

Part II

WORLD AND REGIONAL REVIEW *a longer-term perspective*



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World and regional review

A longer-term perspective¹

World agriculture has achieved notable success over the past half century but faces serious challenges now and in the coming decades. The proportion of people suffering from hunger has fallen by half since 1969–71, the earliest period for which estimates are available. In developing countries, where most of the world's undernourished people live, progress is still being made on reducing the proportion of undernourished people, but the absolute number appears to be rising.

Steady growth in agricultural output and a long-term decline in real agricultural commodity prices attest to the success of the global agricultural system in meeting the increase in effective global demand for food and other products. Recent rises in commodity prices have been driven by weather-related production shortfalls and other factors such as the emergence of liquid biofuels as a large source of demand for agricultural commodities. It remains unclear whether this signals a new paradigm for agricultural prices and, if so, what that might mean for agricultural development, poverty reduction and food security.

Agricultural growth contributes directly to food security, but it also supports poverty reduction and acts as an engine of overall economic growth in much of the developing world. The success of the agriculture sector has not been uniform across regions and countries, however, and seems to have waned since the early 1990s. The challenge is to revive it and extend it to those left behind. Many of the least-developed countries, particularly those located in marginal production environments, continue to experience low or stagnant agricultural productivity, increasing food deficits and rising levels of hunger and poverty.

¹ This report is based on Wik, Pingali and Broca, 2007, and several previously published FAO reports cited in the text.

AGRICULTURAL PRODUCTION

The value of total agricultural output (all food and non-food crop and livestock commodities) has almost trebled in real terms since 1961 (Figure 14), representing an average increase of 2.3 percent per year, well ahead of global population growth (1.7 percent per year). Much of this growth has originated in developing countries, but it also reflects the rising share of high-value commodities such as livestock products and horticulture in the total value of production (FAO, 2006i).

Regional differences in performance

Global agricultural value added per capita has grown at an average rate of 0.4 percent per year in real terms since 1961 (World Bank, 2006), but not all regions have followed the same trend (Figure 15). Latin America and the Caribbean and South Asia have had a small increase, while the East Asia and Pacific region has more than doubled agricultural value added per capita over the last four decades. Sub-Saharan Africa is the

only region in which per capita agricultural value added has not seen a sustained increase, with an overall declining trend and a considerable variation over time and across countries (Figure 16).

Changing composition of agricultural production

The composition of agricultural production has changed considerably over the last 40 years. The global output of cereals, oil crops, sugar, vegetables, eggs and meat has increased more than population growth rates, while the production of pulses and roots and tubers has declined relative to total population growth (Table 16).

Since 1990, cereal production growth has slowed compared to that of earlier decades. On the other hand, production of oil crops has accelerated, fuelled by growth of demand in developing countries for these crops' feed and food uses (FAO, 2006i).

In developing countries, egg and meat production has grown even more rapidly than that of oil crops. Given the diversification of diets driven by rising

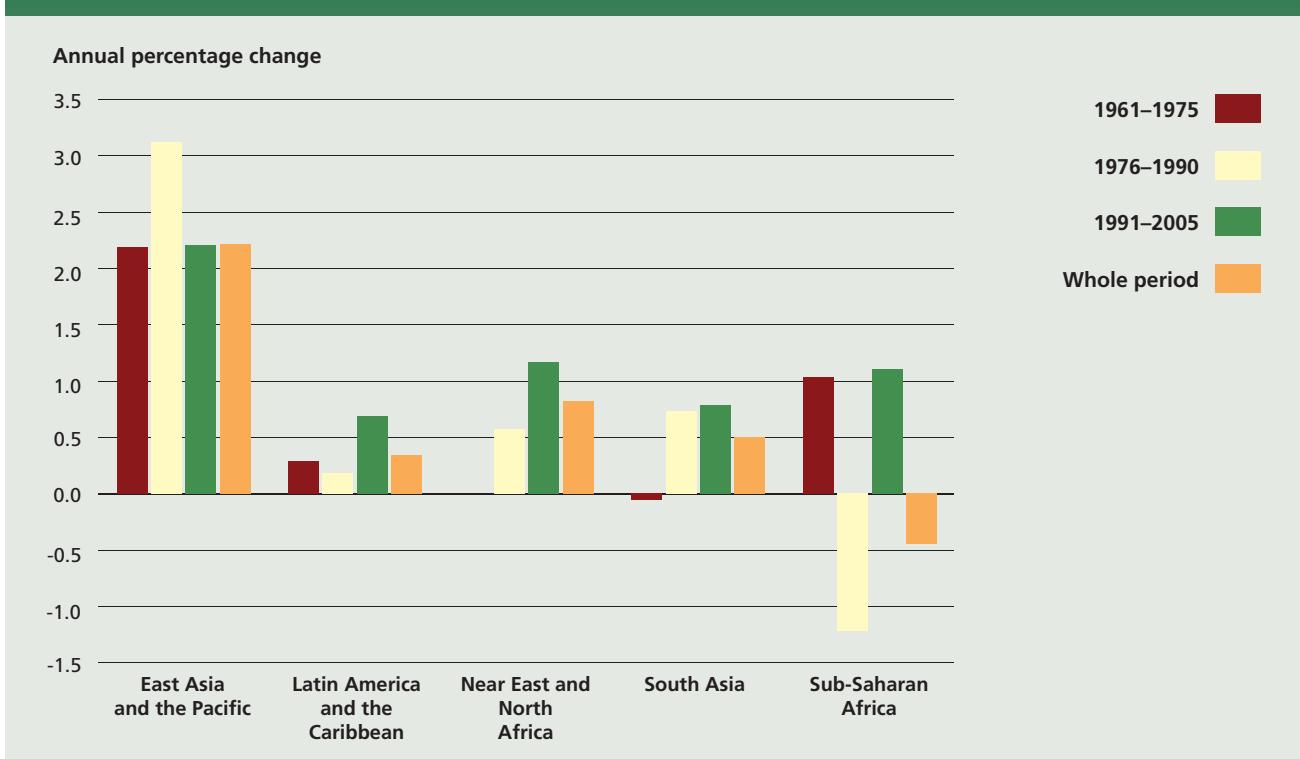
FIGURE 14
Total and per capita agricultural production



Note: International dollars are an international commodity prices unit, average 1999–2001. For more information on international dollars, see <http://faostat.fao.org>.

Source: FAO, 2006h.

FIGURE 15
Average growth rate in per capita agricultural value added, by region



Note: Agricultural value added includes fish and forestry products. No data are available for the Near East and North Africa until 1974. Data for sub-Saharan Africa are available from 1967 and for Latin America and the Caribbean from 1965.

Source: World Bank, 2006.

