



Chapter 2. Food security: concepts and measurement^[21]

2.1 Introduction

This chapter looks at the origins of the concept of chronic food insecurity, the implications for measurement, and suggests the need for a complementary investigation into the implications for transitory food insecurity of trade liberalization. The 2002 food crisis in Southern Africa is used to highlight issues for further discussion.

2.2 Defining food security

Food security is a flexible concept as reflected in the many attempts at definition in research and policy usage. Even a decade ago, there were about 200 definitions in published writings^[22]. Whenever the concept is introduced in the title of a study or its objectives, it is necessary to look closely to establish the explicit or implied definition^[23].

The continuing evolution of food security as an operational concept in public policy has reflected the wider recognition of the complexities of the technical and policy issues involved. The most recent careful redefinition of food security is that negotiated in the process of international consultation leading to the World Food Summit (WFS) in November 1996. The contrasting definitions of food security adopted in 1974 and 1996, along with those in official FAO and World Bank documents of the mid-1980s, are set out below with each substantive change in definition underlined. A comparison of these definitions highlights the considerable reconstruction of official thinking on food security that has occurred over 25 years. These statements also provide signposts to the policy analyses, which have re-shaped our understanding of food security as a problem of international and national responsibility.

Food security as a concept originated only in the mid-1970s, in the discussions of international food problems at a time of global food crisis. The initial focus of attention was primarily on food supply problems - of assuring the availability and to some degree the price stability of basic foodstuffs at the international and national level. That supply-side, international and institutional set of concerns reflected the changing organization of the global food economy that had precipitated the crisis. A process of international negotiation followed, leading to the World Food Conference of 1974, and a new set of institutional arrangements covering information, resources for promoting food security and forums for dialogue on policy issues^[24].

The issues of famine, hunger and food crisis were also being extensively examined, following the events of the mid 1970s. The outcome was a redefinition of food security, which recognized that the behaviour of potentially vulnerable and affected people was a critical aspect.

A third, perhaps crucially important, factor in modifying views of food security was the evidence that the technical successes of the Green Revolution did not automatically and rapidly lead to dramatic reductions in poverty and levels of malnutrition. These problems were recognized as the result of lack of effective demand.

Official concepts of food security

The initial focus, reflecting the global concerns of 1974, was on the volume and stability of food supplies. Food security was defined in the 1974 World Food Summit as:

“availability at all times of adequate world food supplies of basic foodstuffs to sustain a steady expansion of food consumption and to offset fluctuations in production and prices”^[25].

In 1983, FAO expanded its concept to include securing access by vulnerable people to available supplies, implying that attention should be balanced between the demand and supply side of the food security equation:

“ensuring that all people at all times have both physical and economic access to the basic food that they need”^[26].

In 1986, the highly influential World Bank report “Poverty and Hunger”^[27] focused on the temporal dynamics of food insecurity. It introduced the widely accepted distinction between chronic food insecurity, associated with problems of continuing or structural poverty and low incomes, and transitory food insecurity, which involved periods of intensified pressure caused by natural disasters, economic collapse or conflict. This concept of food security is further elaborated in terms of:

“access of all people at all times to enough food for an active, healthy life”.

By the mid-1990s food security was recognized as a significant concern, spanning a spectrum from the individual to the global level. However, access now involved sufficient food, indicating continuing concern with protein-energy malnutrition. But the definition was broadened to incorporate food safety and also nutritional balance, reflecting concerns about food composition and minor nutrient requirements for an active and healthy life. Food preferences, socially or culturally determined, now became a consideration. The potentially high degree of context specificity implies that the concept had both lost its simplicity and was not itself a goal, but an intermediating set of actions that contribute to an active and healthy life.

The 1994 UNDP Human Development Report promoted the construct of human security, including a number of component aspects, of which food security was only one^[28]. This concept is closely related to the human rights perspective on development that has, in turn, influenced discussions about food security. (The WIDER investigation into the role of public action into combating hunger and deprivation, found no separate place for food security as an organizing framework for action. Instead, it focused on a wider construct of social security which has many distinct components including, of course, health and nutrition^[29]).

