



United Nations  
**World Food  
Programme**

**Price Increases, Markets and Food and Nutritional  
Insecurity in Central America**

October 2008

## Credits

Research:

Amy Angel

General Coordination:

Carlo Scaramella, Hebert Lopez, Ludovic Subran

Editing:

Tania Moreno, Gladys Cañas, Mirta Molina, Irene Sanchez

Design:

Alexandra Servellon

Photography:

Luis Galdamez, Tania Moreno, Francis Roudière

Print:

Impresos Múltiples

United Nations World Food Programme, El Salvador

October 2008

The opinions expressed in this document are the points-of-view of the researcher and do not necessarily represent the positions of the World Food Programme of the United Nations.

[www.wfp.org/spanish](http://www.wfp.org/spanish)

[www.elsalvador.nutrinet.org](http://www.elsalvador.nutrinet.org)

[wfp.sansalvador@wfp.org](mailto:wfp.sansalvador@wfp.org)

Boulevard del Hipódromo No. 738, Colonia San Benito

San Salvador, El Salvador

Tel. (503) 2263-6144

Fax (503) 2510-7142

## **Acknowledgments**

Many WFP staff in the Central American region contributed to this study; we are grateful to the WFP Country Directors of Guatemala, El Salvador, Honduras and Nicaragua, and their technical and administrative staff for their contributions. The ministries of agriculture and the national institutes of statistics of the four countries provided access to data and statistics that allowed the execution of this study. Thanks also go to Paul Dorosh from the World Bank, Maren Egedorf from MFEWS/Guatemala, Ludovic Subran from WFP/Rome, Mack Ramachandran and Raoul Balleto from WFP/Panama for their contributions and comments, and we would like to recognize the efforts of national consultants who prepared the papers in each country: Mamerto Reyes, Guatemala; Amy Angel, El Salvador; Alcides Castillo, Honduras; and Rado Barsev, Nicaragua.

## **Introduction**

The issue of food and nutritional security is setting the global agenda, due to rising food prices that began affecting the international economy in 2006. This increase, which has been caused by various factors, including crop failures due to prolonged droughts and rising oil prices, is currently heavily impacting millions of people around the world.

In addition to these economic factors, there are others, structural in nature, that are linked to the increase in demand for basic grains, including the production of bio fuels and supply to emerging markets. The price increase, according to ECLAC, may increase poverty and destitution in more than fifteen million people in Latin America and the Caribbean.

This represents a concern for the United Nations World Food Programme (WFP), as poverty levels are deepening and increasing the number of people who have difficulty obtaining their food in the quantity and quality needed to have a healthy and dignified life.

For Central America, this economic shock could reverse the social progress achieved so far, particularly in the most vulnerable sectors. This situation clearly demonstrates new challenges, and is a call for all governments, nations, private sector, civil society and international cooperation to identify and implement urgent measures to overcome the crisis.

As WFP we hope that this document will serve as a contribution to the understanding and analysis of this global event and at the same time will accompany and support the urgent solution to this problem. We reiterate our collaboration with national and regional institutions to contribute together to maximize efforts to benefit the most vulnerable groups.

Pedro Medrano

Regional Director of United Nations World Food Programme  
for Latin America and the Caribbean

## **Presentation**

During the past years, a silent tsunami has been affecting the food and nutritional security of millions of poor people around the world. The phenomenon of price increase in basic grains – particularly since 2006 – has been unleashed by a combination of situational and structural factors, and has grown and been complicated by the parallel rising prices of petroleum derivatives. This rise has caused two interrelated effects: a progressive and disturbing erosion of purchasing power of many of the poorest populations in the world and the birth of at least 100 million “new poor” living in food and nutritional insecurity.

This means that at a global level, between 2006 and the beginning of 2008, the access to adequate food and nutrition for millions of mothers, fathers, girls, boys and elderly people has been reduced even more. At the same time, the global number of people living in poverty, vulnerability and risk, has grown.

Without a doubt, as it has been underlined by many experts, this silent phenomenon is meant to mark a stark reverse in the fight against poverty and hunger, affecting the efforts made toward the achievement of the first Millennium Development Goal. In that sense, the World Bank is looking at seven or more lost years.

This crisis is evidence once again of the precarious equilibrium on which the food and nutritional security of the poorest of our society are based. Also, the crisis has illustrated the existing and complex interdependencies in a highly globalised economy.

The progress of some countries (which translates into an increase of the levels of demand for food in the global market) in conjunction with other factors (for example, droughts in large producing countries and/or a growing demand for basic grains for bio fuel production in other countries), can cause a rise in prices that severely impacts the access of poor populations in other parts of the world.

From this point of view, the phenomenon to which we refer, shows us new great challenges in global governance, in relation to hunger and malnutrition issues; therefore these problems depend still more on the functioning and the interdependence of global markets.

In Central America, the phenomenon of rising prices in basic food products has concerned national governments and regional and international institutions, due to two factors: first, the regional dependence on imports of basic grains and hydrocarbons;

and, second, the high levels of poverty that still affect a great portion of the population and raises their risk in view of a food and nutritional crisis.

Based on this analysis, Central American governments are carrying out a series of measures directed mainly at strengthening production, the expansion of social protection programs, as well as controlling market functions. Within the SICA (Central American Integration System) framework, interesting examples of coordination between countries have been undertaken, particularly in areas concerning the agricultural production sector.

The World Food Programme (WFP) has participated in various consultation, coordination and national and regional decision-making processes; contributing with vulnerability and risk analysis, and with the organization—in conjunction with SICA—of strategic analysis and information exchange events (“Prices, Markets and Food and Nutritional Security” Forum, San Salvador, May 26<sup>th</sup> and 27<sup>th</sup>, 2008). The WFP has also supported the execution or expansion of important national social protection programs such as: combating malnutrition, providing health care and nutrition for mothers and children, and school feeding programs, among others. Within the framework of these activities, and with the aim of providing useful information for decision making, WFP has commissioned the realization of this regional study on rising prices, markets and food and nutritional insecurity spanning four countries: Guatemala, El Salvador, Honduras and Nicaragua.

It is hoped that the information contained in this study serves as a contribution to the understanding and analysis of the phenomenon of rising prices and its consequences at national and regional levels in order to accompany and support the processes of defining policies and programs for the management of this urgent problem.

With this contribution, the sincere and strong commitment of the WFP to continue supporting the efforts of Central American countries to strengthen social protection programs and productive support for the benefit of the most vulnerable groups in the region is reiterated once again.

Carlo Scaramella  
WFP El Salvador Country Director

## Contents

Executive Summary.....	8
1. The Basic Grains Market in Central America and its Integration with International Markets .....	12
1.1 Trends in Global and Regional Markets .....	12
1.2 Trends in Regional Production.....	17
1.3 The Role of Imports.....	18
1.4 Market Integration in the Region .....	23
1.5 Market Structure and Function.....	24
2. Food Security and High Prices in the Region .....	27
2.1 Food vulnerability .....	27
2.2 Effects on Food Security in the Region .....	30
2.3 Poverty and Hunger .....	39
3. Prospects for the Future: Repositioning the Issue of Food Security in Central America.....	43
3.1 Social Protection .....	44
3.2 Agricultural Production.....	46
3.3 Market Operations.....	47
References .....	48
Appendices.....	50

## **Executive Summary**

Globally, since the second half of 2006, the widespread rise in the cost of the basic food basket has been a concern for the United Nations World Food Programme. These price changes especially impact food vulnerable populations, which is why, at the end of 2007, the WFP began an investigation in Guatemala, Honduras, El Salvador and Nicaragua to identify and measure the impact of the rise in prices and the market dynamics on the food security of the population.

Research results indicate that the hike in prices has structural and temporary explanations, at both international and regional levels. In the international arena, temporary factors are associated with crop losses by prolonged droughts and rising prices of hydrocarbons. On the other hand, those of a structural nature are associated with the increase in demand for grains, both for the production of bio fuels and to supply emerging markets such as China, India and some Latin American countries. Between January 2006 and April 2008, the international price for yellow maize (corn) rose 140%, the price of rice rose 257%, the price of soybeans rose 126% and the price of wheat rose 117%, a trend that could continue for the next 10 years.

At the regional level, the most important temporary factors have been the delay of the rainy season, Hurricane Felix in the North Atlantic of Nicaragua, and the untimely rains at the end of the rainy season of 2007. The first phenomenon affected the harvest of white maize, and the second affected the harvest of red beans.

These regional factors, combined with international factors, contributed to the average price of white maize in the region rising by 20.5% from January 2007 to April 2008, and the price of red beans rising by 80.7%.

The basic grains market in Central America is closely linked to the international market and that of the same countries in the region. In the case of white maize, there is a strong correlation between the prices of the region and the international price of yellow maize, which is taken as a reference. For red beans, there is a direct correlation between the price in El Salvador, Honduras and Nicaragua.

The grain import dependency in the region is relatively high (72.3% for yellow maize, 69.6% for rice and 100% for wheat). The production of red and black beans in the region covers the needs of the producing countries; however, in countries where there is shortage intra-regional trade supplies the demand. Import dependency for white maize represents only 9.8% of the consumption, indicating that this region to a large extent is a producer of white maize. The explanation for this is the consumption pattern of the

population. The hike in international prices in 2007 led to the increase of the grain imports bill in the region by U.S. \$160.2 million.

In Central America, grains represent a fundamental part of the basic food basket; for example, beans and grains in Nicaragua account for 50%, in Honduras 47%, in Guatemala 53.8% and in rural areas of El Salvador 75%. The price changes of these products between September 2006 and February 2008 generated increases in **the nominal cost of the basic food basket. The increase was 22.1% in Guatemala, 12.8% in Honduras, and 17.1% in urban areas of El Salvador and 17.2% in rural areas.** For Nicaragua, the food price index rose 33.5% in the same period. The increase in the cost of the basic food basket has deteriorated families' purchasing power because minimum wage increases have not been sufficient to respond to increases in food prices. For example, the minimum wage in Nicaragua, in April 2008, covered less than 25% of the cost of the basic basket of an urban household, and 11% for a rural household.

**There are population groups in Central America whose food consumption is put at risk by these economic conditions; among them are urban poor, subsistence farmers, poor labourers and poor rural non-agricultural labourers.** In most cases, these families are buying more than 80% of their food. Food expenses represent a significant proportion of household expenses, more than 55% for the poorest. This means that these households have a reduced margin to adjust their other costs when food prices increase.

Based on an economic analysis of the households' response to higher prices, it was estimated that among the poorest families, **food consumption could be reduced up to 26% in Nicaragua, up to 13% in El Salvador, up to 8% in Honduras and up to 6% in Guatemala.** Although many families can offset this amount by buying cheaper food, there is a reduction in food quality, contributing to an increased risk of malnutrition, especially among children under 5 and pregnant women or nursing mothers. Estimates by WFP in El Salvador indicate that 87% of poor households have reduced the quantity and quality of food consumed as a result of rising prices.

Despite significant advances in nutrition in the region during the past decades, malnutrition remains a major problem. Estimates by FAO from 2002-2004 indicate that **of a total population of 32.8 million people in Guatemala, Honduras, El Salvador and Nicaragua, about 6.8 million (20.8% of the total population) were suffering from malnutrition (inadequate calorie intake) before the food prices crisis. More than one third of the population, 11.3 million, is highly vulnerable to food insecurity,** and the residents of rural areas are the poorest and the most vulnerable. Thus, in Guatemala and Honduras, 60% of the rural population is poor, with 36-38% living in extreme poverty.

Price increases of basic grains and other foods experienced since January 2007, could

contribute to a worsening of this situation, reversing the progress made in recent years. Based on an analysis of household surveys **in El Salvador and Guatemala** in 2007, **it was estimated that the number of people living in extreme poverty rose by about 6.5% (92 thousand people in El Salvador and 74 thousand in Guatemala) as a result of the increase in the cost of food. In the same period, there emerged 104 thousand new poor in El Salvador and 229 thousand in Guatemala.** Given the price trends, it is expected that in 2008 the number of poor will further increase. A recent study by the World Bank in Nicaragua shows that in the period 2005-2007 the number of poor in urban and rural areas of Nicaragua could have increased by 10.5% and 4.2%, respectively, as a result of the higher cost of the basic food basket.

To cope with price increases and to support households, governments in the region have decided to open import quotas without tariffs for wheat flour, continue widespread subsidies, distribute packages of agricultural supplies to small farmers and, in some cases, to restrict exports of maize and/or red beans. Recently, more attention has been placed on the extension and expansion of food aid programs, in many cases related to school feeding programs or conditional cash transfers. Given long term price changes, it is important to consider the sustainability of these measures and the feasibility of continuing to devote the necessary resources to the most vulnerable families.

## **Price Increase, Food and Nutritional Insecurity and Markets in Central America**

The increase in food costs has led to crises in many countries throughout the world, even causing social unrest. Its most worrisome impact is silent and is reflected in deepening poverty and malnutrition. Faced with this situation, the United Nations World Food Programme (WFP) requested additional support to cover the costs of their existing humanitarian aid programs and also to meet the demand of a new vulnerable population, due to the effects of the price increases.

The governments of Guatemala, El Salvador, Honduras and Nicaragua have implemented economic policy measures to face food shortages and price hikes; however, their actions to date have focused on short-term programs to increase agricultural production and direct support to families in moderate, severe, and extreme poverty.

In Central America, basic grains constitute the food and nutritional base of low-income households, generating around 20% of the agricultural production, and their production is a source of income for more than one million people who depend on such activity. These contributions make basic grains a strategic subsector in economic, cultural and social aspects. Therefore, it is essential to study the dynamics and factors that directly and indirectly influence basic grains.

Since mid-2007, the cost of the basic food basket in Central America has experienced increases, triggering and deepening economic vulnerability and food insecurity in the poverty strata of the population. According to World Bank President, Robert Zoellick, this means a setback in the fight against poverty, possibly "seven years lost" in this effort.

The outlook for the effects of rising prices, as well as market dynamics, lead to an analysis of the implications of and factors involved in production, international trade and domestic marketing of basic grains; principally, food security and poverty in Central America. In this sense, the realization of this study, which addresses the issue of prices, the market and its impact on food security and poverty among vulnerable populations in Central America, becomes important.

# 1. The Basic Grains Market in Central America and its Integration with International Markets

## 1.1 Trends in Global and Regional Markets

Basic grains prices in Central America have been affected by both international and regional factors. Among the first noteworthy factors are: the decline by 15% of wheat and maize (corn) harvests in Europe and the United States between 2004 and 2006, a 30% reduction of the wheat harvest in Australia, caused by a prolonged drought, and the influx of investors to commodities markets, as a result of low returns in other financial markets, bringing with them higher levels of volatility and speculation.

