From hunger to food security: a conceptual history

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ABSTRACT

Hunger afflicts hundreds of millions of people around the world. However, the very concept of hunger is difficult to define, and in fact the whole issue of hunger has been subsumed under the more comprehensive concept of food security. This paper retraces the history of this concept, from its original appearance in international usage at the 1974 World Food Conference, to more modern versions like the definition adopted in the First and subsequent World Food Summits. Originally framed in terms of sufficient world supply of food, the concept of food security initially morphed into the aim of national self-sufficiency in the production of food, but later evolved into its current meaning centred on access to food by individuals and households. Under its more recent incarnation, and quite unlike its former meaning, it is recognised that international food trade is a key element for achieving food security. This and other conceptual transformations are revised through this paper.
A taste of hunger

There is frequent talk, in the press as in the development literature or in academic publications, about the extent and prospects of hunger in the world, especially in relation with emergencies such as floods and droughts, and also regarding countries and human groups afflicted by chronic poverty and/or violent conflict, and other similar predicaments. Hunger is also a focus of attention in relation to challenges such as high food prices in international markets, the extent of food waste, or how much extra food will have to be produced in the future to eliminate existing hunger and to keep a growing population free of hunger; the matter is also frequently present in discussions of the likely impacts of climate change on agriculture and food.

However, such frequent reference to hunger is often based on imprecise notions about what is actually meant. Hunger is a household word, familiar to everybody, and thus easily communicable, but it has many layers and dimensions, deserving a careful conceptual dissection. The technical notions underlying the 'hunger' problem may be quite different from the popular notion of 'hunger'.

On a very elementary level, hunger is a subjective feeling of food craving or a desire to eat, something everyone may experience, especially after some hours of fast, prompting people to seek food and eat. That subjective feeling, however, is not necessarily correlated with nutrient requirement: obese people feel hungry every day, in spite of their ample reserves of most nutrients, and many people crave more food than they need. On the other extreme, starving people frequently lose appetite as a result of their condition, and feel hungry no more.

Humans have an inborn tendency to desire more food than they immediately need; that extra amount of appetite was selected for, over many million years of evolution, as our species survived in small bands of hunters and gatherers whose luck at finding food was wildly variable from one day or week to the next; individuals with a willingness to eat more than immediately needed were able to accumulate bodily reserves of energy, vitamins and minerals during the (generally short and unpredictable) spells of abundance; this enhanced their chances of survival and reproduction over the (usually longer) periods of relative scarcity. Genes coding for extra appetite tended to be selected for, through differential survival and reproduction, and became quite frequent in the human gene pool. In a world where food supplies are more reliable, these tendencies to have more hunger than necessary may become superfluous, and indeed deleterious for health and survival.

Besides its primary meaning (a desire to eat) the word hunger has been also used as synonymous to insufficient intake of food over a period of time, even if the people involved may not actually feel hungry, and indeed not implying any investigation of their feelings or cravings: a level of intake is usually judged to be insufficient by comparison with some external norm or standard established by doctors and nutritionists. The insufficiency, in turn, may refer to the lack of any of several things: food provides various ingredients necessary for life, and any of them may be in insufficient supply. Food provides fuel (e.g. carbohydrates or fats) used by body cells to generate energy (commonly measured in calories). Food also provides protein, i.e. chemical chains of amino-acids that are the building blocks of body tissues; once eaten, the protein in foods of animal or vegetal origin is broken down into its component amino-acids, which are then used by the body to synthesize its own human proteins (or eventually burnt for energy if not used for producing proteins). Food also supplies minerals and vitamins: the body cannot synthesize any vitamin other than vitamin D (the bodily production of which is activated by exposure to sunlight); all other vitamins, as well as all minerals, must be taken through food. The body needs food to stay alive, to perform physical activity, to enable organs (like brain or liver) to work properly, to recover from infections, and to build new tissues as required for growth in pregnant women, children and adolescents. A proper diet should cover all these needs; an unbalanced diet may perhaps cover or exceed dietary energy needs but fail to provide enough of other nutrients.

Food intake, moreover, is not all: other things are required, both before and after food is eaten. Before food intake occurs, people must have access to food; in turn, before being accessed the food must be
produced, and thus production and distribution of food, and the ability to access it, are important elements to understand 'hunger'. And the problem of hunger does not end with food access and intake: after food is eaten it must be biologically processed and utilised inside the body, absorbing its nutrients and using them for the various purposes mentioned before. Problems hindering bodily food utilisation may offset the potential benefits of food intake.

Lack of resources, poverty, or isolation may hinder food production or food access. Health and sanitation shortcomings may hinder biological utilisation of food by the body. Infectious diseases (such as diarrhoea) can reduce the ability of the body to assimilate food and to use it effectively; infections may also waste energy, dissipating heat in the form of fever. Thus hunger has a number of aspects, requiring more precise concepts and sub-concepts, and their corresponding operational definitions and measures.

As it happened, the various preoccupations about food and hunger in the world have coalesced around the notion of food security. It covers all the above aspects. Even as its own definition has been evolving, under its mantle many discussions have been sustained on some key questions: How much food is needed? Is food production sufficient for all? Would it continue to be sufficient in the future? How is it distributed across people? How much hunger is there? How much obesity? How are these conditions to be defined and measured? What is the likely future of hunger in the world? How is it likely to be affected by climate change? The way these questions have been addressed through the concept of food security has been evolving over time. We discuss next the historical evolution of food security as a concept.

Food security as food self-sufficiency

Many people identify food security with national food self-sufficiency. According to this concept, a nation has food security if it produces all the food required by its population. This notion is sometimes extended to smaller units: for instance, the self-sufficiency approach would assert that a rural household will have food security if it produces enough food to cover its food needs.

There was indeed a time when food security was regarded as a matter of self-sufficiency, but that approach has been long abandoned. Food security as a concept underwent a remarkable transformation during recent decades (Maxwell & Smith 1992, Frankenberger & McCaston 1998, Maxwell 2001, DEFRA 2006; CFS 2012). The concept emerged and received worldwide relevance in the wake of the short-term food price surge in the mid-1970s, following the 1973 oil crisis and amidst longer-term fears of explosive population growth, giving worldwide resonance to the 1974 World Population Conference, held in Budapest, which addressed the issue of demographic growth. The contemporary 1974 World Food Conference discussed food security at the world level in terms of global food supply for a growing population: food security was defined as ‘availability at all times of adequate world supplies of basic food-stuffs […] to sustain a steady expansion of food consumption […] and to offset fluctuations in production and prices’ (UN 1975). The definition said little about food security at the national or lower levels, and was almost silent on the role of food trade to bring food from one nation to another (or from one zone to another within a nation), and quite silent as well on the question of access to food by households and individuals, and on a number of other related questions such as food quality or food waste.

