



IPS 6, Session: Measuring food security, challenges of statistical systems

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In short

Measuring food security is a challenge for national statistical systems. The objective of the session is to analyze the main approaches to measure food security as well as the importance of statistical systems in this assessment.

Keywords: Measurement, indicators, food security.

Abstract

Food security, long considered from the angle of agricultural production, is still the subject of much debate. Considering the socio-economic aspects, the understanding of food security has become multidimensional. As a result of these discussions, the Universal Declaration of Human Rights incorporated the "right to food", and food security has become one of the challenges of humanity and a common right of the population. . However, in the absence of standard food safety indicators, its measurement remains a major challenge for statistical systems. Some institutions believe that these systems cannot always assess it.

In addition, the approaches to measuring food security, to which the bibliography answers the most widely, show a great difference, the most relevant of which is the absence of an indicator.

Therefore, the idea of a SMART indicator, is of great importance, under the assumption of guaranteeing food to the population in different situations. Several technical factors limit the measurement of food security.

In conclusion, the analysis of food security assessment approaches, using certain indicators, in the context of Covid-19 and drought, made it possible to highlight the progress made by statistical systems in certain countries. However, in other countries they face several challenges, some of which are priority ones.

In addition, the proposal of an indicator to assess food security and nutrition is the major challenge for international institutions working on food security.

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1- Presentation

Food security has for a long time been analyzed from the angle of agricultural production, two major aspects of which have been taken into account: local food availability and self-sufficiency. This vision is still permeates and creates in many debates.

With the consideration of aspects of poverty, the understanding of food security has become multidimensional by integrating the notions of access, quality and stability.

The most consensual definition, which is that of the World Food Summit of November 1996, states that "Food security is ensured when all people, at all times, have economic, social and physical access to sufficient, safe and healthy food. Nutrient that meets their nutritional needs and food preferences to enable them to lead active and healthy lives .

Over time, emphasis has been placed on the ethical and human rights dimension, even though the concept of the "right to food" dates back to 1948 when the Universal Declaration of Human Rights stated that "Everyone has the right to an adequate standard of living, including adequate food"(Cotula , 2009).

The right to food, according to Olivier de Schutter, United Nations Special Rapporteur for the Right to Food, is the "right of every human being to feed himself in dignity, whether by producing his own food. Or by buying it" This declaration makes explicit reference to agricultural production and more precisely to self-consumption which characterizes a large part of family farming strategies, particularly in developing countries.

In addition, food security is one of the major global challenges for humanity and common law that states must guarantee to provide their citizens, by implementing ad policies equates. In order to meet the expectations of citizens and reduce the dependence of countries on each other to strengthen food sovereignty, and especially during times of crisis, states can encourage populations to move towards clean and specific food systems taking into account the availability of resources and production potential. Indeed, food security and food sovereignty can be considered as complementary: the first favors the finality, the second concerns the means to achieve it.

2- Food security measurement

One of the major challenges for national statistical systems is the measurement of food security. Indeed, the availability of data depends on the efforts and willingness of producers in terms of Réalis st of statistical operations in themselves and their frequency and rhythm, not to mention the quality of data.

Addition, countries may have their own specific statistical system which can assess food security according In to arbitrarily chosen indicators. However, world organizations believe that these systems do not always make it possible to assess the level of food security and to make comparisons between countries with the aim of proposing actions and aid to plan their priorities.

In the absence of standard indicators, these institutions do not adopt the same approaches or the same indicators that reflect the level of food security on a global scale. In addition to this great challenge, there are other major constraints linked to the nature of the operations established.

These institutions assess the level of food security in the world according to different approaches, some are direct, rapid multidimensional, others inversely monitor the nutritional level of the population and others have a dashboard drawn up of a few indicators.

3- Case study of food security measurement approaches

- Organization of the United Nations of Food and Agriculture (FAO)

FAO measure of food security in the world several approaches depends on the objectives and targets of evaluation.

- **Direct measurement of food security**

The measurement of food security is most often described in four dimensions which take into account both supply and demand. It relies on the food availability, food access, food utilization and sustainability. To facilitate the measurement of food security, a consultation process led by the Committee on World Food Security (CFS) led to the identification of 30 indicators that aim to capture several aspects in question. These indicators are classified according to the four dimensions with, respectively, five, eight, seven and ten indicators per dimension.

