



Food and Agriculture Organization
of the United Nations

Post-2015 and **SDGs**

Targets and Indicators for the Sustainable Development Goals and the Post-2015 Development Agenda

A Contribution by the
Food and Agriculture Organization
of the United Nations (FAO)

Rome, May 2015

Introduction

This document presents a proposal of indicators that could be considered for FAO to monitor progress towards a subset of Goals for which the [Report of the Open Working Group \(OWG\)](#) of the General Assembly on Sustainable Development Goals (SDGs) defines targets aimed towards various outcomes, as well as additional targets addressing related Means of Implementation. The proposals comprise both established and potential indicators in areas where FAO has unique expertise and abundant experience as the **leading UN specialized body committed to food security and agriculture**. These areas include ending hunger, food insecurity and malnutrition; better managing natural resources; and ensuring more sustainable ecological processes for a healthier environment.

The Report of the OWG on SDGs, which includes 17 proposed SDGs and 169 targets, has already been welcomed by the UN General Assembly, which has decided that this *“shall be the main basis for integrating sustainable development goals into the post-2015 development agenda”* [[A/RES/68/309](#)]. Moving into the next and final phase of the Post-2015 Development Agenda process therefore, it will be crucial for the international community to develop a concise number of indicators to support action on the agenda.

The United Nations Statistical Commission (UNSC) at its forty-sixth session (3 - 6 March 2015) discussed and agreed on the process and modalities for the development of the indicator framework. It endorsed the formation of the Inter-agency and expert group on SDG indicators (IAEG-SDG) which is tasked to fully develop the indicator framework for the monitoring of the goals and targets of the post-2015 development agenda.

FAO has drawn on its broad multidisciplinary knowledge and experience to propose indicators that can effectively monitor progress towards the targets that Member States have set for themselves in the OWG on SDGs process. It will continue to review the indicators in light of developments in negotiating process and emerging guidance to ensure they best reflect needs of Members and address SDG complexity.

Drawing on the [recommendations of the United Nations Inter-Agency and Expert Group on MDG Indicators \(IAEG-MDG\)](#), the selection of indicators has been guided by considerations related to the relevance, methodological soundness, measurability and understandability of the indicators. Many indicators have budgetary implications and, if approved, would require additional funding to be implemented. One guiding principle in the selection of the proposed indicators has been the need to keep the list of indicators that will form the core of the SDG monitoring framework as manageable as possible, while trying to preserve the multidimensional and complex nature of the targets in question. When more than one indicator is presented for a given target, an effort has been made to clarify whether they should comprise “tier 1” indicators, which could be included in a core set of indicators for a globally relevant monitoring framework, or as “additional” indicators.

The list of proposed indicators is organized according to the Targets as defined in UNGA document A/68/970 of 12 August 2014, which incorporates the OWG report. For each Target, the indicators’ factsheets are preceded by a short narrative that explains the rationale for the selection made.

SUSTAINABLE DEVELOPMENT GOALS

As proposed by the Open Working Group of the General Assembly on Sustainable Development Goals,
July 19, 2014

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| Goal 1 | End poverty in all its forms everywhere |
| Goal 2 | End hunger, achieve food security and improved nutrition and promote sustainable agriculture |
| Goal 3 | Ensure healthy lives and promote well-being for all at all ages |
| Goal 4 | Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all |
| Goal 5 | Achieve gender equality and empower all women and girls |
| Goal 6 | Ensure availability and sustainable management of water and sanitation for all |
| Goal 7 | Ensure access to affordable, reliable, sustainable and modern energy for all |
| Goal 8 | Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all |
| Goal 9 | Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation |
| Goal 10 | Reduce inequality within and among countries |
| Goal 11 | Make cities and human settlements inclusive, safe, resilient and sustainable |
| Goal 12 | Ensure sustainable consumption and production patterns |
| Goal 13 | Take urgent action to combat climate change and its impacts* <i>*Acknowledging that the United Nations Framework Convention on Climate Change is the primary international, intergovernmental forum for negotiating the global response to climate change.</i> |
| Goal 14 | Conserve and sustainably use the oceans, seas and marine resources for sustainable development |
| Goal 15 | Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss |
| Goal 16 | Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels |
| Goal 17 | Strengthen the means of implementation and revitalize the global partnership for sustainable development |