The 1974 referred to worldwide supplies of food, with no explicit reference to individual nations. However, after adopting a definition of food security based on sufficient world supplies of food, a recommendation of the Conference and many documents derived from it was that, to contribute towards world food security, every nation should strive to achieve food self-sufficiency. The rationale behind this recommendation was apparently the trivial notion that if every nation is able to feed itself, world food availability would also be achieved, and then there would not be food insecurity at the world level as defined by the Conference. The concept of worldwide sufficiency (on which the 1974 definition was based) was thus downscaled and applied to individual nations in the form of national self-sufficiency, i.e. positing as an ideal situation that each nation should produce all the food its citizens consume. The usual interpretation of this principle was that a country lacked food.
security if it had a food deficit, i.e. if it failed to be food-self-sufficient. Food imports were the mark of food insecurity.

Up to the 1980s the concept of food security continued to be centred on national self-sufficiency, especially in cereals which are the main staple food of humankind. Foreign trade was not seen as a way of enhancing food security but as a sign of its absence: that a country had to import food was by itself an indication of limited food security, especially in poor countries. Food surpluses in some countries were not seen as possibly reducing the food insecurity of food-deficit countries: only domestically produced food counted against food insecurity. For countries without food self-sufficiency, their capacity to import food (e.g. with revenue from exports of non-food products such as minerals) was usually not examined. No difference existed in principle between food-deficit countries with different levels of per capita income or non-food exports, e.g. between Mauritania and Saudi Arabia, or between El Salvador and Belgium. Only later a specific category of 'low-income food-deficit countries' was created in FAO statistics, trying to concentrate attention on countries where lack of self-sufficiency may involve a problem, although the problem in that case might originate in low income, or rather low export revenue, rather than non-self-sufficiency in food production.

On the other hand, only aggregate self-sufficiency at the national level received attention: domestic inequality in food consumption or in access to food among individuals or households, or different degrees of deficit or surplus among sub-national regions, were at that stage absent from the definition of food security. One common argument at the time was that depending on foreign trade entailed exposure to capricious fluctuations in world markets, which would be avoided by relying on domestic production. This line of reasoning, of course, disregarded the instability created by fluctuations in domestic production (mainly due to climatic vagaries but also to macroeconomic imbalances, domestic inflation, distorted relative prices, domestic economic cycles, and other factors). Fluctuations in domestic output could indeed be offset and smoothed by foreign trade, which is unlikely to fluctuate always synchronously with local variations of climate, economic activity or inflation.

That approach also assumed that local food prices could be successfully controlled, and decoupled from world prices: even if world prices surged, a self-sufficient country could allegedly keep domestic food prices low. This was a plausible proposition up to the 1970s and in many cases up to the 1980s, because price controls were widespread, trade was limited, government intervention in (and control of) food trade was common, international financial flows were restricted, and exchange rates were officially fixed (at single or multiple rates) as per the 1944 Bretton Woods agreements, in force till 1973 but sustained in many developing countries until the 1980s and in some cases even further. Developing country currencies were usually undervalued, and thus imported food was abnormally expensive compared to local foodstuffs. Local and foreign prices were thus, in many cases, actually decoupled, and local prices kept under State control.

In subsequent years and decades this became increasingly difficult to achieve. The global economy underwent profound changes since the mid-1970s, such as a shift towards liberalisation of trade and financial flows across national borders. This was not so much a result of a change in economic ideas but an inevitable consequence of the collapse of the Bretton Woods system: if currencies were no longer convertible in gold at a fixed US dollar price, and were therefore allowed to float, then freer international financial flows were a necessity. Ideas and policies adjusted in order to face this necessity. At the same time, this situation accelerated the pace of world trade liberalisation, started in 1948 with the General Agreement on Trade and Tariffs (GATT). Successive rounds of trade negotiations under GATT achieved gradual and incomplete but nonetheless very significant reductions in trade barriers (tariff and non-tariff). This led to the constitution in 1996 of the World Trade Organisation (WTO), which actually established tariff ceilings and general agreements on trade liberalisation. Although barriers to trade remained in place for some sectors, most notably for farm products, trade in general became more liberalised, including trade in food, and this tendency has accentuated even more since WTO was established.

This course of events, plus the evident inability of many developing countries to keep public finance in order and to repay their foreign debt, led to structural reforms and economic liberalisation in both
developed and developing economies. Again, this was less a result of a change in ideological winds than a necessity imposed by the new international economic reality. Ideological debate took place mainly on the question of how (and how fast) to adjust to this new economic setting, but it rested on the objective changes that had occurred and were occurring in the world economy.

The process of structural adjustment started with the establishment, shortly before 1980, of new lines of credit for that purpose opened by both the World Bank and the International Monetary Fund, and was given more dramatic impact with the Mexican debt crisis of 1982. It continued during the following years, especially during the 1990s. Older regimes of fixed exchange rates, determining wide differences between international and local prices (calculated at official rates of exchange) tended to be replaced by more realistic, and often floating, exchange rates, and a convergence of local and foreign prices at market exchange rates. Realignment of currencies implied also that domestic prices became closer to international levels. The economic and financial systems of nations increasingly became international as local activities and transactions implied global consequences, and domestic policies got increasingly conditioned by the global economic system. When parts of that global system faced a crisis, the repercussions were rapidly spread over the entire globe, as in the financial crisis that started in 2008 and caused a global slowdown that is still on-going, though slowly recovering, at the time of writing.

In the post-war era, developed countries (Europe, the US, Japan) had established farm protection policies leading to systematic production of surpluses, routinely purchased by the State to protect farmers from ruinous falls in producer prices. This, however, tended to change since the 1992 reform of the Common Agricultural Policy of the European Union, and the 1996 establishment of the World Trade Organization, two events that triggered other similar developments worldwide.

Other shortcomings of the concept of food security defined as national food self-sufficiency did also surface. A key defect was that it was centred on food availability, neglecting matters of distribution and access: a country with sufficient food supplies, matching or exceeding its total food needs, may still have a large percentage of its population in a situation of hunger or malnutrition. Concentrating on the aggregate (national or worldwide) level, a definition of food security centred on sufficient food supply ignored inequalities between zones, groups, households and individuals.

