

## **Food security, nutrition and sustainable agriculture in the post-2015 agenda: priority targets and indicators identified by FAO, IFAD and WFP**

**27 March 2014<sup>1</sup>**

### **Introduction**

The three United Nations Rome-based Agencies (RBAs) have been actively supporting Member States and other key actors in identifying and articulating critical issues related to food security, nutrition and sustainable agriculture in the new post-2015 development agenda. They have consistently highlighted the central importance of this set of issues in the overall agenda and have drawn upon their individual and collective expertise and knowledge to offer a joint analysis of key challenges, trends, and areas requiring attention in a post-2015 framework. In particular, the RBAs have jointly co-led and contributed to the preparation of issue briefs and statistical notes related to this cluster of issues. The RBAs' joint efforts have informed the work of Member States in the Open Working Group (OWG) on Sustainable Development Goals (SDGs) during its stocktaking phase (March 2013 to February 2014) and now in their effort to draft a set of new sustainable development goals. The RBAs' contribution has been inspired by a common vision of food security, nutrition and sustainable agriculture as a closely interlinked set of issues requiring comprehensive, holistic approaches, with strong linkages to many other parts of a sustainable development agenda.

As the OWG has entered into a "negotiation mode" to define a set of SDGs to present to the United Nations General Assembly (UNGA) in September 2014, and as preparatory work gets underway for later discussions on the full content of the post-2015 agenda (including not just goals and targets but also indicators and means of implementation), it is crucial that sound technical inputs concerning how to measure and monitor progress in the area of food security, nutrition and sustainable agriculture be available to decision makers. As a contribution to this effort, and at the request of Members to provide a joint perspective, the RBAs have worked together to identify possible targets and indicators in the areas of food security, nutrition and sustainable agriculture for a universal, transformative agenda that is ambitious but also realistic and adaptable to different country and regional contexts.

This work has been inspired by the holistic vision of the United Nations Secretary-General's Zero Hunger Challenge and informed by the technical work of individual RBAs, as well as by the proposals made by other stakeholders during the post-2015 process.

This document presents the list of the RBAs' proposed targets and indicators as of end of March 2014. The RBAs will continue to work and refine the results of this joint effort in the coming weeks and months, with a view to being responsive to the evolving debate among Member States and other stakeholders. In addition, work will continue to test and refine indicators in critical areas where data collection and availability are currently weak.

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<sup>1</sup> This document summarizes the outcome of three workshops held by the Food and Agriculture Organization of the United Nations (FAO), the International Fund for Agricultural Development (IFAD) and the World Food Programme (WFP), with inputs from Bioversity and the United Nations One Secretariat, to identify a set of targets and indicators that can support an integrated, holistic post-2015 agenda around food security, nutrition and sustainable agriculture. The results of each workshop have been documented in summary reports available upon request from the three agencies.

**Target 1 – Access to food: All people have access to adequate (safe, affordable, diverse and nutritious) food all year round.**

The target on access to adequate food concerns people’s ability to achieve stable and adequate food consumption. FAO’s prevalence of undernourishment has been the main Millennium Development Goal (MDG) indicator tracking food access at country level. While an important indicator on long-term trends, it does not capture important aspects of diet quality and cannot monitor the effects of shocks and rapid changes. Therefore, we also recommend the use of prevalence of households with inadequate food consumption (measured by the Food Consumption Score). This indicator is a measure of dietary diversity and food frequency; it has been extensively used by WFP in food security assessments for many years, and is included in a number of national Living Standards Measurement Surveys (LSMS) and monitoring surveys. In addition, we propose FAO’s Food Insecurity Experience Scale, which is currently being rolled out in more than 150 countries and measures the prevalence of population with severe food insecurity, based on individuals’ reported experience. The two latter indicators capture different dimensions of food access, but both are easy to collect and can be used to monitor changes on the ground in a low-cost manner. We also recommend to measure prevalence of households with over 75 per cent share of food expenditure over total consumption expenditure, which indicates economic vulnerability and is a key dimension of food access. Finally, to monitor food safety, the incidence of food and waterborne diarrhoea provides a direct measure of the extent of microbiological contamination in the food supply and its impact on the population.

