



## AFRICAN COMMISSION ON AGRICULTURAL STATISTICS

### Twenty-Sixth Session

Libreville, Gabon, 4 – 8 November 2019

#### AGENDA ITEM 5

### **The Differences and Complementarities of the Different Assessments of Food Insecurity: PoU and FIES versus IPC/CH**

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#### **SUMMARY**

Following the 1996 World Food Summit definition, “food security exists when all people, at all times, have physical, social and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.” The comprehensiveness of the conceptual definition of food security, thus its complexity (inadequate dietary energy intake, uncertainty about the future ability to access to food, inability to satisfy food preferences, inadequate safety and nutritious food), implies that no direct measure of the state of the food insecurity in the world will ever be possible. Many tools have been developed in the last fifty years, each of them with different scope, conceptual and operational definition, and statistical properties. Nonetheless, this proliferation created sometimes confusion on the appropriateness of applying a certain tool in a certain context. This paper will address the differences and complementarities of two food security assessments in which the Food and Agriculture Organization (FAO) plays a crucial role, that is the SDG indicators related to target 2.1 and the Integrated Phase Classification (IPC) and *Cadre Harmonisé* (CH) frameworks. We will describe what they are, their scope, their methodologies and data sources, and highlight some characteristics of these two different assessments.

#### **I. INTRODUCTION**

Assessing and monitoring food and nutrition security is critical to inform early strategic decisions in emergency contexts as well as to guide and monitor structural food security policies and programmes. For these purposes, many different food security tools and metrics have been developed over the years. Among these, there are two types of assessments in which FAO plays a crucial role: the Integrated Phase Classification (IPC) and the monitoring of progress towards SDG target 2.1. As they both refer to the severity of the food insecurity condition of populations, we find there is a need to clarify the differences. Also, because sometime similar expressions (e.g., “moderate” or “severe food insecurity”) are used to describe different things, confusion may arise.

The IPC, as well as the *Cadre Harmonisé* (CH) – a similar framework implemented in West Africa and the Sahel – is the result of a partnership of various organizations (including FAO) at global, regional and local level. The IPC is a process to build technical consensus among key stakeholders, based on available secondary data, and it was born to provide the most recent and up-to-date actionable information on the state of food security *in emergency contexts* for resource allocation where immediate actions are needed to prevent or decrease the acute food insecurity that threatens lives or livelihoods. On the other side, the SDG monitoring framework, particularly the indicators related to target 2.1, namely SDG indicator 2.1.1 Prevalence of Undernourishment (PoU) and 2.1.2 Prevalence of moderate or severe food insecurity, based on the Food Insecurity Experience Scale (FIES), is a process intended to identify medium-long term trends in the more general, *structural or chronic food insecurity condition* of the countries' populations. The two SDG indicators for food security have been developed by FAO to complement each other: the main purpose of the PoU is to monitor *chronic hunger*, mainly at global and regional level, while the main purpose of monitoring the prevalence of moderate or severe food insecurity using the FIES is to focus on a broader concept of *food insecurity* that goes beyond hunger, including people's inability to regularly access food of sufficient quality.

It is clear that, the IPC/CH and the SDG monitoring process have different scopes, even though often these are perceived as two different processes aiming at the same thing. The objective of this paper is to shed light on what they are, what is their main objectives and their differences and complementarities.

While both processes rely on the analysis of existing data and evidence, there is a difference between the type of information that is appropriate for each process. In this context, one quality of the FIES, linked to the possibility to use it in a very inexpensive and timely manner, is that it may provide information to policy makers to guide and monitor the effects of national food security policies and programmes. In certain conditions, it can be used also to inform IPC/CH processes.

## **II. DEVELOPMENT OF THE TOPIC**

### **What they are, why they have been developed and what kind of useful information they provide**

The IPC is defined as “a process to build evidence-based technical consensus among key stakeholders” to “classify the severity and magnitude and to identify key drivers of food insecurity and malnutrition” (IPC Global Partners, 2019). This means that the IPC is not an indicator of food security per se, but rather **a process**, following standardized protocols, through which key stakeholders analyse and **reach a consensus** on the severity and the persistency of food and nutrition insecurity in the country at a certain point in time. This consensus building process operates within the IPC technical working groups. In practical terms, whenever needed, usually during emergency situations, the hosting Government forms the country IPC technical working group, composed by Government representatives, International Organizations, NGOs and civil society, to classify the food security and nutrition situation of the country by analysing already existing available information.