Box 1:

LIST OF PROPOSED INDICATORS BY TARGET

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| Target 1.4: | <u>By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance</u> |
| Indicator 1.4.1 | <u>Percentage of adult female agricultural landowners out of total agricultural landowners (disaggregated by age groups, ethnicity and income levels)</u> |
| Indicator 1.4.2 | <u>Proportion of adult women/men agricultural holders, out of total agricultural holders</u> |
| Target 2.1: | <u>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</u> |
| Indicator 2.1.1 | <u>Prevalence of population with moderate or severe food insecurity, based on the Food Insecurity Experience Scale (FIES)</u> |
| Indicator 2.1.2 | <u>Prevalence of Undernourishment (PoU)</u> |
| Target 2.2: | <u>By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons.</u> |
| Indicator 2.2.1 | <u>Dietary Diversity Score</u> |
| Target 2.3: | <u>By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment</u> |
| Indicator 2.3.1 | <u>Value of production per labour unit (measured in constant USD), by classes of farming/pastoral/forestry enterprise size</u> |
| Target 2.4: | <u>By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality</u> |
| Indicator 2.4.1 | <u>Percentage of agricultural area under sustainable agricultural practices</u> |
| Target 2.5: | <u>By 2020, maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and ensure access to and fair and equitable sharing of</u> |

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| | <u>benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed</u> |
| Indicator 2.5.1 | <u>Ex-situ crop collections indicator</u> |
| Indicator 2.5.2 | <u>Number/percentage of local breeds classified as being at-risk, not-at-risk, and unknown-levels of risk of extinction</u> |
| Target 2.a | <u>Increase investment, including through enhanced international cooperation, in rural infrastructure, agricultural research and extension services, technology development and plant and livestock gene banks in order to enhance agricultural productivity capacity in developing countries, in particular in least developed countries.</u> |
| Indicator 2.a.1 | <u>Agriculture Orientation Index for Government Expenditures</u> |
| Target 2.c | <u>Adopt measures to ensure the proper functioning of food commodity markets and their derivatives and facilitate timely access to market information, including on food reserves, in order to help limit extreme food price volatility</u> |
| Indicator 2.c.1 | <u>Indicator of (food) Price Anomalies (IPA)</u> |
| Target 5.a | <u>Undertake reforms to give women equal rights to economic resources, as well as access to ownership and control over land and other forms of property, financial services, inheritance and natural resources, in accordance with national laws</u> |
| Indicator 5.a.1 | <u>The legal framework includes special measures to guarantee women's equal rights to landownership and control</u> |
| Indicator 1.4.2 | <u>Percentage of adult female agricultural landowners out of total agricultural landowners (disaggregated by age categories and location)</u> |
| Target 6.4 | <u>By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity</u> |
| Indicator 6.4.1 | <u>Percentage of total available water resources used, taking environmental water requirements into account (Level of Water Stress)</u> |
| Indicator 6.4.2 | <u>Percentage of change in water use efficiency over time</u> |
| Target 7.3 | <u>By 2030, double the global rate of improvement in energy efficiency</u> |
| Indicator 7.3.1 | <u>Fossil fuel energy directly used in agriculture per hectare of arable land/per unit of value of output/per calorie of food produced (to be normalized by levels of capital stock of machinery per unit of arable land)</u> |
| Target 12.3 | <u>By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses</u> |
| Indicator 12.3.1 | <u>Global Food Loss Index</u> |

