Food security
Third part: dimensions of food security and their drivers

1. Availability

The **availability** of food products is clearly a fundamental condition for food security. This means that in a country, a region, or a locality, food items are physically available in sufficient quantity and appropriate quality (free from undesirable substances and culturally acceptable) to ensure the food security of its inhabitants. The origin of these foods can be either local, national, or from abroad through imports. This therefore implies a marketing system that connects producers (local, national, from the rest of the world) with consumers.

Production

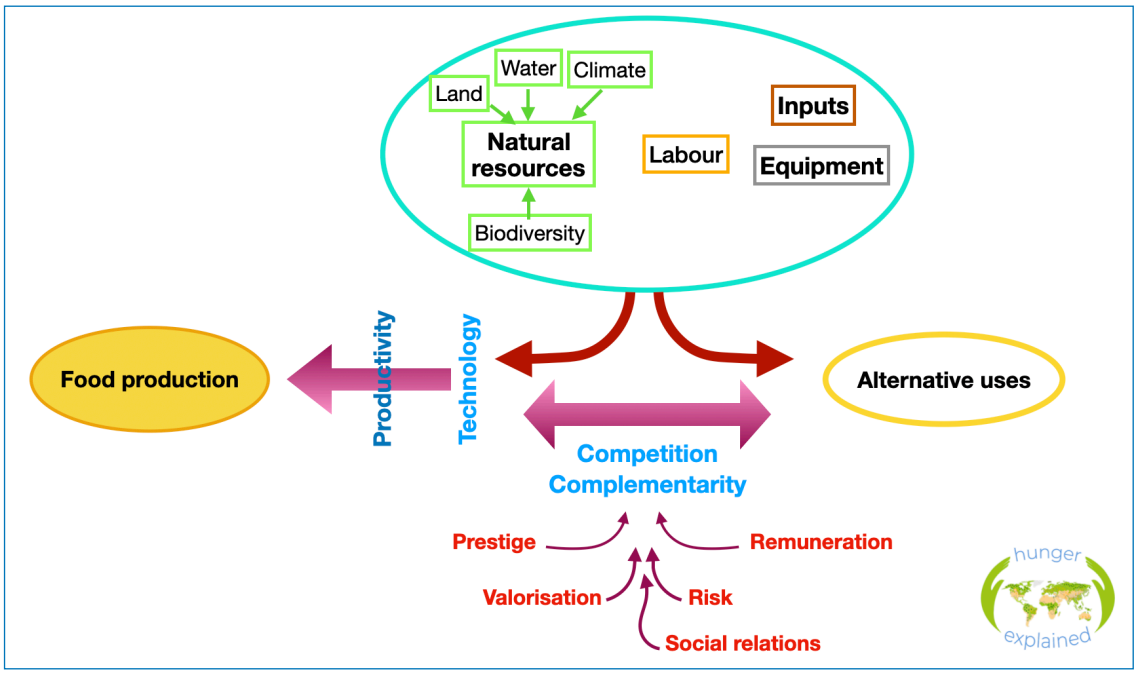
Production depends on natural resources (land, water, biodiversity and climate) and their condition, the labour force involved (their numbers and technical and management skills), the capital employed (buildings, equipment, tools, as well as animals), and inputs (seeds and genetic material, materials used for soil fertility and plant and animal health management, animal feed, energy, etc.). All of this is combined through technologies that determine the level of productivity of land and labour, two economically essential variables for the distribution of income generated by production among land, capital, and labour.

From an economic and social perspective, the level of food production will also vary with the extent of competition or complementarity with other economic activities (e.g. use of land, labour, equipment or inputs for non-food production or non-agricultural purposes). The balance between food and other activities will depend on the income that can be generated, the risks involved, social relationships, the prestige or other benefits associated with it. Similarly, it will be modulated by the degree to which these other activities could enhance the value of food products (e.g. artisanal or industrial processing, tourism) (see **diagram 1**).

The amount of food production will also be impacted by the quality, relevance, and accessibility of available services to facilitate the use of the most suitable technology (training, extension, research, financing, management advice, etc.).

All these facets must be taken into account when formulating a food security policy that cannot be limited to a simple agricultural development policy.

Diagram 1 – Drivers of food security: availability



Marketing and processing

Producers and consumers are connected through **value chains** (or supply chains) that make products available to consumers. These chains vary greatly in length. They are very short in the case of home-consumption, direct sales, and Community Supported Agriculture (CSA) associations (known as AMAP in French-speaking countries, and Teikeis in Japan) [read], but can become very complex, with many intermediaries, when they involve processing and transportation operations over long distances.

The availability factors include a wide range of diverse elements such as:

- Types of traders (collection, wholesale, or retail);
- The organisation mode of producers (individuals, cooperatives, or groups under contract);
- Infrastructure for exchange (real or virtual markets, spot or futures), transportation (roads, rail, vehicles, ports and airports), and storage;
- Information networks;
- Processing technologies (efficiency, costs, implications for logistics);
- Distribution methods (small retailers, supermarkets, or hypermarkets);
- Competition levels at various stages of the supply chain; and,
- Types of contracts binding farmers to other operators, and other such arrangements among actors in the value chains.

