High Food Prices: Causes and Possible Actions

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The world is experiencing a dramatic rise in food prices. The upturn began gradually in 2006 and has now escalated into a massive surge of food price inflation around the world. It has caused hunger, protests, riots and even fears for international security. Low-income, food-deficit countries have been hardest-hit, but the problem is global. Reports of the impact of high food prices on the poor across many developing countries have led to calls for international action to reverse the slide towards increased poverty and malnutrition. Aid agencies have encountered difficulties in meeting the higher costs of purchasing food for distribution and have appealed for additional funds.

Almost all agricultural commodities have been affected, with the most dramatic increases in the prices of wheat, rice and maize, and to a lesser extent in the prices of dairy products and meat. International wheat and maize prices, for example, more than doubled in the last year. The prices of tropical products and agricultural raw materials have increased less.

The current high prices should in principle be good news for farmers around the world. But prices of key agricultural inputs such as fertilizer, seeds and power have also surged, making it difficult for farmers to reap the benefits of the increases. Subsistence farmers in developing countries even stand to lose. They face higher input prices without producing a marketable surplus that would earn them higher revenues. Urban dwellers have to cope with price surges on several fronts – not only for food but also for fuel, electricity, transportation and many other basic necessities.

The current crisis raises many important and urgent questions. Most importantly, how can we swiftly address the problems of the most needy in order to avert a deeper and more widespread crisis? Specifically, what can be done to allow subsistence farmers to weather high input prices and reap the benefits of higher food prices? How can the food security situation be improved and the adverse impacts of high prices on nutrition be limited? How can food price inflation be restrained and a lasting improvement in national food security be achieved while maintaining incentives for producers and creating a supportive market environment? We also need to understand fully what factors have caused the surge in prices and whether food prices will remain high for the years to come, for sustainable solutions can only work when the causes of the problems have been understood.

These questions will be discussed in the rest of the paper which is organized as follows: The first section will take stock of main manifestations of the crisis and report on the magnitude of price surges and their impacts on hunger, poverty and inequality. It will then discuss the main causes of the price surges, distinguishing supply and demand-side factors and differentiating between factors that have driven long-term trends and those that have caused short-term swings. Finally the paper will present possible actions that would help to alleviate the most urgent and grave consequences and eventually put the world food situation back onto a more sustainable longer-term path.

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1 Appreciated are inputs by Josef Schmidhuber, Head, Global Perspective Studies Unit, FAO
1 Taking stock of a global shock: the nature and extent of the crisis

Soaring food prices

During the first four months of 2008, international prices of all major food commodities reached their highest nominal levels in nearly 50 years while prices in real terms were the highest in nearly 30 years. The FAO Food Price Index rose, on average, by 12 percent in 2006 compared with 2005. The price increase accelerated to 24 percent in 2007. The increase in the average of the index for the first four months of 2008 compared to the same four months in 2007 stands at 52 percent (Table 1). The continuing surge in prices is led by vegetable oils, which on average increased by more than 94 percent during the same period, followed by grains with 80 percent, and dairy products with 49 percent (Table 1). Prices for some commodities, notably for maize, continued to rise over the entire first half of 2008. Up to mid-June 2008, maize prices rose by more than 70%, approaching a record level of nearly US$8/bushel. Likewise, prices for soybeans and soybean oil, after a short retreat, returned to record or near record levels in mid-2008. Meat product prices also rose, but not to the same extent. Recent large increases in some commodity prices point also to increased volatility and uncertainty in the current market environment. Although the food market situation differs from commodity to commodity and country to country and although the future evolution remains highly uncertain, best projections suggest that food prices are likely to remain high in the next few years and high prices are expected to affect most developing country markets (OECD-FAO, 2008).

Looking at prices in real terms, the increases are not quite so dramatic although they are still significant. Real prices have shown a steady long-run downward trend punctuated by typically short-lived price spikes. There is some suggestion of a flattening out since the late 1980s with a gradual recovery beginning in 2000 before the sharp increase in 2006: the average growth rate over the 2000-2005 period of 1.3 percent per year has jumped to 15 percent since 2006. It is an interesting question whether the current sharp increases are fundamentally different from earlier price spikes and whether the observed long-term decline in real prices has halted, signalling a structural change in agricultural commodity markets. It is too early to decide, but these questions will be returned-to later.

The current high prices are in sharp contrast to the secular downward trend and the prolonged slump in commodity prices from 1995 to 2002 which even prompted calls for the revival of international commodity agreements. However, the question of whether the current price levels are consistent with past commodity price behaviour (sharp but short-lived peaks and prolonged slumps) or represent a break with these past behaviour patterns is difficult to answer conclusively on the evidence to date. There are some features of the current situation, notably the historically-low stock levels for cereals and strong demand for biofuels, which suggest that the current high prices may well not be short-lived but could persist for some years.

Soaring input prices

Soaring food prices have been accompanied by soaring input prices. Prices for fertilizer, seeds and animal feed have risen by 98, 72 and 60 percent respectively since 2006. For some inputs these price rises even accelerated in 2008. On average, the FAO Input Price Index doubled in the first four months of 2008, compared to the same period in 2007; US dollar prices of some fertilizers more than tripled. Small farmers in developing countries are always particularly
hard-hit by soaring input prices: they have to pay a lot more for the seeds, fertilizer and diesel they need without being able to benefit from high output prices (Table 1).

**Table 1: Changes in output and input prices for selected products and inputs**

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<th>Meat</th>
<th>Dairy</th>
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<th>Oils</th>
<th>Sugar percent</th>
<th>Food price index&lt;sup&gt;1&lt;/sup&gt;</th>
<th>Ammonia</th>
<th>Urea</th>
<th>CAN</th>
<th>NPK</th>
<th>DAP</th>
<th>IRAC Crude Oil&lt;sup&gt;2&lt;/sup&gt;</th>
<th>Input price index&lt;sup&gt;1&lt;/sup&gt;</th>
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<sup>1</sup> Food Price Index: butter, cocoa, beans, corn, cottonseed oil, hogs, lard, steers, sugar and wheat. Input price index: Ammonia, Urea, CAN, NPK, DAP and IRAC Crude Oil

<sup>2</sup> Imported Refiner Acquisition Cost (IRAC) of Crude Oil in USA.

**Rising inflationary pressures**

The upturn in food prices swiftly triggered a surge in food price inflation around the world. Again, the poorest consumers and countries have been hardest-hit. As poorer consumers spend a larger share of their disposable incomes on food, they are particularly vulnerable to increases in food prices.

What makes individual consumers vulnerable to rising food prices makes entire countries susceptible to inflationary pressures. In countries where food consumption accounts for a large share of overall expenditures, rising food prices translate into overall inflationary pressure. Figure 1 illustrates the case. In poor countries, food expenditures often account for two thirds of the overall consumer price index (CPI), whereby food has a weight of merely 15 percent or less in rich countries (Figure 1). The effects are already highly visible. In Sri Lanka, for instance, where food accounts for 62% of the CPI, rising food prices boosted food price inflation by 26%. Overall inflation rose by 19 percent. In South Africa, by contrast, food accounts for “only” 23 percent of the CPI, so that food prices translated into a smaller increase in food price inflation of 14%. Overall inflation was up by 9 percent.