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| Target 14.4 | <u>By 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics</u> |
| Indicator 14.4.1 | <u>Proportion of fish stocks within biologically sustainable levels</u> |
| Indicator 14.4.2 | <u>Progress by countries in [level/degree of] the implementation of international instruments aiming to combat IUU fishing</u> |
| Target 14.7 | <u>By 2030, increase the economic benefits to small island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism</u> |
| Indicator 14.7.1 | <u>Productivity of aquaculture in utilizing natural resources (land, water and wild stock)</u> |
| Target 14.b | <u>Provide access for small-scale artisanal fishers to marine resources and markets</u> |
| Indicator 14.b.1 | <u>Percentage of catches that are subject to a catch documentation scheme or similar traceability system as a percentage of the total catches that are less than x tons and traded in major markets</u> |
| Indicator 14.b.2 | <u>Progress by countries (level/degree of) in the application of a legal/regulatory/ policy/institutional framework which recognizes and protects access rights for small-scale fisheries</u> |
| Target 14.c | <u>Ensure the full implementation of international law, as reflected in UNCLOS for states parties to it, including, where applicable, existing regional and international regimes for the conservation and sustainable use of oceans and their resources by their parties</u> |
| Indicator 14.c.1 | <u>Progress by countries in [level/degree of] implementation of the Code of Conduct of Responsible Fisheries (CCRF) and associated guidelines and plans, as reported in the biannual CCRF questionnaire surveys</u> |
| Target 15.1 | <u>By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements</u> |
| Indicator 15.1.1 | <u>Forest area as a percentage of total land area</u> |
| Target 15.2 | <u>By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and increase afforestation and reforestation by [x] per cent globally</u> |

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| Indicator 15.2.1 | <u>Carbon stock in woody biomass</u> |
| Indicator 15.2.2 | <u>Forest cover under sustainable forest management</u> |
| Target 15.3 | <u>By 2020, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land-degradation-neutral world</u> |
| Indicator 15.3.1 | <u>Percentage of agricultural area under sustainable agricultural practices</u> |
| Target 15.4 | <u>By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development</u> |
| Indicator 15.4.1 | <u>Mountain Green Cover Index</u> |
| Target 15.6 | <u>Ensure fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources</u> |
| Indicator 15.6.1 | <u>Number of permits or their equivalents made available to the Access and Benefit-sharing Clearinghouse established under the Nagoya Protocol and number of Standard Material Transfer Agreements, as communicated to the Governing Body of the International Treaty</u> |

Target 1.4

By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance

FAO recognizes the value of the tenure indicator currently included in the UNSD preliminary list. However, such indicator poses several challenges in terms of feasibility, methodology and data availability. In order to be operational, the indicator should be more specific, and focus either on “equality in recognition and documentation” or on “perception of tenure security”. The attempt to address the two issues (equality and perception) with one indicator could result into misleading and incomparable data. In addition, “perception of tenure security” requires focused and not trivial methodological efforts in order to reach a proper operational definition.

On this basis, FAO believes an alternative indicator will be more appropriate to monitor Target 1.4 adequately. As alternative to the current tenure indicator, FAO proposes the following indicator: “Percentage of female/male agricultural landowners out of total agricultural landowners”, disaggregated by age groups, ethnicity and income levels”. This indicator shows the distribution of male and female owners of agricultural land and hence zooms in on gender inequalities in this highly important productive resource. An increase in the percentage of female landowners indicates that out of those with ownership rights to land, a larger proportion is women, signifying progress towards equal rights to land. This indicator is based on a broad definition of ownership. In addition to officially titled ownership, it also includes other proxies, such as the right to use, sell or bequeath the land, or the right to use it as collateral. This enable the indicator to capture a “bundle of rights” related to land, rather than land ownership in the strictest sense of the term. The indicator frames gender differences in resource ownership by comparing the proportions of men and women out of those that have some degree of rights to land. As such it gives a clearer picture of the gender-based inequalities in land ownership, than for instance, the incidence of female/male ownership in the entire population of a country, as the latter will also be affected by many other factors above and beyond gender inequality in women’s property rights over land. The feasibility of the indicator is positively affected by multiple global efforts that will make this indicator more available in the future (see factsheet for further details).

Besides the landowners’ indicator proposed above, FAO an alternative indicator that also reflects control over and access to land: “Proportion of adult women/men agricultural holders, out of total agricultural holders”. The indicator can be further disaggregated by age groups, ethnicity (when applicable) and income levels (see factsheet for further details).

