
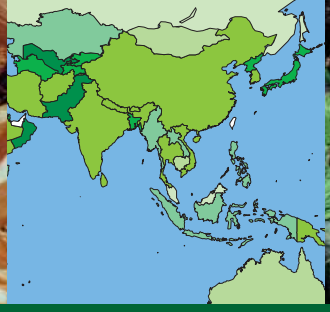


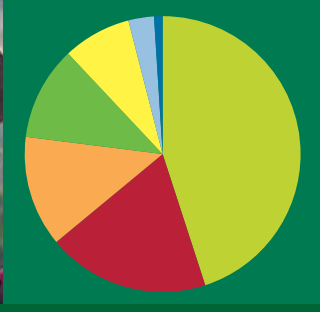

The State of
Food Insecurity in the World
2008

High food prices and food security – threats and opportunities

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The State of

Food Insecurity in the World

2008

High food prices and food security – threats and opportunities

About this report

The State of Food Insecurity in the World 2008 represents FAO's ninth progress report on world hunger since the 1996 World Food Summit (WFS). In previous editions, FAO has expressed deep concern over the lack of progress in reducing the number of hungry people in the world, which has remained persistently high.

This year's report focuses on high food prices, which are having a serious impact on the poorest populations in the world, drastically reducing their already low purchasing power. High food prices have increased levels of food deprivation, while placing tremendous pressure on achieving internationally agreed goals on hunger by 2015. This report also examines how high food prices present an opportunity to relaunch smallholder agriculture in the developing world.

As discussed in the report, FAO's undernourishment estimates for the period 1990–92 to 2003–05 have been revised on the basis of new standards for human energy requirements established by the United Nations (UN) and 2006 revisions of UN population data.

Key messages

1 **World hunger is increasing.** The World Food Summit (WFS) goal of halving the number of undernourished people in the world by 2015 is becoming more difficult to reach for many countries. FAO's most recent estimates put the number of hungry people at 923 million in 2007, an increase of more than 80 million since the 1990–92 base period. Long-term estimates (available up to 2003–05) show that some countries were well on track towards reaching the WFS and Millennium Development Goal (MDG) targets before the period of high food prices; however, even these countries may have suffered setbacks.

2 **High food prices share much of the blame.** The most rapid increase in chronic hunger experienced in recent years occurred between 2003–05 and 2007. FAO's provisional estimates show that, in 2007, 75 million more people were added to the total number of undernourished relative to 2003–05. While several factors are responsible, high food prices are driving millions of people into food insecurity, worsening conditions for many who were already food-insecure, and threatening long-term global food security.

3 **The poorest, landless and female-headed households are the hardest hit.** The vast majority of urban and rural households in the developing world rely on food purchases for most of their food and stand to lose from high food prices. High food prices reduce real income and worsen the prevalence of food insecurity and malnutrition among the poor by reducing the quantity and quality of food consumed.

4 **Initial governmental policy responses have had limited effect.** To contain the negative effects of high food prices, governments have introduced various measures, such as price controls and export restrictions. While understandable from an immediate social welfare perspective, many of these actions have been ad hoc and are likely to be ineffective and unsustainable. Some have had damaging effects on world price levels and stability.

5 **High food prices are also an opportunity.** In the long run, high food prices represent an opportunity for agriculture (including smallholder farmers) throughout the developing world, but they will have to be accompanied by the provision of essential public goods. Smallholder gains could fuel broader economic and rural development. Farming households can see immediate gains; other rural households may benefit in the longer run if higher prices turn into opportunities for increasing output and creating employment.

6 **A comprehensive twin-track approach is required.** Governments, donors, the United Nations, non-governmental organizations, civil society and the private sector must immediately combine their efforts in a strategic, twin-track approach to address the impact of high food prices on hunger. This should include: (i) measures to enable the agriculture sector, especially smallholders in developing countries, to respond to the high prices; and (ii) carefully targeted safety nets and social protection programmes for the most food-insecure and vulnerable. This is a global challenge requiring a global response.

Contents

Foreword

Millions more food-insecure – urgent action and substantial investments needed

Soaring food prices have triggered worldwide concern about threats to global food security, shaking the unjustified complacency created by many years of low commodity prices. From 3 to 5 June 2008, representatives of 180 countries plus the European Union, including many Heads of State and Government, met in Rome to express their conviction "that the international community needs to take urgent and coordinated action to combat the negative impacts of soaring food prices on the world's most vulnerable countries and populations". At the G8 Summit in Japan in July 2008, the leaders of the world's most industrialized nations voiced their deep concern "that the steep rise in global food prices, coupled with availability problems in a number of developing countries, is threatening global food security".

Moving away from hunger reduction goals

The concerns of the international community are well founded. For the first time since FAO started monitoring undernourishment trends, the number of chronically hungry people is higher in the most recent period relative to the base period. FAO estimates that, mainly as a result of high food prices, the number of chronically hungry people in the world rose by 75 million in 2007 to reach 923 million.

The devastating effects of high food prices on the number of hungry people compound already worrisome long-term trends. Our analysis shows that in 2003–05, before the recent rise in food prices, there were 6 million *more* chronically hungry people in the world than in 1990–92, the baseline period against which progress towards the World Food Summit and Millennium Summit hunger reduction targets is measured. Early gains in hunger reduction achieved in a number of developing regions by the mid-1990s have not been sustained. Hunger has increased as the world has grown richer and produced more food than ever in the last decade. As this report has pointed out many times, this disappointing outcome reflects the lack of concerted action to combat hunger despite global commitments. Soaring food prices have reversed some of the gains and successes in hunger reduction, making the mission of achieving the internationally agreed goals on hunger reduction more difficult. The task of reducing the number of hungry people by 500 million in the remaining seven years to 2015 will require an enormous and resolute global effort and concrete actions.

Poorest and most vulnerable worst hit

Food price increases have exacerbated the situation for many countries already in need of emergency interventions and food assistance due to other factors such as severe weather and conflict. Countries already afflicted by emergencies have to deal with the added burden of high food prices on food security, while others become more vulnerable to food insecurity because of high prices. Developing countries, especially the poorest, face difficult choices between maintaining macroeconomic stability and putting in place policies and programmes to deal with the negative impact of high food and fuel prices on their people.

Riots and civil disturbances, which have taken place in many low- and middle-income developing countries, signal the desperation caused by soaring food and fuel prices for millions of poor and also middle-class households. Analysis in this report shows that high food prices have a particularly devastating effect on the poorest in both urban and rural areas, the landless and female-headed households. Unless urgent measures are taken, high food prices may have detrimental long-term effects on human development as households, in their effort to deal with rising food bills, either reduce the quantity and quality of food consumed, cut expenditure on health and education or sell productive assets. Children, pregnant women and lactating mothers are at highest risk. Past experience with high food prices fully justifies such fears.

A strategic response: the twin-track approach

The food crisis brought about by soaring food prices in many developing countries needs an urgent and concrete response. At the same time, it should be recognized that high food prices are the result of a delicate balance between food supply and demand. These two facts show that, more than ever before, the twin-track approach to hunger reduction advocated by FAO and its development partners is key to addressing not only the threats to food security caused by high food prices but also the opportunities that arise. In the immediate term, carefully targeted safety nets and social protection programmes are urgently required in order to ensure that everyone is able to access the food they need for a healthy life. In parallel, the focus should be on helping producers, especially small-scale farmers, to boost food production, mainly by facilitating

their access to seeds, fertilizers, animal feed and other inputs. This should improve food supplies and lower prices in local markets.

In the medium-to-long term, the focus should be on strengthening the agriculture sectors of developing countries to enable them to respond to growth in demand. Expanding food production in poor countries through enhanced productivity must constitute the cornerstone of policies, strategies and programmes seeking to attain a sustainable solution for food security. High food prices and the incentives they provide can be harnessed to relaunch agriculture in the developing world. This is essential not only to face the current crisis, but also to respond to the increasing demand for food, feed and biofuel production and to prevent the recurrence of such crises in the future.

Relaunching agriculture in developing countries is also critical for the achievement of meaningful results in poverty and hunger reduction and to reverse the current worrisome trends. This will entail empowering large numbers of small-scale farmers worldwide to expand agricultural output. Turning agricultural growth into an engine for poverty reduction means addressing the structural constraints facing agriculture, particularly for the millions of smallholder producers in agriculture-based economies. This calls for expanded public investment in rural infrastructure and essential services – in roads, irrigation facilities, water harvesting, storage, slaughterhouses, fishing ports and credit, as well as electricity, schools and health services – in order to create favourable conditions for private investment in rural areas.

At the same time, increased resources must be devoted to more sustainable technologies that support more-intensive agriculture and that assist farmers to increase the resilience of their food production systems and to cope with climate change.

A coherent and coordinated strategy is vital

Many developing countries have taken unilateral action in efforts to contain the negative effects of high food prices, including the imposition of price controls and export restrictions. Such responses may not be sustainable and would actually contribute to further rises in world price levels and instability. To face threats and exploit opportunities posed by high food prices effectively and efficiently, strategies must be based on a comprehensive and coordinated multilateral response.

Urgent, broad-based and large-scale investments are needed in order to address in a sustainable manner the growing food-insecurity problems affecting the poor and hungry. No single country or institution will be able to resolve this crisis on its own. Governments of developing and developed countries, donors, United Nations agencies, international institutions, civil society and the private sector all have important roles to play in the global fight against hunger.

It is vital that the international community share a common vision of how best to assist governments in eradicating chronic hunger, and that all parties work together to translate this vision into reality on the scale required. The situation cannot wait any longer.

The resolve of world leaders at the June 2008 Summit on World Food Security in Rome and the fact that the G8 Summit placed concerns surrounding high food and fuel prices at the top of its agenda demonstrates a growing political will to address hunger. Moreover, substantial commitments have been made for increased financial support to developing countries to address the food security threats caused by high food prices. Nevertheless, unless this political will and donor pledges are turned into urgent and real actions, millions more will fall into deep poverty and chronic hunger.

The need for concerted action to combat hunger and malnutrition has never been stronger. I am hopeful that the global community will rise to the challenge.

Jacques Diouf
FAO Director-General

Undernourishment around the world

High food prices: another 75 million hungry

Higher food prices have triggered an increase in hunger worldwide. Provisional FAO estimates show that the number of chronically hungry people in 2007 increased by 75 million over and above FAO's estimate of 848 million undernourished in 2003–05, with much of the increase attributed to high food prices (details in Table 1, page 48). This brought the number of undernourished worldwide to 923 million in 2007. Given the continued and drastic price rises in staple cereals and oil crops well into the first quarter of 2008, the number of people suffering from chronic hunger is likely to have increased further.

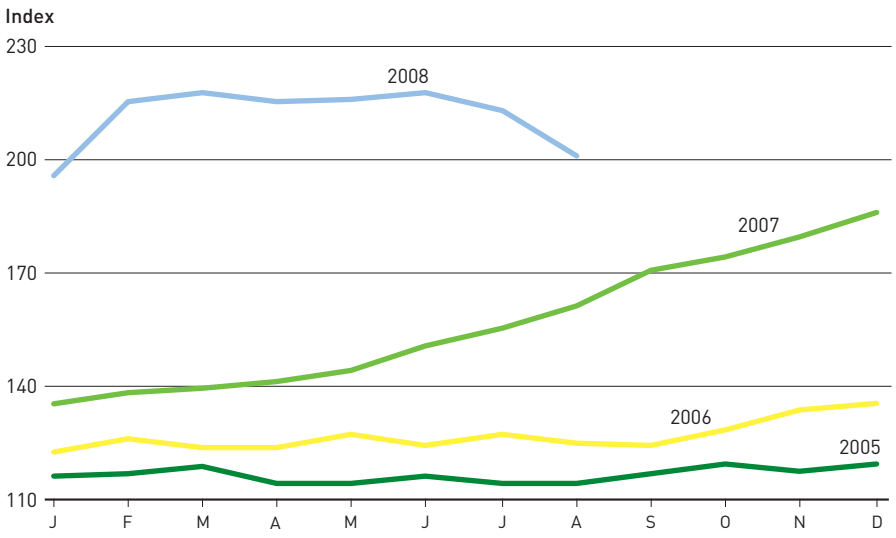
At 923 million people, the number of undernourished in 2007 was more than 80 million higher than in 1990–92, the base period for the World Food Summit (WFS) hunger reduction target. This makes the task of bringing the *number* of undernourished to 420 million by 2015 more difficult, especially in an environment of high food prices and uncertain global economic prospects.

The impact of rising food prices on the *proportion* of undernourished people (the Millennium Development Goal [MDG] 1 hunger indicator) is worrisome. Good progress in reducing the share of hungry people in the developing world had been achieved – down from almost 20 percent in 1990–92 to less than 18 percent in 1995–97 and just above 16 percent in 2003–05. The estimates show that rising food prices have thrown that progress into reverse, with the proportion of undernourished people worldwide moving back towards 17 percent. Hence, amid soaring food prices, progress towards achieving internationally agreed hunger reduction targets has suffered a serious setback in terms of both the number of undernourished and the prevalence of hunger.

The estimated impact of high food prices on the global estimates of undernourishment is confirmed by an analysis of household-level data (pages 22–27). The analysis confirms a negative impact of soaring food prices, especially on the poor and most vulnerable.

1

FAO food price index

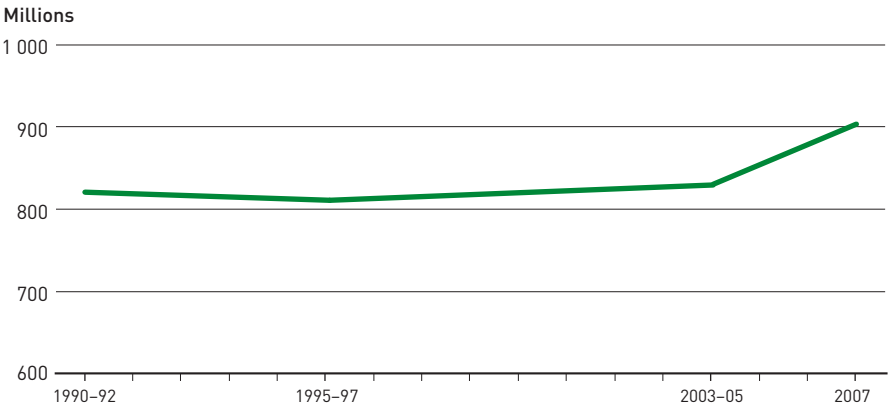


1998–2000 =100

Source: FAO.

2

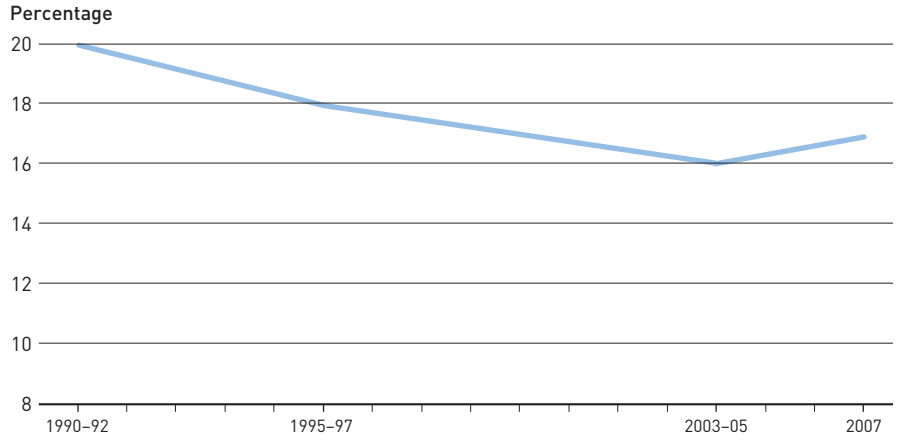
Numbers of undernourished people in the developing world, 1990–92 to 2007



Source: FAO.

3

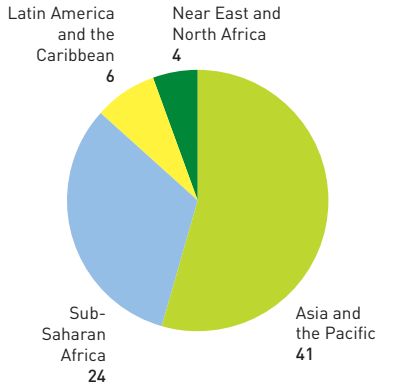
Proportion of undernourished people in the developing world, 1990–92 to 2007



Source: FAO.

4

Regional impacts of high food prices: additional undernourished in 2007 (millions)



Source: FAO.

Price surge halts progress

At the regional level, the largest increases in the number of undernourished people in 2007 occurred in Asia and the Pacific and in sub-Saharan Africa, the two regions that together accounted for 750 million (89 percent) of the hungry people in the world in 2003–05. FAO estimates that rising prices have plunged an additional 41 million people in Asia and the Pacific and 24 million in sub-Saharan Africa into hunger.

Together, Africa and Asia account for more than three-quarters of the developing world's low-income food-deficit countries (LIFDCs). Africa is also home to 15 of the 16 countries where the prevalence of hunger already exceeded 35 percent, making them particularly vulnerable to higher food prices.

While the numbers affected are smaller, Latin America and the

How FAO estimated the impact on undernourishment

The most recent complete estimates of undernourishment at the country level are those for the three-year period 2003–05. These provide the basis for FAO's regular monitoring and analysis on progress towards hunger reduction targets, and they are presented in the section "Taking stock of world hunger".

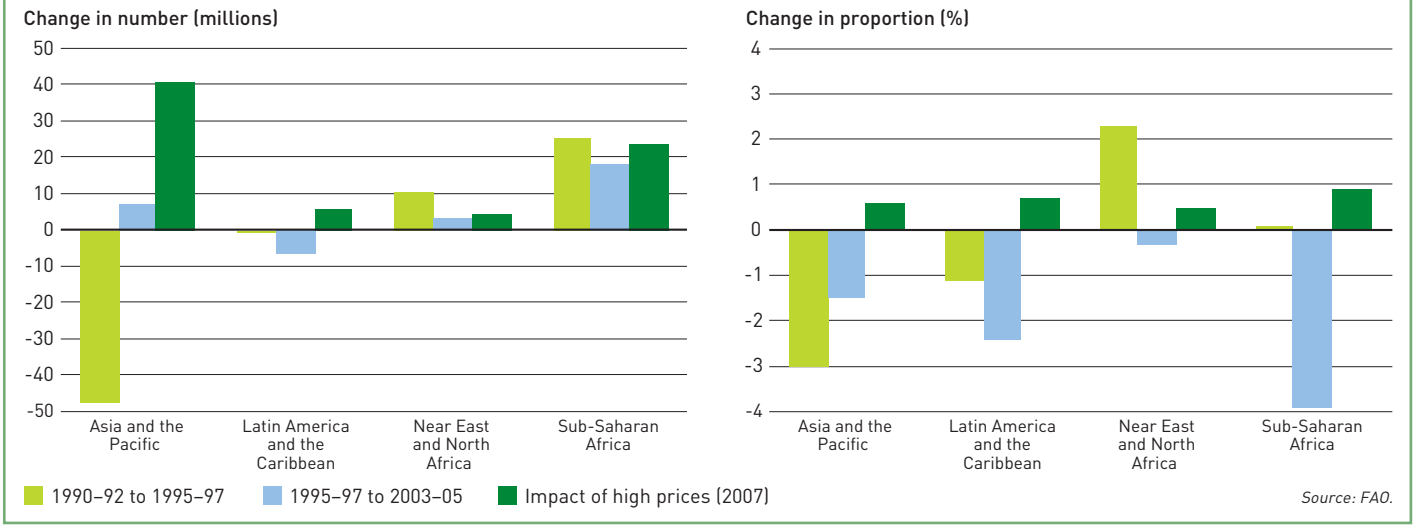
Responding to growing concerns about the implications of soaring food prices for world food security, FAO developed a methodology to estimate the impact of high food prices on undernourishment in 2007, based on partial data for 2006–08. Trends in dietary energy supply derived from two different databases maintained by FAO were used, namely: (i) detailed "supply utilization accounts" from FAO's core database (FAOSTAT) covering hundreds of commodities per country; and (ii) more recent data covering cereals, oils and meats available for human consumption (accounting for about 80 percent of dietary energy supply). Combining the two was necessary as FAO's core database includes complete data only up to 2005; the second database, while less complete, includes estimates up to 2008, hence capturing much of the period in which food prices were rising rapidly. A relationship between the historical data contained in the two databases was established in order to extrapolate the core database to 2007.

The 2007 estimates capturing the impact of food prices on hunger were generated at the global and regional levels only, and are not available at the country level. As such, and given the way the 2007 data were computed, the estimates should be considered provisional.

Undernourishment around the world

5

Regional changes in number and proportion of undernourished people



Source: FAO.

Caribbean and the Near East and North Africa regions have also experienced increases in hunger as a result of rising food prices (a sharp reversal for Latin America after more than a decade of steady progress toward the WFS goal).

Overall, the rising prevalence of hunger and the estimated increase of 75 million undernourished people worldwide in 2007 validate concerns about a global food security crisis following high food prices, at least in the short term.

Are FAO estimates conservative?

The box on page 7 describes how FAO produced estimates on world hunger for 2007. Partly as a result of the updated parameters, the calculation of the number of undernourished is based on the assumption that the *distribution* of dietary energy intake within a country or region *remained unchanged* between periods of "low" and "high" food prices. On the other hand, the household-level analysis (pages 22–27) shows that, as a result of higher food prices, the poor are proportionately worse off than the rich in the short run.

In-depth analysis of eight countries has shown that the distribution of per person dietary energy supply among households deteriorates following drastic increases in food prices. Thus, FAO's estimate of the global impact of high food prices on hunger may well be an underestimate. Therefore, it can safely be stated that high food prices have resulted in *at least a further 75 million hungry people* – people being deprived of access to sufficient food on a daily basis.

Using a different methodology, the United States Department of Agriculture (USDA) estimates that the impact of high food prices has resulted in an increase in the number of undernourished of 133 million people in 70 countries analysed.[1] A key distinction between the two approaches for estimating hunger relates to the way in which inequality in the distribution of food available for human consumption is calculated. Compared with FAO, USDA uses a higher (and constant) cut-off point for determining the hunger threshold. It uses a value of 2 100 kilocalories per person per day while FAO values depend on the age and gender distribution in each country, typically ranging from as low as 1 600 to 2 000 kilocalories per person per day.

[1] United States Department of Agriculture. 2008. *Food Security Assessment, 2007*, by S. Rosen, S. Shapouri, K. Quanbeck and B. Meade. Economic Research Service Report GFA-19 (available at www.ers.usda.gov/PUBLICATIONS/GFA19/GFA.PDF).

Driving forces of high food prices

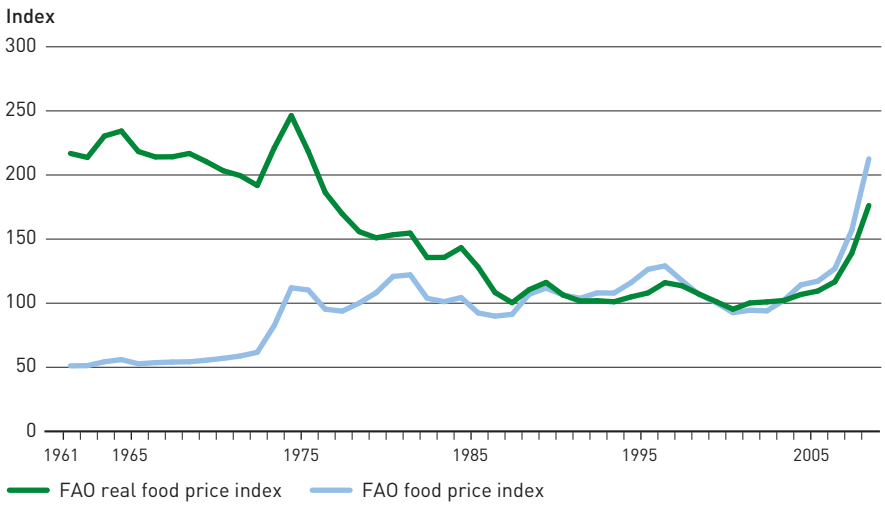
As agricultural commodity prices rose sharply in 2006 and 2007 and continued to rise even further in early 2008, the forces behind soaring food prices were examined from various perspectives in an effort to design response options. This section lists some of the main drivers behind soaring food prices.[1] Medium-term projections indicate that, while food prices should stabilize in 2008–09 and subsequently fall, they will remain above their pre-2004 trend level for the foreseeable future.[2]

The FAO index of nominal food prices doubled between 2002 and 2008. In real terms, the increase was less pronounced but still dramatic. The 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 their 2002 levels. 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.

Be they policy measures, investment decisions or emergency interventions, appropriate actions to address the human and economic impacts of soaring food prices require a thorough understanding of the underlying driving forces. These driving forces are many and complex, and they include both supply-side and demand-side factors. Long-term structural trends underlying growth in demand for food have coincided with short-term cyclical or temporary factors adversely affecting food supply, thus resulting in a situation where growth in demand for food commodities continues to outstrip growth in their supply.

6

Evolution of FAO food price indices, 1961–2008

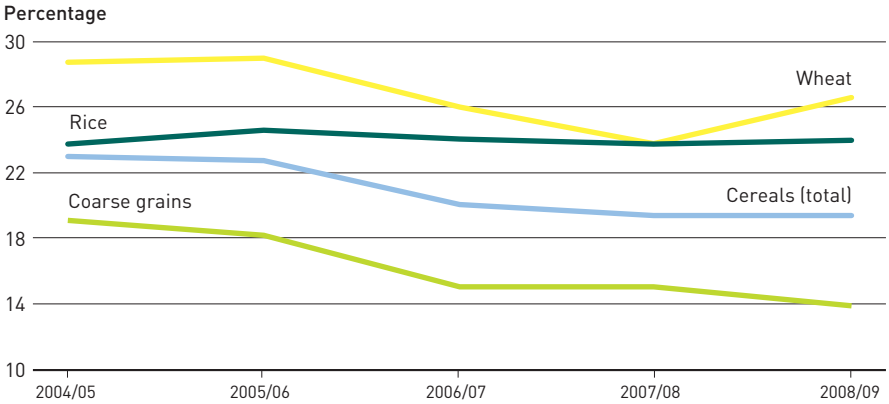


Note: 1998–2000 = 100.

Source: FAO.

7

Ratio of world cereal stocks to utilization



Source: FAO.