IPC was born as a global partners initiative to provide policy makers with a “big picture” classification on the status of food security and nutrition in the country agreed by the key stakeholders, where the main objective is to **provide actionable knowledge for immediate intervention during emergency situation**. As a matter of fact, in contexts affected by shocks rapidly distressing the food security situation, there is usually no time to conduct specific food security or needs assessment. In most of the cases, quick actions are needed, thus it becomes crucial that these actions are informed by the most updated available information and that are supported as much as possible by the main stakeholders. IPC exactly provides the space for the development of this consultation process, allowing the consolidation of the available information through a set of pre-defined protocols of analysis.

In principle, an IPC/CH process should take into consideration any existing piece of time-relevant information that is available for the area under assessment. While attention is devoted to ensuring at least a minimal acceptable level of reliability though, emphasis is placed more on the timeliness and relevance than on the statistical properties of the indicators used, or on the possibility that they generate cross-country comparable estimates.

On the other hand, the **two indicators of access to food** developed by FAO and included as part of the Sustainable Development Goals (SDG) monitoring framework, have been selected by the Inter-Agency and Expert Group on SDG Indicators (IAEG-SDGs) to monitor Target 2.1 “by 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round”, precisely because of their theoretical and statistical properties, which ensure that they are valid, reliable indicators of access to food, and that they provide internationally comparable statistics. The PoU is an estimate of the proportion of the population whose habitual food consumption is insufficient to provide the dietary energy levels that are required to maintain a normal active and healthy life. It is an indirect measure of access to food derived from official national-level information on food supply and food consumption data, and energy needs (based on population characteristics such as the age/ sex structure and levels of physical activity). The FIES provides estimates of the proportion of the population facing difficulties in obtaining food in sufficient quality and quantity, based on direct interview with survey respondents who reply to questions about their own experiences or on behalf of their households as a whole.

While the PoU and FIES-based indicators can be used *also* to inform IPC analyses– and actually both indicators are part of the IPC chronic food security assessment –this is not the main purpose for which they have been developed. The PoU indicator has been developed by the Indian statistician P.V. Sukhatme in 1961 and published for the first time by FAO in 1974. The indicator has been used by FAO to monitor the World Food Summit Target and the MDG Target 1C, at national, regional and global level, since 1999. It represents the food security measure that for the first time combined information on food supply and food access in one single indicator, and it is still the only valid methodology to estimate the prevalence of food inadequacy. It provides information about **general trends of the chronic food insecurity over time**, thus it is useful to look at long term changes. The FIES-based measurement system is the result of the project “Voices of the Hungry” launched by FAO in 2013 with the aim of providing a global tool to facilitate valid and reliable monitoring of progress towards eradicating hunger and ensuring universal access to food. It builds on existing knowledge on the use of experience-based food insecurity scales (e.g. US Household Food Security Survey Module HFSSM, *Escala Brasileira de Insegurança Alimentar EBIA*, *Escala Latinoamericana y Caribena de Seguridad Alimentaria ELCSA*, *Escala Mexicana de Seguridad Alimentaria EMSA*, and the Household Food Insecurity Access Scale HFIAS), but its main innovation is the methods **to compute country-level estimates of the prevalence of food insecurity at different levels of severity that are valid, reliable and formally comparable across countries and over time**. Due to its flexibility, the FIES methodology and resulting indicators can be used for global monitoring as well as to guide and monitor the effects of national food security policies and programmes.

In conclusion, IPC/CH and the SDG monitoring are two different processes, born to address different issues. The IPC/CH is a consensus building process based on the consolidation and summary of available information. The main users of this assessment are donors and policy makers operating on humanitarian and resilience contexts. On the other side, use of the PoU and FIES-based indicators of access to food have the objective of monitoring progress towards the medium-long term objective to eliminate hunger and food insecurity. The main users are Governments, international agencies, academia, media and anyone interested in the long-term evolution of food security and nutrition.