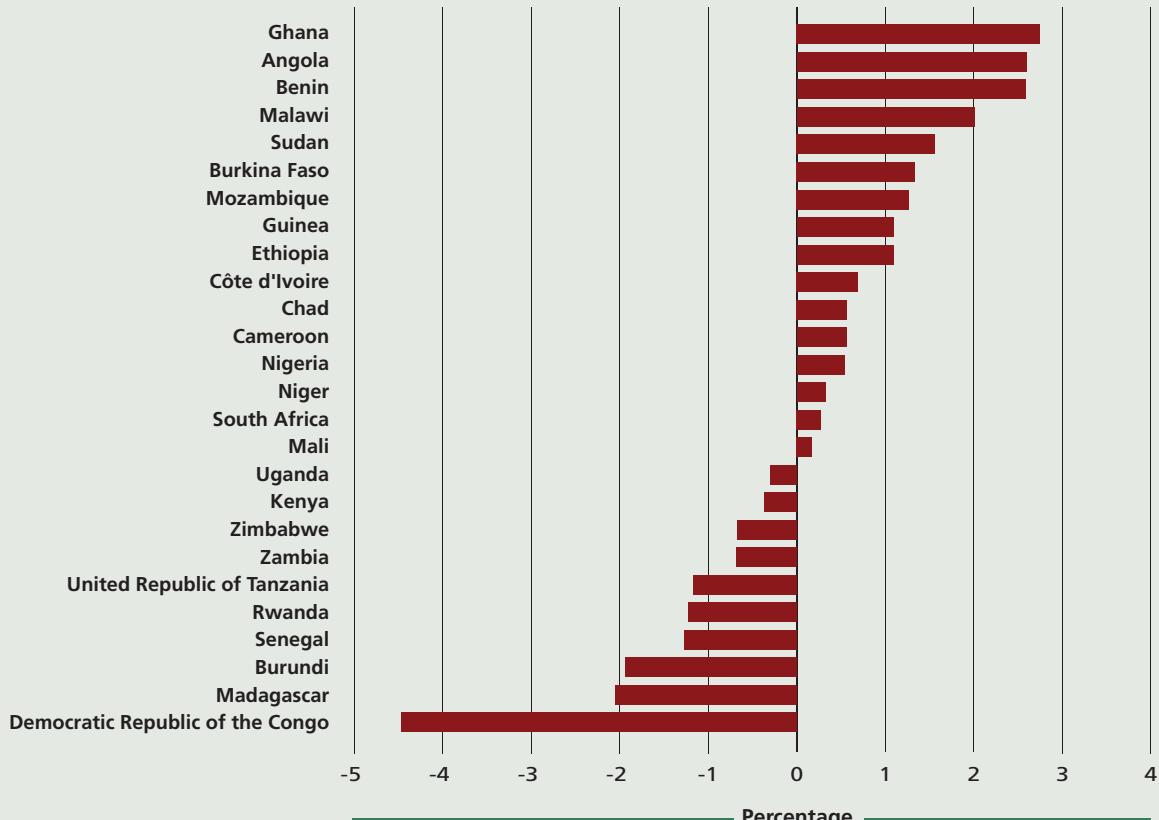
TABLE 16
Global growth rates for outputs of different agricultural commodities

		1961-76	1977-91	1992-2005	1961-2005
		Annual percentage change			
CEREALS	WORLD	3.5	1.8	1.3	2.2
	Developing countries	3.9	2.8	1.5	2.8
OIL CROPS	WORLD	2.9	4.8	4.2	4.0
	Developing countries	3.1	5.0	4.9	4.4
SUGAR	WORLD	3.4	2.3	0.8	2.2
	Developing countries	3.1	3.5	1.2	2.6
PULSES	WORLD	0.8	1.5	0.9	1.1
	Developing countries	0.5	1.0	1.4	1.0
ROOTS AND TUBERS	WORLD	1.3	0.5	1.5	1.1
	Developing countries	3.0	1.6	2.2	2.3
VEGETABLES	WORLD	1.8	3.2	4.7	3.2
	Developing countries	1.9	4.4	6.1	4.1
EGGS	WORLD	3.0	3.4	3.6	3.4
	Developing countries	4.6	7.0	6.0	5.9
MEAT	WORLD	3.5	3.0	2.6	3.0
	Developing countries	4.3	5.3	4.8	4.8
MILK	WORLD	1.6	1.4	1.2	1.4
	Developing countries	2.7	3.3	3.8	3.2

Source: FAO, 2006h.

FIGURE 16

Growth rate in per capita agricultural production in sub-Saharan Africa, 1990–2004



Source: FAO, 2006h.

FIGURE 17

Meat production in developing countries

Million of tonnes



Source: FAO, 2006h.

incomes and urbanization, it will probably continue to grow at a faster rate than will the population. Growth in the milk sector is expected to accelerate, mainly because of increased demand in developing countries.

Sugar production growth has accelerated recently. It is expected that this sector will see continued growth in the future because of both increased demand from developing countries (including China, which has very low sugar consumption per capita) and the potential for using sugar cane for the production of biofuels (FAO, 2006i).

Spotlight on livestock production

Total meat production in developing countries more than quintupled from 27 million tonnes to 147 million tonnes between 1970 and 2005 (Figure 17). Although the pace of growth is slowing down, global demand for meat is expected to increase by more than 50 percent by 2030 (FAO, 2006i). Satisfying the increasing demand for animal food products, while at the same time sustaining the natural resource base and coping with climate change and vulnerability, is one of the major challenges facing world agriculture today.

Globally, livestock production is the largest user of agricultural land and accounts for almost 40 percent of the total value of agricultural production. In developed countries, this share is more than 50 percent. In developing countries, where livestock production accounts for one-third of the value of agricultural production, its share is rising rapidly as a result of growth in income and changes in lifestyle and dietary habits.

Until recently, a large proportion of livestock in developing countries were not raised for food, but for providing draught power and manure and as capital assets that were only disposed of in times of emergency. Livestock were an integral part of agricultural systems, distributed among many owners and raised close to their feed supplies. This pattern is changing rapidly. Almost all of the growth in livestock production is now occurring in industrial systems, where meat production is no longer tied to a local land base for feed inputs or to supplying animal power or manure for crop production (Naylor *et al.*, 2005).

The world has been getting more meat, milk and eggs per kg of cereals used as feed.

A rising share of poultry production in total meat production has contributed to this gain (poultry requires much smaller quantities of cereal feed per kg of meat than beef), but the growing use of high-protein oilmeals in livestock feeding is another important factor. World production of soybean, which is mainly processed into oil for human consumption and oilmeal for animal feed, grew at 5 percent per year in the last decade.

FOOD CONSUMPTION

The world has made significant progress in raising food consumption per capita, from an average of 2 280 kcal/person/day in the early 1960s to 2 800 kcal/person/day (Figure 18). The gains in world average food consumption predominantly reflect those of developing countries, given that developed countries already had fairly high levels of per capita food consumption in the mid-1960s. The overall progress of developing countries has been decisively influenced by the significant gains made in East Asia.

Diversification of food consumption

Both reflecting and driving the changes in agricultural production described above, global dietary patterns have changed significantly over the past four decades (Figure 19). Diets have shifted away from staples, such as cereals, roots and tubers and pulses, towards more livestock (meat and dairy) products, vegetable oils and fruits and vegetables.

