



# Economic growth, hunger and malnutrition

## Income growth and changes in food consumption

### Key message

**In order for economic growth to enhance the nutrition of the neediest, the poor must participate in the growth process and its benefits:**

(i) Growth needs to involve and reach the poor; (ii) the poor need to use the additional income for improving the quantity and quality of their diets and for improved health and sanitation services; and (iii) governments need to use additional public resources for public goods and services to benefit the poor and hungry.

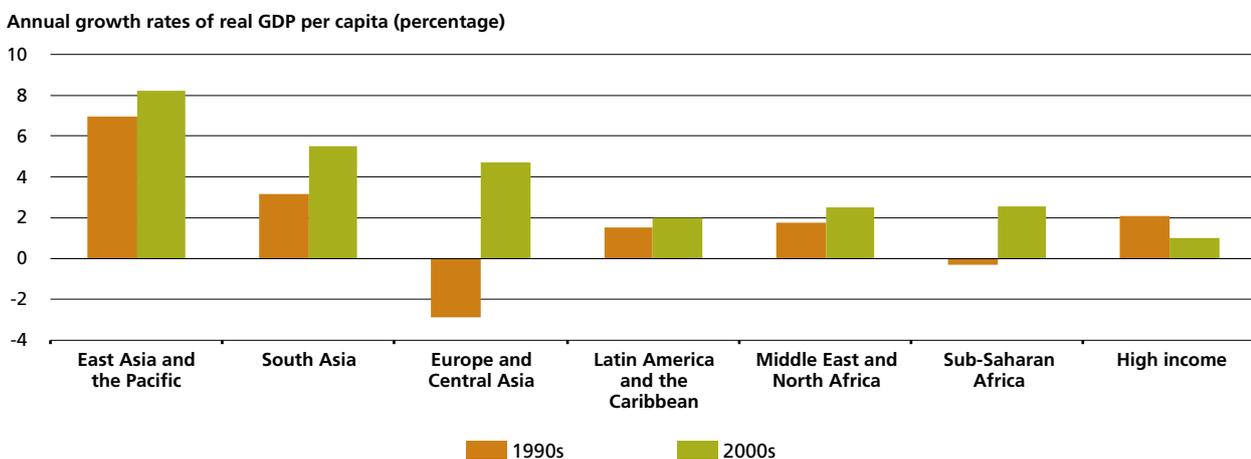
countries were more rapid in the 2000s than in the 1990s, with the most dramatic turnarounds taking place in sub-Saharan Africa and in Europe and Central Asia (developing countries only for both groups; Figure 6). The most rapid growth rates (by far) occurred in East Asia and the Pacific in both periods. Growth rates for high-income countries slowed in the 2000s.

In order for economic growth to enhance access to food that is adequate in quantity (dietary energy) and in quality (diversity, nutrient content and safety), three key steps are required. First, growth needs to reach and involve the poor and provide increased employment and income-earning opportunities for the poor. Second, the poor need to use their additional income for improving the quantity and quality of their diet, water and sanitation as well as on improved health services. (The role of women is crucial in ensuring that these spending patterns are realized.) Third, governments need to spend additional public revenues on safety nets and key public goods and services such as education, infrastructure and public health measures.

**E**conomic growth in recent decades has provided considerable scope for reducing hunger and malnutrition. Between 1990 and 2010, real per capita incomes grew by nearly 2 percent per year globally, though with major differences among countries and between decades. Growth rates for all groups of developing

FIGURE 6

Economic growth rates in developing countries have varied significantly by region and over time

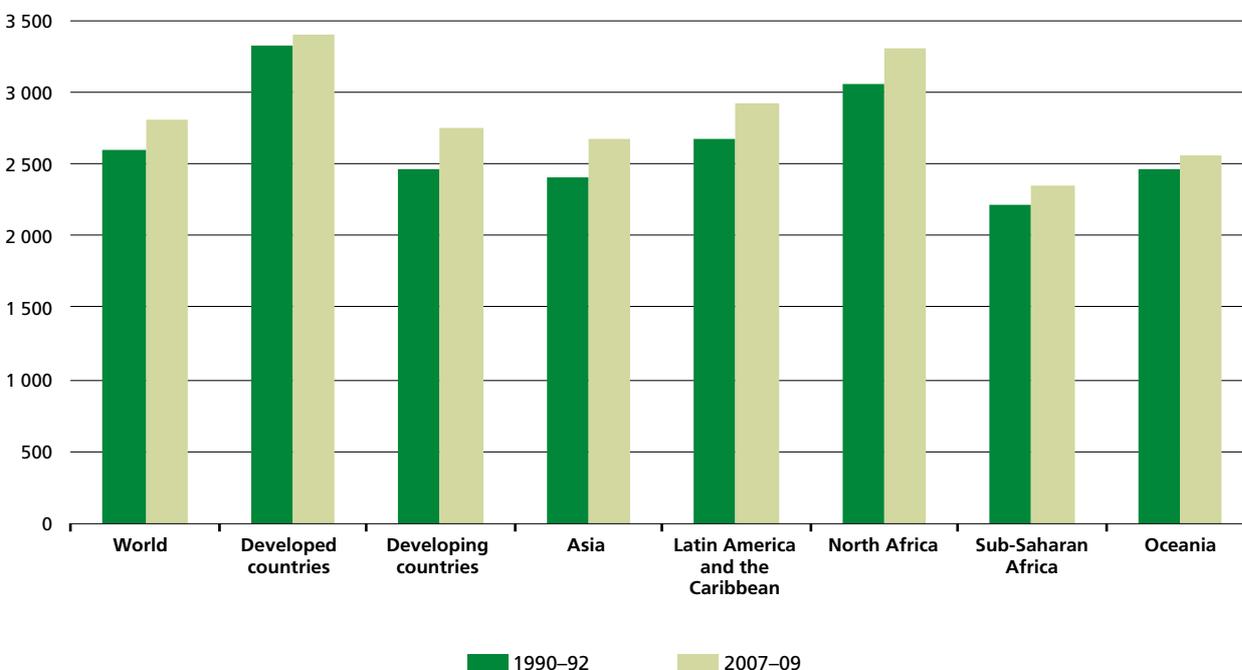


Note: All groupings refer to developing countries only (except for "High income"). Real GDP per capita expressed in purchasing power parity (PPP) terms.  
Source of raw data: World Bank, World Development Indicators.

**FIGURE 7**

Dietary energy supplies have risen in all regions

**Dietary energy supplies (kcal/person/day)**



Source: FAO.

Before discussing these key steps in more detail, the report will first review some broad trends in dietary energy and nutrition during the past two decades.