As noted above, another major shortcoming of the 1974 definition and its incarnation in national policies was an inconsistent treatment of food trade. Self-sufficiency was sought only at the national level: it was not ordinarily stated as a goal that each province or locality in the country should also be self-sufficient, implicitly allowing that some zones may have a food deficit, and implicitly entrusting domestic trade with the task of bringing food to all places within the country. Thus international food trade was rejected as a resource for food security, but no such exclusion existed for domestic trade. The latter was implicitly seen as manageable, whilst foreign trade was considered unpredictable and capricious. Ultimately, the decisive criterion was not self-sufficiency as such, but the requirement of political control over the food supply: if food was to come from abroad, it made the polity dependent on other nations, whereas domestic production and trade were (supposedly) under the aegis of the national government. This concept of food security was more about national sovereignty and national security than about ensuring that people receive adequate food.

A related aspect of this sort of double standard about trade and food security is of a monetary nature. Domestic trade is conducted in local currency, whereas foreign trade requires foreign currency. The former could be issued by the government, whereas the latter must come from exports, foreign investment or financial transfers. Many developing countries were by the 1970s and 1980s in a chronic balance of payments quagmire, with stagnant exports and increasing imports (driven in part by a growing population, and also by domestic development policies based on subsidising import substitution).

This problem was often accentuated when countries incurred in serious fiscal deficits, and tried to make up for their fiscal deficits by issuing domestic currency and adopting loose monetary policies, creating domestic inflation, increasing public indebtedness and gradually reducing the purchasing power of their domestic currency over internationally traded goods (like food). Their capacity to import was chronically insufficient; their capacity to export was often also insufficient to support the
imports demanded by their growing population. Devalued currencies made imported commodities increasingly unaffordable. Subsidising the domestic price of imported food soon gets fiscally unbearable. Reducing food imports (in fact any imports) seemed a necessity, due to balance of payments constraints. Food self-sufficiency at any cost seemed thus justified, in the eyes of governments, to avoid crushing collapses of national economies, triggered by acute balance-of-payment crises, huge fiscal imbalances, and (often) runaway inflation. However, the root cause was not in imports, but on the underlying distortions and imbalances of national economies. Only after economies gradually opened up and faced the necessity of economic reform this was gradually perceived.

A major consequence of these combined developments was the growing awareness that international food flows (including food donations) are a necessary ingredient of food security. Facilitating food trade, as well as aligning exchange rates to make imported food affordable, increasingly appeared as an important element to ensure adequate food supplies in all countries. Food aid became a large (and quasi-permanent) component of the food supply in many low-income countries, and international food trade increased rapidly, both in absolute terms and as a share of total food output. Acceleration of growth in developing countries (especially in Asia) further increased food trade since the 1990s, and drove food prices up in the 2000s.

Another conceptual problem with the 1974 and similar definitions was their neglect of export earnings, including those of agricultural origin, and other foreign revenue such as remittances. A country producing insufficient food and importing much of its food needs, but being able to pay for its imported food with regular and abundant foreign revenue from remittances or from exports would have no trouble fulfilling the food needs of its population. It would nonetheless appear to have an extreme degree of food insecurity according to the self-sufficiency definition. Export revenue may come from non-farm commodities like oil, minerals, or industrial goods, and also non-food or non-staple-food farm products such as jute, spices, tea, coffee, or tobacco. This neglect of exports implied that many rich countries, as well as many developing nations with abundant non-food exports or large remittance inflows, were incongruously classed as food insecure at the national level, just because they 'depended' on food imports. Actually, of course, even if food output in those countries may be insufficient to cover domestic supply, such countries could have regular access to (imported) food insofar as they have a permanent source of foreign revenue. On the other hand, closed economies with insufficient financial capacity to import, such as North Korea, might suffer famine or food shortages just because they could not afford importing extra food when needed.

Environmental aspects were also absent from the 1974 definition of food security, as they were also absent from definitions of economic development at the time, except in works dealing with Malthusian views of resource constraints on population growth such as the 'population bomb' and 'limits to growth' debates sparked by Ehrlich 1968 and Meadows et al 1972.1 Conflicts between ensuring food self-sufficiency and preserving the environment were not explicitly envisaged. In fact some developing countries, in the name of the overriding goal of food self-sufficiency, strongly resisted calls for stopping deforestation or providing stronger environmental protection. 'Food first' often implied 'the environment later'.

Likewise, food quality was ignored in the early definitions of food security. Attention was centred on the quantity of food, and moreover centred on staple food, chiefly cereals. Concerns about diets that were poor on micro-nutrients were not paramount. Concerns about food safety and adequacy to prevailing cultural values and food habits were largely absent from food security definitions. In a way, this was tolerable since the definition referred mostly to staple food providing the bulk of food energy, chiefly cereals, and was implicitly admitted that some specific cereals were preferred in each

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1 Both books and their catastrophic forecasts were criticized for internal methodological shortcomings, and lost most of their appeal some years afterwards, when such disasters failed to materialize and observed trends diverged from their forecasts. Authors of both books revisited their work lately, mostly to defend it (Meadows et al 1992 and 2004; Ehrlich & Ehrlich 2009). On the 'population bomb' issue see various (pro and con) articles in the Vol.1 No.3 (2009) issue of the Electronic Journal of Sustainable Development (http://www.ejsd.org).
country. However, this was not explicitly incorporated into the definition identifying food security with sufficient world supplies of food; a shortage of rice in an Asian country could be offset by an extra supply of wheat at the world level, even if rice-consuming populations were not likely to substitute other cereals when facing a rice shortage. A systematic insufficiency of vitamin A, leading to widespread night blindness, was not examined in the context of food security (only some preoccupation about protein emerged in the 1970s and 1980s, leading to the incorporation of pulses and some dairy products in food aid packages). Consistent with the tendency to ignore food preferences, the various food aid policies implemented in the 1970s and 1980s provided cereals or other foodstuffs as dictated by excess supply at the source, regardless of local preferences. Wheat was dispatched as food aid to countries accustomed to the consumption of maize, thus contributing to aid-driven dietary change; in some cases some of the strictest safety norms prevailing in donor countries were ignored for donated food.

