

## Food Security – definitions and drivers

### 1. Some basic definitions

[Food security](#); [food requirements and consumption](#); [poverty and food security](#); [food self-sufficiency](#); [food sovereignty](#)

#### 1.1 What is food security ?

The concept of **food security** has been defined on numerous occasions by the international community and it has evolved considerably over time. One of the most fundamental shifts has been the change from an initial concept in which food security was considered equivalent to the reliable availability of food towards the contemporary notion in which food is one of the elements of a complex social context that determines livelihoods. This social context and the relative balance of power that exists amongst the different interest groups that constitute it, are key determinants of the food security situation<sup>1</sup>.

The consensus that has emerged from the global debate is that:

*“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”.*<sup>2</sup>

Food security is a concept that encompasses four main dimensions:

- **Availability** in sufficient quantity of food of an appropriate nature and quality in all parts of the national territory, irrespective of its origin (local production, imports or food aid)
- **Access** by all people to the resources required to be able to acquire the food needed by them for an nutritionally adequate diet. These resources include not only financial resources, but also rights of access to the resources required to produce food or to receive it from others
- **Stability** of access to food, i.e. the assurance of access by people to food even in the face of natural or economic shocks

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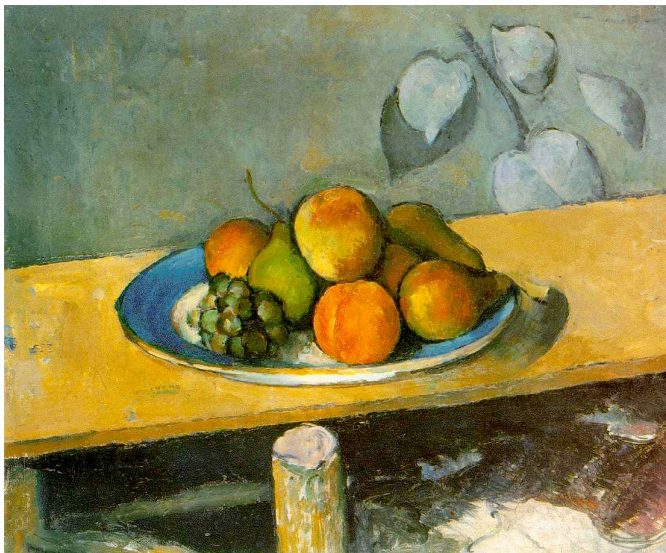
<sup>1</sup> E. Carr, [Postmodern conceptualization, modernist applications: Rethinking the role of society in food security](#), Food Policy 31 (2006) 14-29.

<sup>2</sup> FAO. [Rome Declaration on World Food Security and World Food Summit Plan of Action](#). World Food Summit 13-17 November 1996. Rome.

- A satisfactory **utilisation** of food by people that is not inhibited by health or hygiene problems (safe drinking water, sanitation or medical services, etc.).

For an individual to be in a situation of food security, all these conditions must be respected simultaneously.

Food insecurity can best be measured by anthropometric data that can help detect undernourishment and differentiate chronic from temporary undernourishment<sup>3</sup>.



The concept of **nutrition security** complements the concept of food security by adding a health dimension that encompasses the availability of health services and the knowledge of good food preparation and eating practices required for the health of their family members and indispensable for achieving their full development potential. Nutrition security also implies eliminating any major deficits in minerals and vitamins which often affect the same people who suffer from food deprivation.

As noted above, food security can be defined at various levels: individual, household, community or population group, regional, national or groups of countries. It is obvious that achieving food security at one of these levels does not necessarily mean that it is also achieved at other levels. For example, a country that is in a situation of food insecurity will almost always have some population groups whose food needs are fulfilled. Similarly many countries who are in a situation of national food security include some who people who do not eat sufficiently. A food-insecure household may also include some members who fully meet their food needs<sup>4</sup>.

**Caution:** do not mix up food security with **food safety!**

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<sup>3</sup> See for example the [Anthropometry Pocket References for Children and Adolescents](#) produced by USAID's Food and Nutrition Technical Assistance Project.

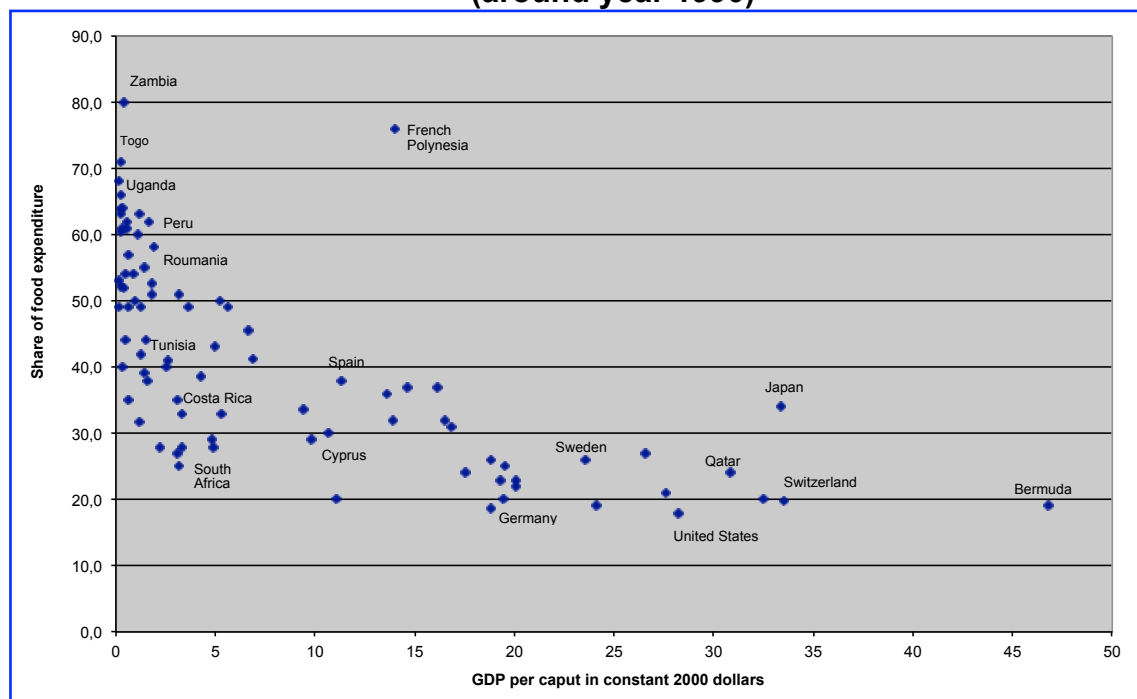
<sup>4</sup> **A. Thomson and M. Metz**, [Implications of Economic Policy for Food Security. A Training Manual](#), Training materials for agricultural planning no. 40, FAO, 2000

## 1.2 Food requirements and consumption

The amount of energy and nutrients required for healthy individuals to grow to their full potential and to lead a normal life, constitutes their **food requirements**. These requirements are usually expressed on a daily basis and they vary according to the category of persons (age, weight, physiological stage - e.g. growing, pregnant or lactating - and level of activity).

**Food consumption** is the quantity of food consumed by a given individual. It also includes wastage of food within the household after it has been acquired. The volume and the composition of this consumption depends on the level of disposable income of the individual (and of the household of which he/she is a member), the population group of which he/she is a member (rural or urban) as well as on a number of social and cultural factors – including knowledge of how to eat healthily - that determine the nature of food consumed. For example, as income increases, basic food products (cereals, roots and tubers) tend to constitute a decreasing part of food consumption, while products such as meat, fish, fruits and vegetables see their share grow. In the case of China, the traditional diet was essentially based on cereals, vegetables and a small quantity of meat. But the consumption of meat and fish have increased strongly as household income has grown, urbanisation has occurred and markets have developed<sup>5</sup>. More generally, the share of food consumption in total consumption

### Share of food expenditure in total household expenditure according to the level of GDP/caput (in \$'000) (around year 1990)



Sources : FAO, World Bank

decreases as income increases. For the poorest categories of people in a poor country, expenditure on food may represent as much as 80% of their total budget,

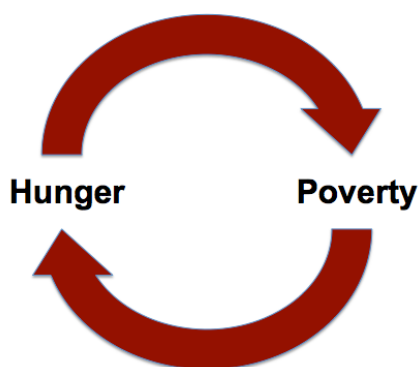
<sup>5</sup> J. Huang et H. Bouis, *Structural changes in demand for food in Asia*, IFPRI's Food, Agriculture, and the Environment 2020 Paper Series 11, International Food Policy Research Institute (IFPRI), 1996.

while for richer categories this proportion may fall to below 10%. The following diagram illustrates the variation of the share of food expenditure in total household budgets according to the GDP per caput of selected countries in 1990, the latest year for which comparable data for a large number of countries are available. Whereas food requirements are determined mainly by physiological factors, consumption depends on economic, social and cultural factors. Levels of consumption (also sometimes called *food demand*) can be influenced by policies, especially those that affect prices.