The **institutional organisation** of links among producers, traders, industrialists, and consumers is essential. It should allow for a dialogue that promotes predictability in behaviour rather than creating opacity that leads to lack of trust.

The efficiency of supply chains will greatly determine the differences between the price for the consumer and the farm-gate price. These differences vary considerably for different products and countries and can be strongly influenced by policies (regulation, taxes and subsidies) and market structure (see **box 1** below).

Box 1 - Price spread between producers and consumers

The spread between the price paid to the producer and the price paid by the consumer can be extremely high. This difference is related to transportation costs, packaging, storage, processing (if applicable), and the margins taken by economic agents operating at various stages of the supply chain. In non-industrialized countries, transportation costs can be very high and may represent more than 30% of the price paid by the consumer.

In Europe, the differences between consumer and producer prices are also quite variable, depending on the product and country. For example, this difference ranges from 28% to 62% for liquid milk and from 42% to 82% for butter.

For meat, depending on the cuts, the difference can range from 12% to 92% for pork and from 7% to 74% for beef, according to a study by the European Parliament dating back to 2007.

For fruits, this difference ranged from 26% to 74% and for vegetables from 14% to 82%.

Based on European Parliament, *The gap between producer prices and the prices paid by the consumer*, 2007.

In case where the market is not competitive because it is dominated by a single operator (monopoly) or a group of agents (oligopoly), rents captured by the dominant operator will create a larger difference, penalising both producers and consumers. In this sense, the accelerated concentration of business in the hands of a small number of companies, often facilitated by the digitalisation of food systems, significantly harms competition [read].

On the contrary, the more this difference is reduced, the more it will be possible to find a compromise between a fair remuneration for producers (an incentive for production) and an affordable price for the consumer (increased purchasing power and enhanced food security).

The characteristics and the mode of operation of the supply chains at different stages thus determine the level of transmission of signals given by national, regional, or global policies and markets. The less efficiently and transparently markets function, the more the supply chains will 'absorb' the signals sent to them.

Foreign trade

The other source of supply for a country, in case national production is insufficient, is **imports**. Border conditions (tariffs, taxes, freight costs, importers' margins, sanitary and quality standards, currency access rules, etc.) determine imports, their price and volume [To know more about international trade in agricultural products, read here].

2. Access

Access to food for the entire population depends on the conditions of the food market and the income of the population. For the poorest categories, access to a sufficient quantity and quality of food rests on the extended rights of individuals and the food assistance in place to help them.

Market conditions

As mentioned in the previous pages, market conditions impact food prices and therefore access to food for the population. They also depend, and this has not been said yet, on product taxation policies (especially value-added tax - VAT - where applicable) or existing subsidies that can significantly alter the level of food prices. Consumer discretion to organise in associations, as well as other institutional measures (such as the existence of specific shops and points of sale - see below the section dedicated to food assistance on p 7), can also play an important role.

Income

Income and **purchasing power** resulting from it are determining factors of food security. It is important to consider all sources of revenue that may have an impact on food security. It is also necessary to distinguish between the situation in rural areas and urban areas, as the urban population is growing faster than the rural population, conditions are very different, and food insecurity is becoming increasingly an urban and peri-urban phenomenon [read].

In **rural areas**, income largely comes, directly or indirectly, from agriculture. Revenue directly derived from agriculture depends on the value of production (thus on the selling price of products) and on production costs (such as seeds, fertilisers, pesticides, fuel, equipment, and financial expenses). Individual income is directly related to labour productivity and therefore to the technology used. For farmers, a variable part of production can be self-consumed, especially in low-income countries, with the rest being sold or exchanged. For agricultural workers, revenue takes the form of a wage paid in cash and/or in kind.

The indirect receipts from agriculture are diverse and can originate from activities carried out within agricultural value chains, both **upstream** (such as production and marketing of agricultural inputs, or production, sales, and maintenance of agricultural equipment) and **downstream** (marketing, storage, processing, etc.), resulting in salaries for employees and profits for business owners.

Revenues can also come from activities induced by the **consumption effect** due to the manner in which people living off agriculture use their money (for example, retail trade of consumer products or restaurants).

Finally, rural income can also originate from sectors which have their own dynamics and are largely independent of agriculture: mining, light industries,

tourism and other services, administration, etc. All these non-agricultural receipts, although quite considerable, are often overlooked by food security specialists who tend to assume that the livelihood of rural people is essentially and directly based on agriculture. However, studies dating back several decades demonstrate that even in Africa, a significant proportion of rural workers have long been engaged in non-farm activities [read]. T. Reardon shows, based on the analysis of 33 field studies, that non-farm income is extremely important in East, West, and Southern Africa: it can weigh between 22% and 93% of total rural revenues [read]. In addition, earnings from migration (temporary or permanent) also represents a meaningful and often growing share of this non-agricultural income in some regions.