*Indicators:*<sup>2</sup>

- Prevalence of undernourishment
- Prevalence of households with inadequate food consumption (*Food Consumption Score*)
- Prevalence of population with moderate or severe food insecurity (*Food Insecurity Experience Scale*)
- Prevalence of households with over 75 per cent share of food expenditure over total consumption expenditure
- Incidence of food and waterborne diarrhoea

**Target 2 – (Mal)nutrition: End malnutrition in all its forms (undernutrition, micronutrient deficiencies and overnutrition), with special attention to ending stunting.**

The second target we propose focuses on ending malnutrition. One of the biggest challenges we now face is to end chronic malnutrition. This is related to access to sufficient food and diet quality, and is measured by the prevalence of stunting under five years of age, and in particular under two years of age because malnutrition within the first 1,000 days (from conception) can cause irreparable damages. The prevalence of wasting under five years of age is instead an indicator of acute malnutrition. This should be used along with the stunting indicator, since the absence of wasting alone does not necessarily imply absence of malnutrition. Another major challenge is the prevalence of overweight and obesity, which is high in high-income countries and of increasing concern in low- and middle-income countries. This is therefore

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<sup>2</sup> Indicators are listed in the order in which they are presented in the narrative paragraphs, which provide a rationale for choice and sequencing of indicators based on importance and/or established data or methodologies, depending on the cluster of indicators.

recommended as a key indicator of malnutrition that has global relevance. Iron deficiency is an important and most prevalent micronutrient deficiency, therefore we further recommend the prevalence of anaemia among women at reproductive age and children under five years of age as an indicator of micronutrient deficiencies. Finally, given the nutritional vulnerability of women and children and the need to monitor this at the individual level, we recommend the inclusion of the individual dietary diversity score (for women and infants).

*Indicators:*

- Prevalence of stunting (low height for age) under five years of age, and particularly under two years of age
- Prevalence of wasting (low weight for height) under five years of age
- Prevalence of overweight/obesity<sup>3</sup>
- Prevalence of anaemia among women and children
- Dietary diversity of women and infants

**Target 3 – Sustainable food systems: All food production systems become more productive, sustainable, resilient and efficient – minimizing adverse environmental impact without compromising food and nutrition security.**

The target area of sustainable food systems encompasses different thematic domains. The most relevant themes include energy, water, land/soils, forests, biodiversity and resilience, and one key indicator has been proposed for each theme. The selection of these six indicators reflected several criteria, the most important of which were the usefulness for tracking progress and the availability of data. The six indicators together imply a broad, multidimensional approach to sustainable agriculture. In this respect, the decision to include indicators from several different domains is as important as the selection of specific individual indicators. In each case, the preference was for the broadest indicators available. The resilience indicator, for example, combines human and economic losses from crises and disasters. Selection of the biodiversity indicator, on the other hand, focuses on the one area – fisheries – where evidence is readily available and the usefulness of the indicators is well-established. Additional indicators of biodiversity may be proposed, but this would need to be considered in the context of data availability and the investments that will be required to collect new data.

*Indicators:*

- Direct use of fossil fuel in agriculture per a) hectare of arable land, b) unit of value of output, c) unit of calorie of food produced<sup>4</sup>
- Agricultural water withdrawal as a proportion of total water withdrawal and total water withdrawal as a proportion of total actual renewable water resources
- Soil erosion rate
- Total area of forests and other wooded land as a proportion of total area

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<sup>3</sup> Based on growth charts for 0-19-year-olds per World Health Organization (WHO) standards and Body Mass Index (BMI) for adults.

<sup>4</sup> To be normalized by levels of capital stock of machinery per unit of arable land.

- Proportion of fish stocks within safe biological limits
- Human and economic losses from crises and disasters<sup>5</sup>

**Target 4 – Smallholder productivity and income: All small food producers, especially women, have secure access to adequate inputs, knowledge, productive resources and services to increase their productivity sustainably and improve their income and resilience.**

Small food producers play a critical role in food systems at all levels – from the local to the national, regional and global. In particular, small family farms represent the vast majority of farms in the world and are a critical engine of food supply – despite often operating under great constraints in terms of asset base, access to inputs, technology, services and markets. Small food producers, notably small family farmers, also represent a critical link between food security, nutrition, sustainable agriculture and economic growth and poverty eradication, because a large share of them live in poverty, and because of the disproportionate poverty-reducing impact of agriculture-led growth. To empower these actors to drive a transformative agenda for the sector, the post-2015 agenda needs to help build their capacity and address the constraints they face. In particular, it is important to track progress in the asset base and opportunities of women and men operating in this sector, their productivity and incomes. The suggested indicators therefore capture both outcomes related to the asset base and investment capacity of small food producers and outcomes related to their productivity and income growth. On the first front, land tenure and financial inclusion indicators (both disaggregated by sex) represent powerful proxies for assets and investment capacity. On the second front, value of agricultural and food production per land and labour units are indicators for the overall agriculture sector that can be disaggregated by size of holding and by sex. In recognition of the critical role played by the public sector in providing public goods and crowding in private investments in and for agriculture, a fifth recommended indicator relates to the share of public budgets dedicated to this sector.

