (ECLAC), *Climate Change in Central America: Potential Impacts and Public Policy Options* (LC/MEX/L.1196), Santiago, 2015.
[a] Scenario A2 corresponds to the highest temperature increase scenario of the set of scenarios defined prior to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) (2014).

In the Plurinational State of Bolivia, the impact of changes in temperature and precipitation is likely to reduce rural incomes by an average of 20%. The Department of Potosí, the country's poorest, will be the worst affected, with rural incomes falling by 34% (ECLAC, IDB, 2014).

The same study shows how traditional agriculture and agribusiness in the Plurinational State of Bolivia would be the worst affected sectors in 2100, in the scenarios of greatest temperature increase (A2) and least temperature increase (B2).

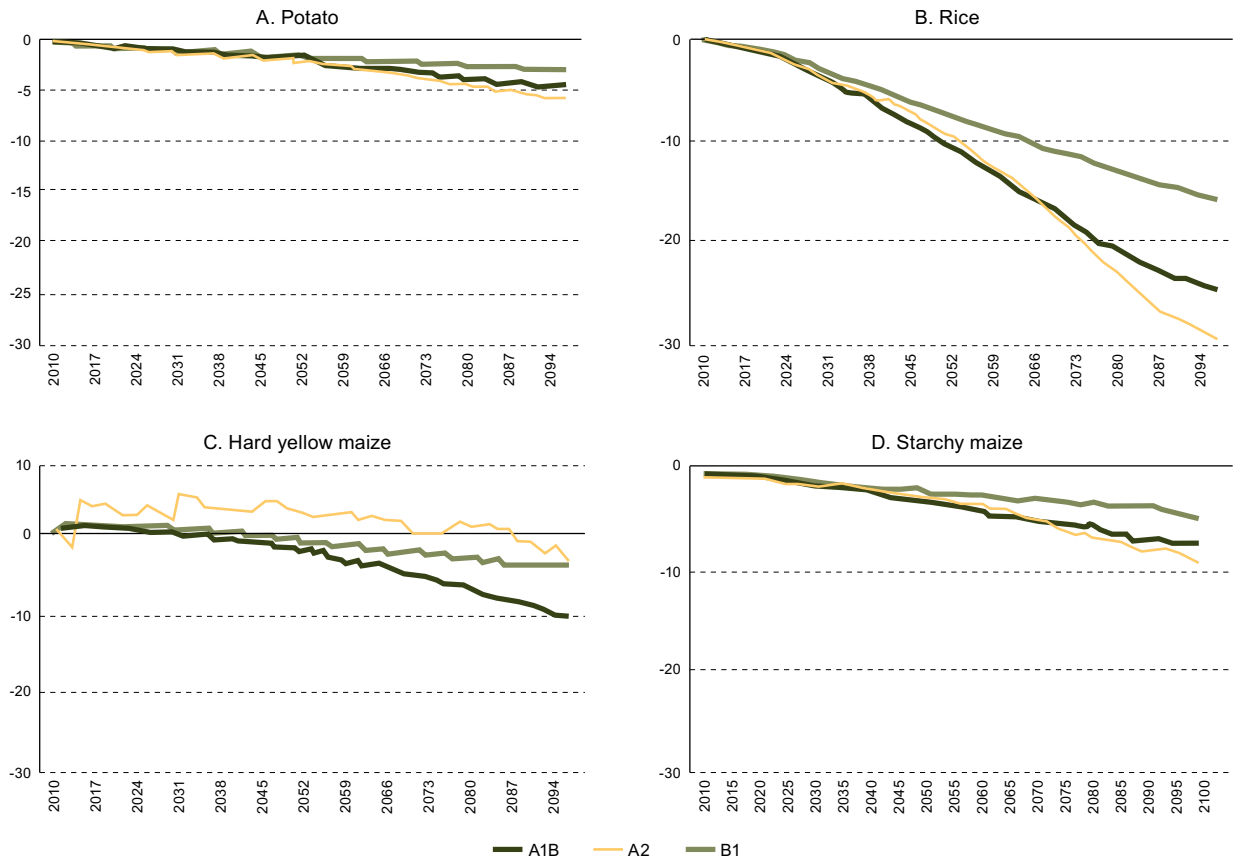
In the case of Peru, the projections show that the impact of climate change on agriculture is likely to generate decreased production of several basic crops under all scenarios, especially those requiring more water such as rice, which would be most serious in the highest temperature rise scenario (A2).

Figure V.1
Plurinational State of Bolivia: sectoral GDP losses under the base scenario and scenarios A2 and B2[a]
(Percentages of the net present value of sectoral GDP)



Source: Inter-American Development Bank (IDB)/Economic Commission for Latin America and the Caribbean (ECLAC), *La economía del cambio climático en el Estado Plurinacional de Bolivia*, Project Document (LC/W.627), Santiago, 2014.
Note: The figures are calculated using a 0.5% discount rate.
[a] A2 and B2 correspond, respectively, to the highest and lowest temperature rise scenario, respectively, of the set of scenarios defined prior to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) (2014).

Figure V.2
Impact of climate change on the value of the production of selected crops under scenarios A1B, A2 and B1, 2010-2100
(Percentage variation)

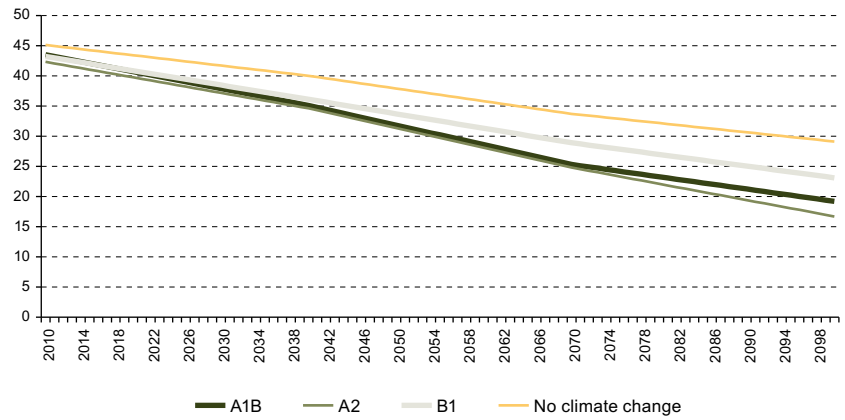


Source: Inter-American Development Bank (IDB)/Economic Commission for Latin America and the Caribbean (ECLAC), *La economía del cambio climático en el Perú. Síntesis*, Project Documents (LC/W.640), Santiago, ECLAC, 2014.
Note: Scenario A1B is characterized by the development of energy technologies that make a balanced use of fossil and non-fossil sources; A2 corresponds to the highest temperature increase scenario; and B1 is characterized by global solutions aimed at economic, social and environmental stability, but in the absence of additional climate-related initiatives (from the set of scenarios defined prior to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) (2014)).

