

Chapter 1

The challenge of global food security

This chapter describes the fundamental challenge of eliminating hunger and ensuring global food security. It assesses the scale of that challenge, identifies the basic conditions that need to be met, and sets out the key policy issues.

Ending hunger and malnutrition is among the greatest challenges humanity faces. Malnutrition is estimated to be the cause of 30% of infant deaths, the predominant factor behind the global burden of disease, and a major impediment to cognitive development, and to growth in labour productivity, wage earnings and overall incomes (Headey, 2013). With approximately 850 million people undernourished, the problem persists, despite technological advances in food production, unprecedented global wealth and rapid economic development in many parts of the world. It means solving the great paradox of hunger amid plenty. The world produces enough food for everyone, but many are too poor to afford it.

The highest profile commitment to tackle hunger, and focus for recent international efforts, has been through the Millennium Development Goals (MDGs). Goal 1 calls for the eradication of poverty and hunger. It includes specific targets of halving, between 1990 and 2015, the proportion of the world's people whose income is less than one dollar a day and the proportion of the world's people who suffer from hunger, measured via the prevalence of undernourishment and under-weight (i.e. an abnormally low weight-for-age ratio) among children under 5 years of age.¹ The combining of poverty and hunger targets within one goal implicitly recognises that the two are closely connected.

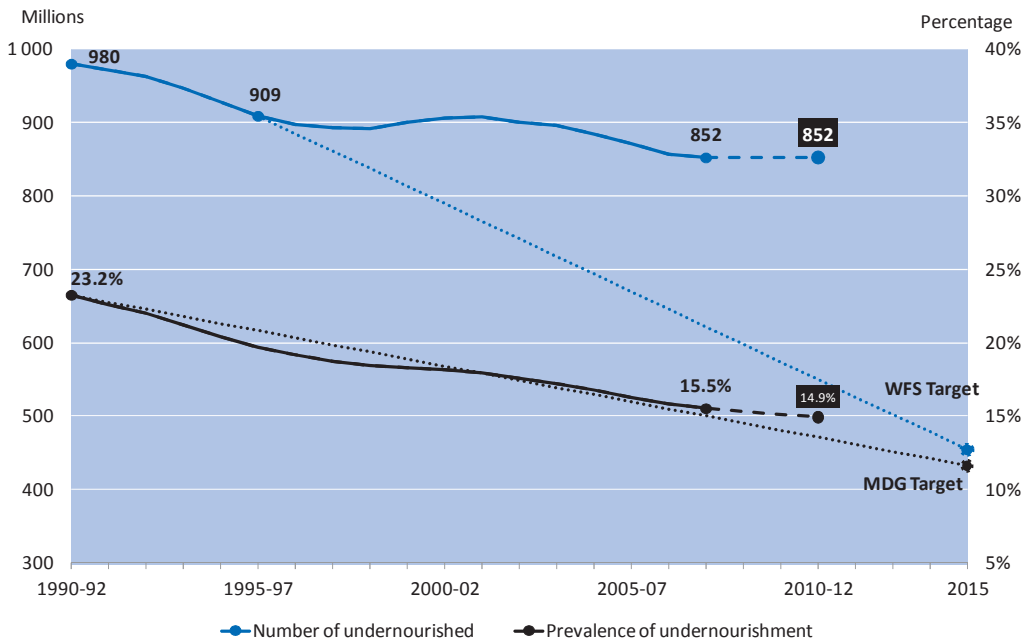
Progress on MDG1 has been uneven. According to FAO, the proportion of the population in developing countries that is undernourished has fallen significantly over the past two decades, from 23% in 1990-92 to 15% in 2010-12 (Figure 1.1). But the pace of decline has slowed and the world is not currently on target to meet the First Millennium Development Goal (MDG1) target of halving the proportion of undernourished people in developing countries between 1990 and 2015. Moreover, as a result of population growth, the total number of undernourished people in developing countries has fallen even more slowly, from just under a billion in 1990-1992 to around 852 million in 2010-12. This is far behind the more ambitious goal set at the 1996 World Food Summit, where countries pledged to eradicate hunger in all countries, with an immediate view to reducing the *number* of undernourished people to half the 1996 number by no later than 2015.

According to FAO data, 70% of the world's undernourished live in middle-income economies, mostly in Asia. Asian countries accounted for 65% of the world total in 2010-12, with the share of China and India alone above 40%, despite significant progress in China whose share of the total undernourished has dropped from 25% to 18% in ten years (Figure 1.2). On the other hand, the *prevalence* of undernourishment is highest in low income economies, at 30%. Africa is the most afflicted region, with 23% of people undernourished, compared with 14% in Asia, 8% in Latin America and the

Caribbean and 12.5% on average globally. The share of undernourished living in least developed countries (LDCs) has increased from one-fifth to one-third.