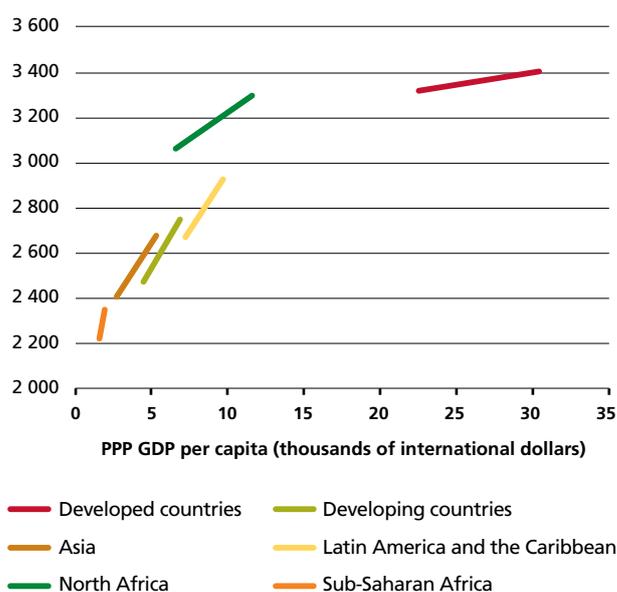
**Trends in dietary energy supplies**

The 2 percent per annum increases in real per capita incomes between 1990 and 2010 resulted in increased demand for dietary energy. On average, for the entire world, dietary energy supplies (DES) increased by about 210 kcal per person per day, or 8 percent (Figure 7). The increase was larger in the developing countries (275 kcal/person/day) than in the developed countries (86 kcal/person/day). Across developing country regions, the largest absolute increases (260 to 270 kcal per day) were in Asia (where economic growth was most rapid) and Latin America and the Caribbean, while the smallest increases (less than 130 kcal per day) were in Oceania and sub-Saharan Africa (where economic growth was slow). Figure 8 shows graphically how demand for energy is greater at higher levels of income. It also shows how the impact of additional income is greater at lower levels of income (in which case the slope of the line is steeper).

**FIGURE 8**

Demand for food consumption increases as incomes rise

**Dietary energy supply (kcal/person/day)**



Notes: PPP = purchasing power parity. Regional aggregates include only developing countries. Sources of raw data: FAO and World Bank.

### ■ Changes in food consumption patterns

The rise in available food energy has been accompanied by changes in the composition of diets. Hence, the source of DES shifts over time as incomes grow. Figure 9 illustrates these changes at the regional level in terms of the shares of major food groups in total dietary energy availability. Worldwide, the shares of cereals, roots and tubers declined significantly, whereas the shares of fruits and vegetables and of animal products, including fish, increased.

Regionally, there are contrasts between regions with rapid economic growth and regions that have grown less rapidly. Per capita dietary energy from cereals, roots and tubers declined in rapidly growing Asia, despite an increase in total per capita dietary energy availability. At the same time, dietary energy from animal-source products and fruits and vegetables increased noticeably. In sub-Saharan Africa, however, dietary energy availability from cereals, roots and tubers increased while dietary energy from animal-source foods and fruits and vegetables was essentially constant.

Numerous studies have shown a statistically significant positive association between total household per capita income and dietary diversity, defined as the number of individual foods or food groups consumed over a given period of time.<sup>2</sup> The close association between income and diets can be shown by using household consumption surveys. Figure 10 presents the results of an analysis of

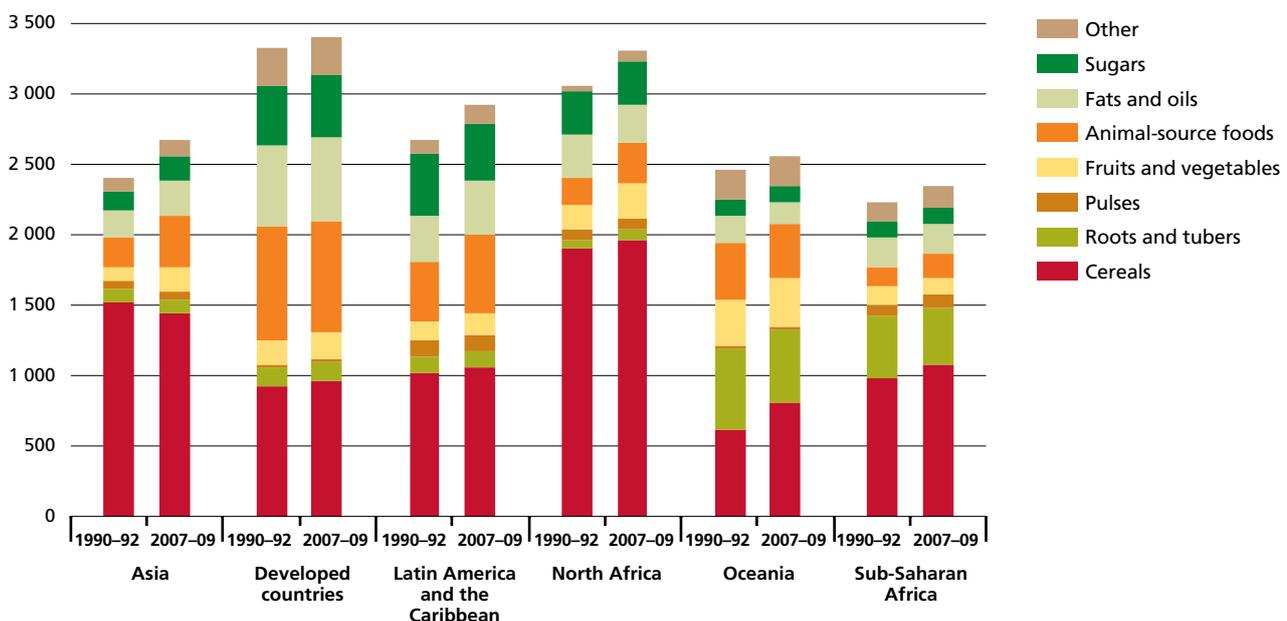
59 household surveys conducted in 47 developing countries in recent years, showing the lowest (Q1) and highest (Q5) quintiles according to per capita income. Despite regional differences in diets, the survey results confirm that diets in the higher-income groups are more diversified, irrespective of the region. As incomes grow, the contribution of cereals, roots and tubers to total per capita DES decreases whereas the contributions of animal-source foods and of fruits and vegetables increase significantly. The relative contribution from sugars to overall DES is also clearly rising with increasing incomes, in most regions.

The shifts in diet composition with income are reflected in changes in the availability of nutrients. As shown in Figure 11, the relative importance of carbohydrates from cereals, roots and tubers is much smaller in the diets of higher-income households. Conversely, the relative importance of carbohydrates from sugars and other foods is higher in higher-income households, as is the contribution of fats. These are all indicators of a major nutrition transition (discussed further below). There are both positive and negative aspects to these changes. An increase in the share of DES from foods other than staples (e.g. animal-source foods, fats and oils, legumes, vegetables and fruits) is generally beneficial to health and nutrition. Increases in the share of fats for people with low fat intake may be good – fats are high in calories and they are required for bioavailability of some micronutrients (those that are fat-