Supply-side forces

Stock levels and market volatility. Several of the world's major cereal producers (China, the European Union, India and the United States of America) have changed their agriculture policies in recent years. One result has been significantly lower levels of cereal stocks compared with earlier years. The ratio of world cereal stocks to utilization is estimated at 19.4 percent for 2007/08, the lowest

Food prices: from world to domestic markets

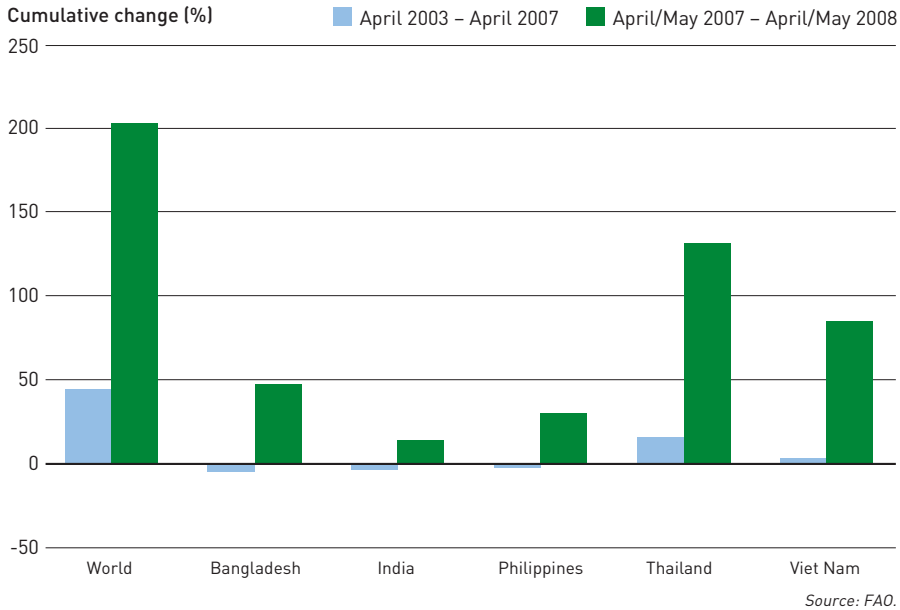
Analysis of country data suggests an incomplete transmission of world prices denominated in US dollars to domestic prices (expressed in local currency). Even before the price hikes of 2008, world cereal prices had risen substantially between 2002 and 2007. In this period, world market prices for rice, wheat and maize increased by 50, 49 and 43 percent, respectively, in real US dollar terms. However, the transmission to domestic prices was usually less than complete, with prices in local currency terms not rising as much as the international market prices – as was the case with rice in various Asian countries.

Several factors contributed to this dampening of the transmission of world to domestic prices. The US dollar has been depreciating for several years against a range of currencies, including those of many developing countries. From 2002 to 2007, low-income countries experienced an average real appreciation of 20 percent against the US dollar (compared with 18 percent for high-income countries). Exchange rate appreciation nullified some of the increase in world market prices (expressed in US dollars) for both food importers and exporters into 2007. Some trade policy and other commodity-specific measures further limited price transmission.

While domestic policies and exchange rate movements mitigated the impact of world price increases for some time, domestic prices eventually increased substantially in many countries in late 2007 and early 2008.

Source: FAO. 2008. *Have recent increases in international cereal prices been transmitted to domestic economies? The experience in seven large Asian countries*, by D. Dawe. ESA Working Paper No. 08–03 (available at ftp://ftp.fao.org/docrep/fao/010/ai506e/ai506e00.pdf).

Rice: consumer price transmission



Source: FAO.

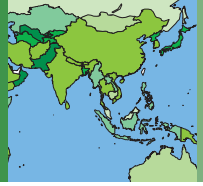
in three decades. Lower stock levels contribute to higher price volatility in world markets because of uncertainties about the adequacy of supplies in times of production shortfalls.

Production shortfalls. Extreme weather events in 2005–07, including drought and floods, affected major cereal-producing countries. World cereal production fell by 3.6 percent in 2005 and 6.9 percent in 2006 before recovering in 2007. Two successive years of lower crop yields in a context of already low stock levels resulted in a worrisome supply situation in world markets. Growing concern over the potential effect of climate change on future availabilities of food supplies aggravated these fears.

Petroleum prices. Until mid-2008, the increase in energy prices had been very rapid and steep, with one major commodity price index (the Reuters-CRB Energy Index) more than tripling since 2003. Petroleum and food prices are highly correlated. The rapid rise in petroleum prices exerted upward pressure on food prices as fertilizer prices nearly tripled and transport costs doubled in 2006–08. High fertilizer prices have direct adverse effects on the cost of production and fertilizer use by producers, especially small-scale farmers.

Demand-side forces

Biofuel demand. The emerging biofuel market is a significant source of demand for some agricultural commodities, such as sugar, maize, cassava, oilseeds and palm oil. The stronger demand for these commodities caused a surge in their prices in world



markets, which in turn has led to higher food prices. While biofuel production and consumption is supported by government policies in a number of countries, rapid increases in crude oil prices have further contributed to growing demand for agricultural commodities for biofuel feedstock. Biofuel production will utilize an estimated 100 million tonnes of cereals (4.7 percent of global cereal production) in 2007–08.

Consumption patterns. The first decade of this century has seen rapid and sustained economic growth and increased urbanization in a number of developing countries, most remarkably in large emerging economies such as China and India. These two countries alone account for more than 40 percent of the world's population. As the purchasing power of hundreds of millions of people has increased, so has their overall demand for food. This new wealth has also led to changes in diet, especially to greater consumption of meat and dairy products, which are heavily dependent on cereal inputs.

However, the recent high commodity prices do not appear to have originated in these emerging markets. Cereal imports by China and India have declined from an average of about 14 million tonnes in the early 1980s to roughly 6 million tonnes in the past three years, suggesting that changes in consumption patterns have largely been met through domestic production. While continued strong economic development in China and India may increasingly affect food prices, this has not yet been an exceptional factor.

Other factors

Trade policies. In an attempt to minimize the impacts of higher food prices on vulnerable population groups within countries, a number of governments and private-sector actors have taken measures that have at times exacerbated the effects of the above-mentioned underlying trends on food prices in international markets. The adoption of export restrictions and bans by some countries has reduced global supply, aggravated shortages and eroded trust among trading partners. In some countries, such actions have also reduced farmers' incentives to respond to higher international prices. Speculative re-stocking or pre-stocking by large importers with relatively strong cash positions has also contributed to higher prices.

Financial markets. The recent turmoil in traditional asset markets has had an impact on food prices, as new types of investors have become involved in derivates markets based on agricultural commodities in the hope of achieving better returns than those available on traditional assets. Global trading activity in futures and options combined has more than doubled in the last five years. In the first nine months of 2007, it grew by 30 percent over the previous year.

This high level of speculative activity in agricultural commodity markets has led some analysts to indicate increased speculation as a significant factor in soaring food prices. However, it is not clear whether speculation is driving prices higher or whether this behaviour is the result of prices that are rising in any case. Either way, large inflows of funds could partly account for the *persistence* of high food prices and their increased *volatility*. Further research is needed. The role of financial investors in influencing food prices and whether there is a need for appropriate regulations to limit the impact of speculative bubbles on food prices are increasingly issues of concern.

Will high prices persist?

Cereal production has recovered, increasing by 4.7 percent in 2007 and a projected 2.8 percent in 2008. However, although food prices may fall from current high levels as some of the short-term factors behind the high prices subside, real prices of food commodities for the next decade are expected to remain above those of the previous ten years.

Three main assumptions underlie this expectation. First, economic growth in the developing world, particularly in large emerging economies, is expected to continue at about 6 percent per year, further raising the purchasing power and changing the dietary preferences of hundreds of millions of consumers. Second, biofuel demand is likely to continue its rapid growth, partly driven by high oil prices and government policies and partly by slow developments in widespread adoption of second-generation biofuels and technologies. According to the International Energy Agency, the share of the world's arable land devoted to growing biomass for liquid biofuels could triple in the next 20 years.[3] Third, in addition to land and water constraints, increasing costs of production, including higher fertilizer prices and rising transportation costs resulting from high petroleum prices, are likely to affect food production adversely, compounding the challenge of meeting global food demand.[4]

Taking stock of world hunger: revised estimates

Global overview

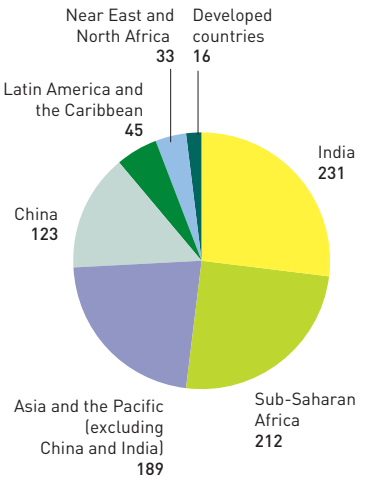
FAO's long-term estimates of undernourishment at the regional and country levels for the period from 1990–92 to 2003–05 (using the FAOSTAT database) confirm insufficient progress towards the WFS and MDG hunger reduction targets even *before* the negative impact of soaring food prices. Worldwide, 848 million people suffered from chronic hunger in 2003–05, the most recent period for which individual country data are available. This number is slightly higher than the 842 million people who were undernourished in 1990–92, the WFS and MDG baseline period.

The vast majority of the world's undernourished people live in developing countries, which were home to 832 million chronically hungry people in 2003–05. Of these people, 65 percent live in only seven countries: India, China, the Democratic Republic of the Congo, Bangladesh, Indonesia, Pakistan and Ethiopia. Progress in these countries with large populations would obviously have an important impact on the overall reduction of hunger in the world. Among these, China has made significant progress in reducing undernourishment following years of rapid economic growth.

The proportion of people who suffer from hunger in the total population remains highest in sub-Saharan Africa, where one in three people is chronically hungry. Latin America and the Caribbean were continuing to make good progress in hunger reduction before the dramatic increase in food prices; together with East Asia and the Near East and North Africa, these regions maintain some of the lowest levels of undernourishment in the developing world (Table 1, page 48).

8

Number of undernourished people in the world, 2003–05 (millions)



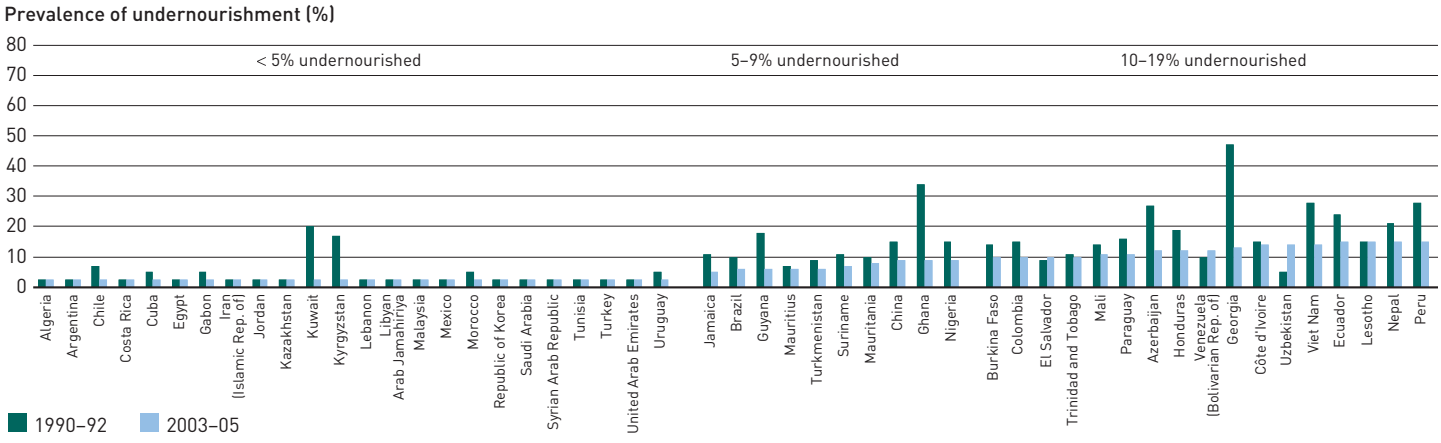
Source: FAO.

Sub-Saharan Africa

Sub-Saharan Africa's population grew by 200 million between the early 1990s and 2003–05, to 700 million. This substantial increase, coupled with insufficient overall and agriculture-sector development, placed a burden on hunger reduction efforts. However, while the overall *number* of undernourished people in the region increased by 43 million (from 169 million to 212 million),

9

Proportions of undernourished people in developing countries, 1990–92 and 2003–05



Revised undernourishment estimates

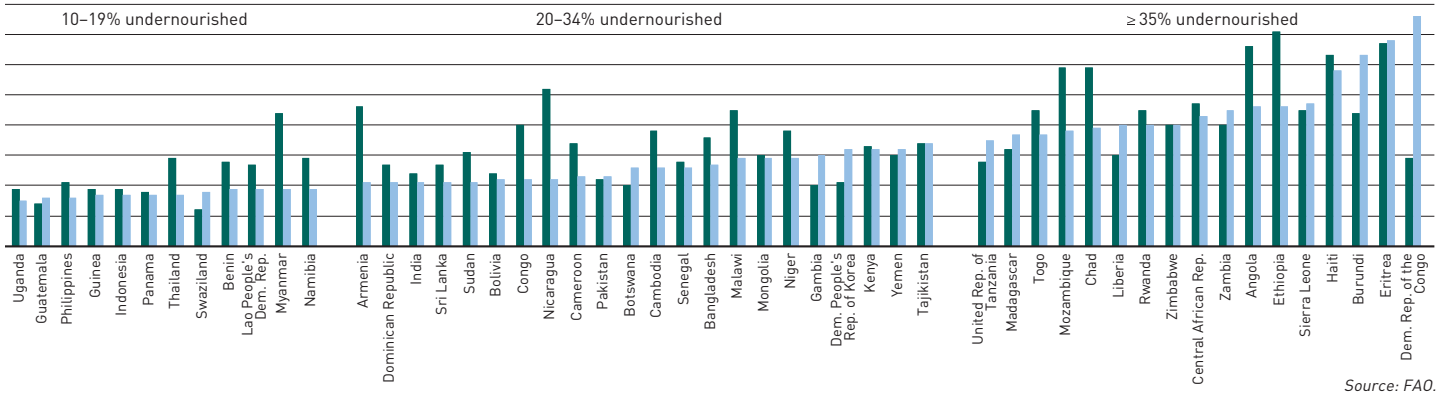
Compared with estimates presented in the 2006 edition of this report, data for both the 1990–92 baseline and subsequent periods have been revised on the basis of the most recent standards for human energy requirements and of new United Nations population statistics incorporated into FAO's undernourishment estimates. The Technical Annex presents the overall impact of the changes in these key parameters, and how they have influenced the estimates (pages 45–47). It is emphasized that the analysis in this section does *not* take into account the effects of high food prices.

sub-Saharan Africa did achieve some progress in reducing the *proportion* of people suffering from chronic hunger (down from 34 to 30 percent).

Most of the increase in the number of hungry people in sub-Saharan Africa occurred in a single country, the Democratic Republic of the Congo. Fuelled by widespread and persistent conflict, the number of its chronically hungry shot up from 11 million to 43 million and the proportion of undernourished rose from 29 to 76 percent. The number of undernourished has risen in another 25 countries in the region since 1990–92, presenting it with a major challenge in moving more rapidly towards the WFS and MDG hunger reduction targets.

At the same time, several of the countries that have achieved the steepest reductions in the proportion of undernourished are also located in sub-Saharan Africa. They include Ghana, the Congo, Nigeria, Mozambique and Malawi, with Ghana being the only country to have reached both the WFS and MDG targets. Key to Ghana's success has been robust growth, both in the economy at large and in the agriculture sector in particular. Spurred by policies that provide a larger return to producers and by relatively strong cocoa prices, Ghana's agricultural gross domestic product (GDP) has grown steadily. A recent World Bank study found that more than twice as many Ghanaians are moving back into agriculture as are leaving it.

In the 14 African countries on track to reach the MDG target of reducing the prevalence of hunger by half by 2015, the agriculture sector has achieved steady and relatively rapid growth, characterized by gains in agricultural value added, food production, cereal production and cereal yields. This is in marked contrast to the 14 African countries that either have failed to reduce the prevalence of undernourishment or have seen it increase since 1990–92. In these countries, food production has fallen sharply, while agricultural value added has edged up at less than one-quarter of the rate achieved by the more successful group. Importantly, countries that have scored successes include several that emerged from decades of civil war and conflict, offering striking evidence of the importance of peace and political stability for hunger reduction.



Source: FAO.

Undernourishment around the world

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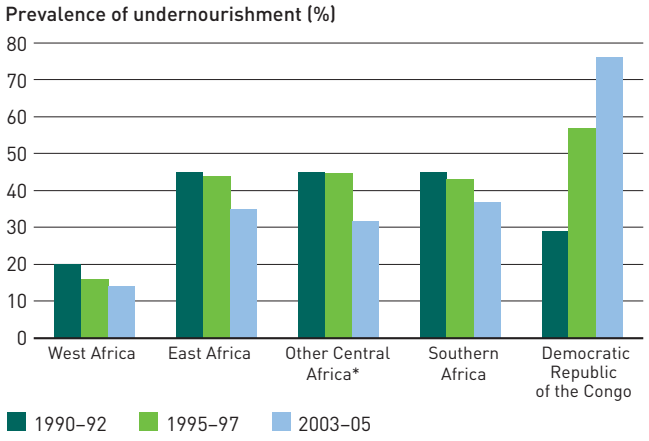
Subregional trends in sub-Saharan Africa

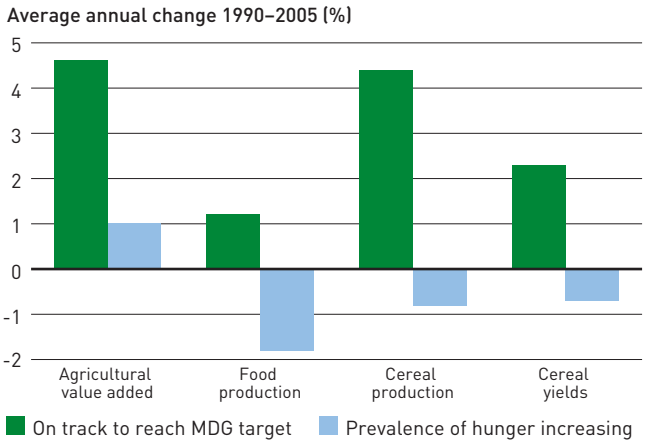


* Excluding the Democratic Republic of the Congo.

Source: FAO.

11

Growth in agriculture for best and worst performers in Africa



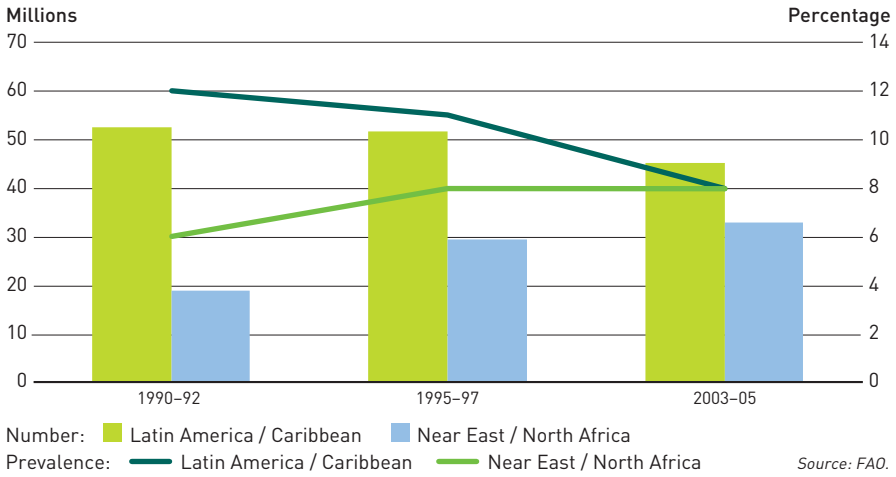
Source: World Bank.

Latin America and the Caribbean

Among all the subregions, South America has been the most successful in reducing hunger, with 10 out of 12 countries well on their way towards achieving the MDG 1 target. Backed by relatively high levels of national income, strong economic growth and strong productivity growth in their agriculture sectors, five countries in South America (Argentina, Chile, Guyana, Peru and Uruguay) have all reached the WFS and MDG targets.

12

Undernourishment in Latin America and the Caribbean and in the Near East and North Africa



Source: FAO.

However, elsewhere in the region, progress has not been as uniform. Costa Rica, Jamaica and Mexico have joined Cuba on the list of countries that successfully reached both the WFS and MDG hunger reduction targets in 2003–05. On the other hand, El Salvador, Guatemala, Haiti and Panama continue to experience difficulties in reducing the prevalence of hunger. Despite facing persistently high levels of political and economic instability, poverty and hunger, Haiti has seen a small reduction in undernourishment since 1990–92. However, with 58 percent of the population suffering from chronic hunger, it has one of the highest levels of undernourishment in the world.

Near East and North Africa

Countries in the Near East and North Africa region generally experience the lowest levels of undernourishment in the developing world. However, for the Near East as a whole, conflict

has had an important impact, with the total number of undernourished people nearly doubling from 15 million in 1990–92 to 28 million in 2003–05. This has largely been due to conflict in Afghanistan and Iraq, where the numbers of undernourished people have increased by 4.9 and 4.1 million, respectively. The number of undernourished has also increased in Yemen, where one in three (6.5 million people) suffers from chronic hunger.

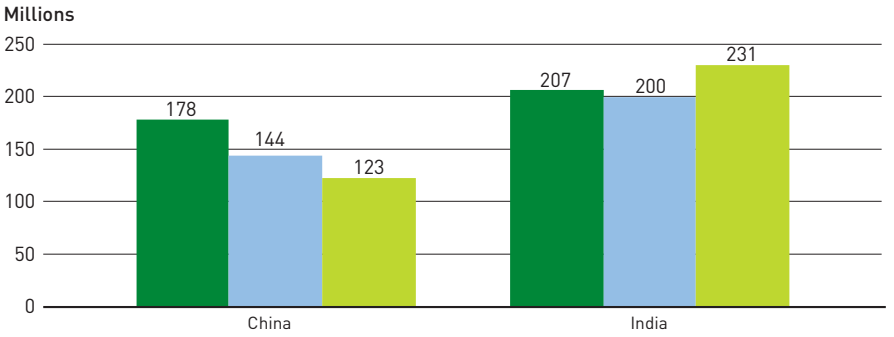
For North Africa, FAO estimates that about 3 percent of the overall population were still chronically hungry in 2003–05 (4.6 million people as against slightly more than 4 million in 1990–92). While the prevalence of undernourishment is generally low, the entire Near East and North Africa region would have to reduce the number of chronically hungry people from the 33 million in 2003–05 to fewer than 10 million by 2015 for the WFS target to be reached.

Asia and the Pacific

Like other regions in the world, the Asia and Pacific region shows a mixed picture of success stories and setbacks in hunger reduction. Asia has recorded modest progress in reducing the prevalence of hunger (from 20 to 16 percent) and a moderate reduction in the number of hungry people (from 582 million to 542 million people). However, with a very large population and relatively slow progress in hunger reduction, nearly two-thirds of the world's hungry people still live in Asia. Among the subregions, South Asia and Central Asia have suffered setbacks in hunger reduction after achieving initial progress in some countries with large populations (e.g. India, Indonesia and Pakistan; see Table 1, page 48). On the positive side, the Southeast Asia subregion as a whole has been well on track towards achieving the MDG hunger reduction target, with Viet Nam being the only country that reached this target by 2003–05. Some, including Thailand and Viet Nam, have made good progress towards the more ambitious WFS target.

13

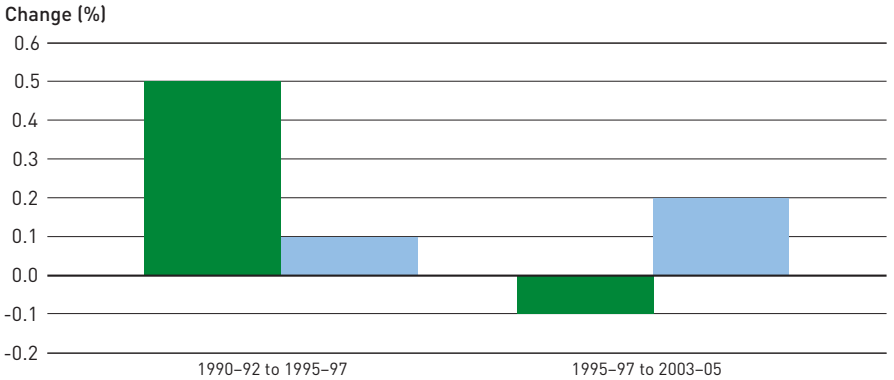
Revised estimates of undernourished in China and India



Source: FAO.

14

India: dietary energy requirements outpace supply



Source: FAO.

China and India

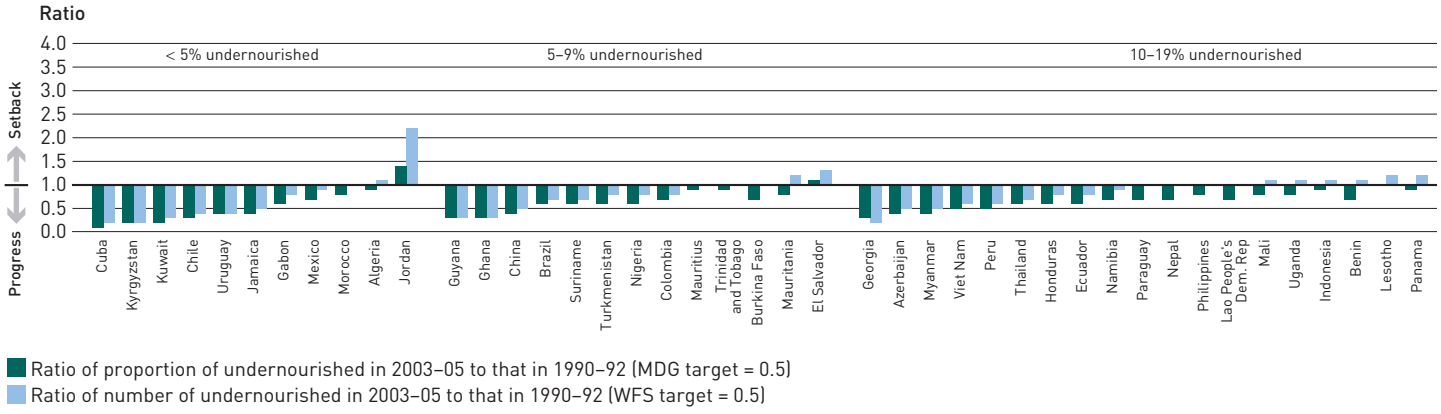
By virtue of their size, China and India combined account for 42 percent of the chronically hungry people in the developing world. The importance of China and India in the overall picture warrants some analysis of the main driving forces behind hunger trends.