### **Methodology, data sources and timeliness**

As already mentioned, the IPC is a consensus building process based on already available information. The set of information on which the IPC country technical working group base their agreement is foreseen by the predefined protocols. These vary according to the IPC scales, thus the scope for which the IPC technical working group is formed. Three IPC scales are described in the latest version of the IPC technical manual (IPC Global Partners, 2019):

1. Acute food insecurity, with the analytical focus in “identifying areas with a large proportion of households with significant food energy gaps or livelihood change strategies that can endanger lives or livelihood”;
2. Chronic food insecurity, with the analytical focus in “identifying areas with a large proportion of households that have long-term inability to acquire adequate food requirements both in terms of macro- and micronutrients”;

3. Acute malnutrition, with the analytical focus in “identifying areas with a large proportion of children wasted or with oedema”.

Each IPC scale foresees different food security and malnutrition indicators, as well as different thresholds to then classify severity and identify key drivers (IPC Global Partners, 2019, pp. 35-36, 106-107, 158-159). The protocols are organized according to four functions to a) **build technical consensus**, b) **classify severity and identify key drivers**, c) **communicate for action**, and d) **quality assurance**, providing a guide of the activities that the technical working groups need to follow.

IPC analysis are usually conducted during one/two week’s workshop at the end of which a report is developed by the technical working group. The general idea of the IPC scales is to come up with a classification of food security or malnutrition consolidating information from available indicators collected from multiple sources. Time is vital for this assessment that always use the most up-to-date information. Nevertheless, this does not guarantee this secondary information is actually recent. As a matter of fact, the IPC/CH does not foreseen data collection activities. Because of this, we can say that IPC/CH is timeliness in the sense that it can be formed by the government at any time and a consensus is usually reached during the workshop. Nonetheless, the ability of this framework to timely reflect the food security or malnutrition situation of a certain context really depends on the available data. Information collected through **nationally representative surveys** are always the preferred once. Nevertheless, these are quite expensive and for this reason they are not implemented every year. Because of this, some countries (e.g. Senegal) have established a system of surveys, with smaller samples, trying to assess the food security and nutrition situation regularly, to provide the technical working group with updated information of key indicators. In most of the cases these **food security assessments led by countries** are managed by the country level food security unit and the Ministry of Agriculture, while the National Statistical Offices are not always involved. Alternatively, IPC/CH technical working groups rely on **food security assessments done by the World Food Programme (WFP)** (like the Emergency Food Security Analysis (EFSA) and, less often, the Comprehensive Food Security and Vulnerability Analysis (CFSVA)). Food security assessments led by countries or implemented by WFP are precious sources of information for IPC/CH. However, these are generally not designed to *monitor* food security but rather to provide actionable information to address emergency situations.

The PoU indicator allows monitoring trends in the extent of dietary energy inadequacy in a population over time, generated as a result of the combination of changes in the overall availability of food, in the households’ ability to access it, and in the socio-demographic characteristics of the population, as well as differences across countries and regions in any given moment in time. The indicator is computed at the population level. To this aim, the population is represented by an “average” individual for which a probability distribution of the habitual daily dietary energy intake levels is modelled through a **parametric probability density function** (pdf). Once the pdf is characterized, the indicator is obtained as the cumulative probability that daily habitual dietary energy intakes ( $x$ ) are below the lower bound of the range of normal dietary energy requirements for that representative, or average individual (MDER), as in the formula below:

$$PoU = \int_{x < MDER} f(x|DEC; CV; SK) dx$$

where DEC, CV and Skew are the mean, coefficient of variation and skewness that characterize the distribution of habitual dietary energy consumption levels in the population. As for the IPC/CH assessment, the timeliness of both PoU and FIES-based indicators depend on the frequency of data collection of official statistics by the country.