The 1996 World Food Summit adopted a still more complex definition:

“Food security, at the individual, household, national, regional and global levels [is achieved] when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life”^[30].

This definition is again refined in The State of Food Insecurity 2001:

“Food security [is] a situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life”^[31].

This new emphasis on consumption, the demand side and the issues of access by vulnerable people to food, is most closely identified with the seminal study by Amartya Sen^[32]. Eschewing the use of the concept of food security, he focuses on the entitlements of individuals and households.

The international community has accepted these increasingly broad statements of common goals and implied responsibilities. But its practical response has been to focus on narrower, simpler objectives around which to organize international and national public action. The declared primary objective in international development policy discourse is increasingly the reduction and elimination of poverty.

The 1996 WFS exemplified this direction of policy by making the primary objective of international action on food security halving of the number of hungry or undernourished people by 2015.

Essentially, food security can be described as a phenomenon relating to individuals. It is the nutritional status of the individual household member that is the ultimate focus, and the risk of that adequate status not being achieved or becoming undermined. The latter risk describes the vulnerability of individuals in this context. As the definitions reviewed above imply, vulnerability may occur both as a chronic and transitory phenomenon. Useful working definitions are described below.

Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life. Household food security is the application of this concept to the family level, with individuals within households as the focus of concern.

Food insecurity exists when people do not have adequate physical, social or economic access to food as defined above.

Household measurements: the focus on chronic hunger and poverty

Sub-nutrition, often assumed in official literature to be synonymous with the more emotive term hunger, is the result of food intake that is continuously insufficient to meet dietary energy requirements.

Measurement is typically indirect and based on food balance sheets and national income distribution and consumer expenditure data. Linking hunger and sub-nutrition with inadequate food intake allows the measurement of food insecurity in terms of the availability and apparent consumption of staple foods or energy intake^[33]. This type of measurement corresponds to the earlier narrower definitions of chronic food insecurity^[34].

Where international cross-sectional and national time series comparisons are undertaken, as in SOFI 2001, national estimates are based on average per capita availability of staple foods, or apparent consumption. The estimates may also be weighted by evidence of food expenditure by income categories for countries where consumer expenditure surveys are not available. Because poverty lines, such as those calculated by the World Bank, also reflect assumptions about dietary energy intake, there is inevitably a high degree of correlation in these cases with estimates of poverty and extreme poverty^[35].

The international comparison of country estimates of chronic food insecurity therefore reflect cross-sectional patterns and trends in food production, supplemented by what is recorded about trade in basic foodstuffs (effectively cereals) as incorporated into national food balance sheets. These comparisons show broad differences in food security between the development categories of low, middle and upper income countries, as well as considerable variance within categories.

Attempts to explain these differences within categories, and in changes over time in the incidence of sub-nutrition, have met with limited success. SOFI 2001 notes that groups of variables that reflect shocks and agricultural productivity growth are significant influences in explaining periodic differences in country performance but concludes: "...attempts to seek one simple cause for either good or bad performance are not very useful. The power of just a few variables to explain changes in highly diverse, and indeed unique national situations is limited"^[36].

The factors that underpin this form of statistical investigation include the association of a single dependent variable to represent chronic food insecurity, with proxy variables for differences amongst countries and changes in agricultural trade regime. However, these are not suitable for studying trade and food security.

The problem of unreliable data on production and unrecorded trade is unavoidable, but may be serious for many of the most food insecure countries in sub-Saharan Africa. The current crisis in

Southern Africa highlights this issue. Malawi appears to have been one of the twelve best-performing countries since the early 1990s in improving food security^[37]. However, there is currently much debate about the reliability of food production data, particularly for roots and tubers in this country. Trends for countries in which these are important staples, especially in subsistence, and comparisons between these and other countries are a source of ambiguity.

An important intra-country gap exists in current analyses of food insecurity, which focus on national level or the individual level, as reflected either in averages derived as ratios of national aggregates or a national survey estimate. That gap is most apparent for larger countries such as Brazil, India, Nigeria or the Russian Federation. Substantial intra-country regional or zonal differences in the structure and dynamics of food security are also likely - for example, as a result of more rapid agricultural development in the Punjab and Haryana States in India or temporarily because of drought in Northern Nigeria. The trends in food security, as in poverty, may not be fully evident at a national level. Therefore, an investigation of a process such as trade liberalization that involves cross-country comparisons should be sensitive to possibly important variability within larger economies. This implies the need for regional analyses to complement country level investigations. The case study of Guatemala illustrates the intra-country dimension missing from national food security assessments^[38].