The WHO underweight data describe an even more disturbing situation than the undernourishment figures. Almost one out of five children under five was moderately or severely underweight in recent years (WHO, 2012) – a figure which has come down by 5 percentage points since the late 1980s.² As with the undernourishment information, the majority of the world's underweight children live in Asia. But in contrast with the undernourishment numbers, the prevalence is higher in Asia than in Africa, with a particularly high incidence in India, at over 40% (although that rate has come down from 60% in 1988-92). There are almost as many underweight children in India as in all of Africa.

Figure 1.1. Undernourishment in the developing world

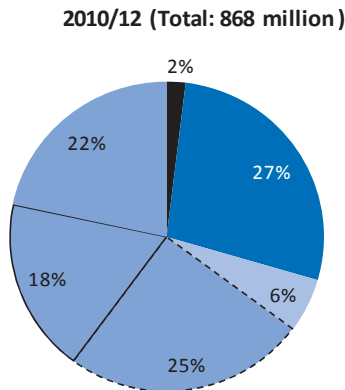
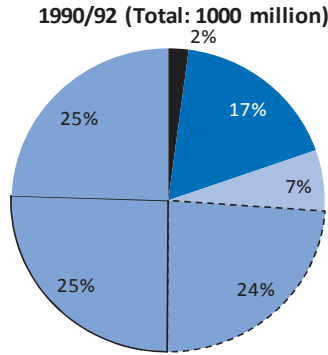


Note: WFS: World Food Summit; MDG: Millennium Development Goals.

Source: Adapted from FAO (2012a).

Figure 1.2. Global number of undernourished

- Developed countries
- Africa
- Latin America and the Caribbean
- India
- China
- Other Asia



Source: FAO (2012b).

Across low and lower-middle income countries, food insecurity is predominantly rural and smallholder farmers are particularly afflicted (WB, 2007; IFAD, 2010). While most of the world’s poor live in rural areas, poverty is becoming increasingly urban (WB, 2008). From the standpoint of food security, that makes the real incomes of consumers and their ability to afford food an increasingly important issue. However, as income growth in middle income countries draws increasing numbers of poor households over the basic poverty threshold, the chronic problem of food insecurity is likely to be increasingly concentrated where growth still languishes – among the poorest farm households in the poorest parts of the world.

World Bank figures suggest that the target for reducing extreme poverty has already been met, with 22% of the developing world's population – or 1.29 billion people – living on USD 1.25 or less a day in 2008, compared with 43% in 1990 and 52% in 1981. Provisional estimates for 2010 indicate that the USD 1.25 a day poverty rate fell to less than half the 1990 rate, with developing countries generally managing to withstand food, fuel and financial crises. Moreover, the number of people in extreme poverty and the extreme poverty rate declined in every region of the developing world in 2005-08, for the first time since the World Bank started tracking extreme poverty (Chen and Ravallion, 2010).

The poverty data provide grounds for optimism, suggesting that major reductions in hunger and malnutrition are within reach. But they also suggest that raising incomes and reducing extreme poverty is not enough. Some countries have been more effective than others in translating income growth and poverty reduction into improved nutritional outcomes. Of the countries that have performed poorly in terms of nutritional outcomes, some have been marked by conflict, some have seen strong economic growth but the benefits of that growth have not reached the poorest, while in some countries essential complements to higher incomes – such as improved public sanitation and healthcare – have been missing.

Deficient incomes need not be an obstacle to adequate nutrition. If people are too poor to afford food, then there should in principle be ways of ensuring that they are properly nourished anyway. For example, national governments can provide social safety nets and nutrition programmes, while national funding gaps can be met by the international community. When world food prices spiked in 2007-08, a specially convened UN High-Level Task Force proposed a twin track approach, consisting of an immediate response to the needs of vulnerable populations, combined with a commitment to longer-term strategies to address the chronic problem of undernourishment and to strengthen resilience to shocks (UNHLCF, 2010). The Scale Up Nutrition (SUN) movement (SUN, 2012) sets out an agenda for effective backstopping, with direct nutrition interventions complementing wider efforts to address the underlying causes of under-nutrition.