The ideal source of data to estimate the PoU would be a carefully designed and skilfully conducted **individual dietary intake survey**, in which actual daily food consumption, together with heights and weights for each surveyed individual, are repeatedly measured on a sample that is representative of the target population. Due to their cost, however, such surveys are rare. In principle, a well-designed **household survey** that collects information on food acquisitions might be sufficient to inform a reliable estimate of the PoU in a population, at a reasonable cost and with the necessary periodicity to inform the SDG monitoring process, provided that:

- All sources of food consumption for all members of the households are properly accounted for, including, in particular, food that is consumed away from home;
- Sufficient information is available to convert the data on food consumption or on food expenditures into their contribution to dietary energy intake;
- The proper methods to compute the PoU are used, to control for excess variability in the estimated levels of habitual food consumption across households, allowing for the presence of normal variability in the distribution of food consumption across individuals, induced by the differences in energy requirements of the members of the population.

Examples of surveys that could be considered for this purpose include surveys conducted to compute economic statistics and conduct poverty assessments, such as Household Income and Expenditure Surveys, Household Budget Surveys and Living Standard Measurement Surveys.

In practice, however, it is often impossible, and not advisable, to rely only on data collected through a household survey, as the information needed to estimate the four parameters of the PoU model is either missing or imprecise. Household Survey food consumption data often must be integrated by:

- a) Data on the demographic structure of the population of interest by sex and age;
- b) Data or information on the median height of individuals in each sex and age class;
- c) Data on the distribution of physical activity levels in the population;
- d) Alternative data on the total amounts of food available for human consumption, to correct for biases in the estimate of the national average daily dietary energy consumption in the population.

Data for a), b) and c) could be available through the same multipurpose survey that provides food consumption data, but are more likely available from other sources, such as National Demographic and Health Surveys (for a and b) and Time Use Surveys (for c). Correcting for bias in the estimated average daily dietary energy consumption might need to be based on alternative sources on food consumption, such as aggregate food supply and utilization accounts and food balance sheets<sup>1</sup>.

The FIES-based SDG indicator measures the percentage of individuals in the population who have experienced food insecurity at moderate or severe levels during the reference period. The severity of food insecurity, defined as a latent trait, is measured with the Food Insecurity Experience Scale and calibrated against the global FIES reference scale, a standard established by FAO based on the results of the application of the Food Insecurity Experience Scale in more than 140 countries worldwide, starting in 2014. (Cafiero, Viviani and Nord, 2016) Data at the individual or household level is collected by applying an experience-based food security scale questionnaire within a survey. The food security survey module collects answers to questions asking respondents to report the occurrence of several typical experiences and conditions associated with food insecurity. The data is analysed using the **Rasch model** (also known as one-parameter logistic model, 1-PL), which postulates that the probability of observing an affirmative answer by respondent  $i$  to question  $j$ , is a logistic function of the distance, on an underlying scale of severity, between the position of the respondent,  $a_i$ , and that of the item,  $b_j$ .

$$Prob(X_{i,j} = \text{Yes}) = \frac{\exp(a_i - b_j)}{1 + \exp(a_i - b_j)}, \forall i, j,$$

Parameters  $a_i$  and  $b_j$  can be estimated using maximum likelihood procedures. Parameters  $a_i$ , in particular, are interpreted as a measure of the severity of the food security condition for each respondent and are used to classify them into classes of food insecurity.

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<sup>1</sup> To inform its estimate of PoU at national, regional and global level, in addition to all household surveys for which it is possible to obtain micro data on food consumption, FAO relies on: a) UN Population Division's World Population Prospects (<https://esa.un.org/unpd/wpp/Download/Standard/Population/>), which provide updated estimates of the structures of the national population by sex and age every two years for most countries in the world; b) FAO Food Balance Sheets ([http://faostat3.fao.org/download/FB/\\*/E](http://faostat3.fao.org/download/FB/*/E)), which provides updated estimates of the national availability of food every year for most countries in the world. Micro data from household surveys that collect food consumption data are sourced by FAO directly through the National Statistical Agencies' websites, or through specific bilateral agreements.