After registering impressive gains between 1990–92 and the mid-1990s, progress in reducing hunger in India

Undernourishment around the world

15

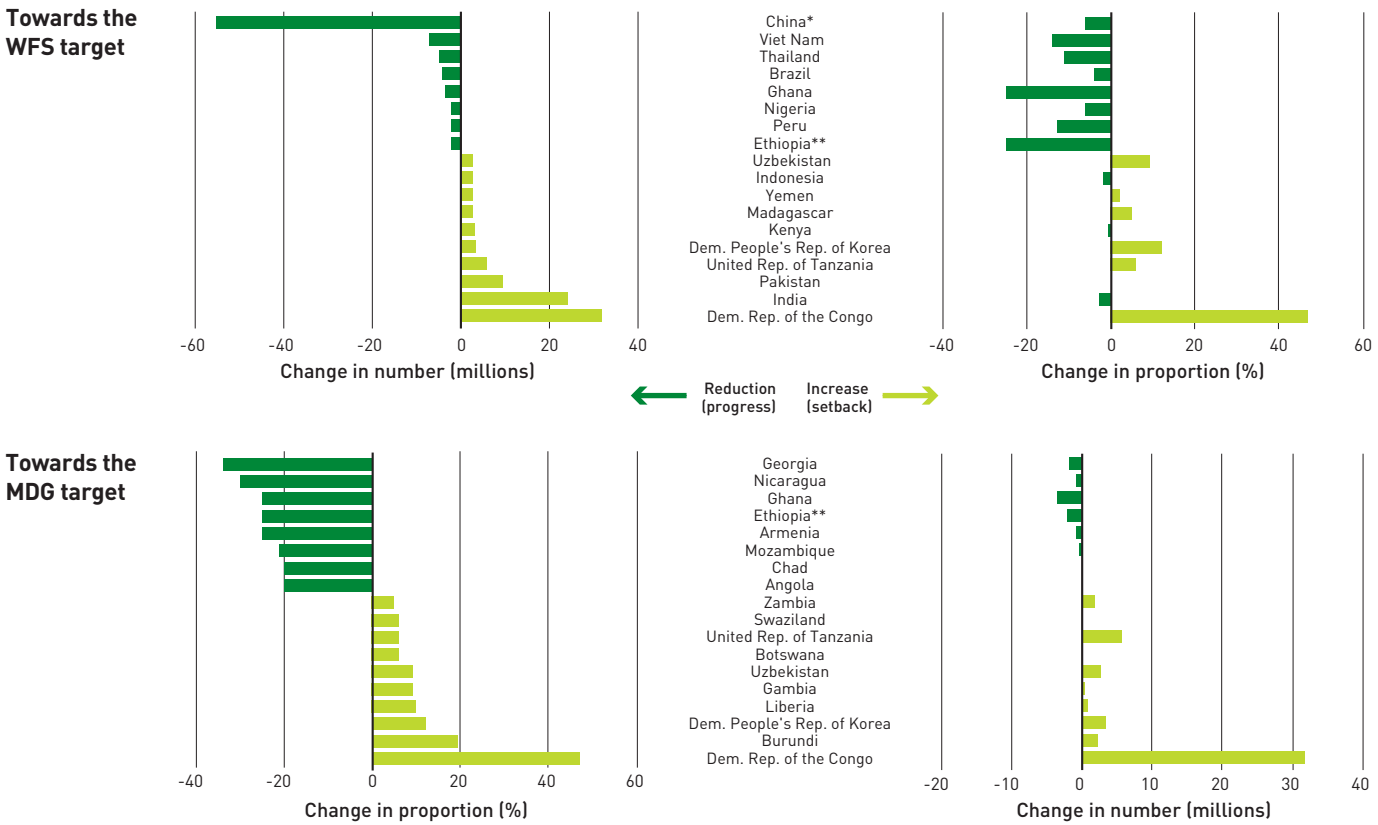
Progress and setbacks: ratios of number of undernourished and prevalence of undernourishment, 1990–92 to 2003–05



Ratio of proportion of undernourished in 2003–05 to that in 1990–92 (MDG target = 0.5)
Ratio of number of undernourished in 2003–05 to that in 1990–92 (WFS target = 0.5)

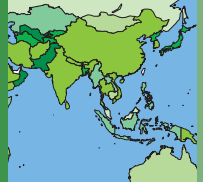
16

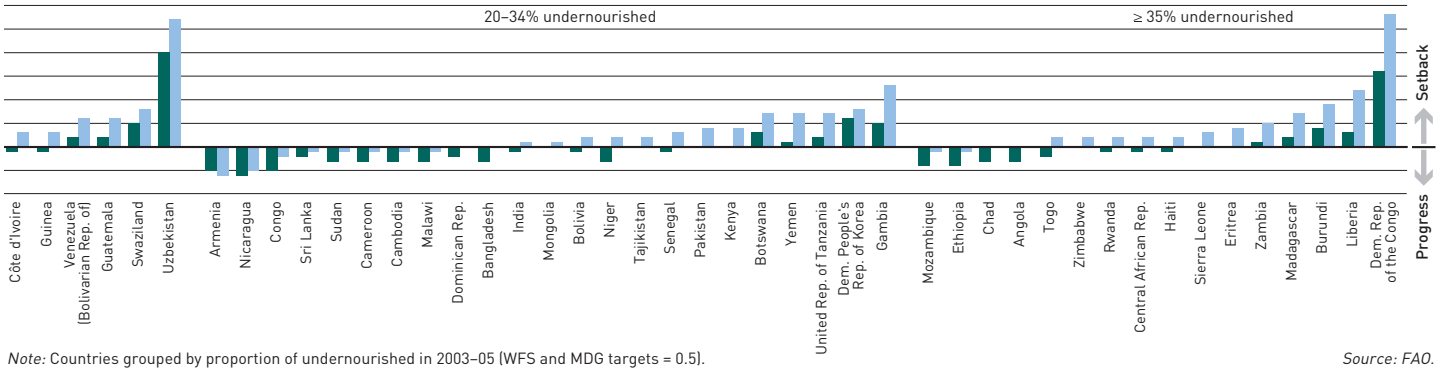
Progress and setbacks in reducing undernourishment



* Includes Taiwan Province of China. ** Estimates for former Ethiopia PDR used for 1990–92.

Source: FAO.





Note: Countries grouped by proportion of undernourished in 2003–05 (WFS and MDG targets = 0.5).

Source: FAO.

has stalled since about 1995–97. The high proportion of undernourished in India in the base period (24 percent) combined with a high population growth rate means that India has had a challenging task in reducing the number of undernourished (Table 1, page 48).

The increase in the number of undernourished in India can be traced to a slowing in the growth (even a slight decline) in per capita dietary energy supply for human consumption since 1995–97. On the demand side, life expectancy in India has increased from 59 to 63 years since 1990–92. This has had an important impact on the overall change in population structure, with the result that in 2003–05 the growth in minimum dietary energy requirements had outpaced that of dietary energy supply.

The combination of the declining per capita growth rate in total dietary energy supply and higher per capita dietary energy requirements resulted in an estimated 24 million more undernourished people in India in 2003–05 compared with the base period. The increased food needs of the ageing population amount to about 6.5 million tonnes per year in cereal equivalent. Nevertheless, the prevalence of hunger in India decreased from 24 percent in 1990–92 to 21 percent in 2003–05, marking progress towards meeting the MDG hunger reduction target.

Progress and setbacks by country

With the number of chronically hungry people in the world in 2003–05 at about the same level as in 1990–92 and rising steeply with soaring food prices, the WFS target of halving that number by 2015 has become much more challenging. Barely one-third of the developing countries included in FAO's estimates have succeeded in reducing the number of undernourished people at all since 1990–92. Of those, only 25 were on track in 2003–05, before the onset of high food prices, to achieve the WFS target. The challenge will be all the greater if high food prices persist, placing an even larger burden on fighting hunger.

Key monitoring ratios

Both the WFS and the MDG targets aim to "halve hunger" by 2015. The 1996 World Food Summit called for the *number* of hungry people to be reduced by 50 percent by 2015, while under MDG 1, countries have committed themselves to "halve, between 1990 and 2015, the *proportion* of people who suffer from hunger". To measure progress or setbacks in terms of achieving these targets, FAO calculates a simple set of ratios for each country, dividing the estimate of the most recent number or proportion of hungry people by the corresponding figure in the base period 1990–92. A value of 0.5 (one-half) means that the target of "halving hunger" has been reached. A value lower than 1.0 means that progress has been achieved, while a value higher than 1.0 implies a setback. Figure 15 presents the values for the WFS and the MDG hunger reduction targets separately for each country (data listed in Table 1 on page 48).

Undernourishment around the world

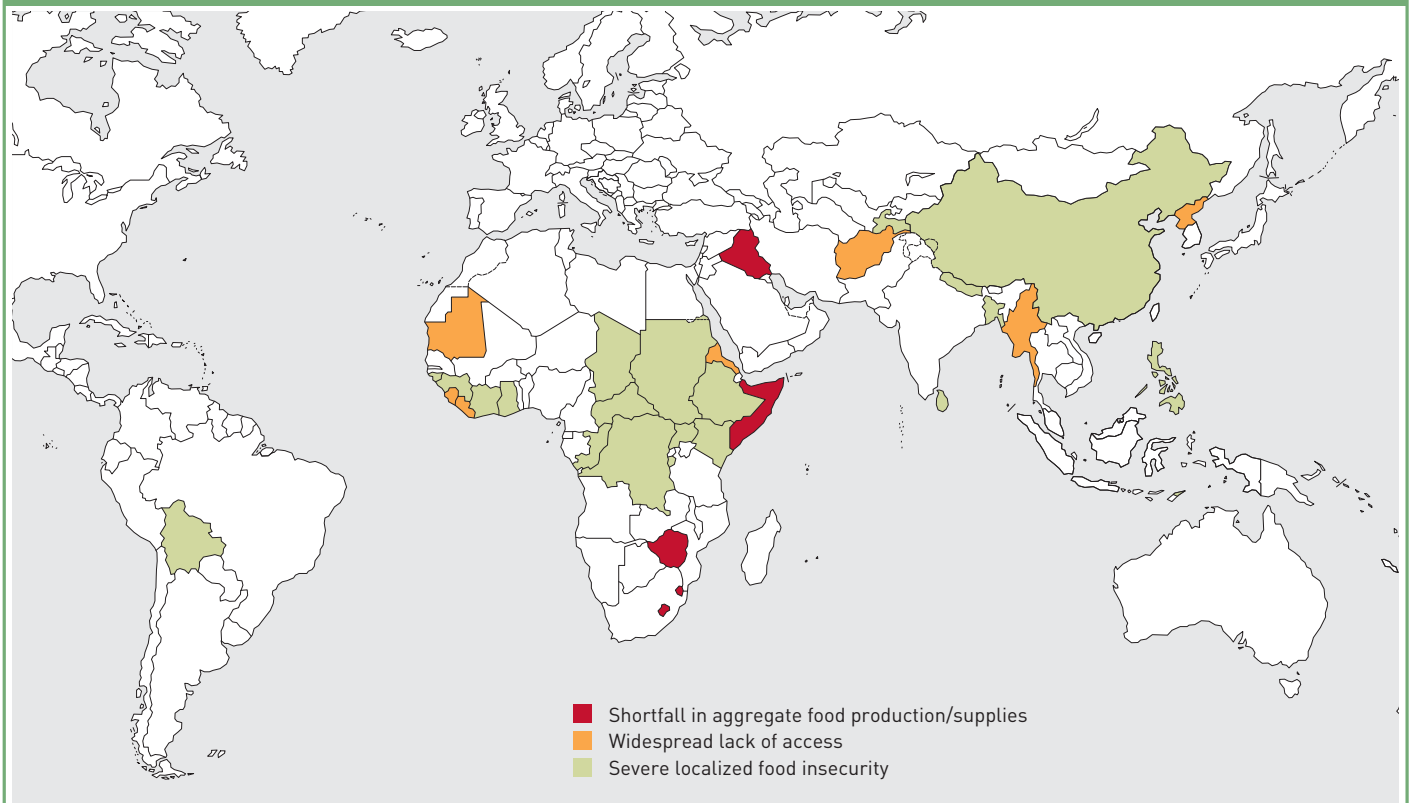
Hotspots and emergencies

The above analysis of long-term trends in undernourishment highlights the marked prevalence of chronic hunger in countries that have experienced food crises over several consecutive years. Food crises can emerge at any time and anywhere in the world as a consequence of severe adverse weather conditions, natural disasters, economic shocks, conflicts or a combination of these factors. In support of timely action to mitigate – and with the desire to prevent – a further deterioration in the food security situation of affected countries, the FAO Global Information and Early Warning System (GIEWS) continuously monitors the situation on all continents and maintains a list of countries that are in crisis. Many such countries remain on the GIEWS list for a long time, or appear frequently, and are regarded as having "hunger hotspots" – areas where a significant proportion of people are severely affected by persistent or recurring hunger and malnutrition. Figure 17 shows a map of countries in crisis that require external assistance (33 countries as of August 2008).

A retrospective analysis of the nature and underlying causes of past and ongoing food crises is crucial to the framing of appropriate emergency interventions and policy measures to address hunger hotspots. This analysis provides a basis for assessing the impact of the sharp rise in agricultural commodity, food and fuel prices on countries already in crisis (and on many others highly vulnerable to these price shocks). Given the uncertain impact of soaring food and fuel prices on countries, households and individuals around the world, the distinction between countries already "in crisis" and others "at risk" has become much less clear, and this presents a series of challenges for monitoring and for timely and appropriate early warning of impending food crises.

17

Countries facing food crises



Note: As of August 2008.

Source: FAO.

Trends in crises

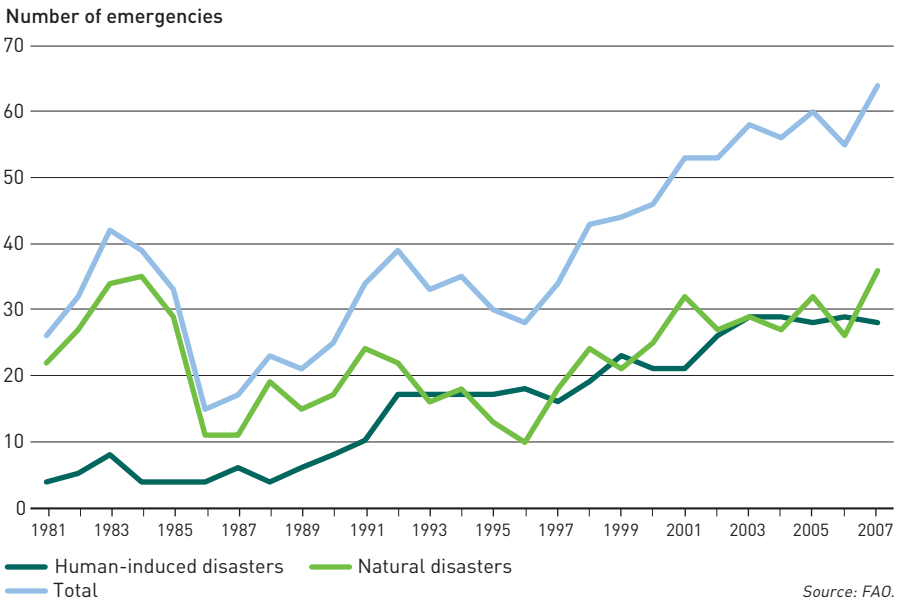
In 2007, a record number of countries (47) faced food crises requiring emergency assistance, with 27 of these countries in Africa, 10 in Asia and the remaining 10 in other parts of the world. In the period 1993–2000, an average of 15 African countries faced food crises annually; that number has climbed to about 25 countries since 2001. Having faced severe food insecurity in one season, many countries remain on the list for several years owing to the lingering effects of drought and/or conflict and low resilience. Others appear on the list more sporadically and need careful monitoring.

As the number of countries facing food crises has risen in the past two decades, the underlying causes have become more complex. In many cases, human-induced disasters have compounded natural ones, ushering in complex and long-lasting crises. In other instances, human-induced crises have been aggravated by a natural disaster. Natural disasters were the primary cause of food insecurity until the early 1990s, with human-induced crises becoming more prominent in the past decade.

Natural disasters. Natural disasters can be classified as either "slow onset" (e.g. drought or prolonged dry spells) or "sudden onset" (e.g. floods, cyclones, hurricanes, earthquakes and volcanic eruptions). While the proportion of natural disasters has generally decreased over time, FAO/GIEWS data indicate that sudden-onset disasters – especially floods – have increased from 14 percent of all natural disasters in the 1980s to 20 percent in the 1990s and 27 percent since 2000. Worldwide, flood occurrence has risen from about 50 floods per year in the mid-1980s to more than 200 today.[5] Conversely, there has been a decrease in food emergencies caused by slow-onset natural disasters. As sudden-onset emergencies leave much less time for planning and response than slow-onset ones, these trends have important implications for mitigation measures and the mobilization of resources needed to prepare for, and respond to, emergencies in order to save lives and protect livelihood systems.

18

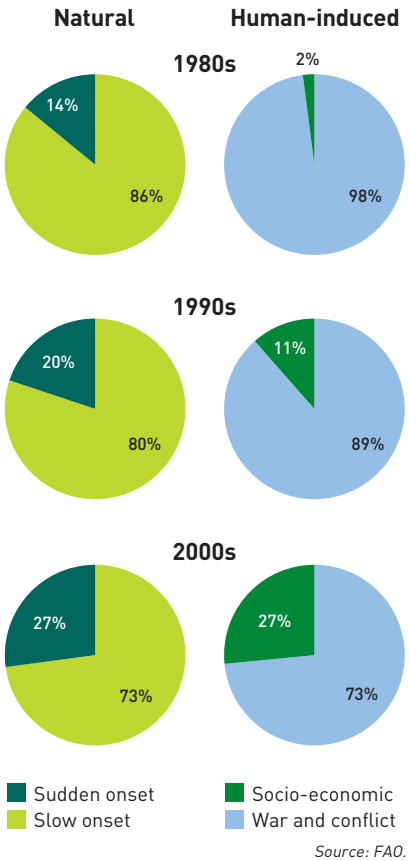
Causes of food emergencies, 1981–2007



Source: FAO.

19

Changing nature of natural and human-induced disasters



Source: FAO.

Undernourishment around the world

Socio-economic factors. Human-induced crises can be divided into war or conflict-related ones and disasters induced mostly by socio-economic shocks. The latter can in turn stem from internal factors (such as poor economic or social policies, conflicts over landownership or a deteriorating public health situation) or from external factors. External factors may include a collapse in a country's export commodity prices resulting in a loss of export earnings or a sharp increase in the price of imported food commodities (as in the last two years). The relative share of food crises caused by socio-economic factors has risen in the past three decades from about 2 percent in the 1980s to 11 percent in the 1990s and 27 percent since 2000. Although the relative share of countries with food crises caused by war and conflicts has declined, the absolute number of such crises has risen in the same period, with huge loss of life, destruction of assets and displacement of populations.

New dimensions of vulnerability

High food prices have affected countries in various ways, but their impact has been felt more severely in countries with a structural deficit in food production, where incomes are low, and where most households spend a high proportion of their limited budgets on food. Many of these countries already have high rates of undernourishment. Most actually fall within a typology developed by FAO in the 1970s (following a previous global food crisis) known as low-income food-deficit countries, or LIFDCs.[6] In 2008, a total of 82 LIFDCs are expected to spend nearly US$169 billion on food imports compared with US$121 billion in 2007, a 40-percent increase. The percentage rise for the basic grains component of their food imports is even greater – 50 percent. By the end of 2008, the food import bills of LIFDCs could cost four times as much as in 2000, representing a tremendous burden on these countries.

While LIFDCs as a group are spending considerably more for basic imported foods, there are large differences among countries and population groups. These differences depend on many factors, including: the degree of dependency on imports; food consumption patterns; the degree of urbanization; the extent to which international prices have influenced domestic consumer and producer prices for basic commodities (degree of price transmission); real exchange-rate movements; and the effectiveness of policy measures taken by governments to deal with the crisis.

For example, if one considers the nations that import most of their petroleum products and foodgrain requirements and also have high rates of undernourishment, these would include Eritrea, Haiti, Liberia, the Niger, Sierra Leone and Tajikistan.[7] Most are in sub-Saharan Africa and many are already on the GIEWS list of countries in crisis.

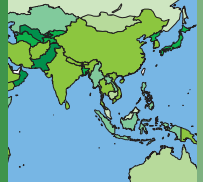
Investment implications

Donor countries and development agencies are particularly concerned with the need to prioritize emergency assistance and investment decisions in the context of the current global food crisis, and they are calling for lists of countries that are at risk.

FAO has recently completed an analysis of key factors determining the degree to which countries are vulnerable to high food prices, taking into account the extent to which they are net importers of energy products

Informal cross-border flows

Pakistan provides an illustration of the complexity of commodity price dynamics at the national and regional levels. The country is a relatively large regional producer and consumer of wheat, usually in a surplus situation. Wheat production in 2008 is down just over 6 percent from last year's record level, but wheat imports are expected to be between 2.5 and 3 million tonnes. Despite the government's strong intervention in the domestic wheat sector, prices have increased sharply since mid-2007. Indeed, by June 2008, they had nearly doubled their levels of a year earlier in deficit provinces. In this case, a major factor is that wheat prices in Pakistan are still much lower than in neighbouring countries, particularly Afghanistan (which has been struggling with a combination of unfavourable weather and insecurity). The large price differentials between the two countries have resulted in substantial informal cross-border flows and in Pakistan importing wheat from international markets. At the same time, a reduced capacity to subsidize fertilizer has resulted in a 60-percent increase in di-ammonium phosphate (DAP) fertilizer prices at the producer level, which has led to a sharp drop in its use and affected yields adversely.



Countries most at risk of deteriorating food security due to high food prices

In food crisis	At high risk
Central African Republic	Cameroon
Democratic Republic of the Congo	Comoros
Côte d'Ivoire	Djibouti
Eritrea	Gambia
Ethiopia	Madagascar
Guinea	Mongolia
Guinea-Bissau	Mozambique
Haiti	Nicaragua
Kenya	Niger
Lesotho	Occupied Palestinian Territory
Liberia	Rwanda
Sierra Leone	Senegal
Somalia	Solomon Islands
Swaziland	Togo
Tajikistan	United Republic of Tanzania
Timor-Leste	Yemen
Zimbabwe	Zambia

Source: FAO.

and of cereals (weighted by the proportion of cereals in dietary energy intake), relative levels of poverty and the prevalence of undernourishment. Results indicate that, in addition to countries already in crisis and requiring external assistance (some of which are listed on the left in the table), many others have been severely affected by high commodity prices, in particular of basic energy and food products. These include countries listed on the right in the table.[8]

Importantly, some countries not featuring on a list today may still fall into a food security crisis tomorrow, possibly owing to a sudden natural disaster, an outbreak of civil unrest, a financial crisis or a combination of factors. Bangladesh is one such example; the country still features in the GIEWS list of countries experiencing "severe localized food insecurity" following past flooding and the impact of cyclone Sydr in late 2007, but with a clear indication that the food security situation is improving. Bangladesh also features on the list of countries severely affected by high food prices, which calls for continued close monitoring of the situation. In other instances, food price increases in a given country are strongly influenced by the situation across its borders, as is the case of wheat prices in Pakistan.

Implications for early warning

Given such a highly dynamic global food situation, the GIEWS concept of "countries in crisis requiring external assistance" has had to be revisited. In addition to crises induced by natural events and occasional economic shocks, strong and sustained impacts of high food prices will put some countries already in crisis in a more precarious position or worsen the situation in other countries to the extent that they become countries in crisis.

GIEWS monitors food production, maintains supply and demand balances at the national level and produces global aggregates. In addition, it regularly monitors, analyses and reports on the world commodity markets and trade situation (including food prices) and provides prospects for the overall food situation. In order to strengthen these functions, while also providing policy advice and technical assistance to countries in a context of high food prices, GIEWS has been reinforcing its data collection and analysis capacity in three main areas:

- monitoring international and domestic commodity/food prices, including at the subnational level;
- monitoring policy measures taken by countries in response to high food prices;
- analysing the impact of high food prices on urban and rural households, taking into account the variables mentioned above.

In keeping its finger on the pulse of a continuously changing global food situation and in monitoring the many risk factors that make countries vulnerable to a possible sudden deterioration in their food security situation, GIEWS helps keep the world abreast of the latest developments.

High food prices and food security

Poor households worst hit

FAO global estimates show that high food prices have increased world hunger. While stories abound in the media about affected individuals, families and communities, it is important to understand who ultimately gains and who loses from high food prices, especially among the poor, and why. This knowledge will enable appropriate policies and programmes to target those most in need.

FAO has examined the impact of high food prices on household welfare. The empirical analysis described in this section shows that, in the short term, the vast majority of poor urban and rural households are hit hardest by higher prices. Among the poor, it is the landless and female-headed households that are most vulnerable to sharp rises in basic food prices. The relative impact is not uniform, even among poor households, and depends on a number of factors.

Particularly important is the extent to which households produce food for their own consumption compared with what they buy in the marketplace. A household is defined as a net food buyer when the value of food staples it produces is less than the value of food staples it consumes. Poor households tend to be net buyers of food, even in rural areas where agriculture and staple food production determine the principal livelihoods for many. According to FAO data from nine developing countries, about three-quarters of rural households and 97 percent of urban households are net food buyers (see table).

Net food buyers stand to lose from an increase in the price of food staples. The extent of the impact depends in part on dietary patterns. Households that spend a large proportion of their income on internationally traded food staples (such as wheat, rice and maize) are more likely to suffer a decline in overall welfare. These include most urban households. The extent of this decline depends on the ability of a household to shift consumption towards less-expensive foods that do not generally enter global markets, such as roots and tubers. In contrast, households with land and those that derive some income from the production and sale of food staples that are also traded internationally could benefit from higher world prices. However, high fuel and fertilizer prices are likely to offset some of these gains. In the medium term, most farmers tend to shift production towards more profitable

Philippines: rice price increasing poverty

Soaring rice prices are pushing more families in the Philippines into poverty, making it more difficult for the country to achieve MDG 1 (halving the proportion of people living on less than US$1 per day by 2015). More than 24 percent of Philippine families were living in extreme poverty in 1991, and while that rate had declined to 13.5 percent in 2003, it has started rising again.

Inflation rose by nearly 2 percentage points to 8.3 percent from March to April 2008 and reached 9.6 percent in May, the highest level since 1999. Joel Saracho, National Coordinator of the Global Call to Action against Poverty in Philippines, said that "income is barely enough for daily needs yet there is a decrease in [household] purchasing power". Leonardo Zafra, a security guard in Manila, said that his household's only option was to borrow from moneylenders at exorbitant interest rates: "Our debts are piling on top of each other". His wage of 260 pesos per day (about US$6.50) was not enough to pay the bills for utilities, education and food.

Source: IRIN news service, May/June 2008.

Net buyers of staple foods

	All households			Poor households		
	Urban	Rural	All	Urban	Rural	All
	(Percentage)					
Albania, 2005	99.1	67.6	82.9	*	*	*
Bangladesh, 2000	95.9	72.0	76.8	95.5	83.4	84.2
Ghana, 1998	92.0	72.0	79.3	*	69.1	*
Guatemala, 2000	97.5	86.4	91.2	98.3	82.2	83.1
Malawi, 2004	96.6	92.8	93.3	99.0	94.8	95.0
Nicaragua, 2001	97.9	78.5	90.4	93.8	73.0	79.0
Pakistan, 2001	97.9	78.5	84.1	96.4	83.1	85.4
Tajikistan, 2003	99.4	87.0	91.2	97.1	76.6	81.4
Viet Nam, 1998	91.1	32.1	46.3	100.0	40.6	41.2
Unweighted average	96.4	74.1	81.7	97.2	87.9	78.5

* Insufficient data.