Indicator 1.4.1 (Tier 1)

“Percentage of female/male agricultural landowners out of total agricultural landowners”,
(disaggregated by age groups, ethnicity and income levels)

Definition

Definition of indicator:

$$\left(\frac{\text{Female Agricultural Landowners}}{\text{Total Agricultural Landowners}} \right) \cdot 100$$

Definition of landowner:

The landowner is the legal owner of the land. However, definitions of ownership may vary across countries and surveys. For instance, documented ownership means that ownership is verified through title or deed, while reported ownership relies on individuals' own judgment. Additionally, in some countries, it is more appropriate to investigate land ownership using proxies able to capture a “bundle of rights”. Therefore, the indicator will need to be complemented with metadata that specify what definition(s) of ownership is employed.

1. How is the indicator linked to the specific TARGET as worded in the OWG report and copied above?

The indicator is related to Goal 1, target 1.4: “By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance.”

More specifically, this indicator monitors “**ownership of land**” and it is particularly useful in terms of framing gender differences in land ownership whilst relating them specifically to the population of interest, namely landowners. As such it gives a clearer picture of gender inequalities in land ownership, than for instance looking at the incidence of female ownership in the entire population of a country. An increase in the percentage of women owning land indicates that, within the population of interest (ie., the landowners), progress is made towards achieving equal rights to land among men and women..

In addition, the indicator focuses on **agricultural** land, because agricultural land is a productive resource, and focusing on agricultural landownership gives a clearer indication of empowerment, compared to lands used for other purposes that are not economically-related. This is particularly true in developing countries.

Indicator 1.4.1 (Additional)

“Proportion of adult women/men agricultural holders, out of total agricultural holders”

Definition

$$\left(\frac{\text{Female Agricultural Holders}}{\text{Total Agricultural Holders}} \right) \cdot 100$$

Definition of agricultural holder:

“The agricultural holder is defined as the civil or juridical person who makes the major decisions regarding resource use and exercises management control over the agricultural holding operation. The agricultural holder has technical and economic responsibility for the holding and may undertake all responsibilities directly, or delegate responsibilities related to day-to-day work management to a hired manager” (FAO, 2005).

The indicator illustrates the management of agricultural holdings by gender. While it does not inform about resource ownership, it shows to what extent women have the management responsibility of agricultural production resources. As such, it is an important indicator of women’s influence in agricultural production.

Enabling target measurement

The indicator is related to Goal 1, target 1.4 (*“By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance”*).

More specifically, the proposed indicator monitors **“control over land and other forms of property.”** Since the holder is in charge of managing the agricultural holding, s/he controls and makes decisions about the holding, including the holding’s land and other resources within it. Hence, the proposed indicator is a very direct measure of control over land or other forms of property.

An increase in the percentage of female agricultural holders out of total agricultural holders indicates that more women take the role of agricultural managers and hence have enhanced control over agricultural resources.

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

The prevalence of undernourishment (listed here as indicator 2.1.1.) is an established indicator used to monitor progress against the 'hunger' target of the Millennium Development Goals. It is maintained and published regularly by the FAO with reference to the average of the last three-year period, and it will allow monitoring progress in continuity with the past, a reason why it supported as a core indicator for this target.

It is believed, however, that there is a clear need to develop and use indicators capable of providing more timely assessments, which can be meaningfully disaggregated at subnational level by population groups and/or by geographic areas and that can be informed by easy to collect data.

For these reasons we also propose an indicator that shows high promise for being adopted as core indicator for Target 2.1, once established on a global scale:

- *the percentage of individuals experiencing moderate or severe levels of food insecurity, as measured through the Food Insecurity Experience Scale (FIES)*

Indicator 2.1.1

“Percentage of individuals in the population with moderate or severe food insecurity, as classified based on the Food Insecurity Experience Scale (FIES)”

Definition

These are in reality two related indicators, representing the percentage of individuals in the national adult population (15 or more years of age) that have experienced *moderate or severe levels* and *severe levels of food insecurity* respectively, during the previous year.

Severity of food insecurity is defined as the extent to which people have difficulties in accessing food of adequate quality and/or quantity due to lack of money or other resources. Difficulties include also psychological concerns associated with the struggle in accessing food.

Enabling target measurement

This indicator is a direct implementation of the concept of “access to food” that informs the target. Experience-based food insecurity scales are the only available tools that address the effective ability to access food at the individual or household level, directly. Reliable measure at individual level, as afforded by these indicators, is crucial to respond to the need to ensure monitoring access “by all people” and that monitoring can be conducted “in particular for the poor in vulnerable situations”.