### 1.3 Poverty and food security

Because income affects food consumption, poverty is one of the main causes of food insecurity.

Poverty is often defined using a poverty line which is fixed as the level of income below which it is possible to say that a person is poor (World Bank<sup>6</sup>). In contrast with this simplistic definition, Nobel Prize laureate Amartya Sen defines poverty by the absence of a sufficient level of fundamental entitlements such as the right of access to essential goods which may be either the right on what is being produced, or a right of access to goods and services acquired through exchange on markets - including through sale of one's own labour. He also recognizes [extended rights](#) - based on social relations, gifts and counter-gifts and public goods - which can be exchanged by an individual. The amount of goods available to an individual - "*exchange entitlement set*" - can therefore be modified either through a variation in the entitlements of individuals or through a variation of his/her real rights to exchange<sup>7</sup>. Poverty is therefore above all a heavily contextualised complex and multidimensional concept linked to the low (or unequal) capacity of choice that individuals have. Thus income is only one of the dimensions, alongside social, institutional and even cultural dimensions<sup>8</sup>. The concept is related to a multidimensional view of development which has been the basis for the [Human Development Report](#) which has been produced annually by the United Nations Development Programme (UNDP) since 1990.



Poverty is one of the main causes of food insecurity. For poor households, once expenditures on basic necessities (energy, clothes, shelter and others) have been deducted, there are not sufficient resources left to meet other family needs, including food. Poverty itself is both a cause and a consequence of undernourishment resulting from chronic food insecurity<sup>9</sup>. Numerous studies have demonstrated that chronic undernourishment is a

<sup>6</sup> See: [www.worldbank.org/poverty/](http://www.worldbank.org/poverty/)

<sup>7</sup> V. Reboud (Ouvrage collectif), *Amartya Sen : un économiste du développement 2*, AFD 2008 (in French).

<sup>8</sup> A. Sen, *Poverty and Famines: an Essay on Entitlement and Deprivation*, Clarendon Press/Oxford University Press, 1981.

<sup>9</sup> S. Broca, *Food Insecurity, Poverty and Agriculture: A Concept Paper*, ESA Working Paper No. 02-15, FAO, 2002. [http://www.fao.org/righttofood/kc/downloads/vl/docs/Broca%20twin\\_track%20approach.pdf](http://www.fao.org/righttofood/kc/downloads/vl/docs/Broca%20twin_track%20approach.pdf).

factor in the perpetuation of poverty. An undernourished person attains a lower level of physical and intellectual development, and his/her capacity to work is constrained, especially by lack of available energy. He/she is also more likely to be sick and therefore not to be able to work at all. Undernourishment is also a vector for the inter-generational inheritance of poverty, as women weakened by an inadequate diet during their pregnancy, give birth to small and fragile infants who will have some kind of physical or even intellectual handicap from the moment of their birth. Similarly, an undernourished child will not do well at school, both as a result of reduced concentration - because of hunger - and also in many cases because of insufficient intellectual development. Finally, poverty is often the enemy of risk: a poor person will hesitate to embark on risky economic activities which often offer the highest potential profits.

#### **1.4 Food security, food self-sufficiency, food sovereignty and food safety**

People often mix up food security with “food self-sufficiency” and “food sovereignty”. It may therefore be useful to distinguish between these three concepts.

##### **a. Food self-sufficiency**

*Food self-sufficiency is the capacity of a country to satisfy all the food requirements of its population from its national production alone.* Self-sufficiency is a central element in the food policies of countries which seek total economic and political independence, as had been the case at one stage of the USSR in its cold war struggle with the US. But the pursuit of self-sufficiency has been shown to be dangerous for a country, as it makes it especially vulnerable to any hazard, weather-related or other, that may impact negatively on its production. There are two main characteristics that differentiate these two concepts:

- 1) Food security is a broader concept than self-sufficiency, to the extent that it encompasses the possibility of a country using its capacity to import food and not depend just its national production capacity to meet its food needs.
- 2) Food security and food self-sufficiency do not have the same goal: while the sole objective of food security is to satisfy all the food requirements of the population, regardless of the source, self-sufficiency gives at least the same level of priority to achieving political and economic independence. This gives this latter concept a stronger political meaning. It is this second point that constitutes the main difference between the two concepts.

From an economic point of view, food security relies heavily on international trade, selling goods that the country produces efficiently and importing goods that it is not so good at producing, following the principle of “comparative advantage”. Food security can therefore be achieved by a country that does not produce sufficient food for itself but has the money required, by exporting other products, to purchase food on the world market. Food security therefore may, in some cases, depend heavily on the terms of trade between exported goods and food, and on world food market conditions. This dependence on the market has been felt strongly since the recent food crisis and the increase of global food prices and has encouraged some countries to aspire to higher levels of self-sufficiency.

## b. Food sovereignty

Food sovereignty is a concept that was developed and presented for the first time by “[Via Campesina](#)” at the World Food Summit organised by FAO in Rome in 1996.

It is presented as “*the RIGHT of peoples, communities, and countries to define their own agricultural, labor, fishing, food and land policies which are ecologically, socially, economically and culturally appropriate to their unique circumstances. It includes the true right to food and to produce food, which means that all people have the right to safe, nutritious and culturally appropriate food and to food-producing resources and the ability to sustain themselves and their societies*”<sup>10</sup>.



Food sovereignty includes:

- “*Prioritising local agricultural production in order to feed the people, access of peasants and landless people to land, water, seeds, and credit. Hence the need for land reforms, for fighting against GMOs (Genetically Modified Organisms), for free access to seeds, and for safeguarding water as a public good to be sustainably distributed.*”
- *The right of farmers, peasants to produce food and the right of consumers to be able to decide what they consume, and how and by whom it is produced.*
- *The right of Countries to protect themselves from too low priced agricultural and food imports.*
- *Agricultural prices linked to production costs : they can be achieved if the Countries or Unions of States are entitled to impose taxes on excessively cheap imports, if they commit themselves in favour of a sustainable farm production, and if they control production on the inner market so as to avoid structural surpluses.*
- *The populations taking part in the agricultural policy choices.*

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<sup>10</sup> NGO/CSO Forum for Food Sovereignty, [Official déclaration](#), June 8 – 13, 2002.

- *The recognition of women farmers' rights, who play a major role in agricultural production and in food*<sup>11</sup>.

Food sovereignty has a much more political content than food security as it is inspired by several aspects of the Right to Food.

*Origins of the concept:* while the concept of food sovereignty was created and first promoted by the international Via Campesina movement in 1996, it has since then been adopted by various anti-globalisation organisations that use it to get their message across. The rights underpinning the concept are not yet formally recognised by international law or international organisations.

*Meaning and implications of the concept :* food sovereignty is in essence political as it must result, according to its creators, in the recognition of the right of a country to adopt agricultural policies that are better suited to the needs of its population.

According to its promoters, the objective is to facilitate the revival of a local agriculture that aims in the first instance to supply local, regional and national markets and which has, according to the anti-globalisation movement, a greater economic, social and environmental efficiency than industrial agriculture and large-scale plantations.

Although this concept sometimes appears in official speeches, it remains very much linked to the anti-globalisation movement and therefore carries a strong political message.

### **c. Food safety**

Finally, it is also important to note that there is often confusion between the terms “food security” and “food safety”, especially when translations are being made. Food safety is concerned especially with the assurance that food is not damaging to the health of consumers because of contamination by harmful organisms or toxic products. [read more on [food quality and safety](#)]

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<sup>11</sup> Via Campesina, [Food Sovereignty](#), 2003.