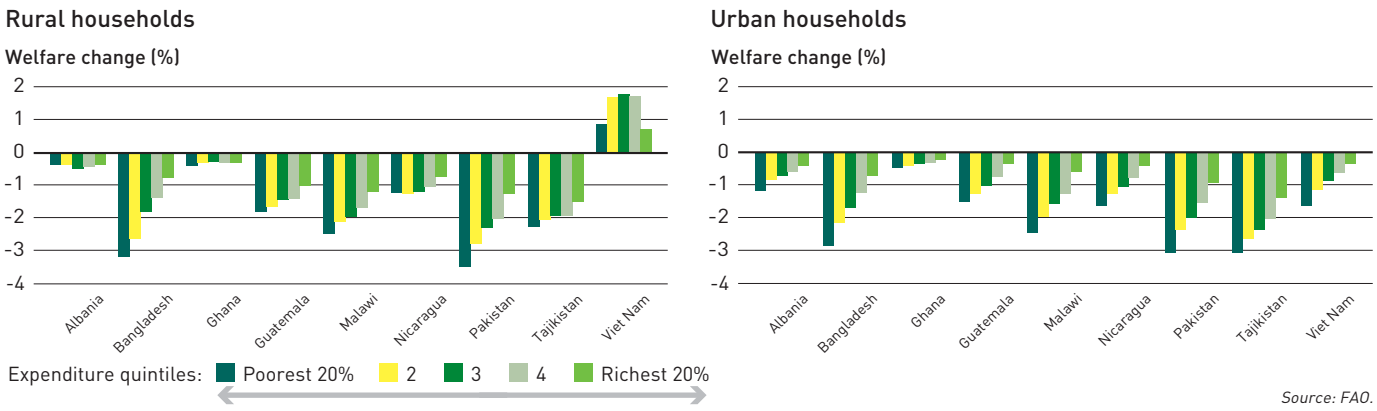
Source: FAO.

crops. This could enable them to move from being net buyers to net sellers of staple foods. Their ability to change depends on the movement in relative prices as well as their access to land, resources and services needed to facilitate change (see pages 34–40).

FAO has simulated the short-term impact of a 10-percent increase in the price of key internationally traded staple foods on the income of different types of households in urban and rural areas (see box for methodology). It was not possible to use actual price changes in each country as local currency prices do not always reflect world prices in a

20

A 10-percent rise in the price of food staples hits poor households hardest



Source: FAO.

Welfare impacts of a price rise in basic staples

Using representative household survey data from a number of countries, the likely short-term welfare impact of rising food prices was calculated for groups of households differentiated by income, landholdings and livelihood strategies. The welfare impact in this case is the amount of income needed to restore a household to its position prior to the income shock of high prices, and therefore the real income lost to high food prices. This is illustrated in Figures 20–23 as a percentage change in total consumption expenditure. This estimate is determined by comparing how the shares of the main staple products in household consumption and income vary following a 10-percent increase in the prices of the main staple products. The methodology employed is similar to that in Deaton[1] and in Minot and Goletti.[2]

In each country, the main staples were chosen based on their importance in the share of total food expenditure as follows: Albania (wheat, maize and rice); Bangladesh (rice, wheat and pulses); Ghana (maize and rice); Guatemala (maize, wheat and beans); Malawi and Nicaragua (maize, rice and beans); Pakistan and Tajikistan (wheat, rice and beans); and Viet Nam (rice, maize and beans).

The reported results refer to the short-term impact of high food prices only. Household responses that involve changes in production and consumption behaviour over time are not included. Moreover, it is possible that price increases become more generalized over time in some countries, eventually affecting staples that are not internationally traded, e.g. cassava. In this case, the results may be underestimates for those groups of households that spend substantial shares of their income on non-tradable staples. Finally, for simplicity, the simulation assumes that price changes are transmitted equally to different types of households, be they urban consumers or smallholder farmers in remote areas.

[1] A. Deaton. 1989. Rice prices and income distribution in Thailand: a non-parametric analysis. *The Economic Journal*, 99(395): 1–37.
[2] N. Minot and F. Goletti. 2000. *Rice market liberalization and poverty in Viet Nam*. IFPRI Research Report No. 114. Washington, DC, IFPRI.

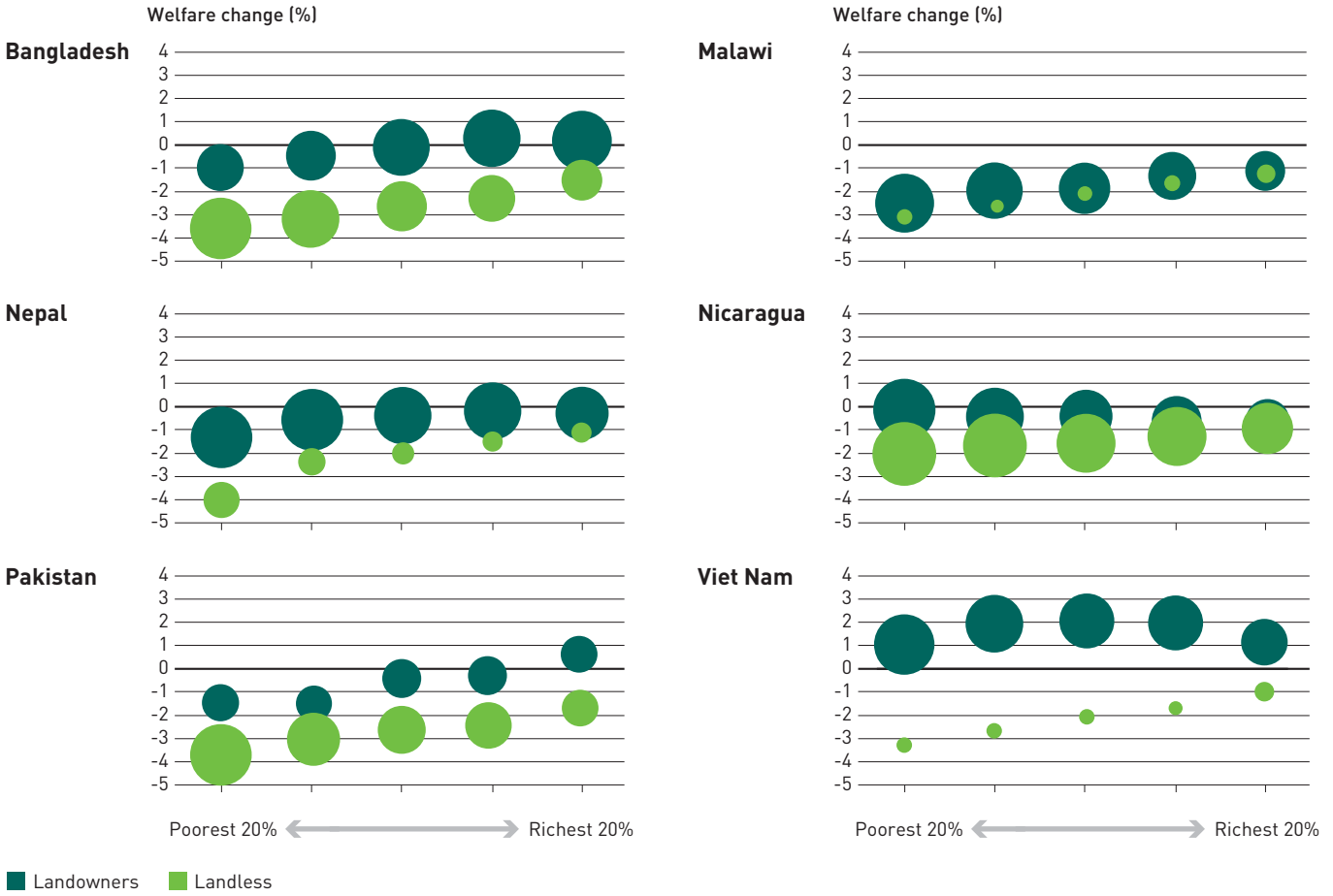
consistent manner (see box on page 10) and the increases in staple food prices vary among locations within countries. Using a uniform 10-percent increase illustrates how the effects are distributed among different household groups and allows more meaningful cross-country comparisons. Simulating the higher price increases occurring in many countries would yield higher impacts, but the distribution among household groups would remain the same.

In terms of the percentage loss in income, the results show that the poorest households are hit hardest by rising food prices in both urban and rural areas. This is a cause for concern because the erosion of their real income harms not only their current ability to cover basic needs but also their prospects of escaping poverty. In order to cope with the added stress of high food prices, poor households may be forced to sell assets that would reduce their livelihood base, to reduce the number and/or the diversity of meals they consume, or to reduce expenditure on essential non-food items, such as health care and education.

Households tend to be less affected in countries where the diet consists largely of food staples that are not internationally traded. For example, Ghanaian households appear to be relatively insulated from swings in international food markets because a large share of their diet is based on local staples

21

Welfare effects of a 10-percent rise in staple food prices on rural households, by landownership



Note: Bubble size represents the relative portion of that category of the rural population that is landed or landless.

Source: FAO.

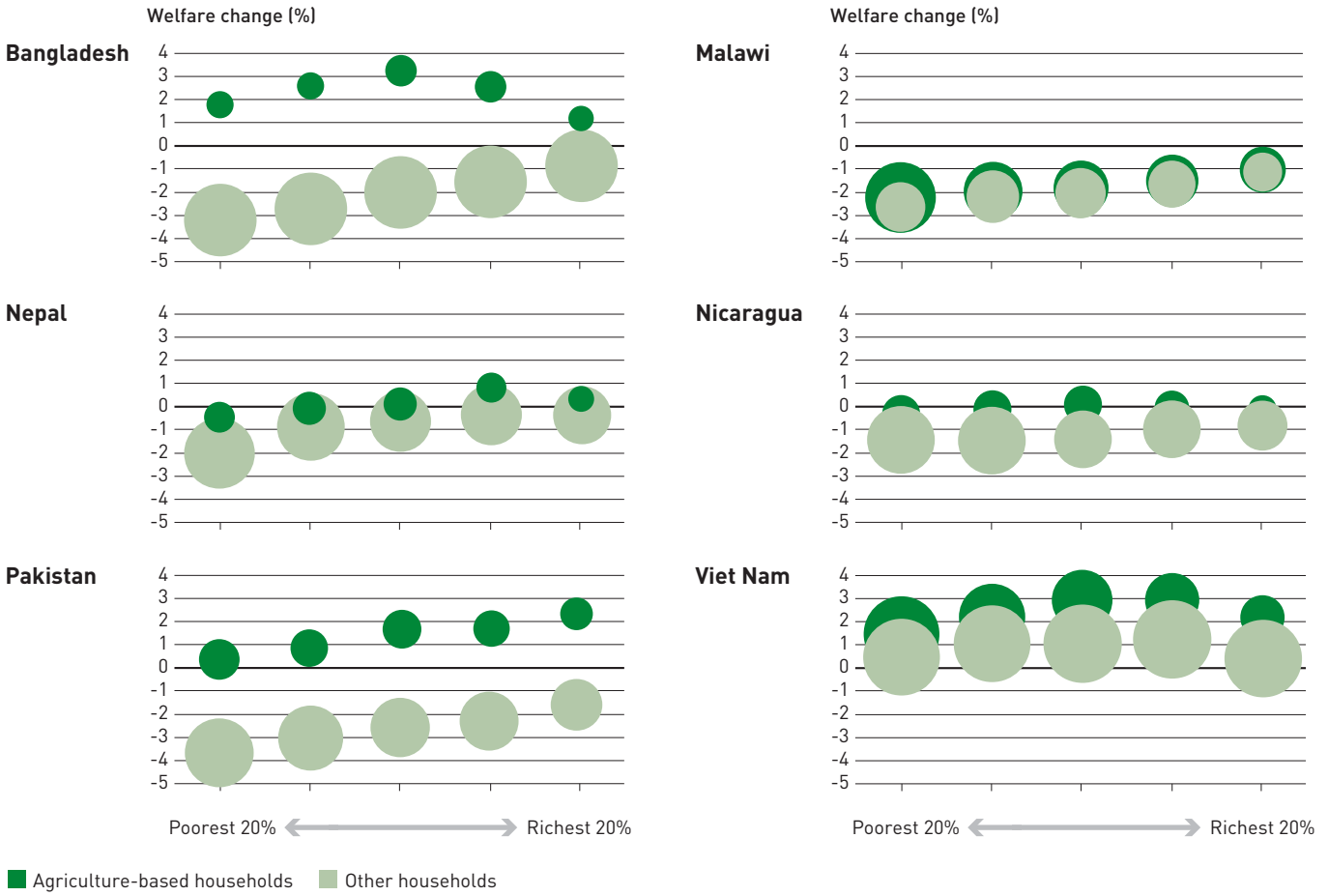
such as cassava and sorghum. Should the price of these local staples also increase as demand for them grows, rising food prices would have a much stronger impact.

The effects of rising food prices may also vary substantially among countries that have similar dietary patterns but differ in terms of land distribution and productivity levels. In Bangladesh and Viet Nam, rice is the major food staple and also the main food crop grown by small farmers. Viet Nam has a fairly egalitarian distribution of land, with most farmers participating in the production and sale of rice. With impressive gains in smallholder productivity in recent decades, the country has become one of the world's leading rice exporters. In contrast, most farmers in Bangladesh have limited access to land, often only through tenure arrangements such as sharecropping. Given the different land tenure arrangements and, thus, the importance of agriculture in household income, high rice prices have a substantially different impact on rural welfare in the two countries. In Viet Nam, even the poorer rural households gain from rising prices. In Bangladesh, the impact is largely negative across income groups, and it is particularly high for the poorest and landless households.

Access to key productive assets, especially land, influences the extent to which households, even at similar levels of income, are affected positively or negatively by higher

22

Welfare effects of a 10-percent rise in staple food prices on rural households, by livelihood



Note: Bubble size represents the relative portion of that category of the rural population specializing in agriculture or non-agricultural activities.

Source: FAO.

High food prices and food security

Can high food prices help the poor?

By their very nature, poor households seldom produce enough to feed themselves, let alone produce a surplus for sale, thus making them net food buyers. In the short run, high food prices usually hurt net food buyers, rich or poor; but the impact can be devastating for the poorest of the poor. That said, in certain circumstances, high food prices can help the poor even in the short run. If the poorest of the poor are net food sellers, as is the case for rice in Viet Nam, higher prices will help reduce poverty (the fact that Viet Nam exports a large share of its production also helps). However, available evidence suggests that this situation does not occur in many countries. In general, although there may be some exceptions, higher food prices do hurt the poor.

In the medium term, higher food prices provide an incentive to increase production. Increased food production implies higher demand for agricultural labour and an increase in agricultural wages. Agricultural wages are an important source of income for the rural poor. Wage rises may more than offset the welfare losses of the poor caused by higher food prices. However, the speed and extent of agricultural wage growth is important. Research suggests that higher wages eventually did compensate for higher food prices in Bangladesh in the 1950s and 1960s, but only after a lag of several years.[1] The matter warrants further research.

Finally, there is strong evidence that productivity-based agricultural growth, especially by small producers, has an overall positive economic impact on rural areas. Higher agricultural productivity and incomes translate into increased demand for non-agricultural goods and services produced in rural areas. This in turn leads to higher employment, wages and rural incomes. The issue, then, is the extent to which the incentives related to high food prices translate into production and productivity increases, and the time lag before agricultural growth translates into overall rural development.

[1] M. Ravallion. 1990. Rural welfare effects of food price changes under induced wage responses: theory and evidence for Bangladesh. *Oxford Economic Papers*, 42(3): 574–585.

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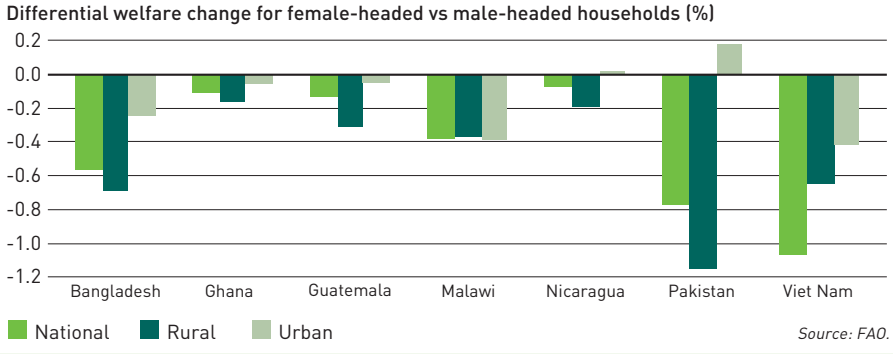
Rising food prices hit female-headed households harder



food prices. Across the board, high food prices hit landless households hardest. Landowners, especially the wealthier ones, are in a favourable position to gain from price increases in internationally traded staple foods.

Household livelihood strategies are another important factor in determining the impact of increased food prices on household welfare. Agriculture-based households (those

The Horn of Africa: poor urban population hurt

The urban poor in the Horn of Africa are the new face of hunger in a region where up to 14.6 million people now require humanitarian assistance owing to poor rains, high food and fuel prices, conflict, animal disease, inflation and poverty. According to the World Food Programme, the situation of the urban poor has worsened, as they continue to be adversely affected by rising food prices. Others have called for immediate action to prevent hunger from spiralling out of control in the region, while emphasizing that the urban poor are among those at greatest risk.

As of today, some 20 million people live in slums across the Horn of Africa, and they are at the mercy of huge fluctuations in the price of basic family foodstuffs that strip their purchasing power and deplete their savings. Bellatu Bakane, a 38-year-old mother of three living in Addis Ababa, can't help but feel frustrated: "I get angry because every time I go [to the market] food prices are higher" ... "because food prices are increasing, we are eating less". Many Ethiopians are skipping meals and cutting out "luxuries" such as vegetables and eggs.

Source: IRIN news service, June/July 2008.

deriving more than 75 percent of their income from farming) stand to gain from the price increase, or at least lose less, depending on the extent of staple crop production. In Pakistan and Viet Nam, and even in Bangladesh, agricultural households gain substantially from higher food prices, with benefits accruing even to some of the poorer households. More surprisingly perhaps, wealthier agriculture-based households may not always gain most from price increases in staple foods as they may be producing other commodities whose prices may not necessarily be rising, such as high-value or non-food crops (e.g. tobacco in Malawi), or livestock.

The welfare impact of a 10-percent rise in staple food prices also varies by gender. Among urban households (which are primarily net buyers of food), female-headed households suffer a larger proportional drop in welfare than male-headed households. The most important exception found in the countries analysed is in Pakistan, where female-headed households represent a larger proportion among the wealthier income groups. Among rural households, female-headed households face considerably higher welfare losses in all countries.

Overall, at the national level, female-headed households are more vulnerable to food price shocks for two reasons. First, they tend to spend proportionally more on food than male-headed households; hence, they are hit harder by higher food prices. Second, they face a variety of gender-specific obstacles that limit their ability to produce more food and, thus, to benefit from an increase in food prices. Chief among these constraints are differences in access to inputs and services, particularly land and credit.

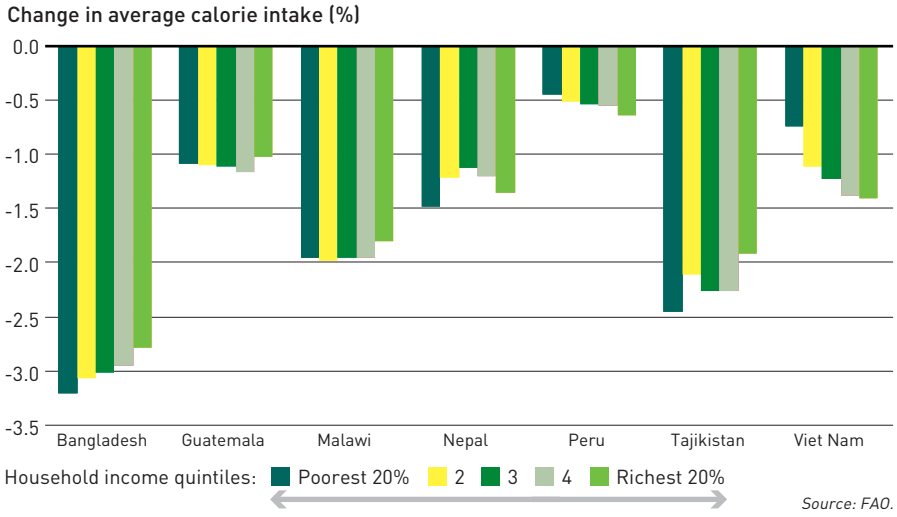
High prices and undernourishment – household-level analysis

Going beyond the household welfare effects, it is important to understand how price changes translate into calorie intake and, eventually, into country-level undernourishment estimates. To this end, the effect of a 10-percent increase in the price of the main staple cereal on dietary energy intake was analysed using household information from seven different countries. The staples considered were rice in Bangladesh, Nepal and Viet Nam; maize in Guatemala and Malawi; and wheat in Peru and Tajikistan. While small in number, this group of countries offers great variety in terms of patterns of food consumption, income sources and food production.

Identifying households that are most vulnerable to increased undernourishment as a result of food price shocks is not straightforward. This is because dietary energy intake is determined by factors that vary substantially within and across countries. First, the drop in purchasing power is greater for those households that spend more on food, which are typically the poorest households. However, rising food prices also increase the incomes of those households that produce food, which could be overrepresented either among poorer or richer households. Preferences are also important as they determine food substitution patterns and how food consumption responds to income changes.

Compared with the welfare analysis, the results are not as clear-cut. Looking at urban and rural households together, those countries with a large share of the main staple in total dietary energy (Bangladesh, Malawi and Tajikistan) suffer the greatest impact and the drop in calorie consumption is relatively higher among the poor. However, in Viet Nam, where the primary staple provides 60 percent of total dietary energy, the effect of increased income from rice production mitigates the negative impact of higher food prices and the impact of the increased income is relatively higher among poorer households.

Change in dietary energy intake, by income group



Source: FAO.

High food prices and food security

Coping and nutritional outcomes

The previous section described how rising staple food prices could reduce household welfare, which is important in determining access to food, especially for the poorest. In the short term, households have few choices or none as to how to cope with high food prices, which often leads to a reduction in daily diets. However, in the medium-to-longer term, households may employ different strategies to cope with the drop in purchasing power caused by higher food prices.

Depending on the severity, frequency and duration of food price increases, household coping strategies could be food-based, non-food-based or a combination of both. In countries where people have access to a more diversified diet, households will respond to a sudden and dramatic increase in food prices by first reducing the number of foods consumed from different food groups while leaving overall consumption of staples unchanged.

High prices of internationally traded commodities, such as staple grains and vegetable oils, are expected to increase the prevalence of malnutrition among both urban and rural households, with a greater impact in countries with already low levels of dietary diversity. The links between high staple food prices and nutritional outcomes are complex and subject to contextual factors, including the geographical distribution of the food price increases, the number of commodities affected in any one country and the choices made at the household level that affect food, health and care practices. Figure 24 illustrates possible household response options and the impact that various coping strategies may have on the nutritional status of individuals.

In general, in analysing the possible nutrition impacts of household and individual behaviour in response to high food prices, coping strategies can be classified as being either food-based or non-food-based. Among the food-based coping

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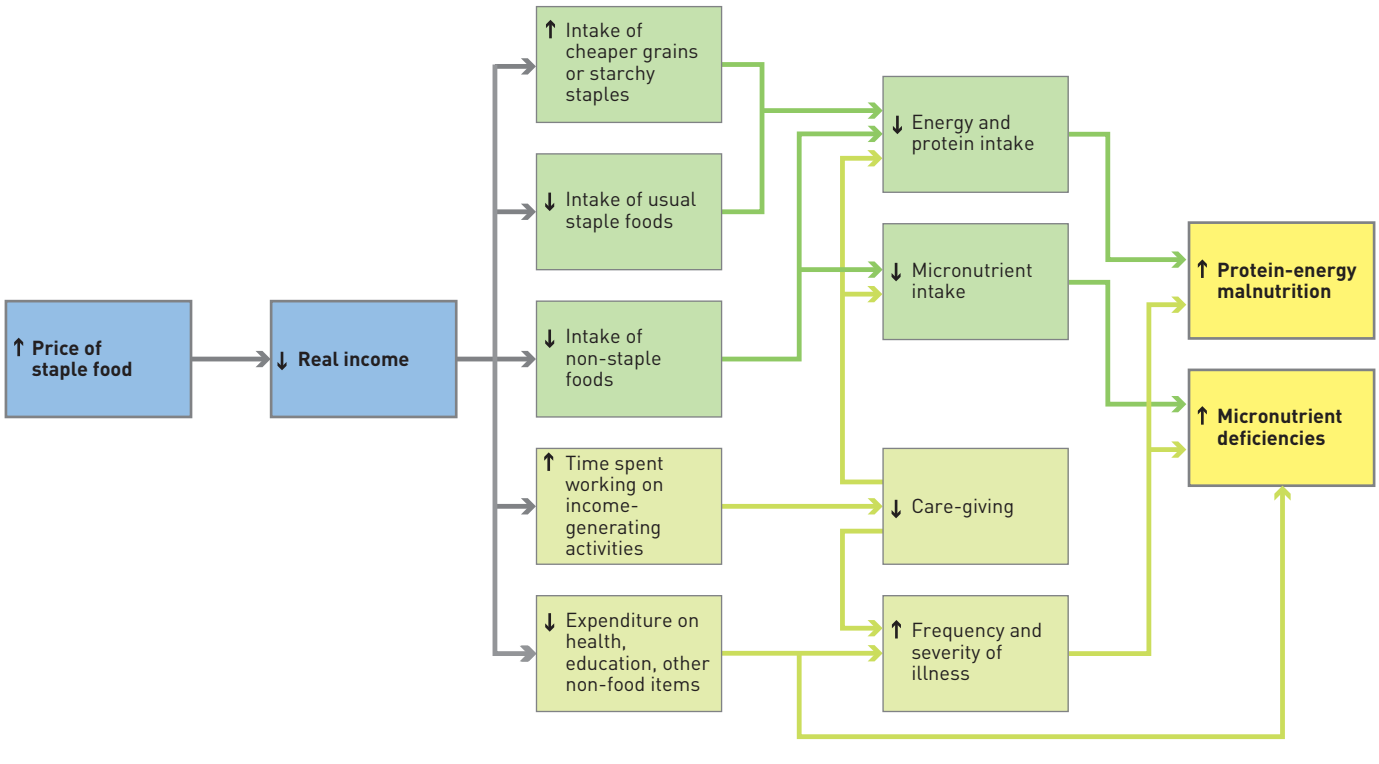
Household coping behaviours and nutrition impacts following a sudden rise in food prices



Source: FAO.

strategies, a sudden loss in purchasing power may result in changes in the quantity, quality and/or diversity of food items consumed. For example, an increase in the price of imported rice in West Africa might force households to switch to cheaper domestic rice or other starchy staples, such as locally produced sorghum or millet. Low-income households with little or no choice to reduce the diversity of their diets will respond by simply eating fewer meals per day and by reducing non-food expenditure. Non-food-based coping strategies may involve a reduction in expenditure on health care and education, in addition to seeking other sources of income to offset the loss in purchasing power. Importantly, the extent to which households and individuals are affected depends considerably on their consumption behaviour and income status *before* the price shock took place.

Nutrition impacts vary

The proportion of income spent on food in any one country tends to decrease with higher levels of per capita income. On average, this proportion may range from about 60 percent for some of the lowest-income countries to 15 percent or less for high-income countries. Households in low-income countries generally derive a larger share of total energy intake from cereals. Therefore, the relative impact of high food prices, particularly of high cereal prices, will be largest in low-income countries. This effect is magnified in countries where a large share of the population is already undernourished and where diets among the poor are less diversified. In these countries, households have little choice but to reduce the number of meals and/or the portion size, resulting in reduced energy intake and increased levels of undernourishment. In countries where people have access to a more diversified diet, the nutritional concern associated with a price shock centres on increased risk of deficiencies in essential micronutrients, such as iron and vitamin A, as households are forced to consume fewer foods.