Indicator 2.1.2

“Prevalence of Undernourishment” (PoU)

Definition

The Prevalence of Undernourishment (PoU) is defined as the probability that a randomly selected individual from the reference population is found to consume less than his/her calorie requirement for an active and healthy life. It is written as: $PoU = \int_{x < MDER} f(x) dx$ where $f(x)$ is the probability density function of per capita calorie consumption and MDER is a Minimum Dietary Energy Requirement. The MDER threshold is computed on the basis of normative energy requirement standards referred to a minimum level of physical activity. Estimates of the number of undernourished (NoU) - calculated by multiplying the PoU by the size of the reference population - are used to monitor progress towards the World Food Summit goal of reducing by half the number of people suffering from undernourishment. The parameters needed for the calculation of the indicator are: the mean level of dietary energy consumption (DEC); a cut-off point defined as the Minimum Dietary Energy Requirement (MDER); the coefficient of variation (CV) as a parameter accounting for inequality in food consumption; and a skewedness (SK) parameter accounting for asymmetry in the distribution. The DEC as well as the MDER are updated annually, with the former calculated from the FAO Food Balance Sheets. The MDER is calculated as a weighted average of energy requirements according to sex and age class, and is updated each year from UN population ratio data. The inequality in food consumption parameters is derived from National Household Survey data when such data is available and reliable. Due to the limited number of available household surveys, the inequality in food access parameters are updated much less frequently over time than the DEC and MDER parameters¹.

Enabling target measurement

The indicator refers to food available for consumption over a period on one year. It refers to a severe condition of lack of food. In this respect, it is fully consistent with the spirit of the developmental goal. Energy intake is a very specific aspect of food insecurity, which applies where conditions are more severe.

Ideally, undernourishment should be assessed at the individual level by comparing individual energy requirements with individual energy intakes. This would enable the classification of each person in the population as undernourished or not. However, this approach is not feasible for two reasons: individual energy requirements are practically unobservable with standard data collection methods; and individual food consumption is currently measured with precision in only a few countries and for relatively limited samples. The individual-level consumption data that can be estimated from National Household Survey data are largely approximated owing to disparities in intra-household food allocation, the variability of individual energy requirements, and the day-to-day variability of food consumption that can arise for reasons independent of food insecurity. The solution adopted by FAO has been to estimate the PoU with reference to the population as a whole, summarized through a representative individual, and to combine available micro-data on food consumption with macro-data.

The Prevalence of Undernourishment indicator is still one of the most reliable tools to monitor progress towards reducing global hunger. Recent innovations to the methodology, such as those presented in *Wanner et al.* (2014) allow to improve the quality of global monitoring, and to capture more accurately progress in reducing hunger and how the problem is currently distributed globally. In 2012 the functional form of habitual food consumption was modified. The Skewed Normal functional form was introduced to take into account the

¹ More detailed information on the indicator can be found in: Wanner N., C. Cafiero, N. Troubat, P. Conforti (2014), Refinements to the FAO Methodology for estimating the Prevalence of Undernourishment Indicator, FAO Statistics Division Working Papers Series 14-05, Rome 2014 (available at: <http://www.fao.org/3/a-i4046e.pdf>) and in: Cafiero, C. Advances in hunger measurement. Traditional FAO methods and recent innovations FAO Statistics Division Working Papers Series 14-04, Rome 2014 (available at <http://www.fao.org/3/a-i4060e.pdf>).

asymmetry of the distribution. This was a major improvement, as it allowed better capturing the characteristics of the distribution, and how this would change when calories consumption increases. At the same time, a strong increase was promoted in the number of Household Budget Survey employed in the calculation of the CV and SK parameter. Household Budget Survey now covers about 70 percent of the total number of undernourished estimated. Another main recent refinement, introduced in 2014, is a data-driven flexible selection criterion for the choice of the functional form of the distribution of per capita habitual calorie consumption that maintains the probability framework. Further improvements to the calculation of inequality in food access parameters, both directly and indirectly, have been made in 2014 to allow for time-varying parameters that take into account economic progress and demographic changes.