## 2. The drivers of food security

[Historical point of view](#); [Conceptual point of view](#)

### 2.1 Historical drivers

*From 1970 to 1995*

The drivers that may explain the evolution of the number of undernourished over time have been the object of numerous analyses and publications during recent decades. In a report published in 2000, FAO acknowledges the importance of economic growth in hunger reduction, estimating that progress made in Asia during the 70s was essentially due to a fast growth of GDP. To substantiate this statement, FAO quotes some expert estimates according to which an increase of GDP per caput by more than 3% would allow a significant improvement of the standard of living and a reduction of poverty which, in turn, would result in a reduction in food insecurity.<sup>12</sup> In the same report, FAO emphasises the impact of the green revolution in Asia, the strong increase in food production it entailed and its consequences on job creation and increase of local consumption.

One can indeed consider that the generally positive developments observed during the 70s, particularly in Asia and despite successive economic crises, can largely be attributed to advances in technology initiated during the 60s as well as to the considerable investments made in agricultural research and infrastructure, particularly irrigation. In some countries, progress also stemmed from considerable advances in the process of land reform.

Peter Timmer<sup>13</sup> stresses how much the food security strategies adopted in Asia contrasted with the processes of economic liberalism then being promoted by the international financing institutions. It is indeed by imposing trade restrictions and protecting the domestic market with the view to stabilising prices, especially the price of rice which is the staple commodity in Asia, that these countries were able to increase their production and enhance the food security of their population. A high savings rate, strong capital productivity and huge investments in human capital were the ingredients of rapid growth in Asia<sup>14</sup>. In the case of China, - and later Viet Nam - institutional reform was also essential ([see the box on China](#)).

However, despite these developments, Asia remains the region with the most hungry people [\[read\]](#) and the green revolution and its emphasis on irrigation and purchased chemical inputs has by-passed most small-scale farmers [\[read\]](#). Instead, most of the benefits have accrued to a minority of large-scale farmers and have contributed to

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<sup>12</sup> FAO, *The State of Food and Agriculture 2000, Chapter II : World food and agriculture: lessons from the past 50 Years*, FAO, 2000.(in French).

<sup>13</sup> P. Timmer, *Food Security and Economic Growth: an Asian perspective*, Heinz W. Arndt Memorial Lecture, Canberra, November 22, 2004.

<sup>14</sup> World Bank, *The East Asian Miracle: economic growth and public policy*, Oxford University Press for the World Bank, 1993.



spread an agricultural model that is fragile and detrimental to the environment [\[read\]](#).

### The Case of China

China is a remarkable example of success in the struggle against poverty and food insecurity .

The amounts of food available per person have grown from less than 1700 kcal in 1960 to 2570 kcal per day in 1995, largely because of an increase of food production but also because of the “one child” policy which slowed population growth.

The Chinese experience demonstrates the importance of technological developments combined with better incentives, institutional reform, rural economic development and other policies that have made it possible to increase food availability. The introduction of fast growing varieties allowed an increase in the intensity of cropping, thus contributing to increased land productivity. Hybrid rice, for which Chinese scientists have been the pioneers in the 70s, increased yields and had spread to close to half the rice-grown area as early as in 1990. Economic and institutional reforms have given a big push forward to agriculture. The post-reform GDP doubled, with much of the growth attributable to the expansion of the rural economy, resulting in an extraordinary reduction in absolute poverty in China between 1978 and 1985.

(based on : [FAO, \*Poverty Alleviation and Food Security in Asia: Lessons and Challenges\*](#), FAO Regional Office for Asia and the Pacific, Bangkok, 1999)

**Note:** Today (2013), China continues to support its agriculture strongly (according to the OECD, China's total annual support to agriculture is estimated at \$143 billion - equal to that of the US - of which \$118 billion is in the form of producer support) and the level of consumption of fertiliser is one of the highest in the world (217kg N/ha to be compared to 102kg/ha N in France, according to FAO). The record use of chemicals and the boom in intensive livestock production have created environmental hazards and high health risks.

Africa saw its number of hungry increase during the 70s. This period was characterised by some political instability and by the difficulties met by the then recently independent states in managing their economies, largely because of lack of capacity and resources. Pan-territorial and pan-temporal prices adopted by countries with the objective of ensuring greater economic equality turned out to be very costly for national budgets and failed to offer incentives for expanding production: agriculture was highly taxed. Cereal production fell during much of this period and average agricultural growth was less than 3% in most countries, which was below the level of population growth and insufficient to make agriculture an engine for growth<sup>15</sup>. The degradation of the economic situation finally led during the 80s to international financing institutions taking virtual control over the economy of many African countries.

In Latin America overall, the 70s were a decade of relatively strong growth. In contrast, the 80s were a difficult period characterised by negative growth of GDP per caput, particularly between 1981 and 1983, and between 1989 and 1991. This period saw an increase of the percentage of the population in a situation of poverty from 40.5% in 1980 to 48.3% in 1990<sup>16</sup>. Simultaneously, there was a steep increase in the

<sup>15</sup> [W. Kidane, M. Maetz and P. Dardel, \*Food security and agricultural development in sub-Saharan Africa\*](#), FAO, 2006.

<sup>16</sup> [J. Graziano Da Silva, \*Políticas de Seguridad Alimentaria: Panorama General en América Latina y Caribe\*](#), Tercer Encuentro de Ex-Presidentes, FAO, 2008 (in Spanish).

number of undernourished. This succession of good and bad years may explain the relative stability of the number of hungry over the period.

### Evolution of the number of undernourished (millions) (1969-2012)

Groups of countries	1969-71	1979-81	1990-1992*	1999-2001*	2004-2006*	2007-2009*	2010-2012*
Africa	103	148	173	210	213	222	223
Latin America and Caribbean	53	48	66	61	55	50	47
Asia and Pacific**	713	681	735	644	599	563	529
Developed Countries			20	18	14	15	16
<b>WORLD</b>	<b>917</b>	<b>877</b>	<b>1015</b>	<b>957</b>	<b>907</b>	<b>878</b>	<b>842</b>
India			227	241	233	229	214
China			272	184	175	158	158
Other countries of Asia and the Pacific			236	219	191	176	157

\* new FAO method of estimation, SOFI 2012

\*\* including Oceania

Source : FAOSTAT, SOFI

#### *Between 1995 and the 2007 food crisis*

The high growth in food production, which reached 3% per annum in non-industrial countries, fell to 1% during the 90s<sup>17</sup>. The causes for this slowing of growth are believed to have been the decrease in public expenditure (particularly in research) and investments in agriculture. These coincided with a broad withdrawal of the state from engagement in the agricultural sector as a result of reforms conducted in the framework of the stabilisation and structural adjustment programmes, imposed by international financing institutions. These reforms were simultaneous to a neglect of food production in non-industrial countries, in part because of a downward pressure on prices driven by high agricultural subsidies in OECD countries. Reforms also encouraged increased attention to the production of export commodities, which, because of the fallacy of composition, experienced diminishing world prices, as markets were over-supplied. African countries, in particular, suffered from this slowdown, as they were rigorously applying the recipes given by international financing institutions, and because of their heavy dependence on a limited number of export commodities. Towards the end of the period, agricultural production revived weakly at a rate just above that of population growth, despite improved incentives for production<sup>18</sup>.

The loss of the green revolution's momentum was also due, particularly in Asia, to the fact that the most fertile zones had already been exploited and that new types of pests appeared while water and micronutrient shortages started to make a dent in yields. Whereas China was able to reduce its number of undernourished by around