In **urban areas**, revenues are mainly non-agricultural in origin, although some may indirectly come from agriculture and related value chains. A small portion may originate directly from agriculture, either through urban and peri-urban agriculture, the cultivation or renting of agricultural land located at a distance, or transfers of resources from parents living in rural areas.[1]

In **rich** and **highly urbanised** countries, the income of the majority of the population mainly comes from formal wage employment, pensions for the elderly (who represent a growing share of the population), and various social benefits (family allowances, unemployment benefits, housing assistance, food assistance, etc.) from public or private sources, the relative importance of which varies greatly from country to country [read]. However, in these circumstances, the financial resources available for food are limited by a series of **unavoidable expenditures** such as housing – especially when you have to deal with slumlords – health expenses, and exorbitant fees and penalties imposed by banks. 'Being poor is costly', writes Matthew Desmond [read], especially when you are part of the group

[1] The flow of resources between cities and the countryside varies depending on the country and the period of time. During economic crises, significant flows (often in kind) from rural areas to urban areas have been observed.

of undocumented migrants underpaid in violation of the law, or if you live in a country where labour unions are weak [read].

In **poor countries**, which are also urbanising rapidly, a very large portion of the population survives from **informal jobs**, often on a daily basis, from small street trades (street food vendors, food delivery, small object repair workshops, water carriers), and from selling a variety of products on the street such as kola nuts, paper tissues, and lighters, sometimes resorting to illicit activities. To supplement a **low and very unpredictable income,** the poor sometimes spend part of the day searching for places where they can find cheap food or where they can obtain free food (food banks, community kitchens, food distribution centres).

Too frequently, precarious living conditions, isolation, and the breakdown of traditional mechanisms of solidarity push people to **fundamentally change their eating habits**. Due to lack of time and money, they are forced to replace their standard diet with the consumption of industrial food products that are filling and cheap, rich in fat, sugar, salt, and a variety of additives, which are convenient to consume and satisfy the stomach at the cost of health [read].

Extended rights

The concept of extended rights used here refers to all the possibilities available to an individual (in addition to their income) to improve their access to essential goods. This includes **opportunities for assistance** that a person can benefit from, from family in the broad sense, the community, as well as from the state or civil society organisations. This is, therefore, a concept with strong institutional, social, and cultural dimensions. Thus, depending on the societies, **traditional solidarity mechanisms** grant each individual rights and duties of assistance within their family and community. Formally, and depending on the country, **certain rights** are legally recognised: the right to work, right to housing, right to social protection, right to food, etc.

This last listed right, which is legally recognised by an increasing number of countries[2], involves 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]'. These actions include:

- Ensure that policies and laws respect and protect the right to food of each individual and act to create an environment that allows the population to feed themselves;
- Implement principles of good governance and pay attention to the most deprived and marginalised. This implies that the state is responsible for situations that undermine food security (for example, tolerating monopolies or speculators who make access to food excessively expensive) and that it

[2] In 2023, more than 45 countries had taken measures for the implementation of the right to food, including by mentioning this right in the constitution [read]. To find out the current status, check the database here.

must guarantee the absence of discrimination against certain population groups.

The adoption by a state of the right to food means that individuals and groups can sue it in court if it turns out that the state has not taken all possible measures to help population groups facing food insecurity (justiciable right). However, experience shows that integrating the right to food into a country's constitution is not enough to sustainably improve the food security situation [read].

Food assistance

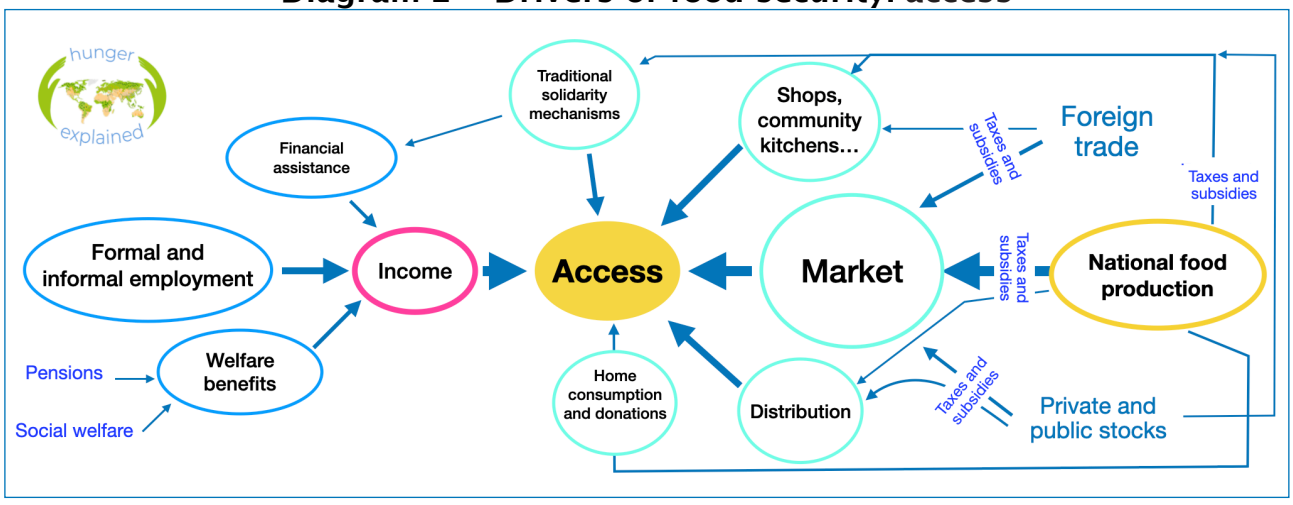
Food assistance refers to the **transfer of resources** to individuals in need when it comes to accessing food. It can take the form of cash payments (various allowances) or vouchers, free food distribution (especially in times of crisis or disaster), or subsidies (on priority food products – either blanket or targeted to specific groups based on a set of criteria). Assistance can be provided by public institutions or civil society organisations (associations, food banks, community kitchens, etc.).