The definition of sub-nutrition includes poor absorption and/or poor biological use of nutrients consumed. The most convenient assumption for an agricultural economic analysis would be to ignore these factors. However, and again the current crisis in Southern Africa serves as a reminder, there may be significant differences between countries in these factors and the way they are changing. The deteriorating health situation in Southern Africa may be eroding nutritional status, not only with the recrudescence of malaria and tuberculosis, but most evidently because of the rapid spread of HIV/AIDS, with an incidence of 25 percent and more amongst the economically active adult population. People may become more vulnerable, and so the economy more fragile and sensitive to ever-smaller shocks. This is also a reason for reassessing the importance of transitory, acute food insecurity.

2.3 The process of liberalization and transitory food insecurity

Policy statements on food security give less and less prominence to transitory food insecurity and the risks of acute food crisis. The frequently reiterated assurance that there is globally enough food to feed everyone is supported, moreover, by the success in limiting the impact of the Southern Africa drought crisis of 1991/92. Such considerations may even suggest that the risk of a natural disaster, an economic shock or a humanitarian problem resulting in a severe food crisis is diminishing. Before accepting that comfortable conclusion, it is appropriate to re-examine the issue of transitory food insecurity and the possible links with liberalization.

According to the World Bank, in 1986 “The major sources of transitory food insecurity are year-to-year variations in international food prices, foreign exchange earnings, domestic food production and household incomes. These are often related. Temporary sharp reductions in a population’s ability to produce or purchase food and other essentials undermine long term development and cause loss of human capital from which it takes years to recover”^[39].

Since that report, evidence that natural disasters and conflict have both severe short-term and persisting long-term negative effects has accumulated. The analysis is usually restated in terms of poverty rather than food security, as in the 2000/01 World Development Report.

It is possible that liberalization increases the risk of shock that precipitates a food crisis or makes populations, at least during the transition in trade regimes, more vulnerable. International grain markets were more volatile in the 1990s than since the crisis period of the early 1970s. Some commentators have asked whether this volatility is associated with regime changes linked to the Uruguay Round (UR)^[40]. Tropical commodity export prices are performing badly, apparently still following the long-run Prebisch-Singer downward trend.

At a national level, agricultural liberalization could also be associated with increased volatility in production and prices. Maize yields, maize production and other agricultural products appear to have been more volatile since around 1988/89 when there have been considerable changes in agricultural institutions. Simple Chow tests show that in some countries, notably Malawi and Zambia, agricultural performance was significantly more variable in the 1990s than previously.

Other influences, such as climate change, also affect agricultural performance. Although as yet there is no conclusive evidence for Africa or elsewhere that climatic variability and the occurrence of extreme events such as drought, flood and storms, have increased significantly, nevertheless, global models suggest that such changes in climatic variability are likely to occur. As already noted, deterioration in the health status could make populations more vulnerable to less extreme shocks.

It is also possible that the current crisis in Southern Africa is the consequence of a combination of all these developments.

2.4 Conclusion: a multi-dimensional phenomenon

Food security is a multi-dimensional phenomenon. National and international political action seems to require the identification of simple deficits that can be the basis for setting of targets, thus necessitating the adoption of single, simplistic indicators for policy analysis. Something like the “State of global food insecurity” analysis has to be undertaken. Since food insecurity is about risks and uncertainty, the formal analysis should include both chronic sub-nutrition and transitory, acute insecurity that reflects economic and food system volatility.

Such formal exploration is usefully complemented by multi-criteria analysis (MCA) of food security. This should lead to qualitative, if not quantitative, comparisons. Where the focus of investigation is on sub-nutrition, then the linkages between sub-nutrition and inadequate food intake need to be carefully explored. Some elements that need to be considered are:

- sources of dietary energy supply - taking account, for example, of different foods, trends in the acquisition of food from subsistence to marketing;
- climatic variability as a source of volatility and short-term nutritional stress;
- health status, especially changes in the incidence of communicable diseases, most obviously HIV/AIDS;
- spatial distribution within countries of poverty and forms of food insecurity, drawing on evidence from vulnerability assessment and mapping supported by the Food Information and Vulnerability Mapping Systems (FIVIMS), the FAO and the World Food Programme (WFP) interagency initiative.