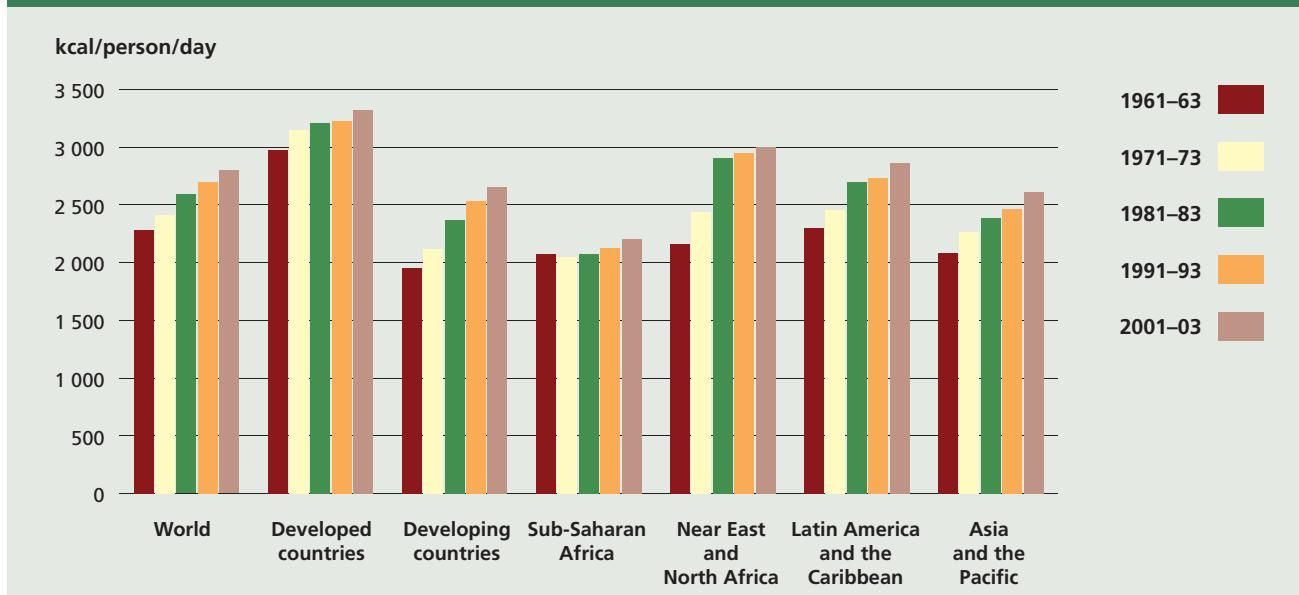
Income growth, relative price changes and urbanization have altered dietary patterns in both developed and developing countries. When people have more money to spend, they normally add more variety and more expensive and high-value foods to their

diets, although responses differ between developing and developed countries. In the latter, most consumers can already afford the foods they prefer. Therefore, when their incomes rise, changes in their diets and food purchases are relatively small.

In developing countries, on the other hand, rising incomes have an immediate and pronounced impact on diets, as people adjust their budgets to include higher-value food items (Figure 20). As wages increase, people are also willing to pay for convenience, freeing up their time for income-earning activities or leisure. They demand more processed foods with shorter preparation times. This is typically the case when more women participate in the labour market (Pingali, 2007). Also, declining real food prices have allowed poor consumers to access improved diets at existing income levels.

Urbanization is another important factor influencing consumers' preferences. Urbanization is taking place at a high pace, and urban dwellers were expected to outnumber rural populations by around 2007 (Millennium Ecosystem Assessment, 2005b). Large urban markets create opportunities for the establishment of large supermarket chains, and they attract foreign investment and advertising from global corporations. Non-traditional foods are also becoming

FIGURE 18
Per capita food consumption



Source: FAO, 2006h.

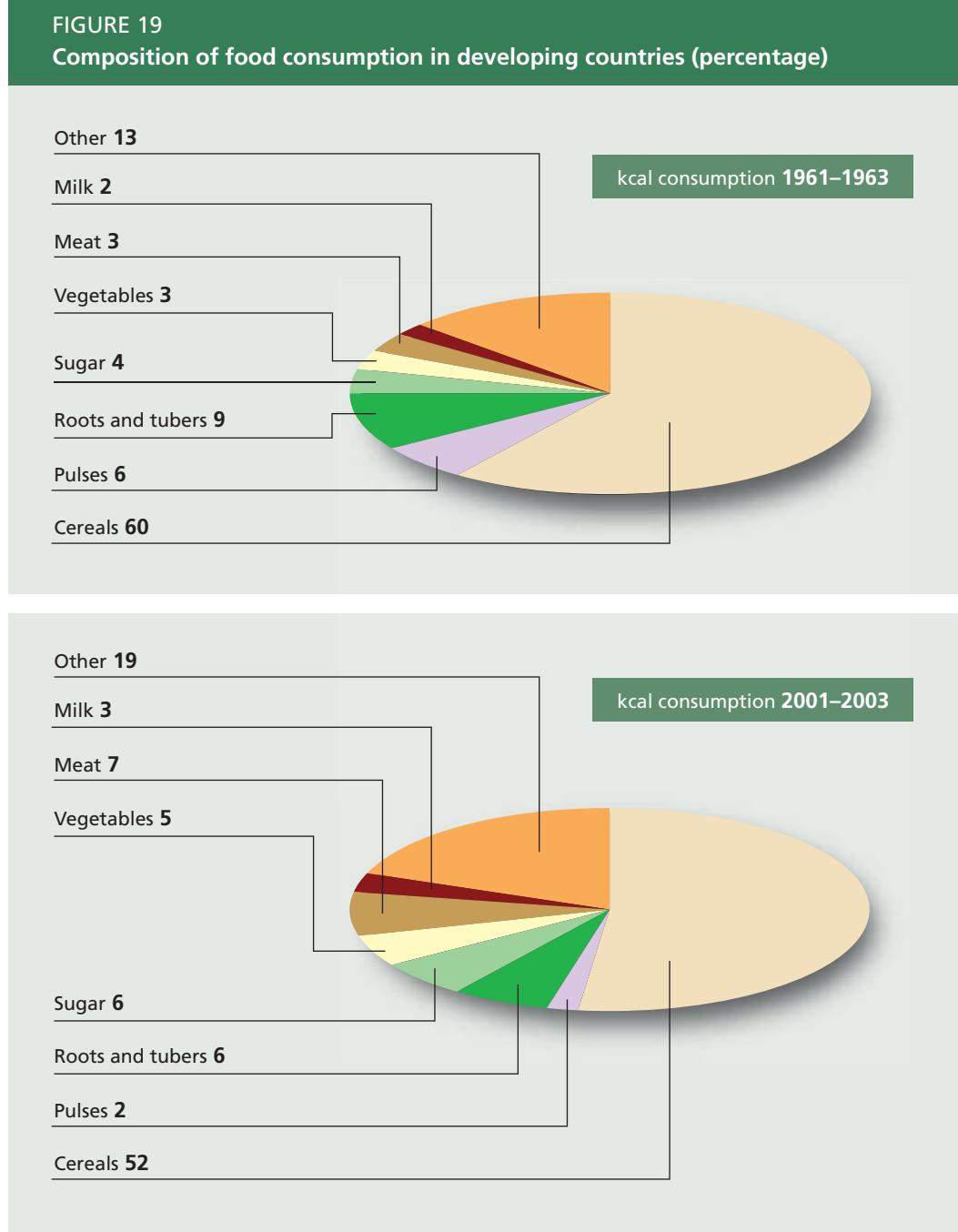
more accessible to urban populations as a result of trade liberalization and declining transportation costs (Pingali, 2007).