Dietary diversity and nutrition

The strong influence that income exerts on food choices can be seen in country-level data from food balance sheets. The share of dietary energy from animal foods, vegetable oils, sugar, fruits and vegetables increases with higher per capita income levels, while that from roots, tubers and pulses tends to decrease. As a result, diets in low-income countries are typically rich in cereals, roots and tubers, while the poor consume less meat and fewer dairy products, smaller amounts of oils and fats, and fewer fruits and vegetables (included in "Others" in Figure 25). These foods are usually the most expensive, but they are also the most concentrated sources of many nutrients. Meat and dairy products are rich in high-quality proteins and micronutrients, such as iron, zinc and vitamin A. Fruits and vegetables contain vitamin A precursors. Oils are rich in dietary energy. Thus, the poor in developing countries usually suffer disproportionately from malnutrition in part because diverse, nutritionally well-balanced diets are unaffordable.

Households first respond to high food prices by buying less food or switching to relatively cheaper foods. After the African Financial Community franc (CFA franc) was devalued in 1994, the price of imported rice increased, but many urban households in Côte d'Ivoire, Mali and Senegal continued to consume the same amounts of rice. The strain on food budgets resulted in less diverse diets for the poorest households in these areas. In Dakar (Senegal) and

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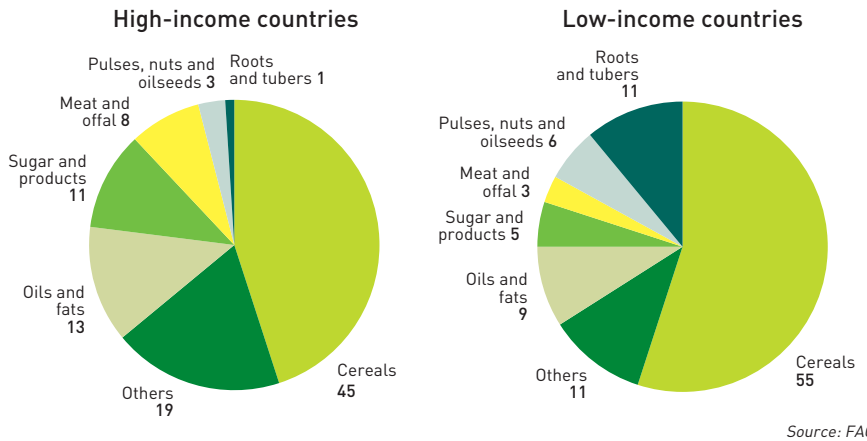
Dietary diversity by source of dietary energy (percentage)



Source: FAO.

High food prices and food security

Indonesia: price rises mean greater malnutrition

Although the Indonesian economy is growing at about 6 percent a year, some 100 million Indonesians live on less than US$1 a day. UNICEF data show that child malnutrition is rising. Dozens of children under five died of malnutrition in the first six months of 2008. In the same period, the cost of staple soybean-based products such as tofu and tempe, a source of vital protein, rose by about 50 percent owing to soaring commodity prices on the international markets.

Source: IRIN news service, June 2008.

Brazzaville (the Congo), fats and vegetables became even less prominent in the daily diet.[9]

Women and children are particularly vulnerable to the nutritional effects of high food prices, as they are more likely to suffer from micronutrient deficiencies when driven to consume less diversified daily diets. Figure 26 shows that on average only 40–50 percent of children under two years of age have an appropriately diversified diet in sub-Saharan Africa, with particularly low values of only 10 percent in the Niger and Togo. Following a drought-induced increase in maize prices in Zambia in 2001, the rate of stunting increased among rural infants whose mothers had been pregnant at the time of the price increases.

During the drought and financial crisis of 1997/98 in Indonesia, mothers of poor families responded by reducing their own dietary energy intake in order to feed their children better, resulting in increased maternal undernutrition.[10] Children were also at greater risk of being given up for adoption by their families in order to reduce the number of mouths to feed. Household purchases of more nutritious protein-rich foods were reduced in order to afford the main staple (rice), leading to an increased prevalence of anaemia in both mothers and children. The effects were particularly severe for infants conceived and weaned during the crisis. These examples demonstrate the long-term and intergenerational effects of rising food prices on the growth and development of children.

As explained in an earlier section, the actual impact of high staple food prices, in particular of tradable cereals, also depends on prevailing cultural food norms and habits in different countries.

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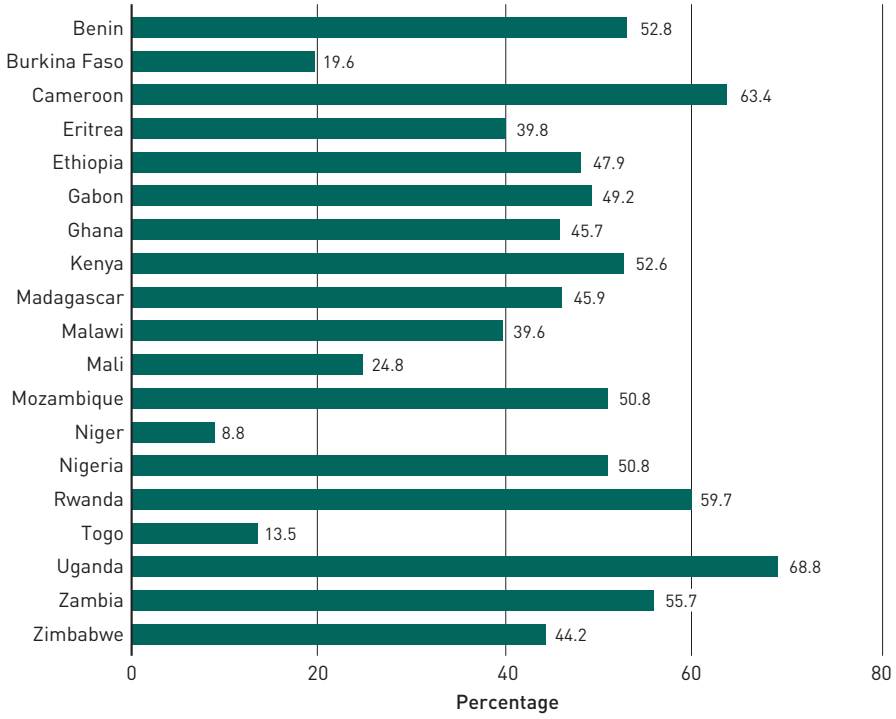
Children aged 6–23 months in sub-Saharan Africa receiving appropriate* number of food groups



* The appropriate number of food groups is defined as three for breastfed children, and four for non-breastfed children.
Source: A.G. Mukuria, M.T. Kothari and N. Abderrahim. 2006. Infant and young child feeding updates. *Calverton, United States of America, ORC Macro.*

Impact on undernutrition

It has been shown above that higher staple food prices are likely to lead to increased undernourishment (following reduced dietary energy intake). A general association between levels of undernourishment and prevalence of undernutrition in children under five years of age is apparent in Figure 27. Thus, it is reasonable to conclude that when levels of undernourishment in the total population increase, child undernutrition increases as well. Particularly critical levels of undernutrition occur when

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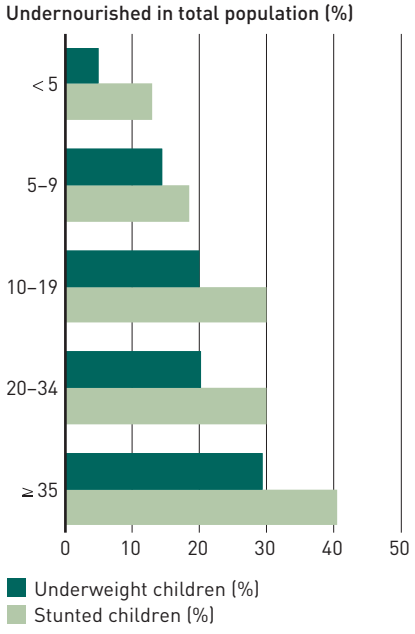
Undernutrition in children under five years of age



Source: FAO.

Côte d'Ivoire: high prices cut health spending

With the increase in food prices in Côte d'Ivoire, poorer urban people are seeking to cut down on essential non-food items, such as medicines. An example is Drissa Kone, a man with a severe respiratory infection and a prescription for medicines that would cost CFA franc 35 000 (US$83) at official prices. Drissa Kone has no hope of raising enough money to buy the medicines. His solution is to buy counterfeit medicines at Abidjan's Adjame market, where he can find an illegal reproduction of the original drug at a fraction of the price. He said "I can buy the same medicines at the market by the individual tablet not the packet, and pay just CFA franc 150 [US$0.35] per pill. For CFA franc 500 [US$1.19], I can get enough medicine to last me three days!" The downside, however, concerns the quality of the medicines as they are usually less effective than the originals – a serious problem when treating potentially deadly illnesses like malaria. Fake medicines sometimes contain a mix of chemicals that further harms health.

Dr Ambroise Kouadio, a doctor in Abidjan, says that, although the risks of using counterfeit medicines are fairly well understood, the number of people like Kone who are turning to them is increasing. "The state has built many more health centres and hospitals, but the people are still poor. They have to choose between health care and eating, and they usually choose to eat," said Dr Kouadio.

Source: IRIN news service, July 2008.

undernourishment exceeds 10 percent in the total population. Based on this association, it is expected that undernutrition in children under five years of age will increase, especially if prices remain high and no preventive measures are taken.

Non-food coping strategies

Having examined the short-term impacts of high food prices on undernourishment levels, it is also necessary to consider the longer-term negative effects on nutritional levels and their consequences as households attempt to cope by decreasing non-food expenditure and/or by increasing their income. Reduced expenditure on health, already often low among poor populations, and education means that health conditions deteriorate and children will have less schooling, thus adversely affecting their future income-earning opportunities and overall development prospects.

Households may attempt to engage in new income-generating activities. Time constraints among women with small children may have negative health and nutrition-related consequences for children. Disease and malnutrition are closely related. Infections increase the likelihood of various types of malnutrition due to reduced utilization by the body of essential nutrients. For example, routine health activities, such as child growth monitoring and immunizations, declined in Brazzaville after the 1994 CFA franc devaluation, partly because of mothers' decreased capacity or willingness to take their children to health centres. The prevalence of child stunting and wasting rose and the nutritional quality of infant complementary foods declined.[11]

Increased female employment may lead to less or lower-quality child care at home. It may interfere with breastfeeding, home-based food preparation, sanitation practices and seeking medical assistance when children are sick. Older siblings may have to take over from mothers in providing child care, while being less equipped to do so. Increased child labour at home or outside may have further negative nutritional consequences for children and interfere with their education.

Policy responses: effective and sustainable?

The sudden rise in global food prices has triggered a wide variety of policy responses around the world. Initial action has focused on guaranteeing an adequate food supply locally, keeping consumer prices low and providing support for the most vulnerable. Policy measures have included an easing of import taxes and the imposing of export restrictions to maintain domestic food availability; applying price controls and subsidies to keep food affordable; and stock drawdowns to stabilize supplies and prices. There has been less emphasis, at least initially, on fostering an agricultural supply response. However, the governments of a number of developing countries have taken action to provide farmers with the support needed to boost domestic food production.

A survey of policy responses in 77 countries revealed that in 2007 and early 2008 about half of the countries reduced cereal import taxes and more than half applied price controls or consumer subsidies in an attempt to keep domestic food prices below world prices.[12] One-quarter of the governments imposed some type of export restriction, and roughly the same proportion took action to increase domestic supply by drawing on foodgrain stocks. Only 16 percent of the countries surveyed had not employed any policy response to mitigate the impact of soaring food prices. Policy responses varied considerably by region, with sub-Saharan Africa and Latin America and the Caribbean showing the lowest number of policy interventions.

The impact, effectiveness and sustainability of some of the policy measures are not always clear. First, by maintaining farmgate prices at artificially low levels, policies may be discouraging the much-needed supply response and potential productivity increases. Second, export restrictions lower food supplies in international markets, pushing prices higher and aggravating the global situation. Third, higher subsidies and/or lower taxes and tariffs increase the pressure on national budgets and reduce the fiscal resources available for much-needed public investment and other development expenditure.

In summary, some of the policy measures employed tend to hurt producers and trade partners and actually contribute to volatility of world prices. Experience has shown that price controls rarely succeed in controlling prices for long. Moreover, they place a heavy fiscal burden on governments and create disincentives for supply responses by farmers. In a number of countries applying export controls (or outright bans on exports), some farmers have reduced plantings of cereals because of artificially low domestic prices for their products coupled with high prices for inputs such as fuel, seeds and fertilizers. As the box shows, the ability of government policies to insulate domestic economies from the external price shock has been very limited.

The way forward: the twin-track approach

The initial policy responses to the dramatic increase in food prices concentrated on improving local food supplies and alleviating the immediate impact on consumers. However, it has become clear that in order to deal with the short- and long-term challenges posed by high food prices and reinforce the opportunities they present, both national governments and the international community require coherent policies and actions. The sustainable solution to the problem of food insecurity in the world lies in increasing production and productivity in the developing world, especially in LIFDCs, and in ensuring that the poor and vulnerable have access to the food they need.

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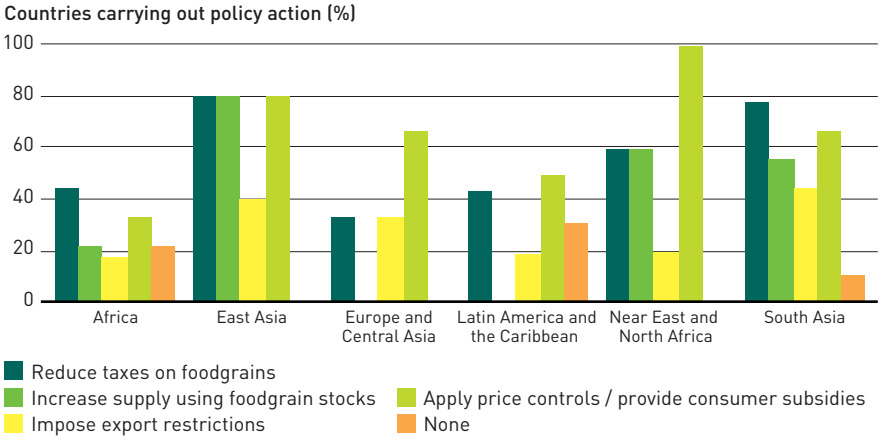
Policy actions to address high food prices, by region



Note: Based on preliminary information collected by World Bank staff and amended by FAO (April 2008). *Source: FAO.*

In line with this, FAO has advocated for the *twin-track approach* as an overall strategic framework for fighting hunger. Now widely adopted by the development community, it addresses both short- and long-term challenges to food security and is highly relevant in the current context of high food prices. One track aims to promote the supply response of the agriculture sector and the development of the rural areas through appropriate incentives and investments in public goods. The objective is to increase food supplies and to enhance the income-generating capacity of agriculture and the rural economy as a means of promoting overall rural development. In order for policies to reduce poverty significantly, a strong focus on the productive capacity of smallholder farmers is crucial. The other track of this approach aims to ensure immediate access to food for the poor and vulnerable in both rural and urban areas through the provision of safety nets and social protection measures.

Both components of the twin-track approach are crucial and mutually supportive. Developing agriculture and the rural economy provides opportunities for the poor to improve their livelihoods, a necessary condition for a sustainable reduction in food insecurity. Improving direct access to food and nutrition enhances human capacity and the productive potential of those at risk of nutritional deficiencies. It also allows them to take fuller advantage of the opportunities offered by development. Given that 75 percent of the poor live in rural areas, focusing on agriculture and rural development is crucial to achieving a substantial and sustainable reduction in hunger and poverty.

Policy trade-offs

Developing countries face difficult macroeconomic choices as a result of high food and fuel prices.

Inflation has been rising throughout the world, with food price inflation generally outpacing that for other goods and services, especially in developing countries (where food tends to account for a much larger share of the consumption basket).

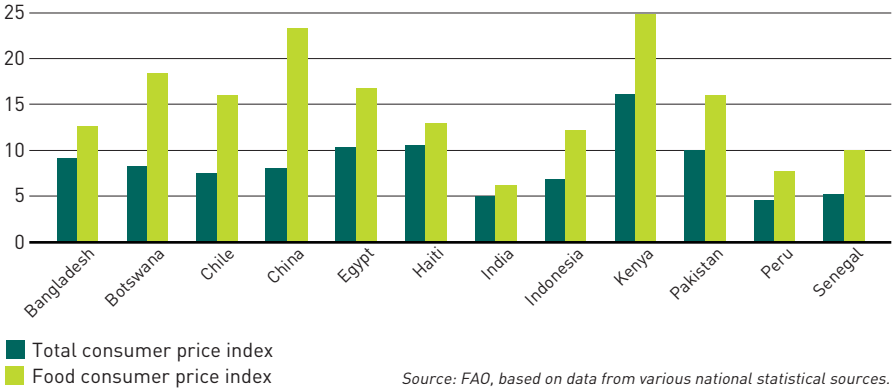
Management of inflation presents difficult policy trade-offs with important implications for food security. Raising interest rates will help to reduce inflationary pressures but tend to reduce investment and cause the exchange rate to appreciate, with adverse effects on exports, growth and employment. This may reduce the incomes of the poor and, hence, their access to food. On the other hand, continued rapid price increases will erode the value of real wages and the purchasing power of wage earners, with adverse effects on food security.

Attempts by governments to shield consumers from rising food prices through general subsidies or the establishment of safety nets are costly and cause budgetary constraints for low-income countries. If domestic prices rise in line with world prices, procuring food domestically for resale to targeted groups will entail increased budgetary outlays. Restricting exports in order to maintain domestic consumption will result in lost export revenue and foreign-exchange earnings. Some countries may be able to finance budget deficits for a limited period, but others with rudimentary financial systems may need substantial external assistance to deal with macroeconomic imbalances. LIFDCs will be particularly hard pressed as they may need to reduce development budgets and divert foreign exchange away from other essential imports in order to secure adequate and affordable food supplies.

In conclusion, higher food prices present governments with difficult trade-offs. They can: (i) reduce subsidies and risk an immediate deterioration in food security; (ii) reduce investment in public goods, such as health, education and infrastructure, and risk slowing the pace of longer-term growth and development; or (iii) do neither and risk substantial macroeconomic imbalances that also threaten long-term growth and welfare.

Rising food prices and overall inflation

Change from February 2007 to February 2008 (%)



Source: FAO, based on data from various national statistical sources.

Smallholder agriculture for poverty reduction

Food prices, production and food security

Increased food production would help to restore the supply–demand balance at a lower price level. High food prices and the increased incentives they provide present an opportunity for agricultural producers to increase investment and expand production. Initial signs indicate that the agriculture sector has responded to these greater incentives with increased plantings and production.

However, the need to increase food production should not only be seen in the context of the current supply and demand "imbalances". Increases in food and agricultural production and productivity will be essential for meeting further increases in effective demand in the years to come. Demand for food and feed will continue to grow as a result of urbanization, economic growth and rising incomes, all of which cause a shift in diets towards higher-value products, including meat and dairy. Projected population and socio-economic growth will double current food demand by 2050.

In order to meet this challenge in developing countries, cereal yields will need to increase by 40 percent and net irrigation water requirements will rise by 40–50 percent. Moreover, some 100–200 million hectares of additional land may be needed, mainly in sub-Saharan Africa and Latin America.[13] An estimated 80 percent of the increase in global food production must come from growth in crop yields. To this, the new demands for feedstock for an expanding bioenergy sector should be added.

Going beyond simple balances between global food needs and availability, a question that is central for food security concerns relates to who participates in the short- and long-term response of agriculture to high food prices and in meeting future food needs. In other words, increasing food production is a necessary but not a sufficient condition to address the recent increase in food insecurity caused by high food prices (represented by an additional 75 million people now hungry) as well as the long-term structural insecurity represented by the close to 850 million people who were suffering from hunger even before the recent price rises.

Why smallholder farmers?

In order to ensure that increased food production enhances food security, developing countries must be able to exploit their potential to increase agricultural production and productivity through a more conducive policy framework and increased investment in agriculture and rural development by both national governments and international donors involved in agriculture and rural development.[14]

The magnitude of hunger in the world and the difficulties in reducing it even when food supplies are high and prices low highlight a fundamental problem of access to food. Even low food prices will not fully address the problem of inadequate access to food, which is also affected by the ability of the poor to produce enough food or generate sufficient income to buy it.

On the other hand, as most poor rural households rely on agricultural production for a significant share of their income, increasing agricultural productivity is closely related to reducing rural poverty. It follows that increasing food production and productivity should go beyond the objective of reducing prices in global markets – providing an opportunity for reducing rural poverty and hunger.

Realizing the potential of food and agricultural production to reduce poverty and hunger depends largely

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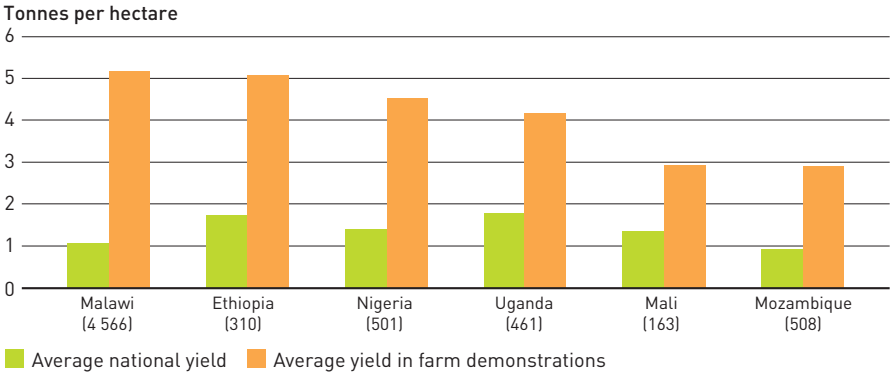
Maize: exploitable yield gaps in sub-Saharan Africa



Notes: Number of plots in parentheses. Open pollinated improved varieties in all cases except Nigeria, which uses hybrids. Data are for 2001 for Ethiopia, Mozambique, Nigeria and Uganda; 2002 for Malawi; and an average of 2001, 2002 and 2004 for Mali.

Source: World Bank. 2007. World Development Report 2008: Agriculture for Development. *Washington, DC.*

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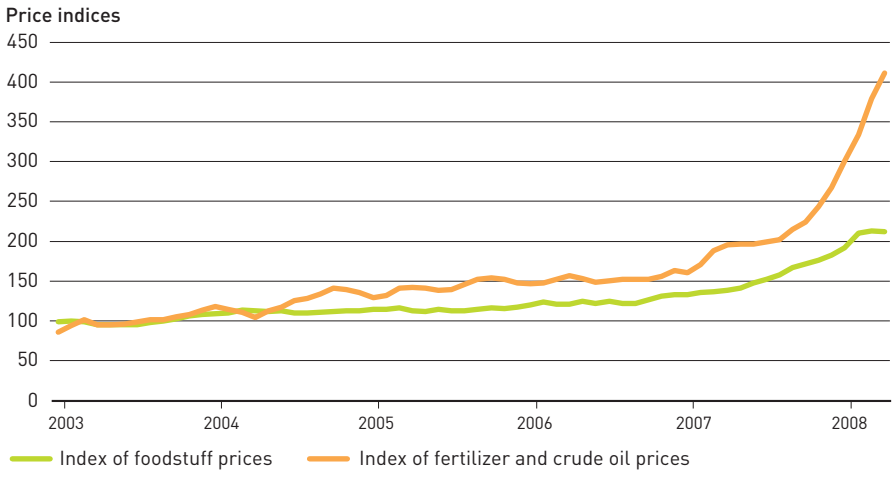
Input prices outpace food prices



Note: Base = 2003. *Source: FAO.*

on the degree to which smallholder farmers, representing 90 percent of the rural poor, are able to participate in productive and remunerative farming and off-farm activities.[15]

About two-thirds of the 3 billion rural people in the world live off the income generated by farmers managing some 500 million small farms of less than 2 hectares each. Hence, efforts to boost agricultural production must focus largely on increasing smallholder productivity. Small-scale farming constitutes about 80 percent of African agriculture, producing largely staple foods.[16] Failure to include smallholders in future strategies will result in further marginalization, increased rural poverty and rising migration of the rural poor to urban areas.

Broad-based agricultural growth that includes smallholders can have a large impact on poverty reduction. In addition to boosting food availability and lowering food prices, improved smallholder productivity generates higher incomes and demand for locally produced goods and services, resulting in broad-based socio-economic development in rural areas. This dynamic process is a primary reason why agricultural growth is up to four times more effective in reducing poverty compared with growth in other sectors.[17]

Moreover, the potential for increased productivity is often larger on smaller farms because of their efficient use of family labour. Policies promoting smallholders and more equitable land distribution were at the heart of country success stories during the green revolution in several Asian countries (e.g. China, India and Indonesia).

Input prices constrain incentives

A productivity-led response centred around smallholders requires incentives that reach farmers in the form of higher output prices and improved access to affordable inputs. However, the prices of many agricultural inputs, such as fertilizer, pesticides and transportation, are closely linked to fossil fuel prices. From January 2007 to April 2008, input prices (fertilizers and crude oil) outpaced food prices, dampening the positive production incentive of the food price increases. To the extent that input costs constitute a sizeable part of the total variable cost of farming, this trend diminishes the extent to which higher food prices will stimulate production response.

Structural constraints

Broad-based agricultural growth requires significant and systematic efforts to address the diverse constraints affecting smallholders. Such efforts will enable smallholders to increase farm productivity and meet new, more stringent demands regarding food safety and quality.

Technology. Access to a regular stream of technologies adapted to specific conditions contributes to increasing productivity, particularly in the context of limited land resources, and, thus, it is important for small-scale producers. For example, in arid zones, investments in improved irrigation technology and drought-tolerant crops help reduce price and income variability by mitigating the impact of droughts. Low levels of publicly funded agricultural research and development have severely impeded small farmers' access to productivity-enhancing technologies. Only a few smallholder farmers participate in contractual arrangements with buyers (such as agricultural commodity value chains or outgrower schemes) that facilitate

access to improved seeds, inputs and mechanization.

Market access. Access to functioning markets for both staples and high-value commodities is a key prerequisite for agricultural development and improved productivity. Market access differs among developing regions, with sub-Saharan Africa having the lowest level of access, particularly for smallholders. In many developing countries, smallholder participation is often constrained by: (i) a lack of infrastructure and transport; (ii) poor market information; (iii) inadequate and poorly enforced grades and standards; and (iv) poor farmer organization for bulk marketing.

Fertilizer use in sub-Saharan Africa: are subsidies the answer?

Fertilizer consumption in sub-Saharan Africa was only 8 kilograms per hectare in 2002, just 1 kilogram more than in 1982 and 7 kilograms more than in 1962. This level of fertilizer use is less than 10 percent of that in most other developing regions. Perhaps as a result, cereal yields increased by just 50 percent in sub-Saharan Africa from 1962 to 2002, compared with a near tripling in the rest of the developing world in the same period. Furthermore, as a result of the low intensity of fertilizer use, Africa's soils are at risk of being mined of nutrients.