Access to these various forms of food assistance may be granted on the basis of the economic and social characteristics of the beneficiaries (target groups) or as a result of the situation in which the country/region may be (price hikes, drought, flooding, earthquakes, etc.). It may also be subject to certain conditions (e.g. participation in a particular education or health program).

In-kind food aid can be supplied by three main sources: existing private or public stocks, imports, or foreign in-kind food aid. Cash transfers and subsidies can be funded by the state budget, private contributions, or external aid.

Food can be made available by special distribution programs, or be channelled through specific shops or points of sale, or be distributed by existing private retail outlets. **Diagram 2** schematically summarises the main factors affecting access.

Diagram 2 – Drivers of food security: access



3. Stability

Food security requires availability and access to food **at all times**. This notion encompasses both production stability and access stability. Stability can be threatened by exceptional climatic, health, economic, or political shocks, as well as by the seasonality of production and agricultural markets. Agricultural technology and infrastructure that can stabilise production, public and private stocks, financial services, and food assistance are among the main instruments that can contribute to stability.

Stabilisation of production

The factors contributing to stabilising food production include **infrastructure** (such as water and soil conservation infrastructure, irrigation systems, disease control infrastructure like quarantine areas and antiparasitic immersion basins), **production techniques** (water and soil conservation – WSC, biodiversity protection and habitat preservation, integrated pest management, intercropping, etc.), and the use and preservation of **genetic resources** and **agrobiodiversity** (e.g. drought-resistant short-cycle varieties and disease-resistant varieties kept in gene banks).

These factors serve as tools to better manage water resources, reduce dependency on rain, prevent diseases, and enhance plant or animal resilience to health and climate-related stresses.

Public or private stocks

Stocks play a crucial role in both **inter-seasonal and interannual stabilisation**. The maintenance of a strategic public reserve stock has been the subject of many debates. Although costly in terms of physical losses, management, and financing, reserves allow governments to intervene either by releasing products onto the market (which helps lower prices) or by using them to provide food assistance. Replenishing public stocks at harvest time also helps avoid excessively low prices that could threaten producer incomes. Private stocks, which mainly contribute to year-round supply distribution, are profitable only if there is a sufficient price difference between the harvest and the lean season to cover storage costs and adequately compensate for the storage function. Regulations and government action must ensure that private stocks are not used for speculation, leading to excessive price increases during the lean season, at the expense of food security of the population and its most vulnerable groups.

Financial services

Financial services play a central role in stabilising markets. They enable, on one hand, the funding of storage and, on the other hand, the provision of emergency financing and insurance services in case of a natural or economic shock. The financing of stocks is needed at all stages of the supply chain, including individual

