

Part II

WORLD FOOD AND  
AGRICULTURE IN REVIEW



## Part II



## World food and agriculture in review

World food and agriculture are facing critical challenges. Sharply higher food prices sparked riots in many countries in 2008 and have led at least 40 governments to impose emergency measures such as food price controls or export restrictions (FAO, 2008a). Meanwhile, food-aid volumes have fallen to their lowest levels in 40 years (WFP, 2008) even as the number of countries requiring emergency assistance has grown. While higher commodity prices offer opportunities for agricultural producers to increase production and earn higher incomes, early assessments of current crop-year conditions in many countries give cause for concern (USDA, 2008b). These were among the issues discussed in June 2008 in Rome at the High Level Conference on World Food Security: the Challenges of Climate Change and Bioenergy.

Among the factors responsible for the recent surge in commodity prices are higher costs of production driven by rising petroleum prices, weather-related production shortfalls in key exporting countries and strong demand growth – including for biofuel feedstocks. These factors occurred against a backdrop of historically low global cereal stocks, driving market prices higher. Some of the emergency measures implemented to protect consumers from higher prices, such as export controls, have further destabilized world markets (FAO, 2008a).

While commodity prices have always risen and fallen with changes in supply and demand, world agriculture now appears to be undergoing a structural shift towards a higher demand-growth path. Many countries, especially in Asia, have entered a period of faster economic growth that is generating strong demand for higher-quality diets including more meat, dairy products and vegetable oils (FAO, 2007d; Pingali, 2007). The growth in demand arising from stronger income growth is certainly welcome news, but higher prices pose challenges for all consumers, particularly the poorest.

Liquid biofuels constitute a second major new source of demand for agricultural products, as discussed in depth in Part I of this report. The degree to which biofuel demand has influenced recent food and

commodity price trends is a matter of debate, with estimates ranging from 3 percent (USDA, 2008b) to 30 percent (IFPRI, 2008) and higher. Analysis reported in Part I suggests that the projected growth in biofuel demand over the next decade is likely to push commodity prices 12–15 percent above the levels that would have prevailed in 2017 if biofuels were held at 2007 levels (OECD–FAO, 2008).

Some of the supply factors that have contributed to the current high prices are transitory in nature, such as poor crop-growing conditions in a few regions. Better weather can increase production and bring prices back to more normal levels. Farmers can also respond to higher prices by increasing crop area and intensifying the use of yield-enhancing technologies. Other factors, such as growing demand as a result of rising incomes and expanding biofuel production, will continue to exert upward pressure on prices.

Decades of depressed commodity prices have led many governments in developing countries to neglect investments in agricultural productivity, and higher petroleum prices may signal a long-term shift in the cost of agricultural production, making it more costly for farmers to intensify production. Moreover, global climate change is predicted to increase the frequency and severity of extreme weather events. These longer-term factors pose serious challenges to the global food and agriculture system.

This review of the state of food and agriculture briefly summarizes the current situation with a view to illuminating the underlying causes of the current agricultural situation and anticipating future commodity-market developments. It also analyses some of the leading sources of uncertainty facing world agriculture and presents a series of scenarios outlining the possible implications of alternative assumptions regarding the key factors underpinning the recent agricultural commodity price surge. To help inform some of the key issues raised at the June 2008 High Level Conference, scenarios are presented for alternative developments in biofuel production, petroleum prices, income growth, crop yields and trade policies.

## AGRICULTURAL COMMODITY PRICES

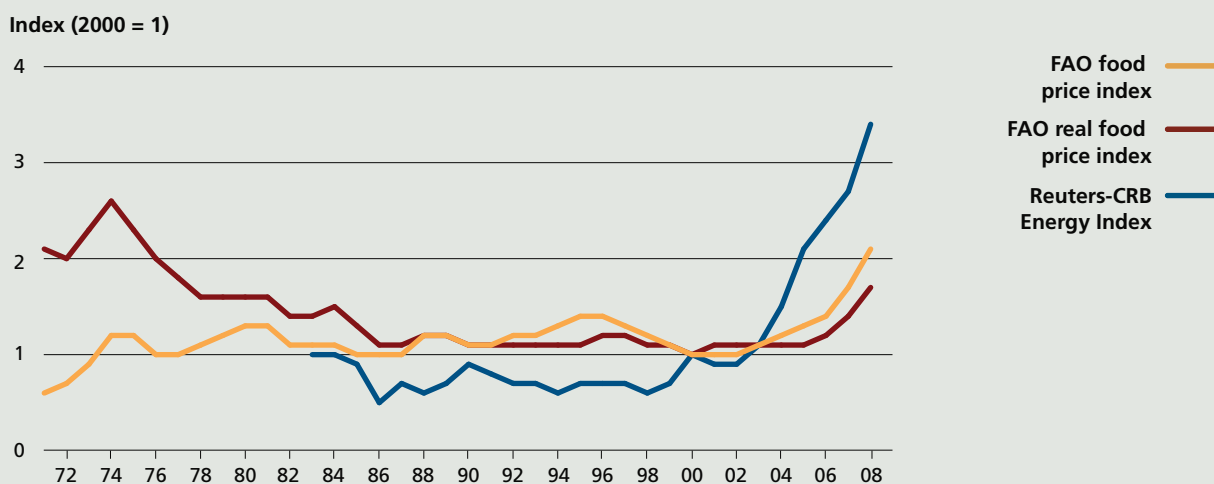
The FAO index of nominal food prices doubled between 2002 and 2008 (Figure 30). Energy prices, led by crude oil, began rising earlier, in 1999, and have trebled since 2002. In order to assess how nominal price increases affect consumers, they need to be considered in relation to prices of other goods and changes in purchasing power. Figure 30 also shows food prices deflated by an index of prices for traded manufactured goods. This real food price index began rising in 2002, after four decades of predominantly declining trends, and spiked sharply upwards in 2006 and 2007. By mid-2008, real food prices were 64 percent above the levels of 2002. The only other period of significantly rising real food prices since this data series began occurred in the early 1970s in the wake of the first international oil crisis.

Affordability is a question of income as well as prices. Figure 31 shows an index of four major commodities – vegetable oils, wheat, maize and rice – deflated by an index of per capita world gross domestic product (GDP). The figure shows that, until recently, these commodities have generally become more affordable in terms of average purchasing power throughout the period since the mid-1970s.

The lower graph in Figure 31 shows the same index but only since 2000, making the recent changes more visible. Vegetable oil prices have risen twice as fast as average incomes since 2000, and other commodity prices have also risen substantially relative to incomes: wheat by 61 percent, maize by 32 percent and rice by 29 percent. For the last three crops, most of the increase has occurred since 2005. These rapid increases have led to a substantial loss of purchasing power. The averages, of course, hide wide variations among and within countries. For countries where per capita GDP growth has lagged the world average, the loss of purchasing power would be even greater. Similarly, within countries, low-income consumers who rely on basic food commodities for the bulk of their diets would be most acutely affected.

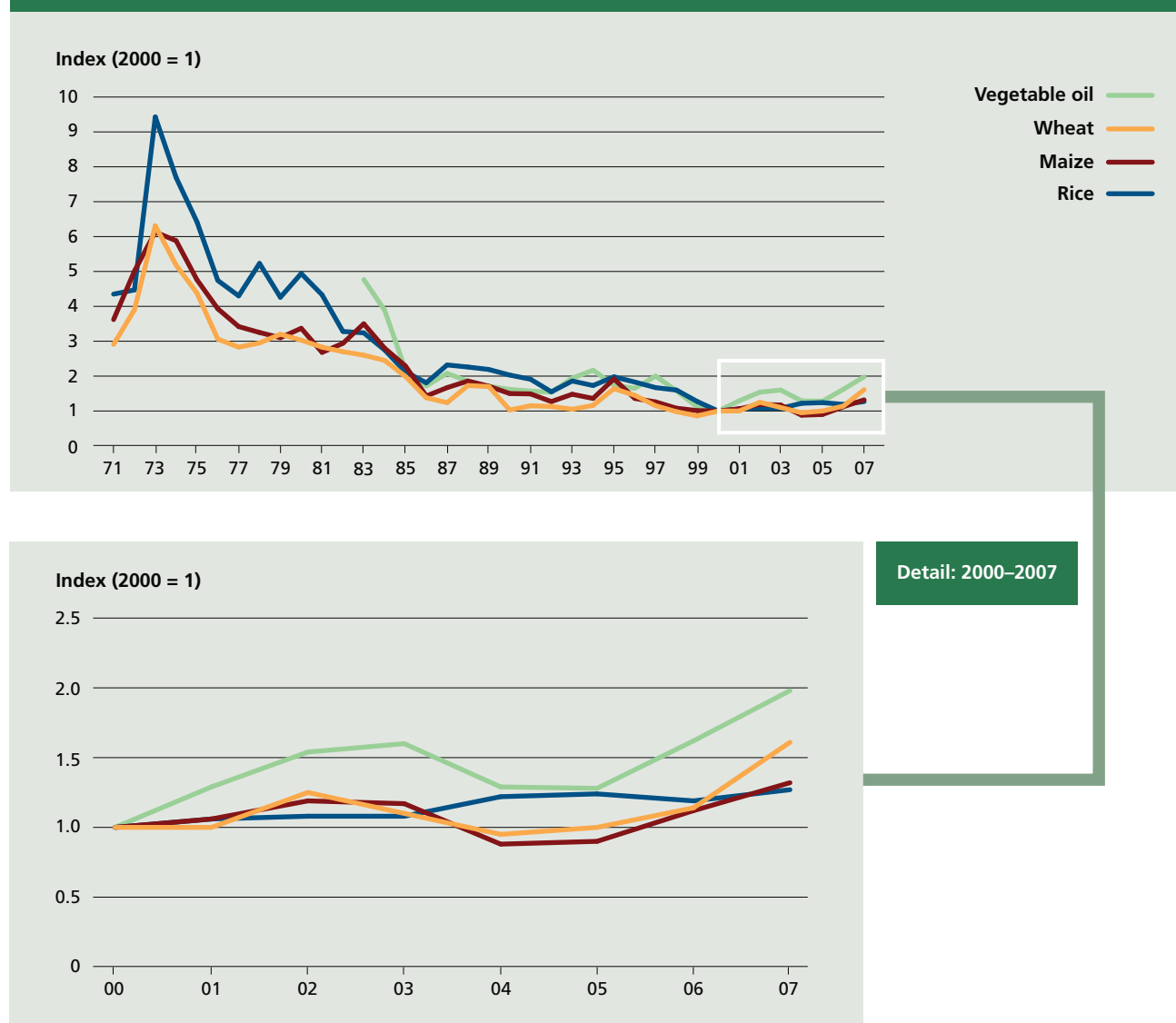
World price changes do not necessarily translate directly into local consumer prices. The degree of price transmission depends on several factors, including currency exchange rates, trade openness, the efficiency of markets and government policies for price stabilization. To illustrate this point, Figure 32 shows the evolution of rice prices from late 2003 to late 2007 for five Asian countries. During this period, world prices denominated in US dollars increased by 56 percent, the same for all countries. Prices at the border expressed in national currency