Emerging obesity concerns in developing countries

The progress in raising and diversifying per capita food consumption has had positive and negative effects in several developing countries. In raising dietary energy supplies

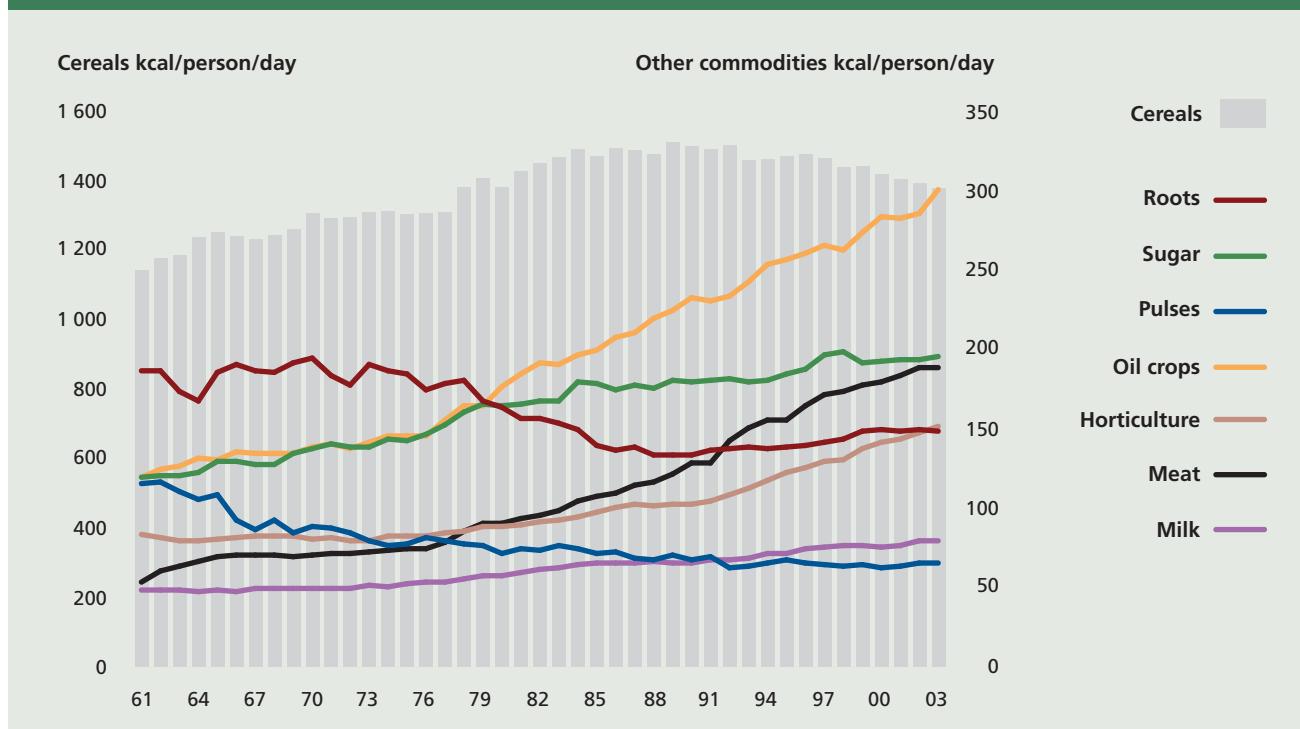
to 3 000 kcal/person/day, the related diet transition often includes a large increase in the consumption of refined carbohydrates and processed fats and oils. In developing countries, this diet transition, combined with a more sedentary lifestyle, generally results in rapidly growing rates of overweight, obesity and a number of diet-related non-communicable diseases such as Type 2 diabetes and heart disease (Boutayeb and

FIGURE 19
Composition of food consumption in developing countries (percentage)



Source: FAO, 2006h.

FIGURE 20
Consumption of different food commodities in developing countries



Source: FAO, 2006h.

Boutayeb, 2005; Popkin, 2004). It is now common to find overweight/obesity and malnutrition side by side in developing countries, even within the same household, with obese parents and malnourished children under the same roof (Doak *et al.*, 2000).

Globally, 1.6 billion adults are overweight, and at least 400 million are obese. Two out of three overweight and obese people now live in low- and middle-income countries, with the vast majority in emerging markets and transition economies (WHO, 2006). Health problems resulting from obesity-related non-communicable diseases tend to appear side by side with health problems related to undernutrition, making these countries confront a “double burden of malnutrition”, resulting in novel challenges to, and strains on their health systems.

AGRICULTURAL TRADE²

Trade

Since the early 1960s, the nominal value of agricultural exports has increased tenfold, while the share of agricultural trade in total merchandise trade has followed a long-term downward trend, falling from almost 25 percent to less than 10 percent in recent years (Figure 21).

Over this period, the net flow of agricultural commodities between developed and developing countries has reversed direction (Figure 22). In the early 1960s, developing countries had an overall agricultural trade surplus of almost US\$7 billion per year. By the end of the 1980s, however, this surplus had disappeared. During most of the 1990s and early 2000s, developing countries were net importers of agricultural products. Without Brazil, the deficit of the rest of the developing world would have been considerably bigger; it

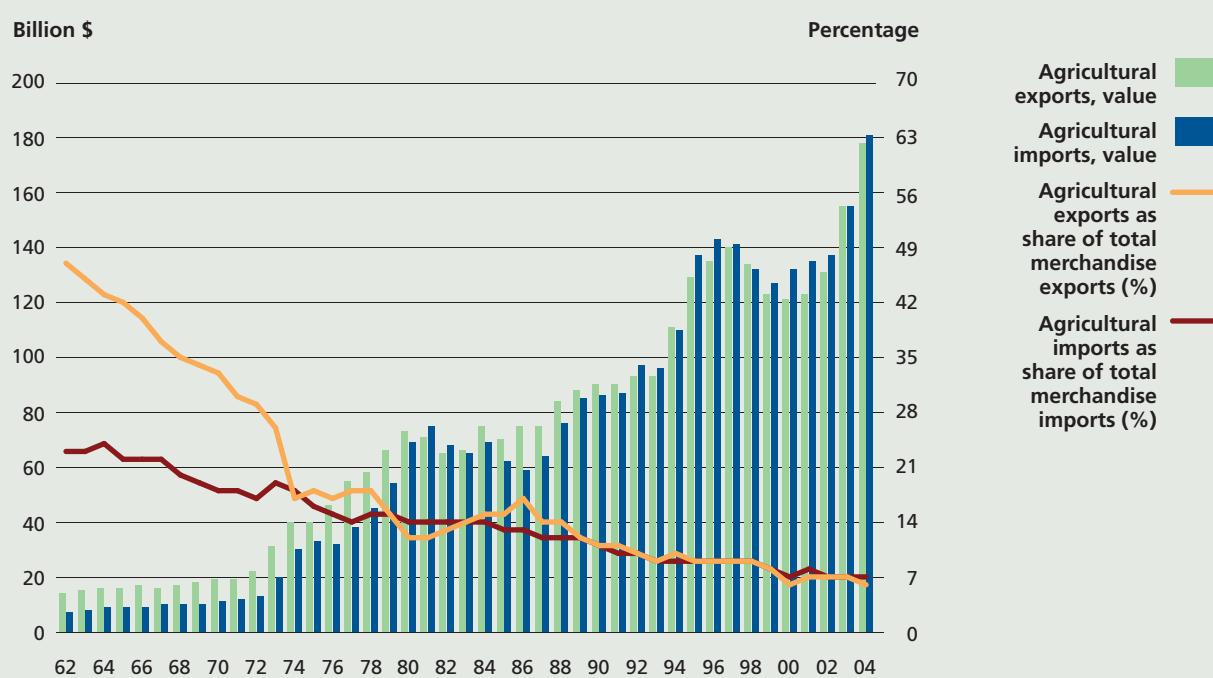
² This section is based on FAO, 2004d and FAO, 2006j.