In addition, there are a series of factors that are generating structural change in world food markets, and it is this change that creates the largest imbalance. China and India are demanding greater quantities of all primary products, and require more food for their growing populations, but also their consumers have a greater purchasing power and demand more high value products such as meats and dairy. For example, since 1990, per capita consumption of meat in China has increased by 140%. Faced with its greater needs for animal feed, it is expected that China will become a net importer of maize as of 2010, when it was once a major exporter.

Another structural factor is the production of bio fuels, which demands one third of the maize harvest in the United States, leading to the replacement of areas previously used to grow soybeans and wheat.

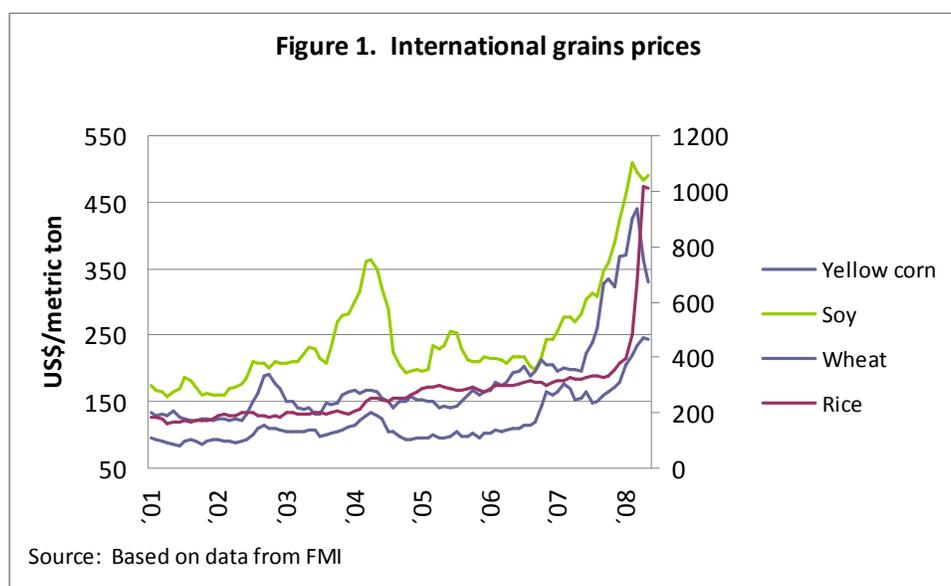
Many analysts point out climate change, the rise in oil prices and the increased demand for fertilizer for food production in China as the factors that have affected market prices of basic grains and the supplies for their production. For example, the hike in prices of hydrocarbons between October 2006 and October 2007 increased the prices of fertilizers (urea increased by 72.2% and diammonium phosphate, or DAP 18-46-0, increased by 110.9%) as well as the prices of land and sea freight (a 167.9% increase in sea freight in European ports, according to FAO, 2007).

The combination of temporary and structural international factors has led to a decline in global grain stocks to about 15.5% of consumption<sup>1</sup>, below the levels reached in the past

---

<sup>1</sup> USDA, May 2008

50 years; an increase of the real food prices index, that has been the highest since the beginning of 1845<sup>2</sup>; and strong price increases since the second half of 2006 (Figure 1).



Between January 2006 and April 2008, the international price of yellow maize increased by 140%, rice by 257%, soy by 126% and wheat by 117%. At the same time, the generalized price increase phenomenon is affecting prices of livestock products.

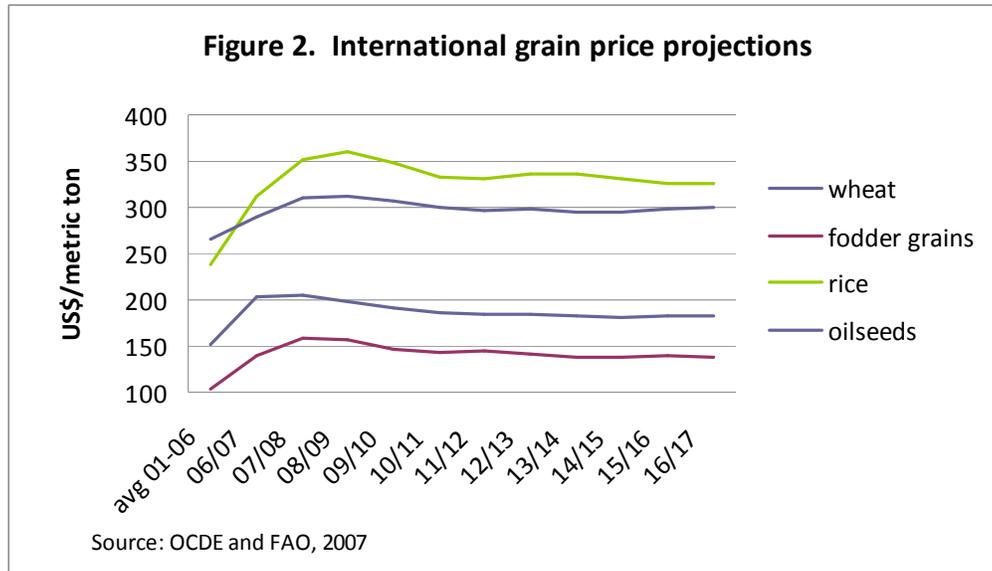
The consensus among experts is that the weight of the effects of structural changes is greater than those caused by temporary changes, which could last up to ten years<sup>3</sup>.

The global supply response to the rise in prices has practical limits; the largest areas still available for growing grain (Brazil, Russia, Kazakhstan, Congo and Sudan) require heavy investments in infrastructure to improve access (FAO, 2007). The existence of limits in technology and slower growth in global yields are not keeping pace with demand growth for the coming years because yields in developed countries are almost at their limits with existing technology (Cassman, 2008).

It is estimated that the increased demand and lower supply response, coupled with structural and international temporary factors, would allow prices to remain high, but slightly less than those achieved in 2008/2009 (Figure 2).

<sup>2</sup> Data from the Economist

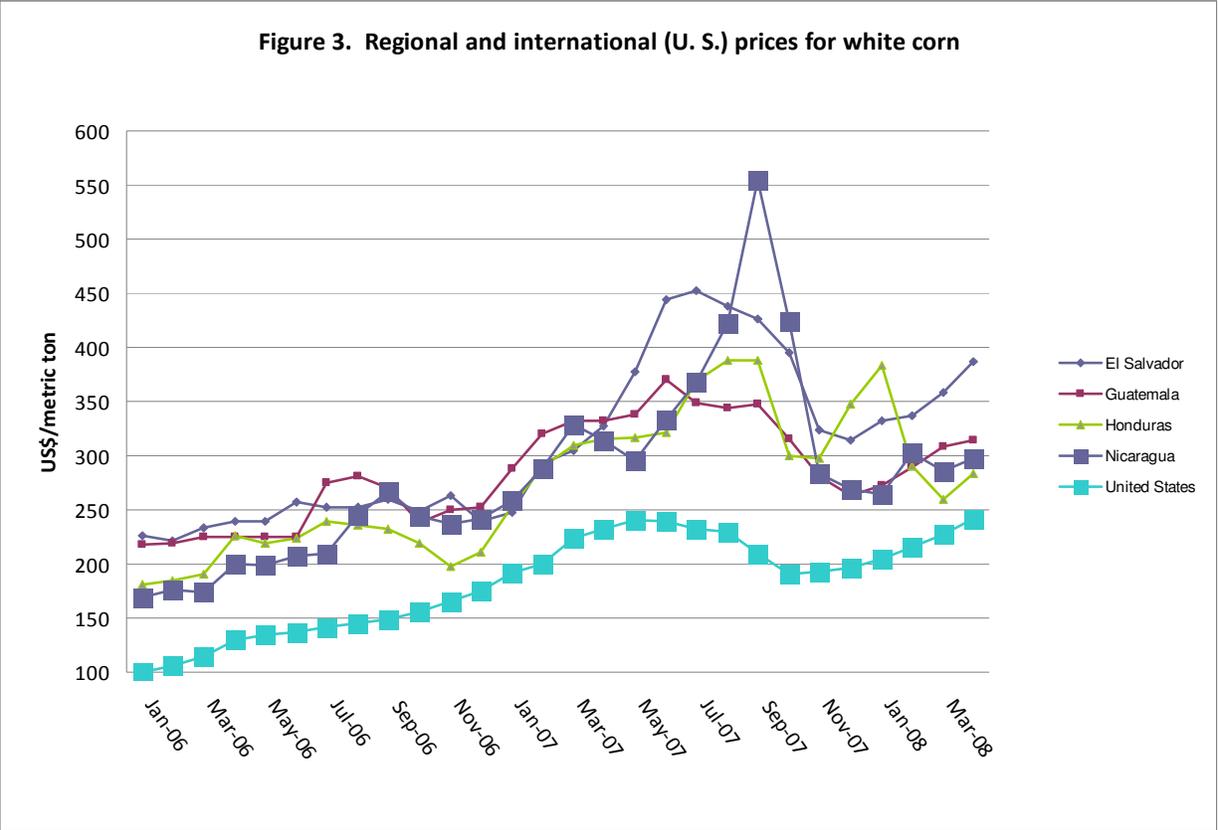
<sup>3</sup> Estimates produced by OCDE and FAO in 2007; Von Braun, 2007; FAO, 2007; USDA, 2007 and World Bank, 2008.



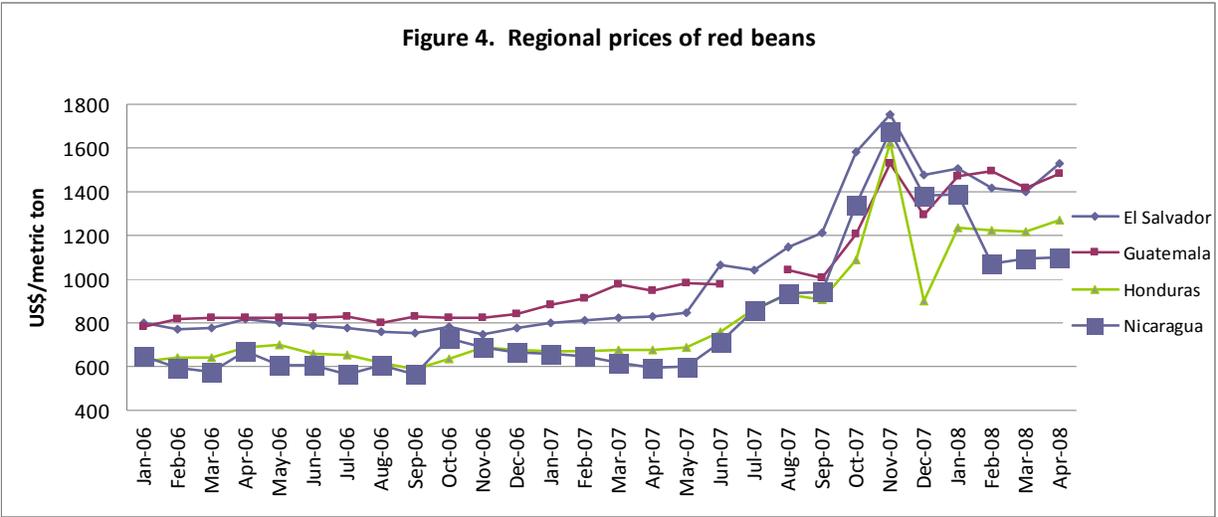
There are analysts who blame the changes in the prices on production subsidies that for decades have existed in developed countries. This not only discourages investment in agricultural production in developing countries, but also discourages investing in technology and infrastructure to support small producers. Now the opportunity exists to eliminate these subsidies and invest in productivity in developing countries, in partnership and other mechanisms to increase the likelihood that producers receive higher prices than the current ones and incentives to improve production. However, one cannot ignore the natural reaction of the real sector (production), which does not react immediately, and the negative influence weather conditions exerts on agriculture.

In the Central American region, the rainy season of 2007 did not follow normal patterns; affecting the productivity of basic grains. The countries whose production of white maize was hardest hit were El Salvador and Honduras. For example, in El Salvador, rain in the month of June was 40.3% lower than normal, causing losses for 160 thousand producers. In Honduras, subsistence producers experienced losses of up to 50% of their crops of maize and beans in 2006/07; then erratic rains in 2007 exacerbated this situation.

In Guatemala, maize imports failed to reduce the price. The price of white maize experienced a dramatic increase in the region in mid-2007, although the price in the United States began its climb before that time (Figure 3). Prices fell at the start of 2008 but then returned almost to peak levels by the middle of the year.

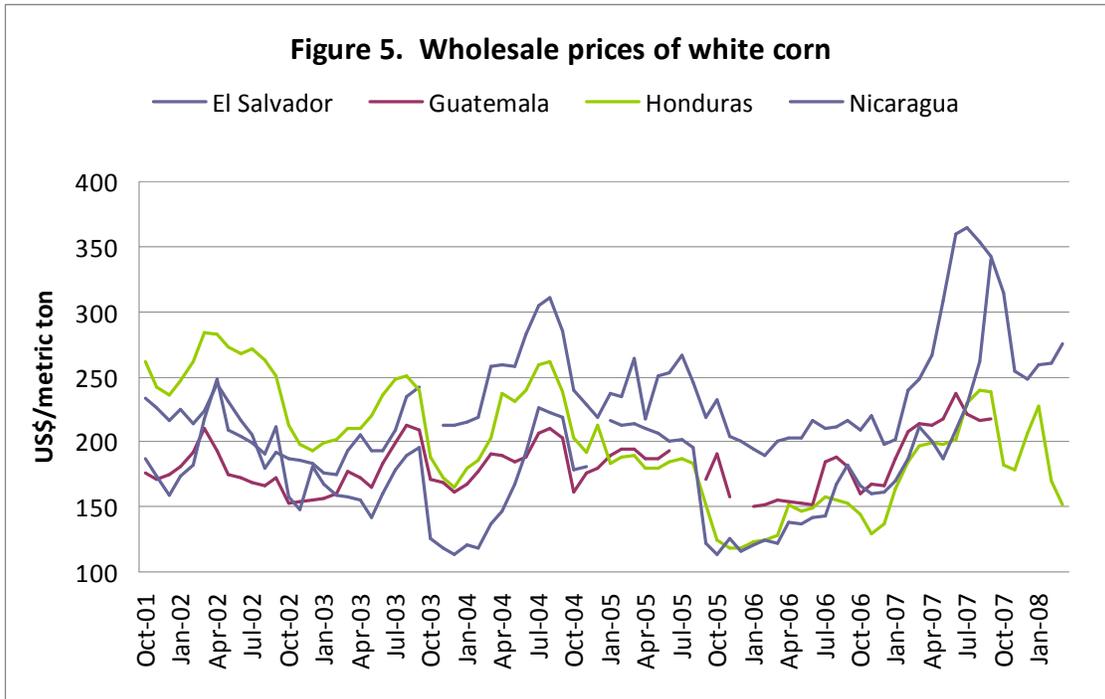


In the case of red beans, in September 2007 Hurricane Felix hit the North Atlantic coast of Nicaragua, and in October untimely rains fell in the western part of the country. Both phenomena contributed to a production of beans 20.2% lower than normal. In September, Honduras closed its borders, not allowing the export of grains; this suspension which should have been lifted at the end of December, affected the markets of red beans and white maize. It is possible that the availability of red beans in the region was limited before Hurricane Felix, which generated a strong speculative hike in October (Figure 4). Even after the harvest in November, price remained high. It was expected that the second season harvest in Nicaragua would contribute to a reduction in price, but this did not happen; its exports of red beans to El Salvador have also been restricted in 2008. In the case of black beans, with major production and consumption in Guatemala, price has been more stable.