In addition to the direct burden on the cost of living, there are other propagation mechanisms through which rising food prices can become increasingly harmful. For example, they may raise non-food prices through a wage response to higher food prices – higher wage demands have been at the core of several recent protests.
Poorer countries are much more exposed to food inflation

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\begin{align*}
\text{Per capita income (US$)} & \quad 0 \quad 10 \quad 20 \quad 30 \quad 40 \quad 50 \quad 60 \quad 70 \\
\text{Percentage share of food in CPI} & \quad 0 \quad 10000 \quad 20000 \quad 30000 \quad 40000 \quad 50000 \quad 60000 \quad 70000
\end{align*}
\]

Source: FAO, SOCO, 2008

Figure 1: Share of food in CPI

**Protest and Riots**

In many developing countries, especially those dependent on international markets, substantial increases in food prices and the cost of living have posed a threat to macroeconomic stability and overall economic growth. The most visible, immediate consequences were social unrest and riots that have and continue to take place on most continents. In some cases soaring food prices even acted as a trigger for protests against wider economic and political problems.

Social unrest has predominantly affected urban areas where consumers have felt the brunt of soaring food prices. The latter effectively erode the purchasing power of import-dependent urban dwellers, particularly when countries depend heavily on imported food and when food accounts for a large share of disposable incomes. There is also growing evidence that rural populations have been adversely affected. While high agricultural prices are normally good news for farmers, higher input prices have allowed only commercial producers to benefit in a significant way. Subsistence farmers have been squeezed by soaring costs without being able to benefit from high output prices.

**Soaring food import bills**

The combination of rapidly rising food prices and higher freight costs has resulted in sharply higher food-import costs. Globally, food import bills surged to 820 billion dollars in 2007, the highest level in history. (FAO, 2008a). Costs are projected to rise by another 26% in 2008 and could reach an all-time high of 1 035 billion dollars in 2008 (Figure 2). The most economically vulnerable countries are liable to bear the highest burden in the cost of importing food, with total expenditures by Least Developed Countries (LDCs) and Low-
Income Food-Deficit countries (LIFDCs) anticipated to climb by up to 40 percent from 2007, after rising by 30 percent and 37 percent, respectively, last year. In 2008, the annual food-import basket in these countries could cost four times as much as it did in 2000.

![Figure 2: Food import costs, 1978 - 2008](image)

**Rising poverty and inequality**

Soaring food prices, in conjunction with soaring fuel prices, have aggravated poverty and inequality (World Bank, 2008). A recent World Bank study suggests a surge in poverty due to rising food prices, even though those results are based on eight countries only and may be subject to revision. Extrapolating these results globally and exclusively focusing on the impact of higher food prices would mean that total world poverty may have increased by between 73 and 105 million people. In Africa alone, the food price crisis could have pushed nearly 30 million additional persons into poverty. The World Bank study also suggests that the poverty impact of rising oil prices is generally lower, since a smaller share of household consumption goes to fuel and energy-related products. But as a crucial intermediate input, higher energy costs also affect the prices of an enormous range of goods, especially related to transport.

A few country examples help illustrate the poverty impacts of the food crisis. In Liberia, the cost of the food basket for a typical household increased by 25% in January alone. As a result the poverty rate has risen from 64% to over 70%. In Yemen, the doubling of the price of wheat and bread has resulted in a 12% loss in real income for the poor. In Honduras, the rise in food prices is estimated to have increased poverty by four percentage points from 51% to 55%, while in Sierra Leone the food crisis has raised poverty by 3 percentage points, to 69%. In Djibouti, the increase in food prices over the past three years is estimated to have led to an increase in extreme poverty from 40% to 54%. The World Bank warns that such setbacks may reverse the gains made in reducing poverty over the last seven years.
There is also growing evidence that higher food prices have heightened inequality within countries. In Bangladesh, for instance, surging food prices have not only increased the level of absolute poverty, but also raised the Gini index of inequality by five percent. This is due to the benefit that larger farmers accrue relative to smaller farmers and to the urban poor. Similarly, the effective rate of inflation faced by the poor in Latin America is three percentage points more than the official rate, implying that rich-poor gaps are widening. In Vietnam, while a significant number of those close to the poverty line are net sellers of rice and benefit from rising prices, the poorest in rural areas benefit least and those in urban areas are worst affected. As a result, inequality across and within regions in Vietnam is likely to increase.

**Rising hunger**

With rising poverty it should come as no surprise that hunger, the most fundamental manifestation of poverty, is also on the rise. The 2008 edition of FAO’s State of Food Insecurity in the World (SOFI) shows that the number of hungry people rose by about 50 million in 2007 (FAO, 2008, forthcoming). The FAO analysis also shows that the lion’s share of this increase can be attributed to high food prices and it warns that the numbers may rise further in 2008 since countries have drawn down their budgetary reserves and households exhausted their savings. With such buffers no longer in place, many more people could go hungry.

FAO is also monitoring the effects of rising food prices on particularly vulnerable groups. This works shows that that children living in environments of conflict, instability, or HIV/AIDS are especially affected. In East and Southern Africa, 12 million AIDS orphans are amongst those most vulnerable to rising food prices. In Somalia, 2.6 million, approximately 35% of the population, of which more than half are children, are already affected by a nutrition crisis caused by drought and prolonged conflict. As a result of rising food prices, many are now either skipping meals or are switching to cheaper and lower-quality cereals. It is estimated that the number of people needing humanitarian assistance in Somalia could reach 3.5 million, or half the total population of Somalia, by the end of 2008 (FAO, 2008b).

World Bank poverty and FAO hunger estimates have been corroborated by other studies. UNICEF, for instance, estimates that 1.5 to 1.8 million more children in India are currently at risk of malnourishment, as households cut back on meals or switch to less nutritious foods due to rising food prices. In Vietnam, where nearly 80 percent of the caloric intake of the poor comes from rice alone, the increases in prices could significantly affect the nutritional status of rural and urban poor alike. If even stable, high growth countries are not immune to the damaging effect of escalating food prices, the risks in other less dynamic economies must be even greater.
2 The main causes of the crisis

Market fundamentals and price trends

Changes in prices stem from shifts in supply and demand. In food and agricultural markets, the responsiveness of supply and demand strongly depends on the time frame in which these shifts take place. In the short run, supply and demand for agricultural products are inelastic and do not respond much as prices change, so supply and demand shocks can produce considerable swings in prices. The most frequent shocks in agriculture are produced by the vagaries of weather; the effects of these shocks are particularly pronounced where the dependency on weather is highest, i.e. in marginal agricultural production systems. Typical long-term supply shifts result from productivity gains, while long-term demand shifts mainly stem from population and income growth, urbanization or changes in food consumption patterns.