FIGURE 30  
Long-term food and energy price trends, real and nominal



Source: FAO.

FIGURE 31  
Commodity prices relative to income, 1971–2007



Source: Prices and population from OECD–FAO, 2008; GDP in current US dollars from IMF, 2008.

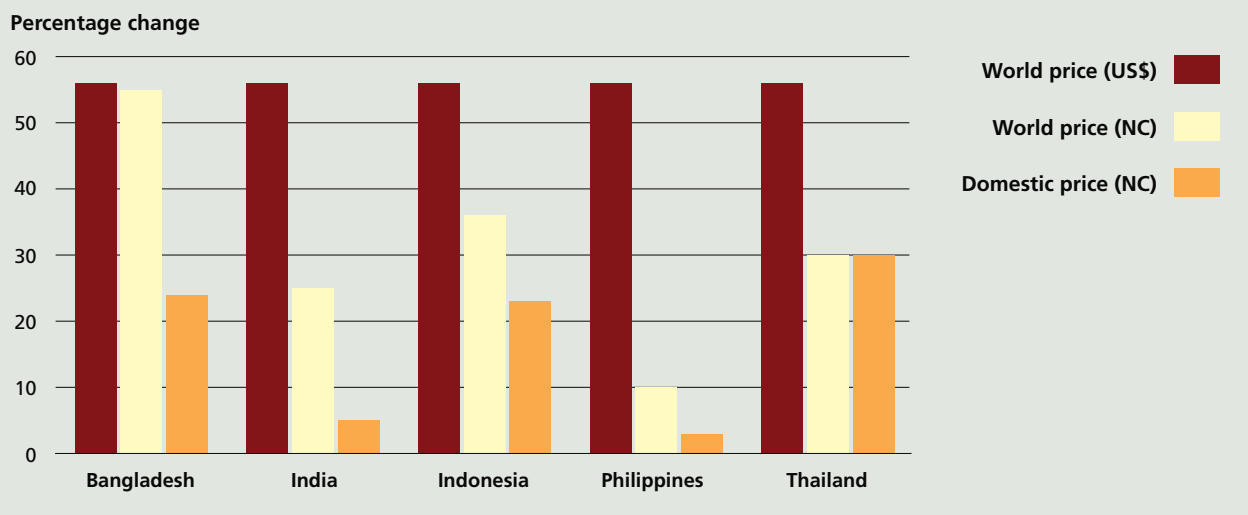
units also increased for all countries, but by differing amounts depending on changes in the real exchange rate between the US dollar and the national currency. The currencies of all of these countries except Bangladesh appreciated strongly against the dollar, offsetting part of the impact of higher international prices.

The domestic price changes shown in Figure 32 are based on observed prices in local markets and reflect the application of tariffs for imported goods and other market interventions aimed at buffering the effect

of international price changes. The ratio of the change in the local market price to that of the world price represents the degree of price transmission. The data show that the degree of price transmission has varied widely, from about 10 percent or less in India and the Philippines, to over 40 percent in Bangladesh, Indonesia and Thailand.

During this period, several countries pursued policies aimed at insulating domestic markets from international prices. For example, India and the Philippines used government storage, procurement and distribution as

**FIGURE 32**  
Changes in real rice prices in selected Asian countries, October–December 2003 to October–December 2007



Note: NC = national currency.

Source: FAO, 2008a.

well as restrictions on international trade, and Bangladesh used variable rice tariffs to stabilize domestic prices.

A low degree of price transmission should not be taken to mean that consumers have not been affected by rising prices. Prices rose by 25–30 percent in Bangladesh, India and Pakistan. Furthermore, world prices surged further in the first quarter of 2008, almost doubling between December 2007 and March 2008, and have led to substantial price increases in many domestic markets. In Bangladesh, wholesale prices rose by 38 percent during the first quarter of 2008. Prices in the India and Philippines also increased significantly during this period. Policy responses to rising prices are discussed further below and illustrated in Figure 40.

Part I of this report contains an extensive analysis of the impacts of higher food prices on food security. For the poorest households, food typically accounts for half, and often more, of their total expenditure. It follows that food price increases can have significant effects on welfare and nutrition. As shown in Figure 29 in Part I, a 10 percent increase in the price of the staple food can reduce the welfare of the poorest quintile of consumers by up to 3 percent in many countries. These estimates do not allow for household responses in production and consumption decisions. However, in the very

short run, adjustments in crop production are limited, and on the consumption side the very poor are likely to have only very limited substitution possibilities.