In both cases (white maize and red beans), speculation in the markets has been the spark that ignited the markets, since the initial hikes occurred as a result of climatic phenomena (reduction in rainfall in June; hurricane in September) that would affect the future availability of these grains.

Apart from analyzing market prices, or nominal prices, it is important to calculate the real or deflated prices, removing the effect of inflation on the price level. For example, for white maize, the real price shows the same upward trend; this is more pronounced in El Salvador and Nicaragua from the third quarter of 2007 (Figure 5).

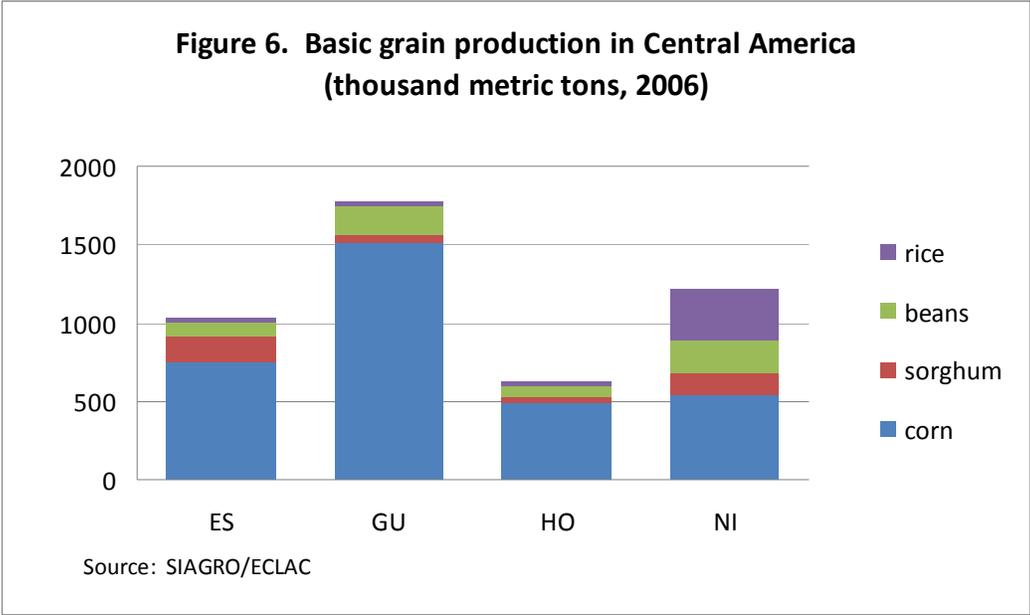


The hike in prices may, in some cases, make the economically active population receive greater income similar to the rate of inflation, which reduces the impact of the increase in nominal prices. This is not the case in Central America, where, minimum wage increases since 2007 by some countries failed to offset the increase in the cost of living because the bulk of employment is informal or constituted by small agricultural producers who are covered by the wage policy.

**1.2 Trends in Regional Production**

The production of grains in the Central American region is characterized as small scale, with plots under five hectares; however, there are exceptions of producers with larger areas. At the same time there are “subsistence” producers, who cultivate for self consumption and sell part of their harvest to finance other household expenses due to the failure to have another source of income. They represent the vast majority in the region.

In the region there are countries specialized in one grain in particular. Guatemala is the largest producer of white maize. Guatemala and Nicaragua are the main producers of beans, with the difference being that Guatemala produces black beans, and Nicaragua produces red beans. El Salvador is the largest producer of sorghum, which is intended for animal consumption in place of yellow maize. Nicaragua is the largest producer of rice (Figure 6).



Grain producers are also being affected by structural and temporary changes in international markets, as their production costs have increased considerably. Fertilizers

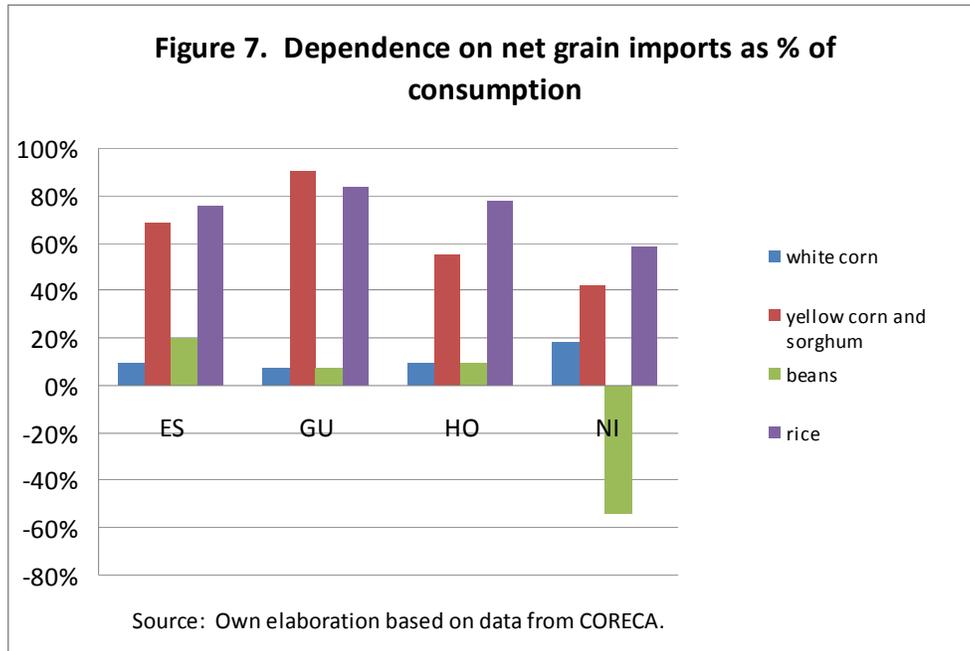
are among the supplies with the greatest increases in the price, because they respond to the increase in the price of petroleum and an increasing demand for them. At the same time, to supplement the diets of their families, producers have to spend a greater proportion of their income on the purchase of a significant portion of their food (50% or more). For small-scale producers, these factors reduce most, if not all, of the benefit of better prices.

Faced with this situation, governments in the region have implemented or expanded their agricultural package delivery programs (generally improved seeds and fertilizers), as well as other short-term measures, with a planned investment for 2008/09 of US \$467 million. The goals are regional self-sufficiency for human consumption in white maize, beans and sorghum, and to reduce import dependency for rice and yellow maize. These programs do not reach all producers, and the smallest and most isolated generally fail to participate. Therefore, their benefit is limited to a short-term effect on domestic production; often subsistence producers do not receive support.

On the other hand, there is a substantial gap between current yields and potential yields under optimal conditions for basic grains in the region. This means that the productivity of grains generally could double with the proper use of existing technology. These packages are contributing to higher agricultural yields, but their sustainability is subject to government fluctuations, whereas if farmers were able to incorporate better cultivation and post-harvest practices, the gain in production could be permanent. So, there should be a greater focus on extension efforts and on overcoming other barriers that prevent the full use of available technology, such as financial services.

### **1.3 The Role of Imports**

Based on the balance sheets for the 2006/07 crop year, one can calculate import dependency of basic grains for the countries of the region. Import dependency for yellow maize and rice is generally high, while the dependence on imports of white maize tends to be less significant (Figure 7). For beans, Nicaragua is a net exporter. Additionally, there is little production of wheat and soy in the region, and this is a problem because the consumption of bread and the use of concentrates for animal feed are growing.



Regional production is a key issue. Although there is still no shortage of grain in the world market, a lesser reliance on imports of cereals is desired. For example, the projections of the government of the United States indicate that although they will have increased production of maize for the next decade, the volume available for export will continue without change, due to increased use of maize to produce ethanol in that country. The United States provides 60% of world exports of maize and is the country of origin for almost all imports of white and yellow maize in Central America.

The increase in international prices of cereals not only has implications at the microeconomic level, by affecting the purchasing power of vulnerable households; it may also influence macroeconomic indicators such as the trade balance. Imports of grains meant an additional cost of approximately U.S. \$164.1 million in the region (Table 1). If this increase is added to the cost of the petroleum bill, the trade balance becomes more negative, with macroeconomic implications that directly affect the welfare of families in the Central American region. By 2008, given the upward trend of international prices, increases in the value of imports could continue.

**Table 1. Change in the value of cereal imports, 2007, compared with 2006**

	Change in value (US\$ million)	Percent change
El Salvador	56.8	31.1%
Guatemala	69.1	29.2%
Honduras*	41.8	29.4%
Nicaragua*	-7.5	
Total	164.1	

Note: \*Projections based on 2006 values and 2007 prices

Source: Own elaboration based on SIECA data and national information services.

Another important factor in the analysis of grain trade in the region is short-supply quotas, which in some cases began in 1998. These quotas allow the import of a certain volume without tariff, while the rest of imports pay tariffs. For grains, there are quotas for white maize, yellow maize and rough rice in most countries. They are often tied to marketing agreements in which producers and industry are involved, and since 2006, have been replaced in whole or in part by DR-CAFTA quotas. The effect of quotas depends on its relation with the total demand for imports of the product: if demand is greater than the quota, the price of imports with tariffs prevails in the market, but if the quota is higher than demand, the market price reflects the import price without tariffs (Morley, 2005).

Apparently, the introduction of quotas without tariffs drives the local market price toward the international price, including other freight and import costs. For example, when analyzing the relation of quotas for white and yellow maize with the volumes of import in the case of El Salvador (Table 2), it is observed that in 2006 the authorized volumes of quotas were similar to imports, while in 2007, authorized quotas were not fully used, especially those for yellow maize.

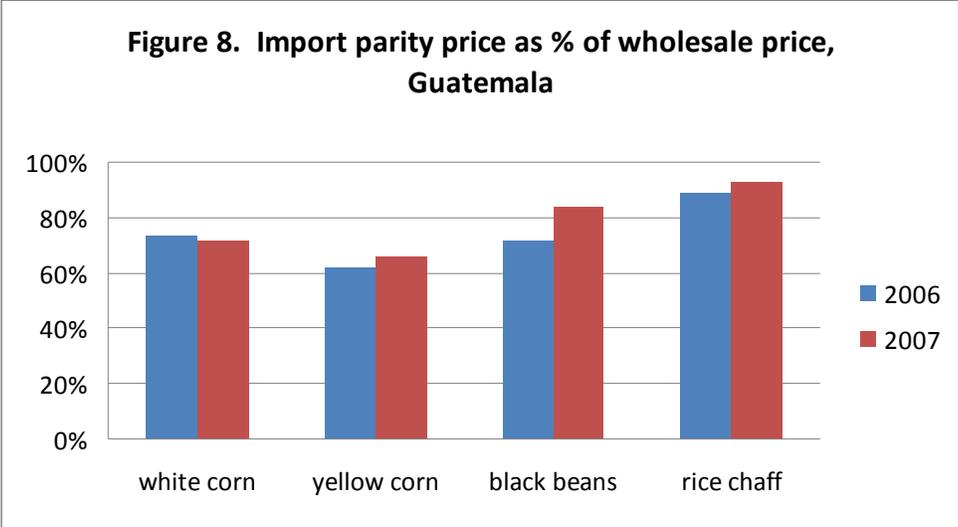
**Table 2. Quotas and imports of white and yellow maize in El Salvador, in metric tons**

	White maize			Yellow maize		
	2005	2006	2007	2005	2006	2007
Short-supply quota	67,178	76,059	150,200	519,000	105,950	192,000
DR-CAFTA quota		35,700	36,400		367,500	385,000
Quota total	67,178	111,759	186,600	519,000	473,450	577,000
Imports	87,328	112,550	183,445	378,069	464,571	409,046
Quotas/imports	76.9%	99.3%	101.7%	137.3%	101.9%	141.1%

Note: These are the authorized quotas, not necessarily imported.

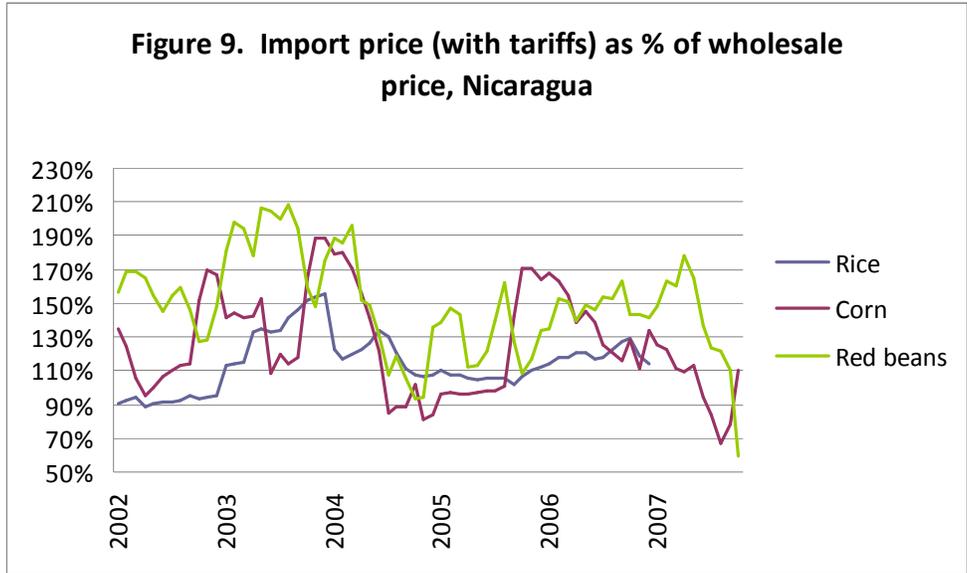
Source: Own elaboration based on official journals and BCR data.