It is important to separate the long-term shifts from the short-term shocks. The long-term shifts typically cause trend developments while the shocks are responsible for the swings around those trends. The analysis presented here provides a clear distinction between shock and shift factors as well as demand and supply factors. While no attempt will be made to measure the precise impacts of the various factors, it will present the main facts and figures that characterised the shifts and shocks and discuss their importance in a qualitative way. The analysis will also endeavour to debunk some of the myths and misperceptions that have emerged in discussion of the recent market turbulences.

2.1 Short-term swing factors

Lower stocks make markets more susceptible to exogenous shocks

Stocks play a key role in equilibrating markets and smoothing price variations. If stocks are low relative to utilisation, prices tend to rise. The level of stocks, mainly of cereals, has been falling since the mid-1990s. Since the last high-price event in 1995, global stock levels have declined by 3.4 percent per year. As consumption has increased, the ratio of stocks to total utilization has fallen even faster and reached a historic low in 2008 (Figure 3).

A number of changes in the policy environment have brought about that drop; they include the reform of support policies, particularly in the EU and US and the departure from intervention purchases by public institutions; the development of other less costly instruments of risk management; demand for biofuels as a new “vent for surplus”; improvements in information and transportation technologies and thus a reduced need to hold large amounts of stocks.

The relatively calm market situation at the beginning of this decade made these lower stock levels look sufficient as a market buffer. But as they continued to decline and new demands emerged, stock levels eventually became too small to buffer the more pronounced shortfalls in supply. Wide swings in prices in 2007 and 2008 ensued and continuing low stock levels will keep prices high and volatile for some time. By the close of the seasons ending in 2008, world cereal stocks are expected to decline a further five percent from their already reduced level at the start of the season and reach their lowest levels in 25 years. The ratio of world cereal stocks-to-utilization ratio is expected to fall to 18.8 percent, down six percent from the
previous low in 2006/07 (Figure 3). Stock-to-use ratios for wheat even hit historic lows. In parallel, the stock situation for oils/fats and meals/cakes began to deteriorate in mid-2007 after the spillover effects from developments in the cereals markets, especially of wheat and coarse grains, with the stock-to-utilisation ratio expected to fall from 13 to 11 percent for oils/fats and from 17 to 11 percent for meals/cakes by the end of the 2007/08 season.

![Stock-to-use ratios for cereals at historic lows](image)

**Figure 3: World cereal stocks, 1981 - 2008**

*Weather related shocks*

While low stocks are not *per se* an independent (exogenous) factor for high prices, they have made markets more sensitive to shocks. A typical example for a short-term supply shock is a sudden deterioration in weather conditions. Directly measuring a change in average global weather conditions is a difficult, if not impossible undertaking. But changes can be measured indirectly by examining global yield trends and measuring deviations from this trend. All other yield-affecting factors (fertilizer and pesticide applications, irrigation, etc.) are assumed to remain unchanged.

Examination of actual yield trends for cereals reveals a differentiated picture (Figure 4). In recent years, global wheat yields have indeed fallen below their past trends. The most affected countries are easily spotted. They include Australia which suffered two consecutive droughts and subsequently two sharp yield drops in 2006 and 2007; an outright crop failure for wheat in Morocco in 2007; and a very low wheat crop in the Ukraine that was also weather-related. In a market environment of low stocks, these production shortfalls certainly contributed to the recent price spike which culminated in futures prices for wheat of over US$13/bushel by end March 2008.
Weather related supply shocks
Lower wheat yields but coarse grain yields, globally

![Graph showing weather-related supply shocks: Lower wheat, but higher coarse grains yields](graph.png)

Figure 4: Weather-related supply shocks: Lower wheat, but higher coarse grains yields

While the weather seems to be one factor for spiking prices for wheat, no such effect is discernable for coarse grains. On the contrary, average global coarse grain yields remained above their long-term trend over the last four years. Whether these higher yields can be completely ascribed to good weather is still unclear, but anecdotal evidence of good growing conditions in the main growing areas would corroborate the good weather hypothesis.

*When stocks are low, wafer-thin markets can be swung by a few important suppliers*

One of the idiosyncrasies of agricultural markets is that internationally traded volumes account for only a fraction of world consumption or production. Wheat trade, for instance, accounts for less than 18 percent of production, maize trade for 12 percent and rice less than 8 percent. In addition, trade is often controlled by only a handful of exporters. For maize, one single country accounted for more than 60 percent of world exports in 2007 while the share of the top three countries was 90 percent. In the case of rice, the top exporter controlled nearly 30 percent of the world market in 2007 and the top three suppliers nearly 60 percent. Thin markets and a high concentration of trade in the hands of a few countries make these commodities very susceptible to exogenous shocks, particularly if a main international supplier is affected. In fact, in the tight conditions of 2007/08 even the mere announcement of a possible change was enough to send shockwaves through the market. Numerous examples may be cited. Probably the most striking was the market reaction to the announcement by an important wheat exporter that it was considering imposing a tax on its exports for the rest of 2008. When the announcement was made on 25 February 2008, wheat prices leaped by 25 percent in a single trading session, the largest-ever recorded price rise in a day.
The input price shock

Another major supply-side shock was the dramatic increase in oil prices beginning in 2003. Essentially all economic sectors were affected, agriculture in particular. Average input prices have doubled, prices of some fertilizers (e.g. triple superphosphate and muriate of potash) have increased by more than 160 percent in the first few months of 2008 compared to the same period in 2007. Overall the increase in energy prices has been rapid, steep and comprehensive, with the Reuters-CRB energy price index more than tripling since 2003.

The oil price shock also affected agricultural markets through the transportation sector. Average freight rates doubled within a one-year period beginning in February 2006. Ocean freight rates for grains from the United States to Europe almost trebled, surging from about 34 €/t to nearly 90 €/t. This effectively re-regionalised international agricultural markets, particularly for bulk commodities. It also created substantial regional price differentials and meant that trade could no longer fully play its vital role in international food security by matching local deficits with local surpluses.

The policy shocks

As prices on the international markets surged during the second half of 2007, many countries became increasingly concerned about the security of their domestic food supply situation. Food price inflation became an increasingly worrisome burden for entire economies and hurt the poorest population segments in particular. In some countries, worries about possible physical shortages of foodstuffs emerged, even compromising the availability of subsidized supplies through safety nets. Protest, riots and general social unrest ensued.

To ward off deeper and more serious consequences, many governments resorted to trade policy measures to curtail price increases and ensure adequate supplies on domestic markets. In the case of food-exporting countries, the measures put in operation ranged from export taxes to quantitative export restrictions to outright export bans. For importing countries measures included the reduction of tariffs and in a few cases, even the outright subsidization of imports, i.e. negative import tariffs.

FAO surveyed policy reactions in 77 individual countries. It found that more than 50 percent of them had reduced grain import tariffs and about 25 percent had imposed export controls of some kind – either in the form of taxes or quantitative controls such as bans and quotas.