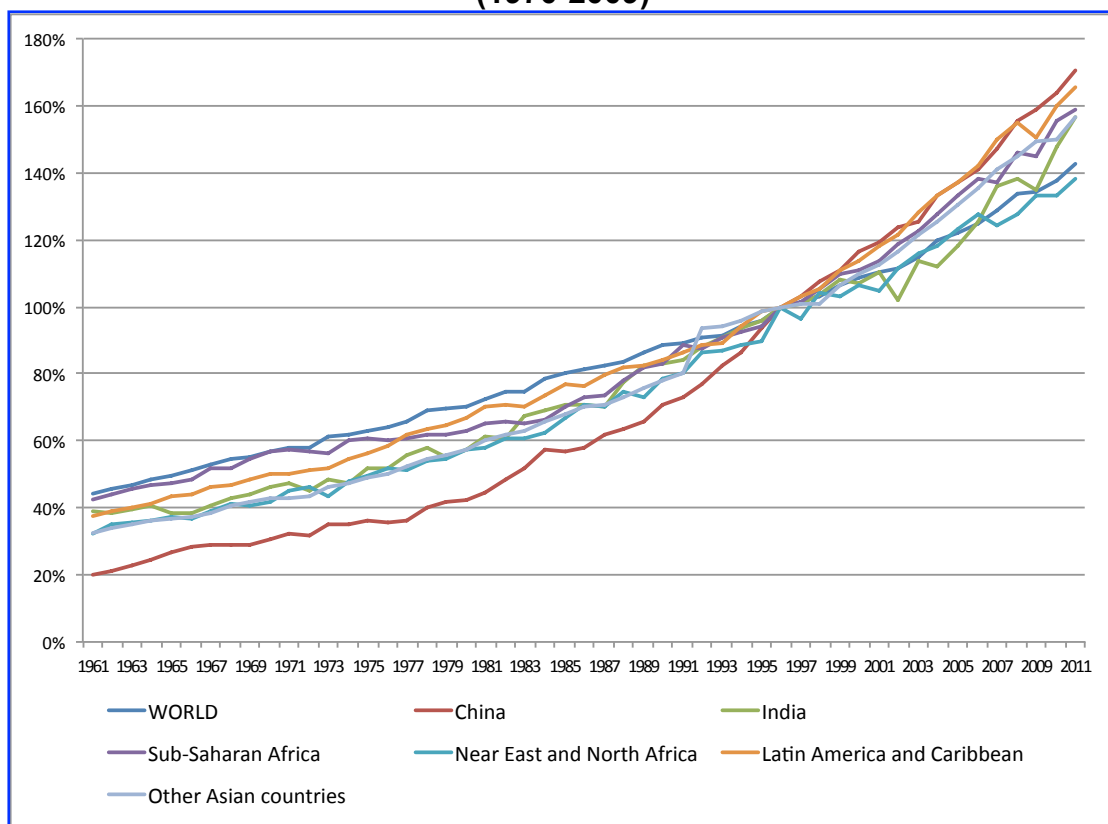
<sup>17</sup> FAO, 2000 *Ibid.*

<sup>18</sup> K. Anderson and W. Masters, *Distortions to Agricultural Incentives in Africa*, World Bank 2009.

35% between 1990-92 and 2005-07, the same figure remained stable for India, in spite of it becoming largely self-sufficient in food production, illustrating the very different nature of economic growth in both countries.

In Africa, it is interesting to note that much under-nourishment can be directly linked to the conflicts that continued to wage on the continent. At the beginning of the XXI<sup>st</sup> century, around 60% of the 210 million undernourished Africans lived in countries that had been under conflict recently and had important mineral resources<sup>19</sup>. The disorganisation of the economy, difficulties in communication, displacement of refugees and economic problems resulting from the exploitation of mineral resources (Dutch disease syndrome) are factors that may explain this situation<sup>20</sup>.

**Evolution of total agricultural production (Index 100=1996)  
(1970-2009)**



Source : FAOSTAT

Latin America, in contrast, saw a reduction by more than 17% in the number of undernourished between the beginning of the 90s and the middle of the first decade of the XXI<sup>st</sup> century. This can be explained by a favourable period from an economic

<sup>19</sup> The 2010 report of FAO on "[The State of Food Insecurity in the World](#)" emphasises that 22 countries identified as being in a state of protracted crises (or having regions in a state of protracted crisis) had 166 million undernourished people, close to 40% of their total population and almost 20% of the total number of undernourished in the world.

<sup>20</sup> **Kidane et al.** 2006, *ibid.*

point of view, particularly between 2004 and 2007 when the GDP growth rate per inhabitant was greater than 3% annually<sup>21</sup>.

From the middle of the 90s, the awareness of the lack of progress in food security at world level created a series of reactions which ranged from the organisation of several successive World Food Summits to an increase in official development assistance to agriculture and food security. It also included noteworthy changes in the agricultural policy “recipes” (return to favour of subsidies, in the shape of “smart subsidies”, emergence of the “twin track” approach which combines development actions and social programmes that are intended to give to the most vulnerable the means to seize opportunities that result from development initiatives, etc.).

Unfortunately, this awareness was mostly evidenced by big speeches and formal commitments that were not followed up by concrete action on the ground. Government expenditure continued to decrease, except maybe in the very latest years of this period, and international assistance to agricultural and rural development remained at a historically low level. At the same time, a growing proportion of international assistance went to emergency support. International assistance to agricultural development fell from around \$9 billion annually in 1987 to less than \$4 billion in 2002. [[read more on support to agriculture](#)] In the case of Africa, the assistance to social sectors increased from 13% of the total in 1979 to 44% in 2007<sup>22</sup>.

#### *The 2007-08 food crisis and the immediate post-crisis period*

There is a mass of literature on the food crisis, its drivers and consequences. Reasons explaining the crisis generally include<sup>23</sup> :

- Weather-related production shortfalls observed in some large food exporting countries such as Australia and Canada.
- Falling global food stock levels that had suffered a progressive reduction of more than 3% percent per year on average since the middle of the 90s, mainly for cereals. This reduction is at least in part due to a change of policies imposed by international financing institutions that asked countries to diminish their publicly held food stocks because of the high cost involved in storing food commodities. The level of privately held stocks may also have decline with the growing concentration of the international food trade in the hands of a few very large multinational corporations.
- Increasing oil prices that contributed to raising costs of food production because of a higher price of fuel and fertilisers, particularly nitrogen-based fertilisers. The cost of energy started to rise in 2003 (+15% compared to 2002). The strong increase of the cost of energy (37% in 2004, 20% in 2006, 43% in 2007 and 60% in 2008) also had an impact on the cost of transport.

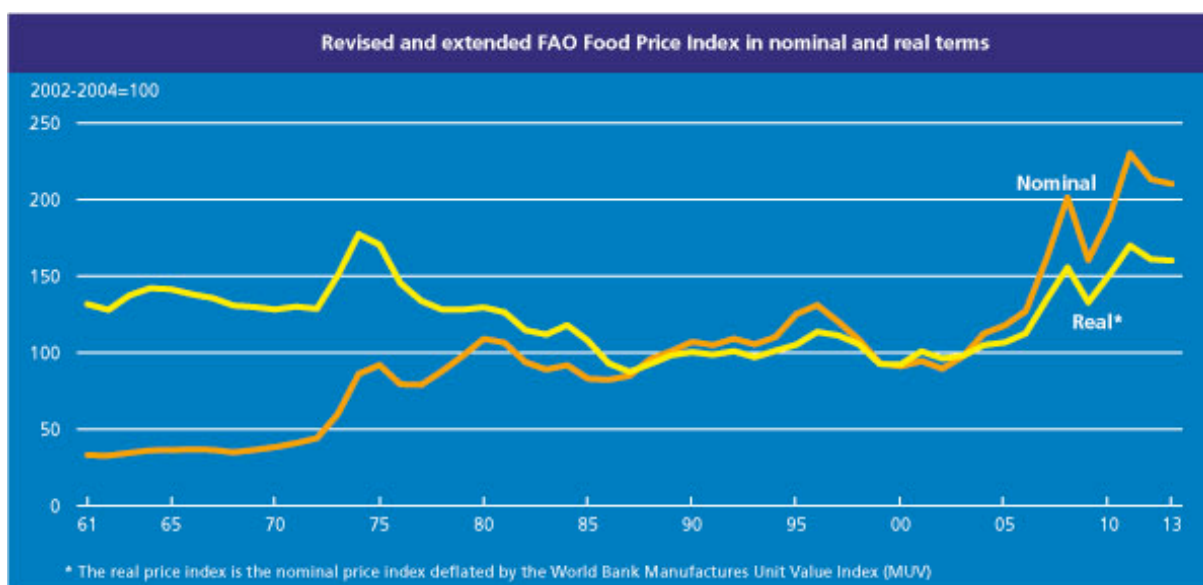
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<sup>21</sup> J. Graziano Da Silva, 2008, *ibid*.

<sup>22</sup> M. Brown, *Rapid Assessment of Aid Flows for Agricultural Development in Sub-Saharan Africa*, Investment Centre Division Discussion Paper, FAO, 2009.

<sup>23</sup> based on : FAO, *Soaring Food Prices: Facts, Perspectives, Impact and Actions required*, High-Level conference on world food security: the Challenges of climate change and bioenergy, 2008.