The efficiency of domestic markets to transmit changes in the international price can be analyzed by calculating import parity prices; it compares the international reference price plus the cost of bringing this product to the domestic market, with the internal price. Differences between the adjusted import price and the domestic price may indicate flaws in the market, such as excessive control by importers or dealers. In the case of Guatemala, when comparing the CIF (cost, insurance and freight) price of imports in Puerto Quetzal, adding taxes and port costs, with the wholesale price in the market “La Terminal,” there is usually a gap of over 20% between the two prices, which means that the import parity price is less than the wholesale price (Figure 8). This difference reflects the fact that there are factors impeding the transmission of external prices to the domestic market.

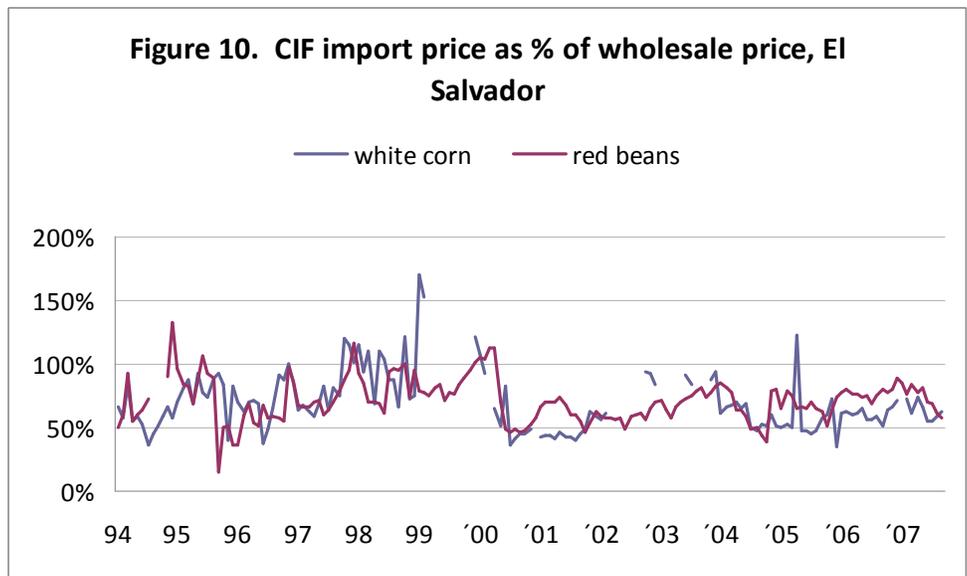


In the cases of El Salvador and Nicaragua, it is difficult to calculate the difference with a time series because a database of ocean freight costs, expenses of stay in port and inland transportation costs is not available. However, the data from the unit prices of monthly imports, or the value of imports divided by the volume as a proxy, could be used. This value already includes some of the costs because it is CIF based, but these data may suffer from under-invoicing, which would depress the import price.

For Nicaragua, adding the tariff, the import price is generally higher than the wholesale price, reflecting the reduced dependence on imports that exists in that country (Figure 9).



In analyzing the cases of white maize and red beans in El Salvador (Figure 10), note that import prices fluctuate in a range of 50-75% of the price at wholesale. This is explained in part by not including costs of tariff, post costs, domestic transport and value-added tax in the equation. Import prices and wholesale prices demonstrate the same tendencies, although with a greater volatility in domestic prices.



Market inefficiencies can also be explained by institutional factors. Intra-regional trade in agricultural products should be without barriers. For example, imports within the Central American region enter without a tariff; however, these imports often face non-tariff obstacles such as the subjective granting of plant health permits or the use of sanitary measures without a scientific basis. On the side of exports, it is common to find

border closure. During the first semester of 2008, Honduras and Nicaragua slowed exports of white maize and red beans on different occasions. It is understood that these measures were implemented to safeguard food security; however, these actions encourage smuggling, raising costs, and thus prices, even more in the rest of the region. Border closure reduces the price in the country imposing the measure, which discourages production.

#### **1.4 Market Integration in the Region**

As a result of the globalization of economic activities, local markets do not need much time to adjust to new conditions in the international or regional market. To measure the relation between regional and international prices, correlation coefficients, and beta coefficients, are calculated, which indicate the degree of price response of an asset in a country in view of changes in the price of that same asset in another country. Also models of co-integration can be used.

In the case of white maize, the analysis indicates a high relation between regional prices (Guatemala-Nicaragua:  $R=0.765$ ; Nicaragua-Honduras:  $R=0.922$ , Appendix 1). The integration was lower than expected with the international market, especially the United States, the origin of much of the imports in the region. Therefore, the dynamics of regional supply and demand would be the primary determinant of prices.

In analyzing the response coefficients ( $\beta_1$ , Appendix 1) for white maize, one can see that the price in El Salvador reacts to changes in price in Guatemala, Honduras and the United States, that the price in Honduras reacts to the changes in Guatemala and the United States, that the price in Nicaragua reacts to changes in the other countries, with the exception of Mexico, and that Guatemala apparently has little movement in their price compared to changes in other countries. Guatemala is, therefore, the central player in the regional market.

The case of red beans is especially interesting. The consumers in El Salvador, Honduras and Nicaragua have a strong preference to this bean; in Guatemala and Costa Rica, production and consumption are concentrated in black beans. In El Salvador, Honduras and Nicaragua, other colours and sizes of beans are rejected by consumers who have the ability to buy regional red beans. Even the most similar bean, the "small red" of the United States, is not accepted because of its taste and texture (Appendix 2).

The response coefficients indicate that the price of red beans in El Salvador reacts to changes in the rest of the region, that the market in Honduras reacts to changes in Nicaragua and Guatemala, and that the market in Nicaragua reacts to changes in Guatemala and Honduras (Appendix 2). Nicaragua is the largest exporter of red beans

in the region. Similarly, official imports in El Salvador do not indicate the entry of large volumes of red beans from Guatemala, but market observers indicate large quantities are smuggled into the country.

For rice, the main supplier is the United States; therefore, it is not surprising that the relation between the U.S. price and the prices of countries of the region is strong (Appendix 2).

In short, the markets for basic grains in the region demonstrate a high degree of integration, which emphasizes the importance of analyzing and watching them as a whole, especially in the context of food security. On the other hand, it is important to note that although countries increase their production of basic grains, prices are always linked and depend on the international market; then, with a greater Central American supply, prices could not be reduced, with the exception of red beans, whose market has a more regional character.

## **1.5 Market Structure and Function**

The production of basic grains in Central America is characterized as subsistence, not focused on marketing, although not counting on other sources of income; producers are generally forced to sell part of their production immediately after harvest. If economic needs weigh more, farmers save less for their household consumption, which leads them to buy at higher prices months later.

Producers often sell directly to local middlemen, who store the product for their later sale or take it to the wholesale market. In some cases, middlemen provide funding or deliver inputs to a farmer in exchange for his commitment to sell or for sharecropping to compensate for the supplies.

This heavy dependence of farmers on middlemen is linked to the atomization of cultivated areas. Small producers do not have their own transportation to move their crop to the market, or are unwilling or unable to carry out marketing; therefore, they depend on the services of middlemen. These market agents can exert a great amount of power. Many areas in the interior of the countries have few middlemen, which allow the exercise of nearly monopolistic power, and producers must accept the price from this buyer.

The power of middlemen is demonstrated by the marketing margins in the grain chain. In the chain, agricultural products usually pass through several levels before reaching final consumers. The percentage of final value that grain producers receive varies widely by country and by product (Table 3). Generally, producers get between 60% and 75% of the final price. The case of rice is different for two reasons: first, the

“transportation” level that also includes the milling (processing) of rice, obviously has a cost, and second, a there are a reduced number of milling plants within the rice industry. Subsequently, the power of the plants influences the price structure in the chain. These two factors explain why the rice producer receives a lower price compared to consumer prices, less than 40% of the consumer price (Table 3).

**Table 3. Producer price as a proportion of the consumer price**

Country/Product	Percentage of the producer price, average 2001-2007
<i>El Salvador</i>	
White maize	64.0%
Sorghum	63.3%
Red bean	66.0%
Rice	32.5%
<i>Guatemala</i>	
White maize - north	76.3%
White maize - east	75.2%
White maize - south	67.9%
<i>Nicaragua</i>	
White maize	59.0%
Red bean	63.5%
Rice	34.5%

Source: Own elaboration based on data from MAG/El Salvador, MAGFOR/Nicaragua, MAGA/Guatemala.

Among the measures that have been used in the region to reduce the power of middlemen, marketing agreements between producers' organizations and industrial processors of grains are worth mentioning. These agreements define the base price for the purchase of the year's agricultural harvest, quality requirements, payment terms, and so on. Another option is state-owned companies that maintain a strategic reserve or exercise other pressures on market price (Box 1).

### **Box 1: Government intervention in markets: The case of IHMA in Honduras**

A government institution that has had and to a certain extent still has a close association with the basic grains market is the Honduran Institute for Agricultural Marketing (IHMA). This institution was established in 1978 in order to improve the marketing of basic grains and ensure the stabilization of domestic prices through the buying and selling of domestic production and imports. However, the adoption and implementation of the Law of Modernization and Development of the Agricultural Sector in 1992, promoted the "liberalization" of the market and reformed the functions of IHMA, changing the role of the institute from stabilizing prices to control speculation and encourage food security, through the handling of what is called a *strategic grain reserve*.

This reserve, which is used in times of shortage, may have a physical (stock) or financial (funds) form and represents 3% of annual demand for maize and beans. This percentage represents volumes of around 9,000 metric tons of maize and 1400 metric tons of beans, which do not greatly affect market prices, even if IHMA sells and buys grains periodically to maintain the quality of the reserve.

The role of IHMA to stabilize domestic prices, through the purchase and sale of domestic production, has almost disappeared. Now the institute is the entity that manages the system of price bands for maize, sorghum and rice, allowing, in some way, control of domestic prices and reducing the impact of changes in international prices.

On the other hand, the Honduran government has established marketing agreements between producers and manufacturers of maize, sorghum and rice, as an additional mechanism to stabilize basic grain prices through the purchase and sale of domestic product at predetermined prices.

These agreements are an incentive for processors to import yellow maize and rice in proportion to the amount of domestic product purchased with zero import tariffs. However, this mechanism has often resulted in a reduction in the domestic supply for direct human consumption, which affects the retail price.

In short, the "price control" that the government of Honduras has in the basic grains market is a combination of mechanisms which include price bands, quotas, tariffs and incentives to purchase domestic production. Although it is generally believed that these mechanisms benefit the food security of the Honduran population very little, the impact is still uncertain, and it is a topic of great importance that should be studied in detail.

## 2. Food Security and High Prices in the Region

### 2.1 Food vulnerability

According to ECLAC, of a total population of 32.8 million people in Guatemala, Honduras, El Salvador and Nicaragua, it is estimated that approximately 20.8 percent or 6.8 million (Table 4) were in a situation of malnutrition before the food prices crisis (Box 2).

**Table 4. Indicators of malnutrition and poverty in Central America**

Country	Population (millions)	Malnutrition** 2002-2004 (FAO)	Total poverty*	Extreme poverty*
El Salvador	5.77	11.0%	47.5%	19.0%
Guatemala	12.73	22.0%	60.2%	30.9%
Honduras	7.48	23.0%	71.5%	49.3%
Nicaragua	5.68	27.0%	69.3%	42.4%
Total	32.84	20.8%	61.7%	34.6%

Notes: \* Data from: 2004 (ES), 2002 (GU), 2006 (HO), 2001 (NI).

\*\* Consumption of calories less than average requirements.

Source: ECLAC

The vulnerability of the population falling into a situation of food insecurity due to economic reasons is heightened among poor families. In the region, extreme poverty is defined as the condition of people whose income is insufficient to acquire the basic food basket. The relative poverty line is usually twice the extreme poverty line. In the region, approximately 34.6% of the population, equivalent to 11.3 million people, live in extreme poverty. It is assumed that these families face some nutritional deficiency. The other group of poor (those in relative poverty), after the purchase of food, had little disposable income for other expenses, before recent price increases. Under current conditions, many of these families are at risk of going into extreme poverty and malnutrition. Further on, simulations were performed to estimate the possible changes in the poverty rates in the region due to the price situation.

Another important aspect of food and poverty is its geographic emphasis. Consistently, rural areas in Central America have high poverty rates and more concentrated social vulnerability, because a greater proportion of poor families live in those areas.

Finally, the distribution of income is another indicator of the challenge to progress in Central America. The poorest 40% of the population receive about 10% of revenues,

while the richest 10% receive between 40% and 45% of the revenue, according to the country. The distribution of income has not improved at the same pace as other indicators of economic and social development. Between 1990 and 2004, the improvements in income of the poor were due to the growth of the economy, not a redistributive effect, or reduction in income inequality (Hammill, 2007). A price rise may also have important implications for the growth of inequality.

**Box 2: The Cost of Hunger in Central America**

In 2007, WFP and ECLAC published the report "The Cost of Hunger: Economic and Social Impact of Child Under-nutrition". The study analyses the cumulative effects of under-nutrition on additional health expenditures, grade repetition and lost productivity, and provides estimates of their 2004 economic cost to the state. The results of the report indicate that under-nutrition leads to serious consequences for the economies of the countries, and that loss of productivity, a lower education level and a higher death rate, generate 90% of the costs.

The study found that the total cost of malnutrition in 2004 for Guatemala, Honduras, El Salvador and Nicaragua was US \$5.3 billion, representing between 5.8% and 11.4% of GDP (Table 5). It was calculated that a total of 1.36 million people will not reach their productive stage of life due to under-nutrition. The study also concluded that the investment needed to alleviate malnutrition is below its cost to society.