From a short-term domestic food security perspective, export restrictions may make perfect sense: they are cheap, easy to implement and generally help achieve the stated objective of stabilising the domestic food situation. From an international perspective, however, they are highly counterproductive. They aggravate the international supply shortages, make markets more volatile and push up prices even further. De facto, they relegate a domestic food security problem to the international market and shift the brunt of the problem onto those countries which heavily depend on imports and cannot afford the higher prices. In general, these are the Low Income Food Deficit Countries (LIFDCs), typically the countries already suffering from very high levels of undernourishment.

The FAO survey results also indicates that the benefits of these measures may be short-lived: While export taxes raised some additional government revenues initially, a number of exporting countries have reported that lower domestic output prices coupled with high input
prices have actually resulted in decreased plantings and may cause a further deterioration of the food security situation soon. Likewise, reducing import tariffs has incurred revenue losses which often make an important contribution to overall budgetary resources for development.

**Demand-side shocks**

Demand shock factors contributing to the recent rise in world food prices are more difficult to spot. Unlike supply, changes on the demand side are seldom rapid or unexpected. The main reason is that demand in food markets is mainly driven by population and income growth, and both these factors evolve gradually rather than abruptly. In general, the situation during the years of the recent price surge does not depart from this trend. Neither food nor feed demand has exhibited a sudden or unexpected increase that would have merited the kind of price rises witnessed recently.

The only discernable exception is the rapid expansion of demand for biofuel feedstocks. It marks a clear departure from the gradual demand growth patterns of food and feed and therefore warrants closer inspection. Among all major food and feed commodities, additional demand for maize (a feedstock for the production of ethanol) and rapeseed (a feedstock for the production of biodiesel) saw the steepest increases and thus probably had the strongest impact on prices. For example, out of nearly 40 million tonnes increase in total world maize utilization in 2007, almost 30 million tonnes were absorbed by ethanol plants alone. Most of this expansion occurred in the United States, the world’s largest producer and exporter of maize. In the United States, maize used to produce ethanol represented around 30 percent of total domestic utilization (Figure 5). Globally, some 12 percent of all maize used was for ethanol in 2007. In the EU, the biodiesel sector is estimated to have absorbed about 60 percent of member states’ rapeseed oil output in 2007, which amounts to about 25 percent of global production and 70 percent of global trade in the commodity in 2007. For both products, the rise in demand for biofuels was sudden and massive and helps explain the steep rise in international prices observed since the beginning of 2007.

![Maize utilization and exports in the United States](image)

*Figure 5: US Maize utilization, 2003/4 - 2007/08*
From a longer-term perspective, rising energy prices may mean that agriculture becomes an increasingly important provider of (bio)energy. The energy market is so large and the demand for bioenergy is potentially so high that the energy market could completely change the traditional agricultural market systems. This may introduce a new paradigm for world agricultural markets. If energy prices remain high and feedstock production for the energy market remains an economically viable activity, this will discontinue the long-term downward trend in real prices and create a vast demand potential outside of the traditional food markets. In economic terms, bioenergy demand could create perfectly elastic demand for agricultural output at breakeven price levels to the energy market (Schmidhuber, 2006). For the long-term outlook it means that food will remain expensive as long as oil prices remain high.

A demand-side shock through speculation?

Recent discussions of high food prices have included a growing interest in the possible effects of speculators and large institutional investors buying into agricultural commodities on futures markets. Indeed, the share of non-commercial traders taking long positions in the commodity markets has been going up, indicating increased interest on their part in buying futures contracts. Between 2005 and 2008, non-commercial traders almost doubled their share of open interests in the corn, wheat and soybean futures markets while their share in the sugar futures market remained largely unchanged. Global trading activity in futures and options combined more than doubled in the last five years. In the first nine months of 2007, this activity grew 30 percent over the previous year. The renewed general interest in commodities as an investment class, the theory runs, was sparked by the downturn in the global equity and property markets.

This high level of speculative activity in agricultural commodity markets in the last few years has led many analysts to associate increased speculation with the recent increases in food prices. The situation is not very clear, with uncertainty as to whether speculation on agricultural commodities is driving prices higher or is attracted by prices which are increasing anyway. A recent study by the IMF concluded that in general it was the high prices which were encouraging inflows of investment funds into futures markets for agricultural commodities.

There is nonetheless little doubt that speculators can play an important role in setting the price for agricultural commodities. But when speculators or fund managers bet large amounts of money on higher prices they can be assumed to do so based on solid analysis of future trends in supply and demand. If they indeed manage to push prices up to unexpected heights, it can also be assumed that demand would contract and supply expand. Eventually, this would produce unsold supply and absorbing it would eventually require actual buying and increased holding of stocks. Higher stocks, however, are impossible to spot in the current market situation. This may still mean that speculators have caused or at least exacerbated short-term intra-seasonal price swings in futures markets, but there is little evidence that they have driven up inter-seasonal price trends on the spot markets.

2.2 Long-term trend factors

Trend shifters of demand

As the world population has grown, food demand has risen. Consumption has grown even faster than population, leaving room for increased per capita supplies and a change in diets;
initially, this dietary shift represented a move away from roots and tubers to cereals, then, increasingly, from starchy staples to meat and other livestock products. In general these changes have been gradual and are thus unlikely to have caused the sharp and sudden spike in prices witnessed over the last years. But in rapidly-growing economies like India and China, it is claimed (von Braun, 2007), dietary changes have come about so swiftly that they caused an abrupt change in demand growth. Such abrupt changes have been observed in demand for many industrial products, notably for metals and ores, coal, gas and oil. But whether they really exist for food warrants a closer examination of the relevant facts, figures and trends.

No doubt, emerging economies, particularly China and India, are playing an important role in global demand and supply of agricultural commodities. The two countries account for nearly 2.5 billion people or 40% of world population and thus for a large share of global food demand. But there is no evidence that demand in either of these economies has grown faster than past trends. In fact, actual consumption estimates suggest that demand has grown below trend as immediately evident from Figure 6. Still, doubts could be raised about the reliability of domestic food consumption statistics, a problem that plagues food estimates even in countries with highly developed statistical systems. But much more reliable trade statistics also fully corroborate the findings for consumption trends. Cereal imports by China and India have even been trending downwards, by about 4 percent per year since 1980, falling from an average of about 14 million tonnes in the early 1980s to roughly 6 million tonnes during the past three years (Figure 7).