- The very strong increase in demand for agrofuels produced from sugarcane, maize, oilseeds and palm oil, which can be directly linked to the price of oil<sup>24</sup>, as well as to ethanol subsidies in OECD countries, amounting to \$11 to 12 billion annually to which subsidies on agricultural products used for producing agrofuels should be added.
- The change in structure and level of food demand arising from economic development and increased income in non-industrial and emerging countries, compounded by population growth and urbanisation.
- Speculation on financial and commodity markets which has especially contributed to the short-term volatility of agricultural commodity prices and which sparked price hikes at the peak of the crisis. However the characteristic of speculation is to try and cash quickly its profits, which means that the hikes are generally only short-lived and destabilise markets over relatively short periods of time.
- The instability of currency exchange rates and particularly the weakening of the US dollar which occurred between August 2007 and August 2008.
- The decisions made by some exporting countries to restrict their exports with the aim of protecting their consumers, thereby creating panic on regional and global markets.



Source: [FAO](#)

Most of the reasons listed here were of a temporary nature in 2007-08, apart from the change in food demand. However they are indicative of underlying factors that are likely to shape the future of world agriculture and food security, namely: (i) the level of investment in rural and agricultural development; (ii) climate change; and (iii) the long term trend of increasing fossil fuel prices. There was hope in 2008, that the crisis which resulted from a conjunction of negative circumstances, would be easily overcome. The expectation was that, provided immediate assistance was provided to the most hard hit population groups and the negative trend in investment and support to agriculture was reversed, conditions would return to “normal” even though

<sup>24</sup> The importance of the impact of this factor on the price increase has been estimated at very different levels, depending on sources. It has been the object of a rather hot exchange between the Director-General of IFPRI and the US Secretary for Agriculture during the round table organised at the High Level Conference held in Rome in June 2008.

some food products would see their prices remain higher. FAO, for example, estimated that by 2017: “*compared to the average of the observed prices during the period 2005-2007, the real price of wheat [would increase] by 2 percent; rice by 1 percent; maize by 15 percent; oilseeds by 33 percent; vegetable oils by 51 percent; and sugar by 11 percent*”<sup>25</sup>.

But by the end of 2010, it was clear that all the efforts made by some countries and a few international organisations (the World Bank and its Global Agriculture and Food Security Program - GAFSP, and the European Union’s Food Facility) would not be sufficient, despite the negative impact of the financial crisis of 2008-09 on global food demand, as food markets remained extremely fragile and food prices quite high<sup>26</sup>. This was later confirmed, in 2011, when world food prices experienced new peaks, and even today in late 2013, the FAO food price index remains 40% above what it was 5 years ago. [read more about [food crises](#)]

The consequences of soaring food prices have been the subject of controversies regarding their real impact on food security. As soon as the increase of prices was confirmed and riots occurred in about 25 non-industrial countries, international organisations engaged in a competition to estimate the impact of high food prices on food insecurity and poverty. The President of the World Bank announced that there were 100 million additional poor in low income countries<sup>27</sup>, and the Director-General of FAO stated that there were 50 million more people suffering from hunger<sup>28</sup>. He later gave an estimated figure of 963 million undernourished persons compared to the 923 million that had been estimated in 2007<sup>29</sup>.



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<sup>25</sup> FAO, 2008, [ibid.](#)

<sup>26</sup> FAO, [Food Outlook - Global Market Analysis](#), Rome, novembre 2010.

<sup>27</sup> World Bank website, 14 April 2008.

<sup>28</sup> FAO website, 3 July 2008, <http://www.fao.org/newsroom/en/news/2008/1000866/index.html>.

<sup>29</sup> FAO website, 9 Decembre 2008, <http://www.fao.org/news/story/en/item/8836/icode/>.

J. Swinnen <sup>30</sup> stresses the contradictory aspects of some of the declarations made over time by international organisations and large international NGOs, recalling that these organisations were focussing their communications on the negative impact of soaring food prices on the number of undernourished, in spite of the fact that they had lamented for decades that the decreasing trends in food prices observed since 1970 were one of the fundamental causes of degradation of world food security<sup>31</sup>. Although some improvements in analytical techniques may lead to changes in some of the conclusions reached, in this case the observed contradictions appear to have had more to do with how the results were communicated than with the results themselves. These contradictions could therefore, according to him, be mainly explained by: (i) the main objective of these organisations is to help those people who are in need; (ii) the existence of a bias in favour of urban areas as the media - and consequently international organisations - are more sensitive to urban events such as food riots, than to the silent complaints of rural people; (iii) these organisations have to mobilise resources to be able to act and, as a consequence, have to continuously communicate the importance of what they do<sup>32</sup>; and (iv) these organisations maintain close links with the media that tend to give priority to “negative” information that is more appealing to the emotions of their audiences.

After this rapid review of drivers of food security from the historical point of view, a complementary conceptual review may be useful to better understand the specific factors that determine food security.

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<sup>30</sup> J. Swinnen, [The right price of food](#), Licos Discussion Paper series 259/2010, Katholieke Universiteit Leuven, 2010.

<sup>31</sup> It is however true that FAO also acknowledges that the price increase is an opportunity for the development of agriculture. See for example: FAO, [Guide for immediate country level action](#), FAO's Initiative on Soaring Food Prices, May 2011.

<sup>32</sup> An example of this dramatisation is a communication by OCHA (UN Office for the Coordination of Humanitarian Affairs) which gave an estimate of 10,000 dead following the Haiyan typhoon in the Philippines in 2013, a number much larger than estimates made one month later which were of “only” 7,000 dead.

## 2.2 The drivers - the conceptual point of view

[Availability](#); [Access](#); [Stability](#); [Utilisation](#)

### 2.2.1 Availability

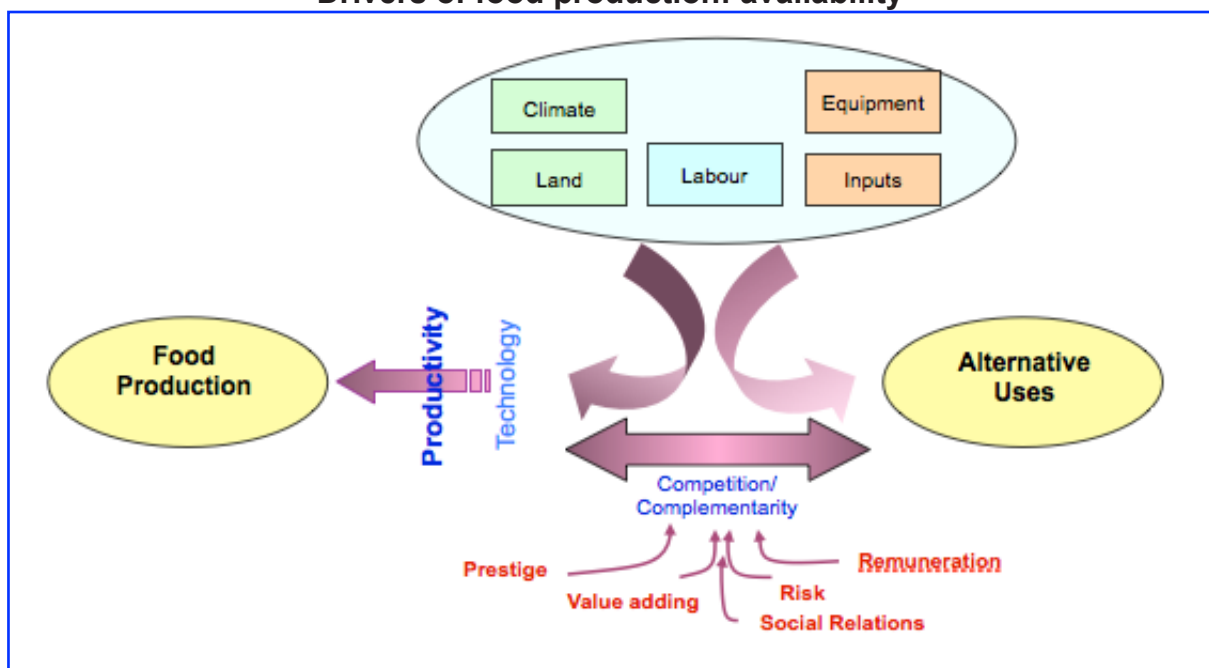
**Availability** of food is clearly a necessary condition for food security to occur. This means that in a given country, region or locality, food products are physically available in sufficient quantity to ensure the food security of its inhabitants. The origin of this food can be local or national or the food may have been imported from abroad. This implies the existence of a marketing system that links producers (local, national or from the rest of the world) to local consumers.