**Table 5. Principle results of the cost of hunger**

Indicator	El Salvador	Guatemala	Honduras	Nicaragua
Total cost (US \$million)	1,175.3	3,128.4	780.1	264.3
Percent of GDP	7.4%	11.4%	10.6%	5.8%
Extra cases for health system	85,000	560,000	201,000	85,000
People who will not reach reproductive stage of life	289,000	641,000	266,000	164,000

Source: WFP and ECLAC, 2007

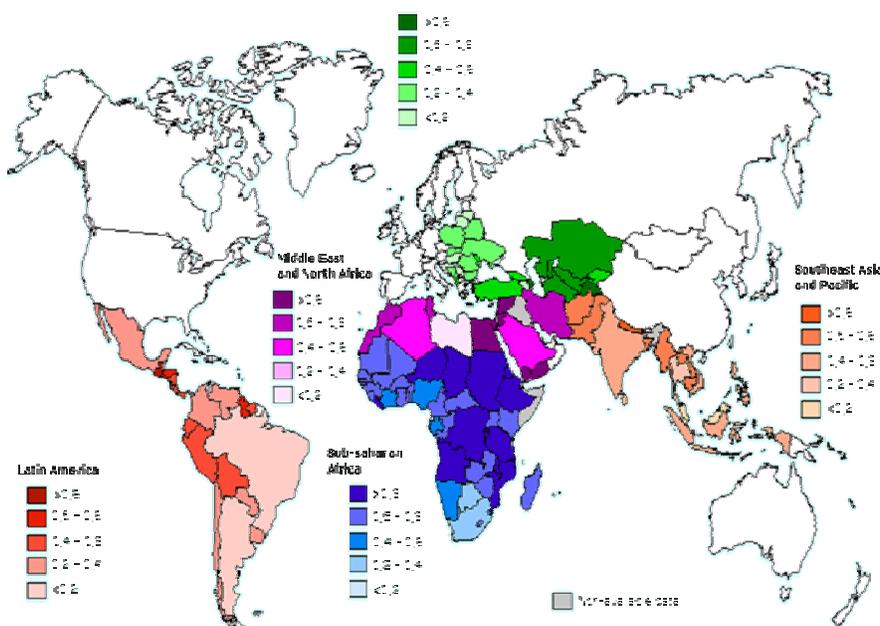
WFP has constructed an index of vulnerability to food prices, which incorporates all these aspects, including 12 economic and social variables, levels of poverty, malnutrition and dependence on imports. According to this index, Central American countries show a significant degree of vulnerability to rising prices of food, especially Guatemala, whose vulnerability falls into the same status as Haiti (Box 3).

**Box 3: Analysis of macroeconomic vulnerability in Latin America: An index of vulnerability to high prices (IVAP)**

The World Food Program of the United Nations conducted a vulnerability analysis to international price changes of 28 countries in Latin America and the Caribbean, based on indicators of economic development, production, consumption and trade of basic grains (Subran, 2008). Synthesizing various aspects of food vulnerability of a country in a single index, a principal component analysis was used to combine, regionally, the twelve variables that determine the ability to resist grain price pressures at the international level, dependence on imports and the level of poverty. This index ranks countries in the region that need special attention in terms of the recent price raises.

The results of the analysis of vulnerability place Guatemala in position 2 (behind Haiti), Honduras in position 4 (behind Bolivia), and El Salvador Nicaragua in positions 5 and 6 (before Panama and Peru), showing, in that way, the high degree of vulnerability of Central America (Figure 11).

**Figure 11. Map of the index of vulnerability to price increases**



## 2.2 Effects on Food Security in the Region

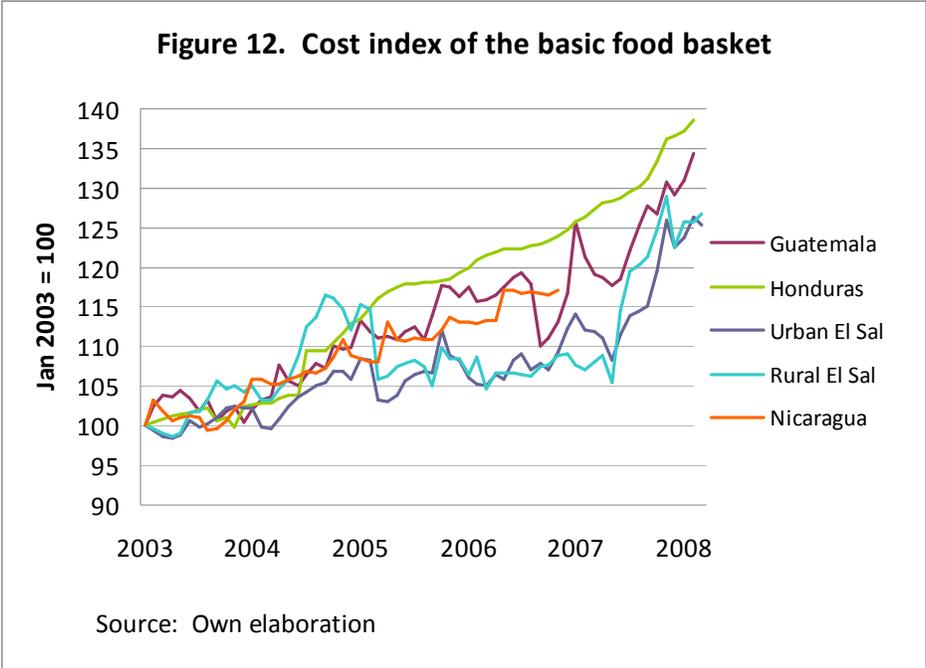
The upward trend in costs of food began with cereals. In Central America, among the different products in the basic food basket, grains are an important part, and consumer prices show significant increases. Beans and cereals account for 50% of the basic food basket in Nicaragua, 75% of the rural basket in El Salvador, 47% of the basic food basket in Honduras and 53.8% of the basic food basket in Guatemala. However, since the price increases are widespread, it is necessary to analyze the food basket as a whole.

Basic food baskets generally reflect "a set of basic foods that provide appropriate and sufficient quantities to meet at least the needs for energy and proteins for a reference family."<sup>4</sup> They reflect the consumption patterns of the population. These consumption patterns are variable in time, but in several countries in the region, the baskets have not been updated in many years. For example, in El Salvador, the composition of the basket used dates from 1990, which could generate some distortion in the analysis of economic vulnerability. It is also the only country that uses a different basket for urban and rural areas.

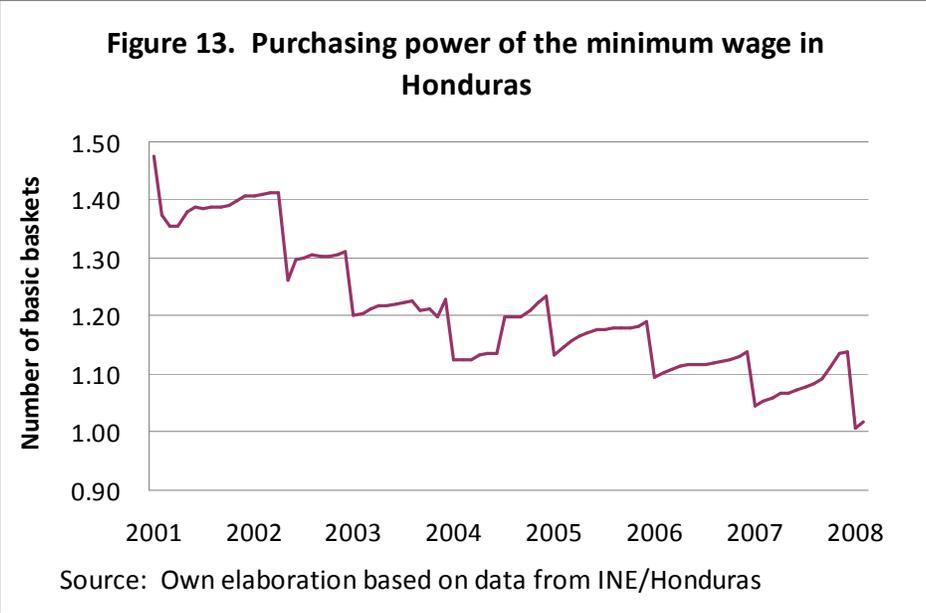
After several years of stable prices, between September 2006 and February 2008, a period of 18 months, the nominal cost of the basic food basket rose 22.1% in Guatemala, 12.8% in Honduras, 17.1% in urban areas of El Salvador and 17.2% in rural areas of El Salvador (Figure 12).

---

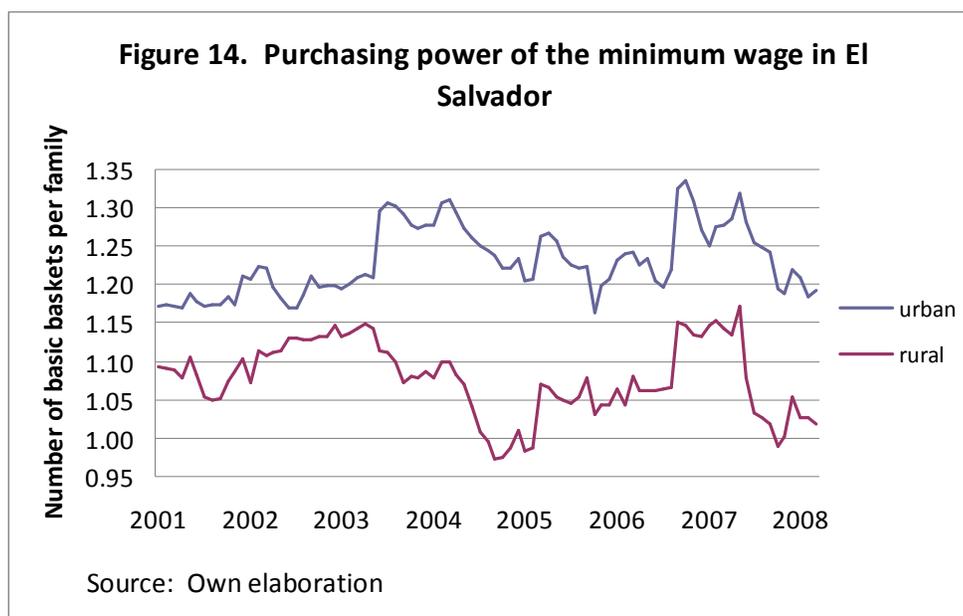
<sup>4</sup> Menchú, María Teresa y Osegueda, Olga C. "The Basic Food Basket in Central America. Revision of Methodology".



In some situations, one can argue that the effects of rising food costs are offset by the improvements in the minimum wage. At this time, minimum wage increases are not reaching increases in food prices. For example, in Honduras, despite almost annual adjustments, the minimum wage has experienced a consistent declining trend in purchasing power, a decline that is particularly pronounced in recent months (Figure 13).



In El Salvador, the minimum wage differs by activity, so the minimum wage for commerce and industry can be compared with the cost of the urban basic food basket and the agricultural minimum wage can be compared with the rural basket. Despite the fact that for a long period no adjustments in wages were made, purchasing power in terms of number of basic food baskets improved (Figure 14). Beginning in mid-2007 wages were adjusted; however, these adjustments were not able to recover the purchasing power, because the hike in prices was greater than the increase in wages. Price increases have deteriorated purchasing power to such a degree that a rural family with one full time, minimum wage income earns enough to buy only the basic food basket (Figure 14).



In Honduras and in rural areas of El Salvador, the minimum wage barely covers the cost of the basic food basket and leaves no surplus for other expenses such as housing, health, clothing and education. In the case of Nicaragua, in April 2008 the average minimum wage covered only 23% of the cost of the basket for an urban family, and 11.2% in rural areas. In all these cases it is assumed that people have permanent employment, which is not usual in rural areas, especially for agricultural workers.

For poor families, buying food can represent a significant portion of their expenses. According to the consumer price index, in Guatemala, food accounted for 38.8% of average consumer purchases. In Nicaragua, food amount to 38.5% of spending in Managua and 46.1% in the rest of the country. In El Salvador, 33.5% of average expenditures go to food. For example, according to the Multi-Purpose Household Survey of 2006 in El Salvador, for the poorest quintile of the population, which includes families in extreme poverty, 53% of their expenses are for the purchase of food. Therefore, the poorest families have less room to adjust their spending when facing higher prices. It should be noted that this proportion was before the hike in food prices.

Although it is logical that higher prices mean less food for consumption, it is important to investigate the degree of adjustment that may occur in families, especially the most vulnerable ones. The price effect on food consumption can be determined using price elasticities of demand, which show how much the quantity demanded is affected by a price change (Appendix 2). By multiplying the change in the price elasticity of demand by its weight in the food basket, the potential first-order change in consumption, or the pure effect of price without considering other actions as substitute for other food or other mitigation measures, can be estimated.

On the other hand, food and nutritional vulnerability are intimately linked with the livelihoods of families and their access to physical or economic resources to purchase the food they need. For example, a subsistence basic grain farmer would feel less impact from higher prices than the urban poor who depend on purchasing all their food. Mitigation measures that families take and aid operations can also vary according to livelihood.

Finally, once the dimension of households in poverty is identified, it is important to consider their dependence on the market. A poor rural family with high self-production is less vulnerable to price hikes of basic grains than a family of laborers who buys most of its food basket. In El Salvador the non-farm families are heavily dependent on purchased food (more than 80%), but even the families of market producers and subsistence farmers and day labourers purchase between 55% and 70% of their food. In rural areas of Guatemala, purchases represent between 40% and 90% of the consumption of black beans, according to livelihood, and between 25% and 85% of the consumption of white maize. In Honduras, among poor rural households, purchases are the source of between 25% and 88% of their food.

Using the livelihood methodology, it was estimated that the increases in cereal prices over the past 18 months could generate a reduction of up to 26% in food consumption in Nicaragua, between 9.2% and 12.9% in El Salvador and 8.4% in Honduras. In Guatemala, the average reduction would be 5.0%; lower than the other countries because the price of black beans has not changed to a great degree.

According to the previous methodology, in El Salvador the households of subsistence farmers and day labourers in extreme and relative poverty represent 7.0% and 4.7% of the population, respectively (Table 6). Another important group are the non-agricultural rural households in poverty, amounting to 6.5% of the total population. Finally, urban households in poverty represent the biggest segment of the population in economic vulnerability, with more than 18% of the population. In total, 37.4% of the population, approximately 2.4 million people, face a higher risk of food insecurity, with more vulnerability for 15.5% of the population, which is equivalent to one million inhabitants.

**Table 6. Population evaluated by livelihood in El Salvador and the effects of high 2007 grain prices on consumption**

Livelihood group	Approximate population	% of total population	% of food purchased	Effect of high grain prices on consumption
Urban households in extreme poverty	388,420	6.0%	86.4%	-8.9%
Urban households in relative poverty	791,807	12.2%	92.7%	-8.2%
Market producers in extreme poverty	30,946	0.5%	61.9%	-9.3%
Market producers in relative poverty	34,697	0.5%	67.0%	-8.9%
Subsistence farmers and day labourers in extreme poverty	454,818	7.0%	54.0%	-7.9%
Subsistence farmers and day labourers in relative poverty	303,212	4.7%	59.4%	-10.1%
Other rural households in extreme poverty	130,975	2.0%	80.1%	-10.9%
Other rural households in relative poverty	293,209	4.5%	81.2%	-9.6%

Source: Elaborated by WFP based on data from EHPM/DIGESTYC 2006.