To inform SDG 2.1.2, data can be collected using the Food Insecurity Experience Scale survey module (FIES-SM) developed by FAO, or any other experience-based food security scale questionnaires, including:

- the Household Food Security Survey Module (HFSSM) developed by the Economic Research Service of the US Department of Agriculture, and used in the US and Canada,
- the Latin American and Caribbean Food Security Scale (or Escala Latinoamericana y Caribeña de Seguridad Alimentaria – ELCSA), used in Guatemala and tested in several other Spanish speaking countries in Latin America, - the Mexican Food Security Scale (or Escala Mexicana de Seguridad Alimentaria, - EMSA), an adaptation of the ELCSA used in Mexico,
- the Brazilian Food Insecurity Scale (Escala Brasileira de medida de la Insegurança Alimentar – EBIA) used in Brazil, or
- the Household Food Insecurity Access Scale (HFIAS), or any adaptation of the above that can be calibrated against the global FIES.

Summarizing, the IPC/CH process and the monitoring of food insecurity for the SDGs, are based on different criteria and approaches, and only in few cases they can be informed by the same data sources. Apart from the PoU and FIES-based indicators that, as already mentioned, are also included among the indicators that can inform IPC chronic food security classifications, none of the other food security indicators that are typically used in IPC acute food insecurity assessments qualify as SDG indicators. For an indicator to be part of the SDG monitoring framework, the countries that are part of the system of the United Nations, through the UN Statistical Commission and more precisely through the Inter-Agency and Expert Group on SDG Indicators, must have agreed on the relevance and the properties of that specific indicator. A (tier one or tier two) SDG indicator is recognized to be conceptually clear, with an internationally established methodology and with standards that are available. In the domain of food security, only PoU and the prevalence of food insecurity measured with the FIES have been selected to monitor the SDG target 2.1, despite many other indicators had been proposed, including for example the Food Consumption Score, but which have been found not to possess the minimal fundamental properties of statistical soundness to ensure globally valid measurement.

This also means that **the IPC/CH food security assessments cannot be used to inform SDG monitoring**. IPC/CH are consensus building processes extremely useful for driving interventions in emergency situations. Nevertheless, the mechanism, and more specifically the indicators composing IPC/CH miss the minimum set of statistical properties needed to inform a global monitoring process. For this reason, IPC/CH and SDG 2.1 indicators complement each other. IPC/CH are important to summarize available information to guide quick interventions in emergency contexts while SDG 2.1 indicators provide the statistical monitoring framework to globally monitor food security and guide structural policies and development programs.

### **Ease of application versus validity and reliability**

In contexts where a rapid food security assessment is needed, low-cost tools easy to implement have been usually preferred to indicators sometimes more difficult to apply but possessing statistical properties like validity and reliability (Cafiero et al., 2014). Indicators such as the Food Consumption Score (FCS) or the reduced Coping Strategy Index (rCSI) are routinely computed even when data collection cannot be conducted following proper survey design, and often they are the sole recent evidence on which IPC assessment can be based.

The fact that an IPC assessment can be made does not mean that it does not present challenges. The first main challenge is technical and consists in finding the best way to consolidate/summarize the available information and translate this into severity categories. The second one is “political” and relates to reaching the consensus within the technical working group. The technical challenge is probably also one of the weakest aspect of the entire IPC process. Despite the undoubted attractiveness of having the food security situation of a country described by few proportions assigned to severity classes, the process of aggregating sparse information coming from different sources is really dangerous. The final results will depend on the available information (that may vary from application to application), the properties of the indicators that are used (validity and reliability *in primis*), and the rules (including the thresholds) that are applied to “put everything together”. What is sure, is that this process does not allow to understand to what extent the final result is reliable and definitely it does not provide estimates comparable between different applications, even within the same country. This objective

technical challenge is even more delicate when put in a perspective of a consensus building process in which each stakeholder pushes to give more emphasis to those information that in his/her opinion is more relevant.