The situation is somewhat different for oilseeds, where China has emerged as a major buyer over the past decade, particularly for soybeans. But while China has indeed become a major importer of oilseeds, vegetable oils and livestock products, the country’s overall agricultural trade balance has remained largely in positive territory in most years since the mid-1990s. Likewise, the long-term development in India’s trade position also runs counter to the belief that India is one of the drivers of increasing food prices in world markets. India has been a major exporter of food and, in most years between 1995 and 2007, exported more wheat, rice and meat than it imported. Even India’s relatively large imports of vegetable oils need to be considered in the context of equally large exports of oilcakes. In fact, neither for China nor for India is there evidence that a sudden increase in imports of oilseeds, meals and oils has contributed to their hike in prices, which began in mid-2007, after the spike in the prices of grains (maize in particular) a year earlier. In sum, neither China nor India can be held responsible for the sudden price spike in the oils complex. This is not to downplay their role, nor that of the long-term changes in consumption patterns; but to the evidence serves to debunk the notion that these countries caused the spike in prices (FAO, 2008c).
Figure 6: Consumption growth in India and China remained below trend

Cereal utilization in China, India and the rest of the world
1980 to 2007

China refers to mainland China
Utilization is the sum of food, animal feed, seed use, industrial use and waste

Source: Global Perspective Studies Unit, FAO

Figure 7: India and China have not been net buyers on the grain market

Net imports of cereals by China and India
1980 to 2007

Source: Global Perspective Studies Unit, FAO
**Trend shifters of supply**

After having examined possible factors responsible for supply and demand shocks and after inspecting trend developments in demand, we may now turn to the factors determining the long-term trends in supply. The basic drivers are well known. In principle, long-term supply is determined by the amount of productive agricultural resources (land, water, genetic potentials, etc.) available for production as well as the productivity of these resources, measured in terms of land yields and cropping intensity, off-take rates and carcass weights, or overall total factor productivity. Both the amount of resources and their productivity is crucially dependent on the level and quality of investments. For developing countries, investment assistance from abroad plays an important role in these investments.

**Too little help**

Investment in developing countries’ agriculture lies at the heart of the long and impressive expansion of production in the latter half of the 20th Century. In 1961, the world used about 1.4 billion hectares of land for crops while it farmed only 1.5 billion hectares in 1998 to get twice the amount of grain and oilseeds. Farmers managed to feed almost twice as many people far better from virtually the same cropland base. This success was the result of far-sighted public investment in agricultural research in the 1960s and 70s, the backbone of the Green Revolution and the main driver of the rapid expansion in agricultural output of many developing countries.

Unfortunately, the success of public investments in agriculture was taken for granted. Investments in agricultural research began to level off in the 1990s and overseas development assistance (ODA) to developing countries’ agriculture experienced an outright collapse: from 1980 to 2005, aid to agriculture fell from 8 billion dollars in 1984 to 3.4 billion dollars in 2004, representing a reduction in real terms of 58%. Agriculture’s share in ODA fell from 17% in 1980 to a mere 3% in 2006. In addition, international and regional financial institutions saw a drastic reduction in resources allocated to an activity that constitutes the principal livelihood of 70% of the world’s poor. This long-term lack of support held back growth in production in developing countries. In economic terms, it reduced the shifts in the agricultural supply curve of developing countries and contributed to their growing import dependence. The effect was most visible for the least-developed countries (LDCs), which now import twice as much agricultural produce as they export.

**Too many policy distortions**

Another important shifter that affected the longer-term trend of agricultural supply is the massive support and protection afforded to farmers in OECD countries. Since 1986, when the systematic measurement of these transfers became available, OECD countries have afforded their farmers support and protection to tune of US$300 billion annually (Figure 8). In some years transfers were even higher. Recent efforts to reduce the level of support and protection are acknowledged; so are all policy reforms that helped to make these policies less trade-distorting. But it must also be recognised that these measures have done considerable damage in the past; high protection in OECD countries made it difficult for developing countries to sell their produce abroad, and OECD export subsidies even made their agriculture uncompetitive at home. Lower prices at home held back investments in agriculture, discouraged production and made developing countries increasingly dependent on food imports.
The precise impact of the lack of agricultural investment on agricultural prices is difficult to gauge. It must also be remembered that these measures have affected longer-term price trends more than current price spikes. So it would therefore be even harder to attribute a certain portion of the price spike to either of these policy developments. Clearly, however, the downward trend in investments needs to be reversed if we want to rise to the challenges that agriculture has to meet over the next 50 years. Equally clear is that more investment in agriculture is required urgently in order to fight the current food crisis. Without additional assistance, prices of fertilizer, seeds and power are too high, agricultural markets and supply chains are too weak, and food safety nets too meagrely funded to alleviate the current crisis. FAO has put in place an action programme, the Initiative on Soaring Food Prices (ISFP), which helps address these needs. Initiated in December 2007, the ISFP has already become a catalyst in addressing the global food crisis. It has therefore been selected for closer discussion in the broader context of possible actions.
3 Possible actions

The basic case for action rests on the vast benefits obtainable by making agricultural markets work for the poor. In the context of the current food security situation, it also rests on the urgent need to avert an even deeper crisis and on the general recognition that higher prices alone may not be sufficient to stimulate production in the short-run. No doubt, higher prices are a crucial prerequisite for increased productivity and stable food supplies in the medium and long-run. They provide producers with the necessary incentives to enhance productivity, expand production and fully realise existing supply potentials. In the short run, however, important impediments can hinder farmers from exploiting the opportunities created by higher prices. Such impediments include the often widespread lack of access to finance and credits, a lack of appropriate technology and inputs, of functioning supply chains and a variety of infrastructural obstacles such as inadequate transportation and market information systems.

There are numerous measures that can help address these problems in principle. They include general policy reforms such as an overall reversal in the decline of ODA to agriculture; a further reduction in OECD support and protection and a decoupling of remaining measures; an urgent and comprehensive conclusion of the Doha Development Agenda, or support measures such as immediate balance-of-payments support for countries hardest-hit by the double burden of surging oil and food prices. They also include very specific measures such as increasing food aid facilities to address the most urgent needs, stepping up budgetary means to finance safety net expenditure, or revisiting the issue of a global facility for financing food imports. This list of possible actions is meant to be illustrative rather than exhaustive. The space available here requires one to be selective. We will therefore take the liberty of focussing on two aid initiatives that FAO has recently implemented or proposed. These are the Initiative on Soaring Food Prices as an example of an immediate action and the Anti-Hunger Programme (AHP) as a package proposed for a strategic re-orientation of agricultural development efforts.

3.1 The Initiative on Soaring Food Prices (ISFP)

The ISFP was launched in 2007. Its main goal is to reduce food insecurity caused by soaring food prices as quickly as possible and thus help avert a deeper and more widespread crisis. At its inception, it was budgeted for US$1.7 billion and conceptualized as an emergency aid package with six priority areas. Table 2 provides an overview of the six areas and a more detailed description follows below.