FIGURE 21
Global agricultural exports



Source: FAO, 2006h.

FIGURE 22
Agricultural imports and exports in developing countries



Source: FAO, 2006h.

would have grown from US\$20 billion in 2000 to US\$27 billion in 2004 (FAO, 2006i).

The change has been even more pronounced for the least-developed countries, which over the same period have changed from being net exporters to significant net importers of agricultural commodities (Figure 23). By the end of the 1990s, imports by these countries were more than double their exports.

Cereal foodstuffs once dominated international agricultural trade. Now, however, the share of cereals in total agricultural imports has fallen below 50 percent in developing countries and below one-third in developed countries. While the share of cereal imports has declined, both developed and developing countries are importing greater quantities of higher-value and processed foods, particularly edible oils, livestock products and fruits and vegetables.

Prices

An analysis of agricultural commodity prices over the past 40 years reveals some striking features (Figure 24):

- Real prices of agricultural commodities, that is, prices relative to those of all manufactured goods, have declined significantly – almost 2 percent per year.
- Real prices have fluctuated considerably around the long-term downward trend.

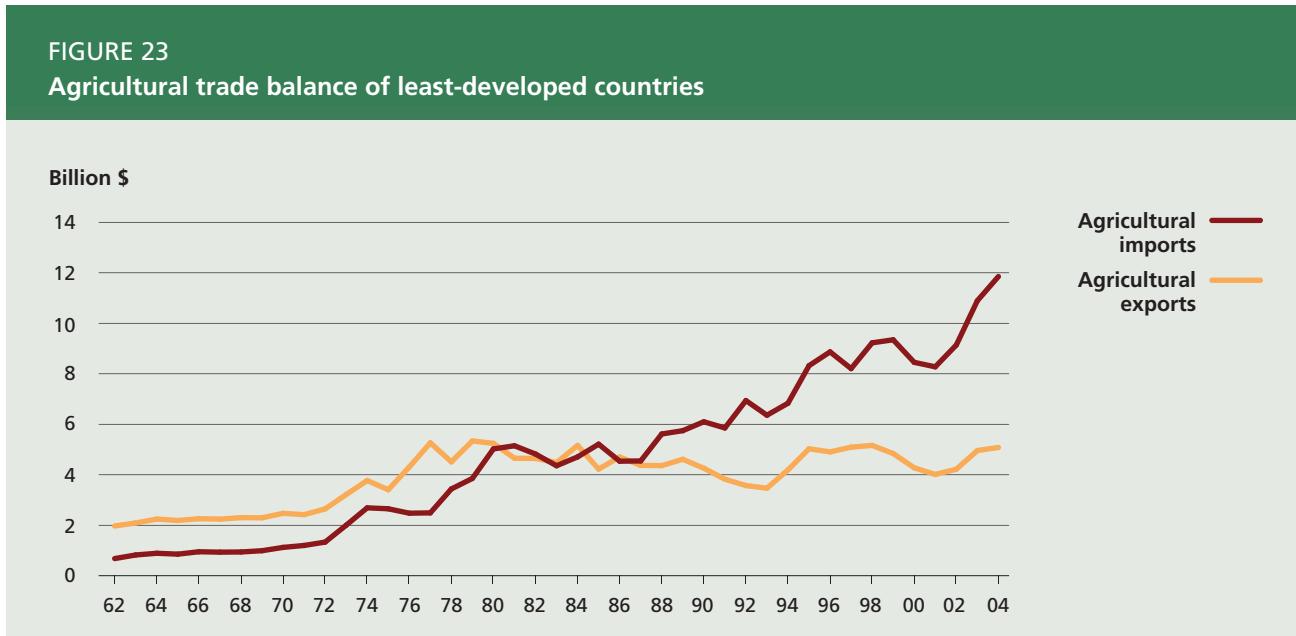
- Both the fluctuations and the long-term decline have been less pronounced since the mid-1980s.
- Cereal and oilseed prices have increased recently, driven partly by rising demand for biofuels and by weather-related production shortfalls.

A number of factors have contributed to these trends. Trade policy reforms and improvements in transportation and logistics have helped to hold down prices of traded goods, including agricultural products. Technological advances have reduced costs and made it possible, at given prices, to expand production at a rate that has outstripped demand growth, despite rising population and income. Trade liberalization has permitted a wider range of countries to participate in world commodity markets, reducing the relative importance of the supply situation in any one country. Technological advances have reduced the vulnerability of some crops to climatic influences.

Production and export subsidies in some developed countries have also contributed to the downward trend of world prices for many agricultural products grown in temperate zones, reducing the export earnings of developing countries that export commodities such as cotton, sugar and rice.

Even though real prices for all agricultural commodities have declined over the past

FIGURE 23
Agricultural trade balance of least-developed countries



Source: FAO, 2006h.

FIGURE 24
Agricultural commodity prices



* Real prices are deflated by export unit values of all merchandise exports.

** MUV is the manufactures export unit value (World Bank).

Source: FAO, 2004d.

40 years, the rate of decline has varied from one commodity to another. Prices of traditional commodities such as raw materials, tropical beverages, oil crops and cereals have experienced the largest variation and the steepest decline.

Trade diversification

Some developing countries have managed to take advantage of changing price and demand trends by shifting production and trade into the non-traditional higher-value sectors. It has mainly been the more advanced and prosperous developing countries that have managed to do this. Developing countries other than the least-developed countries have more than doubled the share of horticultural, meat and dairy products in their agricultural exports, while reducing the share of tropical beverages and raw materials in their agricultural exports from 55 percent in the early 1960s to around 30 percent in 1999–2001.

An analysis of FAOSTAT data (FAO, 2004e) found that trade in some non-traditional agricultural exports, including fruits, vegetables and selected speciality and processed products (excluding trade in bananas and citrus) was worth more than US\$30 billion annually. Developing countries held a 56 percent share of world trade in non-traditional fruit and vegetables in 2001