FIGURE 9

Diets are becoming more diverse worldwide

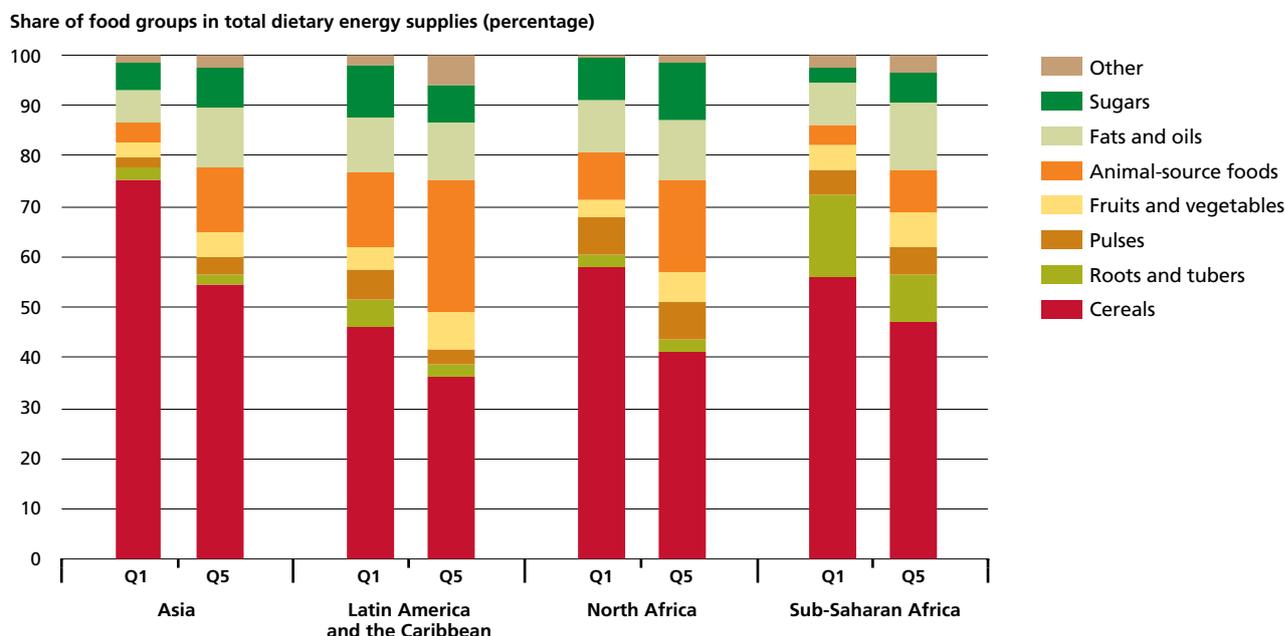
Contributions to total dietary energy supplies (kcal)



Source: FAO.

FIGURE 10

As incomes rise, dietary diversity increases



Note: Data refer to households of lowest and highest income quintiles in 47 developing countries. Source: FAO, analysis of household surveys.

soluble). However, for individuals who have higher levels of fat in their diets, a further increase may be detrimental to health.

Finally, there is also some increase in the relative contribution of protein to total dietary energy supplies, but this increase is relatively small compared with the other changes.

As shown in Figure 10, consumption of animal-source foods (including fish) increases significantly as per capita incomes grow. In fact, with the longer-term economic growth observed worldwide since the early 1960s, growth in consumption of animal-source foods has markedly outpaced growth in that of other major food groups.<sup>3</sup> Consumption of milk per person has almost doubled in developing countries, meat and fish consumption has tripled, and egg consumption has increased by a factor of five. Growth has been strongest in Eastern and South-Eastern Asia and in Latin America and the Caribbean, whereas it stagnated in sub-Saharan Africa. The rates of growth were generally lower in developed countries, where consumption levels were already higher than in developing countries.

Expressed as the relative contribution of animal-source foods to total per capita DES availability, diets seem to be converging to a more uniform pattern, as Figure 12 shows for a selected number of countries. Whereas only small increases (or even a decrease, in the case of the United

States of America) were observed in countries that already had relatively high shares of 20–25 percent in the early 1960s (e.g. France, Germany, United States of America), the increases were significant in countries with lower initial shares and fast economic growth during this period. The latter group includes some developed countries (e.g. Italy, Spain) as well as various developing countries (e.g. Brazil, China). Generally, the levels of per capita consumption of animal-source foods are still rather low in most developing countries, in spite of high growth rates.

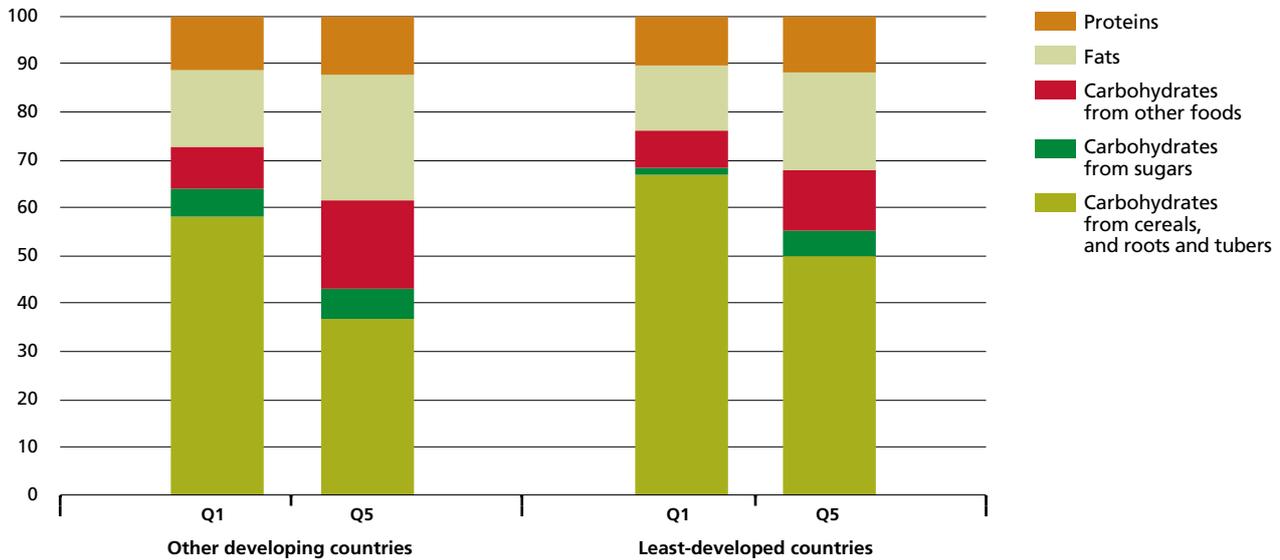
Meat, fish, milk and eggs provide proteins containing a wide range of amino-acids as well as bioavailable micronutrients such as iron, zinc, calcium and vitamins A and B<sub>12</sub>, in which many malnourished people are deficient.<sup>4</sup> Several of these (e.g. iron and zinc) may be difficult to obtain in sufficient amounts from plant-based diets (owing to poor bioavailability). Young children in particular benefit from animal-source foods. However, there are concerns that excessive consumption of meat (especially red meat), dairy products and eggs by older children and adults can have detrimental health effects and increase the risk of chronic non-communicable diseases such as heart disease, cancer, diabetes and obesity.