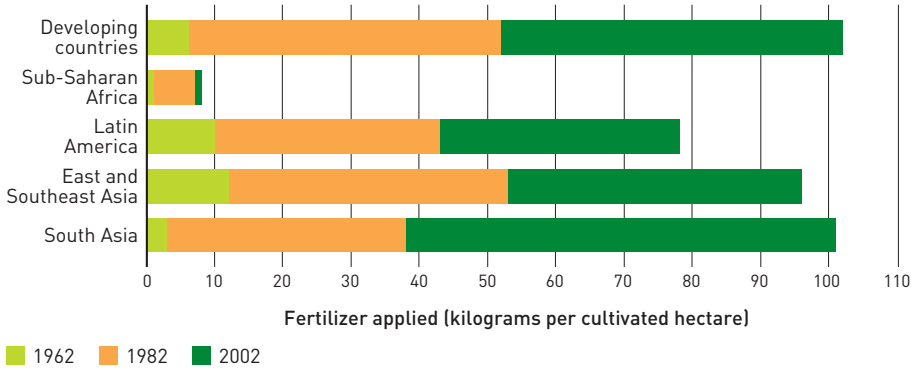
The factors responsible for Africa's low level of fertilizer use include poor infrastructure, which increases the costs of fertilizer and reduces availability; high risk owing to price volatility and a lack of irrigation; lack of credit; and a poor business environment shaped by regulations, taxes and rents that diverts fertilizer provision from the private to the public sector (which tends to allocate supplies inefficiently).

With fertilizer prices outpacing agricultural commodity prices (so undermining the increased production incentives), small farmers who are net food buyers may be particularly hurt, as the high food prices also reduce the funds they have available to purchase fertilizers. Many poor African countries may see a decline in fertilizer use in the short run that could threaten even current levels of production, which are already too low.

The rapid rise in fertilizer prices has brought the issue of fertilizer subsidies to the fore. Such subsidies may be warranted where there is a clear prospect of significant productivity gains, where they are a cheaper form of income transfer than alternatives (such as food aid) and where they do not affect market mechanisms adversely. "Market-smart" subsidies include the use of vouchers redeemable through commercial dealers, demonstration packs to stimulate demand and credit guarantees to encourage importers to offer credit to their dealers.

If input subsidies are to be used to promote a supply response, several constraining factors need to be considered. In some locations, adequate supplies may not be available and a subsidy will merely lead to local price inflation. Subsidies are expensive and can put stress on government budgets, causing reductions in spending in other important areas such as education and health (international donors may have a role to play in alleviating these constraints). If efforts to target are made in order to reduce budgetary outlays, administrative difficulties could prevent the subsidies from reaching the beneficiaries most in need. These considerations suggest that although fertilizer subsidies can be an effective short-term response, they are not sustainable in the long run. Whenever input subsidies are used, they should involve the private sector in order to improve and build marketing systems in the long run.

Fertilizer use



Sources: FAOSTAT data and M. Morris, V.A. Kelly, R.J. Kopicki and D. Byerlee. 2007. *Fertilizer use in African agriculture: lessons learned and good practice guidelines.* Washington, DC, World Bank.

Unless such constraints are addressed, the bulk of agricultural sales will only accrue to a small proportion of large producers.

Infrastructure. Rural roads and storage facilities are essential public goods that reduce marketing costs and expand economic opportunities to all households. Access to transportation and social service infrastructure is much lower for the poorest segments of the rural population.

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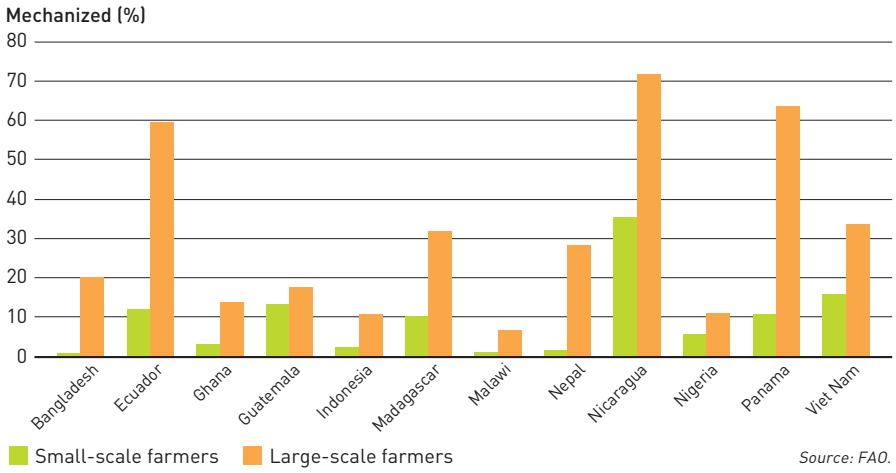
Mechanization: small-scale and large-scale farmers



Source: FAO.

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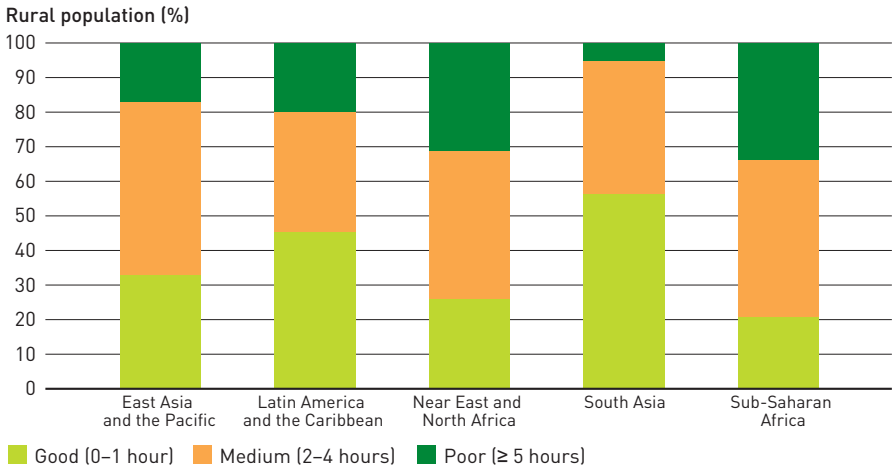
Market access: time to market



Source: World Bank. 2007. World Development Report 2008: Agriculture for Development. *Washington, DC.*

Assets. Access to, and use of, physical capital varies considerably both within and among countries. Small landholders consistently employ practices that are less capital-intensive. Similarly, human capital is strongly related to the level of wealth – heads of poorer households are generally less educated than those of richer households. Ease of access to assets largely determines the potential to respond to high food prices and increase income and production. As many assets serve as collateral, households with sufficient assets can exploit investment and agricultural expansion opportunities more effectively.

Credit. A large percentage of smallholders suffer from insufficient access to credit. This may reduce their timely access to and use of appropriate inputs. Many successful cash-crop value chains have effectively overcome the lack of rural credit by providing input credit directly to farmers and farmers' associations, with reimbursement at the time of product sale.[18] To the extent that higher food prices provide greater returns to staple food production, smallholder access to cash and credit may improve.

Risk. Smallholder agricultural production in the developing world is inherently a high-risk activity, but recent years have seen an increase in both the level and variability of food prices on world markets. To the extent that the greater price variability is transmitted to domestic markets, this creates problems for smallholders and may discourage a supply response. In addition to price volatility, smallholders – and indeed most farmers – lack access to crop and/or livestock insurance or other risk-reducing instruments to deal

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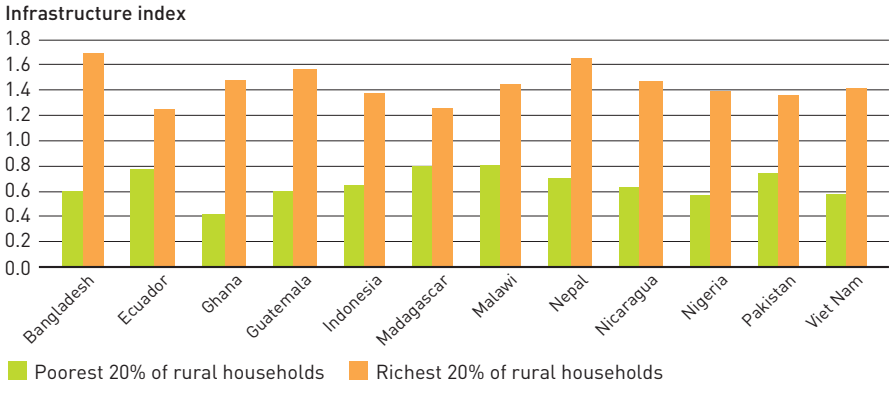
Infrastructure access for rural households



Note: Infrastructure index based on analysis of main components; the higher the value, the greater the access to infrastructure.

Source: FAO.

with production variability. The unavailability of insurance leads farmers to adopt more risk-averse production strategies or to diversify economic activities away from agriculture. This constraint limits the potential intensification of agricultural production and adoption of agricultural technology. Recent innovations in weather insurance that promise lower administrative costs should provide an opportunity for farmers to insure more effectively.

Realizing smallholder potential

The incentives offered by soaring food prices provide a favourable environment for advancing an agricultural reform agenda to meet future food needs at affordable prices through poverty-reducing agricultural productivity growth. Such an agenda puts particular emphasis on smallholder farmers, especially in agriculture-based countries.

Translating this opportunity into concrete action and measurable improvement in the livelihoods of smallholder farmers depends first and foremost on sustained political commitment and investment of governments and development partners to address the numerous constraints on small farmers' incentives and behaviour. Today, higher prices appear to present opportunities to intensify production of certain staple crops and agricultural commodities that might

Transportation infrastructure for development

Investment in transportation infrastructure is crucial to sustainable agricultural development. Decentralized small-scale agricultural production in the developing world needs broad transportation networks to improve market access, reduce retail fertilizer prices and increase harvest prices for farmers. For several African countries, there would be sizeable benefits in terms of poverty reduction.[1]

Transportation services help to improve trade, welfare and agricultural growth and to reduce the gap between producer and consumer prices. The figure indicates that the difference in input costs between several countries in Africa and the United States of America is almost entirely attributable to transportation costs.

[1] X. Diao, S. Fan, D. Headey, M. Johnson, A. Nin Pratt and B. Yu. (forthcoming). *Accelerating Africa's food production in response to rising food prices – impacts and requisite actions.* Xinshen, June 2008. IFPRI Discussion Paper.

Transportation cost (urea prices 2003, US$/tonne)

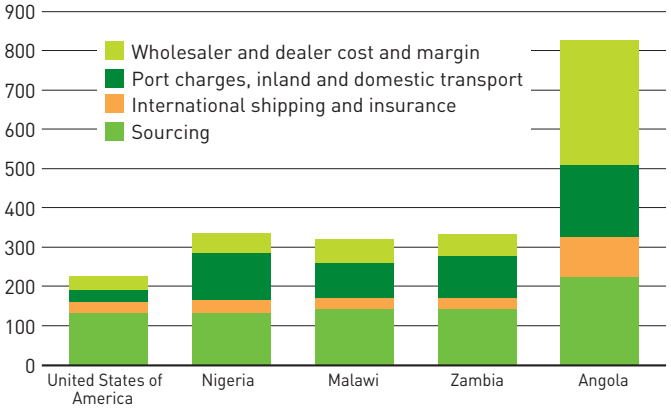


Figure source: D.I. Gregory and B.L. Bumb. 2006. Factors affecting the supply of fertilizer in sub-Saharan Africa. *Agriculture and Rural Development Discussion Paper 24. Washington, DC, World Bank.*

Irrigation in poor regions

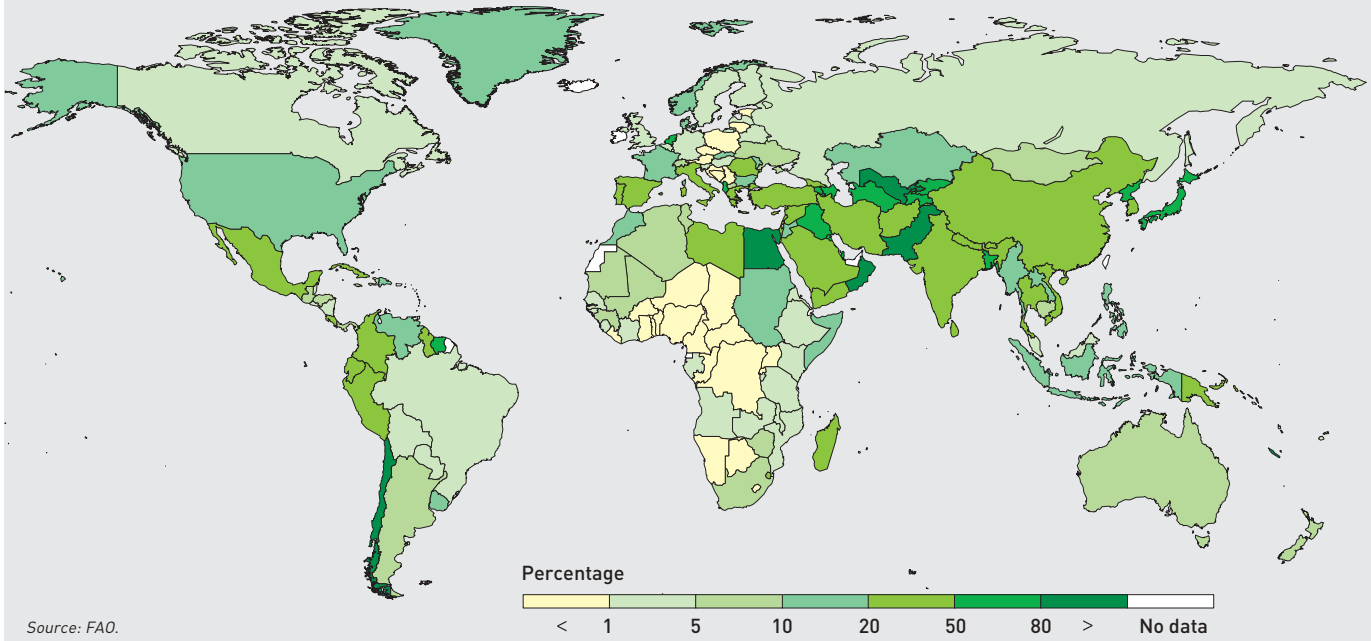
The ability to produce more food for a growing world population has improved significantly in recent decades as a result of expansion in irrigated cropland. Increasing the proportion of irrigated agricultural land has provided a solid base for boosting productivity and reducing the volatility of agricultural yields. With demand for water rising and climate change imposing further restrictions, efficiency in the management of available water resources becomes a necessary condition for productivity increases in agriculture and for food security.

In about 25 percent of the world's irrigated agricultural systems, the rate of water withdrawal exceeds that of renewal. Even more worrisome are reports that water is becoming scarce in several regions. Open access or loose property rights on water resources and irrigation systems lead to the overexploitation of aquifers and unsustainable irrigation practices that exhaust, contaminate or at the very least increase irrigation costs. Land degradation is also an outcome of inefficient use of water resources and inadequate irrigation management practices, resulting in productivity reductions and increasing losses of cropland. Small-scale farmers are most affected by these practices as they lack the capacity to secure their rights to water as well as the resources to invest in more expensive but more effective pumping tools.

In Africa, less than 5 percent of cropland is irrigated. Large benefits could accrue to small farmers by expansion of irrigated land to increase and stabilize the level of production, while also minimizing the role of rainfall uncertainty in agriculture. Irrigation investment projects have high rates of return, estimated as exceeding 15 percent and even reaching 30 percent in sub-Saharan Africa.[1] Significant gains in terms of welfare improvements are also expected from expanding irrigation investment. Increasing investment in irrigation by 1 percent has been estimated as having reduced poverty by nearly 5 percent in Kenya.[2]

[1] World Bank. 2007. *World Development Report 2008: Agriculture for Development.* Washington, DC.
[2] J. Thurlow, J. Kiringai and M. Gautam. 2007. *Rural investments to accelerate growth and poverty reduction in Kenya.* Discussion Paper No. 723, Washington, DC, IFPRI.

Percentage of total arable and permanent cropland irrigated



Source: FAO.

formerly have been available only for higher-value export crops. This change is positive given the large poverty-reduction effect achieved by growth in food staples relative to growth in high-value exports.[19] Assessing the lessons learned from years of experience with programmes and projects aimed at promoting smallholder productivity is the first step to scaling up what holds the promise of a high payoff.

While some of the constraints facing smallholders in various contexts are similar, priorities may differ among countries and physical environments. In agriculture-based countries in Africa, the emphasis is likely to be on improving the productivity of staple products and increasing farmers' access to larger markets. Research and development for staples in the diverse agro-ecological environments and improvements in marketing infrastructure will be priorities for public policy and resource mobilization.

However, in higher-potential areas with good access to markets, linking smallholder farmers to the emerging high-value product chains and larger retail outlets offers a considerable payoff potential provided that farmers can manage the increased emphasis on product branding, grading and standardization. Increased access to international markets (less than one-quarter of total production in Africa is exported) and local market development will increase returns given smallholders' cost advantage in the production of primary crops.[20]

Côte d'Ivoire, Ghana, Kenya and Zambia provide successful examples of enterprises producing and trading new products, such as tropical fruits and cut flowers.

FAO Initiative on Soaring Food Prices

In response to the rapidly rising food prices, FAO launched (in December 2007) the Initiative on Soaring Food Prices (ISFP) with the immediate aim of rapidly increasing food production during the 2008 and 2009 agricultural seasons, mainly by supporting direct access to inputs for smallholders. FAO appealed to donors for an immediate investment of US$1.7 billion in support of this effort.

The main objective of the ISFP is to boost food production urgently in the most affected countries so as to improve local supplies. The initiative aims to assist governments in formulating country-specific action plans for food security interventions to be implemented along the twin-track approach – boosting food production while also guaranteeing access to food for the most vulnerable population groups affected by higher and more volatile food prices.

FAO's assistance has taken the form of: (i) interventions to increase access by small-scale farmers to inputs (e.g. seeds, fertilizer, animal feed) and improve agricultural practices (e.g. water and soil management, reduction of post-harvest losses); (ii) policy and technical support; (iii) measures addressing smallholder access to markets; and (iv) a strategic response to cushion the effects of rising food prices in the short, medium and long terms through increased and sustainable investment in agriculture.

The ISFP programme has built a strong partnership between FAO, the World Bank, the Rome-based United Nations Agencies (the International Fund for Agricultural Development and the World Food Programme) and other development partners based on complementarities and synergies among partners to respond efficiently and effectively to both the impacts of high food prices on food security at the country level and the corresponding needs for investment.

Further information on the ISFP is available at http://www.fao.org/worldfoodsituation/isfp/en

Understanding market opportunities, evaluating available cropping technology, identifying the binding constraints on production (e.g. feeder roads, credit and affordable inputs), and marketing represent concrete first steps in revitalizing support to smallholders. One possibility is to organize staple food production and marketing on the basis of contract farming or outgrower schemes in order to improve access to technology and markets.

Finally, research on food security issues has highlighted the strong positive interactions between cash-crop and food-crop activities and innovative methods for resolving many of the constraints facing smallholders. Higher-value cash crops produced for international, regional or national markets often provide increased access to credit, equipment and inputs that may not be feasible with traditional food crops. Under certain conditions, they foster higher rates of food production, generate higher incomes and lead to greater capitalization at the farm level. Diversified farming systems also contribute to increased resilience of production systems and more sustainable livelihoods that are less vulnerable to shocks.

Ensuring access to food

The people most vulnerable to food price shocks need to be protected immediately from the loss of purchasing power caused by soaring food prices. Such protection not only saves lives, it can also strengthen livelihoods and promote longer-term development. Safety nets and social protection can prevent and reduce the malnutrition that has lifelong consequences. More secure livelihoods prevent distress sales of assets, allow investments in education and health, and keep households from falling into the poverty trap.

"Safety net" is an umbrella term for various types of programmes aimed at assisting vulnerable population groups. They include food distribution programmes, cash transfer schemes, various feeding programmes and employment schemes. Many countries have one or more safety net programmes, with varying degrees of coverage. However, in the context of the current high food prices, one problem has been that not all countries have safety net programmes in place because of budgetary costs and administrative complexity.

Cash transfers include the distribution of cash or cash vouchers. They can be unconditional or conditional on participation in health, education or public works programmes. Cash transfers are appropriate where food markets work and where improved ability to purchase food is the objective of the intervention. Unrestricted cash transfers allow households to make decisions as to how to spend the cash, whether on food, essential non-food items or on investment needs. Such interventions can also foster local market development in food and other goods by providing greater incentives to the private sector to engage in higher-volume, more-stable marketing channels. However, where food prices are increasing rapidly, the value of transfers will need to be adjusted in order to maintain purchasing power, and this can complicate fiscal planning.

Other approaches to improving access to food, such as food stamps, are also appropriate where local food markets work and lack of access to food is the root cause of hunger. Food stamps can foster local market development, primarily of food products, and have the advantage of being more politically acceptable. They may also be more difficult to divert to "undesirable" consumption and may be self-targeting (where wealthier households are less interested in vouchers or food stamps than cash). In addition, food stamps have lower transaction costs than direct provision of food aid. However, they have higher transaction costs than cash transfers and may restrict the ability of households to choose the most appropriate expenditure. Moreover, the selling of food stamps in the shadow economy may undermine programme goals.

Food-supply-based programmes provide food or nutritional supplements directly to individuals or households. They are most appropriate where food markets are not functioning well, so that cash transfers or other forms of income support are less effective. For example, providing cash or food vouchers in areas where food is not readily available could disrupt local markets and drive up prices. Such conditions typically require direct food aid or "food for work" programmes, which constitute the primary safety net implemented by

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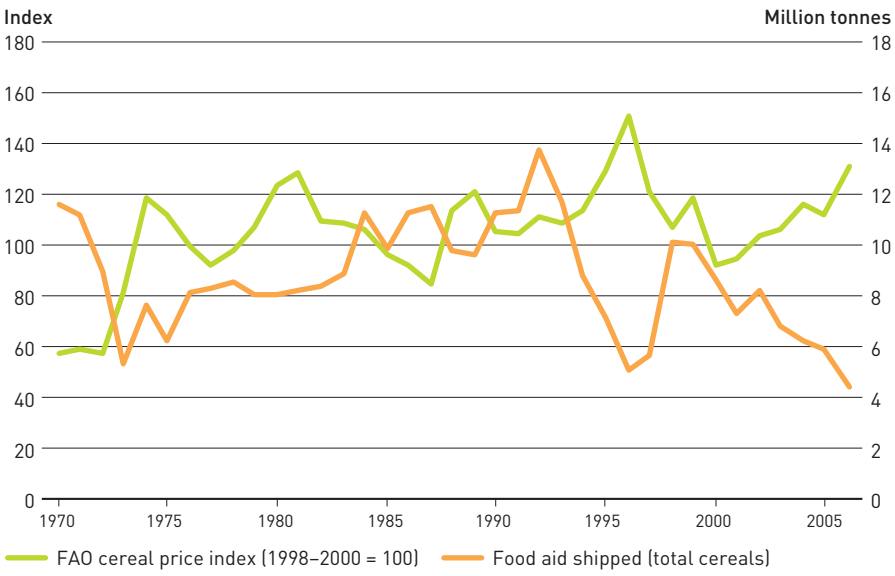
International cereal prices and food aid



Source: FAO.

the World Food Programme. Other types of direct food distribution programmes are warranted where specific members of the household are particularly vulnerable to food insecurity or malnutrition. In these cases, school lunches or food supplementation could be necessary.

Direct food-based assistance is fundamentally different from cash or food stamps; it is most appropriate when an insufficient supply of food is the root cause of hunger. Moreover, such programmes are often politically more acceptable, perhaps because it is more difficult to divert the aid to undesirable consumption. Importantly, food aid is often donated to the receiving country, with the quantity of food aid available often reduced when world prices rise. However, the fact that food aid is often given free of charge may cause governments to ignore other more appropriate and sustainable solutions.

Given the importance of agricultural livelihoods for the poor and food-insecure, especially in sub-Saharan Africa and particularly in the context of soaring food prices, productive safety nets can also play an important role. In countries such as Ethiopia and Malawi, traditional agricultural policy instruments, including input subsidies, and innovative approaches to crop insurance have become part of social protection. In the short run, the smallholder supply response to higher price incentives may be limited by a lack of access to essential inputs, such as seeds and fertilizers. In these cases, social protection measures, including the distribution of seeds and fertilizers either directly or through a system of vouchers and "smart subsidies", may be an appropriate response. If implemented effectively, such programmes can increase local production and the incomes of small producers and may reduce price increases in local markets, thereby contributing to improvements in the nutritional status of net food-buying families.

While the idea of a safety net in the context of high food prices may be conceptually straightforward, the formulation, design and implementation of such a programme are complex. Many possibilities exist and no specific programme design is inherently "better". A particular design should depend on local objectives and conditions, and many safety nets combine elements of the options outlined above. Most importantly, design should be driven by the needs and circumstances of a particular country or region and the views of the beneficiaries rather than by the needs and priorities of donor countries and agencies.

Nutritional deficiencies

As nutrition problems among children and adults are likely to worsen substantially if high food prices persist, immediate action should be taken to mitigate negative consequences. For appropriate policy and programme responses to be implemented, a clear understanding of the specific country context is essential, as the nutritional impact of coping mechanisms will vary considerably in different settings and among different population groups. Food-based interventions should aim to maintain or improve dietary diversity in order to prevent increases in micronutrient deficiencies.

Policy and programme responses include direct interventions such as micronutrient supplementation or distribution of fortified foods for highly vulnerable groups, such as children and pregnant or lactating women. These stopgap measures should be complemented by longer-term measures to ensure that low-income households have access to affordable diversified diets. Examples include supporting small-scale food industries to produce weaning foods of good nutritional quality; supporting and promoting breastfeeding; providing adequate nutrition education messages; and conducting growth monitoring. Evidence that emerged from Bangladesh in the 1990s suggests that macroeconomic food policies that keep the price of food staples low can, in combination with other food and nutrition interventions, help reduce the percentage of underweight children.[21] Considering the importance of women's status for child nutrition, effective measures should aim at eradicating gender discrimination and reducing power inequalities between women and men.

Concluding remarks

Addressing the threats

The dramatic rise in global food prices poses a threat to food and nutrition security. It also creates many economic, social, political and environmental challenges with knock-on effects for both development and humanitarian activities. This food crisis endangers millions of the world's most vulnerable people and threatens to reverse critical gains made towards reducing poverty and hunger in the past decade. Already before the rapid rise in food prices, close to 850 million people worldwide were estimated to be undernourished. The crisis may drive millions more in both rural and urban areas deeper into poverty and hunger.

A crisis of this nature and magnitude requires an urgent comprehensive, coherent and coordinated global response to ensure food and nutrition security, especially in developing countries, in a sustainable manner. This response must address both immediate and longer-term needs and target both the urban and rural poor, especially smallholder rural farmers in affected countries (whose capacities to benefit from high food prices are severely constrained by lack of inputs, investment, infrastructure and market access).

A call for urgent coordinated action

On 28 April 2008, the United Nations Secretary-General established the High-Level Task Force (HLTF) on the Global Food Crisis under his chairmanship. The HLTF brings

Follow-up to the FAO High-Level Conference

When world leaders met in Rome in early June 2008 for the High-Level Conference (HLC) on World Food Security, they reconfirmed that it is "unacceptable that 862 million people are still undernourished in the world today" and urged the international community "to take immediate, urgent and coordinated action to combat the negative impacts of soaring food prices".

It was recognized that immediate life- and livelihood-saving relief assistance is needed, combined with an urgent need to help food-insecure countries expand agriculture and food production. The HLC produced a range of recommendations.