High Andean livestock activity is also important for food security. Projections show that the livestock carrying capacity of the Puna ecoregion would be adversely affected by climate change, with effects manifesting themselves in variations in plant coverage and land use. The contribution of this zone to the national economy would decline considerably, and the food security of population groups that depend on this activity would be compromised. Up to late 2010, there were 6,609 recognized campesino communities in Peru, characterized by their high level of poverty, working mainly in extensive livestock grazing. These campesino families account for roughly 69% of rural families, and 30% of all families in the country. The results for the analysis of the three climate scenarios suggest a progressive reduction in ecosystem carrying capacity and a reduction in the available area of grazing lands.

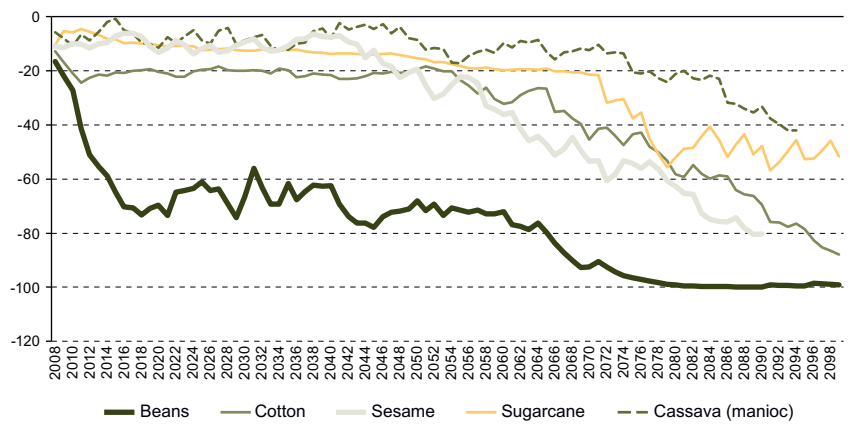
A similar but more fluctuating trend is projected in Paraguay, with falling yields in the main family farming crops under the highest temperature increase scenario (A2).

Figure V.3
Peru: impact of climate change on total animal load for the puna, under scenarios A1B, A2, and B1, 2010-2100
(Millions of head of sheep)



Source: Inter-American Development Bank (IDB)/Economic Commission for Latin America and the Caribbean (ECLAC), *La economía del cambio climático en el Perú. Síntesis*, Project Documents (LC/W.640), Santiago, ECLAC, 2014.
Nota: Scenario A1B is characterized by the development of energy technologies that make a balanced use of fossil and non-fossil sources; A2 corresponds to the highest temperature increase scenario; and B1 is characterized by global solutions aimed at economic, social and environmental stability, but in the absence of additional climate-related initiatives (from the set of scenarios defined prior to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) (2014)).

Figure V.4
Paraguay: variations in family farming crop yields, projections under the A2 scenario[a] with respect to the baseline, 2008-2098
(Percentages)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), *La economía del cambio climático en el Paraguay*, Project Documents (LC/W.617), Santiago, 2014.
[a] Scenario A2 corresponds to the highest temperature increase scenario of the set of scenarios defined prior to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) (2014).

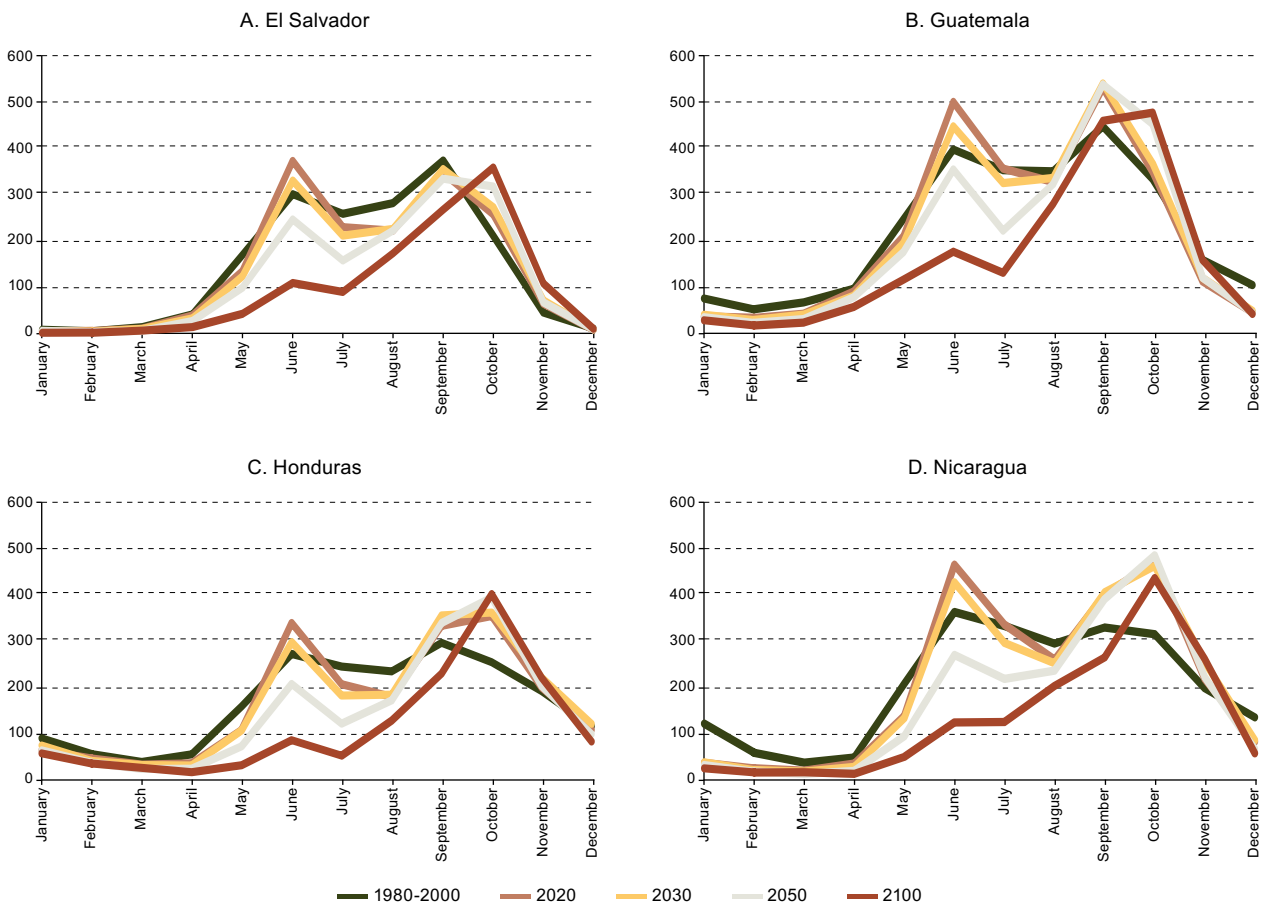
C. Consequences of changes in the annual distribution of precipitations

Owing to climate change, variations in the annual volume and distribution of precipitation are forecast, with intense rainfall set to increase by roughly 7% for every degree Celsius by which temperature rises (UNEP, 2012).

The increase in rainfall intensity has adverse consequences for agriculture, such as increased erosion, an increase in run-off with a loss of available water, and even damage to the crops themselves. In the plants' growth phase there are critical periods in which water availability is essential. Changes in the distribution of rains throughout the year could endanger the production of milpa (agroecosystem with simultaneous maize, bean and squash crops), which constitute the base of rural diet in Meso-America.