*Indicators:*

- Share of women and of men with legally recognized evidence of land tenure
- Adults with an account at a formal financial institution, rural/urban and by sex
- Value of agricultural production per labour unit<sup>6</sup>
- Value of food production per hectare<sup>7</sup>
- Share of public budget spent on agriculture

**Target 5 – Food loss and waste: More efficient post-production food systems (harvest, handling and storage, processing and packaging, transport and consumption) that reduce the global rate of food loss and waste by 50 per cent.**

<sup>5</sup> Includes natural hazards; conflict, protracted crises and socio-economic crises combined; and food chain crises from pests, animal diseases and food safety events. This indicator is still subject to further revisions as current discussions on resilience measurement are still very much work in progress.

<sup>6</sup> Measured in constant United States dollars/unit of labour, disaggregated for two lowest quintiles of countries' farm size distribution, as well as for female-headed smallholder producer households.

<sup>7</sup> Measured in constant United States dollars/hectare, disaggregated for two lowest quintiles of countries' farm size distribution, as well as for female-headed smallholder producer households.

The target area of food losses and waste presents certain unique characteristics compared to the other four target areas. Presently, there are no global comprehensive and coordinated efforts to collect direct data on food losses and waste. The cost of directly measuring losses and waste by tracking quantities of a commodity and recording weights/biomass from production through different stages of the value chain and distribution to final consumption could be very high. The RBAs have agreed, however, that one indicator – the Global Food Loss Index – has the potential to meet stringent selection criteria. While it is yet to be fully developed and validated, the food loss index is very likely to become available by the end of 2015. Despite the paucity of data collection for food loss and waste, it is vitally important to establish an indicator that can provide timely information and enable policymakers to track progress over time. It was also noted that FAO has prioritized the subject of food losses and waste in its new Strategic Framework and the development of the index is a key deliverable within its 2014-2015 programme of work. The index is based on a model which uses observed variables that conceivably influence food losses (e.g. road density, weather, pests) to estimate quantitative losses, using data readily available from a variety of sources. In addition, the model is dynamic and, as new hard data on losses become available, they can be updated to improve estimates.

*Indicators:*

- Global Food Loss Index

## Annex: Indicator-specific rationale and annotations

**Target 1: All people have access to adequate (safe, affordable, diverse and nutritious) food all year round.**

### Indicators and annotations:

*Prevalence of undernourishment (measure of sufficiency of access to food at country level)*

- This is a well-established measure of long-term national trends in the levels of chronic food insecurity (FAO State of Food Insecurity, SOFI).
- Food balance sheets data are available with a 2-3-year time lag and surveys are conducted every 3-5 years. Efforts to improve the quality and relevance of food consumption data collected through expenditure surveys will improve precision of the estimates in many countries.

*Prevalence of households with inadequate food consumption (Food Consumption Score)*

- This indicator is a measure of dietary diversity and food frequency and assesses household's dietary diversity based on their food consumption during the week prior to interview.
- The indicator has been extensively used in food security assessments by WFP in the past 15 years. It is an easy-to-collect, well-established indicator that has been included in LSMS and several other national surveys.

*Prevalence of population experiencing moderate and severe food insecurity, measured through the Food Insecurity Experience Scale (measuring severity of food insecurity)*

- Experience-based food insecurity scales have been used in several countries since 1995 for monitoring the intensity of food insecurity at national and subnational level. They can also be used to analyse the problems for men and women separately.
- Through the "Voices of the Hungry" project, FAO will provide annual data from more than 150 countries, starting in 2014.

*Prevalence of households with over 75 per cent share of food expenditure over total consumption expenditure (measuring economic access to food)*

- A high share to food in the total budget indicates high vulnerability to food insecurity and low level of resilience to shocks, which indicates economic vulnerability and is a key dimension of food access.
- Data are available from national household and income surveys every 3-5 years for most countries in the world, though efforts should still be made to allow disaggregation by relevant population groups.

*Incidence of food and waterborne diarrhoea (measure of food safety)*

- This indicator captures food safety aspects, which have become an increasingly important issue for consumers and health. It is used as a proxy for foodborne disease.
- Global baselines can be estimated using data available from the World Health Organization's (WHO) Foodborne Disease Burden Epidemiology Reference Group (FERG) programme.