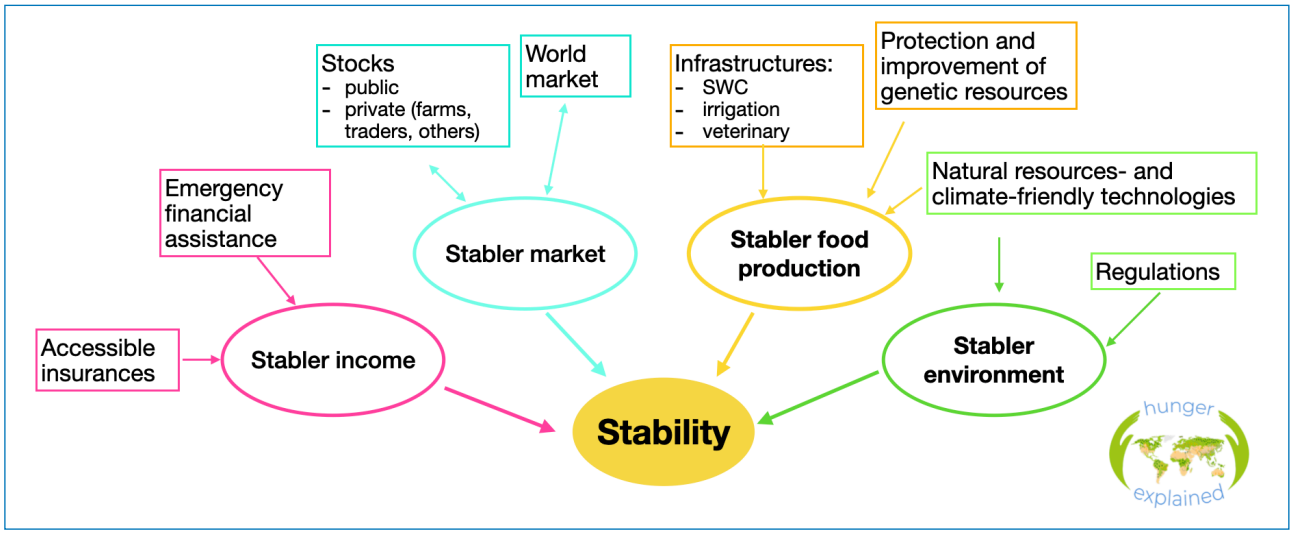
consumption, commercial-scale storage, community-level collateral management, and others [read in French].

Food assistance

As discussed in the previous section on access, food assistance is made of resource transfer mechanisms relying on vouchers or liquid financial resources distribution to give direct or indirect access to food for at risk population groups. The most appropriate modalities depend on market conditions, target groups, and the management capacities.

Diagram 3 shows the main elements contributing to stability.

Diagram 3 – Drivers of food security: stability



4. Utilisation

The concept of utilisation introduces the **non-strictly food-related** part of food security. It pertains to conditions ensuring that if food is consumed, its physiological use results in meeting dietary needs. This includes **health aspects** such as access to clean water, sanitation, and the availability of healthcare services, all of which are required for a person to maintain good health and fully utilise consumed food [read]. The concept of utilisation also covers the **quality and safety of food** [read], with the view of achieving a balanced and safe diet.

Nutritional quality

The nutritional quality is based on two aspects: on one hand, the diversity and nutritional balance of the diet in terms of nutrients (carbohydrates, fats, proteins, vitamins, and oligo-elements), and on the other hand, food hygiene.

The diet balance has implications not only on children's growth, maternity, and people's capacity to work, but also on health (obesity, disease resistance, cardiovascular diseases, etc.). It has been proven that deficiencies in vitamins and,

more generally, the absence of certain micronutrients hinder physiological and mental development. This compromises the immune system, causes disabilities at birth, and leads to a life where full physical and intellectual potential is not reached [read].

Food safety

Food standards, such as those defined within the framework of FAO and WHO's Codex Alimentarius, define the tolerable level for health of presence of certain harmful elements such as pesticide residues, toxic metals and pathogenic microorganisms. The presence of these elements beyond the authorised standards can lead to diseases that will hinder the proper use of food (however, these standards are criticised by some scientists because they do not take into account the possible interactions between various elements that can lead to an exacerbation of harmful effects on health from doses lower than the fixed thresholds) [read].

Adherence to these rules has **significant implications** on food production, processing, and preservation techniques. They are also binding for catering businesses (collective, formal and informal, street or otherwise), which are a growing source of prepared food, especially in urban areas.

In 2019, according to the United Nations, a healthy and balanced diet was out of reach for around 3 billion people worldwide, and this number has likely increased further, possibly due to the COVID-19 pandemic and the impact of war in Ukraine [see pages 7-9].