Following this same methodology, in Guatemala, among rural households, self-production contributes 38.8% of the maize consumed and 59.5% is purchased. For beans, 21.3% is produced by the family and 76.3% is purchased. Moreover, these data provide estimates that the costs of maize, beans and rice account for 20.5%, 8.6% and 6.2% of food expenditures, respectively.

In Guatemala the group most vulnerable to food insecurity is the rural poor (68.0% or approximately 4.2 million people), including 37.6% (2.3 million) in extreme poverty. The most vulnerable communities in Guatemala are located in the western departments of Huehuetenango, Quiché, San Marcos, Totonicapán, Quetzaltenango and Solola. In these areas the almost exclusively indigenous population is dependent on subsistence agriculture and the sale of its labour, mainly on coffee farms. Other areas of food insecurity include the department of Jalapa, the northern part of Chiquimula and the southern part of Zacapa, areas prone to drought. The urban poverty rate is 45.1% (3.4 million), including 18% in extreme poverty (1.3 million).

By simulating the effects of rising prices of white maize, black beans and rice, it was estimated that the consumption of these goods in Guatemala, which represent a large percentage of the food basket, could fall between 4.2% and 6.4% (Table 7). Considering that Guatemala currently has relatively high food insecurity rates, any hike in food prices could pose a greater risk for malnutrition. In the case of Honduras, 60% of households are poor and 35.9% of those are classified as extreme poor (Table 8). In rural areas these figures increase considerably, with 66.4% of households being poor and 53.4% of those living in extreme poverty. The vulnerable population in Honduras constitutes 1.16 million people, mainly living in the southern area, the border area with Guatemala and the North Atlantic area.

**Table 7. Effects of high food prices on consumption by livelihood in Guatemala**

Livelihood	% of sample	White maize			Black beans			Rice			Total effects on consumption
		Self-consumption (%)	% of total purchase in food consumption	Effects on consumption	Self-consumption (%)	% of total purchase in food consumption	Effects on consumption	Self-consumption (%)	% of total purchase in food consumption	Effects on consumption	
Agricultural day labourer in the community	25	55.6	25.2	-1.5%	33.3	9.5	-0.1%	100.0	6.4	-3.1%	-4.7%
Technical activity	14	19.3	22.5	-1.3%	10.8	10.0	-0.1%	100.0	7.4	-3.6%	-5.0%
Permanent salary employment	15	20.0	21.1	-1.3%	13.7	9.3	-0.1%	100.0	7.4	-3.6%	-4.9%
Crop sales	11	76.4	19.2	-1.1%	54.9	6.5	0.0%	100.0	7.4	-3.6%	-4.8%
Agricultural day labourer outside the community	12	42.1	24.6	-1.5%	23.5	10.3	-0.1%	100.0	6.6	-3.2%	-4.8%
Non-agricultural day labourer	5	30.8	24.9	-1.5%	12.2	13.3	-0.1%	100.0	7.5	-3.7%	-5.2%
Small business	6	35.5	21.7	-1.3%	22.8	10.8	-0.1%	100.0	8.7	-4.2%	-5.6%
Recipient of remittances	3	27.3	22.4	-1.3%	15.2	8.5	-0.1%	100.0	5.8	-2.8%	-4.2%
Livestock	2	53.7	21.7	-1.3%	42.9	6.5	0.0%	100.0	6.1	-3.0%	-4.3%
Domestic employment	3	13.0	21.4	-1.3%	7.4	9.5	-0.1%	100.0	6.9	-3.4%	-4.7%
Artisan	2	60.0	37.2	-2.2%	22.9	9.1	-0.1%	100.0	8.4	-4.1%	-6.4%
Retired or beggars	2	19.4	22.9	-1.4%	9.4	10.8	-0.1%	100.0	5.8	-2.8%	-4.3%
Other	2	51.4	21.2	-1.3%	8.6	14.2	-0.1%	100.0	8.5	-4.2%	-5.5%

Source: Own elaboration based on Reyes 2007.

**Table 8. Households by poverty level according to area in Honduras (2007)**

Area	Non Poor (%)	Poor (%)		
		Relative	Extreme	Total
Urban	44.6	33.0	22.4	55.4
Central District	50.4	36.5	13.1	49.6
San Pedro Sula	52.5	32.0	15.5	47.5
Urban remainder	38.8	31.5	29.7	61.2
Rural	33.6	13.0	53.4	66.4
National Total	39.8	24.3	35.9	60.2

Source: INE. XXXIV Multi-Purpose Household Survey, May 2007.

Analyzing the possible response from consumers in Honduras to higher prices, it is perceived that the groups whose food consumption would be most reduced include agricultural producers and subsistence basic grain producers. Their consumption could be reduced by between 10% and 12% (Table 9).

**Table 9. Analysis of shock response by livelihood (impact of rising grain prices, January 2006- March 2008) in Honduras**

Livelihood zones	% of food purchased by poor households	Effect on consumption			Total Effect
		Maize	Beans	Rice	
Fishing and subsistence farming	25	-2.41%	-0.86%	-0.36%	-3.64%
Commercial Agriculture	88	-8.48%	-3.04%	-1.28%	-12.80%
Horticulture with coffee	75	-7.23%	-2.59%	-1.09%	-10.91%
Livestock and basic grains	35	-3.37%	-1.21%	-0.51%	-5.09%
Agro-industry	69	-6.65%	-2.38%	-1.00%	-10.04%
Remittances	50	-4.82%	-1.72%	-0.73%	-7.27%
Coffee	60	-5.78%	-2.07%	-0.87%	-8.73%
Subsistence basic grains	60	-5.78%	-2.07%	-0.87%	-8.73%
Basic grains and wood	80	-7.71%	-2.76%	-1.17%	-11.63%
Wood	50	-4.82%	-1.72%	-0.73%	-7.27%
Coffee and potato farming	38	-3.66%	-1.31%	-0.55%	-5.53%
Industrial	72	-6.94%	-2.48%	-1.05%	-10.47%
Buffer zone of the Río Plátano Reserve	35	-3.37%	-1.21%	-0.51%	-5.09%
Horticulture and fruits	63	-6.07%	-2.17%	-0.92%	-9.16%
Coffee and basic grains	69	-6.65%	-2.38%	-1.00%	-10.04%

-10.04%

Source: Own elaboration

In the case of Nicaragua, the poor and large families face the greatest potential reduction in food consumption, but the models project substantial reductions for the society at large, from 21.5% to 26.2% (Table 10). Combined with the relatively high rate of malnutrition in the country, the situation of rising prices could bring very negative

consequences for Nicaragua. The Nicaraguan case exemplifies the situation in the entire Central American region, especially among poorer populations and those exposed to food insecurity.

**Table 10. Potential change in consumption in Nicaragua due to rising food prices**

Product	Elasticity of demand	% change of consumer price, January 2006-March 2008	Importance of the product in the basic food basket	Total effect on consumption
<i>Socio-economic level</i>				
<b>Low</b>				
Beans	-0.601	103.60%	14.55%	-9.06%
Cereals	-0.553	80.65%	39.65%	-17.68%
Total				-26.74%
<b>Medium</b>				
Beans	-0.601	103.60%	10.10%	-6.29%
Cereals	-0.553	80.65%	40.39%	-18.01%
Total				-24.30%
<b>High</b>				
Beans	-0.601	103.60%	8.36%	-5.21%
Cereals	-0.553	80.65%	36.60%	-16.32%
Total				-21.53%
<i>Household size</i>				
<b>&lt; 5 people</b>				
Beans	-0.601	103.60%	9.98%	-6.21%
Cereals	-0.553	80.65%	37.43%	-16.69%
Total				-22.91%
<b>5-7 people</b>				
Beans	-0.601	103.60%	10.90%	-6.79%
Cereals	-0.553	80.65%	40.06%	-17.87%
Total				-24.65%
<b>&gt; 7 people</b>				
Beans	-0.601	103.60%	11.78%	-7.33%
Cereals	-0.553	80.65%	42.36%	-18.89%
Total				-26.23%

Source: Own elaboration

All these estimates of the first order impact of price hikes on consumption assume that families do not take other mitigation measures, although previous research has shown that reducing food consumption is a common response when faced with this situation (de Sanfeliú, 2004; Trigueros, 2004). A recent study by WFP (2007) in El Salvador assessed rural households with different levels of food vulnerability and found that one in three households face difficulties with a substantial increase in food prices; the main responses of households to this type of event is to reduce the quantity and quality of food (87%) and to reduce the number of daily meals (37%). So the reduction in food is a common option among families when facing economic difficulties. These estimates of potential reductions in consumption are particularly worrisome considering that in many cases families in extreme poverty are currently in a situation of a lack of food, and families in relative poverty are on the brink of food insecurity (Box 4).

To study in more detail how vulnerable families face the current situation of high prices, WFP conducted a focus group study in Honduras and El Salvador. In both cases, the response of families depended on whether they were consumers or net sellers of food. The assessment revealed that most families buy more than 90% of the food they eat. Their vulnerability also tends to be particularly severe during certain times of the year, as there is little demand for labour between the months of March and September. In 2008, many families indicated that they received lower earnings than expected from harvest employment, in some cases due to the mechanization of the harvest of sugar cane. Other families indicated remittances as a source of income; however, these have declined because the issuers of remittances have difficulty finding employment in the United States.

Faced with the current situation of difficult access to food, many families report that they have sought work outside their community, or even outside the country. They also seek the sale of assets to supplement income and reduce other expenses such as clothing and health and increase the harvest of wild foods. Households participating in the focus groups said that they have increased their spending on food by 10%, but still saw the need to reduce the variety, quantity and quality of food they consume (Boxes 5 and 6). The families that produce maize have low stocks due to losses in the previous year's harvest. Finally, producer households voiced their concern over the increasing cost of fertilizers, which would hinder their cultivation of maize and beans in the next agricultural cycle.

#### **Box 4: The coffee crisis and access to food in El Salvador, 2002-2003**

The El Salvador coffee crisis (1998- 2004) is an example of a food access crisis and the nutritional effects it implies. The 2002 crisis affected thousands of families in the country, especially those who depended, on a higher level, on the incomes from coffee activities to meet their basic needs.

With the fall in coffee prices at the international level, there was a disincentive to invest in coffee activities. In some areas, farmers chose not to harvest, bringing about, as a consequence for these affected families, a reduction or absence of the main source of work and a drastic reduction in family income.

Because most of these families were already living in a situation of extreme poverty, the absence of the main source of income heavily affected their food security and caused a significant increase in the already high under-nutrition rates in these areas. The nutritional crisis resulted in increased cases of severe acute under-nutrition and deaths of children under 5 years, whose main cause was under-nutrition experienced during the first half of 2002. This situation was especially critical in the western part of the country, where it was necessary to reinforce hospital care units for under-nourished people.

The Government of El Salvador requested emergency support to WFP who led a rapid assessment of the situation, showing that many of these coffee area municipalities had under-nutrition rates above the national average of 10.3%. The municipalities with a higher prevalence of moderate or severe under-nutrition were Juayúa (24%), Santa Catarina Masahuat (22%), Nahuizalco (22%), San Antonio del Monte (16%), Santo Domingo de Guzmán (12%) and Nahuilingo (12%), in the department of Sonsonate; San Pedro Puxtla (17%), Guaymango (17%), Tacuba (15%), Jujutla (14%) and Apaneca (13%), in the Department of Ahuachapán; and Tecapán (24%) and California (13%), in the Department of Usulután. In the mentioned municipalities, cases of severe acute under-nutrition, requiring hospital treatment to preserve life, were also identified. In addition to children under 5, the situation has affected most especially breastfeeding mothers and pregnant women.

The assessment found a high proportion of families who did not have food at that time. Many of these families had women as heads of household. They had to assume the role as the father of their children and had to emigrate to other areas in search of new sources of revenue.

### **2.3 Poverty and Hunger**

Concerns about world hunger led to the consideration of this problem in the first Millennium Development Goal (MDG 1.2) to eradicate extreme poverty and hunger and to halve the proportion of people suffering from hunger between 1990 and 2015.

An important objective for achieving the MDG 1.2 is to combat malnutrition among children under five and those who barely achieve minimum calorie consumption. The Central American countries achieved some progress during the first 10 years (Table 11),

and continued the progress over the past five years. However, it is very likely that the current situation reverses this progress.

**Box 5: Doña Tila: Between scarcity and desperation**

Doña Bertila Vallecillos, affectionately known as Doña “Tila” in Hacienda Pretoria, told WFP about her family economic background. "Today we have nothing to eat and we don't even have a nickel," she said with a labored voice. Doña Tila, of 58 years old, lives in Cantón Taltapanca, in the municipality of Apaneca, Department of Ahuachapán, in western El Salvador. She lives in a house of corrugated metal with her grandchildren of 2 and 8.

The latter grandchild is a beneficiary of the School Feeding Program, supported by WFP and belonging to the broader Healthy Schools Programme. Oswaldo, the oldest son age 31, graduated from high school, with the support of Doña Tila, who washed and ironed clothes for money. A few months after his graduation, Oswaldo found a job as a security guard; however, recently he lost it and wasn't able to go on helping his mother with the monthly US \$20 she used to count on.

The community of Pretoria lacks water and electric services, and most villagers appear to be affected by high food prices. Doña Tila must ask for store credit, when possible, to be able to eat. "We cannot eat the daily three meals; we live with limitations. Last year we managed to buy potatoes, macaroni, beans, some medicine, some used clothes and cookies for the children"; nevertheless, the current situation prevents her from accessing the same amount of food, and there are even days when she doesn't eat.

Until a few months ago Doña Tila washed clothes in other areas and also washed dishes in some cafeterias around town; however, she assures that now there is no such work, so their situation has worsened. Doña Tila's bi-monthly income enabled her to buy two arrobas (about 50 pounds) of maize for US \$10, ten pounds of black beans for US \$7, ten pounds of rice for US \$5 and two bottles of oil for US \$4 (when it was possible to buy). Doña Tila goes everyday to the community school hoping that they will give her some food surpluses or that some family will support her, allotting food for herself and her grandchildren.