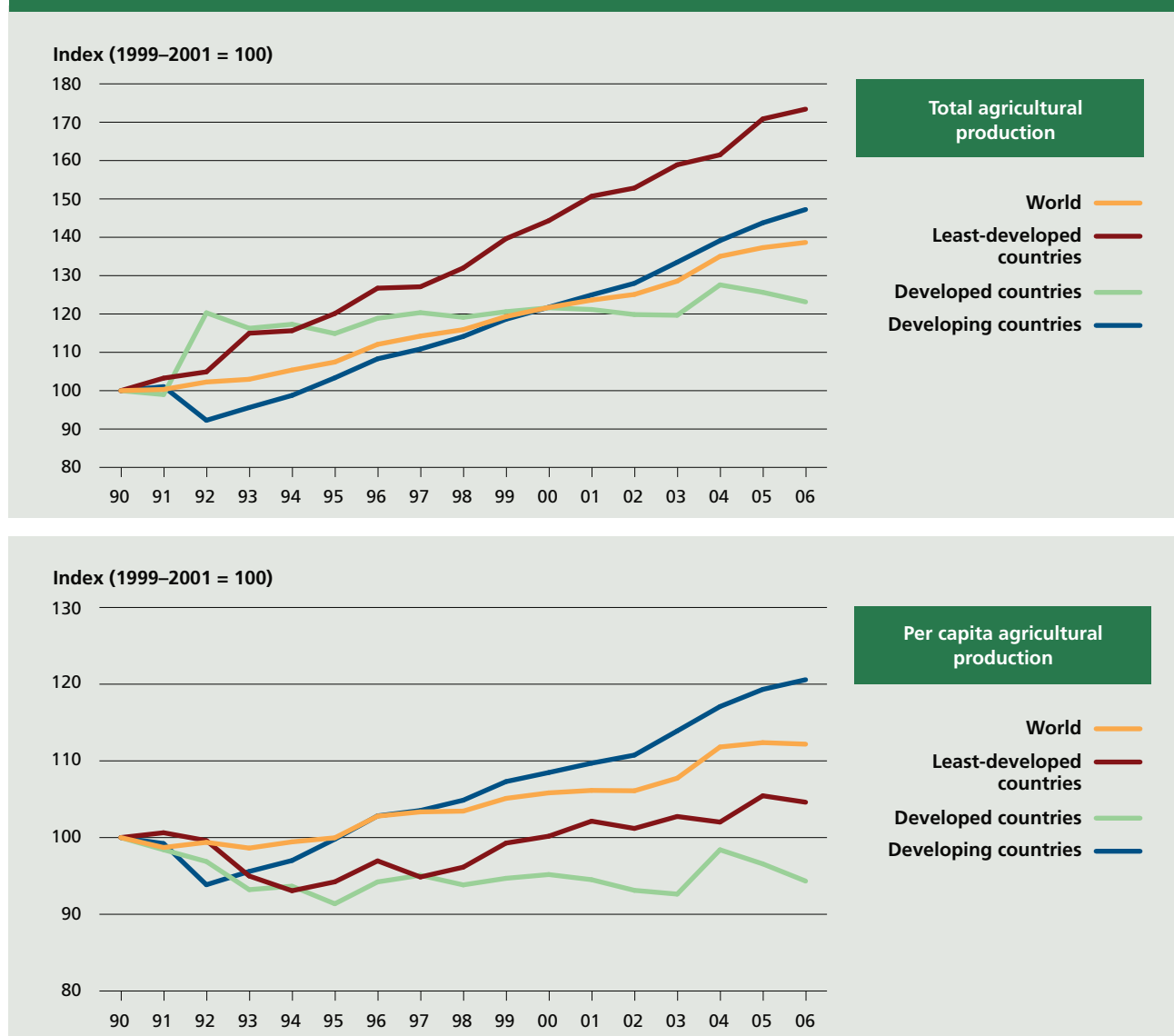
## AGRICULTURAL PRODUCTION AND STOCKS

As noted above, one of the factors identified as driving the recent commodity price surge was weather-induced production shortfalls in key commodity-exporting regions. The index of total agricultural production from 1990 through 2006, the latest year for which comprehensive data are available, shows rising output for the world as a whole and most country groups, with the exception of developed countries, where output has been flat during most of the period (Figure 33). In per capita terms, output levelled off after 2004 for the world as a whole, and declined in the least-developed countries in 2006 after nearly a decade of modest growth.

More recent data and projections to 2010 are available from the OECD-FAO agricultural outlook for key traded crops: wheat, rice, coarse grains, rapeseed, soybean, sunflower seed, palm oil and sugar (OECD-FAO, 2008).

At the global level, total production of these commodities (converted into wheat-

FIGURE 33  
Agricultural production indices, total and per capita



Source: FAO, 2008i.

equivalent units) rose by almost 6 percent in 2007 compared with the 2003–05 average (Figure 34).<sup>1</sup> However, production shortfalls of 20 percent in Australia and Canada, two major cereal exporters, contributed to tighter export supplies. Together with Argentina and Brazil, these countries account for only 15 percent of global production of these

crops but 35–40 percent of world exports. Supply disruptions in these countries can have disproportionate implications for export supplies and international agricultural prices.

Looking ahead to 2010, world output of these crops is projected to rise by 7 percent compared with 2007. This outcome depends on weather and the effective transmission of price signals to producers in countries that have the capacity to expand production. Where governments intentionally dampen price transmission, producers may not receive the necessary incentive to expand production. Conversely, where costs of

<sup>1</sup> Crop and livestock product volumes are converted into a common unit for comparability. Crops are aggregated on a wheat basis based on relative prices in 2000–02. Livestock products are also aggregated into a common unit based on relative prices.

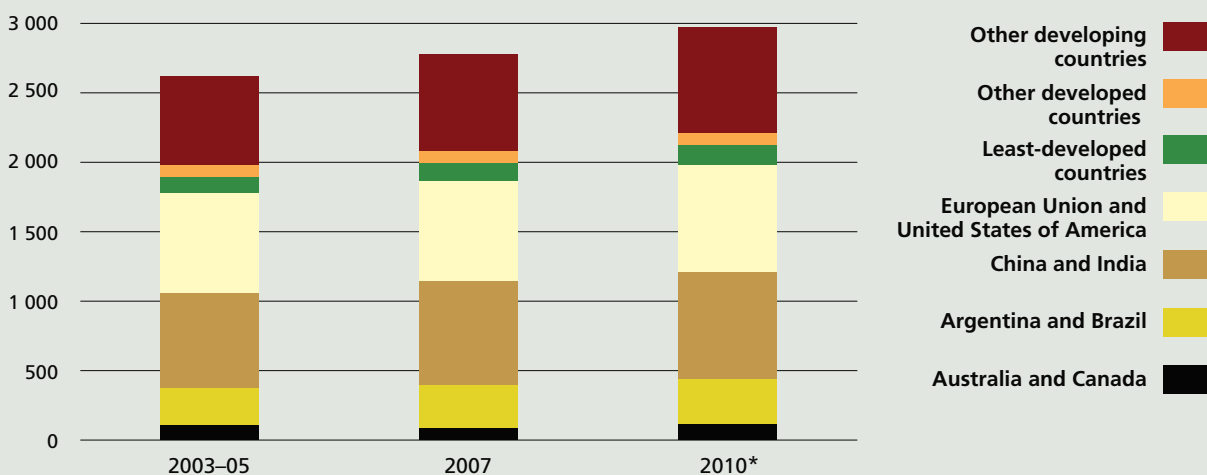
fertilizers and other purchased inputs have risen rapidly along with petroleum prices, farmers may be unable to expand production despite receiving stronger price signals.

World output of commonly traded meats, namely beef, pork, poultry, sheep meat and milk, grew at about the same pace as

output of traded crops from 2003–05 to 2007 (Figure 35). The 10 percent growth in developing-country output outpaced OECD production growth of 2 percent. Many developing countries posted well over 10 percent growth. In contrast, EU meat production was stagnant and EU dairy production fell.

**FIGURE 34**  
Production of selected crops

Million tonnes, wheat equivalent

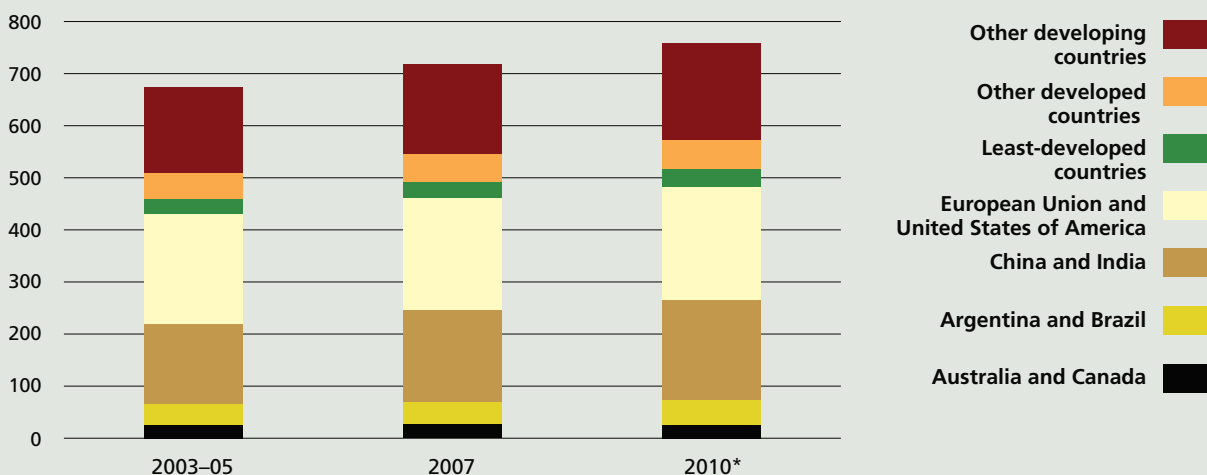


Notes: Selected crops include wheat, rice, coarse grains, rapeseed, soybean, sunflower seed, palm oil and sugar.  
\* Data for 2010 are projections.

Source: OECD-FAO, 2008.

**FIGURE 35**  
Production of selected livestock products

Million tonnes, pork equivalent

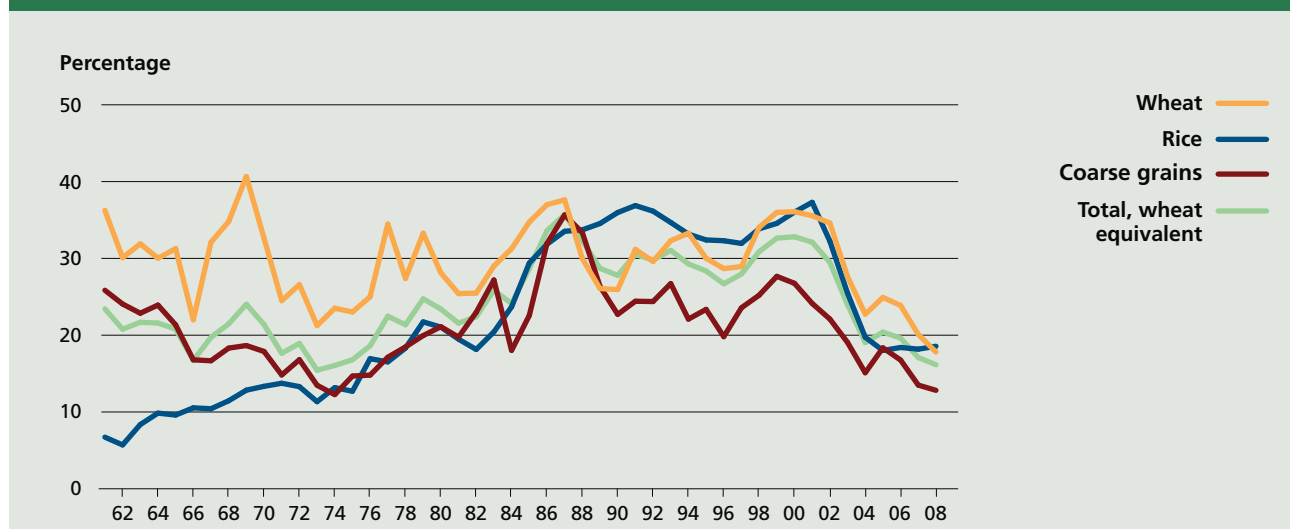


Note: Selected livestock products include beef, pork, poultry, sheep meat and milk.  
\* Data for 2010 are projections.