It is sometimes suggested that there should be more practical use of Sen’s entitlement theory (see Chapter 1). If this were to involve the re-labelling of indicators of food needs as entitlements, it would be less useful than, for example, reflecting entitlement failure in a formal MCA.

Entitlement as a construct introduces an ethical and human rights dimension into the discussion of food security. There has been a tendency to give food security a too narrow definition, little more than a proxy for chronic poverty. The opposite tendency is international committees negotiating an all-encompassing definition, which ensures that the concept is morally unimpeachable and politically acceptable, but unrealistically broad. As the philosopher, Onora O’Neill, recently noted:

“It can be mockery to tell someone they have the right to food when there is nobody with the duty to provide them with food. That is the risk with the rights rhetoric. What I like about choosing the counterpart, the active obligation of duties rather than the rights, you can’t go on and on without addressing the question who has to do what, for whom, when”^[41].

- [21] This chapter is based on a paper prepared by Edward Clay of the Overseas Development Institute, London, UK, for the FAO Expert Consultation on Trade and Food Security: Conceptualizing the Linkages, Rome, 11-12 July 2002.
- [22] Maxwell, S. & Smith, M. 1992. Household food security; a conceptual review. In S. Maxwell & T.R. Frankenberger, eds. *Household Food Security: Concepts, Indicators, Measurements: A Technical Review*. New York and Rome: UNICEF and IFAD.
- [23] Maxwell, S. 1996. Food security: a post-modern perspective. *Food Policy*. 21 (2): 155-170.
- [24] ODI. 1997. Global hunger and food security after the World Food Summit. *ODI Briefing Paper* 1997 (1) February. London: Overseas Development Institute.
- [25] United Nations. 1975. *Report of the World Food Conference, Rome 5-16 November 1974*. New York.
- [26] FAO. 1983. *World Food Security: a Reappraisal of the Concepts and Approaches*. Director General's Report. Rome.
- [27] World Bank. 1986. *Poverty and Hunger: Issues and Options for Food Security in Developing Countries*. Washington DC.
- [28] The list of threats to human security is long, but most can be considered under seven main headings: economic security, food security, health security, environmental security, personal security, community security, and political security. (UNDP. 1994. *Human Development Report 1994*. Oxford and New York: Oxford University Press).
- [29] Drèze, J. & Sen, A. 1989. *Hunger and Public Action*. Oxford: Clarendon Press.
- [30] FAO. 1996. Rome Declaration on World Food Security and World Food Summit Plan of Action. World Food Summit 13-17 November 1996. Rome.
- [31] FAO. 2002. *The State of Food Insecurity in the World 2001*. Rome.
- [32] Sen, A. 1981. *Poverty and Famines*. Oxford: Clarendon Press.
- [33] FAO. 2002. *The State of Food Insecurity in the World 2001*. Rome pp. 4-7.
- [34] World Bank. 1986. *Poverty and Hunger: Issues and Options for Food Security in Developing Countries*. Washington DC.
- [35] FAO. 2002. op cit. p. 10.
- [36] FAO. 2002. op cit. p. 7.
- [37] FAO. 2002. op cit.
- [38] FAO. 2002. op cit.
- [39] World Bank. 1986. *Poverty and Hunger: Issues and Options for Food Security in Developing Countries*. Washington DC.
- [40] Konandreas, P., Sharma, R. & Greenfield, J. 2000. The Uruguay Round, the Marrakesh Decision and the role of food aid. In E. Clay. & O. Stokke, eds. *Food and Human Security*. London: F Cass.
- [41] O'Neill, O. Answer to question following the Second Reith Lecture, BBC Radio 4, 10 April 2002. Dr O'Neill is also the author of *Faces of Hunger*, one of the few explorations by a philosopher of the ethical dimensions of the subject.