In the period spanning 1950 to 2000, in the Central American zones located by the Pacific Ocean there was a dry season and another rainy one, with the first peak in June and a decline in July and August (heat wave or Indian summer), and another peak in September and October, normally more intensive than the first. Under scenario A2, the bimodal pattern of precipitation is expected to accentuate in the next few decades, with increases in both high rainfall periods and reduction during the Indian summer period. Subsequently, the rains of the first period are expected to gradually decline, leaving a single annual peak between October and November.

Figure V.5
Central America (selected countries): monthly precipitation, monthly average 1980-2000 and scenario A2[a], up to 2100
(Millimetres)

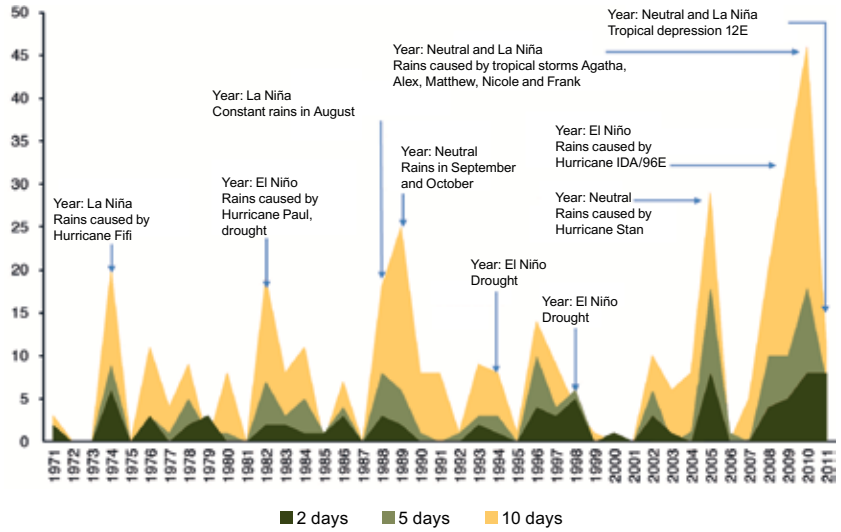


Source: Economic Commission for Latin America and the Caribbean (ECLAC), *Climate Change in Central America: Potential Impacts and Public Policy Options* (LC/MEX/L.1196), Santiago, 2015.

[a] Scenario A2 corresponds to the highest temperature increase scenario of the set of scenarios defined prior to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) (2014).

As regards rainfall intensity, the precipitation records of the municipality of Ilopango in El Salvador show an increase in rainfall events lasting 10 consecutive days. Although there is no analysis with an extensive universe of rainfall records, the precipitation records in Ilopango make it possible to observe the trend projected in the climate change models (ECLAC, 2015b).

Figure V.6
Ilopango (El Salvador): number of events surpassing thresholds, 1971-2011
(Number of events)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), *Climate Change in Central America: Potential Impacts and Public Policy Options* (LC/MEX/L.1196), Santiago, 2015.
Note: The drought events are those recorded in the international database on emergency events (EM-DAT) [online] http://www.emdat.be. The graph did not include data for 1987 because the daily records were incomplete. Information for 2011 includes up to 31 October. The thresholds correspond to 100 mm, 150 mm and 200 mm of rainfall accumulated in 2, 5 and 10 consecutive days, respectively.

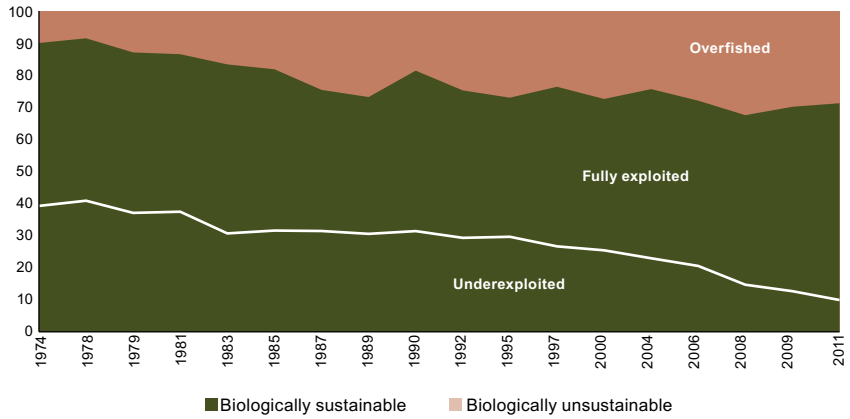
In 2014, Central America was hit by a major drought that affected the production of the first basic grain crop, particularly maize and beans. Lack of rainfall occurred precisely during the most critical phases of crop development (27 consecutive days in a total of 45 days without rain between July and August). Over 500,000 families in El Salvador, Guatemala, Honduras and Nicaragua were registered as suffering from serious food insecurity as a result of the severe drought.

D. Fishing and aquaculture: unsustainable management of fisheries and effects of climate change

Latin America and the Caribbean is home to three of the world's major marine ecosystems: the most important is the Humboldt current system (Chile, Ecuador and Peru) which concentrates roughly 20% of total fish capture worldwide. The Patagonian platform (Argentina and Uruguay) and the southern Brazil platform are other important ecosystems. Fishery and aquaculture production in the region amounted to roughly 13.5 million tonnes in 2014 (8% of global production) of which 79% corresponded to captures and 21% to aquaculture. Ninety per cent of this production occurs (in descending order) in Peru, Chile, Mexico, Brazil, Ecuador and Argentina. Paradoxically, the region is a net exporter and has the world's lowest per capita consumption, along with Africa (9.7 kg per person per year) —roughly half of the world average (FAO, 2014).

Worldwide, roughly 29% of fish stocks were being exploited at a biologically unsustainable level (overfished) in 2011. In the region, a number of species such as Argentina hake and Brazilian sardinella are considered overfished; while the status of Argentine squid is between fully exploited and overfished.

Figure V.7
Global trends in the status of global marine fish stocks, 1974-2011
(Percentages of the populations evaluated)



Source: Food and Agriculture Organization of the United Nations (FAO), *The State of World Fisheries and Acquaculture 2014*, Rome, 2014.
Note: The line divides populations that are fished at a biologically sustainable level in two subcategories: fully exploited (above the line) and under exploited (below the line).

In terms of the repercussions of climate change on marine and aquatic ecosystems, there are still many gaps in the information. In the case of maritime fishing, changes in water temperature, ocean currents, acidification and other conditions affect fishery productivity. Temperate water species are migrating towards the poles.

The various factors stemming from climate change that could affect fishery and aquaculture productions include the following:

- Rising sea levels, retreat of glaciers, changes in rainfall patterns and the intensity and frequency of phenomena such as El Niño/La Niña. These factors will affect the stability of marine and continental resources in the regions affected. It will reduce areas devoted to aquaculture in coastal zones and will also require a change in fishing practices and the location of ports.
- Ocean acidification. pH levels have declined from an average of around 8.2 in the preindustrial era to roughly 8.1 today; and they could fall to 7.8% by 2100 (UNEP, 2012). Acidification affects coral reefs and species that are critical to ocean food webs, including several important human food sources such as crustaceans and molluscs.