Immediate and short term

Measures should focus on:

- responding urgently to requests for assistance to address hunger and malnutrition food assistance emergencies through expanded relief and safety net programmes;
- providing budget and/or balance of payments support, reviewing debt servicing and simplifying the eligibility procedures of existing financial mechanisms to support agriculture and environment;
- increasing smallholder access to appropriate seeds, fertilizers, animal feed, technical assistance and other inputs;
- improving market infrastructure;
- ensuring that food, agricultural trade and overall trade policies are conducive to fostering food security for all through the successful and urgent completion of the Doha Round of trade negotiations and minimized use of restrictive measures that could increase volatility of international prices.

Medium and long term

The current crisis has highlighted the fragility of the world's food systems and their vulnerability to shocks. While there is an urgent need to address the immediate consequences of soaring food prices, it is also vital to combine medium- and long-term measures, including:

- embracing a people-centred policy framework supportive of the poor in rural, peri-urban and urban areas and people's livelihoods in developing countries, and increasing investment in agriculture;
- maintaining biodiversity and increasing the resilience of food production systems to challenges posed by climate change;
- stepping up investment in science and technology for food and agriculture and increasing cooperation on researching, developing, applying, transferring and disseminating improved technologies and policy approaches;
- establishing governance and policy environments that will facilitate investment in improved agricultural technologies;
- continuing efforts to liberalize international trade in agriculture by reducing trade barriers and market-distorting policies;
- addressing the challenges and opportunities posed by biofuels, in view of the world's food security, energy and sustainable development needs.

Towards the Summit commitments

together heads of many of the United Nations specialized agencies, funds and programmes, Bretton Woods institutions and relevant parts of the United Nations Secretariat. It has produced a Comprehensive Framework for Action (CFA) to guide global and local actors, both institutions and governments, and it is designed to catalyse urgent and immediate action. FAO has played a key role in the HLTF and contributed to the overall strategic and technical content of the CFA and will play a major role in its implementation.

The CFA identifies priority actions for improving global food security and furthering poverty reduction in the context of the present food crisis. Consistent with the Declaration agreed by world leaders at the FAO High-Level Conference on World Food Security in June 2008 (see box) and with key messages in this report, the CFA highlights two general sets of actions in support of a comprehensive response to the global food crisis. The first set aims to *meet the immediate needs of food-insecure populations*, while the second set aims to *build resilience and contribute to longer-term global food and nutrition security*. Both require urgent attention, and both would benefit from strengthened coordination, assessments, monitoring, and surveillance systems.

Investment in agriculture is essential

FAO strongly believes that renewed agricultural investment that is focused on smallholder farmers and rural development would turn agriculture into a vibrant economic sector with positive effects on poverty reduction. In order to succeed, increased agricultural productivity must be accompanied by enhanced investment in local and regional market development and by comprehensive adjustments to distorting trade practices. At the same time, sustainable models of agricultural production must be adopted in order to ensure that new solutions are consistent with long-term environmental needs.

Rising to the challenge

Leadership must play a critical role in any global response. National governments should take the lead, but they require redoubled support and cooperation from the private sector, civil society, the humanitarian community and the international system. The financial implications related to the crisis and the response are enormous, and they require substantial political and financial commitments from all stakeholders. Critical needs vastly exceed the response witnessed thus far. Increased allocations should be additional to current funding levels and not divert resources away from other critical social sectors necessary to achieving the MDGs, such as education and health.

These actions and outcomes can only be achieved through partnership at all levels. FAO will continue to provide leadership and coordination in this respect and to assist national governments and affected communities in addressing what constitutes a truly global challenge.

Technical annex

Updated parameters

This technical annex describes the impact of a revision in two key parameters used in the FAO methodology for estimating undernourishment. The revised parameters were introduced following new population statistics from the United Nations Population Division in 2006 and new human energy requirements established by FAO, the United Nations University (UNU) and the World Health Organization (WHO) in 2004.[22] FAO utilizes both parameters for deriving minimum dietary energy requirements (MDERs) on a per person basis, which are unique for each year and country in the world. The revised parameters were applied to the 1990–92 benchmark period and to all subsequent years for which FAO has produced results. As a result, undernourishment statistics and the associated progress and setbacks in terms of World Food Summit (WFS) and Millennium Development Goal (MDG) hunger reduction targets have changed over the entire reporting period. At times, this has resulted in substantial changes to the estimates presented on a country-by-country basis in Table 1 (page 48).

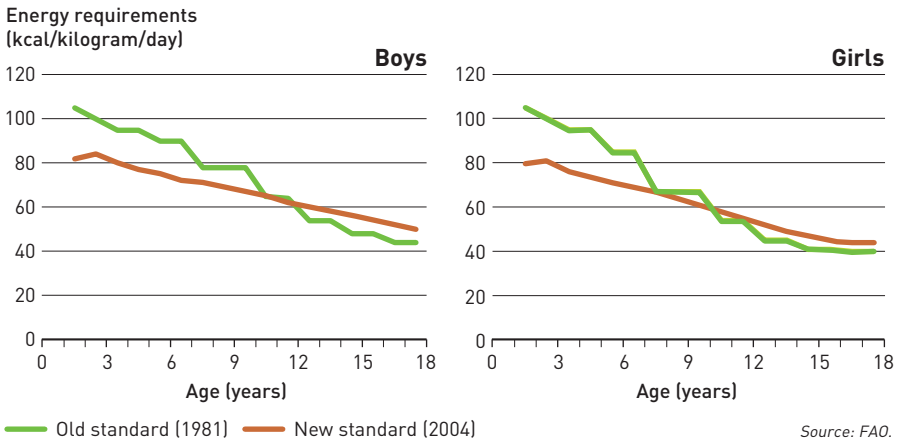
Minimum dietary energy requirements

Most significant in terms of their impact on undernourishment estimates are the new standards of human energy requirements released by FAO, the UNU and WHO. Used for the first time in *The State of Food Insecurity in the World 2008,* these new standards affect the *minimum* dietary energy requirements. The MDER is a crucial factor in FAO's undernourishment methodology as it establishes a cut-off point, or threshold, to estimate the number and prevalence (percentage) of the hungry population in a country. When the threshold changes, so too may the number and percentage of people estimated to be undernourished.

Dietary energy requirements differ by gender and age. They also vary for different levels of activity. Accordingly, MDERs, the amount of energy needed for light activity and a minimum acceptable weight for attained height, vary by country and from year to year depending on the gender and age structure of the population. For an entire population, the MDER is the weighted average of the MDERs of the different gender–age groups in the population. It is expressed in kilocalories (kcal) per person per day. Particularly in countries with a high prevalence of undernourishment, a large proportion of the population typically

A

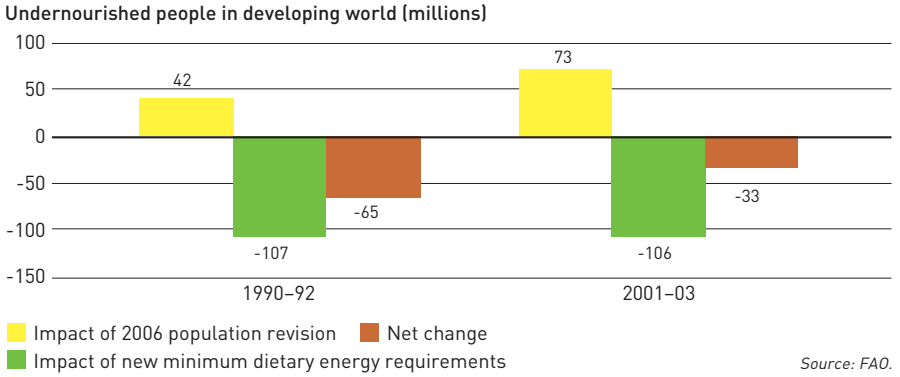
Changes in recommended energy requirements, 1981 and 2004



Source: FAO.

B

Changes due to revised population estimates and minimum energy requirements



Source: FAO.

Technical annex

consumes dietary energy levels close to the cut-off point, making the MDER a highly sensitive parameter. In most countries, the new human energy requirement standards have resulted in an overall drop in both the amount of food required and the prevalence of undernourishment. The new standards have meant a drop in MDERs for children and a slight increase in those for adolescents and adults. The difference has been greatest in those countries with a relatively high proportion of children under 12 years of age. Figure A compares the old and new standards for boys and girls. On average, the new standards have resulted in a drop in MDERs of 88 kcal per person per day in the world, a decrease in food needs equivalent to almost 60 million tonnes of cereals. The effect of these new standards has been to *reduce* the estimated number of undernourished people in the developing world by 107 million in the 1990–92 base period and by 106 million in 2001–03 (the most recent period that can be used for comparison), all other factors held constant (green bars in Figure B).

Revised population estimates

This edition of *The State of Food Insecurity in the World* uses revised population estimates produced by the United Nations Population Division in 2006. The 2006 estimates are provided for the period 1950–2005 and with projections up to 2050. The 2006 revision includes *higher* estimates for most countries, with the result that population estimates for developing countries have increased by some 35 million people for the 1990–92 benchmark period, while the revised population estimates are some 53 million higher than previous estimates for 2003–05.

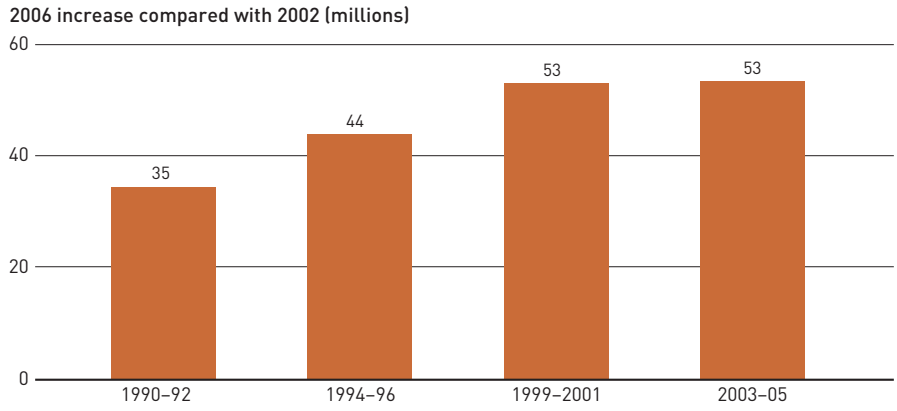
Given that estimated country-level total dietary energy supplies to calculate undernourishment have not changed, available food is shared among more people, thus reducing the daily energy supply available per person, and increasing the prevalence of undernourishment in most countries owing to changes in the population.

The 2006 revised population estimates also updated gender and age distributions. Most significant are the changes in long-term trends for ageing. As countries develop, population growth rates typically decline and life expectancy increases. As the proportion of adults relative to children increases, food needs rise, with a corresponding increase in undernourishment. Between 1990–92 and 2003–05, the number of undernourished people in developing countries increased by some 66 million as a result of an ageing population, all other factors held constant.

Population pyramids for China help illustrate these demographic trends. As China's adult population increased relative to the number of children between 1990–02 and 2003–05, MDERs increased by an average of 43 kcal per person per day, resulting in an increase in the number of undernourished people of 70 million. The combined effect of increases in the number of people and changes to the gender–age structure together with food redistribution available for human consumption based on the 2006 population revision is an *increase* in undernourishment estimates in the developing world of some 42 million people for 1990–92 and of about 73 million people for 2001–03, all other factors held constant (yellow bars in Figure B). The increase is greatest in countries with large populations and high population growth rates.

C

Difference between 2002 and 2006 United Nations population estimates for developing countries

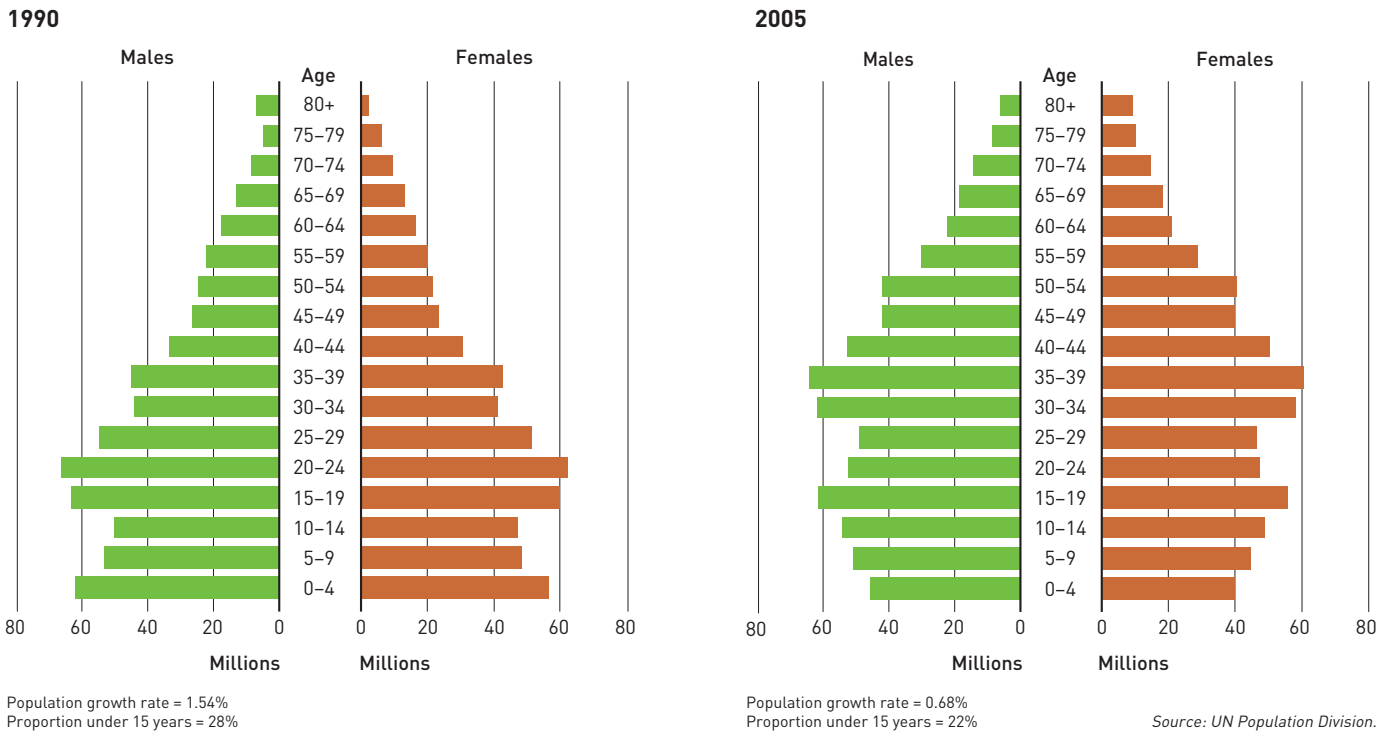


Source: UN Population Division.

Net impact

These important changes to key parameters used in FAO's hunger estimates have led to changes in

China's changing population structure



Population growth rate = 1.54%
Proportion under 15 years = 28%

Population growth rate = 0.68%
Proportion under 15 years = 22%

Source: UN Population Division.

both the numbers and trends in undernourishment around the world, as discussed in the main text of this report.

The combined difference of new energy requirements and the 2006 population revisions is a decrease in FAO's estimates of undernourishment in the developing world of 65 million people in 1990–92 and of 33 million people in 2001–03 (brown bars in Figure B).

Other data changes

A number of other changes have been made to the data that affect the global undernourishment estimates. The "developing world" now includes the countries of the Commonwealth of Independent States (CIS), with the exception of Belarus, Republic of Moldova, the Russian Federation and Ukraine (which are now included in Europe). This has had the effect of adding 10 million undernourished people in the developing world in the base period (1990–92).

Furthermore, new information obtained by FAO has resulted in major revisions to the data for China, Indonesia and Myanmar, adding a further 50 million undernourished people in the base period. The ongoing process of reviewing the food balance sheets and supply utilization accounts has also resulted in small changes to the data for many countries, with the overall result of increasing the number of undernourished in the developing world in the base period by about 5 million. The combined impact of these other changes has been an increase in the number of undernourished in the developing world of about 65 million in the base period and one of 48 million in 2001–03.

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Table 1. Prevalence of undernourishment and progress towards the World Food Summit (WFS)[1] and the Millennium Development Goal (MDG)[2] targets in developing countries[3]

WORLD Region/subregion/country (undernourishment category)	Total population	Number of people undernourished			Progress in number towards WFS target = 0.5*	WFS trend	Proportion of undernourished in total population			Progress in prevalence towards MDG target = 0.5**	MDG trend
	2003–05 (millions)	1990–92	1995–97 (millions)	2003–05		1990–92 to 2003–05	1990–92	1995–97 (%)	2003–05		1990–92 to 2003–05
WORLD	**6 406.0**	**841.9**	**831.8**	**848.0**	**1.0**	▲	**16**	**14**	**13**	**0.8**	▼
Developed countries	**1 264.9**	**19.1**	**21.4**	**15.8**	**0.8**	▼	**–**	**–**	**–**	**na**	**na**
Developing world	**5 141.0**	**822.8**	**810.4**	**832.2**	**1.0**	▲	**20**	**18**	**16**	**0.8**	▼
ASIA AND THE PACIFIC***	**3 478.6**	**582.4**	**535.0**	**541.9**	**0.9**	▼	**20**	**17**	**16**	**0.8**	▼
East Asia	**1 386.1**	**183.5**	**152.0**	**131.8**	**0.7**	▼	**15**	**12**	**10**	**0.6**	▼
China [2]	1 312.4	178.0	143.7	122.7	0.7	▼	15	12	9	0.6	▼
People's Dem. Rep. of Korea [4]	23.5	4.2	6.7	7.6	1.8	▲	21	31	32	1.6	▲
Mongolia [4]	2.6	0.7	1.0	0.8	1.1	▲	30	40	29	1.0	▼
Republic of Korea [1]	47.7	ns	ns	ns	na	na	–	–	–	na	na
Southeast Asia	**544.5**	**105.6**	**88.6**	**86.9**	**0.8**	▼	**24**	**18**	**16**	**0.7**	▼
Cambodia [4]	13.7	3.8	4.8	3.6	0.9	▼	38	41	26	0.7	▼
Indonesia [3]	223.2	34.5	26.7	37.1	1.1	▲	19	13	17	0.9	▼
Lao People's Dem. Rep. [3]	5.6	1.1	1.3	1.1	1.0	◀▶	27	26	19	0.7	▼
Malaysia [1]	25.2	ns	ns	ns	na	na	–	–	–	na	na
Myanmar [3]	47.6	18.1	14.8	8.8	0.5	▼	44	34	19	0.4	▼
Philippines [3]	82.9	13.3	12.8	13.3	1.0	◀▶	21	18	16	0.8	▼
Thailand [3]	62.6	15.7	12.3	10.9	0.7	▼	29	21	17	0.6	▼
Viet Nam [3]	83.8	18.7	15.6	11.5	0.6	▼	28	21	14	0.5	▼
South Asia	**1 468.4**	**282.5**	**284.8**	**313.6**	**1.1**	▲	**25**	**22**	**21**	**0.9**	▼
Bangladesh [4]	150.5	41.6	51.4	40.1	1.0	▼	36	40	27	0.7	▼
India [4]	1 117.0	206.6	199.9	230.5	1.1	▲	24	21	21	0.9	▼
Nepal [3]	26.6	4.0	5.3	4.0	1.0	◀▶	21	24	15	0.7	▼
Pakistan [4]	155.4	25.7	23.7	35.0	1.4	▲	22	18	23	1.0	▲
Sri Lanka [4]	19.0	4.6	4.4	4.0	0.9	▼	27	24	21	0.8	▼
Central Asia	**57.7**	**4.0**	**4.7**	**6.5**	**1.6**	▲	**8**	**9**	**11**	**1.4**	▲
Kazakhstan [1]	15.1	ns	ns	ns	na	na	–	–	–	na	na
Kyrgyzstan [1]	5.2	0.8	0.6	ns	na	▼	17	13	–	na	▼
Tajikistan [4]	6.5	1.8	2.4	2.2	1.2	▲	34	42	34	1.0	◀▶
Turkmenistan [2]	4.8	0.3	0.4	0.3	0.8	◀▶	9	9	6	0.6	▼
Uzbekistan [3]	26.2	1.0	1.1	3.6	3.7	▼	5	5	14	3.0	▲
Western Asia	**15.9**	**6.1**	**4.4**	**2.2**	**0.4**	▼	**38**	**27**	**14**	**0.4**	▼
Armenia [4]	3.0	1.6	1.1	0.6	0.4	▼	46	34	21	0.5	▼
Azerbaijan [3]	8.3	2.0	2.1	1.0	0.5	▼	27	27	12	0.4	▼
Georgia [3]	4.5	2.5	1.2	0.6	0.2	▼	47	24	13	0.3	▼
LATIN AMERICA AND THE CARIBBEAN	**544.2**	**52.6**	**51.8**	**45.2**	**0.9**	▼	**12**	**11**	**8**	**0.7**	▼
North and Central America	**141.9**	**9.3**	**10.2**	**8.8**	**0.9**	▼	**8**	**8**	**6**	**0.8**	▼
Costa Rica [1]	4.3	ns	ns	ns	na	na	–	–	–	na	na
El Salvador [3]	6.6	0.5	0.6	0.6	1.3	▲	9	11	10	1.1	▲
Guatemala [3]	12.4	1.3	1.7	2.0	1.6	▲	14	17	16	1.2	▲
Honduras [3]	6.7	1.0	0.9	0.8	0.8	▼	19	16	12	0.6	▼
Mexico [1]	103.4	ns	4.3	ns	na	na	–	5	–	na	na
Nicaragua [4]	5.4	2.2	1.9	1.2	0.5	▼	52	40	22	0.4	▼
Panama [3]	3.2	0.4	0.6	0.5	1.2	▲	18	20	17	0.9	▼
The Caribbean	**33.7**	**7.5**	**8.6**	**7.6**	**1.0**	▲	**26**	**28**	**23**	**0.9**	▼
Cuba [1]	11.2	0.6	1.5	ns	na	▼	5	14	–	na	▼

(continued)

Table 1. Prevalence of undernourishment and progress towards the World Food Summit (WFS)[1] and the Millennium Development Goal (MDG)[2] targets in developing countries[3]

WORLD Region/subregion/country (undernourishment category)	Total population	Number of people undernourished			Progress in number towards WFS target = 0.5*	WFS trend	Proportion of undernourished in total population			Progress in prevalence towards MDG target = 0.5**	MDG trend
	2003–05 (millions)	1990–92	1995–97 (millions)	2003–05		1990–92 to 2003–05	1990–92	1995–97 (%)	2003–05		1990–92 to 2003–05
Dominican Republic [4]	9.3	2.0	2.0	2.0	1.0	◀▶	27	24	21	0.8	▼
Haiti [5]	9.2	4.5	4.8	5.3	1.2	▲	63	60	58	0.9	▼
Jamaica [2]	2.7	0.3	0.2	0.1	0.5	▼	11	7	5	0.4	▼
Trinidad and Tobago [3]	1.3	0.1	0.2	0.1	1.0	◀▶	11	13	10	0.9	▼
South America	**368.6**	**35.8**	**33.0**	**28.8**	**0.8**	▼	**12**	**10**	**8**	**0.7**	▼
Argentina [1]	38.4	ns	ns	ns	na	na	–	–	–	na	na
Bolivia [4]	9.0	1.6	1.5	2.0	1.2	▲	24	20	22	0.9	▼
Brazil [2]	184.3	15.8	15.6	11.7	0.7	▼	10	10	6	0.6	▼
Chile [1]	16.1	0.9	ns	ns	na	▼	7	–	–	na	▼
Colombia [3]	44.3	5.2	4.2	4.3	0.8	▼	15	11	10	0.7	▼
Ecuador [3]	12.9	2.5	2.0	1.9	0.8	▼	24	17	15	0.6	▼
Guyana [2]	0.7	0.1	0.1	0.0	0.3	▼	18	10	6	0.3	▼
Paraguay [3]	5.8	0.7	0.5	0.7	1.0	◀▶	16	11	11	0.7	▼
Peru [3]	27.0	6.1	4.9	3.9	0.6	▼	28	20	15	0.5	▼
Suriname [2]	0.4	0.0	0.0	0.0	0.7	◀▶	11	8	7	0.6	▼
Uruguay [1]	3.3	0.2	ns	ns	na	▼	5	–	–	na	▼
Venezuela (Bolivarian Rep. of) [3]	26.3	2.1	3.1	3.2	1.6	▼	10	14	12	1.2	▲
NEAR EAST AND NORTH AFRICA* **	**420.0**	**19.1**	**29.6**	**33.0**	**1.7**	▲	**6**	**8**	**8**	**1.3**	▲
Near East	**270.1**	**15.0**	**25.3**	**28.4**	**1.9**	▲	**7**	**11**	**11**	**1.4**	▲
Iran (Islamic Republic of) [1]	68.7	ns	ns	ns	na	na	–	–	–	na	na
Jordan [1]	5.4	ns	0.2	ns	na	na	–	5	–	na	na
Kuwait [1]	2.6	0.4	0.1	ns	na	▼	20	5	–	na	▼
Lebanon [1]	4.0	ns	ns	ns	na	na	–	–	–	na	na
Saudi Arabia [1]	23.0	ns	ns	ns	na	na	–	–	–	na	na
Syrian Arab Republic [1]	18.4	ns	ns	ns	na	na	–	–	–	na	na
Turkey [1]	72.0	ns	ns	ns	na	na	–	–	–	na	na
United Arab Emirates [1]	3.9	ns	ns	ns	na	na	–	–	–	na	na
Yemen [4]	20.5	3.8	5.0	6.5	1.7	▲	30	31	32	1.1	▲
North Africa	**149.9**	**4.0**	**4.3**	**4.6**	**1.2**	▲	**–**	**–**	**–**	**na**	**na**
Algeria [1]	32.4	ns	1.5	ns	na	na	–	5	–	na	na
Egypt [1]	71.6	ns	ns	ns	na	na	–	–	–	na	na
Libyan Arab Jamahiriya [1]	5.8	ns	ns	ns	na	na	–	–	–	na	na
Morocco [1]	30.2	1.2	1.4	ns	na	▼	5	5	–	na	▼
Tunisia [1]	10.0	ns	ns	ns	na	na	–	–	–	na	na
SUB-SAHARAN AFRICA* **	**698.3**	**168.8**	**194.0**	**212.1**	**1.3**	▲	**34**	**34**	**30**	**0.9**	▼
Central Africa	**93.1**	**22.0**	**38.4**	**53.3**	**2.4**	▲	**34**	**51**	**57**	**1.7**	▲
Cameroon [4]	17.4	4.3	5.1	4.0	0.9	▼	34	35	23	0.7	▼
Central African Republic [5]	4.1	1.4	1.8	1.8	1.2	▲	47	50	43	0.9	▼
Chad [5]	9.8	3.7	3.8	3.8	1.0	▲	59	51	39	0.7	▼
Congo [4]	3.5	1.0	1.2	0.8	0.8	▼	40	43	22	0.5	▼
Democratic Republic of the Congo [5]	56.9	11.4	26.5	43.0	3.8	▲	29	57	76	2.6	▲
Gabon [1]	1.3	0.0	ns	ns	na	▼	5	–	–	na	▼
East Africa	**242.4**	**77.1**	**86.1**	**86.0**	**1.1**	▲	**45**	**44**	**35**	**0.8**	▼
Burundi [5]	7.6	2.6	3.6	4.8	1.9	▲	44	57	63	1.4	▲
Eritrea****[5]	4.4	2.1	2.1	3.0	1.4	▲	67	64	68	1.0	▲

(continued)