**Target 2: End malnutrition in all its forms (undernutrition, micronutrient deficiencies and overnutrition), with special attention to ending stunting.**

### Indicators and annotations:

*Prevalence of stunting (low height for age) under five years of age, and in particular under two years of age (measures undernutrition)*

- Stunting is a measure of chronic malnutrition and is related to access to sufficient food and diet quality. It is common to measure stunting for children aged up to five, but it is important to measure stunting for children up to the age of two, since this allows countries to intervene early taking advantage of the window of opportunity of the first 1,000 days (from conception) within which nutritional problems can still be corrected.
- Disaggregated data for boys and girls are available for all countries from Demographic and Health Surveys (DHS).

*Prevalence of wasting (low weight for height) under five years of age (measures undernutrition)*

- Wasting or thinness is an indicator of acute and chronic malnutrition. This should be used along with stunting since the absence of wasting alone does not necessarily imply absence of malnutrition.
- Disaggregated data for boys and girls are available for all countries from DHS surveys.

*Prevalence of overweight/obesity based on growth charts for 0-19-year-olds (WHO BMA, or BMI-for-age z-score) and BMI for adults (measures overnutrition)*

- Prevalence of overweight and obesity is high in high-income countries and is of increasing concern in low- and middle-income countries. It has therefore become a key indicator of malnutrition at global level.
- Data on WHO BMA (BMI-for-age z-score) and BMI for adults for male and female are easily available for all countries from DHS surveys through weight and height measurements.

*Prevalence of anaemia among women of reproductive age and children under five years of age (measures micronutrient deficiencies)*

- Iron is one of the many essential micronutrients. Iron deficiency, particularly among women and children, is an important and most prevalent micronutrient deficiency. Although other micronutrient deficiencies are also important, measuring each of them separately or through a composite index would be too data demanding. In view of this, we would propose that this one crucial aspect of micronutrient deficiency be used.
- Disaggregated data are available for all countries from DHS surveys.

*Dietary diversity in women and infants*

- Diet diversity is crucial for adequate nutrition and has an established association with per capita consumption and energy availability. Dietary Diversity Scores are proxy indicators that predict the mean probability of adequacy of the diet in terms of micronutrients in a population.
- For women, the indicator measures the adequacy of the diet of women of reproductive age. For infants, it measures the adequacy of complementary feeding. Both indicators are based on qualitative 24-hour dietary recalls.

**Target 3: All food production systems become more productive, sustainable, resilient and efficient – minimizing adverse environmental impact without compromising food and nutrition security.**

**Indicators and annotations:**

*Direct use of fossil fuel energy in agriculture per hectare of arable land/per unit of value of output/per unit of calorie of food produced (to be normalized by levels of capital stock of machinery per unit of arable land)*

- Captures the efficiency of energy use in agriculture.

- Data on direct energy consumption in agriculture are available from the United Nations Statistics Division (UNSD) – Energy Statistics and the International Energy Agency (IEA) and FAO is also compiling a panel dataset on the main energy carriers used in agriculture, which will be integrated with FAOSTAT.

*Agricultural water withdrawal as a proportion of total water withdrawal and total water withdrawal as a proportion of total actual renewable water resources (percentage)*

- These two are complementary indicators and should be used together: The first measures whether the extent to which water resources are used in agriculture is sustainable, whilst the second captures whether the overall level of withdrawal of water is sustainable.
- Data on the world's water resources and their use are available from AQUASTAT. In the near future FAO will provide baseline summary data for these indicators.

*Soil erosion rate*

- Soil is a non-renewable natural resource, and soil erosion threatens the capacity of future generations to meet their needs, compromising sustainable agriculture, food security and the provision of ecosystem goods and services.
- The Harmonized World Soil Database, Soilsgrid1km, and the Global Land Degradation Information System (GLADIS) are three datasets available for monitoring data on soils.

*Total area of forests and other wooded land as a proportion of total area*

- Forests make numerous indirect contributions to global food security. Deforestation decreases biodiversity and clean water, increases land degradation, soil erosion and release of carbon into the atmosphere, and also causes the loss of valuable economic assets and livelihood opportunities.
- For this indicator, data are provided every five years by FAO's Global Forest Resources Assessments (FRA).

*Proportion of fish stocks within safe biological limits*

- Worldwide, nearly 3 billion people receive 20 per cent of their daily animal protein intake from fish, but if the current trend in unsustainable uses of marine resources is not reversed, their ability to deliver food for future generations will be severely compromised.
- Data on the proportion fish stocks in safe and unsafe biological limits are provided annually in FAO's State of World Fisheries and Aquaculture report.