**Table 11. Indicators of the MDG**

Country	Malnourished population	1991 (base)	2002	Advance
El Salvador	% of population	12	11	17%
	number of people (millions)	0.6	0.7	
Guatemala	% of population	16	23	-88%
	number of people (millions)	1.4	2.8	
Honduras	% of population	23	22	9%
	number of people (millions)	1.1	1.5	
Nicaragua	% of population	30	27	20%
	number of people (millions)	1.2	1.5	

Source: Indicators of the Millennium Development Goals, United Nations

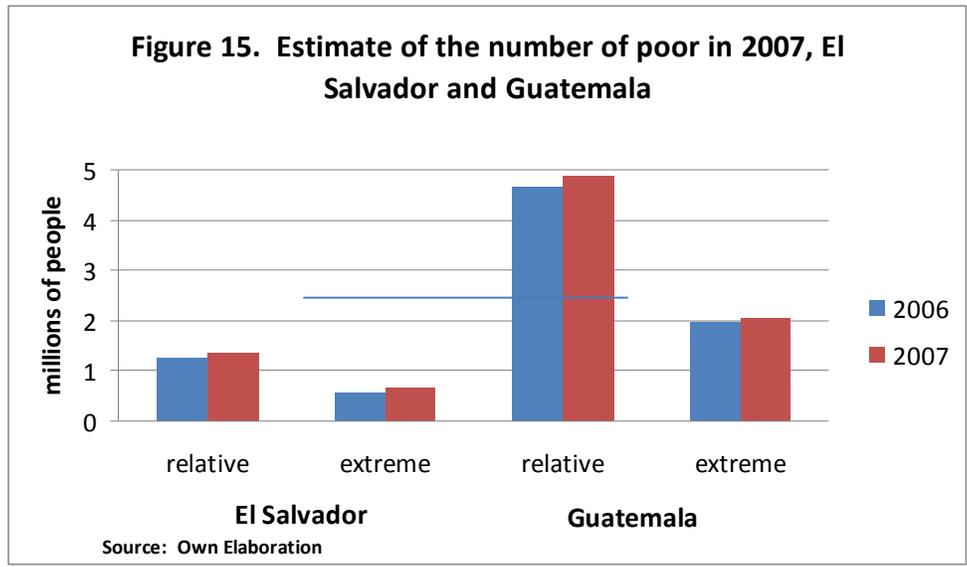
**Box 6. Don Ángel María: Fighting vulnerability**

Don Ángel María was born in San Juan Guarita-Lempira, Honduras, 64 years ago, and he is the father of 16 children (6 sons and 10 daughters) who are between the ages of 8 and 43 years. His economic situation "was already bad," before the death of his first wife, who was also the mother of 4 of his children. This dramatic event pushed him into crisis, as he was earning little and had to take over the entire family, minimizing household expenditures and restricting access to school for the children. At that time, only 2 of his 4 school aged children attended school.

In 2008, he faced a new crisis. The "fever" killed more than half of its poultry, leaving only 25 chickens. His current wife dedicates herself to the children and also relies on the older children's support.

Don Ángel is a farmer, and since 2002, also works in the municipality. He believes that education is important to get ahead: he has 3 children studying in private school and 3 in public school. He hopes his children will finalize their studies and he will have enough strength to go on.

In addition to its immediate effects in families with fewer resources, the increased cost of living may generate a decline in social progress. In the region, the poverty line is determined in part or wholly by the cost of the basic food basket; therefore, when it rises and incomes do not experience an equal adjustment, more people fall within the group of poor people because their incomes do not cover the food basket. For example, in El Salvador in 2006, 9.6% of households were in extreme poverty and 21.7% in relative poverty; using the same distribution of income and incorporating the increase in the actual cost of the food basket, we can estimate that extreme poverty may have increased to 11.2% and relative poverty to about 23.5% (Figure 15). By using the same methodology for Guatemala, the estimates of extreme poverty rise from 15.2% in 2006 to 15.8% in 2007, and the relative, from 35.8% to 37.6%. The increase is particularly reflected in extreme rural poverty, although an adjustment could suffer a slight overestimation by not taking into account higher incomes for some producers of basic grains. With these changes in poverty, it is estimated that nearly 104 thousand people entered poverty in El Salvador and 229 thousand in Guatemala in 2007, while 92 thousand people in El Salvador and 74 thousand people in Guatemala were moved from relative poverty to extreme poverty.



Complementing these economic scenarios, Ivanic and Martin (2008) estimated the impact of rising food prices between 2005 and 2007 for some low-income countries, including Nicaragua, and taking into account increases in the incomes of producers. Among the nine countries evaluated, Nicaragua showed the greatest impact on poverty levels. By incorporating the likely adjustments in wages, rural poverty increased from 61.1% to 65.3%, and urban poverty increased from 32.2% to 42.7%. In other words, it was estimated that possibly 440 thousand people in Nicaragua entered into poverty during this period.

Faced with the critical situation of food prices, the response of Central American governments has focused more on subsidies to encourage production through the delivery of supplies, and in some cases, restrictions on exports. To date, the widening and deepening of food assistance or income support programs have not received the same attention (Box 7). Similarly, measures to promote agricultural production are still not focused on the long term, such as improvements in productivity and competitiveness.

**Box 7: The effect of price increases on the cost of school feeding programs: An example of the School Feeding Program (PAE) in El Salvador**

The School Feeding Program (PAE, for its Spanish acronym) of the Ministry of Education (MINED), integrated in the broader Healthy Schools Programme, began in 1984 supported by WFP. It is currently benefiting 875,980 girls and boys in more than 4,500 schools in rural areas of the country. The PAE has helped to reduce short-term hunger and increase school enrollment and attendance.

This program is considered to be part of the social protection efforts of the country, along with other conditional cash transfer and food and nutritional assistance programs.

As of 2008, the program achieved full institutionalization, allowing the Ministry of Education to assume all operational and financial responsibilities and concluding the hand-over process from WFP to MINED. WFP continues to provide technical assistance to improve quality aspects of the program, and logistical support for food purchase and distribution in schools.

Facing increases in the cost of food purchases, MINED declared that without additional financial resources they would have to reduce the program's benefits. This reduction could mean less coverage and/or a decline in the quality or number of meals distributed to children. In response to this situation, the Government of El Salvador announced it will cover the financial deficit of the PAE to maintain food and nutritional support to the current beneficiaries. Moreover, the benefits of the program were extended to students up to ninth grade and to public schools in poor areas of metropolitan San Salvador. Under these circumstances, WFP is supporting the program.

### **3. Prospects for the Future: Repositioning the Issue of Food Security in Central America**

Considering its complexity and taking into account the risks posed not only on the most poor and vulnerable households and people, but also to Central American societies as a whole, the phenomenon of rising food prices clearly invokes a repositioning of the issue of food and nutritional security in the region.

It is not only about increasing the production of basic grains and encouraging the supply of markets at the macro level, but also addressing the issue from the standpoint of structural vulnerability that is a permanent threat to much of the population, because

of their condition of poverty and lack of a productive environment that will enable a more sustainable development and income improvement. In other words, the protection of the poorest and most marginalized families and their capacity building to enhance purchasing power remain key elements of the equation, along with addressing the productive dimension of the problem, which should be linked to the development of the agricultural sector at local, national and regional levels.

In general terms, the management of the phenomenon of rising food prices in Central America requires consideration of taking urgent short-term measures, and simultaneously achieving the identification and implementation of medium- and long-term measures.

In the short term, the main measures to be implemented should focus on expanding coverage of existing social welfare, nutritional and food assistance programs, placing particular emphasis on the most vulnerable population groups (children under 5, pregnant women, breastfeeding mothers and elderly).

Parallel to these programs, important actions aimed at promoting local food production should be implemented, to strengthen the domestic economy and to improve the purchasing power of more vulnerable and affected households. In the medium and long term, interventions should seek a more sustainable expansion of production and local and regional marketing, such as alternative economic opportunities directed at the poor sectors (marginal, urban and rural), with the goal of raising and/or protecting purchasing power and access to food.

Specifically, for the agricultural sector it will be important to seek modernization of production and marketing, especially for basic grains, but it is also important to do this for non-traditional products. It is therefore clear that to achieve this will require the investment of new resources and sustained efforts on the part of the public institutions and the governments of Central American countries.

Considering the structural nature of the phenomenon, and the impact that already is occurring in the social sphere, this study suggests that national and regional public interventions should focus on three main areas: social protection, agricultural production and market operations. Some of the major recommended measures are described below.

### **3.1 Social Protection**

- Based on the existing situation, a framework for intervention should be defined that covers all the social protection actions needed to counter an extraordinary situation of rising prices. Such a framework for intervention should involve a

strong potential impact on nutrition and health of the poorest and most vulnerable populations and should complement existing measures.

- Based on a clear analysis of food-nutritional vulnerability, expansion of existing programs and social safety nets is recommended, focusing on the most vulnerable populations groups. The programs should be integrated with complementary initiatives, which include programs focused on supplementary feeding and maternal and child health, school feeding programs, conditional cash transfers, employment generation programs, nutritional interventions and emergency support.
- The expansion of programs should take into account the deepening needs of current beneficiaries, and additional requirements, resulting from the new families that have fallen into a situation of poverty and vulnerability. The programs should especially focus on children under age 5, pregnant women, nursing mothers and elderly and should ensure not only that families eat enough, but also good quality food. That is, their products should include the essential micronutrients currently deficient in affected population groups.
- It is also important to explore the possibility of implementing programs aimed at poor and extremely poor households in urban areas, which represent a particularly vulnerable group. The urban poor are net buyers of food, without self-production and with high dependence on markets, and are strongly affected by rising food prices.
- Countries with conditional cash transfer programs should analyze whether the value of such transfers should be updated in order to compensate for the increase in the cost of food and to safeguard the purchasing power for food for the poorest and most vulnerable households.
- To prevent a nutritional crisis, public nutritional support programs should be intensified by strengthening the activities and public care services for pregnant women, nursing mothers and children under age 5, in the most vulnerable areas identified with the major nutritional problems. Also the micronutrient programs should be strengthened and, in emergency situations, provide food aid in an effective and pre-emptive way to confront a possible nutritional crisis.
- At this stage, the health of the people of Central America deserves an even more profound surveillance for early identification of the risk of a possible food and nutritional crisis at the level of the most vulnerable households and population. The collection of data on food, nutrition and health, especially for vulnerable population groups, is essential and fundamental. The immediate attention of

governments and the international community is urgently needed to establish mechanisms for monitoring nutrition and health to prevent and curb the problem. On this matter, there are important local and regional experiences, as well as new initiatives that can serve as models; such as the Nutritional Surveillance System (NSS) developed by the Ministry of Health in El Salvador with support from WFP.

- In this context, it is also necessary to strengthen and/or establish food vulnerability information, analysis and monitoring systems, not only in terms of food availability (production, imports, exports and/or climatic factors), but also with regard to economic access to markets and food intake of the population. Given the interconnectedness of markets in the region, beyond the accuracy and update of information, a complement of utmost importance is inter-agency coordination; to develop coordinated and integrated systems for food monitoring. This takes advantage of the exchange of information and the capabilities of each institution.

### **3.2 Agricultural Production**

- Promote the production of basic grains through agricultural packages (seeds and agrochemicals) programs is a short-term response to maintain the availability of cereals in the region; however, this should be complemented by actions to strengthen productive capacities in the countryside.
- In order to strengthen the economic situation and marketing and production capacity of producers; study and implement production and marketing support programs aimed not only at medium and large producers, but also at small producers and agricultural subsistence households.
- Stimulate greater agricultural productivity through technology (improved seeds, irrigation, technical assistance, storage, etc.) and a diversification of the supply, to achieve greater regional supply, if it is rational in economic terms. The matter of post-harvest handling is particularly important for basic grains to ensure the volume available.
- Ensure environmental sustainability of these efforts, since many grain farms are on slopes and should use soil and water conservation measures.
- Strengthen the functioning of and expand access to financial services (credit and insurance), key tools for diversification and investment in enhanced productivity.

- Encourage and/or strengthen food procurement programs directed at small producers, which facilitate the development of new skills and capabilities locally and nationally.

### **3.3 Market Operations**

- Encourage regional approaches to the issue of food security in the Central American Integration System (SICA), with a view to increased coordination of policies and programs for agricultural development and trade
- Ensure that there are no restrictions on imports or exports, especially between countries of the region.
- Evaluate a temporary reduction of import tariffs on goods that are not sensitive in the region.
- Foster greater market participation of small producers and establish monitoring mechanisms to achieve more efficient market dynamics.
- Consider the establishment of strategic grain reserves, in physical or virtual form (by way of financial reserves) for possible interventions in market control and emergency at a national and regional level, based on an analysis of efficiency in terms of costs and results of these mechanisms.

## References

- Cassman, Kenneth G. 2008. "Biocombustibles, Seguridad Alimentaria e Intensificación Ecológica de los Sistemas Agrícolas", *Informaciones Agronómicas del Cono Sur*, No. 37, International Plant Nutrition Institute, March.
- De Sanfeliu, Margarita. 2004. "Dinámica del Ingreso y la Pobreza Rural", in *El Desafío Rural: Pobreza, Vulnerabilidad y Oportunidades*. Salvadoran Foundation for Economic and Social Development (FUSADES), San Salvador.
- Food and Agriculture Organization of the United Nations (FAO). 2007. *Food Perspectives*, Rome, November.
- Hammill, Matthew. 2007. "Growth, Poverty and Inequality in Central America." Estudios y perspectivas series No. 88, Economic Commission for Latin America and the Caribbean, Mexico.
- Ivanic, Maros, y Will Martin. 2008. "Implications of Higher Global Food Prices for Poverty in Low-Income Countries," Policy Research Working Paper No. 4594, World Bank, Washington, D.C.
- Lopez, Rigoberto. 1998. "Econometric Analysis of Supply Response and Demand for Basic Grains in El Salvador," CRECER/USAID project, San Salvador, June.
- Morley, Samuel. 2005. "CAFTA y las Economías de América Central", CAFTA project workshop presentation, International Food Policy Research Institute (IFPRI), San José, June.
- Organisation for Economic Co-operation and Development (OECD) and Food and Agriculture Organization of the United Nations (FAO). 2007. *OECD-FAO Agricultural Outlook 2007-2016*.
- Seale Jr., J., A. Regmi, and J. Bernstein. 2003. "International Evidence on Food Consumption Patterns." United States Department of Agriculture, Economic Research Service. Technical Bulletin Number 1904.
- Subran, Ludovic. 2008. "Towards a Food Price Vulnerability Index", mimeograph.
- Trigueros, Alvaro. 2004. "Crisis del Café, Pobreza y Vulnerabilidad de los Hogares Rurales", in *El Desafío Rural: Pobreza, Vulnerabilidad y Oportunidades*. Salvadoran Foundation for Economic and Social Development (FUSADES), San Salvador.
- U.S. Department of Agriculture (USDA). 2007. *USDA Agricultural Projections to 2016*. Washington, D.C., February.
- Von Braun, Joachim. 2007. *The World Food Situation: New Driving Forces and Required Actions*. Washington, D.C.: Food Policy Report, International Food Policy Research Institute (IFPRI), December.
- World Bank. 2008. "Rising food prices: Policy Options and World Bank response", Washington, D.C.
- World Food Programme (WFP). 2007. *El Salvador: Análisis de Vulnerabilidad a la Inseguridad Alimentaria*. San Salvador, pending publication.