A further problem with the early definitions of food security was their indifference towards economic behaviour and the operation of markets, preferring a framework more akin to logistics and central planning. A shortage of food was defined as a deficit of supplies relative to usual or normative requirements, and estimated mostly in a mechanical fashion, applying past trends or fixed coefficients, with not much room for adaptive behaviour, and no major role for relative prices and their effect on producer and consumer behaviour. This may be adequate in a command economy or for prisons or barracks, where food is rationed and centrally distributed, but not for a market economy.

Finally, another problem was that early definitions did not involve risk, uncertainty or probability. Food security (or insecurity) was defined just as a factual situation of sufficient (or insufficient) food supply, referred to objective facts of production, stocks and use, without much concern about preferences, expectations or beliefs, and little consideration of uncertainty, risk, or probability.

**Conceptual shifts**

Since the early 1980s the concept of food security evolved away from the concept of self-sufficiency. The first major blow to the early view of food security as a balance of aggregate supply and needs was Amartya Sen's (1981) little book on famines, showing that many famines occurred in situations of adequate or excess food supply. Soon a report emerged, for instance, from the UN sponsored Independent Commission on International Humanitarian Issues (ICIHI 1985) portraying famines as a man-made disaster (against prevailing views attributing them chiefly to drought, plant disease, floods, and other natural disasters).

The centrality of individual (or household) access to food, and the existence of acute malnutrition or famine in the presence of overall food balance or even food surplus, had already been observed in a number of studies on nutrition. Sen's contribution, however, gave the issue a general and formal theoretical standing and made practically impossible to continue discussing food security from a supply point of view without considering distribution and access.

Some early portents of the conceptual change ahead were visible during the 1980s. For instance, a FAO report in 1983 introduced food access (in addition to food supply) in the definition of food security: it required "ensuring that all people at all times have both physical and economic access to the basic food that they need" (FAO 1983). This, however, was still centred on supply: ensuring access was mostly conceived as having enough supplies for everybody. This conceptual change, however, was not yet enshrined in official terminology until much later.

A number of trends emerged afterwards in the evolution of thinking about food security:

- A shift in the unit of analysis from the world and the nation towards households and individuals.
- A gradual inclusion of foreign trade as a legitimate source of a country's food supplies.
- A shift from food availability to food access and utilisation as central elements of food security.
- A stronger link of food security with economic and social development.
- A shift from 'food only' or 'food first' to a more inclusive 'livelihood' perspective.
- A tendency to consider not just objective situations of food shortage but also subjective perceptions of food security or insecurity.
A tendency to consider market mechanisms and incentives, and the behaviour of firms and consumers, as necessary ingredients in the theory of food security.

A widening of the concept more explicitly to embrace concerns about nutrition and food safety. This also includes complementing the preoccupation about dietary energy (calories) and staple foods (cereals, tubers) with a growing consideration of micro-nutrients and 'hidden hunger'.

A growing linkage of food security with environmental concerns.

A growing consideration of local food habits, the right to food, 'food sovereignty' and smallholder production.

Some of these conceptual shifts are briefly discussed in the following sections.

**From food supply to food access**

The most important conceptual change is undoubtedly the move from an emphasis in sufficient supply to an emphasis on individual access. What matters about hunger or food security is not the mere existence of food, but the possibility for people to acquire the food and be able to consume it. This connects food security with poverty, income distribution, livelihoods, and the social and economic organization of the food system, including food production but also including other aspects.

This conceptual change is not only a mere choice of emphasis, but a result of realizing that the world has mostly overcome the 'Malthusian' condition in which humans have lived for millennia, a condition in which mere physical survival, the mere replacement of one generation by another, was perpetually menaced by hunger and early death (for illuminating analyses on the historical process of overcoming the 'Malthusian' era, see the historical analysis of Fogel 2004 and the overarching theoretical framework of Galor 2011). Once humans were able to produce more than enough for survival, and life expectancy could be extended almost threefold, from about 30 to about 80 years in the latest three centuries, the problem was no longer centred on the supply of food (which is already sufficient to feed all mankind and more) but ensuring that everybody gets their share. And this is mostly related to matters other than food production: it involves social and economic development, and with it higher income, better skills, adequate health care, and a higher and more widespread capacity to acquire adequate food for everybody, every day.

**From the nation to the household**

Consideration of inequality in food access produced a shift in emphasis, from the aggregate level of the nation or the world to the micro level of individuals and households, as is usual when distribution is concerned. This forced also to take urbanisation and markets into account. In the post war years and in many cases up to the 1970s or later, most developing economies were seen as overwhelmingly rural, and rural populations in turn were seen as composed of subsistence farmers or pastoralists, with little reliance on markets for their food needs and limited capability to respond to market incentives. This view has been long discredited, as evidence mounted to the contrary. Untrue even in those times, it has been shown to be even more inadequate in recent decades, as market relations penetrate the countryside, most small holdings become subdivided by inheritance under increasing population (and thus no longer capable of feeding a family off their land, if they ever were), and Third World urban populations grow extremely fast during the second half of the 20th Century. Rural dwellers increasingly engage in cash crops, in non-farm self-employment in petty commerce and other trades, and in (farm and non-farm) wage employment, often involving temporary migration to cities or other rural areas, or abroad. These processes implied that many developing countries became predominantly urban, and most of the rural population became market-dependent for most of their food needs (including profound changes in traditional diets). Migration created also a steady flow of remittances that became an ever larger part of Third World household budgets, including rural households. This growing reliance of peasants on cash income, mostly obtained off-farm, was associated also with an increase in per capita food consumption and a decrease in undernourishment and malnutrition in most countries, as seen later in this study.

The idealized self-sufficient peasant family tended to persist far longer than its real-life counterpart. One of the consequences of this biased view was that any sudden drop in subsistence agricultural
production tended to be automatically interpreted as a food access problem for rural families, which could only be solved by food aid since the families in question were supposed to have no other sources of income, and to rely mostly on the food coming from their own farms. Commercial food supplies (from abroad or even from other regions of the country) were not regarded as a solution for peasants lacking self-sufficiency, because peasants were supposed to lack other sources of income to buy food in the market. Adequate markets were also supposed not to exist in many places, or to be highly imperfect, dominated by greedy middlemen who would hoard the food and charge grossly distorted prices, damaging the hungry farmers and their families. If the shortage was nationwide, importing food from abroad was also not seen as a legitimate arrangement, as it may create more 'dependency' and reduce food security (equated to food self-sufficiency at the national level).