*Human and economic losses (in absolute and relative terms) from crises and disasters that occur as a result of (i) natural hazards; (ii) conflicts, protracted crises and socio-economic crises combined; and (iii) food crises caused by plant pests and diseases, animal diseases and food safety events<sup>8</sup>*

- The recurrence of disasters and crises undermines nations' efforts to eradicate hunger and malnutrition and to achieve sustainable development.
- All countries should track and record disaster losses along agreed categories and integrate these into national accounting and budgeting systems; data are compiled and published by the United Nations International Strategy for Disaster Reduction (UNISDR), FAO and WHO.

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<sup>8</sup> This indicator is subject to further revisions as current discussions on resilience measurement are still very much work in progress.



**Target 4: All small food producers, especially women, have secure access to adequate inputs, knowledge, productive resources and services to increase their productivity sustainably and improve their income and resilience.**

**Indicators and annotations:**

*Share of women and of men with legally recognized evidence of land tenure*

- Levelling the playing field in terms of access to productive assets, notably land, has been recognized as pivotal for inclusive economic growth and for rural development in many post-2015 agenda proposals. It is especially critical for smallholder productivity and incomes, as well as for gender equality and women's empowerment.
- Considerable progress in developing a methodology consistent across countries and regions on this specific indicator is underway, involving FAO, the Global Land Tool Network (GLTN), IFAD, the International Land Coalition (ILC), Oxfam, UN-HABITAT under the aegis of the Global Land Indicator Initiative.

*Adults with an account at a formal financial institution, rural/urban and by sex*

- Levelling the playing field in terms of access to services, especially to financial services through deeper financial inclusion, is critical to boost smallholder productivity and incomes.
- Data are available for about 150 countries in the Global Financial Inclusion Database (Global Findex) hosted by the World Bank.

*Value of food production per hectare<sup>9</sup>*

- Small farms make up the majority of farms worldwide (an estimated 85 per cent of farms worldwide are less than 2 hectares). Raising their productivity is essential to simultaneously eradicate hunger and meet increasing food demand resulting from rapid population growth (e.g. Africa's population is expected to more than double by 2050).
- The indicator measures productivity as production of food per unit land. Given the lack of a universally applicable definition of "smallholders", it measures performance for the two lowest quintiles of countries' farm size distributions. Data will also be disaggregated for female-headed households.
- Data are presently available for about 80 countries by LSMS conducted by the World Bank, but also other household surveys. Due to data constraints, sex disaggregation is limited to data on female-headed smallholder households (this would exclude data for women not recognized as household heads).

*Value of agricultural production per labour unit<sup>10</sup>*

- The indicator measures farm labour productivity, which is a sound proxy for income growth. Given lack of a universally agreed official definition of "smallholders", it measures performance for the two lowest quintiles of countries' farm size distributions, thus of relatively smaller scale producers. Data will also be disaggregated for female-headed households.
- Data are presently available for about 80 countries by LSMS conducted by the World Bank, but also other household surveys. Due to data constraints, sex disaggregation is limited to data on female-headed smallholder households (this would exclude data for women not recognized as household heads).

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<sup>9</sup> Measured in constant United States dollars/hectare, disaggregated for two lowest quintiles of countries' farm size distribution, as well as for female-headed smallholder producer households.

<sup>10</sup> Measured in constant United States dollars/unit of labour, disaggregated for two lowest quintiles of countries' farm size distribution, as well as for female-headed smallholder producer households.

### *Share of public budget spent on agriculture*

- Public investment in agriculture is critical to raise food supply, as promoted, for example, by the African Union's Maputo Declaration (2003). Public funds can be used to target the poorest and most vulnerable, address market failures and bottlenecks that deter private investment, and lower entry and transaction costs for smallholders to engage in commercially-oriented agriculture. They are especially critical for the provision of public goods (e.g. infrastructure, research and development).
- Data on this indicator are derived from a wide range of sources, including the Comprehensive Africa Agriculture Development Programme (CAADP), FAO and the International Food Policy Research Institute (IFPRI), and are available for over 100 countries.

**Target 5: More efficient post-production food systems (harvest, handling and storage, processing and packaging, transport and consumption) that reduce the global rate of food loss and waste by 50 per cent.**

### **Indicators and annotations:**

#### *Global Food Loss Index*

- The index measures quantitative food losses and is based on a model which uses observed variables that conceivably influence food losses (e.g. road density, weather, pests) to estimate quantitative loss ratios for specific commodities and specific countries over time.
- Data on these variables are readily available from several sources, including country statistics, FAOSTAT, WFP's Logistics Capacity index, World Road Statistics, etc. Development of the index is a key deliverable within FAO's 2014-2015 programme of work.