Fruits and vegetables are an important component of a healthy diet. WHO and FAO recommend a minimum daily intake of 400 g of fruits and vegetables (excluding potatoes and other starchy tubers); levels lower than this are thought

FIGURE 11

As incomes rise, consumption of fats increases and consumption of cereals, roots and tubers decreases

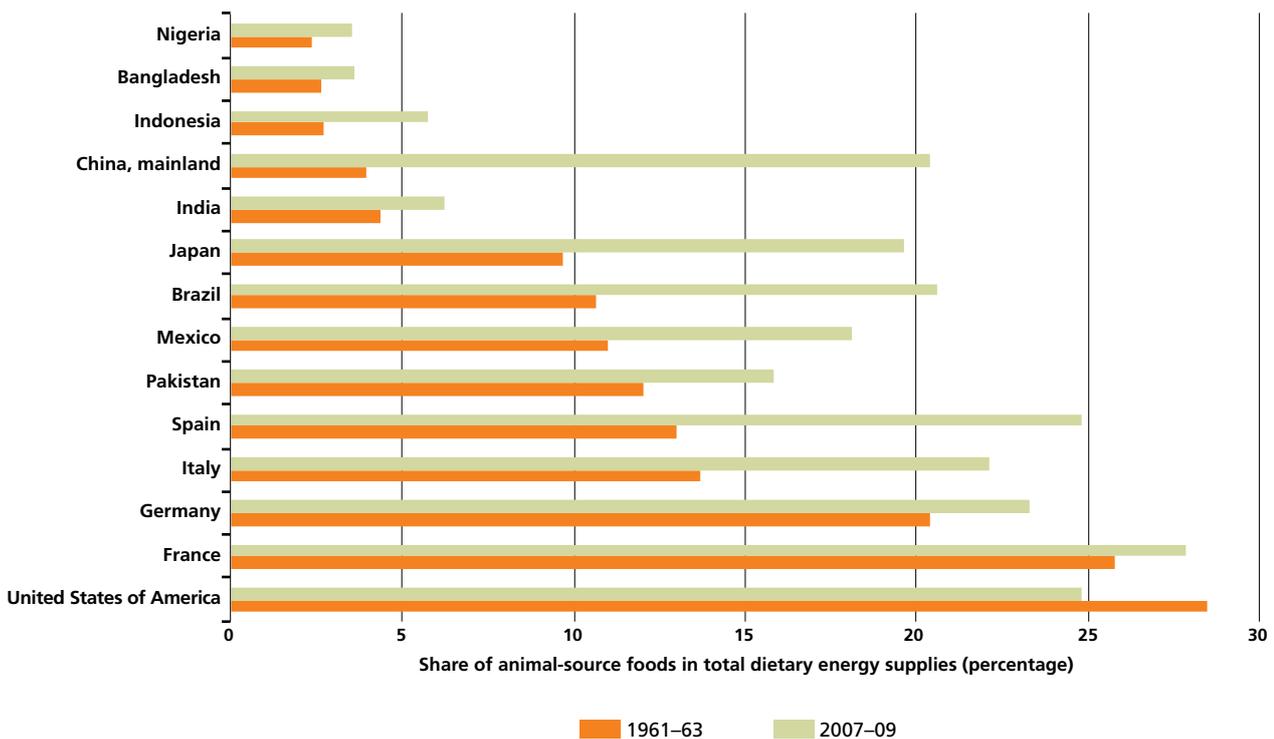
Share of macronutrients in total dietary energy supplies (percentage)



Note: Data refer to households of lowest and highest income quintiles in 47 developing countries.  
Source: FAO, analysis of household surveys.

FIGURE 12

Diets are converging towards an overall higher share of animal-source foods in most countries with fast economic growth



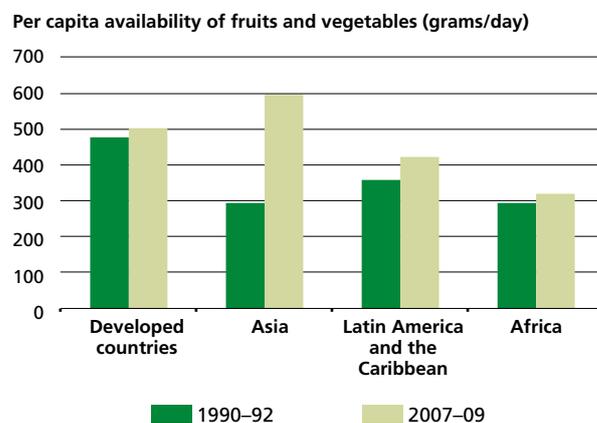
Source of raw data: FAO.

to increase the risk of chronic diseases.<sup>5</sup> An adequate intake of fruits and vegetables also contributes to the prevention of micronutrient deficiencies.

A recent study found that almost 80 percent of the population of 52 mainly low- and middle-income countries consumed less than the minimum recommended levels of fruits and vegetables.<sup>6</sup> The prevalence of the population with below-minimum intake levels ranged from 37 percent in Ghana to 99 percent in Pakistan (the range was similar for men and women separately). It was also found that fruit and vegetable consumption tends to decrease with age and increase with income. While average daily per capita availability levels have been increasing in many regions, especially in Asia, regional average levels are still below the recommended minimum levels in Africa, where daily fruit and vegetable availability has stagnated at levels far below the recommendations (Figure 13).

FIGURE 13

Consumption of fruits and vegetables is increasing, but remains insufficient in some regions



Source of raw data: FAO.

## How does economic growth contribute to hunger reduction and improved nutrition?

### Key message

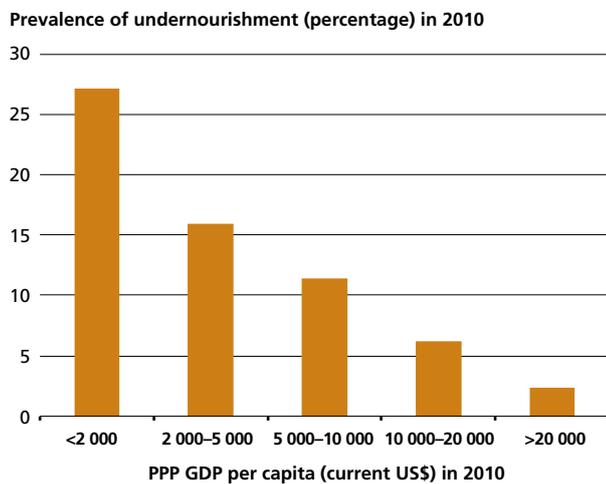
**Economic and agricultural growth should be “nutrition-sensitive”.** Growth needs to result in better nutritional outcomes through enhanced opportunities for the poor to diversify their diets; improved access to safe drinking water and sanitation; improved access to health services; better consumer awareness regarding adequate nutrition and child care practices; and targeted distribution of supplements in situations of acute micronutrient deficiencies. Good nutrition in turn, is key to sustainable economic growth.

Over the long term, it is obvious that higher levels of per capita income help to reduce the proportion of the population who suffer from insufficient food energy intake – FAO’s estimate of undernourishment in developed countries is an order of magnitude below that of developing countries (Figure 14). The previous section showed that economic growth leads to improvements in the composition of diets and, ultimately, better nutrition. But how does economic growth help to reduce undernourishment for the poorest of the poor? And what additional steps need to be taken to reduce hunger and malnutrition more quickly?

There are several key steps in the process that links economic growth (i.e. growth in GDP per capita) to a reduction in undernourishment and malnutrition. First, economic growth must reach the very poor. To reduce poverty and hunger, growth should generate demand for the assets controlled by the poor. Second, poor households must use some of their increased income to increase their intake of dietary energy and other nutrients and to make private investments in health, sanitation and education; women’s involvement is crucial to realizing these spending patterns. Third, a large share of the additional public revenues generated by economic growth must be used to make public-sector investments in social protection systems/safety nets, nutrition, health and education, so as to increase the human capital of the poor. Governments should also invest in public goods and services that promote growth in the sectors in which the poor are employed, for example the agriculture sector (see “Contribution of agricultural growth to reduction of poverty, hunger and malnutrition”, pages 28–35). In order to ensure that these three key steps are indeed effective and sustainable, good governance at the national level is also essential. Good governance extends to the provision of a wide range of essential public goods, including political stability, rule of law, respect for human rights, control of corruption, and government effectiveness.