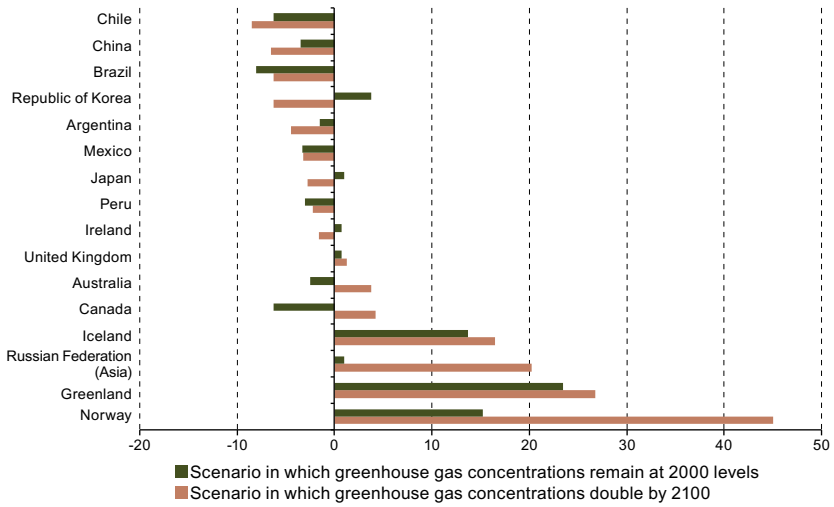
Aquaculture and continental-shelf fishing, however, will be affected in some regions, by water stress and competition for water. Variations are also expected in the abundance of species used to produce food and meal. Aquaculture systems that have little or no reliance on inputs of fishmeal (such as bivalves and macro algae), are considered to have better chances of expansion than productive systems that depend on the products of fish capture.

In terms of food security, climate change will affect the availability of foods, the stability of supplies and access to foods of aquatic origin, owing to changes in livelihoods and in levels of captures or harvest possibilities.

There are models that forecast significant changes in capture potential between regions. In general, captures will increase in high latitudes and decline in the tropics, areas that are more socioeconomically vulnerable. This will have consequences for global food security, particularly communities in tropical areas that depend on fishing for food and income.

Changes in the distribution of captures will adversely affect the region's main fisheries, and fishing activity in Argentina, Brazil, Chile, Mexico and Peru, as illustrated in the figure below.

Figure V.8
Climate change and variations in the potential distribution of fish captures among selected countries, estimates for 2100
(Percentages)



Source: The Pew Environment Group, "Redistribution of Fish catch by climate change, a summary of a new scientific analysis", W.W.L. Cheung and others, Ocean Science Series, October 2009 [online] http://www.seaaroundus.org/wp-content/uploads/2015/04/Pew-OSS-Final-climate-change-and-fisheries.pdf.
Note: Two scenarios are considered for possible levels of greenhouse gas emissions. In the first scenario, emissions continue to grow in line with the current trend, so they will double by 2100; the second scenario assumes that greenhouse gas concentrations remained constant at the 2000 levels.

Alternatives for increasing the capacity for recovery, adaptation and also the resilience of fishery resource ecosystems includes the adoption of ecosystemic approaches in fishing and aquaculture, as proposed in the Sustainable Development Goals.

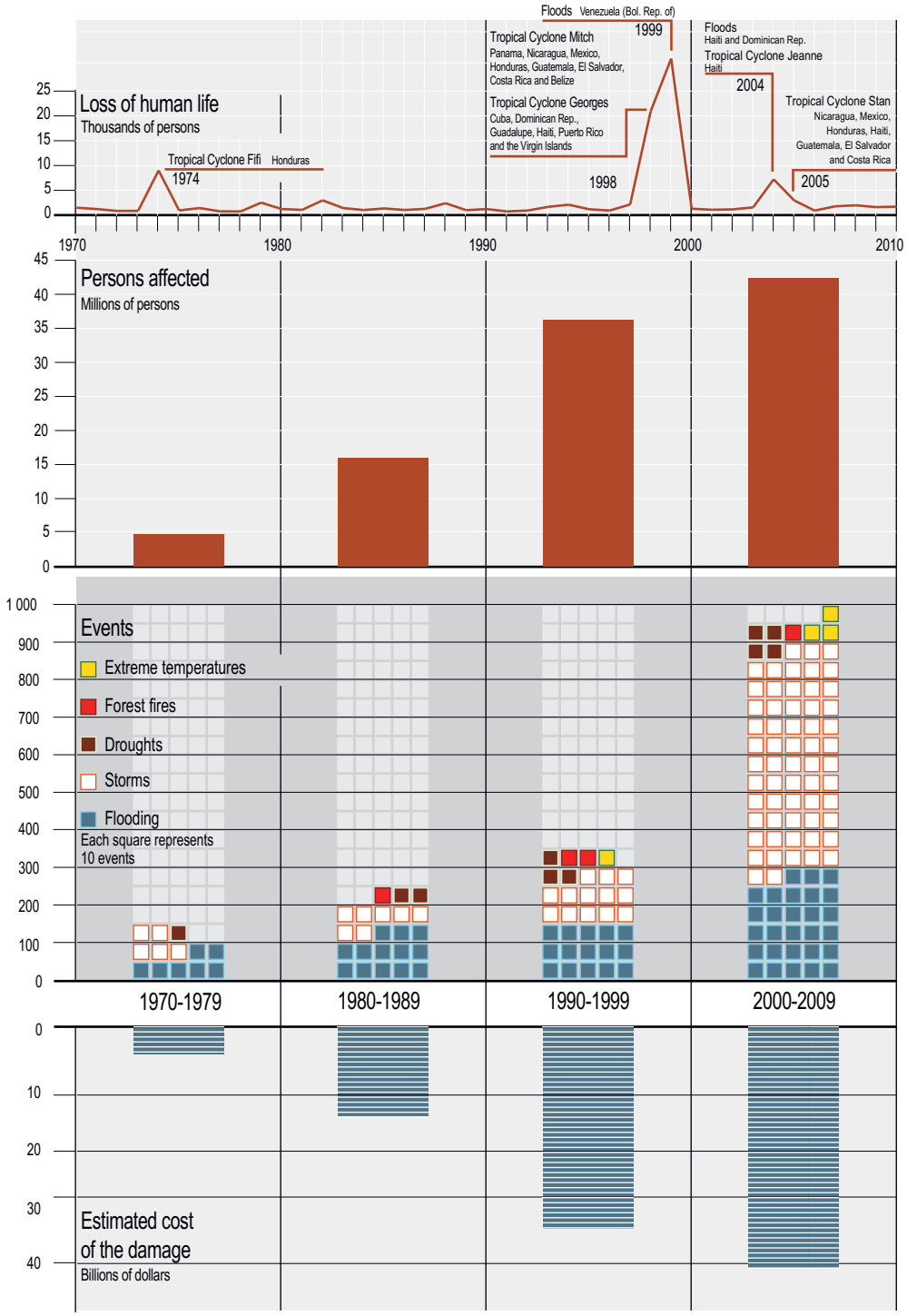
E. The occurrence of disasters

In Latin America and the Caribbean, there has recently been an increase in extreme weather events and the number of people affected. The number of storms occurring between 2000 and 2009 were 12 times the number in 1970-1979; and floods quadrupled in the same period. The number of persons affected by extreme temperatures, forest fires, droughts, storms and flooding rose from 5 million in the 1970s to over 40 million in the 2000 decade, as a result of the growth of human settlements in the region's marginal urban zones and also the greater vulnerability of coastal zones to these events. The estimated costs of damage caused by these extreme weather events in the last 10 years exceeds US$ 40 billion (UNEP/ECLAC, 2010).