Moreover, as already discussed, an IPC classification is not a statistical indicator. It is not possible to formally test its validity (that is the fact that the indicator measures what it is intended to measure) and its reliability (that is the combination of accuracy -lack of bias- and precision -small measurement errors). The extent to which the IPC classification, on which the technical working groups agree, reflect the real situation is impossible to assess. This is acceptable whenever urgent actions have to be taken to face emergency situations, but it is difficult to defend when the objective is to guide long-term development interventions. In this case, sound indicators possessing the minimal set of desirable statistical properties are preferable.

In addition to the statistical soundness of the indicators produced, one of the qualities of the FIES is the relatively ease of use. Data can be collected through a simple survey module including only eight yes/no questions. The data analysis process is supported by the FAO Food Security and Nutrition Statistics team and facilitated by the availability of predefined and harmonized routines and software that guide the user through the analysis. Deriving PoU estimates is more complicated. A food consumption analysis with the objective of computing the PoU using a household consumption and expenditure survey requires careful data collection and analysis. The food consumption module included in the survey should carefully be developed following the commonly accepted standards (<http://www.fao.org/3/CA1561EN/ca1561en.pdf>). As a matter of fact, a food consumption module that does not take into account even one single piece of information needed for the analysis could compromise the quality of the estimates. Moreover, contrary to the FIES, food consumption data analysis is quite complex and time consuming. It requires a good knowledge of the principles of food security and nutrition as well as a good command of programming languages.

The validity of the PoU methodology has been described in many articles (Naiken, 2007). What has not been really assessed is its reliability. More precisely, the reliability of the PoU estimates depends on the quality of the data informing the model. Quality, of course, vary from case to case, but there is no a way to statistically estimate the margin of error associated to the parameters of the model, thus to the final estimate. Completely different is the case of FIES. Any time new FIES data are collected, the rash model is applied and the results are subjected to a rigorous statistical validation process. Validity is assessed by checking whether the data conform to the model's assumptions and only if these tests are passed the results are used to estimate the prevalence of food insecurity in the population. Furthermore, the methodology also allow to derive the reliability of the estimates, by computing the proportion of total variance in the population that is accounted for by the measurement model and by calculating the margin of error associated to the prevalence of food insecurity.

Briefly, the IPC/CH is easy to apply in the sense that it relies on the work of a technical working group that can be formed any time. Nevertheless, it presents both technical and political challenges that may influence the analysis and because of which it is impossible to formally assess the validity and reliability of the resulting classifications. Use of the FIES is also relatively straightforward, as the only prerequisite required is that a nationally representative survey is implemented in the country of analysis. Apart from this, data collection is easy and quick, and the data analysis does not present major obstacles for analyst with some experience in statistics and data processing. It provides also a set of test to assess the validity of the model in the specific application and allows to evaluate the reliability of the estimates. The PoU is informed by data that are neither easy to collect nor to analyse. The methodology developed by the FAO Statistics Division provides a series of tools to address to address many issues related to both data collection and analysis, it guarantee valid estimates of the prevalence of undernourishment but it does not allow to assess the reliability of these.

### **Capacity to provide disaggregated information**

One of the claimed outputs of the IPC is to answer the question “where is response most required”. Nevertheless, the reliability of the answer to this question depends once again on the characteristics of the indicators that have been used to derive the information and on how these have been analysed. Not all the indicators included in the IPC possess an additivity property that guarantee a certain consistency of the results at different level of disaggregation (e.g. regional, national). Moreover, the methods used to aggregate the different indicators may also break this property, creating internal inconsistencies.

The PoU, in principle, can be computed for any specific population group, provided sufficient accurate information exists to characterize the model's parameters for that specific group, that is, if data on the group's food consumption levels, age/gender structure and – possibly – physical activity levels, exist. The scope for disaggregation thus crucially depends on the availability of surveys designed to be representative at the level of sub national population groups. Given prevailing practice in the design of national household surveys, sufficient reliable information is seldom available for disaggregation beyond the level of macro area of residence (urban-rural) and of the main Provinces/Divisions in a country. To the extent that most of the used surveys are designed to accurately capture the distribution of income, inference can be drawn on the PoU in different income classes of the population. Gender disaggregation is limited by the possibility to identify and group households by gender-related information (such as sex of the head of the household, or male/female ratio).