Source: OECD-FAO, 2008.



**FIGURE 36**  
Ratio of global stocks to use



Note: Wheat equivalent based on relative 2000–02 prices from OECD–FAO, 2008.

Source: Stock and use data from USDA Foreign Agricultural Service, 2008.

During the three-year period from 2007 to 2010, these trends are generally projected to continue despite the lingering effects of higher feed costs. The rate of output expansion in some key regions is expected to slow somewhat, but to remain strong in developing countries.

Stocks have the potential to offset shocks to agricultural markets. Stocks can be drawn down quickly during periods of high prices, or built up during periods of low prices, thus offering the opportunity to smooth prices and consumption over time. Global cereal stocks (wheat, rice and coarse grains) have fallen steadily relative to use requirements since the mid-1980s and even more quickly since 2000 (Figure 36). The stocks-to-use ratio for these cereals, at 16 percent, is half the level of ten years ago. This is lower than at any time during the past 45 years. Very low stock levels can make markets more vulnerable to shocks, contributing to price volatility and overall market uncertainty.

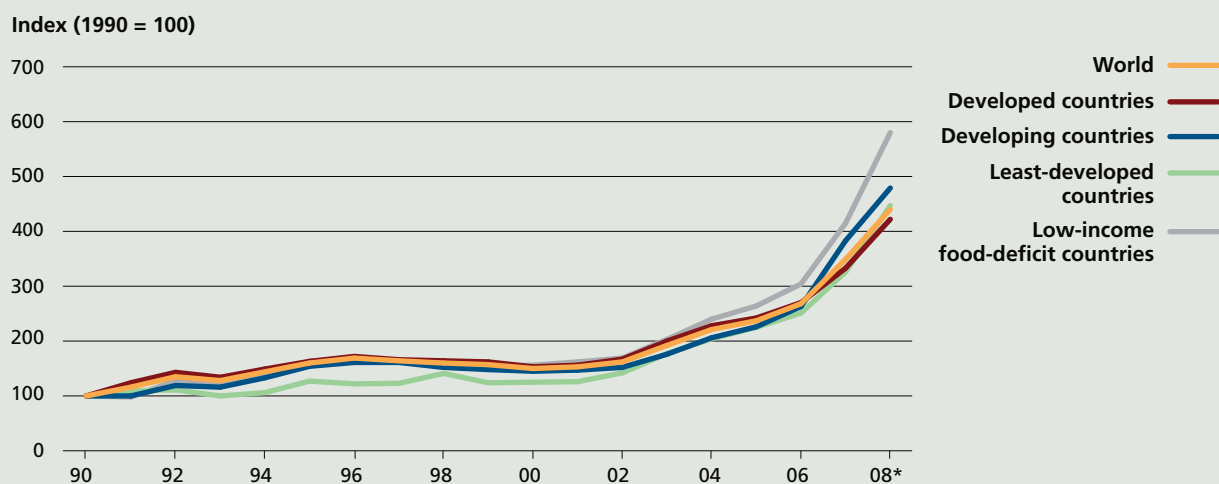
## TRADE

Global food-import expenditures, in value terms, are forecast to reach US\$1 035 billion dollars in 2008, 26 percent higher than the previous peak in 2007 (Figure 37). This figure is still provisional because FAO's food

import bill forecasts are conditional on developments in international prices and freight rates, which remain highly uncertain for the remainder of the year. The bulk of the anticipated growth in the world food import bill would come from higher expenditures on rice (77 percent), wheat (60 percent) and vegetable oils (60 percent). Import bills for livestock products are expected to register smaller increases, owing to moderate rises in global prices together with subdued trade. Higher international commodity prices are responsible for most of the increase, but freight costs, which have almost doubled for many routes, also contribute.

Among economic groups, the most economically vulnerable countries are set to bear the highest burden in the cost of importing food, with total expenditures by least-developed countries and low-income food-deficit countries expected to climb 37 percent and 40 percent, respectively, from 2007, after having risen almost as much in the previous year. The sustained rise in imported food expenditures for these vulnerable country groups is such that, on current expectations, by the end of 2008 their annual food import basket could cost four times as much as it did in 2000. This is in stark contrast to the trend prevailing for the overall developed country group, where import costs have risen far less.

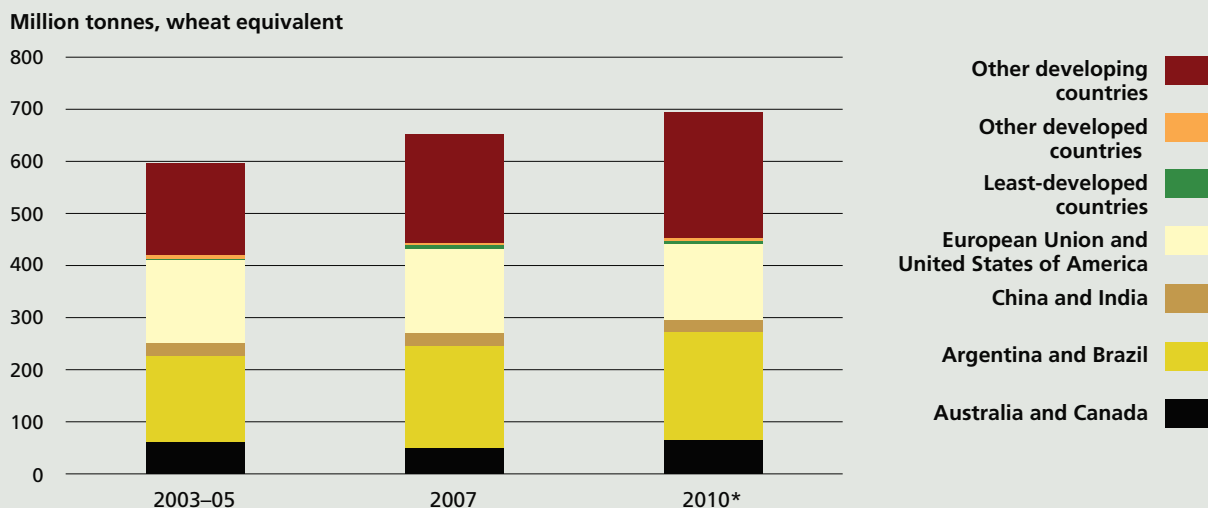
FIGURE 37  
Global food import expenditures, 1990–2008



\* Projection

Source: adapted from FAO, 2008b.

FIGURE 38  
Exports of selected crops



Note: Selected crops include wheat, rice, coarse grains, rapeseed, soybean, sunflower seed, palm oil and sugar.

\*Data for 2010 are projections.

Source: OECD-FAO, 2008.

### Imports and exports of selected commodities

The volume of major crop exports increased by 9 percent (55 billion tonnes in wheat equivalent) from 2003–05 to 2007 and is forecast to continue growing almost as rapidly to 2010 (Figure 38). Comparing trade patterns with production for major traded commodities highlights

the role that imports and exports play in different countries. Supply disruptions in major exporting countries can have important implications for export supplies and international agricultural markets even if they have little impact on global production. Conversely, in cases where trade is a small share of the domestic market, minor changes in a country's supply or

demand can have proportionately larger effects on trade flows.

Imports of these major crops are less concentrated than exports (Figure 39). Only China and the EU account for more than 10 percent of global imports each. Reflecting strong income growth, imports of many countries have increased in volume terms during the past three years despite higher world prices, a development that puts additional upward pressure on prices. As noted above, some countries whose currencies have appreciated relative to the US dollar have been able to sustain imports despite rising US dollar-denominated prices.

### Trade and consumption policies

Many countries have adjusted their trade and consumption policies in response to higher international prices. Figure 40 reports the number of countries that have adopted policy responses to rising food prices as of May 2008. Most of the countries in the sample have changed trade or consumption policies with a view to mitigating the impact of higher prices on consumers.