Table 2: Initiative on soaring food prices – cost estimates of global needs

<table>
<thead>
<tr>
<th>Item</th>
<th>Type of Measures – Initiative on Soaring Food Prices</th>
<th>Cost US$ (000 000)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>POLICY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1A</td>
<td>Following adoption of policies to address soaring food prices such as import tariffs, export bans, subsidies etc., ensure diffusion of good policy practices, dialogue between all stakeholders, analysis of impact, further review of causes of price rises to inform policies</td>
<td>25</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>PRODUCTIVE SAFETY NETS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2A</td>
<td>Inputs and extension advice (Immediate support to small farmers/net food buyers: direct distribution to farmers, input trade fairs, voucher, credit schemes etc; quality control; use of existing supply mechanisms).</td>
<td>630</td>
<td>37</td>
</tr>
<tr>
<td></td>
<td>Rehabilitation of rural and agriculture infrastructure: scaling up of ongoing rehabilitation through cash or food for work for small-scale irrigation structures, market infrastructure, rural roads, soil conservation/restoration of fertility. Technical supervision. Prioritization of activities in agreement with local community</td>
<td>300</td>
<td>18</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>3</td>
<td>INTENSIFICATION OF PRODUCTION SYSTEMS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3A</td>
<td>Scale up seed development programmes, increase early generation seed production, capacity building with national seed services, seed policy reform, establishment of farmer seed enterprises, demonstration of improved varieties; increase soil fertility; good agricultural practices; improve extension</td>
<td>200</td>
<td>12</td>
</tr>
<tr>
<td>4</td>
<td>IMPROVING AGRICULTURAL MARKETS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4A</td>
<td>Rapid interventions to link small farmers to markets: address quality of produce; reliability of supply; efficiency improvements; waste reduction; collective marketing; investments in small-scale market infrastructure; value-addition activities such as rural processing; and facilitation of contractual arrangements between smallholders and companies. Innovative provision of market information</td>
<td>160</td>
<td>9</td>
</tr>
<tr>
<td>5</td>
<td>REDUCING CROP AND LIVESTOCK LOSSES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5A</td>
<td>Post-harvest support (storage rehabilitation, supply of small-scale silos, small processing equipment, improved storage techniques); reinforcement of veterinary services with inputs, refresher training and logistics.</td>
<td>290</td>
<td>17</td>
</tr>
<tr>
<td>5B</td>
<td>Reinforcement of existing prevention systems, reducing harvest losses, early warning and control of transboundary diseases and pests, i.e. wheat rust Uganda 99, Locust, etc.)</td>
<td>15</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>COORDINATION AND TECHNICAL ASSISTANCE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6A</td>
<td>Reinforcement of FAO's technical capacity for coordination and technical support to countries at Global, Regional and Country level, including agricultural policies, economic analysis, agricultural productivity technology, partnerships with regional institutions and CGIAR)</td>
<td>80</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Country level</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Regional level</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Global level</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>1 700</td>
<td></td>
</tr>
</tbody>
</table>

Programme component 1: Policy analysis, technical assistance, and advice. The objective of this component is to ensure that measures taken by governments in response to rising food prices contribute to the long-term reduction of food insecurity. To address this objective, regular updated information on the food security situation and agricultural markets at country and global levels should be made available; regional market synergies should be promoted through coordinated agricultural and trade policies; and better understanding of impact of policy measures initially adopted to address soaring food prices should be obtained. This requires a thorough examination of the agricultural policies on a country-by-country basis and a dialogue on good agricultural practices.
Programme component 2: Productive safety nets. Enhancing the performance of farmers, particularly smallholders, offers one of the most sustainable ways of reducing food insecurity in rural areas. A higher quantity and quality of food available will have a direct impact on the food available to farm households. But it will also have an indirect impact by expanding food supplies in rural markets, creating income-earning opportunities for landless households, and by diversifying the income-earning opportunities for the rural poor. To achieve this, access to improved inputs and extension services has to be increased.

Improved access to inputs can be provided in a variety of ways that include direct distribution to farmers, vouchers, credit schemes, etc. The inputs can also be provided along with food rations to help ensure their use for production purposes. High-quality seeds should be provided from local sources (where available) to ensure that they are adapted to local conditions and tastes. The use of existing input supplies and output marketing practices are integral elements of any productive safety net to support sustainability. To ensure an effective marketing of outputs, an improvement in rural infrastructures is necessary. In the short run, this could be achieved by extending current food-for-work programmes. In this way, the incomes of the most vulnerable could be directly supported, while building or rehabilitating rural infrastructures that link smallholders to the market.

Programme component 3: Intensification of production systems to boost agricultural productivity in a sustainable way. A key factor in boosting agricultural production is the adoption of modern seeds and management practices. Farmers’ access to quality seed, for example, will be improved through strengthening national seed distribution systems, seed market reforms (e.g. registration and labelling of seeds), the promotion of local seed enterprises, public-private partnerships, and better information flows between seed producers and farmers. Another challenge is to find ways to enable increased fertilizer use and access food and commodity output markets. Both public and private-sector stakeholders need to be involved in the process. Boosting production requires, not only a better access to agricultural inputs, but also better crop management practices. To achieve higher yields, extension services should provide widespread information on how to cultivate crops most efficiently, given local conditions. Examples of this include on-farm demonstrations on production intensification, conservation agriculture, and integrated pest management.

Programme component 4: Improving agricultural markets. This point essentially contributes to food security by bringing products faster to the market. As illustrated above, to achieve this better agricultural infrastructure, e.g. rural roads, is required. In addition, marketing constraints that farmers often face should be addressed. Interventions could include collective marketing via farmers’ associations, investments in processing activities, or the facilitation of contractual arrangements between farmers and companies. Investments should also be made in improving the communication infrastructure in rural areas by bringing better radio, television and information connectivity into rural areas. If market prices of agricultural products are communicated in a clear way to farmers, they will be able to respond better and more quickly to price signals that evolve from market demand and supply.

Programme component 5: Reducing crop and livestock losses. This programme point has two parts. The first part focuses on reducing crop losses associated with crop-handling, storage, and processing. Communicating knowledge on how to reduce crop losses to farmers, traders, processors, and distributors as well as improving available drying and storage facilities are essential to reduce often considerable losses. The second part deals with making crops more resilient to abiotic stresses, for example i) by promoting the development of crops that are
more drought or flood tolerant, ii) by encouraging cultivation methods that reduce the risks associated with crop failures (e.g. intercropping, crop diversification), and iii) by managing irrigation water resources more efficiently.

**Programme component 6: Technical assistance and coordination.** To address soaring food prices quickly and in the most efficient way, coordination of activities and outreach to all partners is essential. Yet, placing responsibilities on a large number of shoulders also challenges governments, regional economic organizations, and development partners to collaborate in the analysis, design, targeting and monitoring of a more nuanced and coherent set of actions that concurrently address the transitory aspects and safety net dimension of the acute food access problem while fine-tuning or shifting the target of development-oriented policies and programmes to more effectively address the major constraints of chronically food-insecure populations. As a knowledge organization, FAO has a fundamental obligation to provide information on the evolution of food prices and analyze their impact. In addition, FAO has considerable expertise in development of early-warning and food information systems.

So far, US$40 million to agriculture in 57 heavily affected countries have been disbursed. All measures of the Initiative essentially provide start-up funds as ISFP is above all designed to play a catalytic role in securing more substantive and broader-based international assistance. Its present form the ISFP can only cover the most immediate needs, focus on the poorest countries and aim to enable poor producers to step up agricultural production in the coming planting seasons. The timeframe for actions proposed by the Initiative is short-term, i.e. approximately 18 months until the end of 2009.