- **Measure of food insecurity**

In another context, the FAO assesses the degree of food insecurity through consumer behavior, by directly asking people about their experiences. The answers are collected using a survey module made up of eight questions on access to food. This module, which differs from traditional approaches, was implemented within the framework of the project "Voices of the hungry". Using this approach alone, which measures people's ability to access food in general, does not allow us to directly identify the other dimensions of food and nutrition security. It can be used with other approaches for a better understanding of the causes and consequences of food insecurity. A typical use of the data from the said survey is recommended, to inform indicator 2.1.2 of the Sustainable Development Goal relating to the prevalence of food insecurity.

- **The Global Forum on Food Security and Nutrition**

The discussions of the Global Forum on Food Security and Nutrition, carried out in November 2011, relating to the analysis of the food security situation in the world and more particularly in developing countries, recommended the possibility of using seven indicators so as to raise the various problems of food and nutritional security, in this case food production, household income, food diversity, total expenditure and food expenditure as well as their share and finally the quantities of food.

- International Food Policy Research Institute (IFPRI)

IFPRI conducted a study to assess the state of food security at the national level in 175 countries. This study resulted in a classification system following an approach that includes

five categories, namely the lowest food security group, the weak food security group, the middle food security group, the top food security group and the high food security group.

The approach adopted which allows countries to be classified into five categories is based on the analysis of food availability (production, import, consumption). A battery of 9 indicators spread over the five dimensions is used, including 3 indicators for each of the two dimensions "Consumption of food products" and "Agricultural potential" and one indicator by dimensions for the other three dimensions, namely "Production of food products", "Imports of food products" and "Distribution of food products".

In order to take into account the production potential and the trade security of the countries, a sequential method was used to identify a specific profile of food security by country. Within this framework, the countries were first grouped according to their dependence on imports. Those whose food imports represented less than 10% of the total export were classified as "secured by trade", while those above 10% were identified as "not secured by trade".

The second filtering step groups countries according to their annual per capita food production. Countries with levels above the average value of the 175 countries are classified as "high food producing countries" while the other countries were classified as "low food producing countries".

The third step is to classify the countries in each sub-group according to the level of importation, production with respect to agricultural potential, namely soil fertility, rainfall and temperature.

- **Other food security indicators : Simple food security assessment**

Another typology was used by Breisinger (IFPRI, 2010), to classify countries according to the level of food security. It only used two main indicators to measure food security.

This is the share of total exports in relation to food imports and food production per capita. Based on these two indicators, countries were classified into three categories: low food insecurity, moderate food insecurity and acute food insecurity.

- Countries with "**low food insecurity**" having one or both indicators above the world average ;
- Countries "**food insecure moderate**" having one or two indicators below the world average ;
- Countries "**in food insecure acute**" having one or two indicators below 50% of the world average.

In addition, countries have been classified into a subgroup according to mineral resource wealth (oil and gas) and labor abundance. This analysis carried the label of all oil and gas exporting countries as rich mineral resources.

- **Global Hunger Index**

The Global Hunger Index (GHI) is tools designed to measure and track hunger globally, regionally and nationally and assess progress and setbacks in the fight against hunger.

It is designed to raise awareness and understand the fight against hunger, provide a way to compare hunger levels between countries, and draw attention to areas of the world suffering from hunger and in need of additional hunger eradication.

The GHI product annually, is a composite index based on four indicators ie malnutrition, emaciation of children, child stunting and child mortality. Each of these indicators receives a standardized score on a scale of 100 points, based on the highest score level observed for the indicator in the world. L are standardized scores are aggregated to calculate the score GHI for each country, with each of the three dimensions on an equal weight (insufficient food supplies; infant mortality and malnutrition infant, composed equally of child stunting, wasting).

- World Food Program (WFP)

The World Food Program offers a manual for the assessment of food security in emergencies (2009). Its purpose is to measure the repercussions of a shock on the food security of households and communities in the affected area.

An EFSA brings together primary and secondary information to inform decision-making during crises. This manual is a framework for food security and nutrition situation analysis and examines the links between them. An EFSA can be carried out as a rapid assessment or a comprehensive assessment. A sequential EFSA is a series of rapid assessments, or a rapid assessment followed by in-depth assessments. In the context of an EFSA, the analysis of food security is based on three components i) food availability with 4 indicators, ii) access to food with 5 indicators and iii) food use without determining quantified indicators. In addition, the assessment of the nutritional situation is an integral part of an EFSA, based on an inventory describes aspects of acute and chronic malnutrition.