Trade policies are among the most-used measures, with 18 countries reducing import tariffs on cereals and 17 imposing export restrictions. Of the latter, 14 countries have placed quantitative restrictions or outright

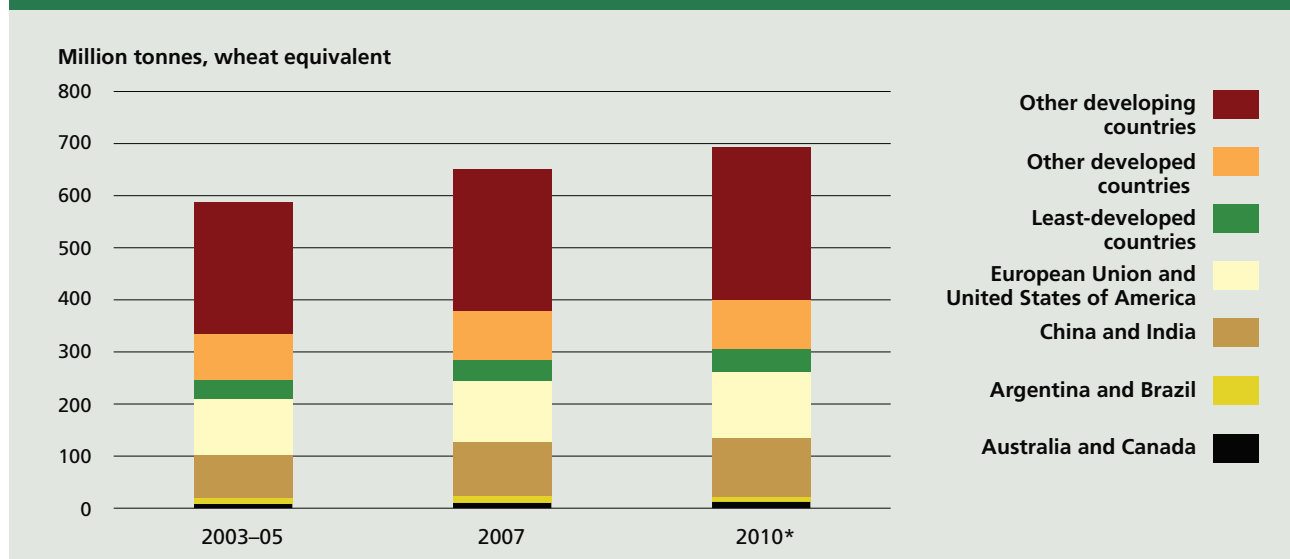
bans on exports. Consumption policies have included reducing food taxes (11 countries) or providing consumption subsidies (12 countries). An additional eight countries have adopted price controls. Of these measures, export bans and price controls are the most disruptive to markets and are likely to suppress incentives to producers to increase production.

### FOOD AID AND FOOD EMERGENCY NEEDS

One measure of vulnerability is the number of countries requiring external food assistance. As shown in Figure 41, as of May 2008, a total of 36 countries in crisis required external assistance, either because of exceptional shortfalls in aggregate food production/supplies, widespread lack of access or severe localized food insecurity. Twenty-one of these were in Africa, ten in Asia and the Near East, four in Latin America and one in Europe.

Rising food and energy prices have implications for food aid and food emergencies. Currently, food import bills and food-aid budgets are stretched thin, as prices per unit rise and transportation costs climb. For example, between the

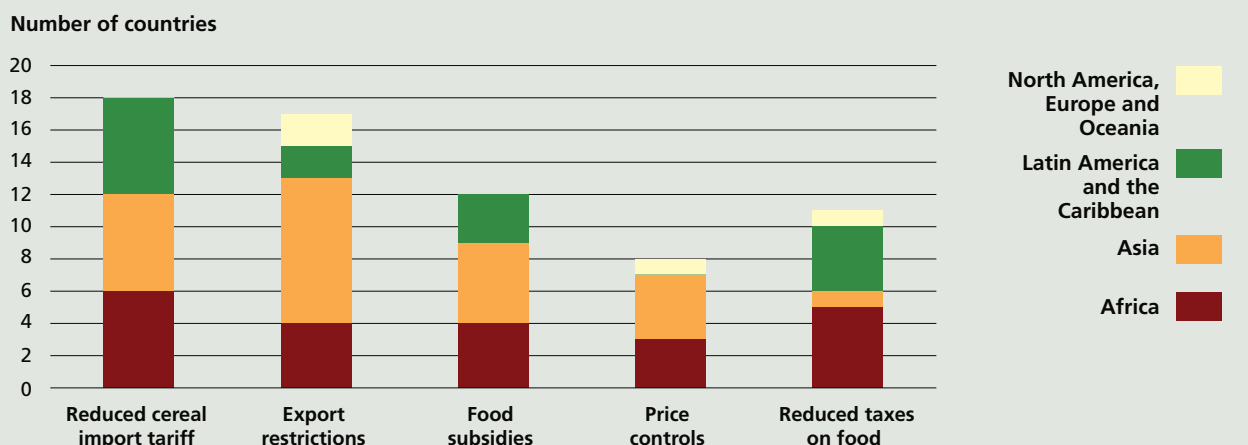
FIGURE 39  
Imports of selected crops



Note: Selected crops include wheat, rice, coarse grains, rapeseed, soybean, sunflower seed, palm oil and sugar.  
\* Data for 2010 are projections.

Source: OECD-FAO, 2008.

FIGURE 40  
Policy responses to high food prices, by region



Source: FAO, 2008a.

2005/06 and 2006/07 crop years, food-aid volumes decreased by 18 percent (expressed in wheat-equivalent), while the imputed value at world prices fell by only 3 percent (Figure 42). Since 1993/94, volumes have fallen by two-thirds and the imputed value has been reduced by half, with the difference explained by higher prices. Food-aid volumes in 2007/08 reached their lowest level since the early 1970s, reflecting the inverse relationship between food-aid volumes and world prices that typifies food-aid shipments (FAO, 2006c).

### KEY FACTORS DRIVING FUTURE PRICES

The preceding sections have highlighted recent trends in world agriculture and the factors underlying the sharp increases in agricultural commodity prices. Agricultural commodity markets are expected to remain tight in the future, and prices are expected to remain higher in the coming decade than they were in the past decade (OECD-FAO, 2008). Future developments in agricultural markets will continue to depend on how the factors reviewed above, and many others, evolve. Key factors discussed at the June 2008 High Level Conference in Rome included biofuel production, energy prices, economic growth, crop yields and trade policies. Some of these factors can be influenced by policy-

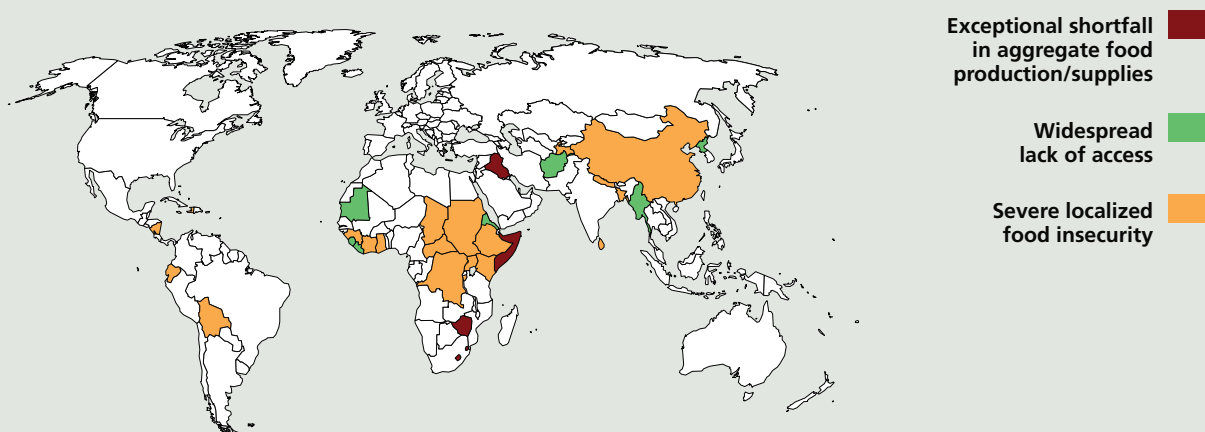
makers while others cannot, but none can be predicted with certainty, so a quantitative assessment of the potential impact of a range of possible values may help to gauge the range of market outcomes.

For this purpose, a series of scenarios have been assessed using the AgLink-Cosimo model, developed in a collaborative effort between the secretariats of FAO and OECD. The simulation exercises illustrate the estimated impact in the medium term on world prices of major agricultural commodities, relative to a baseline scenario, of hypothetical variations in the factors listed above. For a given year, they show changes in commodity prices relative to the values in that year under the baseline scenario. They are designed not to provide a projection, but to illustrate the impact of variations in factors affecting commodity markets. The chosen scenarios are stylized, and in each case important effects are omitted. Further information on the modelling framework and underlying assumptions (but not on these specific scenarios) can be found in OECD-FAO (2008).