When implementing the ISFP, emphasis is placed on integrating the new measures into existing programmes, scaling them up and harmonizing all efforts with other development agencies. All measures are planned and implemented in close cooperation with national and international partners, notably WFP, IFAD and other UN agencies, the Bretton Woods Institutions, the African Union, NEPAD, and CGIAR Centers. Most importantly, the ISFP is integrated in the United Nations Comprehensive Framework for Action (CFA) under the auspices of the UN’s High-Level Task Force (HLTF) on the Global Food Crisis; the Director General of FAO serves as the Vice Chair of this High-Level Task Force.

### 3.2 The Anti-Hunger Programme

While the speed and severity of the current crisis was hard to predict, the lack of progress in achieving food security for all has been clear. FAO has repeatedly pointed to that problem (FAO, 2005; 2006). FAO has also made clear proposals to enhance progress. One such proposal was the Anti-Hunger Programme (AHP), a comprehensive investment proposal tabled at the World Food Summit (WFS, fyl) in 2002; The AHP was conceptualized as an aid package to meet the WFS target of halving the number of undernourished by 2015. When the AHP was prepared in 2003 (FAO, 2003), it was estimated that an annual overall investment envelope of nearly US$24 billion would be needed to accomplish the goal of halving hunger by 2015. This amount, allocated over five distinct areas to improve agricultural productivity and access to food in developing countries, was estimated to generate an overall benefit of US$120 billion. We have just updated these estimates and, by adjusting them for inflation only, raised the annual total to US$30.5 billion. Table 1 provides a detailed breakdown by investment area and region.
### Table 3: Overall costs and regional breakdown of costs for the Anti-Hunger Programme

<table>
<thead>
<tr>
<th></th>
<th>Developing and Transition Countries</th>
<th>Asia and Pacific</th>
<th>Latin America and the Caribbean</th>
<th>Near East and North Africa</th>
<th>Sub-Saharan Africa</th>
<th>Countries in transition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Agricultural and rural development:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Improve agricultural productivity in poor rural communities</td>
<td>2.9</td>
<td>1.9</td>
<td>0.2</td>
<td>0.1</td>
<td>0.7</td>
<td>0.1</td>
</tr>
<tr>
<td>- Develop and conserve natural resources</td>
<td>9.5</td>
<td>3.5</td>
<td>1.7</td>
<td>1.1</td>
<td>2.7</td>
<td>0.6</td>
</tr>
<tr>
<td>- Expand rural infrastructure and market access</td>
<td>10.0</td>
<td>7.0</td>
<td>0.5</td>
<td>0.3</td>
<td>2.2</td>
<td>0.1</td>
</tr>
<tr>
<td>- Strengthen capacity for knowledge generation</td>
<td>1.4</td>
<td>0.3</td>
<td>0.5</td>
<td>0.3</td>
<td>0.3</td>
<td>0.1</td>
</tr>
<tr>
<td><strong>Total Agriculture and Rural Development</strong></td>
<td><strong>23.9</strong></td>
<td><strong>12.5</strong></td>
<td><strong>2.9</strong></td>
<td><strong>1.7</strong></td>
<td><strong>5.9</strong></td>
<td><strong>1.0</strong></td>
</tr>
<tr>
<td><strong>Direct assistance programmes</strong></td>
<td><strong>6.6</strong></td>
<td><strong>4.2</strong></td>
<td><strong>0.5</strong></td>
<td><strong>0.3</strong></td>
<td><strong>1.5</strong></td>
<td><strong>0.2</strong></td>
</tr>
<tr>
<td><strong>Total Agriculture and rural development and Direct assistance programmes</strong></td>
<td><strong>30.5</strong></td>
<td><strong>16.7</strong></td>
<td><strong>3.4</strong></td>
<td><strong>2.0</strong></td>
<td><strong>7.4</strong></td>
<td><strong>1.2</strong></td>
</tr>
</tbody>
</table>

### The main elements of the Anti-Hunger Programme

*Improve agricultural productivity and enhance livelihoods and food security in poor rural communities: [US$2.9 billion per year]*

Improving the performance of small farms in poor rural and peri-urban communities offers one of the best and most sustainable avenues for reducing hunger by increasing the quantity and improving the quality of locally available food. It also provides a foundation for equitable economic growth. At the very least, better performance improves food availability and nutrition within the immediate farm families, thereby increasing their capacity to enjoy a full life, learn and work effectively and contribute to the general good of society. But it also increases and diversifies food supplies in local markets, creates a base for expanding and diversifying farm output into tradable products, opens employment opportunities and slows rural-urban migration.

Starting such a process requires an initial injection of capital, either through loans or matching grants, to enable small farmers to build up productive assets on their farms. The average cost...
of investments required to kick-start a sustainable process of on-farm innovation may be estimated at about US$600 per family. Typically, this start-up capital would finance the uptake of new technologies, such as seed of improved varieties, plants, manure or fertilizers; small-scale on-farm works and equipment (e.g. land levelling, treadle pumps); breeding stock (e.g. poultry, goats); or contributions towards community-led measures to improve food security (e.g. school gardens, paralegal services to broaden land access). To ensure sustainability, farmers who take part in such programmes would repay the initial capital into savings and loans associations or community-run revolving funds, thereby allowing reinvestment of the benefits accruing from higher production.

Success in on-farm development depends on the creation of a policy environment conducive to agricultural growth, supported by research and extension institutions that are responsive to locally articulated needs. In many cases success also depends on developments beyond the farm gate, such as improvements in roads or in the supply of irrigation water. The investment needs for these improvements are addressed under other programme components.

Sustaining and upscaling this process requires the emergence of self-reliant community institutions that can take the lead in ensuring the food security of all their members, plough gains back into new investments and develop linkages with other communities through sharing knowledge and experience. This enables groups of communities with a common goal to place increasingly effective demand on the broadening range of services and types of infrastructure required to allow them to develop greater resilience to economic, social and natural shocks as well as to earn more and emerge from hunger and extreme poverty.

**Develop and conserve natural resources: [US$9.5 billion per year]**

Land, water and plant and animal genetic resources enable agriculture, fisheries and forestry to contribute to food production and rural development. Combining them with appropriate technologies, financial capital, labour, infrastructure and institutions enhances their productivity. This combination of resources and human ingenuity has enabled global food production to outpace growing demand, despite the declining availability of per capita land and water resources and the tendency towards depletion of genetic resources. If food demand is to be met in the future, increased outputs will have to come mainly from intensified and more efficient use of these limited means of production. At the same time, action must be taken to arrest the destruction and degradation of the natural resource base.

We estimated that annual incremental public sector investment of US$9.5 billion is required in natural resources (i.e. land and water, plant and animal genetic resources, fisheries and forestry) to meet the WFS target in 2015. Needless to say this is likely to be a gross underestimate in view of the challenges of climate change and bioenergy.