FIGURE 14

Prevalence of undernourishment declines as GDP per capita increases



Note: PPP = purchasing power parity  
Source of raw data: FAO and World Bank.

### ■ Does economic growth reach the poor?

People who do not have sufficient food intake to lead active and healthy lives are among the poorest in the world. Fundamentally, the poorest do not have the resources either to grow an adequate quantity of food or to purchase it in the market. Thus, the first requirement for economic growth to help reduce undernourishment is that it reaches these very poor people.

Turning to the evidence on the poverty-reducing impact of growth, most research on this issue has found that economic growth leads to increases in the incomes of both the top and bottom quintiles of the income distribution.<sup>7</sup> There are, however, many exceptions – the poor do not benefit from all types of growth under all conditions. The extent to which the poor will benefit from growth depends on initial levels of inequality, the extent to which growth generates employment for the poor, and the sector of the economy in which growth occurs.

The greater the inequality in distribution of assets such as land, water, capital, education and health, the more difficult it will be for the poor to participate in the growth process,<sup>8</sup> and progress in reducing undernourishment is likely to be slow. For example, poor people often have little education, which prevents them from participating in new dynamic labour markets that offer higher wages. Inequality can also reduce the rate of overall economic growth,<sup>9</sup> further harming the poor. Economic growth that is attributable to exploitation of minerals and petroleum, for example, is less likely to directly reduce poverty. Such sectors are capital-intensive and thus lead to less income growth for the poor,

who own very little capital. However, state revenues from such sectors can be used in favour of the poor, as was the case in Indonesia, where government money from oil exports in the 1970s and 1980s was used to improve rural infrastructure, including health clinics and roads.

The impacts of economic growth depend on the source of that growth. There is strong evidence that the incomes of the very poor respond more to agricultural growth than to non-agricultural growth.<sup>10</sup> One reason why agricultural growth is likely to generate income for the poor is that in many countries where poverty is high, poor people are often concentrated in rural areas, and agricultural growth more directly affects the rural economy than do other types of growth. This issue is discussed in more detail in the section “Contribution of agricultural growth to reduction of poverty, hunger and malnutrition”, pages 28–35.

### ■ How do the poor use their additional income?

Even when economic growth does reach the poor, other factors are also important in order to reduce undernourishment as rapidly as possible. The poor must use that additional income to purchase more food energy or nutrients. In the case of the very poor, most research shows that the income elasticity of demand for dietary energy is indeed positive, and in fact is greater than that for the not-so-poor or the rich.<sup>11</sup> In other words, while the poor use additional income to purchase more food energy, the rich do so to a much lesser extent, if at all.

Not all of the additional income used by the poor to purchase additional food is oriented to increasing energy intake, however. Even poor consumers will use some of their additional income to shift to more expensive staple foods, for example from cassava to rice or from rice that is less thoroughly milled to rice that is whiter and more polished. Some of these shifts may do nothing to increase energy intake or improve nutrition, but reflect consumer preferences for attributes such as taste, smell and appearance.

As consumers become wealthier, they tend to increase their consumption of foods other than staple foods (see Figure 10 on page 18, which shows that the rich spend a much larger share of their food budgets than the poor on animal-source foods and fruits and vegetables). Again, some of these foods will enhance nutritional status, but others will not. People do place value on being better nourished, but they also want to eat better-tasting food. Moreover, they may be unaware of the health problems associated with consuming certain foods (leading to obesity) and of the importance of certain micronutrients such as iodine, iron, zinc or vitamin A (the lack of which causes “hidden hunger”).

Finally, consumers will also choose to spend some of their additional income on a wide range of non-food items, such as education, clothes, health or cellular phones. These choices can be influenced by information campaigns or

school curricula that promote the benefits of such key investments. As a result of investments in additional health measures such as sanitary toilets and more frequent trips to the doctor (especially by pregnant women) the impact of economic growth on nutrition will be strengthened. These spending patterns mean that the impacts of food price and income shocks (whether positive or negative) are not limited only to dietary energy intake or food consumption levels, but that adjustments take place in other areas as well.

How additional household income is spent is strongly influenced by the share of income that accrues to women (see Box 6 on page 37). Research has shown that when women have more control over household income, more money tends to be spent on items that improve nutrition and health.<sup>12</sup> During the past two decades, women's participation in the labour force has increased significantly, especially in developed regions such as Europe and North America, and to some extent in the urban areas of developing countries. Female labour force participation is likely to increase with further economic growth and, if accompanied by female empowerment and women's increasing control over household income, may provide further impetus to improving children's nutrition and health.

### ■ How do governments use their additional resources?

Besides increasing private incomes, economic growth also increases public resources. Governments can use these resources in numerous ways to initiate and support institutional reforms and programmes in favour of the poor and hungry, including measures to enable more equitable access to productive resources, investment in rural infrastructure and measures to ensure the sustainability of agro-ecosystems – which are the main source of livelihoods for the poor. A large share of public revenues from economic growth should be used to finance education, skills development and a wide variety of public health measures. Possible examples include improved access to safe drinking water; an increased density of health clinics, especially in rural areas; targeted distribution of vitamin supplements; and information dissemination campaigns promoting improved child care practices such as breastfeeding, complementary feeding and increased birth spacing.

Empirically, higher levels of income are associated with higher levels of such inputs into food security and nutrition,<sup>13</sup> although some countries have done a better job than others at providing such public goods. While it is true that a reorientation of government budgetary expenditures would be helpful for reducing undernourishment even in the absence of economic growth, there is little doubt that economic growth provides more scope to increase sensible social spending. Thus, growth with redistribution is more likely to be effective in reducing undernourishment than either growth or redistribution on their own.

### ■ What is the role of good governance?

#### Key message

**To accelerate hunger reduction, economic growth needs to be accompanied by purposeful and decisive public action.** Public policies and programmes must create a conducive environment for pro-poor long-term economic growth. Key elements of enabling environments include provision of public goods and services for the development of the productive sectors, equitable access to resources by the poor, empowerment of women, and design and implementation of social protection systems. An improved governance system, based on transparency, participation, accountability, rule of law and human rights, is essential for the effectiveness of such policies and programmes.

As is evident from the first section of this report, a number of countries did not succeed in reducing hunger and malnutrition in line with earlier commitments and stated goals. They either had slow growth or the linkages between growth and reductions in hunger and malnutrition were not strong. One reason for this could be weak government structures and lack of political will to put hunger reduction higher on the list of political priorities. As stated in the second draft of the *Global Strategic Framework for Food Security and Nutrition*, the causes of hunger and malnutrition include: “lack of good governance to ensure transparency, accountability and rule of law, which underpin access to food and higher living standards; lack of high-level political commitment and prioritization of the fight against hunger and malnutrition, including failure to fully implement past pledges and commitments and lack of accountability; lack of coherence in policymaking within countries, but also globally and regionally; lack of prioritization of policies, plans, programmes and funding to tackle hunger, malnutrition and food insecurity, focusing in particular on the most vulnerable and food insecure populations; war, conflict, lack of security, political instability and weak institutions; and weak international governance of food security and nutrition.”<sup>14</sup>

In order to ensure that economic growth does indeed contribute to food security and improved nutrition on a sustainable basis, good governance is essential. This extends to providing essential public goods, including political stability, rule of law, respect for human rights, control of corruption and government effectiveness. Effective institutions are a key feature of good governance. Realization of the right to food can add value to an effective food-security strategy by ensuring transparent policy processes, accountability of public institutions and

clarification of government obligations and of the rights and obligations of rights-holders.