### Biofuel production

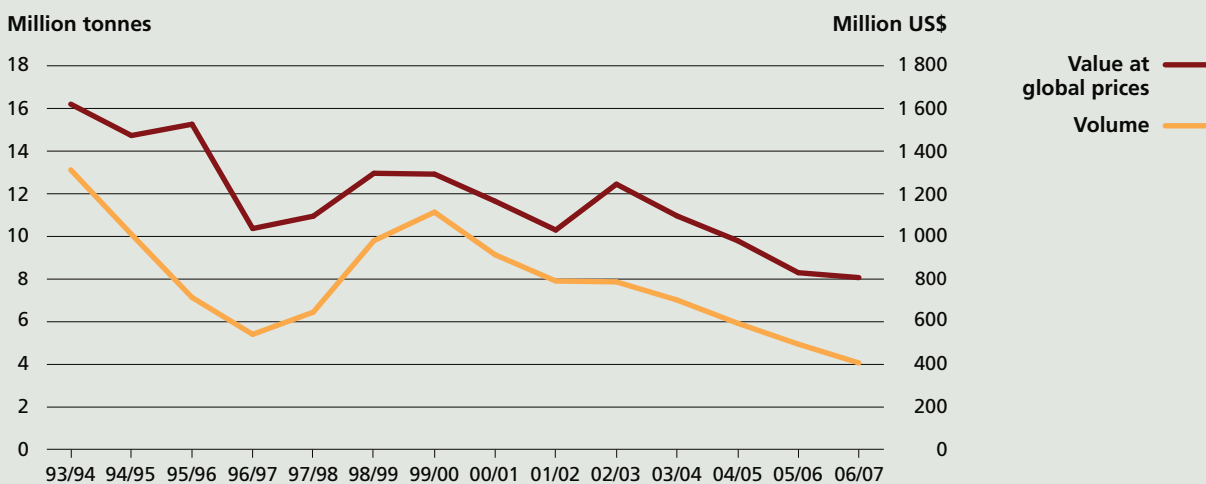
A major uncertainty for the future relates to developments in the demand for agricultural commodities as biofuel feedstocks. These will depend on developments in policies supporting biofuel production and consumption, on trends in

**FIGURE 41**  
Countries in crisis requiring external assistance, May 2008



Source: FAO.

**FIGURE 42**  
Cereal food aid, 1993/94–2006/07



Note: The volume of cereal food aid is the simple sum, not in wheat equivalent. Value is based on the quantity of each cereal multiplied by the global price.

Source: FAO, based on data from WFP, 2008.

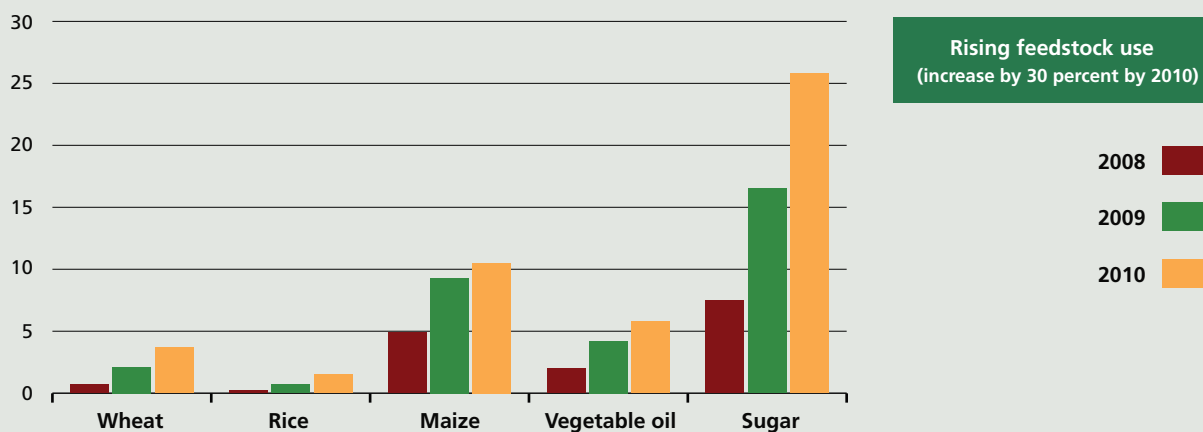
petroleum prices and on developments in technologies and their application. Relative to a baseline scenario where biofuel feedstock demand remains at the level of 2007, two different alternative scenarios have been analysed:

- an increase in biofuel demand for coarse grains, sugar and vegetable oil of 30 percent by 2010 (that is, implying a trend towards a doubling in ten years);
- a decline in biofuel demand for these commodities by 15 percent by 2010 (implying a trend towards a halving in ten years).

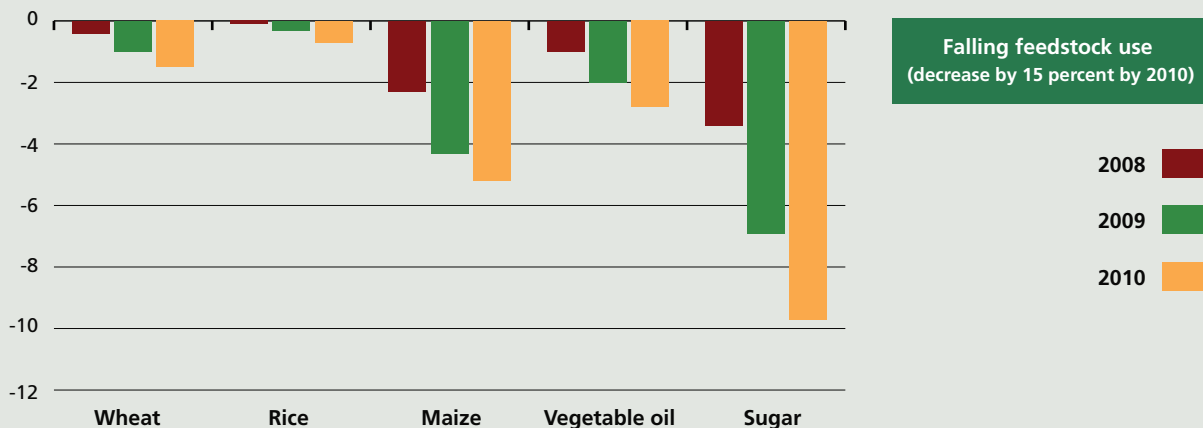
The effects on world prices of wheat, rice, maize, vegetable oil and sugar, relative to the baseline of biofuel feedstocks remaining at 2007 levels, are illustrated in Figure 43. In the case of a 15 percent reduction in biofuel feedstock use by 2010, world maize prices

**FIGURE 43**  
Effects on global agricultural prices of rising or falling biofuel feedstock use  
(compared with constant use at 2007 levels)

Percentage change



Percentage change



Source: FAO, 2008c.

would be 5 percent lower, vegetable oil prices 3 percent lower and the sugar prices 10 percent lower than the baseline scenario. In contrast, an increase of 30 percent in biofuel feedstock use by 2010 would cause prices in that year to increase by as much as 26 percent in the case of sugar and by 11 and 6 percent, respectively, for maize and vegetable oil. In both cases, there would be smaller effects in the same direction for wheat and rice.