There is robust evidence of the relation that exists between climate change and potential extreme weather phenomena. The patterns of climate change projected for the end of this century in the region suggest that Central America and the Caribbean will experience more intense hurricanes, together with a reduction in precipitation and thus an increase in drought episodes. These events cause loss of life, and also destroy property, and livelihoods, and thus weaken the food and nutritional security of the most vulnerable population groups. The poorest inhabitants of rural zones are normally the most vulnerable to the disasters, because they occupy more marginal land and have few resources, so they are forced to engage in unsustainable productive activities in zones exposed to all types of climate threat. They also have a very low recovery capacity, partly owing to the heavy burden of poverty —a situation that is compounded by lack of climate risk preparedness.

Extreme weather events usually bring with them a short-term adverse effect on the population's well-being and a weak or hard-to-identify effect in the medium and long-term. These effects depend, among other factors, on the severity and type of disaster, the sector of the economy, the structure and composition of the economy, and the per capita income level. Developing countries are worse hit than developed ones. Analysis of data obtained from 84 countries over 48 years shows that the worst droughts also undermine GDP growth (-1%) and agricultural growth (-2.2%) (Loayza and others, 2009). Floods can also subsequently generate increases in agricultural productivity.

Diagram V.2
Latin America and the Caribbean: hydrometeorological phenomena, 1970-2009



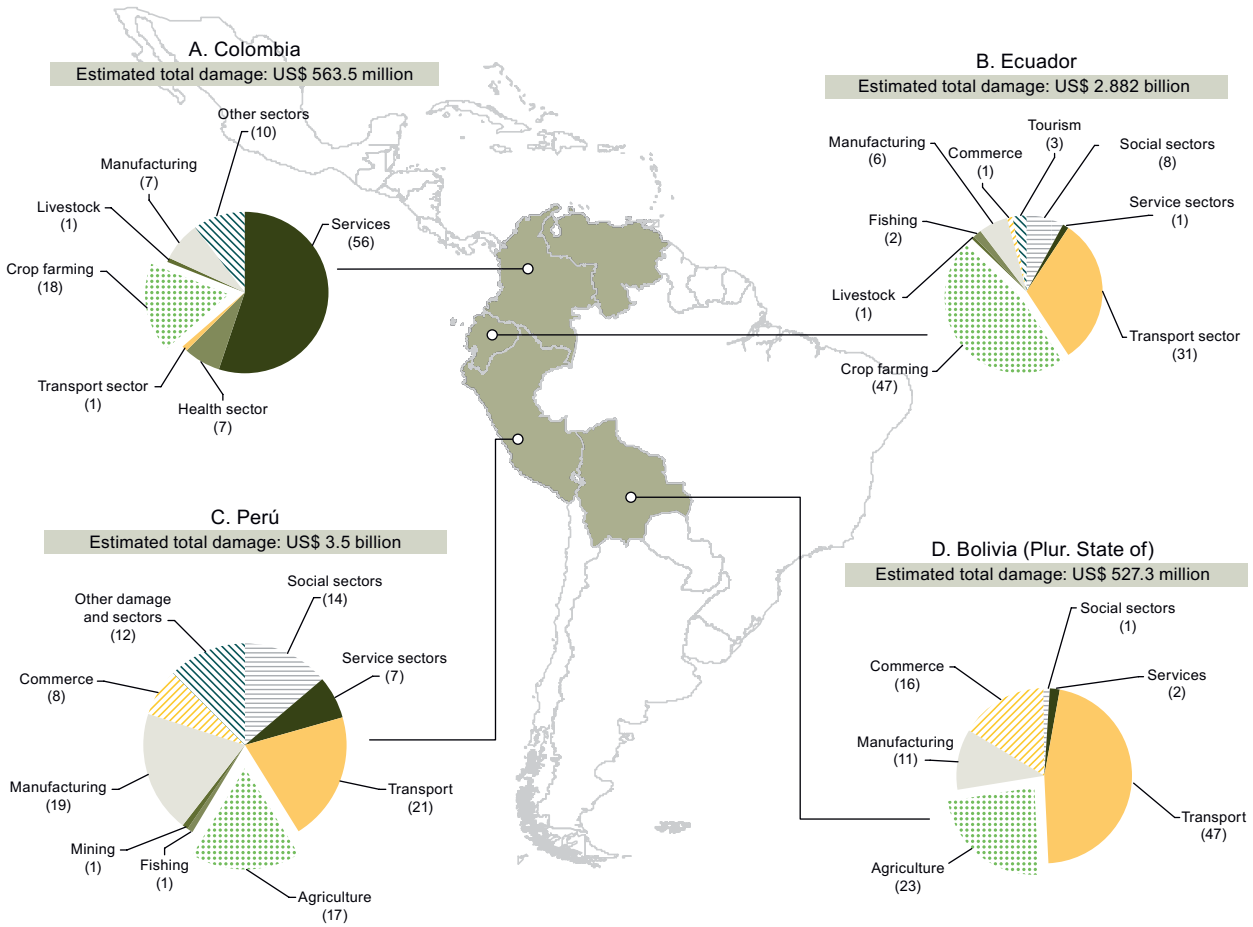
Source: United Nations Environment Programme (UNEP)/Economic Commission for Latin America and the Caribbean (ECLAC), *Gráficos vitales del cambio climático para América Latina y el Caribe. Edición especial para la CP16/CP-RP 6*, México, Bogota, 2010.

Table V.2
Latin America and the Caribbean: the impact of severe natural disasters on economic growth[a]
(Percentages)

Natural disaster	Area of impact			
	GDP growth	Agricultural growth	Industrial growth	Growth in services sector
Drought	-1.0 [b]	-2.2 [b]	-1.0 [c]	0.3
Floods	0.3	0.6	0.1	0.4
Earthquakes	-0.0	-0.1	0.3	0.0
Storms	-0.9 [d]	-0.8 [d]	-0.9	-0.9

Source: Economic Commission for Latin America and the Caribbean (ECLAC), *The economics of climate change in Latin America and the Caribbean: Paradoxes and challenges of sustainable development* (LC/G.2624), Santiago, 2015.
[a] The effects are estimated on the rate of GDP growth and not on its level. Thus, a serious drought could cut the growth of total GDP and industrial GDP by 1%, whereas the growth of agricultural GDP might decline by 2.2%.
[b] Significant at 1%.
[c] Significant at 10%.
[d] Significant at 5%.