Thus donated foreign food aid, distributed by the State to the affected people or to the food industry through non-market channels, was thought to be the only solution. Not only in the short term (e.g. after a crop failure due to a severe drought), but also on a more permanent basis. Many countries started receiving a steady flow of regular food aid (so-called 'programme food aid' as distinct from 'emergency food aid'). This strategy created disincentives for local producers, further distorted local diets, and generated long-term aid-dependency in beneficiary populations. Food aid became a permanent feature in some countries, beyond emergencies, further accentuating those effects.

The growing availability since the 1980s of survey information at household level gradually cleared the fog until a better picture began to emerge about rural livelihoods, rural employment, rural income, food consumption patterns, seasonal migratory movements, and other essential data. Also, the fast process of urbanisation led analysts to shift the focus towards food security in urban areas, a problem much highlighted since the 1980s in studies on urban poverty and the 'informal urban sector'. In many countries the urban poor are more numerous than the rural poor, and many urban poor lack adequate food and nutrition. Also, in many countries a majority of subsistence farmers were shown to depend mostly on the market to acquire food, and to pursue diversified livelihoods relying on various sources of income. Thus analyses of food security shifted emphasis from the national to the household level, defined indicators in terms of food consumption at household level, and analysed also intra-household differences in individual food consumption or nutritional status.

**Food security and nutrition**

In parallel to conceptual developments regarding food security there emerged a framework for conceptually organizing the efforts to fight malnutrition. This concept is related not only to food, but also to sanitation, health care, and other issues. In fact, once food intake has taken place, the biological utilization of food within the body may be hampered by bad health; thus, for instance, gastro-intestinal infections may cause diarrhoea and the consequent loss of water and nutrients; any infection (gastro-intestinal or not) may cause unwanted dissipation of dietary energy in the form of heat (fever). Unsafe water supply is a central cause of infection, and dehydration is a major consequence of diarrhoeas, often causing death. Proper feeding of infants (especially through maternal lactation) provides not only a safe and adequate supply of nutrients but also ensures good health, especially in areas without adequate water supply. Thus adequate feeding patterns, water supply, sanitation, hygiene, health care and other similar components were at the forefront of preoccupation with nutrition, in addition to adequate access to food.

Indicators of nutrition are also different from indicators of food availability and access; they were mostly centred on the anthropometric outcome of good nutrition, especially in children; the most widely used ones were weight and height (whereby actual measurements of children or adults are compared to standards based on healthy and well-nourished individuals; WHO (1995, 2007) are currently embodying the main anthropometric standards). Other nutritional indicators look for signs of micronutrient deficit; this includes measuring iron in blood samples, or calcium in bones; it may also include looking for clinical and epidemiological evidence of related diseases such as scurvy (due to lack of Vitamin C), night blindness (Vitamin A deficiency), or kwashiorkor (massive energy-protein deficiency). Clinical and biochemical indicators are complex and expensive, and are seldom applied on a large scale; however, some demographic and health surveys take blood samples from surveyed indi-
viduals, especially mothers and young children, looking most frequently for evidence of anaemia, i.e. iron deficiency). Some of the diseases are extreme outcomes only observed in famine situations.

The first conceptual embodiment linking food security with these issues, other than general concern about nutrition, was the development of the concept of 'nutrition security' during the 1990s (see a historical account in CFS 2012). Whilst 'food security' was mainly promoted by FAO, nutrition security was a concept initially raised by other international bodies such as the World Health Organization (WHO) and UNICEF. This does not mean that these organizations worked separately; in fact, FAO has incorporated the concept of nutrition security, and has developed the following formulation:

Nutrition security exists when all people at all times consume food of sufficient quantity and quality in terms of variety, diversity, nutrient content and safety to meet their dietary needs and food preferences for an active and healthy life, coupled with a sanitary environment, adequate health, education and care (FAO 2011).

This definition is centred on actual consumption of food, and not only on access to food, and emphasizes the requirement of adequate conditions regarding sanitation, health, education and care. FAO maintains an internal Nutrition Security and Policy Group, in an effort to focus attention on the point that nutrition security is only achieved when individuals actually consume the food they need rather than simply having access to it (as in the currently-accepted definition of food security).

However, this parallel development of two concepts ('Food Security' and 'Nutrition Security') has tended to coalesce in more inclusive terminology, integrating the two perspectives; the first terminological attempt was 'Food Security and Nutrition', and the latest is 'Food and Nutrition Security' (CFS 2012). Behind these variations lies, other than concern for conceptual precision, the need for a common terminology that recognises and embodies the roles and functions of the various international agencies involved in the matter.

From food to livelihoods

The notion of food security tends to isolate food needs from other needs, and agricultural production from other economic activities. However, in practice, people have a variety of simultaneous needs (food, water, shelter, clothing, health care, sanitation, education, and many more) that they must balance in terms of effort and resources devoted to their satisfaction, according to the ordering of preferences and budget constraints guiding the economic behaviour of individuals and households. Just as household needs are diverse, household livelihoods in both rural and urban areas include not only food production for subsistence, but also (and increasingly) other gainful activities and sources of income: cash crops, mining, manufacturing, transportation, construction, commerce and various services. These activities are carried out by households through the use of a variety of assets: physical (reproducible) means of production, natural resources, family labour, social relations and connections (social capital), and financial resources. They must use the proceeds not only to procure food but also to cover other needs. Livelihoods thus include multiple sources of income, and a diversified expenditure structure.

The household (or family) came thus to be seen as an entity that uses resources to obtain revenue, and uses revenue to satisfy needs. Intra-household distribution of food became a frequent issue. Considering a family like a sort of 'enterprise', with assets that are put into operation to provide means of living, is the stuff of the concept of livelihoods, which gave birth to the 'livelihood framework' that since the 1990s become dominant in the analysis of households and vulnerability in developing coun-

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2 Financial resources include money (cash or bank accounts) and other ways of storing purchasing power in more or less liquid forms (including traditional items like jewellery or livestock, or more formal ones like corporate stocks or government bonds). Access to additional credit (not actual indebtedness) is also a financial resource (indebtedness is a liability, not an asset). Access to remittances from emigrant household members, and to other private or public transfers may be counted as revenue from social capital, broadly defined.