Technical annex

Table 1. Prevalence of undernourishment and progress towards the World Food Summit (WFS)[1] and the Millennium Development Goal (MDG)[2] targets in developing countries[3]

WORLD Region/subregion/country (undernourishment category)	Total population	Number of people undernourished			Progress in number towards WFS target = 0.5*	WFS trend	Proportion of undernourished in total population			Progress in prevalence towards MDG target = 0.5**	MDG trend
	2003–05 (millions)	1990–92	1995–97 (millions)	2003–05		1990–92 to 2003–05	1990–92	1995–97 (%)	2003–05		1990–92 to 2003–05
Ethiopia****[5]	77.0	37.4	39.3	35.2	0.9	▼	71	63	46	0.6	▼
Kenya [4]	34.7	8.0	8.4	11.0	1.4	▲	33	30	32	1.0	▼
Rwanda [5]	9.1	3.2	3.3	3.6	1.2	▲	45	56	40	0.9	▼
Sudan [4]	36.2	8.3	7.2	7.4	0.9	▼	31	24	21	0.7	▼
Uganda [3]	28.0	3.6	5.1	4.1	1.1	▲	19	23	15	0.8	▼
United Republic of Tanzania [5]	37.5	7.5	12.7	13.0	1.7	▲	28	41	35	1.2	▲
Southern Africa	**99.2**	**32.4**	**35.8**	**36.8**	**1.1**	▲	**45**	**43**	**37**	**0.8**	▼
Angola [5]	15.6	7.2	7.3	7.1	1.0	▼	66	58	46	0.7	▼
Botswana [4]	1.8	0.3	0.4	0.5	1.7	▲	20	24	26	1.3	▲
Lesotho [3]	2.0	0.2	0.2	0.3	1.2	▲	15	13	15	1.0	◀▶
Madagascar [5]	18.1	3.9	5.4	6.6	1.7	▲	32	37	37	1.2	▲
Malawi [4]	12.9	4.3	3.7	3.8	0.9	▼	45	36	29	0.7	▼
Mauritius [2]	1.2	0.1	0.1	0.1	1.0	◀▶	7	6	6	0.9	▼
Mozambique [5]	20.1	8.2	8.6	7.5	0.9	▼	59	52	38	0.6	▼
Namibia [3]	2.0	0.4	0.5	0.4	0.9	◀▶	29	29	19	0.7	▼
Swaziland [3]	1.1	0.1	0.2	0.2	1.8	▲	12	20	18	1.5	▲
Zambia [5]	11.3	3.3	3.9	5.1	1.5	▲	40	41	45	1.1	▲
Zimbabwe [5]	13.0	4.3	5.5	5.2	1.2	▲	40	46	40	1.0	◀▶
West Africa	**263.7**	**37.3**	**33.8**	**36.0**	**1.0**	▼	**20**	**16**	**14**	**0.7**	▼
Benin [3]	8.2	1.5	1.7	1.6	1.1	▲	28	26	19	0.7	▼
Burkina Faso [3]	13.5	1.3	1.3	1.3	1.0	◀▶	14	12	10	0.7	▼
Côte d'Ivoire [3]	18.3	2.0	2.4	2.6	1.3	▲	15	16	14	0.9	▼
Gambia [4]	1.6	0.2	0.4	0.5	2.3	▲	20	31	30	1.5	▲
Ghana [2]	22.1	5.4	3.0	1.9	0.3	▼	34	16	9	0.3	▼
Guinea [3]	8.8	1.2	1.3	1.5	1.3	▲	19	18	17	0.9	▼
Liberia [5]	3.4	0.6	0.9	1.3	2.2	▲	30	39	40	1.3	▲
Mali [3]	11.3	1.1	1.3	1.2	1.1	▲	14	15	11	0.8	▼
Mauritania [2]	2.9	0.2	0.2	0.2	1.2	◀▶	10	8	8	0.8	▼
Niger [4]	12.8	3.1	3.8	3.7	1.2	▲	38	40	29	0.7	▼
Nigeria [2]	138.0	14.7	10.8	12.5	0.8	▼	15	10	9	0.6	▼
Senegal [4]	11.5	2.3	3.0	3.0	1.3	▲	28	32	26	0.9	▼
Sierra Leone [5]	5.4	1.9	1.8	2.5	1.3	▲	45	43	47	1.0	▲
Togo [5]	6.1	1.8	1.8	2.3	1.2	▲	45	39	37	0.8	▼

Notes: Please see page 55.

Table 2. Selected food, nutrition and development indicators, classified by undernourishment category, income and region

UNDERNOURISHMENT CATEGORY by income group[1]	DES[2] per capita	Contribution of food groups to total energy[3]				Contribution of nutrients to total energy[4]						Agriculture in total GDP	Urban population	Child malnutrition (most recent)	
		C	RT	OF	AP	CHO		Protein		Fat		2005		Under-weight	Stunting
Region/country	(kcal/day)	(% kcal)				(% kcal)						(%)	(%)	(%)	
35% OR MORE UNDERNOURISHED															
Low income															
Latin America and the Caribbean															
Haiti	1 840	49	8	6	7	76	H	9	L	15	L	28*	38	22	24
Sub-Saharan Africa															
Burundi	1 630	17	36	1	2	84	H	11	R	6	L	35	10	39	53
Central African Republic	1 900	23	31	15	12	61	R	9	L	30	H	56	38	29	38
Chad	1 980	53	8	6	6	62	R	12	R	26	R	21	25	37	41
Democratic Rep. of the Congo	1 500	20	56	8	2	80	H	6	L	14	L	46	32	31	38
Eritrea	1 530	68	4	11	5	70	R	12	R	18	R	23	19	40	38
Ethiopia	1 810	66	14	3	5	79	H	11	R	10	L	47	16	38	47
Liberia	2 010	40	24	20	3	68	R	7	L	25	R	66	57	26	39
Madagascar	2 010	58	20	4	7	79	H	9	L	12	L	28	27	42	48
Mozambique	2 070	45	34	9	2	78	H	8	L	15	L	27	34	24	41
Rwanda	1 940	16	39	4	3	82	H	9	L	9	L	42	18	23	45
Sierra Leone	1 910	50	10	15	4	67	R	10	L	23	R	46	40	30	40
Togo	2 020	49	26	10	3	72	R	9	L	19	R	44	39	26	24
United Republic of Tanzania	2 010	53	17	7	6	76	H	10	L	14	L	46	24	44	50
Zambia	1 890	62	14	7	5	74	R	10	L	16	R	23	35	20	50
Zimbabwe	2 040	56	2	13	6	66	R	9	L	24	R	19	35	17	29
Lower middle income															
Sub-Saharan Africa															
Angola	1 880	37	27	11	8	71	R	9	L	20	R	8	53	31	45
20 TO 34% UNDERNOURISHED															
Low income															
Asia and the Pacific															
Bangladesh	2 230	80	2	7	3	81	H	9	L	11	L	20	25	48	43
Cambodia	2 160	73	3	3	9	76	H	10	L	14	L	31	19	36	37
Dem. People's Rep. of Korea	2 150	61	7	6	7	74	R	11	R	15	L	nd	61	23	37
Pakistan	2 340	49	1	16	15	63	R	10	L	27	R	21	34	38	37
Tajikistan	2 070	66	3	9	10	66	R	11	R	23	R	24	25	17	27
Near East and North Africa															
Yemen	2 010	59	1	11	8	69	R	11	R	21	R	14*	27	46	53
Sub-Saharan Africa															
Gambia	2 140	53	1	21	6	60	R	9	L	30	H	33	53	20	22
Kenya	2 040	50	6	8	12	69	R	11	R	20	R	27	21	20	30
Malawi	2 130	56	18	3	2	78	H	10	L	12	L	33	17	31	45
Niger	2 140	66	2	6	5	70	R	11	R	19	R	40*	17	19	46
Senegal	2 150	62	3	15	8	65	R	10	L	25	R	17	41	17	16
Lower middle income															
Asia and the Pacific															
Armenia	2 310	52	6	7	15	69	R	12	R	19	R	21	64	3	13
India	2 360	58	2	13	6	71	R	9	L	20	R	18	29	43	48
Mongolia	2 190	45	3	9	29	56	R	13	R	31	H	25	57	6	21
Sri Lanka	2 360	56	2	3	6	74	R	9	L	17	R	17	15	29	14

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Table 2. Selected food, nutrition and development indicators, classified by undernourishment category, income and region

UNDERNOURISHMENT CATEGORY by income group[1]	DES[2] per capita	Contribution of food groups to total energy[3]				Contribution of nutrients to total energy[4]						Agriculture in total GDP	Urban population	Child malnutrition (most recent)	
		C	RT	OF	AP	CHO		Protein		Fat		2005		Under-weight	Stunting
Region/country	(kcal/day)	(% kcal)				(% kcal)						(%)	(%)	(%)	
Latin America and the Caribbean															
Bolivia	2 170	41	7	10	16	66	R	10	L	24	R	14	64	8	27
Dominican Republic	2 300	29	3	18	14	61	R	9	L	30	H	12	66	5	7
Nicaragua	2 350	53	1	9	10	70	R	10	R	20	R	19	59	10	20
Sub-Saharan Africa															
Cameroon	2 230	39	17	10	6	70	R	10	L	19	R	20	54	19	30
Congo	2 330	27	33	14	7	69	R	9	L	22	R	5	60	14	26
Sudan	2 290	49	1	6	24	60	R	13	R	27	R	34	40	41	43
Upper middle income															
Sub-Saharan Africa															
Botswana	2 200	45	7	10	12	67	R	12	R	21	R	2	57	13	23
10 TO 19% UNDERNOURISHED															
Low income															
Asia and the Pacific															
Lao People's Dem. Rep.	2 300	72	3	2	7	77	H	11	R	12	L	44	20	40	42
Myanmar	2 380	60	1	10	8	68	R	11	R	21	R	57**	30	32	32
Nepal	2 430	68	4	10	5	73	R	10	L	17	R	36	15	39	49
Uzbekistan	2 440	58	2	12	18	62	R	12	R	25	R	28	37	5	15
Viet Nam	2 650	68	1	4	13	73	R	10	L	17	R	21	26	25	30
Sub-Saharan Africa															
Benin	2 290	39	32	9	4	71	R	10	L	19	R	32	40	23	38
Burkina Faso	2 620	73	1	5	5	68	R	12	R	20	R	32	18	37	35
Côte d'Ivoire	2 520	31	33	13	4	73	R	8	L	19	R	23	45	20	34
Guinea	2 540	47	14	14	3	70	R	9	L	21	R	20	33	26	35
Mali	2 570	67	2	8	10	69	R	11	R	19	R	37	30	33	38
Uganda	2 380	21	22	7	6	73	R	9	L	17	R	33	12	20	32
Lower middle income															
Asia and the Pacific															
Azerbaijan	2 530	55	6	6	14	71	R	11	R	17	R	10	51	7	13
Georgia	2 480	56	4	7	18	67	R	13	R	21	R	17	52	3	12
Indonesia	2 440	64	6	7	5	74	R	9	L	17	R	13	47	28	42
Philippines	2 470	55	3	6	13	73	R	9	L	17	R	14	62	28	30
Thailand	2 490	48	2	7	12	71	R	9	L	20	R	10	32	9	12
Latin America and the Caribbean															
Colombia	2 670	34	6	12	16	68	R	9	L	23	R	12	72	7	12
Ecuador	2 300	33	3	19	18	58	R	10	L	32	H	7	62	9	23
El Salvador	2 530	50	2	8	11	69	R	11	R	20	R	11	60	10	19
Guatemala	2 270	52	1	9	8	69	R	10	L	21	R	23	47	23	49
Honduras	2 590	46	1	11	13	67	R	10	L	23	R	14	46	11	25
Paraguay	2 590	29	14	17	15	58	R	10	L	32	H	22	58	5	14
Peru	2 450	44	14	6	11	73	R	11	R	16	R	7	72	8	24
Sub-Saharan Africa															
Lesotho	2 430	79	3	2	5	77	H	11	R	12	L	17	19	20	38
Namibia	2 290	45	14	8	13	69	R	11	R	20	R	12	35	24	24
Swaziland	2 320	46	5	5	15	67	R	11	R	21	R	11	24	10	30

(continued)

Table 2. Selected food, nutrition and development indicators, classified by undernourishment category, income and region

UNDERNOURISHMENT CATEGORY by income group[1]	DES[2] per capita	Contribution of food groups to total energy[3]				Contribution of nutrients to total energy[4]						Agriculture in total GDP	Urban population	Child malnutrition (most recent)	
		C	RT	OF	AP	CHO		Protein		Fat		2005		Under-weight	Stunting
Region/country	(kcal/day)	(% kcal)				(% kcal)						(%)	(%)	(%)	
Upper middle income															
Latin America and the Caribbean															
Panama	2 390	43	2	12	17	65	R	11	R	23	R	8	70	8	18
Venezuela (Bolivarian Rep. of)	2 450	38	3	17	15	63	R	11	R	27	R	4***	93	5	13
High income															
Latin America and the Caribbean															
Trinidad and Tobago	2 760	36	2	13	14	65	R	10	L	25	R	1	12	6	4
5 TO 9% UNDERNOURISHED															
Low income															
Sub-Saharan Africa															
Ghana	2 690	30	40	7	4	78	H	8	L	14	L	37	47	18	22
Mauritania	2 790	47	1	13	18	64	R	12	R	24	R	24	40	32	35
Nigeria	2 600	44	19	13	3	69	R	9	L	22	R	23	47	29	38
Lower middle income															
Asia and the Pacific															
China	2 990	51	6	7	21	61	R	12	R	27	R	13	40	7	11
Turkmenistan	2 780	60	2	9	20	64	R	13	R	23	R	20*	46	11	15
Latin America and the Caribbean															
Guyana	2 830	46	4	6	16	69	R	11	R	20	R	31	28	14	11
Upper middle income															
Latin America and the Caribbean															
Brazil	3 090	33	4	15	20	59	R	11	R	30	H	6	84	6	11
Jamaica	2 810	32	6	13	17	62	R	11	R	27	R	6	53	4	3
Suriname	2 710	41	2	14	11	67	R	9	L	24	R	6	74	13	10
Sub-Saharan Africa															
Mauritius	2 880	47	1	14	14	64	R	11	R	25	R	6	42	15	10
LESS THAN 5% UNDERNOURISHED															
Low income															
Asia and the Pacific															
Kyrgyzstan	3 120	56	8	3	18	71	R	13	R	16	R	32	36	3	14
Lower middle income															
Near East and North Africa															
Algeria	3 100	56	3	11	10	69	R	11	R	20	R	8	63	4	11
Egypt	3 320	64	2	6	6	73	R	11	R	16	R	15	43	6	18
Iran (Islamic Rep. of)	3 100	56	4	8	9	71	R	11	R	18	R	10	66	11	15
Jordan	2 820	45	2	17	11	62	R	10	L	28	R	3	82	4	9
Morocco	3 190	62	2	9	6	72	R	11	R	17	R	13	58	10	18
Syrian Arab Republic	3 000	46	2	16	12	59	R	11	R	30	H	20	50	10	22
Tunisia	3 280	49	2	16	10	63	R	11	R	26	R	12	65	4	12
Upper middle income															
Asia and the Pacific															
Kazakhstan	3 110	43	6	10	23	61	R	12	R	26	R	7	57	4	13
Malaysia	2 860	45	2	14	18	62	R	11	R	27	R	8	66	11	nd
Latin America and the Caribbean															
Argentina	3 000	35	3	12	26	59	R	12	R	29	R	9	90	4	4

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Table 2. Selected food, nutrition and development indicators, classified by undernourishment category, income and region

UNDERNOURISHMENT CATEGORY by income group[1]	DES[2] per capita	Contribution of food groups to total energy[3]				Contribution of nutrients to total energy[4]						Agriculture in total GDP	Urban population	Child malnutrition (most recent)	
		C	RT	OF	AP	CHO		Protein		Fat		2005		Under-weight	Stunting
Region/country	(kcal/day)	(% kcal)				(% kcal)						(%)	(%)	(%)	
Chile	2 980	39	3	13	20	60	R	11	R	29	R	4	87	1	1
Costa Rica	2 790	34	2	14	17	64	R	10	L	26	R	9	61	5	6
Cuba	3 280	41	8	6	9	76	H	10	L	15	L	nd	76	4	5
Mexico	3 270	44	1	10	17	63	R	11	R	26	R	4	76	5	13
Uruguay	2 920	42	4	9	23	63	R	12	R	26	R	9	92	5	11
Near East and North Africa															
Lebanon	3 160	34	6	16	15	57	R	11	R	32	H	6	86	4	11
Libyan Arab Jamahiriya	3 020	43	2	17	12	61	R	10	L	29	R	nd	85	5	15
Turkey	3 340	49	3	15	10	63	R	11	R	26	R	11	67	4	12
Sub-Saharan Africa															
Gabon	2 760	33	18	6	13	70	R	12	R	18	R	5	83	12	21
High income															
Asia and the Pacific															
Republic of Korea	3 030	44	1	13	13	64	R	11	R	25	R	3	81	nd	nd
Near East and North Africa															
Kuwait	3 070	40	1	18	18	56	R	11	R	33	H	nd	98	10	24
Saudi Arabia	3 060	48	1	13	13	64	R	11	R	25	R	3	81	14	20
United Arab Emirates	3 040	44	1	8	19	63	R	13	R	24	R	2	77	14	17

Notes: Please see page 55.

Notes for Table 1

[1] **World Food Summit goal:** halve, between 1990–92 and 2015, the number of undernourished people.
[2] **Millennium Development Goal 1, target 1C:** halve, between 1990 and 2015, the proportion of people who suffer from hunger. Indicator 1.9: Proportion of population below minimum level of dietary energy consumption (undernourishment).
[3] Latest reported period refers to 2003–05 estimates, and baseline refers to 1990–92. For countries that did not exist in the baseline period, the 1990–92 proportion of undernourished is based on 1993–95 and the number of undernourished is based on their 1990–92 population and this proportion.

Countries revise their official statistics regularly for the past as well as the latest reported period. The same holds for population data of the United Nations. Whenever this happens, FAO revises its estimates of undernourishment accordingly. Therefore, users are advised to refer to changes in estimates over time only within the same *The State of Food Insecurity in the World* publication and refrain from comparing data published in editions for different years.

Figures following country name refer to undernourishment categories (proportion of the population undernourished in 2003–05):
[1] < 5 percent undernourished
[2] 5–9 percent undernourished
[3] 10–19 percent undernourished
[4] 20–34 percent undernourished
[5] ≥ 35 percent undernourished

Developing countries for which there were insufficient data are not listed in the table.

* Ratio current/baseline number of undernourished – ratio for WFS target = 0.5
** Ratio current/baseline prevalence of undernourished – ratio for MDG target = 0.5
*** Although not listed separately, provisional estimates for Afghanistan and Iraq (Near East and North Africa), Papua New Guinea (Asia and the Pacific) and Somalia (East Africa) have been included in the relevant regional aggregates. Developed countries have been included in world estimates.
**** Eritrea and Ethiopia were not separate entities in 1990–92, but estimates of the number and proportion of undernourished in the former People's Democratic Republic of Ethiopia are included in regional and subregional aggregates for that period.

KEY
– Proportion less than 5 percent of undernourished.
na Not applicable.
0.0 Zero or less than half the unit shown.
ns Not statistically significant.

SOURCES
Total population: United Nations, Department of Economic and Social Affairs, Population Division. 2007. *World Population Prospects: The 2006 Revision*. New York, USA.
Undernourishment: FAO estimates.

Notes for Table 2

[1] Countries are classified following World Bank country income groups. For operational and analytical purposes, the World Bank has classified countries according to 2007 gross national income per capita, calculated using the World Bank Atlas method. The groups are: low income – US$935 or less; lower middle income – US$936–3 705; upper middle income – US$3 706–11 455; and high income – US$11 456 or more.
[2] DES = dietary energy supply.
[3] Main food groups: C = cereals; RT = roots and tubers; OF = oils and fats: and AP = animal products, excluding fats. Not shown: other vegetable products (pulses, nuts, oilseeds, sweeteners, fruits, vegetables and condiments). "Animal products" includes meat, offal, dairy products, eggs and fish.
[4] Diet composition as the proportion of energy from nutrients (carbohydrates [CHO], protein and fat) in total energy available for human consumption: H = high – proportion above 75, 15 and 30 percent for carbohydrates, protein and fat, respectively; R = within recommended range; and L = low – proportion below 55, 10 and 15 percent for carbohydrates, protein and fat, respectively.

Unless otherwise indicated, data refer to 2003–05.
* Data refer to 2003.
** Data refer to 2000.
*** Data refer to 2004.

KEY
nd No data.

SOURCES
Dietary energy supply for human consumption, energy from food and energy-yielding nutrients: FAO.
Income group and share of agricultural value added to GDP: World Bank (World Development Indicators online database).
Share of urban population: United Nations, Department of Economic and Social Affairs, Population Division. 2008. *World Urbanization Prospects: The 2007 Revision*. New York, USA.
Prevalence of underweight and stunting in children less than five years old: UNICEF/WHO.

Notes

1 Further discussion on major driving forces behind soaring food prices in 2007–08 can be found in FAO's *The State of Agricultural Commodity Markets 2008* (forthcoming) and *The State of Food and Agriculture 2008.*

2 OECD–FAO. 2008. *OECD–FAO Agricultural Outlook 2008–2017*. Paris, OECD Publishing.

3 International Energy Agency. 2006. *World Energy Outlook 2006*. Paris. OECD Publishing.

4 Op. cit., see note 2.

5 Centre for Research on the Epidemiology of Disasters, Université Catholique de Louvain. 2008. Disaster Data: A Balanced Perspective. *CRED Crunch*, 11: 1–2 (available at www.emdat.be/Documents/CredCrunch/Cred%20Crunch%2011.pdf).

6 An LIFDC is characterized by a low per capita income making it eligible for financing from international development associations under World Bank rules, a structural (over three years) net import position for basic foodstuffs and consistency in LIFDC status, or "persistence of position" over time. Most LIFDCs are in Africa (37) and Asia (21).

7 For more on LIFDCs that import petroleum products and foodgrains, see FAO. 2008. *Soaring food prices: facts, perspectives, impacts and actions required.* Information document for the High-Level Conference on World Food Security, Rome, 3–5 June 2008 (available at www.fao.org/foodclimate/conference/doclist/en/?no_cache=1).

8 The full list of countries severely affected by high fuel and food prices is available on the FAO/GIEWS Web site: www.fao.org/GIEWS/ENGLISH/HOTSPOTS/INDEX_M.HTM.

9 T. Fouéré, B. Mair, F. Delpeuch, Y. Martin-Prével, F. Tchibindat and G. Adoua-Oyila. 2000. Dietary changes in African urban households in response to currency devaluation: foreseeable risks for health and nutrition. *Public Health Nutrition*, 3: 293–301.

10 S.A. Block, L. Kiess, P. Webb, S. Kosen, R. Moench-Pfanner, M.W. Bloem and C.P. Timmer. 2004. Macro shocks and micro outcomes: child nutrition during Indonesia's crisis. *Economics and Human Biology*, 2(1): 21–44.

11 Y. Martin-Prével, F. Delpeuch, P. Traissac, J.P. Massamba, G. Adoua-Oyila, K. Coudert and S. Trèche. 2000. Deterioration in the nutritional status of young children and their mothers in Brazzaville, Congo, following the 1994 devaluation of the CFA franc. *Bulletin of the World Health Organization,* 78(1): 108–118.

12 H. Zaman, C. Delgado, D. Mitchell and A. Revenga. (forthcoming). *Rising food prices: are there right policy choices?* Development Outreach. Washington, DC, World Bank.

13 FAO. 2008. *Climate change adaptation and mitigation: challenges and opportunities for food security.* Information document prepared for the High-level Conference on World Food Security: the Challenges of Climate Change and Bioenergy, Rome, 3–5 June 2008 (available at ftp://ftp.fao.org/docrep/fao/meeting/013/k2545e.pdf).

14 For more detail on enhancing agricultural productivity, see FAO. (forthcoming). *The State of Agricultural Commodity Markets 2008*. Rome.

15 R. Birner and D. Resnick. 2005. Policy and politics for smallholder agriculture. *In* IFPRI. *The future of small farms: proceedings of a research workshop*, pp. 283–311. Wye, UK, 26–29 June 2005. Washington, DC, IFPRI.

16 P.B.R. Hazell, C. Poulton, S. Wiggins and A. Dorward. 2007. *The future of small farms for poverty reduction and growth.* 2020 Discussion Paper 42. Washington, DC, IFPRI.

17 World Bank. 2007. *World Development Report 2008: Agriculture for Development.* Washington, DC.

18 For examples of input credit schemes, see: J. Govereh, J. Nyoro and T.S. Jayne. 1999. *Smallholder commercialization, interlinked markets and food crop productivity: cross-country evidence in eastern and southern Africa*. Michigan, USA, Department of Agricultural Economics and Department of Economics, Michigan State University.
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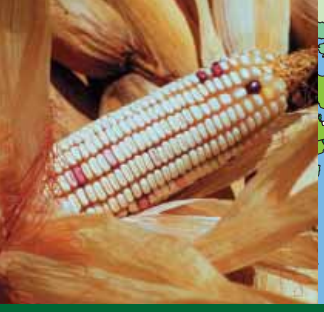
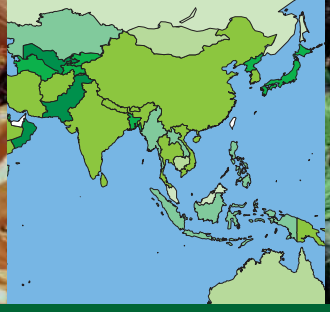


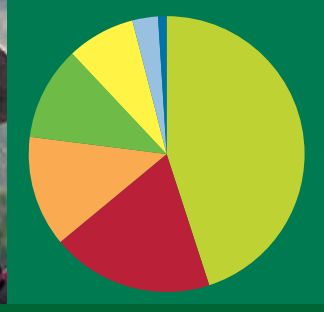

The State of
Food Insecurity in the World

As commodity prices soared in 2007–08, fears of a world food crisis threatening the livelihoods of millions of people and causing widespread hunger and poverty triggered high-level meetings to decide on immediate measures to mitigate the impacts of high prices on the world's poorest and most vulnerable populations.

The State of Food Insecurity in the World 2008 presents the latest statistics on global undernourishment. It reviews the impact of high food prices and concludes that chronic hunger in the world has increased rapidly, now affecting well over 900 million people, and placing tremendous pressure on achieving hunger reduction targets set for 2015 by the 1996 World Food Summit and as agreed under the first Millennium Development Goal.

This report finds that high food prices hit the poorest, landless and female-headed households hardest, affecting real incomes and raising the prevalence of food insecurity and malnutrition among the poor by reducing the quantity and quality of food consumed. Governments worldwide have adopted measures to contain the negative impacts of high food prices. However, these have had limited effect, with some proving detrimental to world price levels and stability.

This report also examines how high food prices present an opportunity to relaunch smallholder agriculture in the developing world. With appropriate incentives, farming households could see immediate gains, while other rural households could benefit in the longer run. The report advocates FAO's comprehensive twin-track approach to address the adverse impacts of high food prices on world hunger. The strategy should include measures to enable the agriculture sector, especially smallholders in developing countries, to respond to high food prices, while also implementing targeted safety nets and social protection programmes for the most food-insecure and vulnerable.

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