Figure V.9
Colombia, Ecuador, Peru and Plurinational State of Bolivia: estimation of the damage caused by the El Niño phenomenon, 1997-1998
(Millions of dollars and percentage distribution by sectors)



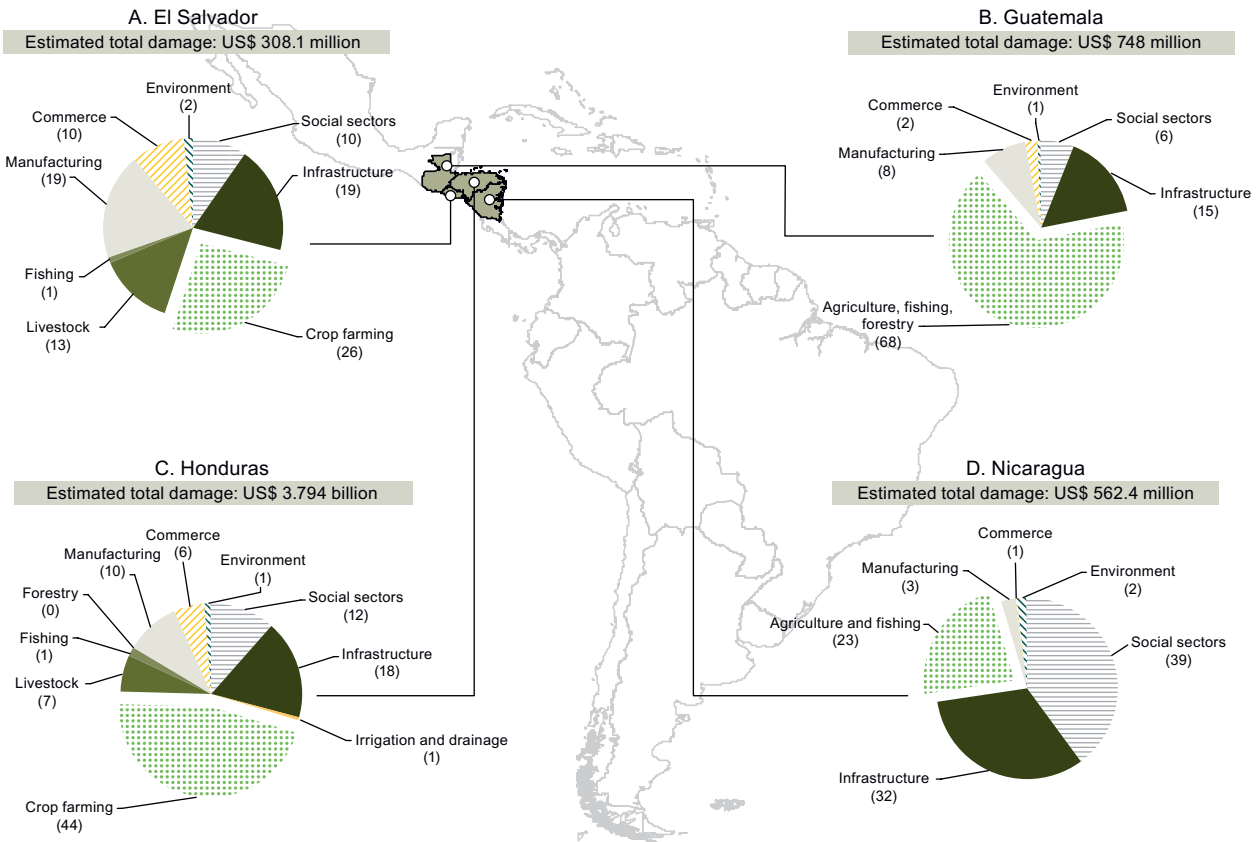
Source: Economic Commission for Latin America and the Caribbean (ECLAC), *Indicadores para el seguimiento del Plan AGRO 2015. Actualización 2007*, Project Documents (LC/W.157), Santiago, 2007.

The crop-farming sector regularly suffers more intensively from natural disasters, which suggest that some subregions, such as Central America and the Caribbean, are particularly sensitive to these phenomena. There are other effects associated with the occurrence of the disasters, such as reduced school attendance, which fosters malnutrition.

The agriculture sector was the worst affected by the two largest disasters suffered in the region (the 1997-1998 El Niño episode) and Hurricane Mitch in 1998. Estimates made by the Economic Commission for Latin America and the Caribbean (ECLAC), of the impact of the two events on the different economic sectors of the affected countries, show that the greatest damage was caused by the 1997-1998 El Niño, which affected several Andean countries and caused total damage estimated at US$ 7.5 billion for the four countries analysed, of which US$ 2.3 billion or 30.7% corresponds to damage in the crop-farming sector. In Central America, Hurricane Mitch caused total damage estimated at US$ 5.4 billion, of which US$ 2.7 billion or 50% directly affected the crop-farming sector.

Many of the region's countries are already lagging behind in terms of adapting to extreme events. Climate change is forcing them to boost their adaptation efforts, particularly in the crop-farming sector.

Figure V.10
El Salvador, Guatemala, Honduras and Nicaragua: estimation of damage caused by Hurricane Mitch, 1998
(Millions of dollars and percentage distribution by sectors)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), *Indicadores para el seguimiento del Plan AGRO 2015. Actualización 2007*, Project Documents (LC/W.157), Santiago, 2007.

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Chapter VI

The policy agenda of the CELAC Plan for Food and Nutrition Security and the Eradication of Hunger 2025 and the targets of the Sustainable Development Goals

A. Success factors in fulfilling target 1C of the Millennium Development Goals: foundation for achieving the Sustainable Development Goals
B. How to address the new challenges posed by the Sustainable DevelopmentGoals? The CELAC Plan for Food and Nutrition Security and the Eradication of Hunger 2025 as a regional response to the challenges of the international agenda

Chapter VI

A. Success factors in fulfilling target 1C of the Millennium Development Goals: foundation for achieving the Sustainable Development Goals

Target 1C of the Millennium Development Goals to halve, between 1990 and 2015, the proportion of people who suffer from hunger, allowed the region to understand the importance that should be attached to food and nutrition security on the regional public agenda, the need to sustain the political commitment and afford broader governance to ensure that State interventions are effective, good-quality and well-oriented, and the relevance of building institutions for food and nutrition security through public instruments, laws, programmes and social policies.

1. Food and nutrition security on the regional public agenda

The January 2015 signing of the CELAC Plan for Food and Nutrition Security and the Eradication of Hunger 2025 represented the consolidation of a long process of political discussion to include food and nutrition security on the Latin America and the Caribbean regional public agenda.

In 2005, the region launched the Latin America and the Caribbean without Hunger 2025 initiative, which set the goal of eradicating hunger by 2025 and served as the basis for discussion of the food and nutrition security situation —both regionally, in supranational entities such as the Union of South American Nations (UNASUR), the Central American Integration System (SICA), the Caribbean Community (CARICOM) and the Southern Common Market (MERCOSUR), and also at the national level, in various specialized mechanisms of the region's countries.

The high-level political commitment that this process entailed, made it possible to place the problem of hunger and malnutrition on the regional public agenda, and it has enabled the individual countries to address the issue of food and nutrition security in a more integrated and comprehensive manner. The key feature of this new approach involves shifting the space in which the problem of hunger is addressed from the technical to the political sphere. This does not mean the loss of technical criteria, but rather their strategic adaptation to policy objectives with an integrated view.