Management and prevention

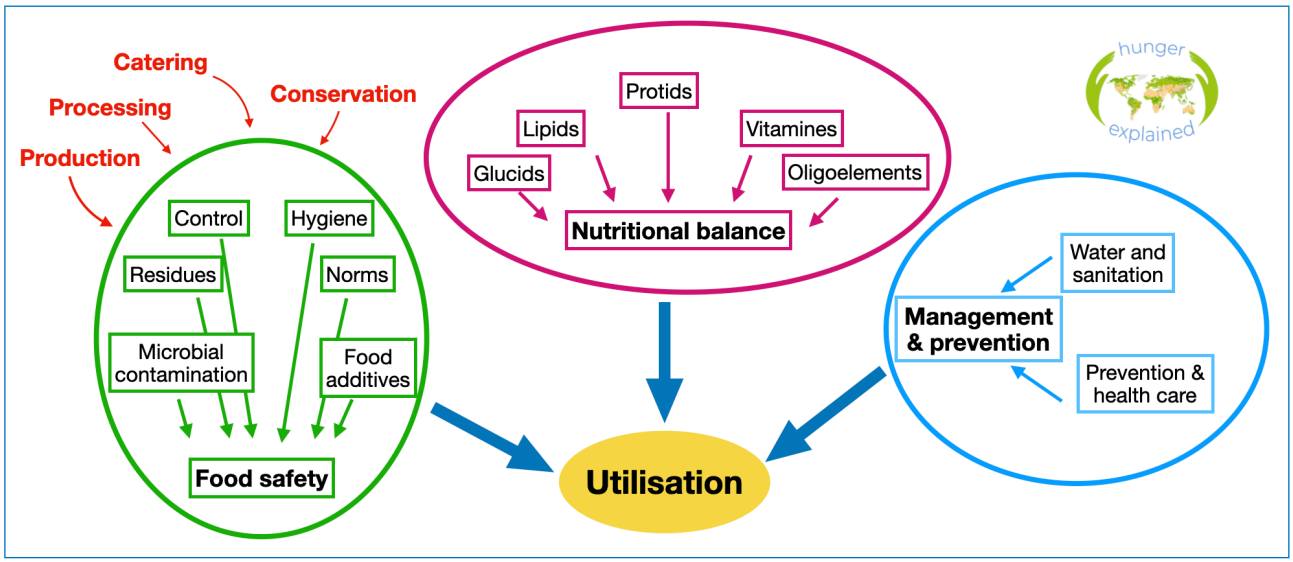
Access to quality drinking water infrastructure, as well as sanitation, plays an essential role in the cleanliness of the environment in which people live. This is particularly significant in urban areas.[3]

Sanitary services capable of managing disease prevention and intervening quickly in case of illnesses are very useful in protecting people from food insecurity. It has been proven that bacterial and parasitic diseases are important causes of food insecurity [read]. Tuberculosis, HIV/AIDS, and malaria have a negative impact both in terms of food assimilation and the ability of affected people to work, earn their living and access food, as well as in terms of food production itself.

Diagram 4 outlines the main dimensions of utilisation.

[3] For instance, in Rio de Janeiro, sewage from favelas is discharged into the sea, leading to water pollution near the coast, illnesses for swimmers, and contamination of fish caught for human consumption.

Diagram 4 – Drivers of food security: utilisation



5. Agency

Agency is defined as 'what a person is free to do and accomplish in the pursuit of goals or values that they deem important'. [read].

In the context of food security, it is necessary for individuals and groups to have the ability to **act independently and decide** what food they produce and consume, and how it is produced (with what seeds [read] and which breeds), processed, and distributed.

They should also have the opportunity to **engage** and **participate** democratically in defining the institutions and policy processes that shape food systems and their governance.

For this to happen, the **political and institutional context** must provide a framework in which institutions and processes are in place to enable inclusive decision-making on food production and consumption. In such a desirable context, no one should be left out because of local power dynamics, potentially insufficient income, or characteristics like gender, religion, or ethnicity.

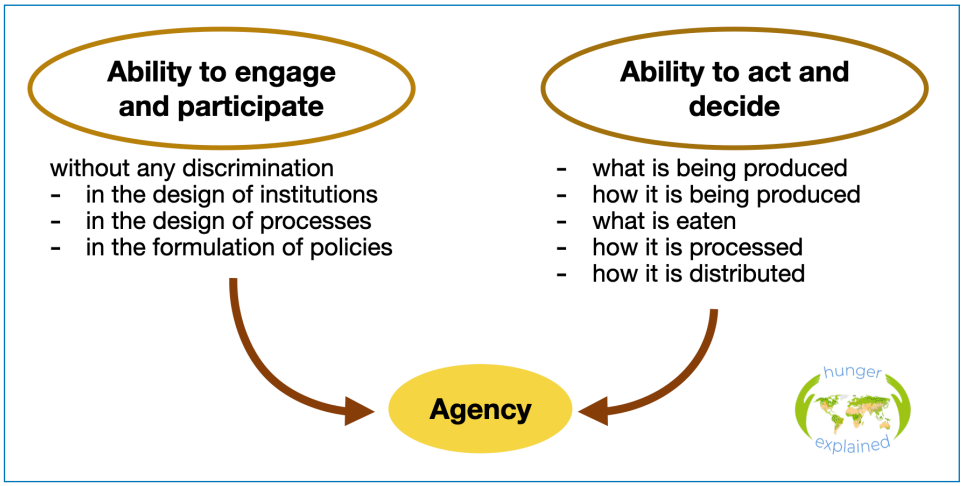
Every person should have the right to group with others in order to decide and take action jointly. Thus, everyone's opinion matters, and the will of a more powerful entity (big business, donor, government agency) should not be imposed on a group.

Everyone has the right to participate in the process of discussion and definition of policies and modes of governance so as to find appropriate solutions for addressing the issue of food insecurity [read pp. 7–8].

Agency is closely linked to the **Right to food** [read].

Diagram 5 summarises the main factors of agency.