If the poor are to benefit from economic growth, it is vital that they have a say in the decisions that affect them. Experience shows that involvement of all stakeholders – including

vulnerable women, youth, indigenous people and other marginalized population groups – in the formulation, planning, implementation, monitoring and evaluation of development activities results in more equitable access to resources and greater benefits for the poor from economic growth.



## Nutrition outcomes – global progress, but many problems remain

There are various indications that the observed increase in per capita food energy availability and in dietary diversity in many countries has contributed to an overall improvement of nutrition globally.<sup>15</sup> A recent assessment found that adherence to the dietary recommendations established by WHO has improved worldwide over the past two decades, although with significant discrepancies across regions.<sup>16</sup>

Children's nutrition has also improved. The percentage of underweight children (low weight for age) declined from 25 percent in 1990 to 16 percent in 2010, and stunting (low height for age) in children under the age of five has decreased globally from 39 to 26 percent over the same period. Progress in the prevalence of child underweight has been rather slow in Africa and most rapid in Asia, particularly China and South-Eastern Asia, where stunting declined from 49 to 28 percent between 1990 and 2010 (see Box 1 for the example of Bangladesh).<sup>17</sup> The highest rates of child underweight and infant and child mortality are in sub-Saharan Africa, but in recent years there have been substantial declines of child mortality in many individual countries in this region.<sup>18</sup>

Some progress has also been made over the past two decades with regard to the reduction of micronutrient deficiency, or "hidden hunger". Progress in eliminating Vitamin A deficiency was remarkable in Eastern Asia and much of Central and South America, although it has lagged behind in sub-Saharan Africa and in Central and Southern Asia. With the effective expansion of salt iodization programmes, the prevalence of iodine deficiency seems to have declined significantly around the world.

Although more rapid economic growth accounts for some of the improved outcomes in Asia, there are substantial differences in child undernutrition levels across countries that cannot all be explained by differences in economic growth. One factor is whether or not growth is accompanied by poverty reduction. Other factors include prioritization within agricultural strategies between staple grains, fruit, vegetables, livestock and fisheries, access to clean water, health and sanitation and cultural traditions. Even when the

poor participate in income growth, they need assistance through effective policies and institutions, particularly relating to health services and nutrition education, to ensure that child nutrition improves. For example, one study found that the absence of such favourable conditions may explain why the notable economic growth in India has not led to a uniform reduction in childhood undernutrition in the various states of the country.<sup>19</sup>

Despite the improvements in nutrition outcomes in many countries, underweight (low weight-for-age) remains the single largest risk factor contributing to the global burden of disease in the developing world. In 2010, more than 100 million children under the age of five in developing countries were still underweight. Children in the poorest households are twice as likely to be underweight as those in the least-poor households. Childhood malnutrition is an underlying cause of death in an estimated 35 percent of all deaths among children under the age of five.<sup>20</sup>

Micronutrient deficiencies ("hidden hunger") still affect over 30 percent of the world's population, causing increased morbidity and mortality, impaired cognitive development and reduced learning ability and productivity, reduced work capacity in populations due to high rates of illness and disability, and tragic loss of human potential. Overcoming micronutrient malnutrition is a precondition for ensuring development. In the case of iron deficiency anaemia, prevalence has not changed substantially; it has even increased in some countries.<sup>21</sup> In India, stunting and iron and iodine deficiencies result in productivity losses equivalent to 2.95 percent of GDP annually.<sup>22</sup> In Sierra Leone, iron deficiency among women working in agriculture will cost US\$94.5 million over five years.<sup>23</sup>

More rapid economic growth can generate opportunities for more effective action to prevent and control micronutrient deficiencies. Agricultural development strategies that promote high-value activities, both nutritionally and in terms of income, such as production of livestock, fruits and vegetables, result in more diversified diets. Additionally, supplementation, targeted towards the most vulnerable, particularly in the first

BOX 1

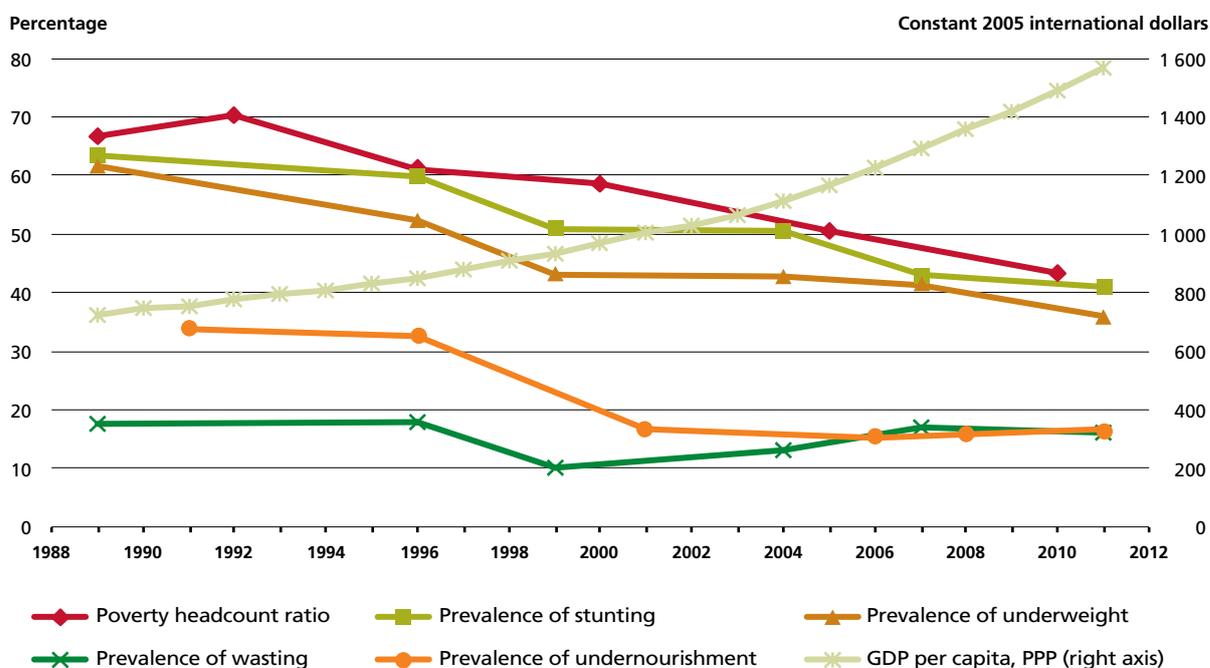
**Economic growth and nutrition in Bangladesh**

Bangladesh has experienced rapid economic growth during the past two decades, and also performed relatively well in terms of nutrition improvements, particularly in the 1990s. Per capita GDP doubled between 1990 and 2010 (see Figure), and agricultural growth averaged 3.3 percent per year (driven by impressive gains in rice yields). Poverty rates declined substantially during that time, indicating that economic growth had reached the poor. Significant declines in the prevalence of stunting (height for age, an indicator of chronic malnutrition) and underweight (weight for age) in children under the age of five were achieved in the 1990s, although progress stalled between 1999 and 2004. Thus, stunting declined by 12 percentage points from 63 percent in 1990 to 51 percent by 1999, with underweight registering an even larger fall from 62 to 43 percent, but between 1999 and 2004 no progress was recorded. Progress has since resumed, although in some cases at a slower rate: between 2004 and 2011, the underweight rate fell by 7 percentage points, with most of

the decline concentrated between 2007 and 2011, and stunting fell by 10 percentage points, of which 8 points were achieved between 2004 and 2007. Current estimates indicate that Bangladesh has already achieved a 50 percent reduction in undernourishment and is likely to achieve the same reduction for underweight, thus meeting the hunger target of the first MDG.

