Indicator 2.1.2

Indicator Name, Target and Goal

Indicator 2.1.2 Prevalence of moderate or severe food insecurity in the population, based on the Food Insecurity Experience Scale (FIES)

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

Goal 2 End hunger, achieve food security and improved nutrition and promote sustainable agriculture

Definition and Rationale

○ Definition

The indicator is defined as the share of the national population that has experienced food insecurity, based on the Food Insecurity Experience Scale (FIES), at moderate or severe levels during the reference period. *FIES* is a peer reviewed measurement metric developed by the Food and Agriculture Organization of the United Nations (FAO), under the Voices of the Hungry (VOH) project, to compare levels of food insecurity across countries.

○ Concepts

Food insecurity is a situation that exists when people lack secure access to sufficient amounts of safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life. Food insecurity may be chronic, seasonal or transitory.

People experiencing *moderate* levels of food insecurity will typically have lower-quality diets and may at times during the year have been forced to also reduce the quantity of food they would normally eat; those experiencing *severe* levels would have gone for entire days without eating due to lack of money or other resources.

○ Rationale and Interpretation:

Food insecurity is associated with the inability to access safe, nutritious and sufficient food regularly.

High prevalence of food insecurity at moderate levels can be considered a predictor of various forms of diet-related health conditions in the population,

associated with micronutrient deficiency and unbalanced diets. Severe levels of food insecurity, on the other hand, imply a high probability of reduced food intake and therefore can lead to more severe forms of undernutrition, including hunger.

Data Sources and Collection Method

We use FAO estimates, because Ministry of Agriculture, Forestry and Fisheries does not collect statistics related FIES independently in Japan.

Method of Computation and Other Methodological Considerations

○ Computation Method

The indicator can be calculated by analyzing survey data 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. 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.

$$Prob\left\{X_{i,j} = Yes\right\} = \frac{e^{(a_i - b_j)}}{1 + e^{(a_j - b_i)}}$$

Through the estimation of the Rasch model using the conditional maximum likelihood method and the assumption that individuals with the same raw score (sum of affirmative answers to the FIES questions) belong to the same distribution of food insecurity, it is possible to estimates the probability of being moderately or severely food insecure ($p_{\text{mod+sev}}$) and the probability of being severely food insecure (p_{sev}) for each respondent, with $0 < p_{\text{sev}} < p_{\text{mod+sev}} < 1$.

Given a representative sample, the prevalence of food insecurity at moderate or severe levels ($FI_{\text{mod+sev}}$), and at severe levels (FI_{sev}) in the population are computed as the weighted sum of the probability of belonging to the moderate or severe food insecurity class, and to the severe food insecurity class, respectively, of all individual or household respondents in a

sample:

$$FI_{mod+sev} = \sum_i p_{i_{mod+sev}} \times w_i$$

and

$$FI_{sev} = \sum_i p_{i_{sev}} \times w_i$$

where w_i are post-stratification weights that indicate the proportion of individual or households in the national population represented by each element in the sample.

○ Comments and limitations

Compared to other proposed non-official indicators of household food insecurity, such as those based on the Food Consumption Score or on the Coping Strategy Index, or on the recently released "Comprehensive Approach to Report Indicators" (CARI), the "Food Insecurity Experience Scale" (FIES) based approach has the advantage that food insecurity prevalence rates are directly comparable across population groups and countries. Even if they use similar labels (such as "moderate" and "severe" food insecurity) other approaches have yet to demonstrate the formal comparability of the thresholds used for classification, due to lack of the definition of a proper statistical models that links the values of the "indexes" or "scores" used for classification, to the severity of food insecurity. For this reason, care should be taken when comparing the results obtained with the FIES with those obtained with these other indicators, even if, unfortunately, similar labels are used to describe them.

Compared to the other indicators used to assess the state of food security at national level, experience-based food insecurity scales like the FIES stand out for the following reasons:

a) Directly ask people about food-related behaviors and experiences associated with food insecurity.

b) Ease of administration and timeliness of reporting.

c) Soundness of the statistical basis used to enable cross-country comparisons based on information collected on individuals or households.

d) Ability to reflect the depth of food insecurity by distinguishing between different severity levels.

e) Possibility to disaggregate results by gender when applied at individual level and by sub national groups when applied in surveys with samples that are representative at sub-national level.

f) Provides actionable information that policy makers can use to identify vulnerable population groups and guide policy interventions.

The FIES is not intended to quantify food consumption nor does it provide a quantitative assessment of dietary quality. It is not a measure of malnutrition and cannot be used to detect nutritional deficiencies or obesity.

Data Disaggregation

The full potential of the FIES to generate statistics that can inform policy is realized when the tool is applied in larger national population surveys that enable more detailed analyses of the food insecurity situation according to income, gender, age, race, ethnicity, migratory status, disability, geographic location, or other policy-relevant characteristics, as is already the case for a number of countries.

In this way, it's possible to obtain prevalence of food insecurity of specific population groups.

References

N/A

Custodian Ministries of Data

Ministry of Agriculture, Forestry and Fisheries (MAFF)

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

Custodian Ministries of Related Policies

Ministry of Agriculture, Forestry and Fisheries (MAFF)

International Organizations

Food and Agriculture Organization of the United Nations (FAO)