As the FIES or any other compatible experience-based food security questionnaire is applied through surveys, the prevalence of food insecurity can be measured in any population group for which the survey used to collect data is representative. If applied at household level, disaggregation is thus possible based on household characteristics such as location, household income, composition (including for example presence and number of small children, members with disabilities, elderly members, etc.), sex, age and education of the household head, etc. If applied at the individual level, proper disaggregation of the prevalence of food insecurity by sex is possible as the prevalence of food insecurity among male and among female members of the same population group can be measured independently. When producing disaggregated statistics, attention must be devoted to verifying the validity of the application by estimating the Rasch model with the data from each specific subpopulation group and, if necessary, perform the appropriate equating of the measure before comparing results.

In synthesis, the capacity to provide disaggregated information is strictly related to the properties of the single indicator. IPC/CH, by putting together indicators with and without the additivity property, cannot provide strong statistical based evidence at sub-national level. To the contrary, PoU and FIES methodologies allow to disaggregate results at subnational level provided that the survey from which they are informed is meant to be representative at the level for which estimates are required.

### **Comparability over time and space**

The IPC analytical approach is comparable across locations in the sense that it provides a set of guidelines to analyse food security and nutrition information following the same standardized protocols. This, however, does not mean that results are comparable. Given that each application of the IPC is based on information available in a certain context at a certain point of time, and it is subjected to a consensus building process that is, by definition, each time different, results cannot be compared. This is not a problem if the scope is to inform urgent decisions directed to face emergency situations, but it is definitely incorrect to use different rounds of the IPC to analyse any kind of trends in food security.

The PoU methodology guarantee comparable estimates. The parametric model is unique for all the countries in the world but is informed by information reflecting country specific characteristics regarding the average dietary consumption in the population, the minimum dietary energy requirement and the coefficient of variation. Analogously the FIES has been developed exactly to add the international comparability component to the already existing experience-based scale methodologies. To ensure comparability of FIES indicator computed for different populations, universal thresholds are defined on the FIES global reference scale and converted into corresponding values on the “local” scales obtained as a result of application of the Rasch model on any specific population, through a process of “equating”. Equating is a form of standardization of the metric based on identification of the subset of items that can be considered common to the global FIES and the specific scale used for measurement in each context. The severity levels associated with the common items are used as anchoring points to adjust the global FIES thresholds to the local scales. The standardization process ensures that the mean and standard deviation of the set of common items is the same when measured on the global FIES or on the national scale. Compatibility with the global FIES and the possibility to compile this indicator requires that at least four of the eight FIES items are identified as common<sup>2</sup>.

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<sup>2</sup> The Statistics Division at FAO has developed the RM.weights package under R, which provides routines for estimating the parameters of the Rasch model using conditional maximum likelihood, with the possibility to allow for the complex survey design.



As a result, comparability over time and space is probably one of the most important differences between IPC/CH and PoU and FIES. By construction, IPC/CH does not provide estimates that can be compared among countries and even within the same country in two different applications. This is not particularly relevant if the objective is to inform interventions directed to mitigate crisis situations, but it is essential to understand why this tool cannot be used to monitor the food security situation a country. On the other hand, both PoU and FIES provide comparable estimates and also because of these they have been selected as SDG indicator to monitor target 2.1.

### **Capacity to distinguish between severity levels**

The objective of the IPC/CH is to “classify the severity and magnitude and to identify key drivers of food insecurity and malnutrition”. Nevertheless, this implies several challenges, two of which are extremely difficult to solve. First, not all the indicators included in the IPC scales are designed to distinguish between different food security levels. For example, the indicator “dietary energy intake” included in the IPC acute scale cannot be used in this sense and any classifications of the severity of food insecurity based on this would not be correct. Secondly, even assuming that all the indicators included in the IPC scales can be used to discern different food security levels, it is extremely difficult to align the thresholds of the food security classes for all the indicators. As a matter of fact, while it is true that all the thresholds are conventions and that only consistent thresholds give generic labels a common meaning and make results comparable, the IPC scales are composed by many indicators for which a threshold needs to be determined for each food security class. This is where the problem come in. How to be sure that the thresholds defined for two different indicators to distinguish between, for example, phase three and phase four of the IPC acute food insecurity scale mean the same thing? To what extent, for example, values 3 and 4 of the Household Dietary Diversity Score and values 2 and 3 of the Household Hunger Score indicators identify the same group of population classified as phase three? This is a very difficult question to answer and would imply a deep analysis.