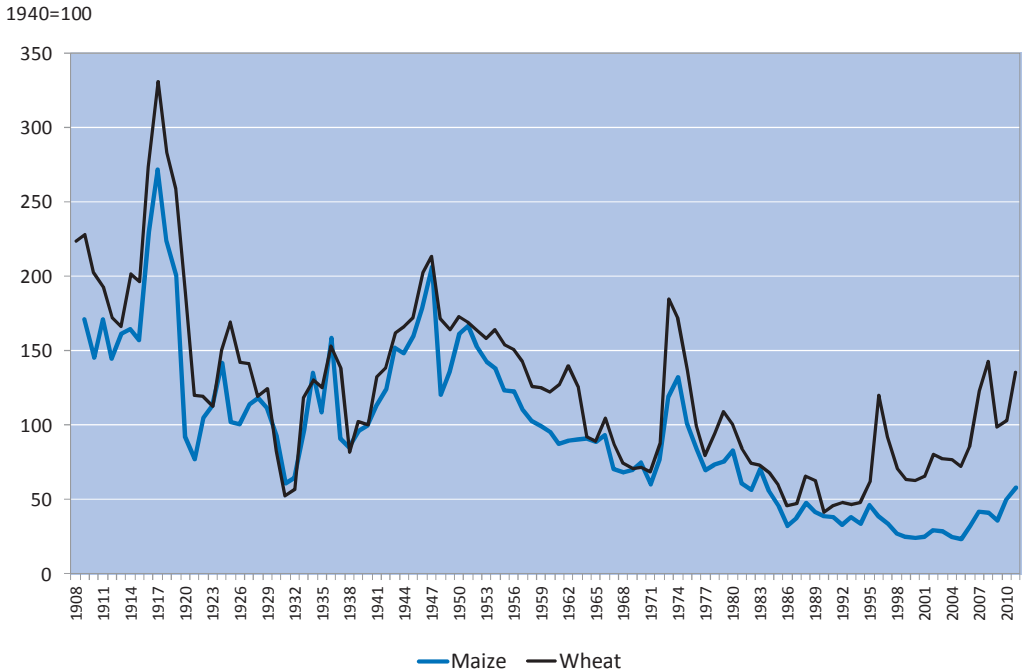
The concept of food security sets out the overarching challenge. According to the FAO definition, agreed at the 1996 World Food Summit, food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life. Increased recognition of the importance of the nutritional dimension, for example at the 2009 World Summit on Food Security in Rome, has led many to prefer the term “food and nutrition security”.

Food insecurity varies by time and degree. Chronic hunger typically affects very poor people who cannot afford to nourish themselves adequately. Hunger may be seasonal, with greater prevalence in the run-up to harvest when supplies are low and local prices high (Devereux, 2009). Populations can also be afflicted temporarily by food crises and emergencies. These attract more political and media attention than chronic food insecurity, but afflict smaller numbers of people (Wiggins and Slater, 2010). The important role of humanitarian relief in such circumstances is beyond the scope of this study.³

The emphasis of this study is on under-nutrition and the developing country dimensions of food insecurity. Strictly, food security covers a variety of nutritional situations, including over-nutrition and its consequences. Globally more than 1.4 billion adults were overweight in 2008, over a third of whom were obese; 65% of the world's population live in countries where overweight and obesity kill more people than underweight (WHO, 2012).⁴ Large numbers of middle income countries suffer from both problems, with significant proportions of the population either underweight or overweight, and many individuals overweight yet poorly nourished. Overweight presents a major public health issue in developed, and increasingly developing, countries. These issues are addressed only to the extent that reduced over-consumption and re-balanced diets can reduce the demand for food, lower prices, and thereby improve the terms of access for poorer households. It is also important to acknowledge that people go hungry in developed OECD countries, and that poorer households often suffer from inadequate nutrition. Again, this is a significant public policy issue, but one that falls outside this study's focus on the functioning of the food and agriculture system.

The FAO's definition provides an organisational framework, suggesting that people will only be food secure when sufficient food is **available**, they have **access** to it, and it is well **utilised**. A fourth requirement is the **stability** of those three dimensions over time. The challenge is wide ranging, multi-faceted and linked to other huge agendas, including those of tackling world poverty, using scarce natural resources sustainably and managing and adapting to climate change.

Ensuring global food availability has not historically been a problem, and the real price of food has fallen dramatically since the end of the Second World War. But recent spikes in world food prices indicate that markets are getting structurally tighter and that an era of steadily declining real food prices has probably ended. Nevertheless, episodes of high food prices are not unprecedented, and recent price spikes are less severe than those experienced during the two world wars and in the 1970s, as data for the United States show (Figure 1.3).

Figure 1.3. Index of real US maize and wheat prices, 1908-2012

Note: Prices are deflated by the Consumer Price Index (CPI) of the Bureau of Labor Statistics (BLS).

Sources: OECD calculations based on USDA and BLS data.

Looking forward, the world's population has recently passed the 7 billion mark and, according to the UN's central projection, is expected to reach 9.3 billion by 2050. FAO estimates that, taking income growth into account, this will require a 60% increase in food production compared with 2005-07 (Alexandratos and Bruinsma, 2012). That translates into annual growth of 1.1% per year, which is lower than recent productivity growth (OECD and FAO, 2012). The challenge in terms of *availability*, however, relates to how the increase in food production is achieved: more food can be produced, but it must be done sustainably, taking into account constraints on natural resources and the effects of climate change.