2. Cross-cutting commitment to food and nutrition security: political commitment and experiences of broad-based governance

This approach, which is the outcome of the political commitment, can be characterized by three fundamental features: (i) the presence of more institutional dimensions for public policy design, which means expanding the traditional mechanisms of policy discussion and design, to add new institutional mechanisms of participation, and taking account of the variables inherent to political activity, to be able to forge the consensuses needed for the sustainable implementation of food and nutrition security strategies; (ii) recognition of the multisectoral nature of the hunger and malnutrition problem, which means implementing mechanisms of intersectoral coordination and broad-based governance for the design of more integrated policies, with multidisciplinary and inclusive means of execution and evaluation; and (iii) the implementation of food and nutrition security policies in a "dual track" logic, which includes

short-term measures to provide an immediate response to the effects of hunger and malnutrition, together with the application of medium- and long-term policies to make the processes of economic and social progress sustainable, thereby ensuring the stability of food and nutrition security.

3. Institutionalization of food and nutrition security in public instruments: laws and policies for food and nutrition security

The effects of this new approach to eradicating hunger and malnutrition manifest themselves most clearly in the growing presence of different types of instruments for the multisectoral approach to food and nutrition security. For example, seven of the region's countries have passed food and nutrition security laws, to provide an appropriate legal framework for the process of eradicating hunger and malnutrition. Moreover, about 20 Latin America and Caribbean countries have policies, plans or strategies covering the four dimensions of food and nutrition security, with designs that embrace the programmatic efforts of all public institutions whose field of action affects food and nutrition security.

This process has been enhanced by collaboration from stakeholders in an environment that is traditionally linked to the executive branch of government in each country, namely the discussion and design of public policies, to create suitable institutional instruments for the process of eradicating hunger and malnutrition. Firstly, the legislature has been fundamental not only in passing food and nutrition security laws, but also for including the human right to adequate food in policy debates, and in discussions on other laws and key sectoral regulations for reducing hunger, such as those related to family farming. Civil society has also been closely involved in the political process aimed at eradicating hunger and malnutrition; and its role has been strengthened in the broad-based governance mechanisms for food and nutrition security that have been set up in the different countries of the region.

These initiatives have underpinned the implementation of programmes to eradicate hunger, malnutrition and poverty over the last decade. The expansion of public policies such as conditional transfer programmes (CTPs), school meal programmes and their links to family farming through public procurement schemes or the establishment of public food supply systems, are just some of the policy measures that have placed Latin America and the Caribbean in an advantageous position for fulfilling the Sustainable Development Goals.

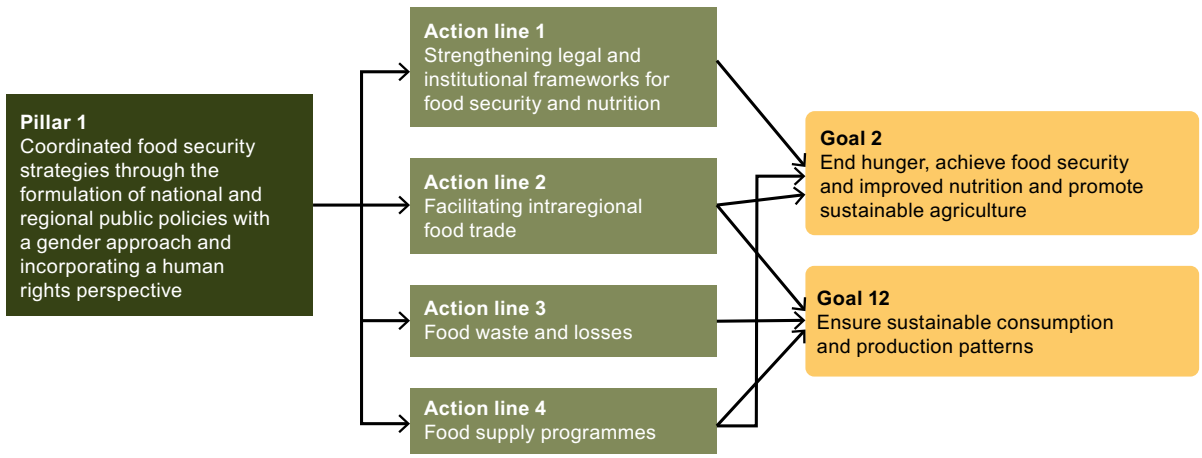
B. How to address the new challenges posed by the Sustainable Development Goals? The CELAC Plan for Food and Nutrition Security and the Eradication of Hunger 2025 as a regional response to the challenges of the international agenda

1. The pillars of the CELAC Plan for Food and Nutrition Security and the Eradication of Hunger 2025 and the Sustainable Development Goals: complementarity and areas for regional work

An analysis of the Sustainable Development Goals, adopted by the United Nations General Assembly in September 2015, shows that the Latin America and the Caribbean region is already on the way to achieving several of the targets not only of Goal 2 (End hunger, achieve food security and improved nutrition and promote sustainable agriculture), but also others such as Goal 1 (End poverty in all its forms everywhere) and Goal 8 (Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all), among others. This reflects the fact that most of the region's countries are already developing policy actions in the different areas identified in these targets; and, by signing the CELAC Plan for Food and Nutrition Security and the Eradication of Hunger 2025 they have also aligned with the vision of the Sustainable Development Goals —as evidenced by the Plan's human rights approach, targeting the most neglected countries and population groups, and the value of (mainly South-South) cooperation between the region's countries to achieve the targets.

Each of the four pillars of the CELAC Plan sets forth measures which, if implemented, could smooth the path that Latin America and the Caribbean has already embarked on to achieve the Sustainable Development Goals. Diagram VI.1 shows potential complementarities between the lines of action of pillar 1 of the CELAC Plan and the different Sustainable Development Goals.

Diagram VI.1
Action lines of pillar 1 of the CELAC Plan for Food and Nutrition Security and the Eradication of Hunger 2025 and how they relate to the Sustainable Development Goals



Source: Food and Agriculture Organization of the United Nations (FAO).

In particular, the measures proposed in pillar 1 of the CELAC Plan could have a major impact on the following Sustainable Development Goal targets: 2.1, By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round; 12.3, By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses; and 12.7, Promote public procurement practices that are sustainable, in accordance with national policies and priorities.