### Production

Production depends on climate, available land and its quality, labour (number of workers and their technical and managerial skills), capital - the equipment that is being used (tools, machinery, buildings and facilities) and livestock - and inputs (seeds and genetic material, water, inputs for the management of soil fertility and plant and animal health, feed for animals, etc.). All this is combined with production technologies that determine the level of productivity of land and labour, the two essential economic variables affecting the sharing between land, capital and labour of the value added arising from production.

Local (national) production therefore depends technically on the quality of these various ingredients and on the ways in which they are distributed geographically and socially. This distribution will largely determine the level of “optimality” of their combination and the result obtained in terms of availability of food products.

### Drivers of food production: availability





From a social and economic point of view, the level of production of food will also depend on conditions of competition or complementarity between food production and other economic activities (use of land for non-food production or for non-agricultural activities, involvement of the labour force in non-agricultural activities, use of equipment or inputs for other non-agricultural activities, etc.). The extent of competition or complementarity will depend on the level of remuneration obtained from these alternative uses, the level of risk incurred, social relations, the level of prestige and other benefits that may be attached to them, or the added value that these activities may bring to food products (e.g. processing).

The level of production will also depend on the quality, relevance and availability of services to facilitate the use of the most adapted technologies (training, extension, research, finance, management advice, etc.).

All these dimensions will need to be taken into account at the time of the formulation of a *food security policy*, which, as can already be inferred from what has been said, cannot simply be limited to an *agricultural development policy*.

### Marketing and processing

Producers are linked to consumers by value chains. It is through them that products are made available to consumers. Their length and complexity is variable. They may be very short in the case of home-consumption, direct sales or [Community Supported Agriculture](#) associations (CSA), (in France AMAP - [Associations pour le maintien d'une agriculture paysanne](#), in Japan [Teikeis](#)). They may become very long and complex when they involve processing and long-distance transportation. Factors affecting food availability and costs will therefore include a large number of elements as diverse as several different types of traders (collection, wholesale or retail), the mode of organisation of producers (individual, cooperatives or groups, contracted growers), market infrastructure (real or virtual, spot or future markets), transport (roads, rail, air and types of vehicles) and storage, information systems, processing technologies (conversion rate, costs, logistical implications), retail structures (small shops, supermarkets or hypermarkets), the level of competition at various stages of the value chain, etc. The institutional structure of value chains is also crucial: does it allow for proper dialogue among stakeholders and thus help to ensure a good level of predictability of behaviour, or does it operate opaquely and hence generate lack of trust? Is there a reasonable balance in the respective powers of the various players in the chain, or an asymmetry that leads to the emergence of exploitative relationships?

The efficiency of these value chains will largely determine the difference between the price obtained by producers and the price the consumer will pay. Prices vary a great deal according to the commodities and countries concerned, and they can be strongly influenced by policies in place (rules and regulations, taxes, subsidies). The smaller this difference is, the easier it will be to strike a balance between a fair remuneration for producers (that will provide an incentive for production) and a just price for consumers to whom it will give more purchasing power – and hence to achieve food security. The form and the mode of operation of value chains at different stages will also determine the extent to which signals given by policies and the world

market are transmitted between consumers and producers.. The lower the levels of efficiency and transparency at different stages of the value chain, the more they “absorb” the signals that are sent through them.

### **Price difference between producers and consumers**

The difference between the price paid to the producer and that paid by the consumer may be extremely high. It is due to transport, packaging, storage, processing (if applicable) and to margins of the economic agents operating at each of the different stages of the value chain. In non-industrial countries, the cost of transport can be very high and may represent more than 30% of the price paid by the consumer.

Even in Europe, the price differences between consumer and producer prices can be quite variable, depending on the commodity and the country. It can range between 28 and 62% in the case of fresh milk and 42 and 82% for butter. In the case of meat, depending on the particular cut, it can vary from 12 to 92% for pigmeat, and 7 to 74% for beef, according to a study of the European Parliament. For fruit, the difference can range from 26 to 74% and for vegetables from 14 to 82%. These differences are mainly explained by: (i) the degree of concentration of retailers (ii) the extent to which producers are organised; (iii) the extent of handling, processing, storage and branding; (iv) the legal and regulatory framework.

Based on **European Parliament**, [\*The gap between producer prices and the prices paid by the consumer\*](#), 2007

## Foreign trade

Imports are the other source of supply for a country when national food production is insufficient. Border measures (tariffs, various taxes, cost of freight, importers’ margins, sanitary and quality norms and regulations, modality of access to foreign exchange, etc.) will determine the conditions of this supply, its price and volume. The chain linking importers and wholesale markets is usually rather short.

### 2.2.2 Access

Access to food by all depends on the condition of food [markets](#), people’s [incomes](#) and, particularly for the poorer categories of the population, on the extent to which they are able to exert their “[extended rights](#)” (for example customary sharing of income or food) and can benefit from [safety nets](#) put in place to help those who do not have their own means to access adequate food supplies.

## Markets

Besides those factors already mentioned above in relation to production, market conditions can also affect access to food by people. These conditions depend on the taxation and subsidy policies adopted by governments that impact on the level of food prices. The extent of freedom for consumers to organise themselves into

associations or lobbies as well as other institutional measures (existence of special selling points or shops - see "[safety nets](#)") may also play an important role.

## [Income](#)

Income, and the purchasing power it provides, is a major determining factor for people to have access to the food they need for them to be food secure. It is worthwhile reviewing here various sources of income that may have an impact on food security while making a distinction between the differing situations in rural and urban areas and bearing in mind that the urban population is bound to grow much faster in the coming years than the number of people living in rural areas<sup>33</sup>.

In rural areas, income largely comes either directly or indirectly from agriculture. Direct income from agriculture (in the broad sense) depends on the value of agricultural production - and therefore of agricultural prices -, and of costs of production of which a large part is constituted by the cost of agricultural inputs, fuel, depreciation of equipment and financial costs. Individual income is a direct consequence of the productivity of labour and of the technology used. For some farmers, a part of the production is home-consumed, the rest being exchanged (see below [extended rights](#)) or sold on the market. For agricultural labourers, income comes from wages in cash or in kind.



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<sup>33</sup> Urbanisation is expected continue at an accelerated rhythm and 70% of the world's population should be living in urban areas by 2050 (compared to 49% in 2009). After reaching a maximum during the 2010-20 decade, rural population will start decreasing. (FAO, [Global Agriculture Towards 2050](#), High Level Expert Forum on "How to Feed the World by 2050", 2009). Even in a region that is known to be very rural, such as West Africa, the urban population should amount to 60% of total population by 2030 (OCDE/Club du Sahel et de l'Afrique de l'Ouest, [Nouveaux contextes et enjeux de sécurité alimentaire au Sahel et en Afrique de l'Ouest](#), 2008) (in French).

Indirect income from agriculture is more diversified and linked overwhelmingly to the multiplier effects of agriculture, through products, inputs and consumption. Through products, income is earned from activities conducted within agricultural value chains (marketing, storage, processing, etc.) which generate wages for employees and profits for business owners. To this, it is necessary to add income from non-agricultural activities such as services and government, primary activities other than agriculture (e.g. mining) and industrial activities. These activities are in part also linked to agriculture through inputs (services, production and marketing of inputs, production and maintenance of agricultural equipment). Income can also be earned from activities resulting from the consumption effect, i.e, activities due to consumption by people living from agriculture. Finally, income in rural areas may also come from sectors that have their own dynamics and are largely independent from agriculture: mining, manufactures, tourism, etc. All this non-agricultural income, although quite important, is often neglected by food security specialists who tend to consider that rural incomes come mainly from agriculture. Studies conducted several decades ago show that even in Africa a considerable proportion of rural workers are involved in off-farm activities<sup>34</sup>. T. Reardon shows, on the basis of the analysis of 33 field studies that off-farm income is extremely important in Eastern, West and Southern Africa: it may constitute between 22 and 93% of total rural income<sup>35</sup>. Income earned and remitted to their families by migrants (temporary or permanent) may also account for an important and growing part of off-farm income in some areas.

In towns, income is mostly of non-agricultural origin, although some people may depend indirectly on agriculture, particularly through their role in agricultural value chains. A small portion may also come directly from agriculture, from peri-urban agriculture, from the use of land located at some distance from the city, from renting out land or from transfer of resources by relations living in rural areas<sup>36</sup>. Urban income and the employment in urban areas that generates them, whether in the formal or informal sector, will play an increasing role in food security in the future, as world population becomes more urban and the number of persons living in cities who may find themselves in a situation of food insecurity grows. One can safely bet, when addressing food insecurity issues, that this evolution will progressively move the focus of attention from agriculture and rural development towards economic development and income generation in urban areas. This implies that most of the policies for improving access to food will be policies aimed at reducing poverty in urban or suburban areas.