3 Intra-household inequality in food access and nutrition pose many methodological difficulties. For an analysis of the issues involved see Haddad et al 1997. Deaton 1997 and Laeven & Michael 1988 provide a more general review of intra-household distribution and its measurement through household surveys.
tries. Chambers & Conway (1992) made one of the first formulations of the so-called sustainable livelihoods framework, which helped to define livelihood vulnerability in terms of the entire livelihood instead of focusing only on food. Frankenberger & McCaston 1998 was a key contribution to translate food security into the wider concept of livelihood security (see also Scoones 1998 and Swift & Hamilton 2001). Rural livelihoods were no longer seen as depending exclusively or chiefly on farming, but increasingly as a diversified operation (Ellis 1998, 1999). This approach emphasising sustainable livelihoods was readily complemented by the concept of sustainable development, where environmental considerations were paramount. Thus the concept of food security gradually incorporated more aspects of human needs beyond food and other aspects of human activity beyond subsistence farming, and shifted attention towards environmental sustainability.

**Objective and subjective food security**

Up to the 1980s food security was entirely centred on objective situations of food supply shortage or, to some extent, lack of access to food. Subjective feelings or beliefs, and reactions of economic agents to the food situation, were largely ignored. People classified as food secure or insecure may have a different opinion, but nobody asked them. The classification of people as food secure or insecure was not democratic but technocratic.

The appearance of a concept of *subjective* food security (or insecurity) marked another conceptual shift. A scale for measuring subjective food insecurity was introduced in the early 1990s, and then adopted as a regular module in the US Current Population Survey since 1995 (Radimer 1990, 2003; Radimer et al 1990; Radimer et al 1992, Bickel et al 2000). It has been extended to other countries, both developed and developing (Frongillo et al 1996; Frongillo 1999). In this approach, the household head or spouse is asked about his or her perceptions and expectations on the household's ability to meet food needs, presently and in the near future, and actions taken (or intended to be taken shortly) in case of insufficient access to food, such as looking for extra income, or reducing the number of meals, or curtailing the quality of food, etc. A number of such questions are combined into a scale ranging from complete food security to severe food insecurity in subjective terms.

This not only shifted the emphasis from objective to subjective indicators: it also shifted attention from the current or past situation to expectations or plans about the uncertain future. Thus household risk assessment and management was introduced into the concept of food security; not risk evaluated by technocrats but assessed by the eventual victims of food insufficiency. The severity of the risk is also indicated by the importance and subjective cost of remedial measures that households adopt or contemplate adopting as coping mechanisms (or coping strategies) to prevent or alleviate food insecurity (Maxwell 1996; Maxwell et al 1999, 2008). Some of these mechanisms or strategies aim at increasing income or subsistence production, other mechanisms aim at reducing food intake or modifying intra-household distribution; some may be just short-term manoeuvres that soon run their course, whilst others may become permanent features of household behaviour. Some require limited cost (e.g. renounce some 'luxury' food) whilst others involve substantial sacrifices (taking children out of school and sending them to work, felling fruit trees to use as firewood or for sale, entering ruinous indebtedness, or in some extreme cases even selling a pre-adolescent daughter into forced marriage or sex slavery in order to reduce household food needs and raise cash for feeding the rest of the family). The frequency and severity of (adopted or intended) coping strategies may be used as an indicator of the degree of objective or subjective food insecurity. Subjective food insecurity has thus become a frequent complement to more objective notions of food security.

However, subjective food security can be misleading. Some people claiming to be food insecure are actually obese, or have sufficient access to food, or regularly eat much more than they need. On the other side, some people in the poorest nations do not complain unless hunger is extreme, just because a degree of food insufficiency is habitual with them. More generally, different people feel food in-

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4 Though many of the concepts are different, and incorporate elements from outside economics, the idea of the household as an economic unit using assets to produce goods, services and income in order to satisfy the needs of its members is closely related to the ‘economics of the family’ sketchily proposed by some authors since the 1950s and formulated more systematically in the 1970s by Gary Becker (1976, 1981).
secure at different levels of food access relative to their objective needs. Some objective norm or standard seems still in order.

**Vulnerability and food insecurity**

The conceptual shifts from food to livelihoods and from objective to subjective food security (or insecurity) were also accompanied by increased prominence of the concept of vulnerability. The very notion of 'security' refers to a reliable expectation about the future. Such security would diminish if some danger arises of its alteration. From a subjective point of view, a person, household or country would feel 'food secure' when its present and future access to food is perceived as secured or certain. The chances of lacking food in the future are of the very essence of vulnerability: the likelihood of falling into hunger, or food insufficiency, at some point in the future.

Since the 1990s, several authors coming from the Sustainable Livelihoods approach tended to include vulnerability in the definition of food security (see for instance Maxwell 1996; Maxwell et al 1999; Dilley & Boudreau 2001). This referred especially to the chances of having spells of food deprivation or scarcity, more than a chronic situation of insufficient access to food. Thus, for instance, subsistence peasants getting their food from their farms in a semi-arid environment could be seen as vulnerable to drought and its consequences for their food supply. Likewise, people living on informal and precarious livelihoods (street hawkers, casual labourers, and the like) were also likely to face periods of scarce income, and therefore the possibility of spells with reduced access to food. It is important to note that a person or household might be vulnerable to food shortage even if it currently has adequate access to food; the concept of vulnerability has an intrinsic inter-temporal dimension.

Subjective perceptions of vulnerability provide also important clues about realities faced by households, and are also behavioural motivations to engage in preventive measures aimed at reducing the risk, as well as reactive measures to reduce harm caused by a spell of poor income or food shortage.

The subjective approach is not the only one. Another possible approach to this issue, based on objective information rather than subjective feelings, rests on the conceptual identification of vulnerability with instability or variance. If food supply or food access vary over time, a family getting just above the minimum amount of food may be deemed vulnerable in the sense that observed variance over time is an indicator of the chances for such family to fall beneath the minimum. The same approach has been used (especially in a number of World Bank studies) to address vulnerability to poverty: households with incomes just above the poverty line may suffer variation of income over time, and these variations may put them below the poverty line at some period or other.

The livelihoods approach includes a more elaborate view of vulnerability. Essential concepts in this regards are shocks and coping strategies. Any household with a certain habitual livelihood may suffer external shocks (a drought, a spell of no work, a surge in food prices) which may entail inadequate food access at least for a time; households must 'cope' with such emergencies by resorting to various 'coping mechanisms' or 'coping strategies', and may also have in place some kind of 'insurance mechanism' to make them resilient to such events.