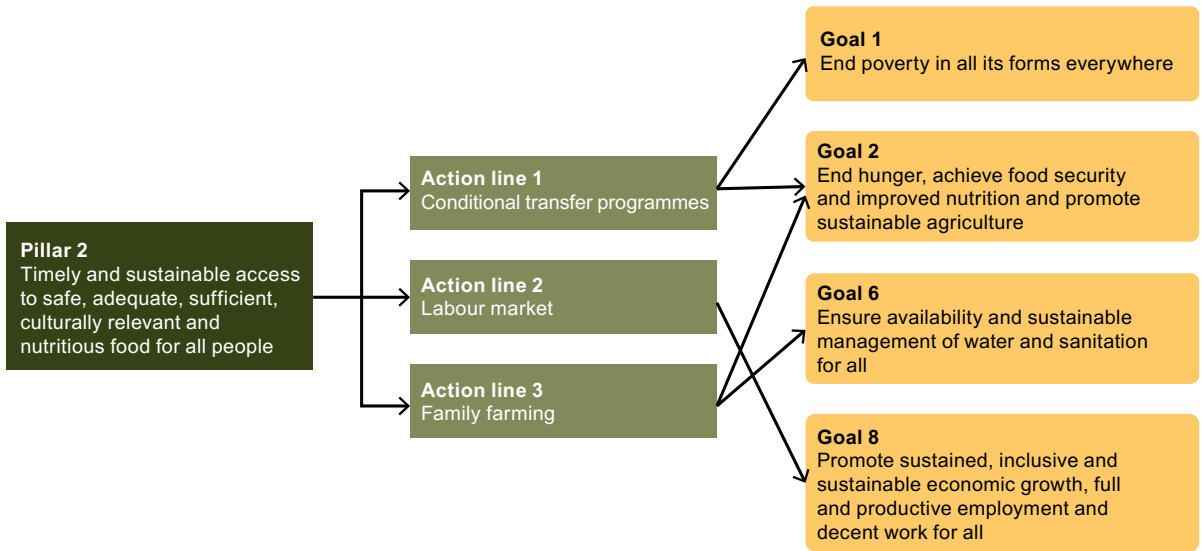
Pillar 2 of the CELAC Plan could also be a major factor for achieving not only Sustainable Development Goal 2, but others as well, as shown in diagram VI.2.

In the case of pillar 2 of the CELAC Plan, its proposals could have a major impact on achieving the following Sustainable Development Goal targets: 1.1, By 2030, eradicate extreme poverty for all people everywhere; 1.3, Implement nationally appropriate social protection systems and measures for all, including floors, and by 2030 achieve substantial coverage of the poor and the vulnerable; 2.3, By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment; 2.4, By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters, and that progressively improve land and soil quality; 6.4, By 2030, substantially increase water use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity; 8.5, By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value; 8.6, By 2020, substantially reduce the proportion of youth not in employment, education or training; and 8.8, Protect labour rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment.

The measures included in pillar 3 of the CELAC Plan also relate to Sustainable Development Goals 2 and 3, as shown in diagram VI.3. Apart from the targets indicated above, the actions proposed in this pillar could also

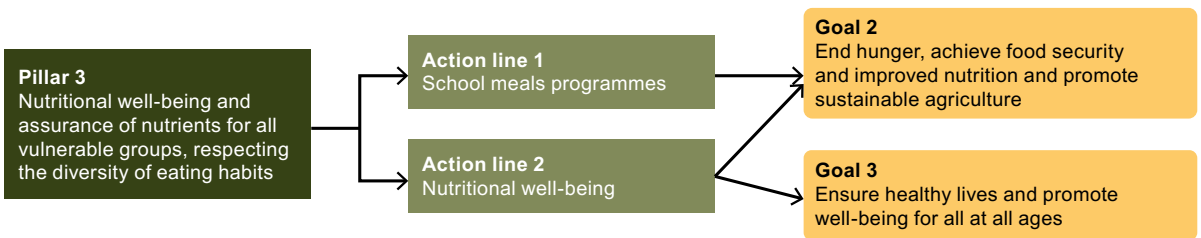
contribute to the following targets: 2.2, By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under five years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons; and 3.5, Strengthen the prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol.

Diagram VI.2
Action lines of pillar 2 of the CELAC Plan for Food and Nutrition Security and the Eradication of Hunger 2025 and how they relate to the Sustainable Development Goals



Source: Food and Agriculture Organization of the United Nations (FAO).

Diagram VI.3
Action lines of pillar 3 of the CELAC Plan for Food and Nutrition Security and the Eradication of Hunger 2025 and how they relate to the Sustainable Development Goals



Source: Food and Agriculture Organization of the United Nations (FAO).

Lastly, diagram VI.4 illustrates the potential relationship between the measures proposed in pillar 4 of the CELAC Plan and Sustainable Development Goal 13, particularly target 13.1 (Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries).

Given that paragraph 58 of United Nations General Assembly resolution 70/1, which adopted the 2030 Agenda for Sustainable Development, explicitly encourages ongoing efforts by States in other forums to address the issues raised in the Sustainable Development Goals, the approval of these goals becomes a development framework for which the CELAC Plan can serve as the main roadmap for the region's countries. This adds importance not only to the contents of the Plan, but also to their execution through appropriate cooperation mechanisms that enable the countries of Latin America and the Caribbean to collaborate effectively to implement the proposed measures.

Diagram VI.4
Action lines of pillar 4 of the CELAC Plan for Food and Nutrition Security and the Eradication of Hunger 2025 and how they relate to the Sustainable Development Goals

Source: Food and Agriculture Organization of the United Nations (FAO).

2. South-South cooperation as the pillar of regional efforts

Implementation of the CELAC Plan, as the region's main instrument for attaining the targets of the Sustainable Development Goals on eradicating hunger and malnutrition, means, in particular, strengthening intraregional cooperation flows, drawing on the positive experiences gained by the region in the process of fulfilling the Millennium Development Goals.

The *Report on South-South Cooperation in Ibero-America 2015*, prepared by the Ibero-American Secretariat (SEGIB), records an increase in bilateral and regional South-South cooperation initiatives, and a slight reduction in triangular South-South cooperation. Cooperation initiatives have been led mainly by Argentina, Brazil, Chile, Mexico and Uruguay, which, between them, account for 85% of total bilateral South-South cooperation projects. On the demand side, however, the region's countries are more evenly distributed, although Ecuador, El Salvador, the Plurinational State of Bolivia and Uruguay can be identified as the leading cooperation requesters.

South-South cooperation should not be seen as a substitute for North-South cooperation, but instead as complementing it. In this regard, the Addis Ababa Action Agenda encourages countries to increase South-South cooperation flows, based on shared experiences and objectives; and the creation of the Working Group on International Cooperation of CELAC in 2013 could be an important means of linking implementation of the CELAC Plan to South-South cooperation and the assistance received from developed countries, with a view to fulfilling the development goals defined in the 2030 Agenda for Sustainable Development.

The region of Latin America and the Caribbean can boast a successful track record in the process of eradicating hunger: it is the only region in the world that has halved both the proportion of people who suffer from hunger (the target set in the Millennium Development Goals) and their absolute number (the target set at the World Food Summit of 1996).

This publication aims to provide the region's countries with up-to-date and timely information on the status of food and nutrition security; on the role in eradicating hunger played by the different areas such as agriculture, agrifood trade and natural resources management; and on the possibility of successfully addressing the twin burden of malnutrition, in a context where the effects of climate change could threaten the progress achieved in Latin America and the Caribbean thus far.

The CELAC Plan for Food and Nutrition Security and the Eradication of Hunger 2025 is a cross-cutting tool for achieving the Sustainable Development Goals of the 2030 Agenda for Sustainable Development; and it thus encourages the countries of Latin America and the Caribbean to redouble their efforts to identify key policy areas that will make it possible to speed up and consolidate the process of eradicating hunger and tackle the twin burden of malnutrition in the region, in which overweight and obesity are increasingly adding to that scourge.

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