At the same time, the indicator does not convey information on the quality of food, nor on its nutritional value. The reason is that it focuses on the most severe aspect of hunger, and it is therefore solely based on the number of calories consumed through food. The parametric approach adopted by FAO allows obtaining reliable estimated for relatively large population groups.

Information about the sufficiency of calories from food for specific population groups, such as the poor and the vulnerable, can be derived if such groups can be identified within the population, and if sampling allows drawing inference on the habitual food consumption of these groups.

In principle, the indicator can be computed for specific population groups, such as the poor and the vulnerable. However, this requires that such groups are clearly identifiable in the population, and that sampling allows drawing inference on their habitual food consumption. In fact, such information is seldom available.

Target 2.2.

By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons

FAO endorses the set of indicators that have been endorsed by Member States at the 65th World Health Assembly (WHA 2012), and supports in particular the Prevalence of stunting (low height-for-age) in children under 5 years of age, and the Prevalence of overweight children under 5 years of age as core indicators for Target 2.2.

Furthermore, it is strongly believed that an important determinant of malnutrition is dietary quality and therefore the Women Dietary Diversity Score (listed here as Indicator 2.2.1) is proposed as an additional one. This indicator would provide information to countries on the dimension of women consuming micronutrient poor diets, an important contribution to micronutrient-related malnutrition.

Indicator 2.2.1 (Additional)
“Women Dietary Diversity Score”

Definition

The Minimum Dietary Diversity for Women (MDD-W) indicator is defined as: “the proportion of all women 15-49 years of age who consumed at least 5 out of 10 defined food groups the previous day”

The 10 food groups are:

- All starchy staple foods
- Beans and peas
- Nuts and seeds
- Dairy
- Flesh foods
- Eggs
- Vitamin A-rich dark green leafy vegetables
- Other vitamin A-rich vegetables and fruits
- Other vegetables
- Other fruits

Enabling target measurement

The MDD-W is a proxy indicator of micronutrient adequacy of the diets of women of reproductive age, with the desired direction of change being an increase of the value of the indicator. Women consuming at least five out of ten food groups have a greater likelihood of meeting their micronutrient needs than women consuming foods from fewer food groups. Women's diets in resource-poor countries have been shown to be inadequate (Torheim, 2010; Lee, 2013), so this indicator is directly relevant to the target of “addressing the nutritional needs of adolescent girls, pregnant and lactating women”.

Target 2.3

“By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment”

While agricultural productivity broadly defined could be measured, at the aggregate national level, with data available through national account data maintained by OECD and the World Bank, the in the target formulation creates a specific demand for data that can only be obtained through surveys.

The last two decades have witnessed an increased reliance on household surveys, focusing on consumption and living standards indicators, which unfortunately cannot be considered a complete and reliable source of data related to agricultural production and to farmers’ access to productive resources, for which a system of farm surveys would be needed.

While some initiatives have been put in place by various development agencies (most notably, the Integrated Surveys in Agriculture project under the World Bank’s Living Standard Measurement Survey and the World Census of Agriculture initiative by FAO) the availability of reliable agricultural production data at farm level is still largely insufficient to cover the monitoring needs for targets that make explicit reference to small-scale family farmers and producers and to different population groups.

To respond to this urgent need, concerted actions aimed at promoting the establishment of regular farm surveys through which countries would collect at least a minimum set of core data specifically related to the economic, social and environmental dimensions of the farming sector, using an integrated agricultural and rural development approach.

In this respect, the Global Strategy to improve Agricultural and Rural Statistics (a multi donor/multi partner statistical capacity development initiative) is promoting the establishment of an Agricultural and Rural Integrated Survey (AGRIS) model which would ensure availability of the basic data needs to inform several key indicators, including the ones listed below, at a sufficient level of coverage to serve the needs of the global monitoring framework of all the dimensions listed in the Target definition.

Indicator 2.3.1

“Value of production per labour unit (measured in constant USD), by classes of farming/pastoral/forestry enterprise size”

Definition

The indicator refers to the value of production per labour unit operated by small-scale family farmers in the farming, pastoral and forestry sectors. Data will be produced by classes of enterprise size.