While PoU can only provide information on the extreme food insecurity, the FIES methodology allows for estimations at different level of severity. For global monitoring, FAO uses two different thresholds to identify, respectively the lower bounds of “moderate” and “severe” levels of food insecurity. The two values refer to estimates of the proportion of the population that, over the reference year, has experienced food insecurity at a moderate or severe (FI<sub>mod+sev</sub>) and at severe (FI<sub>sev</sub>) levels, respectively. The group of people experiencing moderate or severe levels of food insecurity also includes those who have experienced severe food insecurity levels. The reason the percentage of those experiencing moderate food insecurity only is not used as an indicator for global monitoring is because a reduction in this percentage over time would be prone to ambiguous interpretation; a reduction in moderate food insecurity could be due to movement of some of those who were suffering from moderate food insecurity into the “severe” category. Combining the moderate and severe food insecurity categories avoids such ambiguity.

In conclusion, IPC/CH does not have solid statistical basis to provide reliable estimates at different food severity levels. This is again understandable when the objective is to drive quick interventions on the basis of the available information and with the impossibility of implementing other surveys. Nevertheless, it cannot be used for monitoring the severity of food insecurity. At the moment, the only food security indicator with this characteristic is the FIES for which, since July 2019, estimates of food security at moderate and severe levels are published by FAO.

### **III. CONCLUSIONS AND RECOMMENDATIONS**

The Integrated Phase Classification / *Cadre Harmonisé* and the monitoring of progress towards SDG target 2.1 are two different assessments referring to the severity of the food insecurity condition of populations. While both processes rely on the analysis of existing data and evidence, they have a different methodology, different properties/characteristics and a different scope.

The IPC is a process to build technical consensus among key stakeholders, based on available information, and it was born to provide the most recent and up-to-date actionable information on the state of food security *in emergency contexts* for resource allocation where immediate actions are needed to prevent or decrease the acute

food insecurity that threatens lives or livelihoods. On the other side, the SDG monitoring framework, particularly the indicators related to target 2.1, namely SDG indicator 2.1.1 Prevalence of Undernourishment (PoU) and 2.1.2 Prevalence of moderate or severe food insecurity, based on the Food Insecurity Experience Scale (FIES), is a process intended to identify medium-long term trends in the more general, *structural or chronic food insecurity condition* of the countries' populations. Because of this, it is important to **make sure that differences and specific objectives of each process are understood by the political referents at country level**. The IPC/CH food security assessment cannot be used to inform the SDG monitoring and vice versa. The IPC/CH should be used by donors and decision makers to allocate resources and guide interventions in humanitarian and resilience contexts, while SDG indicators 2.1.1 and (especially) 2.1.2. should be used by Governments to guide and monitor the effects of national food security policies and programmes, and international agencies, academia, media and anyone interested in the long-term evolution of food security and nutrition.

The second recommendation relates to the use of FIES-based indicators. The FIES methodology, through the FIES survey module, provides a direct information on the constraints experienced by the individual/household in access to food. It is simple and quick to administer in a survey and can be included in almost any existing survey, at very little additional cost. At the same time it is statistically sound. FIES and similar scales have been shown to be valid in different settings, and by using the FIES methodology food insecurity prevalence rates can be compared across countries and populations and an estimate of their reliability can be derived. Finally the FIES methodology allows to distinguish between severity levels and can provide results disaggregates at the level for which the survey is meant to be representative. Because of all these reasons, the FIES methodology represents the most effective way to estimate the prevalence of food insecurity at different severity levels. It is already part of the SDG monitoring framework as well as the IPC chronic scale, but it remains important to **promote a broader use of the FIES in different contexts, especially in regular statistical monitoring activities**.

#### **IV. REFERENCES**

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