**Expand rural infrastructure (including capacity for food safety, plant and animal health) and broaden market access: [US$10 billion per year]**

Throughout the 1990s, many developing countries invested substantially in urban infrastructure. While such investments have done much to improve living standards and increase productivity, the rural areas of most developing countries still have inadequate levels of services and often a deteriorating stock of rural infrastructure. This infrastructural handicap has resulted in, *inter alia*, reduced competitiveness of the agriculture of developing countries.
in domestic and international markets, and it has increased the costs of supplying growing urban markets from national farm production.

Reversing the decline in the share of developing countries in world agricultural exports, which is an essential ingredient in improving rural incomes, will require increased efforts by many developing countries to alleviate their domestic supply-side constraints. There is a danger that, unless infrastructure-related constraints are addressed, developing countries will miss the opportunities arising from high food prices and the new market opportunities provided by freer markets and new production possibilities (bioenergy).

The highest priority must go to the upgrading and development of rural roads and to ensuring their maintenance, and to basic infrastructure to stimulate private-sector investment in food marketing, storage and processing. Investments in rural infrastructure to enhance market access will not only complement and underpin the projected increased levels of agricultural production, but will also provide wider and more general socio-economic benefits.

The additional public investments required to meet the WFS target was estimated at an annual US$10 billion at 2002 prices. This amount included new construction of rural roads (US$6.6 billion) and of market infrastructure (US$1.1 million for transport facilities, storage capacity, cold chains, conditioning to respect standards of food quality and safety, slaughterhouses, fishing ports, etc.) as well as the maintenance and rehabilitation of both (US$1.8 billion and US$40 million, respectively). Another US$300 million would cover the cost of capacity building, support for policy assistance, institution strengthening and measures to improve plant and animal health. An additional US$160 million was required for measures to strengthen food safety.

These estimates referred to the medium term and a situation where input and product prices were much lower. As climate change will deteriorate the agricultural resource base in many developing countries a much better infrastructure endowment will be necessary to ensure that lower local output can be supplemented by supplies from abroad. Better infrastructure will also be required to maintain and upgrade the resource base in these areas. This includes the provision of irrigation equipment, machinery, fertiliser, etc.

**Strengthen capacity for knowledge generation and dissemination: [US$1.43 billion per year]**

Success in promoting rapid improvements in livelihoods and food security through on-farm investments depends on small-scale farmers having good access to relevant knowledge. This requires the provision of effective knowledge-generation and dissemination systems, aiming to strengthen links among farmers, agricultural educators, researchers, extension workers and communicators. Agricultural research and technology development are likely to be dominated by the private sector, especially suppliers of inputs and companies purchasing farm products.

There remain, however, many areas of basic research and, especially, extension where those who have not paid for the research cannot be prevented from enjoying its benefits. Private companies are therefore generally unwilling to conduct research in areas such as integrated pest management, measures to improve input use (fertilizer use) efficiency, or to conserve genetic resources. The responsibility for conducting such research must therefore rest with the public sector.
The experience of the Consultative Group on International Agricultural Research (CGIAR), which runs an international network of research centres, has been very positive, and there is every reason to reverse the decline in funding from which the CGIAR system has been suffering. Incremental funding of US$450 million per year would greatly strengthen the effectiveness of the system, enabling it to continue to play a vital role in supporting the process of technology development in developing countries. International efforts should be accompanied by measures to strengthen national capacities. Upgrading national research systems requires additional investments in building staff capacities and in improving facilities and equipment, estimated to cost about US$450 million annually.

Improving the effectiveness of agricultural extension usually involves supporting the decentralization of services and making them more responsive to farmers’ needs. It requires creating conditions for the emergence of multiple-service providers, including not only public-sector services, but also services provided by NGOs and the private sector. The main investments will be in introducing institutional reforms and associated activities, such as training of extension staff and, particularly, farmers, who can assume much of the responsibility for facilitating group learning processes in the medium term. Investments are also needed in the preparation of extension and training materials and in means of transport. Total incremental public funding needs are estimated at US$400 million per year.

Other measures in the area of capacity-building include measures to improve the communication infrastructure in rural areas and nutrition education. The total required has been estimated at US$130 million per year.

Ensure access to food for the most needy through safety nets and other direct assistance: [US$6.6 billion per year]

The need to ensure direct access to food by the poor arises not only from humanitarian considerations and from the right to food, but also from the fact that it is a productive investment that can contribute greatly to fighting poverty. The need for such assistance does not disappear with economic development, but changes its focus towards temporary assistance during crises.

All governments committed to achieving the WFS goal need to put programmes in place to ensure that, where the goal is not being met, their citizens have access to adequate food through traditional extended family and community coping arrangements, market mechanisms and the process of economic growth. Options include:

• **Targeted direct feeding programmes.** These include school meals; feeding of expectant and nursing mothers as well as children under five through primary health centres; soup kitchens; and special canteens. Such schemes contribute to human resource development by encouraging children to attend school and improving the health and nutritional status of mothers and infants. They minimize nutrition-related illnesses and mortality among children, raise life expectancy and contribute to a fall in birth rates. WHO estimates show that approximately 30 percent of children under five (approximately 200 million children) are more vulnerable to sickness and more likely to die early because of undernourishment.

• **Food-for-work programmes.** In many developing countries, a significant number of rural people are subsistence or below-subsistence farmers, producing only enough food to feed their families for part of the year. Food-for-work programmes provide support to such
households while developing useful infrastructure such as small-scale irrigation, rural roads, buildings for rural health centres and schools.

- **Income-transfer programmes.** These can be in cash or in kind, including food stamps, subsidized rations and other targeted measures for poor households, and are also a good way of increasing food-purchasing power and improving dietary intake. The updated estimates suggest that ensuring adequate access to food by 214 million of the most nutritionally deprived people in the world would cost an annual US$6.6 billion. Of this, about US$1.6 billion would be needed for a school feeding programme targeting the most needy schoolchildren. If, as we have predicted, food prices remain high in the medium and long-term, the required monetary endowments of income-transfer programmes, food-for-work programmes and direct feeding programmes have to be upscaled substantially.

### 4 Outlook

Enough is known about the current crisis, its dimensions and its causes. Enough is also known about its impacts on hunger, poverty and inequality. And enough is known about the future challenges when the world agriculture will have to double output with more expensive inputs and fewer resources while simultaneously battling climate change. But at the same time an era of unprecedented opportunity could open up for agriculture. Higher prices can make farming much more profitable for many years to come and turn agriculture into a key opportunity in the fight against hunger. But for this to happen, we have to create the environment that allows farmers to reap the benefits of high prices. FAO has made the proposals to accomplish this. If fully funded, the Initiative on Soaring Food Prices will help address the most acute and immediate needs, and the Anti-Hunger Programme would help us rise to the long-term challenges. But the world has to act, and it has to act now.
References