Diagram 5 – Drivers of food security: agency



6. Sustainability

Achieving food security for the current population at the expense of future generations would be an absurd objective. Similarly, it would be inconsistent to consider sustainable development without food security for all as one of its fundamental components. In this sense, **food security and sustainability of the global food system go hand in hand**.

Yet, just as food insecurity cannot be eradicated by 2030, unless a miracle occurs – like for poverty [read] – recent developments in the global food system suggest that it is not at all on a sustainable path. The daily processes employed worldwide to produce, transform, and distribute food are having many negative effects on the **environment** (land, water, biodiversity, climate), as well as on the **economic** and social situation.

Land, from which humanity draws its sustenance, is degrading [read] and it is increasingly being accumulated in the hands of a small number of companies and individuals, to the detriment of the mass of people for whom it is the source of livelihood [read here and here].

Water, too, is distributed unevenly and often wasted [read], while water scarcity and degradation of its quality are part of the everyday reality for billions of people [read].

Biodiversity is declining [read] due to human activities, threatening essential environmental services for food production, while **climate** change, of which food is both a cause and a victim [read], has become a critical issue with growing and concerning economic and social costs [read]. This situation may lead to an intensification of **migrations** from rural areas to cities, between countries within the same region, and at the international level [read].

The increasing concentration of economic **power** [read] and the rise in social and food **inequalities** [read] result in widespread **malnutrition** (undernutrition [read], overnutrition [read]) and unstable **governance**, threatened by private interests and increasingly unable to defend public interest [read].

This pattern of trends indicates an ongoing evolution that is leading us straight towards a very harsh world [read] where the sustainable eradication of food insecurity appears to be a utopia. Its underpinning vision, promoted notably by the World Economic Forum [read] and the private interests driving it, sees the solution to all problems in **technological innovation**[4] developed under the leadership of the major international corporations responsible for the aforementioned degradation who seek to take total control of the global food system [read].

Yet, in contrast to this trend, the **ingredients of sustainable food security** are well known [read]:

- Basing food production on **sustainable technologies** relying on knowledge-intensive methods using natural processes, on diversity and complementarities among cultivated crops and between crops and livestock, as well as ecosystem services, and tailored to local specificities. For this, it is essential to mobilise resources for conducting research independent of corporations and their private interests.
- Eliminate the privileges granted to non-sustainable technologies, particularly subsidies [read] and stop disregarding their hidden environmental and health costs [read]. Redirect the savings made to fund incentives for a transition towards a sustainable food system. The resulting increase in food prices will help reduce waste but will require additional support measures for vulnerable groups (e.g. implementing a social security system for food).
- Use all dimensions of sustainability[5] as criteria for guiding investments, not just the economic and financial dimension.
- Increase the remuneration of food system workers who are currently heavily penalised by low food prices and inequitable value-sharing in the supply chains [read].
- Improve the governance of the food system at local, national, regional, and global levels.
- Inform, educate, and induce people to adopt more sustainable and healthier diets through information programs, food education in schools, school canteens/school gardens, nutritional labelling, etc.[6]

[4] digitisation of food, development of biotechnology, of bioeconomy and alternative proteins, supported by privatization of research and increased financialisation of the sector [read].

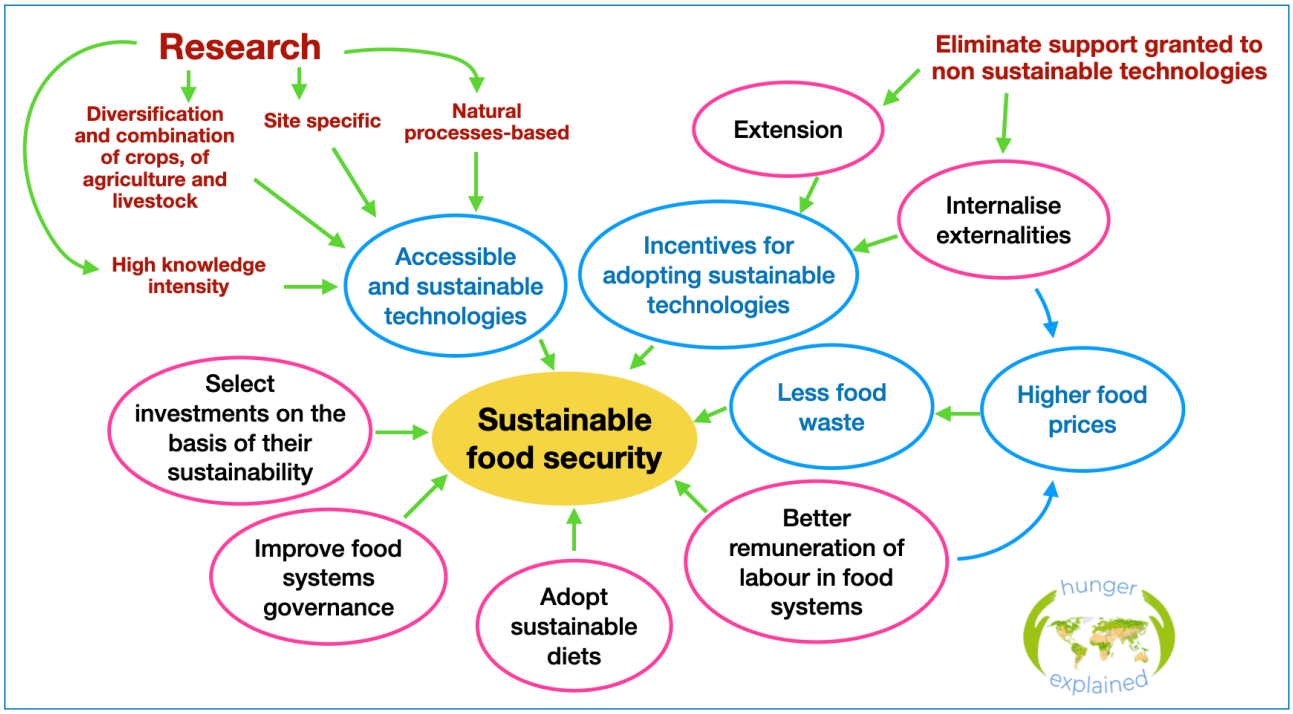
[5] Economic, social and environmental.