- Approach proposed jointly by the OECD and FAO

In another study conducted in 2016, jointly by the OECD and the FAO in five pilot countries including Morocco, food security is approached through indicators linked to the regional territory. In this sense, the state of food security at the national level is absolutely not combined at the regional level, in particular for the first two dimensions.

The methodology proposed in this study is based on (i) the inventory of the different national strategies and programs declined at regional and even local level, in addition to the specific programs to the territory (ii) the convergence of programs and strategies influencing the level of food security, and (iii) the integration of different actors.

- Economic and Social Commission for Western Asia (ESCWA)

In addition, ESCWA conducted a study, in 2014, on "Pathways to Food Security in the Arab World: Assessment of Wheat Availability" which is based on a number of FAO indicators in addition to other indicators specific to the study and to the study region.

4- Proposal of an approach

- Insights on approaches

The cross-reading different approaches of measuring food security show the difference in the following aspects:

✓ The absence of a single indicator to measure the level of food security at the global level and by country in all the approaches;

- ✓ The food security level analysis is evaluated by several according to the approaches;
- ✓ The target populations;
- ✓ The choice of type of indicators (implementation, process, results) ;
- ✓ The links between the indicators chosen and the measurement of the phenomenon studied;
- ✓ The availability of data and their frequencies;
- ✓ Data sources.

Moreover, the availability of food products in the direction of local production remains the flagship indicator that most approaches include in their matrix calculations; however, sustainability is less taken into account in these approaches. The “population” is not always the determining factor of the approaches, despite being the target of the action. Some approaches do not possible to assess the level of food security at the national level, however, they are limited to compare between countries. Other approaches are less important if they are not carried out with other approaches.

- Towards an indicator measurement of level food security

The development of a global and specific indicator, meets the criteria of SMART, to measure the level of food security is of great importance in a given country. In this context, it is assumed that the level of food security is acceptable if the population of a country is not in any situation of food shortage in quantity and quality and at all times, ensuring the sustainability of natural resources: in this case land, water, biodiversity.

In addition, it is important to remember that hundreds of variables will have to be integrated in this case:

- The contribution of the local production of the countries, in basic food products;
- The level of imports of food products;
- The deficit (need) and the capacity for substitution.

In addition, the effects and outcomes of the population that may be related to food security and therefore the aspects of nutrition is major integrating them. The measurement of food security (ISA) in a country should be by an indicator which is a matrix composed of sub-matrices dealing with the different aspects.

ISA = F (population, economic, social, sustainably, ...)

- Questions limited measurement

For developing countries, such as the case of a large number of African countries, the priorities differ and the challenges are multiple which can limit the measurement of the level of food security, the most important of which are related to the availability of food. Data relating to the following aspects:

- ✓ The has significant population growth and economic growth that are both respectful speeds;
- ✓ The limit of food product substitution, the scarcity of natural resources (soil, water, rangelands, forests, fishery products);
- ✓ The economic capacity to ensure imports of food products;
- ✓ The increase in the effects of malnutrition to which are added the negative effects of climate change;

- ✓ Consumption habits;
- ✓ The capacity of local production;
- ✓ The level of food dependency;
- ✓ Food security at household level is of great importance;
- ✓ Access to adequate and sufficient food is determined;
- ✓ Consumer behavior (demand) and consumption preferences;
- ✓ The behavior of the two classes spending less affluent (D1) and more affluent population (D10) in rural, urban and national level;
- ✓ The consumption of households covers a significant portion of their consumption and constitutes a decisive contribution to food security particularly in rural areas;

Conclusion

Analysis of the approaches used to assess the level of food security, through the examination of indicators relating to its various aspects and dimensions, in a context characterized by numerous temporal crises, including the combined Covid-19 and drought, highlighted the advances made by statistical systems in certain countries. However, in other countries, national statistical systems have several challenges in the future, in order to assess the level of food security.

In fact, carrying out surveys that are specific or partially touching on aspects of food security, in this case household surveys, makes it possible to better shed light on the food situation and the behavior of the population with regard to aspects of food security. food security in such a situation.

In addition, the lack of statistics specific to certain aspects of food security to inform decision-makers makes the statistical systems of countries, in particular in developing countries, at the center of the priorities.

Indeed, it is recommended to strengthen scientific research and coordination between the different producers of national statistics to calculate the indicators requested by the different bodies, to build a single composite indicator to assess food security and nutrition, and to enrich the statistical system through new approaches and specific surveys.