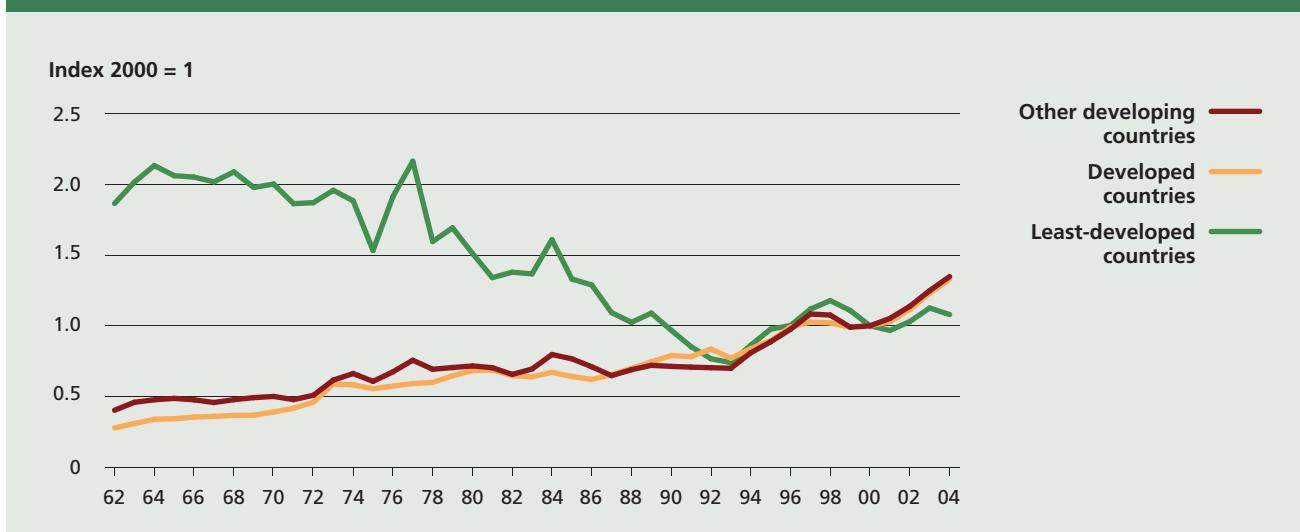
and also accounted for two-thirds of trade in selected speciality products, such as chillies, ginger and garlic.

Across a broad range of these products, developing countries have been gaining market share at the expense of developed countries. This is especially the case of trade in vegetables and speciality products, in which developing countries have taken the lion's share of the substantial growth in global trade during the last decade.

The non-traditional agricultural export market is, however, dominated by just a handful of countries. Some of these, such as Argentina, Brazil, Chile, Costa Rica and Mexico are leading exporters of more than one product. Other countries are dominant in the market for only one product – for example, Kenya for green beans, Malaysia for minor tropical fruits, Thailand for minor fresh fruits and Zimbabwe for green peas.

A large number of countries have only a very limited participation in the market for non-traditional products. Least-developed countries account for only 0.5 percent of world fruit trade and 0.8 percent of world vegetable trade. On the other hand, they have increased their dependence on traditional export products such as raw materials and tropical beverages for their agricultural export earnings from 59 percent to 72 percent during the last 40 years.

FIGURE 25
Income terms of trade for agriculture



For these countries, export earnings have failed to increase, and rising import prices have further eroded their purchasing power. Real agricultural export earnings of least-developed countries have fallen by more than 30 percent over the last two decades, and by half over the last 40 years (Figure 25).

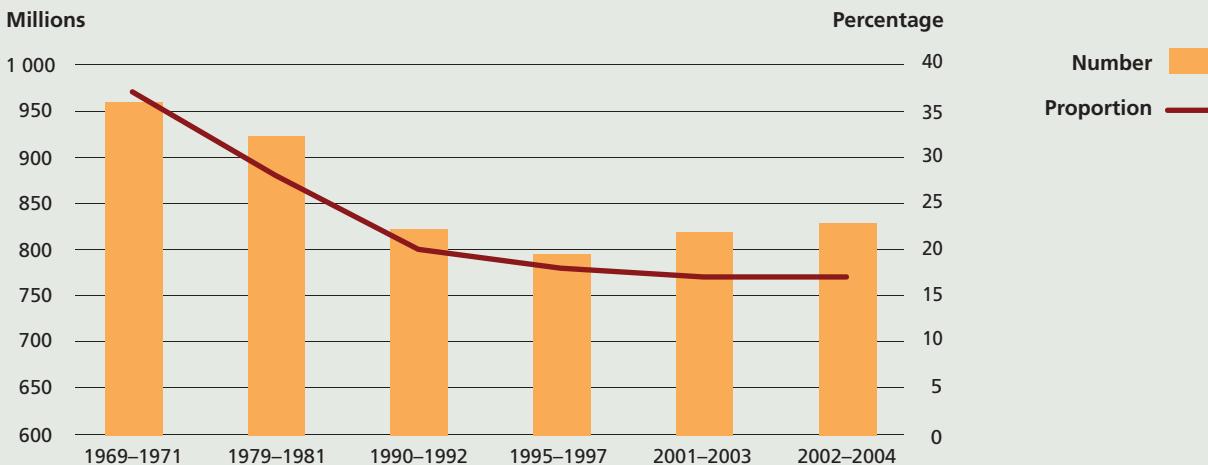
FOOD INSECURITY

The World Food Summit (WFS) established the target of reducing by half the **number** of undernourished people in the world by 2015, from a 1990–92 base period. The Millennium Development Goal target is to reduce by half the **proportion** of people who suffer from hunger, during the same time period (1990–2015).

The historical trend of increased per capita food production and consumption at the global level resulted in a reduction of the **proportion** of undernourished people in developing countries from 37 percent in 1969–71 to 17 percent in 2002–04 (Figure 26) (FAO, 2006k). Most of the reduction occurred in the first two decades of this period; indeed, from the 1990–92 base period, the proportion of undernourished fell by only 3 percentage points. The **number** of undernourished people in the developing world declined from 960 million in 1969–71 to 830 million in 2002–04, but almost all of the decline occurred before 1990–92, and, in fact, the number rose from 1995–97 to 2002–04 (FAO, 2006k).

In the period 1990–92 to 2001–03, the only significant progress towards reducing the number of undernourished people was concentrated in very few, but populous, countries and subregions: China, Southeast Asia and South America (Figure 27). In

FIGURE 26
Undernourishment in developing countries



Source: FAO, 2006h.

India, the prevalence of hunger declined by 5 percentage points, but the progress in terms of reducing the number of undernourished people was small because of population growth. At the same time, the number of undernourished increased in the rest of East Asia (excluding China) and even more in the rest of South Asia (excluding India) (FAO, 2006l).

The Near East, Central America, East Asia (excluding China) and Central Africa subregions experienced an increase in both the *number* and *proportion* of undernourished between 1990-92 and 2001-03 (FAO, 2006l).

In sub-Saharan Africa, recent progress in reducing the prevalence of undernourishment is noteworthy. For the first time in several decades, the share of undernourished people in the region's population declined significantly – from 35 percent in 1990-92 to 32 percent in 2001-03, after having reached 36 percent in 1995-97. While Central Africa experienced a dramatic increase in both the number and prevalence of undernourishment, Southern Africa, West Africa, East Africa and Nigeria saw a decline in the prevalence of undernourishment (FAO, 2006l).