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<sup>34</sup> See for example: **D. Byerlee, C. Eicher, C. Liedhold, et D. Spencer** (1977), [Rural Employment in Tropical Africa: summary of findings](#), Working Paper No. 20, Department of Agricultural Economics, Michigan State University, 1977.

<sup>35</sup> **T. Reardon**, *Using evidence of household income diversification to inform study of the rural nonfarm labor market in Africa*. World Development, 25(5), 1997.

<sup>36</sup> The flow of resources between rural and urban areas is variable in different countries and at different periods. In times of economic crisis, important flows (often in kind) have been observed going from rural to urban areas.

## Extended rights

The concept of extended rights used here refers to all possibilities an individual has, in addition to his/her income, to improve access to basic goods. This encompasses opportunities for support that can be obtained from the family (in the broad sense), the community and the state. These rights have institutional, social and cultural dimensions. Depending on societies, traditional solidarity mechanisms provide individuals with rights and duties of assistance within the family and community. Formally, depending on the country, some rights are legally recognised: the right to work, to housing, to food, etc.. This latter right is legally recognised in a growing number of countries<sup>37</sup>, and implies the implementation of specific actions defined in the “[Voluntary guidelines to support the progressive realization of the right to adequate food in the context of national food security](#)” adopted by FAO in 2004, namely:

- Ensure that policies and laws respect and protect the right to food for each individual and build an enabling environment for people to feed themselves in dignity;
- Implement principles of good governance and give particular attention to the poor and marginalised, which implies the responsibility of the state to address situations unfavourable for food security that it can control (e.g. tolerance for monopolies that make access to food excessively costly), and for non-discrimination against certain groups of population.

The adoption by states of legislation supporting the right to food makes this right enforceable, enabling the population, associations or NGOs to hold the state accountable and to bring it to justice if it is confirmed that it did not take all measures within its power to help population groups who are in a situation of food insecurity. However, experience shows that incorporating the right to food into a country's constitution is not in itself sufficient to bring about lasting improvements in the food security situation. [\[read\]](#)

## Safety nets

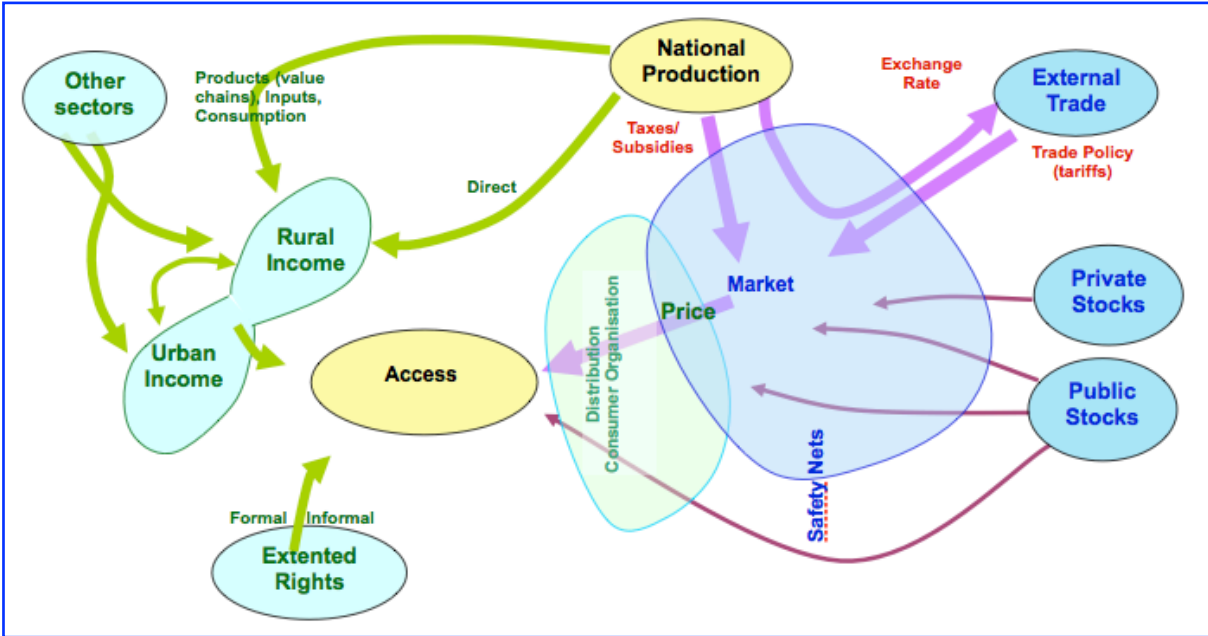
There are three main types of safety nets (sometimes referred to as social protection measures): (i) food distribution, (ii) cash transfers, and (iii) subsidies. Safety nets entail transfers of resources towards beneficiaries to ensure that they can have adequate access to food. Eligibility to benefit from safety nets may relate to the economic and social characteristics of beneficiaries (target groups) or to the situation within which a country or region of the country finds itself (for example, emergencies triggered by soaring food prices, drought, flood, earthquake, etc.). Access to safety nets can also be subject to conditions (e.g. participation of children in an education or health programme). Cash transfers and subsidies can be financed by the state budget, private sources or external aid. Safety nets in kind can be supplied from

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<sup>37</sup> In 2013, 24 countries had included the Right to Food into their constitution : Bangladesh, Brazil, Colombia, the Congo, Côte d'Ivoire, Cuba, Ecuador, Ethiopia, Guatemala, Haiti, India, Islamic Republic of Iran, Kenya, Malawi, Mexico, Nicaragua, Niger, Nigeria, Paraguay, Pakistan, South Africa, Sri Lanka, Uganda and Ukraine

three main sources: existing private or public stocks, imports or food aid in kind. Food can be channelled through special distribution programmes, dedicated shops or selling points, or through existing private shops. State financed school meals programmes offer another means for food transfers<sup>38</sup>.

**Main factors affecting access to food**



**2.2.3 Stability**

Food security requires availability and access to food **at all times**. This concept addresses stability both of production and of access. Stability may be threatened by extraordinary climatic, health or economic shocks, but also by the seasonality of agricultural production and markets. Agricultural technologies and infrastructure that are likely to stabilise production, private and public food stocks, financial services and as safety nets, are among the main factors that may contribute to ensuring stability.

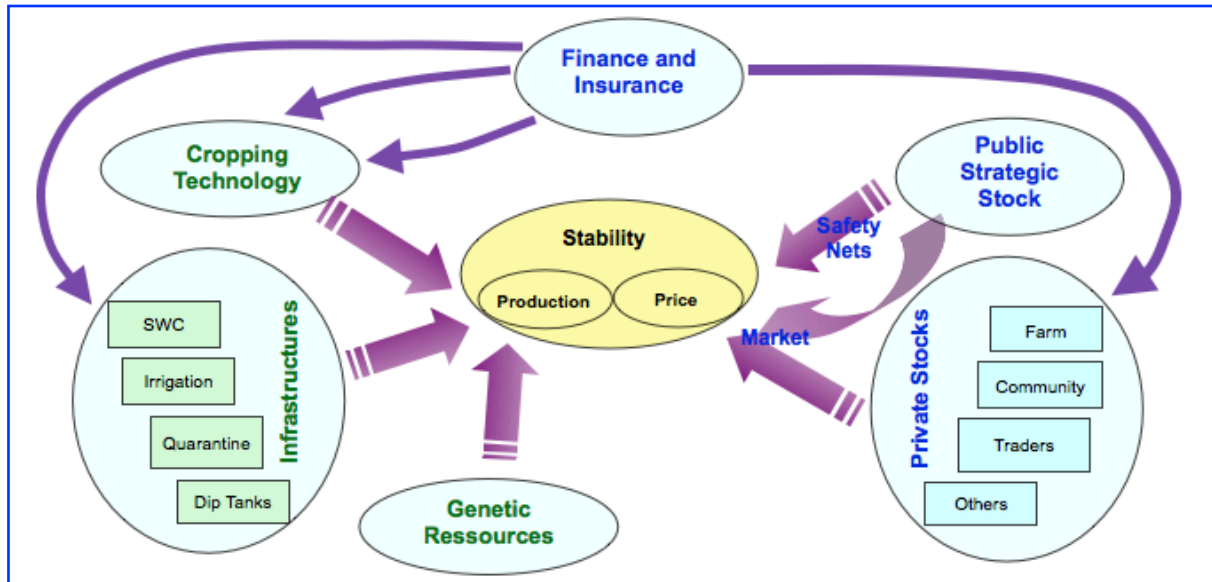
Stabilisation of production

Factors that contribute towards stabilisation of food production include improvements in land and water management, infrastructure and services (e.g. soil and water conservation, irrigation infrastructure, services to prevent and combat diseases - quarantine zones, dip tanks, etc.); adjustments in cropping techniques (e.g. integrated pest management, weed control) and genetic resources improvement (e.g. short cycle drought resistant varieties, disease resistant varieties). Diversification of farming systems may also increase resilience to shocks.