World Food Programme (WFP) and Economic Commission for Latin America and the Caribbean (ECLAC) of the United Nations. 2007. *Análisis del Impacto Social y Económico de la Desnutrición infantil en América Latina: Resultados del Estudio en Centroamérica y República Dominicana*. June.

### **Base Documents**

Angel, Amy. 2007. *Análisis de Mercado de Granos Básicos en Centroamérica: Enfoque en El Salvador*. World Food Programme (WFP), San Salvador, December.

Barzev, Radoslav. 2007. *Análisis de Mercado de Granos Básicos en Centroamérica: Enfoque en Nicaragua*. World Food Programme (WFP), Managua, December.

Castillo Aguilar, Alcides. 2007. *Estudio del Mercado de Granos Básicos y Seguridad Alimentaria en Honduras*. World Food Programme (WFP), Tegucigalpa, December.

Reyes Hernández, Mamerto. 2007. *Análisis de los Mercados Regionales de Granos Básicos: Capítulo Guatemala – El caso de maíz, frijol y arroz*. World Food Programme (WFP), Guatemala City, December.

World Food Programme (WFP). 2007. *Análisis de choque-respuesta*. Economic Studies Division.

World Food Programme (WFP). 2007. *Estimación de Elasticidades*. Economic Studies Division.

World Food Programme (WFP). 2008. *Honduras 12 Grupos Focales Cualitativos: Midiendo el Impacto del Aumento de Precios de los Alimentos en Hogares Vulnerables*, Tegucigalpa.

World Food Programme (WFP). 2008. *Reporte Grupos Focales: Impacto de lincremento de Precios de los Alimentos en Hogares Vulnerables*, San Salvador.

## Appendices

### Appendix 1. Market integration in the region

*Table A.1. Relation between regional and international prices of white maize*

*Correlation coefficients - R*

	El Salvador	Guatemala	Honduras	Nicaragua
Guatemala	0.847			
Honduras	0.854	0.878		
Nicaragua	0.819	0.765	0.922	
United States	0.537	0.571	0.593	0.491
México	0.526	0.572	0.480	0.400

*Beta coefficients -  $\beta_1$*

Base country	Response country			
	El Salvador	Guatemala	Honduras	Nicaragua
El Salvador		0.564	0.762	0.830
Guatemala	1.048		1.029	1.244
Honduras	0.930	0.676		1.137
Nicaragua	0.535	0.432	0.601	
United States	0.844	0.592	0.843	0.819
México	0.702	0.557	0.581	0.641

Note: Prices from October 2001 to August 2007.

Source: Own elaboration based on data from CORECA and U.S. Grains Council.

**Table A.2. Relation between regional and international prices of red bean**

*Correlation coefficients - R*

	El Salvador	Guatemala	Honduras	Nicaragua
Guatemala	0.840			
Honduras	0.875	0.695		
Nicaragua	0.884	0.643	0.884	
United States	0.286	0.277	0.361	0.204

*Beta coefficients -  $\beta_1$*

Base country	Response country			
	El Salvador	Guatemala	Honduras	Nicaragua
El Salvador		0.465	0.733	0.757
Guatemala	1.165		0.901	0.873
Honduras	1.016	0.499		0.917
Nicaragua	0.965	0.444	0.842	
United States	0.822	0.532	0.910	0.537

Note: Prices from October 2001 to August 2007.

Source: Own elaboration based on data from CORECA and USDA.

**Table A.3. Relation between regional and international prices of rice 90/10**

Country	R	$\beta_1$
El Salvador	82.8%	0.546
Guatemala	71.6%	0.375
Honduras	81.5%	0.684
Nicaragua	86.4%	0.732

Note: Comparison with the price of U. S. rice no. 2/4. Prices from October 2001 to August 2007.

Source: Own elaboration based on data from CORECA and InfoArroz.

## **Appendix 2. Estimated first-order effects on consumption**

The price effect on food consumption can be determined using elasticities of demand, which indicate how the demanded quantity changes facing a change in the product price in a given period. By multiplying the price change by its demand elasticity and its influence in the food basket, one can determine the potential first-order change in consumption. In other words, the pure price effect can be determined without considering other actions such as food substitution or other mitigation measures.

To perform this exercise, elasticities calculated by Rigoberto Lopez (1998) for basic grains in El Salvador were used as a base. Lopez used a “spider’s web” model type for white maize and rice and rational expectations for red beans. Other elasticities from Seale, et al (2003) were estimated for the Mexican case because the feeding patterns are similar. Changes in real and nominal prices were used because it is possible that wages have been adjusted for inflation, and sensitivity analysis was conducted with other elasticities.

**Appendix 3:**  
**Results of the Central American Forum “Prices, Markets and Food/Nutritional Security”**  
**San Salvador, May 26-27, 2008**



**Sharing a vision for the region**  
**Forum “Prices, Markets and Food-Nutrition Security”**  
**San Salvador, May 26- 27, 2008**

The Regional Forum on “Prices, Markets and Food-Nutrition Security” in San Salvador, El Salvador, May 26-27, 2008) was developed at the initiative of the World Food Program of the United Nations (WFP) and the System for Central American Integration (SICA), and in close collaboration with the Ministry of Agriculture and Livestock of El Salvador in its function as leader pro-tempore of the Central American Agricultural and Livestock Council (CAC).

The main objective of the event was to share, analyze and discuss at a regional and sectoral level the phenomenon of the rise in food prices, its causes and its potential impact on food and nutritional security for the Central American population, in order to identify cost effective interventions to address the problem at a national and regional level.

Representatives of the governments of Guatemala, Honduras, Nicaragua and El Salvador participated in the Forum, as well as members and experts from international and regional organizations (BID, IFPRI, SICA, PRESANCA), agencies and organizations of the United Nations System (World Bank, WFP, UNDP, FAO, OPS/OMS, UNICEF), international cooperation agencies, such as the Delegation of the European Commission, ECHO, bilateral cooperation organizations (AECID, JICA, USAID); regional technical organizations (MFEWS, INCAP) and NGOs (WVI, CARE, CRS, Intervida, and others).

The Forum reached a consensus on a general diagnosis of the situation, its causes and expectations in time, identifying problems and challenges, as well as intervention opportunities in the agriculture and social sectors as well as in public policy. Recommendations were made for follow up on the part of SICA countries.

Among other aspects, the following was determined:

**General diagnosis**

1. The phenomenon of the rising food prices is a world phenomenon, potentially long term, determined by a combination of multiple current and structural factors (*the perfect storm*), among which are:
  - a. The increase in oil prices and for its by-products (fertilizers, agricultural consumables), affecting production and transportation costs.
  - b. Irregularities in climate such as droughts, which have impacted basic grain production in Australia, European Union, Canada, Russia, Ukraine; and erratic rains in other areas.
  - c. The strong growth in the demand for/of basic grains for consumption in emerging markets, such as China and India.
  - d. The parallel increase in demand for basic grains aimed at production of biofuels.
  - e. The ongoing devaluation of the dollar
  - f. Phenomena of speculation and hoarding at global, regional and local levels.
2. Experts acknowledge that Central America is a vulnerable region when facing the rising food prices, because of its significant dependency on importation of foods and fuels and its high levels of poverty.
3. The rise in prices aggravates deep structural problems of poverty and inequity, characterizing Central American societies.

This phenomenon could cause an important step backwards in the fight against poverty and hunger, deepening and increasing poverty and food insecurity levels: preliminary estimates (WFP, 2008), suggest that during 2007, due to rising food prices, 500,000 more persons have fallen into a situation of poverty in Guatemala and El Salvador. At the Latin American level, based on the projections of abject poverty made for 2007, the United Nations Economic Commission for Latin America and the Caribbean (ECLAC) estimates that an increase of 15% in the price of foods would have 15,7 million persons being reduced to abject poverty.

4. The present context entails a strong sense of emergency and demands, according to experts, the immediate short, medium and long term implementation of energetic, coherent, strategic and innovative mitigation measures.
5. In the short term, the strategies, measures or proposals to be implemented must place emphasis on the urgent extension and strengthening of programs for social protection, agricultural production and humanitarian aid in crisis situations.
6. In the medium and long term, responses should focus, on one hand, on strengthening economic resiliency and development opportunities of the poorest and most affected populations, and on

the other, on modernizing and diversifying agricultural production and marketing methods. All these actions should be multi-sectorial, coherent and coordinated.

The Forum recognized the initial efforts made by the Governments of Central America in view of the situation, by announcing and/or adopting measures aimed at reducing the potential impact of the phenomenon on the most vulnerable populations. The need to extend and strengthen national and regional intervention frameworks was also recognized, articulating sustainable strategies based on three main pillars; Social Protection, Agricultural Production and Public Policy.

#### **A. Social Protection: Nutritional Vulnerability and Means for Living**

Analyzing the impact of the rising prices on food and nutritional vulnerability and on livelihoods, the Forum expressed its concern in view of the risk of a nutritional crisis that could affect the most vulnerable groups of the population, requiring interventions of an immediate nature.

1. In order to prevent an irreparable deterioration of physical and intellectual development, it was decided to focus attention and measures on children under the age of 5 in the areas of greater vulnerability.
2. The consensus of the Forum was that part of the response and of the process of creation of response capacities and prevention depends on strengthening food and nutritional security surveillance and early warning systems.
3. The initiatives that have been announced or are already in execution on the part of Central American governments in the social area were recognized, such as (a) strengthening and extending school feeding programs, (b) mother and child health and nutrition programs, (c) emergency food assistance and food for work, (d) and conditioned cash-based transfers.
4. Specially highlighted was the complementary dimension of these interventions, aimed at different aspects of the problem and at vulnerable groups.
5. The consideration of an increase in the minimum wage and in pensions was also proposed, to improve the purchasing power of families and thereby their access to the basic food basket.

#### **B. Production: Strategic themes and opportunities in agriculture**

To strengthen production at a national and regional level, the following consensus was reached:

1. To improve availability of basic grains, access to food, and income of rural families it is necessary, among other things, to:

(a) encourage the production of basic grains through programs and initiatives that put seeds and fertilizers at the disposal of producers (through mechanisms that do not discourage normal distribution channels), expand technical assistance and other similar measures;

(b) ensure control for correct and efficient operation of the markets and of marketing and distribution;

(c) increase food reserves at the home level, reducing losses after crops are gathered;

(d) strengthen the coverage and operation of rural credit systems.

2. Agricultural policies to be implemented must not be developed in isolation, but must be articulated with other national and regional trade, social and environmental policies. .
3. Policies in this area should not only be aimed at agro-industrial and commercial sectors, but also at strengthening the condition of subsistence producers and the improvement of unskilled rural labor.
4. Emphasis was placed on the need to reinforce and modernize the agricultural / foodstuff sector in order to take advantage of the opportunities for rural development that result from international interest in the problem.

### **C. Public policies and markets**

Specialized institutions identified a series of policies that Governments could implement to facilitate trade and reduce the impact of the rise in prices, maintaining the balance between supply and demand, without discouraging local production. Among them were:

1. Measures related to the operation of markets, such as the elimination of quantitative import and export restrictions on foodstuffs, the reduction of high tariffs, facilitation of trade by means of low transportation costs and logistics and by avoiding price controls.
2. Measures related to the constitution of strategic reserves, under the modes of virtual or financial reserves, at a local and regional level.
3. Measures related to monitoring markets in order to prevent hoarding, speculation and improve transparency in price transmission.
4. Measures related to the use of subsidies, adequately targeted, in order to optimize the function of the limited resources available.

## Coordination

The Forum recognized, as part of the global handling of the problem, the need and the opportunity to strengthen the coordination and collaboration mechanisms already foreseen by the Central American Integration System. In this context, the efforts made to coordinate the regional agricultural emergency plan developed by CAC and aimed at increasing agricultural and livestock production, and the need to develop similar efforts with coordinated actions in the area of social protection and market policies were stressed. Regarding this subject, concerned by the present situation and the consequences that are becoming more increasingly clear, the Forum also called for a joint and coordinated work that would include the countries, the United Nations System agencies, donors and civil society.

## WFP – SICA Collaboration

WFP and SICA will continue their efforts to contribute to reinforce programs and coordination mechanisms to confront the problem, joining already existing regional efforts and initiatives. In the framework of collaboration with SICA, and close collaboration with other global, regional and national institutions and with international donors and cooperators, the WFP will make its competencies available and will intensify its activities and interventions aimed in particular at the following areas:

- Strengthening of nutritional surveillance and food security monitoring systems with the creation of a proposed regional observatory to support regional institutions;
- Possible extension of mother and child health and nutrition programmes in support of the Ministries of Health;
- Possible extension of programmes aimed at fighting under-nutrition, that ensure a minimum requirement of energy and essential micronutrients;
- Implementation of nutritional and food aid programmes in emergency situations, targeting children under 5, pregnant women and lactating mothers;
- Implementation of Purchases for Progress pilot projects and of productive projects which could have a quick positive impact on income generation;
- Development of programmes for institutional strengthening in Food and Nutritional Security.





[www.wfp.org](http://www.wfp.org)

[www.elsalvador.nutrinet.org](http://www.elsalvador.nutrinet.org)

[wfp.elsalvador@wfp.org](mailto:wfp.elsalvador@wfp.org)

**Regional Office**

**Avenida Gaillard, Calle Vicente  
Bonilla,  
Edificio 124 y 125. Ciudad del Saber  
Clayton, Panamá City  
Tel (507) 317 3900  
Fax (507) 317 3903**

**El Salvador Office**

**Boulevard del Hipódromo No. 738  
Colonia San Benito  
San Salvador, El Salvador  
Tel (503) 22663 6144  
Fax (503) 2510 7142**