In addition to Ghana, which has already reached the WFS goal of halving the number of undernourished people, Angola, Benin, Chad, the Congo, Ethiopia, Guinea, Lesotho, Malawi, Mauritania, Mozambique and

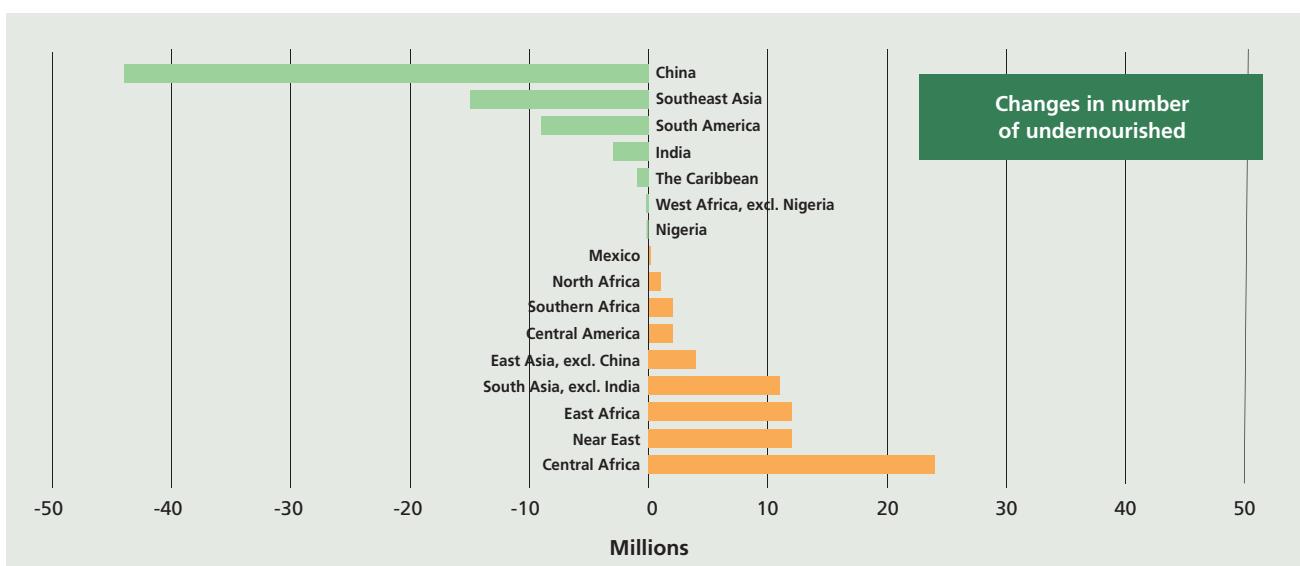
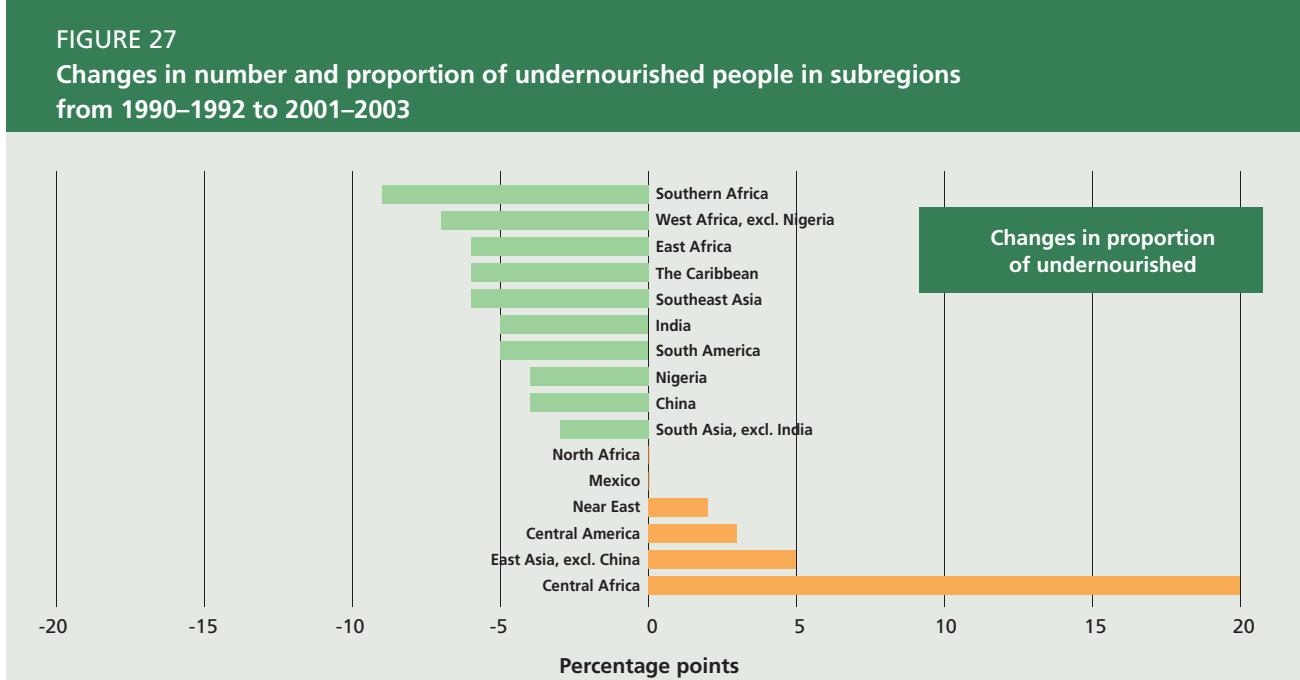
Namibia have also reduced the number of undernourished people. Although the explanations for success have varied among these countries, most seem to have combined good economic growth performances with a significant expansion of per capita agricultural and food production (FAO, 2006l).

The decline in the prevalence of undernourishment in the region is an encouraging development. Still, the task facing sub-Saharan Africa remains daunting. Sub-Saharan Africa accounts for 25 percent of the undernourished people in the developing world, and it has the highest proportion (one-third) of people suffering from chronic hunger. In 14 countries in the region, 35 percent or more of the population were chronically undernourished in 2001-03. The number of undernourished people increased from 169 million to 206 million from 1990-92 to 2001-03, and only 15 of the 39 countries for which data are reported reduced the number of undernourished (FAO, 2006l).

Efforts to reduce hunger in the region have been hampered by natural and human-induced disasters, including conflicts occurring during the 1990s and the spread of HIV/AIDS. Indeed, the increase in the number of undernourished people from the WFS baseline period was driven mainly by five war-torn countries: Burundi, the Democratic Republic of the Congo, Eritrea,

FIGURE 27

Changes in number and proportion of undernourished people in subregions from 1990–1992 to 2001–2003



Source: FAO, 2006l.

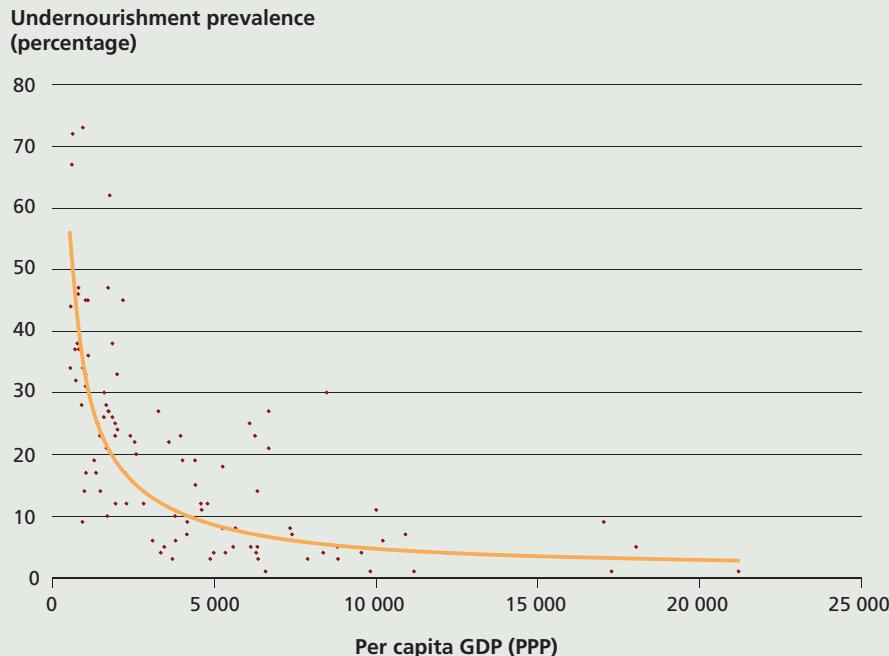
Liberia and Sierra Leone. Particularly dramatic is the worsening of food insecurity in the Democratic Republic of the Congo, where the number of undernourished people tripled from 12 to 36 million, and the prevalence rose from 31 to 72 percent of the population (FAO, 2006l).