The basic problem of food insecurity has been more on the food *access* side – poverty and deficient incomes – rather than on the availability side. The poor spend a significant share of their budgets on food and, until their incomes rise sufficiently, the cost of food remains an important determinant of their real incomes and access. The key to improved access is higher incomes.

Yet, among developing countries, there is a wide variation in nutritional outcomes that cannot be explained by differences in availability or access alone. These differences relate to complementary factors which determine the *utilisation* of food, such as the nutritional value of food, the diversity of peoples' diets and the availability of clean water. Nutritional outcomes also reflect wider determinants of health, including maternal and child care, water and sanitation, and health services.

Finally, there are risks that affect the *stability* of peoples' food security. At the national level, these range from pest outbreaks to climatic events and conflicts. Internationally, they include price shocks, such as those experienced since 2007. The initial 2007-08 food price shock raised many countries import bills. Numerous countries imposed trade restrictions, thereby aggravating the price spike and raising concerns over the reliability of world food markets. This price shock has been followed by two others, and a general increase in price volatility has exposed the vulnerability of poorer households, including both consumers and smallholder farmers. These national and international risks call for a range of policies, including effective risk management strategies at the national and sub-national level.

This study takes the FAO's definition and framework and applies it as follows. Chapter 2 assesses the basic challenge of increasing global food availability sustainably. Chapter 3 considers the links between global and national food availability, focusing on the role of trade and ways of ensuring the stability of national food supplies. Chapter 4 examines the determinants of peoples' access to food, as both producers and consumers. It considers the types of policies that can be effective in raising incomes and access and the role of risk management strategies in improving stability. Chapter 5 examines the utilisation dimension of food security, and the role of complementary policies in ensuring improved nutritional outcomes. Chapter 6 consolidates the main policy conclusions. These include recommendations for OECD countries, as well as for emerging and developing countries. They also identify areas where there is a need for global policy action to improve the functioning of world food markets.

It is important to note that a vast amount of research is underway and many organisations have produced important synthetic work on or related to the topic of global food security and its implications for the world's food and agriculture system. A major initiative was the UK Foresight project, which in 2011 produced a report entitled "The Future of Food and Farming: Challenges and Choices for Global Sustainability" (Foresight, 2011), the most thorough stock-taking so far of issues related to agriculture and food security. At the policy level, there are global efforts, notably the UN High-Level Task Force's Comprehensive Framework for Action and the Scale Up Nutrition (SUN) initiative, as well as regional ones such as the

Comprehensive African Agriculture Development Programme (CAADP). There is a wide range of work devoted specifically to this topic at FAO, whose State of Food Insecurity addresses these issues on a systematic and ongoing basis (FAO, 2012a). OECD has been engaged with other IOs in collaborative work for the G20 on issues pertaining to food security, with recent reports focusing on policy responses to price volatility and on productivity and innovation.

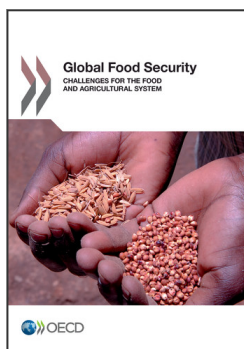
This study does not seek to summarise or challenge this important work. On the evidence side, the aim is to take stock of the current state of knowledge, identify areas where current OECD work is adding value to that knowledge and where future work can make an effective contribution. On the policy side, the objective is to produce information that can inform OECD countries' policies as well as multilateral initiatives, such as those pursued through the G20. It is also hoped that the material will contribute to the global debate on issues pertaining to food security.

Notes

1. The FAO's **undernourishment** indicator estimates the number of people who do not have access to enough food to meet its daily calorie requirement to live a healthy and active life. The estimation starts from the observation of food availability at the national level (converted to calorie equivalent), which is translated to the individual level on the basis of an estimated intra-national distribution of access to food. The quantity of calories to which each individual in the population is considered to have access is then contrasted with a minimum estimated energy requirement. People falling below this threshold are considered to be undernourished.
2. The WHO's index of the prevalence of "moderate **underweight**" is estimated as the proportion of children aged 0-5 years whose weight falls more than two standard deviations below the median of the reference population.
3. Readers are referred to the UN's Comprehensive Framework for Action, produced by the UN's High Level Task Force on the Global Food Security Crisis, which identifies actions to address the immediate needs of vulnerable populations and to build resilience (UN, 2010).
4. Overweight and obesity describe abnormal or excessive fat accumulation that may impair health. The WHO considers a person to be overweight or obese when her body mass index (a person's weight in kilograms divided by the square of his height in meters) is greater than or equal to 25 or 30, respectively.

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