Nutritional successes are stronger when economic growth that reaches the poor is coupled with more specific educational and nutritional interventions. As incomes rise, the consumption of more nutritious foods appears to be increasing – the dietary energy supply available from eggs and fruits and vegetables has more than doubled since 1990. The share of government spending going to health is about double that of the country's large neighbours, India and Pakistan. Literacy rates for young females (aged 15–24 years) have doubled, rising from 38 percent in 1991 to 77 percent in 2009. The coverage of vitamin A supplementation for children aged

Indicators of income, poverty and malnutrition in Bangladesh, 1990–2011



Note: Data on prevalence of stunting, underweight and wasting refer to children under five years of age. Source of raw data: FAO and World Bank.

(Cont.)

**BOX 1 (Cont.)**

6–59 months (which started in the 1990s) is now nearly universal, and consumption of iodized salt has also increased substantially in recent years. The use of oral rehydration salts to treat diarrhoea has nearly doubled, from 35 percent in 2000 to 68 percent in 2007. Immunization rates for measles accelerated sharply from 65 to 94 percent in 2002 and 2005, respectively, with coverage largely maintained to the present. More recently, there has also been a substantial increase in exclusive breastfeeding during the first six months of life, from 43 percent in 2007 to 64 percent in 2011. These factors may have contributed to the reduction in stunting, given the vulnerability of children in the first 1 000 days following conception.

Much more remains to be done, however. Malnutrition in Bangladesh costs an estimated US\$1 billion a year in lost economic productivity.<sup>1</sup> The prevalence of wasting, an

indicator of acute malnutrition, declined from 1990 to 2000, but then increased steadily until 2007 when it reached 17 percent, exceeding the 15 percent emergency threshold. This spike is a concern given that there were no major disasters during that period in Bangladesh. (In 2008 following cyclone Sidr and the food price crisis, some studies indicated that wasting rose to 25 percent). The latest figure in 2011, at 16 percent, still exceeds the emergency threshold, and continues to give cause for concern. Additionally, levels of stunting (41 percent) and underweight (36 percent) remain very high and constitute significant public health issues.

<sup>1</sup> Embassy of the United States of America, Dhaka. 2012. *U.S.-Funded study shows true cost of malnutrition in Bangladesh*. Press release, June 2012 (available at [http://photos.state.gov/libraries/bangladesh/8601/2012%20Press%20Releases/USAID%20malnutrition%20study\\_%20Jun%2025\\_%202012.pdf](http://photos.state.gov/libraries/bangladesh/8601/2012%20Press%20Releases/USAID%20malnutrition%20study_%20Jun%2025_%202012.pdf)).

1 000 days from conception to two years of age, and national fortification of key commodities have proven to be highly cost-effective strategies.<sup>24</sup>

### ■ The nutrition transition and the double burden of malnutrition

As incomes and urbanization increase, people gradually adopt a lifestyle with reduced physical activity, less time for household work, and more meals away from home. Diets increasingly contain more energy-dense, semi-processed foods, and become higher in saturated fats, sugars and cholesterol. This shift is referred to as the nutrition transition.<sup>25</sup> While initially associated with richer urban populations, experts agree that the nutrition transition is rapidly affecting all societies.<sup>26</sup>

The nutrition transition is associated with an increase in overnutrition and obesity. It also appears to bear a causal relationship to the disease burden and mortality transition referred to as the “epidemiological transition”.<sup>27</sup> This is the shift in disease profile from one dominated by mortality largely attributable to infectious and communicable diseases to one characterized by an increase in non-communicable diseases, such as cardiovascular diseases and diabetes. According to the WHO, overweight (body mass index [BMI]  $\geq 25$ ) and obesity (BMI  $\geq 30$ ) are the fifth-leading risk factor for global deaths.<sup>28</sup>

Globally, the number of overweight people has reached more than 1.4 billion adults,<sup>29</sup> surpassing the number of undernourished worldwide. The costs of being overweight (as opposed to being obese), however, are arguably less than the costs of being undernourished. Worldwide, obesity has more than doubled since 1980, although the prevalence of

adult obesity is currently much higher in developed countries than in developing countries (Figure 15). The highest rates are observed in North Africa and the Near East, North America, the Pacific Islands and South Africa.

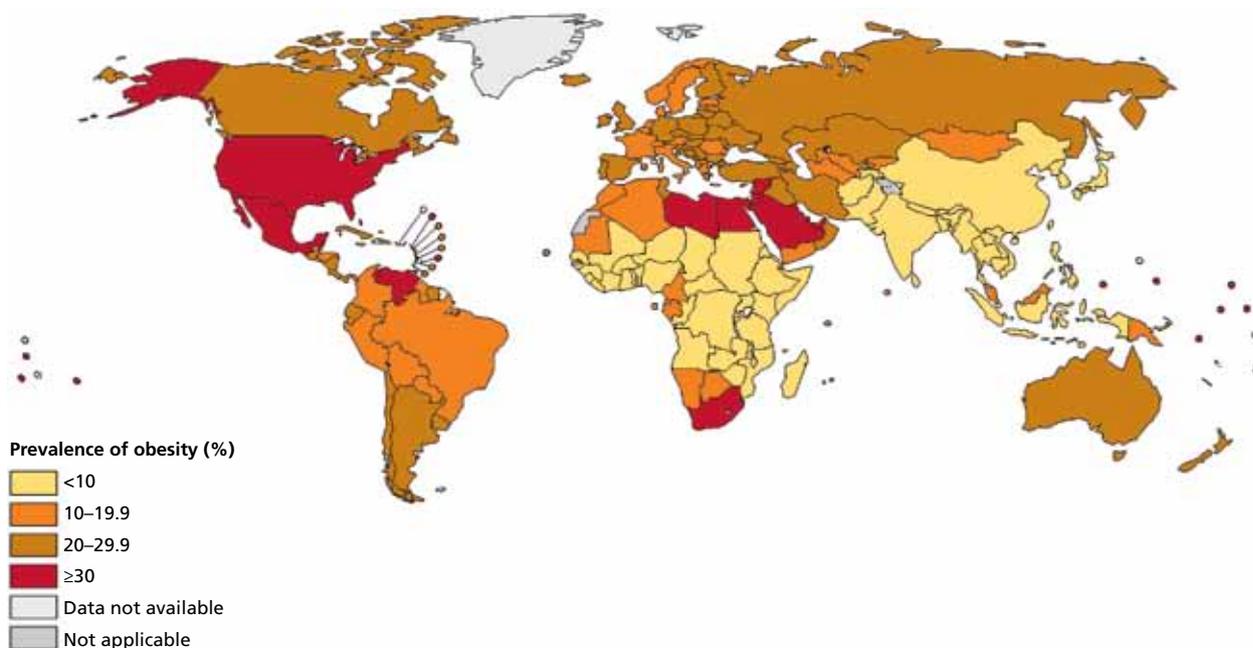
The world is increasingly faced with a *double burden of malnutrition*, whereby undernutrition, especially among children, co-exists with overweight and diet-related chronic diseases and micronutrient malnutrition.<sup>30</sup> Figure 16 shows selected low and middle-income countries in different regions that have a significant prevalence of both undernutrition and overnutrition in their populations, measured respectively as adult obesity and stunting of children under the age of five.<sup>31</sup>