There is a clear negative correlation between countries' income per capita and prevalence of undernourishment in the population (Figure 28). Empirical evidence confirms that sustained economic growth leading to increased productivity and

prosperity at the national level results in reduced hunger. But cross-country studies of developing countries suggest that economic growth alone, in the absence of specific measures to combat hunger, may leave large numbers of hungry people behind for a long time, particularly in rural areas (FAO, 2005c).

Numerous studies have provided evidence that the impact of economic growth on reducing hunger and poverty depends as much on the nature and distribution of the growth as on its scale and speed. Some 70 percent of the poor in developing

FIGURE 28
Per capita GDP and undernourishment (average 2001–2003)



Note: PPP is purchasing power parity dollars. Each data point represents a developing country.

Source: FAO; World Bank, 2006.

countries live in rural areas and depend on agriculture for their livelihoods, either directly or indirectly. In the poorest countries, agricultural growth is the driving force of the rural economy. Particularly in the most food-insecure countries, agriculture is crucial for income and employment generation. Agricultural growth is, therefore, a critical factor in hunger reduction.

Future trends for food security³

Historical trends towards increased food consumption per capita globally and particularly in developing countries will, according to FAO scenarios, continue in the near future. However, they will continue at a slower rate than in the past as more and more countries approach medium-high levels. The average of the developing countries may rise from the current 2 650 kcal per person per day to 3 070 kcal by 2050. By the middle of the twenty-first century, more than 90 percent of the world's population may be living in countries with

per capita food consumption of more than 2 700 kcal per day, compared to 51 percent at present and only 4 percent three decades ago. As in the past, great improvements in China and a few other populous countries will continue to play a significant role in these developments.

However, not all countries are likely to achieve adequate food consumption levels. This is especially the case for countries that currently have high rates of undernourishment, high population growth rates, poor prospects for rapid economic growth and often meagre agricultural resources. Today, 32 countries are in this category, with an average undernourishment rate of 42 percent. The population of these poor countries is expected to increase from the current 580 million to 1.39 billion by 2050, and food consumption could, under fairly optimistic assumptions, increase from the current 2 000 kcal/person/day to 2 450 kcal in the next 30 years. This will not be sufficient for good nutrition in several of these countries, hence the conclusion that

³ Based on FAO, 2006i.

reducing undernourishment may be a very slow process in these countries.

Despite the slow pace of progress in reducing the occurrence of undernourishment, FAO's projections do imply considerable overall improvements. In the developing countries the number of the well fed could increase from 3.9 billion in 1999–2001 (83 percent of the population) to 6.2 billion (93 percent) in 2030 and to 7.2 billion (96 percent) by 2050. The problem of undernourishment will tend to become smaller both in terms of absolute numbers affected and, even more, in terms of the proportion of the population that is undernourished.

OPPORTUNITIES AND CHALLENGES IN THE FUTURE

Population growth in the poorest countries

Global population growth has been the major driving force for growth in food demand and production. The population will continue to grow, but longer-term projections suggest that population growth may slow by the middle of this century. World population is expected to increase from the current 6.7 billion to 9.2 billion by 2050 (UN, 2007). From 2050, world population will be increasing by 30 million per year.

Almost all of this increase is expected to take place in developing countries, and especially in the group of the 50 least-developed countries. These countries may still have inadequate food consumption levels in 2050, and, therefore, there is significant scope for further increases in demand for food even when population growth slows down.

Slowing agricultural production growth⁴

Annual growth of world agricultural output is expected to fall to 1.5 percent over the next decades and further to 0.9 percent in the succeeding 20 years to 2050 (FAO, 2006i), compared with 2.3 percent per year since 1961.

All the major commodity sectors (except for the milk sector) are expected to take part in the deceleration of agricultural growth. The cereals sector has already been in such a downward trend for some time now, and is expected to continue to have the lowest growth rate of the major commodity sectors during the next 50 years.

Water

Agriculture accounts for 70 percent of all water use in the world and as much as 95 percent in many developing countries, almost all for irrigating crops (Millennium Ecosystem Assessment, 2005b). Per capita use of water has decreased from about 700 to 600 cubic metres per year since 1980 (Millennium Ecosystem Assessment, 2005b),

⁴Based on FAO, 2006i.

and water productivity in agriculture increased by at least 100 percent between 1961 and 2001 (FAO, 2003d). But total water use is still increasing and is expected to continue to increase because of population growth, urban expansion and increasing industrialization.

Today, more than 1.2 billion people live in areas of physical water scarcity (Comprehensive Assessment of Water Management in Agriculture, 2007), and by 2025 over 3 billion people are likely to experience water stress (UNDP, 2006). The gap between available water supply and water demand is increasing in many parts of the world, limiting future expansion of irrigation. In areas where water supply is already limited, water scarcity is likely to be the most serious constraint on agricultural growth and development, especially in drought-prone areas (Millennium Ecosystem Assessment, 2005b).

Bioenergy

Recent high petroleum prices are creating new markets for agricultural products that can be used as feedstock for the production of biofuels. The competitiveness of biofuels may be further enhanced if the savings of greenhouse gas emissions resulting from substituting ethanol for gasoline are to be monetized in the form of tradable carbon credits (Certified Emission Reductions of greenhouse gases) through the Clean Development Mechanism under the provisions of the Kyoto Protocol. If world agriculture were to become a major source of feedstock for the biofuel industry, this would have as yet unknown implications for food security and for the environment. Bioenergy is a new area that deserves increased attention and further analysis so that the implications of its development for food security and poverty alleviation can be understood.

Climate change

There are still large uncertainties as to when, how and where climate change will have an impact on agricultural production and food security, but it is generally agreed that agricultural impacts will be more adverse in tropical areas than in temperate areas (Stern, 2007; IPCC, 2007b, Parry *et al.*, 2004, 2005; Fischer *et al.*, 2005).

Model-based scenarios predict slight to moderate reductions of potential crop yields (Stern, 2007). While the adverse impacts of climate change will affect the poor disproportionately, actual impacts will depend at least as much on socio-economic conditions as on the biophysical processes involved. Policies and investments supporting trade, sustainable agricultural practices and technological progress can help mitigate the effects of climate change on agriculture and food security while increasing the capacity of people and societies to adapt (FAO, 2006i).