[6] For more details on the measure to be adopted, see here pp. 5-10.

For this, it will be necessary to implement a series of agricultural and food policies [read] adapted to local situations and to take action to overcome the many obstacles [read] that stand in the way of sustainable food security.

Diagram 6 shows the complex set of drivers leading to sustainable food security.

Diagram 6 – Drivers of food security: sustainability



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(December 2024)

Read also:

- Food security – First part: definitions.
- Food security – Second part: 50 years of food insecurity.

To know more :

- FAO, Realizing the right to adequate food to end hunger and malnutrition in all its forms, 2023.
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- Sen, A., Well-being, agency and freedom:The Dewey lectures 1984. The Journal of Philosophy, 82(4): 169-221, 1985.
- Byerlee, D., Rural employment in tropical Africa: summary of findings, Working Paper, African Rural Economy/Employment Program, Department of Agricultural Economics, Michigan State University, No.20, 1977.

Consulted websites :

- FAO, The Right to Food around the Globe.
- FAO et OMS, Codex Alimentarius.

Selection of articles published earlier on hungerexplained referred to in this text:

- Our view of hunger is changing, … so should the way we combat it (urbanisation of hunger), 2024.
- Opinion: Land Grabs Squeeze Rural Poor Worldwide by Jomo Kwame Sundaram, 2024.
- In spite of the huge economic and social costs resulting from environmental degradation, the way we invest is not changing, 2024.
- The "food and agricultural transition" is ongoing – Nine changes tell us to what kind of world it is leading us, 2023.
- Two years after the Food Systems Summit: plenty of rhetoric and meetings, very few tangible results, 2023.

- Hunger, food assistance and poverty in rich countries (with illustrations from France and the US), 2023.
- Agriculture, food and economic development – Is penalizing food and agriculture a sustainable development option 2022.
- The loss of biodiversity continues, boosted by climate change, 2022.
- Water resources: water stress and pollution, 2022.
- Public support to agriculture has been promoting unhealthy and polluting products and generating more inequality in the world, 2021.
- Facts and figures on world food insecurity and malnutrition – The impact of the COVID-19 pandemic, 2021.
- Climate is changing,… food and agriculture too, 2021.
- The real cost of food – Can the market alone guide our food systems towards more sustainability? 2020.
- Food security and sustainability: should we add a sustainability dimension to food security? 2020.
- Obstacles to transition – Why is it so difficult to make our food system more sustainable and climate-friendly? 2019.
- Improved and local paddy varieties in South Asia: governments remain deaf to arguments put forward by farmers while biodiversity continues to decrease, 2019.
- Policies for a transition towards more sustainable and climate friendly food systems, 2018.
- Land degradation: a serious consequence of human activities with dramatic implications on food, health and well-being of world population, 2018.
- The World Economic Forum's "New Vision for Agriculture" is moving ahead on the ground… 2017.
- Food, Environment and Health, 2017.
- The impact of the 2007-2008 food security crisis: the uncounted social and economic cost of resilience, 2016.
- Are existing food and agricultural policies supportive to local sustainable food systems? 2015.
- The Right to Food: progress and limits, 2013.
- Land: an unequally distributed, threatened but essential resource, 2013.
- Water and Hunger – The ''all-out irrigation'' strategy has led to a fragile, wasteful and inegalitarian system, 2013.
- Food Security – definitions and drivers, 2013.
- Food quality and safety, 2012.

Thematic pages of hungerexplained mentioned in the text:

- Biodiversity and food.
- Climate and food.
- Concentration in the food system.
- Food crises.
- Governance.
- Inequality.
- International trade of agricultural commodities.
- Land.

- Migration.
- Overweight and obesity,
- Power.
- Water.
- World hunger.