These two dimensions of the double burden have long been perceived as being caused by distinct factors: poverty on the one hand and affluence on the other. However, such a categorization is too simplistic. Today, high prevalence rates of overweight are also found in low-income countries or even within the same household as undernutrition. The reason for this co-existence is that being overweight is not necessarily a matter of eating too much food, but eating food that is not nutritious, and poor consumers may have less education and access to information about nutrition. Another part of the explanation may be the rapidly growing supply of previously unavailable products (e.g. some processed foods, soft drinks and snacks) in the modern retail chains of many developing countries. In many cases, such products replace traditional foods, including street foods in urban areas.

Today, it is increasingly evident that the double burden of malnutrition often manifests itself as a life-cycle problem in low-income families. Poor women suffering from undernutrition during pregnancy give birth to undernourished babies. If inadequate nutrition during prenatal development

**FIGURE 15**

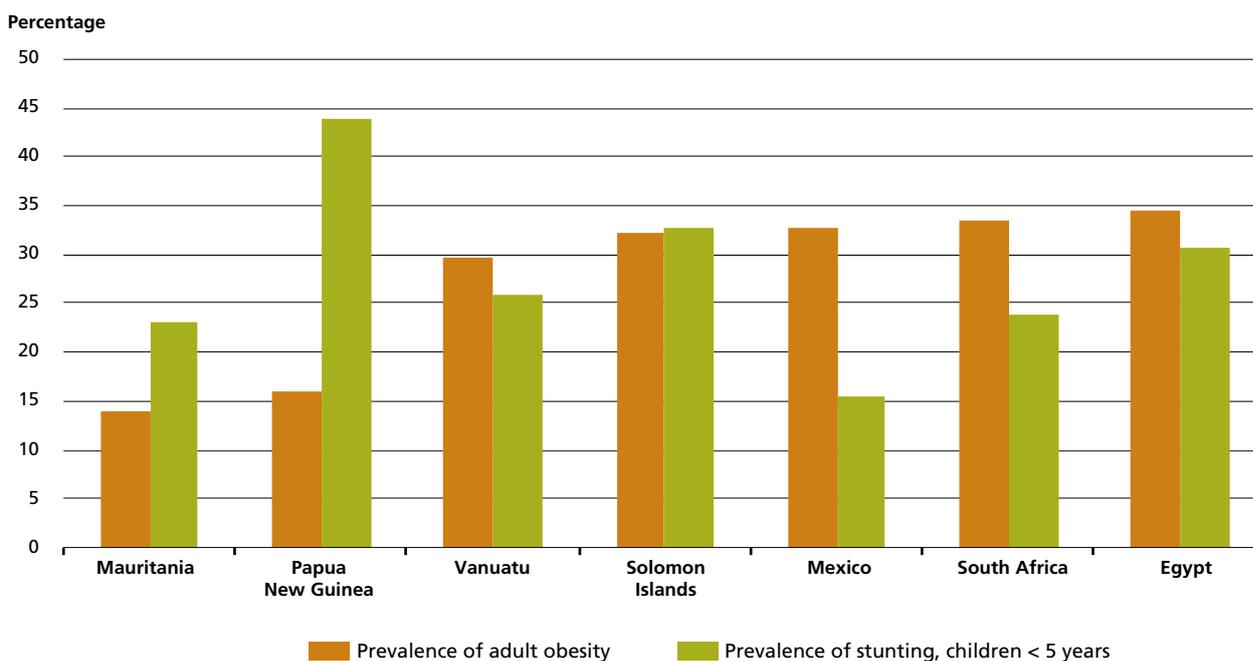
Prevalence of obesity in 2008



Notes: Data refer to adults of both sexes aged 20+, age standardized, in 2008. Obesity is defined as BMI  $\geq 30\text{kg/m}^2$ . Source: World Health Organization.

**FIGURE 16**

The double burden of malnutrition: adult obesity and child stunting in selected countries



Source of raw data: World Health Organization.

and infancy is followed later in life by an excessively increased intake of dietary energy, this could result in an increased propensity to be overweight or obese. Undernutrition (as measured by stunting) during childhood can lead to the risk of greater susceptibility to obesity and diet-related non-communicable diseases later in life as adults. This explains why, in many developing countries, undernutrition, overnutrition and micronutrient deficiencies are often all rooted in poverty. A double burden, for example in terms of stunted children and overweight mothers, is thus closely associated with economic development and is increasingly being observed even within the same low-income households.<sup>32</sup>

### ■ Conclusion: improving nutrition as rapidly as possible

Dietary changes observed over the past two decades have had both positive and negative impacts on nutrition. On the positive side, the quality of diets at the aggregate global level has improved, and nutritional outcomes have improved in most parts of the world. Mortality rates and the proportion of underweight children under the age of five have declined. There has also been progress in reducing the prevalence of some micronutrient deficiencies, although with large variations across regions.

On the negative side, however, the global number of children who are underweight and/or stunted remains unacceptably high. Moreover, the global number of overweight (but not obese) people has surpassed the

number of undernourished and the number of people suffering from micronutrient deficiencies remains high in many countries.

There is a wide and growing consensus that strong economic growth can lead to significant improvements in nutrition. To achieve this as rapidly as possible, the process of growth must benefit the poor, but it must also be “nutrition-sensitive”.<sup>33</sup> To date, the linkage between economic growth and nutrition has been weak, with long lags before real changes in nutritional status occur. Policies in support of such objectives should be pursued within an integrated agriculture–nutrition–health framework. Improving food security and nutrition is about more than just increasing the quantity of energy intake – it is also about improving the quality of the food in terms of dietary diversity, variety, nutrient content and safety. Measures to achieve greater dietary diversity and adequate intake of micronutrients may include the judicious use of targeted supplementation for the poorest until the cost of a diversified diet becomes affordable. Overnutrition should be addressed through changes in lifestyle and healthier diets.

While economic growth is important for progress in improving people’s nutrition, the links run in the other direction as also – nutritious diets are vital for achieving people’s full physical and cognitive potential and health, thus contributing to economic growth. Improved childhood nutrition and access to education can improve cognitive development and thereby raise levels of income when those children become adults – with benefits at the individual level as well as for society as a whole.<sup>34</sup>