<sup>38</sup> FAO, [Social Safety Nets and the Food Security Crisis](#).

These factors can be used as instruments to better manage water resources, reduce dependence on rainfall, prevent diseases and increase plant and animal resistance to health and climatic shocks.

### Main factors of stability



#### Public or private stocks

Stocks have a key role to play in inter-seasonal and inter-annual stabilisation of food supplies. The issue whether to hold strategic public food stocks has been the subject of a great deal of controversy. Even though they may be expensive to keep in terms of physical loss of goods, maintenance and funding, stocks are amongst the few instruments that the state can use to intervene in food markets and to influence prices, either by releasing some part on the markets (which contributes to bring down prices) or by using them to supply safety nets. Private stocks, which generally contribute mainly to a better distribution of supply throughout the year, are profitable to hold only if there is sufficient difference between the price at time of harvest and that observed during the lean season: this difference is used to pay for storage costs and remunerate the storage function.

#### Financial services

Financial services have a central role to play in stabilisation of markets. On the one hand they help to finance storage costs, and on the other hand they supply funding and insurance in case of an economic or natural shock. Many different instruments are used for financing food stocks from the funding of individual storage to that of large scale commercial storage, and including that of community bonded warehousing or warrantage<sup>39</sup>.

<sup>39</sup> Warrantage is a form of short term credit that is guaranteed by a stock of food that can be sold by the bank in case of default. Producers deposit their food in a secure store and obtain in exchange a receipt (warrant) against which they can ask for credit from the bank. In this way, the farmer can have access to credit and recover his/her production upon reimbursement of the loan at a time when prices are generally higher.

#### 2.2.4 Utilisation

The concept of food utilisation relates to the conditions that assure that, once food has been consumed, it is efficiently converted by the body into energy, growth and good health. The capacity of the body to make full use of food is very sensitive to disease affecting the digestive system (e.g. diarrhoea, intestinal parasites). Improvements can be brought about by good sanitation and hygiene, particularly access to safe drinking water and human waste disposal as well as the availability of health services.<sup>40</sup> Food utilisation is also affected by food quality and safety, preconditions for a balanced and safe diet.

#### Nutritional quality

There are two sides to nutritional quality: (i) the nutritional balance and diversity of a diet in terms of nutrient content (carbohydrates, fats and protein), vitamins and trace elements; and (ii) food hygiene and safety standards.

The balance of a food diet has implications for the physical and mental growth of children, maternal health including the health of the unborn baby and the working capacity of people. It also has an impact on health (emaciation, obesity, resistance to diseases, prevalence of cardiovascular diseases, etc.). It has been proven that a shortage of vitamins, and more generally the absence of certain micronutrients, is an obstacle to proper mental and physiological development, weakens the immune system, generates handicaps at birth, and leads to a life in which the full physical and intellectual potential of an individual is never achieved<sup>41</sup>.

Food standards, such as those defined in the framework of the [Codex Alimentarius](#) of FAO and WHO fix the tolerable level in foods of certain elements that are potentially harmful to health, such as pesticide residues, heavy metals, microorganisms, etc.. Any presence of these elements above authorised norms risks causing illnesses that will be an obstacle to the good utilisation of food. These norms are, however, criticised by some scientists on the grounds that they do not take into consideration interactions among various elements which may aggravate the negative consequences on health even at doses below the established standards. Application of these norms has considerable implications on food production, processing and conservation technologies. It also provides the basis for the regulation of food safety in catering businesses (collective, formal and informal, street restaurants or others) which are foodsources of growing importance, particularly in urban areas. Increasingly Codex Alimentarius standards are being applied to assure the quality of food being traded internationally.

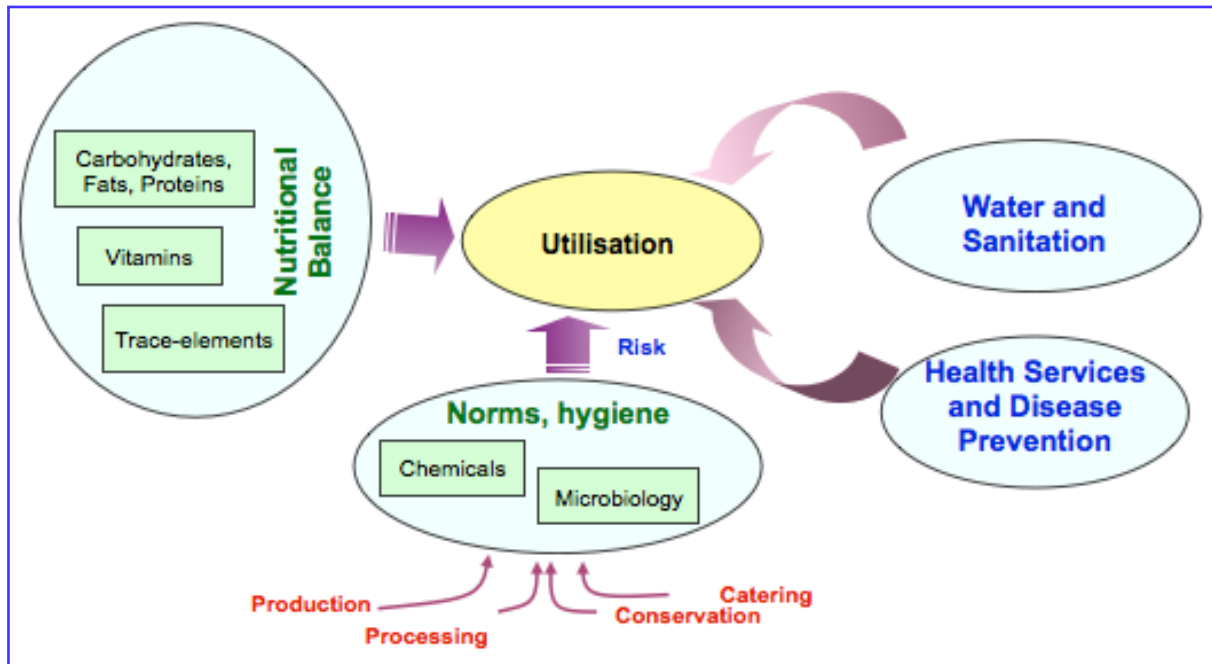
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<sup>40</sup> K. Stamoulis and A. Zezza, [A Conceptual Framework for National Agricultural, Rural Development, and Food Security Strategies and Policies](#), ESA Working Paper No. 03-17, FAO, 2003.

<sup>41</sup> P. Conceição, R. Fuentes-Nieva, L. Horn-Phathanothai and A. Ngororano, [Food security and human development in Africa: Strategic considerations and directions for further research](#), Preliminary Draft for the 2011 African Human Development Report, 2010.



## Factors affecting food utilisation



### Water and sanitation

Infrastructure that provides access to quality drinking water, along with sanitation, plays a critical role in the cleanliness of the environment in which people live, particularly so in urban areas.

### Health assistance

Health services that can manage disease prevention and act rapidly in case of disease, are a key factor of food security. It has been proven that bacterial and parasitic diseases, including diarrhoea and intestinal worms are important causes of food insecurity even when adequate quantities of food are eaten<sup>42</sup>. Tuberculosis, HIV/AIDS and malaria also impact on food security both at the phase of assimilation of food elements and on the working capacity of affected populations, determining their capacity to earn a living that will allow them to have access to food, or to produce food if they are engaged in farming

Materne Maetz  
(May/June 2011  
updated in December 2013)

<sup>42</sup> O. Uthman and O. Aremu, *Malnutrition among women in sub-Saharan Africa: rural-urban disparity*, in Rural Remote Health, April-June, 2008.