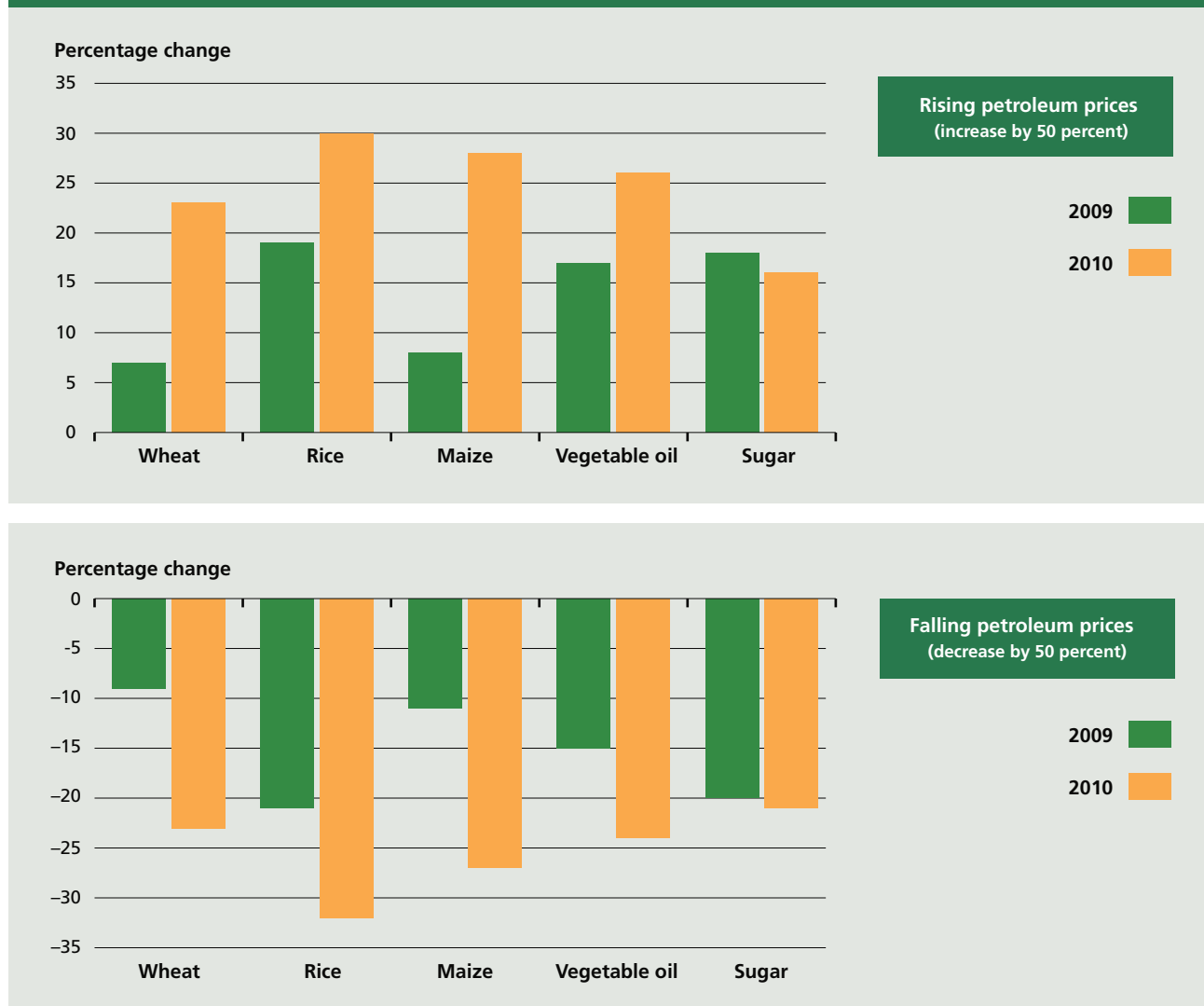
#### Petroleum prices

Petroleum prices are one factor affecting demand for biofuel feedstocks. However,

petroleum prices, and energy prices in general, are also determinants of agricultural production costs through their effects on the prices of fuel and agricultural chemicals. Stages between production and consumption of agricultural commodities, such as transportation and processing, are also sensitive to energy prices, but are not considered here.

The impact of petroleum prices on agricultural commodity markets is assessed by estimating the effect of higher or lower petroleum prices relative to a baseline scenario where petroleum prices remain at US\$130 per barrel, the assumed

**FIGURE 44**  
Effects on global agricultural prices of rising or falling petroleum prices  
(compared with constant price at US\$130/barrel)



Source: FAO, 2008c.

average level for 2008. Two cases are considered:

- petroleum prices rising to US\$195 per barrel in 2009 and 2010 (50 percent above the base level of US\$130);
- petroleum prices falling to US\$65 per barrel in 2009 and 2010 (50 percent below the base level).

The effects on the costs of production and on biofuel feedstock demand are both considered.

The results of the simulation on prices of key agricultural commodities are shown in Figure 44. A halving of oil prices would lead to a significant decline in agricultural commodity

prices, ranging from 21 to 32 percent in 2010, depending on the commodity. Conversely, a doubling of petroleum prices would lead to higher commodity prices in the range of 16–30 percent.

### Income growth

Strong demand growth from rising incomes and purchasing power in several parts of the developing world has been a major factor explaining part of the recent price increases. Such developments and the overall macroeconomic environment are sources of considerable uncertainty for agricultural markets.

Figure 45 illustrates the impact on crop prices of a halving of GDP growth in 2008, 2009 and 2010 compared with a situation of continued growth at the rates experienced in each country in 2007. Exchange rates and inflation are held constant. The initial effects of much slower GDP growth on crop prices would be modest, but by the third year price reductions would range from 6 to 9 percent. Livestock demand is more sensitive to income than staple foods, and livestock markets (not shown on graphic) would experience much more significant price impacts.

### Yield shocks and yield trends

Weather-related shocks yields and to supply explain part of the recent commodity price increase, and such shocks may become more frequent in the future. Given the current very low level of global grain stocks, the implications of additional yield shocks may be more pronounced.

Figure 46 illustrates the impact of a repetition of the yield shocks of 2007 in 2008, 2009 and 2010. If global wheat, rice, maize, vegetable oil and sugar yields were reduced by an amount equivalent to the yield shock of 2007, the expected recovery in output contained in the baseline projections would not materialize. With few stocks to draw on, the price impacts would be significant. Annual average prices for wheat and maize would rise by 20–25 percent in 2008, relative to the baseline. Other commodity prices would also be higher, but by lesser amounts, reflecting the smaller negative yield shocks of 2007 for these commodities. Repeating the yield shock in 2009 would produce further price increases relative to the baseline, reflecting increasingly tight stock levels. A further yield shock in 2010 would again raise prices relative to the baseline, but by lesser amounts than in 2008 and 2009 for wheat and maize, because of the potential for producers to expand area planted in response to higher prices, offsetting some of the decline in yields.

Repeated negative yield shocks are unlikely to occur on a global scale, and such a scenario lends itself to inappropriately pessimistic conclusions. Positive yield shocks in the form of bumper crops are also possible. A good year for growing crops in most key producing areas could lead to a partial respite from the tight market

situation, leaving room even to begin rebuilding stocks. In such a situation, prices could fall quickly.

Apart from transitory yield shocks, trends in yield growth are relevant to the long-term evolution of agricultural markets and determine the ability of world agriculture to adjust to structural shifts such as the emergence of major new sources of demand. The magnitude of yield growth over time constitutes an important factor of uncertainty in the long run. Two opposing arguments can be made.

- Yield growth will be constrained, even negative in some regions due to climatic changes, possibly even leading to declining global yields. Moreover, weather-related yield shocks will become more common.
- Yield growth will accelerate if high crop prices are sustained, as investments in new technologies increase and more producers see profits from raising their own yields, possibly even leading to substantial yield growth in developing countries.

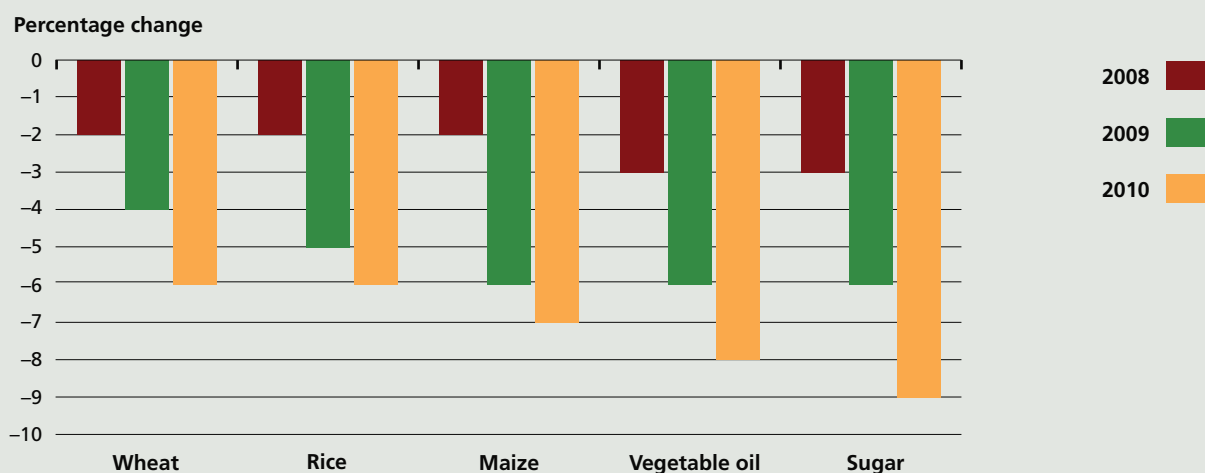
The impact of different assumptions concerning yield growth is demonstrated by Figure 47, which shows the effect of a doubling or a halving of annual yield growth relative to a baseline scenario of 1 percent annual growth. If yields for all commodities in all regions were to grow by 2 percent from 2008 on, wheat, maize and vegetable oil prices would be about 2 percent lower in 2010. Alternatively, if yields were to grow at an annual rate of 0.5 percent, prices would be higher, again most pronouncedly for wheat, maize and vegetable oil. In the longer run the impact of different yield growth assumptions can be significant. Thus, in the case of maize, after ten years of greater yield growth the global price would be 5 percent lower; and after ten years of lower yield growth the price would be 2.5 percent higher.

### Trade policy responses

Policy-makers are under pressure to respond to popular concerns over rising food prices. Responses have included trade measures aimed at influencing domestic prices. In several cases, as noted earlier, importing countries have lowered tariffs and exporting countries have taxed or restricted exports.