The frequency and severity of coping strategies may be used as an indicator of the seriousness people attribute to their predicament about security in food access. Coping strategies are many, and differ in their degree of 'severity' (Maxwell et al 1999) and sustainability. Severity is hard to define, but the notion intuitively refers to the (pecuniary or other) costs of adopting a strategy; so, a relatively less costly strategy for a street hawker may involve staying one or two more hours in the street in the hope of getting some extra revenue; a more costly strategy may imply withdrawing children from school and sending them to work; extremely severe strategies also exist (entering prostitution, or selling off a child to a child slavery racket). Some strategies are unsustainable because they reduce the assets or future income of the household (e.g. selling off the family livestock in order to buy food).

Food security vulnerability has been also assessed in relation to household assets, and to subjective perceptions of food insecurity. In the sustainable livelihoods framework (Scoones 1998), paucity of assets is the main factor determining resilience or vulnerability of a livelihood; those assets include five kinds: reproducible physical assets, access to natural resources, financial capital, human capital,
and social capital. All household activities (productive or reproductive in the broad sense) imply mobilising and using those assets; preserving or losing assets is a key factor of continued resilience or increased vulnerability; this applies to all kinds of risks, including food insecurity but also other kinds of harmful deprivation. Through its link to vulnerability and livelihoods, food security is linked to risk, uncertainty, emergencies, and coping strategies that households may adopt to prevent or cope with such circumstances.

Thus the evolving concept of food security, formulated nowadays in terms of livelihoods, includes an implicit or explicit regard for risk reduction. The risk in question is not the same for everybody: the widespread (though seldom clearly defined) notion of vulnerability, which is essential to the sustainable livelihoods framework, is rooted in the idea that some individuals or households are more vulnerable than others, i.e. more likely to suffer the effects of adverse situations in the future, or less likely to adapt to such adversities, because of their paucity of assets, lack of resilience or more elevated exposure to external shocks.

Vulnerability is mainly a function of a household's characteristics, chiefly its assets of all kinds (physical, natural, financial, human and social) and its capability to use them in order to satisfy needs and respond to shocks. Assets are not static endowments: households may get richer or poorer and can gain or lose resilience as they accumulate, lose, or liquidate assets. Their likelihood of withstanding future shocks, especially in the long run, will depend not on their current but on their future capabilities, which are also subject to uncertainty and may be influenced by today's decisions, e.g. on improving human resources (such as making an effort now to ensure children's education and their future income-earning capability, or, in a shorter timeframe, to improve the income possibilities of current working-age household members).

The World Food Summit definition

The 1980s and early 1990s witnessed a string of financial crises and processes of economic and financial adjustment in developing economies, as countries tried to cope with a changed international environment. In the same period, international agencies and donors started lending more attention to the social costs of structural adjustment, including influential studies like Cornia et al (1987) and the book by Amartya Sen and Jean Drèze (1989), both sponsored by United Nations agencies. Emphasis shifted in this context to poverty reduction as the main way to reduce food insecurity and hunger. A major contribution to this shift of emphasis was the World Bank International Development report of 1990 devoted to poverty (WB 1990), where the Bank introduced its universal poverty lines of one and two dollars a day per capita (in PPP dollars at 1985 prices, later updated). In this context, FAO organised a World Food Summit, which convened in Rome in 1996. The Summit redefined food security, and its new definition was ratified (with minor variants) by further such summits in 2002, 2005 and 2009. Food security was re-defined entirely in terms of access, and entirely in terms of individuals. The official definition in the 1996 Summit's Plan of Action (WFS 1996) was as follows:

Food security exists 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.

This definition became the one universally used; the only refinement was the addition of 'social access' to reckon with food deprivation caused by social custom or other non-economic reasons such as ethnic or gender discrimination (for instance, the fact that in some places women receive less than their fair share of the food accessed by the household). Thus modified, the definition requires that all people at all times have physical, social and economic access, leaving the rest of the definition untouched. Such was the version sanctioned by the World Food Summit of 2009 (WFS 2009, footnote 1). Thus redefined, food security is not primarily concerned with aggregate balance between global or national production and demand, but is centred instead on individual access to food. This definition implied moving from the country to the individual and from emphasis on availability to emphasis on access. Of course availability is a necessary condition for access, but it is not a sufficient condition. Access requires also the capacity to acquire food at individual or household level and is thus intima-
tely related to poverty. Availability, in turn, does not mean domestic production since food may be made available through importation. *Trade became an ingredient of food security.*

Along with this radical change in perspectives, this definition includes a number of other innovations. Besides incorporating the notion that food should be quantitatively *sufficient* and *accessible*, the definition includes also *food safety* and *nutritional needs*, recognizing also *food preferences*, therefore putting a high priority on *qualitative* and *subjective* aspects of food. The reference to an active and healthy life means that the normative level of food consumption is not to be restricted to the bare minimum required for survival, but should be enough to sustain physical activity and health throughout life. This may also include food required to sustain a certain level of voluntary physical activity by individuals not doing heavy physical work, for them to avoid the dangers of sedentary lifestyles. Economic, social, political and environmental factors were also emphasized; the 1996 Summit declaration, for instance, states:

Poverty is a major cause of food insecurity, and sustainable progress in poverty eradication is critical to improve access to food. Conflict, terrorism, corruption and environmental degradation also contribute significantly to food insecurity. Increased food production, including staple food, must be undertaken. This should happen within the framework of sustainable management of natural resources, elimination of unsustainable patterns of consumption and production, particularly in industrialized countries, and early stabilisation of the world population. (Rome 1998).

The notion that food security implies access to food ‘at all times’ entails an *inter-temporal view of food security*, requiring not only stability of food supplies over time but also ensuring *ex ante* people's *future* ability to access food (e.g. by having a steady source of income enabling them to acquire food). Since we are ignorant about the future, a concept of food security ‘at all times’ implies an evaluation of the *probability* of having access to food at different times in the future; thus an *uncertainty and risk* component was (rather obliquely) introduced into the concept of food security, although that element has as yet not fully been incorporated into standard operational indicators.

All this makes evaluating long term food security especially difficult. As a matter of fact most analyses of food security confine themselves to the present, the very recent past or the immediate future. This is a severe limitation for analyses on the impact of long term processes (such as climate change or economic growth) on long term food security. On the other hand, short-term food security concerns are strongly motivated by events such as economic downturns and natural disasters, away from long-standing structural factors and high prevalence of chronic lack of adequate food access.

Last but not least, in the 1990s the importance of *trade* to smooth local food shortages was more explicitly underlined. The 1996 Rome Declaration emphatically stated:

> We agree that trade is a key element in achieving food security. We agree to pursue food trade and overall trade policies that will encourage our producers and consumers to utilize available resources in an economically sound and sustainable manner. [...] We will strive to ensure that food, agricultural trade and overall trade policies are conducive to fostering food security for all through a fair and market-oriented world trade system.

The notion of trade as *'a key element in achieving food security'* was in stark contrast with the traditional tendency to regard food imports as a sign of food insecurity. Even before the 1996 Summit, an early manifestation of the shift away from a definition based on self-sufficiency was that commercial food imports were recognised, in practical assessments of food security, as a legitimate part of domestic food availability: only the ‘uncovered gaps’ (i.e. food needs not covered by local food output and also above the country’s financial capacity to import) were considered as an indication of a food shortage at the *national level*. This can be seen for instance in the methodology used by FAO's Global Information and Early Warning System (GIEWS) to foresee and assess emergency food aid needs.\(^3\)

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\(^3\) The GIEWS (<http://www.fao.org/giews/english/index.htm>) was established after the 1974 World Food Conference. GIEWS routinely conducts Crop Supply Assessment Missions (CFSAM) to estimate food-aid needs in countries facing a present or impending food emergency (CFSAM methodology: <http://www.fao.org/docrep/011/i0515e/i0515e00.htm>). CFSAMs are the objective basis for decisions by food-aid donors, and provide also guidance for the UN World Food Programme which is in charge of food aid delivery and targeting. WFP participates in CFSAMs to assess the numbers and location of the most vulnerable groups in need of food aid; donors also take part as observers.
Dimensions of food security

Even before the 1996 Summit, analyses of food security had gradually expanded their focus, away from the sole consideration of (aggregate) availability, to include also other dimensions. It is a common formulation to distinguish four dimensions or ‘pillars’ of food security, implicit in the Summit definition:

- **Availability** of food – from production, trade and existing stocks, minus non-food uses.
- **Access** to food (physical and principally economic access).
- **Biological utilisation** of food in the human body – affected by infections.
- **Stability** of food availability, access, and utilisation.

These dimensions were often examined separately and on an unequal foot. Sometimes availability was the dominant concern, sometimes food utilisation (nutrition) is the focus, sometimes access. Some analyses focus on chronic or habitual conditions, some on seasonal fluctuations or occasional emergencies. In fact, all the dimensions are essential. However, emphasis has shifted since the 1990s towards the priority of access, which means shifting attention from national or regional aggregates towards households and individuals. The 1996 Summit definition responds to the perceived centrality of access. Availability is thus seen as a necessary (albeit not sufficient) condition for access, and access is also required to be stable and reliable.

Besides, while shifting emphasis from collective aggregates (such as nations) down to individuals, access comes to embrace biological utilisation as well: a person has actual ‘access’ to food or to food’s nutritional components (energy, protein, vitamins, and minerals) only to the extent that infections and disease do not hamper their biological utilisation in the body. As a matter of fact, this explicit inclusion of the body’s ability to process and use food shifts the emphasis further down, from individuals to their organs, tissues, cells and metabolic processes. Food security would require not only that food is reliably available, and (physically and economically) accessible to households, but also that individuals within households have effective access to food and are able (on a continuous basis) to biologically utilise it within their bodies. Thus food security may decrease due to outbreaks of disease, even in the absence of any problem with food availability and access. Access by individuals, not only by households, calls also attention to the intra-household distribution of food, a frequent issue in developing countries (see Haddad et al 1997 for a wide-ranging examination of intra-household allocation of food and other resources).

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Historically the pursuit of self-sufficiency has not been successful. Self-sufficiency policies in Maoist China and North Korea failed to ensure adequate food supply and produced several bouts of famine. Recent food export bans (wheat in Argentina, maize in Bolivia, and similar policies in Russia), adopted in the wake of food price surges in the late 2000s, caused declines in domestic output and increases in imports, and did not enhance or cheapen domestic consumption. See the Bolivia case (Maletta 2013a) as compared with Peru’s more relaxed market-oriented policy (Maletta 2013b).
The above four dimensions are the internal components or 'pillars' of food security. If their prevailing values in a population are adequate (according to certain norms), there is said to exist a food security condition in that population. According to the 1996 Summit definition, such dimensions should imply that all people at all times have adequate access, a target seldom attained.

On the other hand, these dimensions define conditions required for food security to exist. The prevalence of such conditions should lead to certain outcomes. The main outcome of a food security condition is a good nutritional status of the individuals composing a population. Nutritional status is usually measured with anthropometric indicators such as height and weight, and sometimes also through biochemical methods such as analysis of blood samples to detect supplies of iron and other micronutrients; the most severe conditions of malnutrition show up in diseases such as anaemia, scurvy, night blindness, or kwashiorkor, linked (respectively) to acute shortage of iron, Vitamin C, Vitamin A, and protein.

Indicators of food security as such, i.e. food availability, access, utilisation and stability, are often produced separately from indicators on nutritional status. In fact, different world organisations are charged with maintaining the databases that are relevant to each (FAO for food security, WHO for nutrition). There is in fact high correlation between the two families of indicators, but the databases have a different structure, resulting in non-comparable coverage, different frequency of the data, and generally different availability of information depending on the problem at hand. Some of the most pressing problems, such as consumption of micro-nutrients (vitamins and minerals) are not current included in either group of indicators. Indicators of child malnutrition are not routinely collected on an annual basis, but are rather the target of sample surveys taken (not in all countries) every four or more years. This contrasts with indicators of food availability which are produced on an annual and even seasonal basis in most countries.

Thus besides the complex shifts in ideas, that have completely transformed the concepts used to assess hunger, from national self-sufficiency in staple food to actual measurement of individual intake or subjective feelings of food deprivation, there is also widespread heterogeneity as regards collecting and processing of relevant information. Hunger measurement remains elusive to a certain extent, especially the less visible forms of hunger such as micronutrient deficiency or intra-household access inequality, which are seldom, if ever, measured in a systematic way. Traditional indicators in terms of calories may be no longer the most significant ones, in a world where other preoccupations take prime place, such as micronutrients, food quality, diet imbalance, saturated fats, or food waste. Most of these themes are not as yet the object of systematic collection of routine statistical data around the world.

Everybody may recognise extremes cases of hunger, such as those arising during famines or in exceptional circumstances such as war or severe natural disasters, but the hidden forms of food inadequacy are more difficult to gauge. Along with the challenge of better conceptual definitions remains the challenge of better methods and systematic data.

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