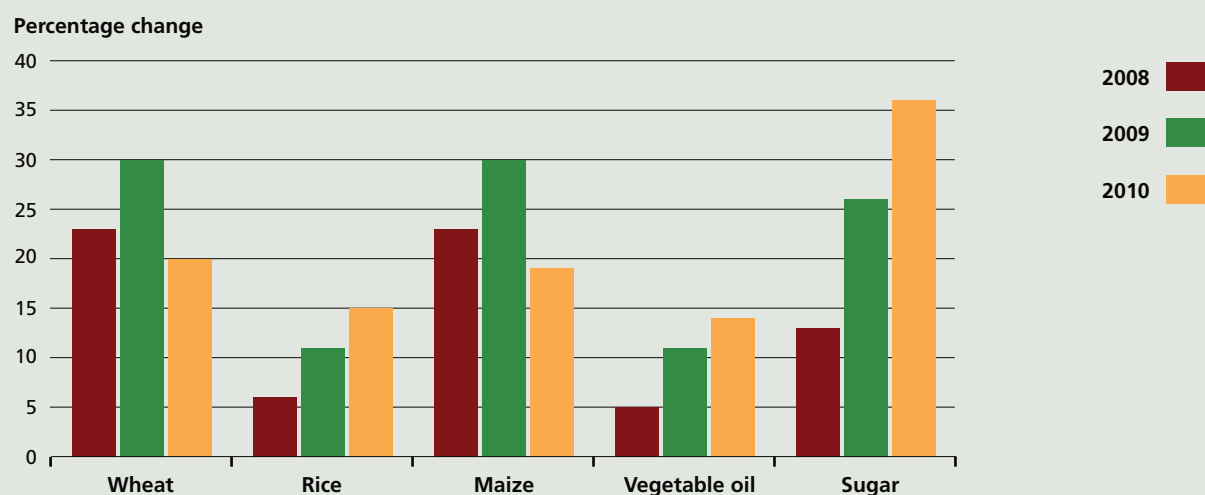


**FIGURE 45**  
Effects on global agricultural prices of a halving of GDP growth  
(compared with GDP growth rate at 2007 levels)



Source: FAO, 2008c.

**FIGURE 46**  
Effects on global agricultural prices of a repetition of the 2007 yield shocks



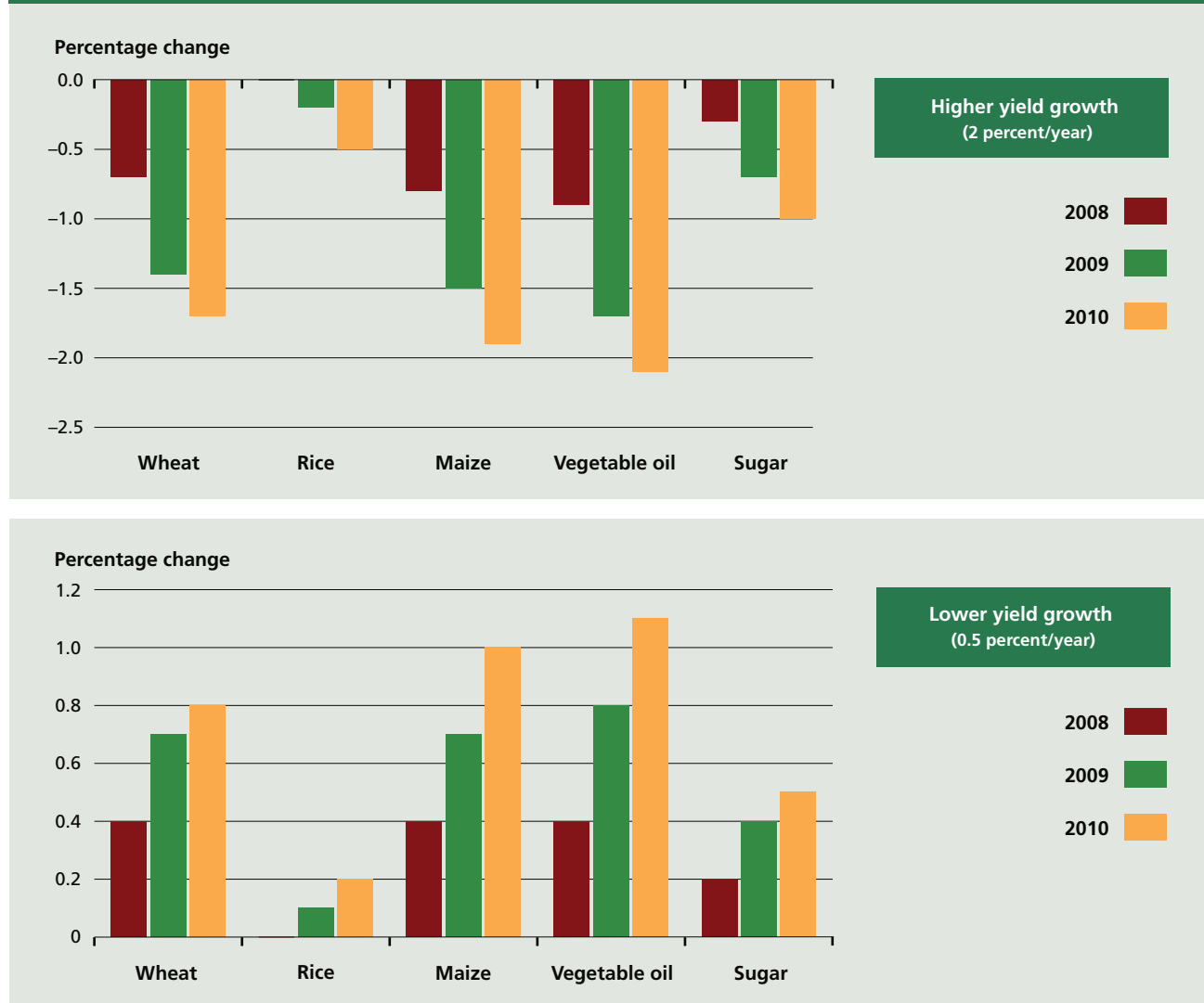
Source: FAO, 2008c.

In either case, the implications are lower domestic prices but further upward pressure on global prices. The lower domestic prices will reduce domestic producers' incentives to increase output and will consequently tend to impede their supply response, thus protracting the situation of high prices.

The impacts of export restrictions are illustrated by a hypothetical scenario

considering Egypt, India, Pakistan and Viet Nam, which together accounted for 38 percent of global rice exports in 2007. If these countries were to engage in policies that halved their rice exports in 2008, the global price would rise by an estimated 20 percent in that year. Relative to a situation with no export barriers, domestic rice prices would fall by as much

**FIGURE 47**  
**Effects on global agricultural prices of higher and lower annual yield growth**  
 (compared with yield growth rate of 1 percent)



Source: FAO, 2008c.

as 40 percent in Egypt and Viet Nam, where exports account for 20–25 percent of the local production, and by even more in Pakistan, given that a larger share of Pakistan's production is exported. The lower domestic prices in 2008 would depress production significantly in 2009.

### LOOKING AHEAD

Agricultural prices have always been volatile, but recent sharp increases in global agricultural commodity prices have focused unprecedented attention on the state of

food and agriculture at the global, regional and national levels. These price increases have been driven by a combination of short- and long-term factors on both the supply and demand sides, some of which will persist into the future. Looking ahead, we expect that biofuels will remain a significant source of increased demand for agricultural commodities – and for the resources used to produce them – and that the growth in income and consumption levels in developing countries will continue and, it is hoped, spread. On the supply side, the incidence of both short-term yield shocks and longer-term climate change remain uncertain, indicating

the persistence of price volatility given low levels of stocks.

Regardless of the source or magnitude of factors raising price levels and volatility, four essential steps are supported by the international community, and have been articulated most recently in the declaration of the High Level Conference on World Food Security: the Challenges of Climate Change and Bioenergy, as adopted in Rome in June 2008.

First, the immediate crisis must be addressed by providing appropriate safety nets for the most vulnerable countries and people. The decline in food-aid shipments in 2007/08, as food prices soared, is an urgent reminder that food aid can be an essential component of emergency aid, but it cannot form the basis of a durable food security strategy. More food aid is urgently required, but it is not enough. Other safety nets could include direct income support or food vouchers for low-income consumers who have seen their purchasing power eroded by rising prices. Many countries have put in place price controls in an effort to insulate consumers from world prices, but such measures are costly and inefficient because they benefit many who are not needy. Furthermore, such measures can be counterproductive in the longer run because they undermine the incentives for farmers to increase production and they reduce the resilience of the food system.

Second, there is an urgent need to invest in agriculture to enable the sector to take advantage of the opportunities presented by higher prices. Global agricultural output must increase substantially in the coming years to meet the rapidly growing demand arising from faster income growth and biofuel production. This growth must be sustainable and take into consideration the already fragile condition of many agricultural ecosystems. Such interventions should be designed in such a way as to encourage the emergence of market-based input supply systems, again to strengthen the resilience of the food system. To reduce the risks associated with high prices and to share the opportunities more widely, particular attention must be paid to the needs of small farmers in developing countries, and to the encouragement of sustainable production practices.

Third, as agreed at the High Level Conference, it is essential to address the challenges and opportunities posed by biofuels, in view of the world's food-security, energy and sustainable development needs. In-depth studies, an exchange of experiences on biofuel technologies, norms and regulations, and a coherent, effective and results-oriented international dialogue on biofuels are necessary to ensure that production and use of biofuels are economically, environmentally and socially sustainable, and that they take into account the need to achieve and maintain global food security.

Finally, the international community needs to act urgently to strengthen the credibility and resilience of the international trade system. International trade can be an important source of market stabilization, allowing countries to meet local production shortfalls through the market. But short-term measures, such as export bans aimed at protecting domestic consumers, can further destabilize markets and punish countries that depend on imports for their food security. More stable and transparent trade rules can support the resilience of food systems and promote durable food security. Only with these measures in place can we look forward to an agriculture sector that is more productive, more resilient and better placed to meet the challenges of continuing uncertainty and increasing demand.