Enabling target measurement

The indicator is directly linked with the target’s formulation. An agreed international definition of “small scale family farmer” in each sector needs to be developed.

FAO has been working in producing the indicator for agriculture using household survey data, within its program of work in “*small scale family farming and agriculture and development transformation*”. To date, the indicator can be computed for nine developing countries in Asia, Africa and Latin America, based on data collected with the LSMS-ISA surveys. Results have not been disseminated yet.

Sources of information would be either agricultural surveys, or agricultural modules in integrated household surveys (e.g., LSMS-ISA) organized by the national statistical agencies, with the necessary support from the World Bank, FAO and other international agencies to ensure methodological rigor.

Target 2.4

“By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality”

Indicator 2.4.1

“Percentage of agricultural area under sustainable agricultural practices”

Definition

The indicator is defined by the following formula:

A= area on which are conducted practices contributing to environmental sustainability of agriculture / agricultural area

Where

Agricultural Area = Arable land and Permanent crops + Permanent meadows and pastures (FAOSTAT)

Area on which are conducted practices contributing to environmental sustainability of agriculture = the surface area identified and/or acknowledged by the government as being affected by agronomic activities and practices that contribute to environmental sustainability of agriculture.

Enabling target measurement

The indicator is directly linked with the target, particularly to the aspects of sustainable production, adaptation to climate change and improvement of land and soil.

Target 2.5

“By 2020, maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and ensure access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed”

For this target we identify two possible core indicators: the “ex-situ crop collection indicator (listed here as indicator 2.5.1), which refers to vegetal entities, and the (listed as indicator 2.5.2), while the other refers to domesticated animals and their related wild species.

Indicator 2.5.1

Ex-situ crop collections indicator

Definition

The **Ex-situ crop collections** indicator is a dynamic measure of the bio- and geographical diversity contained within ex-situ collections across time.

Plant genetic resources for food and agriculture (PGRFA) are the biological basis of world food security. They consist of the diversity of genetic material contained in traditional varieties and modern cultivars grown by farmers as well as crop wild relatives and other wild plant species. It is widely believed that PGRFA are being lost. Agricultural systems are dynamic and the amounts and identity of the genetic diversity in them is constantly subject to change. Ex situ conservation of PGRFA represents the most trusted and popular means of conserving plant genetic resources worldwide. The measure of trends in ex situ conserved materials provides an overall assessment of the extent to which we are managing to maintain and/or increase the total genetic diversity required for current and future production and therefore secure under controlled conditions from any permanent loss of this type of genetic diversity occurring in the field.

The indicator proposed for target 15.5 under SDG serves also as indicator for the CBD's Aichi Target 13 on *genetic diversity of cultivated plants [...] and of wild relatives* and is described at the webpage of the Biodiversity Indicators Partnership (BIP), a network of organizations which have come together to provide the most up-to-date biodiversity information possible for tracking progress towards the Aichi Targets (<http://www.bipindicators.net/cropcollections>).

Enabling target measurement

The indicator has a direct link to “biodiversity” and, indirectly to “food security”, as plant genetic resources are at the base of agricultural ecosystems and biodiversity, and make up to more than 90% of food calories consumed by the world's population. Ex situ collections represent the most accessible gene pool for breeding programmes to improve crop varieties and to find traits of resistance and adaptability to biotic and abiotic stresses, including climate change, salinity, drought, flooding, as well as pests and diseases. Sustainable crop production intensification heavily depends on plant genetic resources and their adequate management.

Indicator 2.5.2

“Number/percentage of local breeds classified as being at-risk, not-at-risk and unknown-levels of risk of extinction)”

Definition

The indicator presents the percentage of livestock breeds classified as being at risk, not at risk or of unknown risk of extinctions at a certain moment in time, as well as the trends for those percentages.

The indicator is based on the most up to date data contained in FAO’s Global Databank for Animal Genetic Resources DAD-IS (<http://dad.fao.org/>) at the time of calculation. Risk classes are defined based population sizes of breeds reported to DAD-IS. The risk class is considered to be “unknown” if (i) no population sizes are reported or (ii) the most recent population size reported refers to a year more than 10- years before the year of calculation (10 year cut off point).

Links to official definitions/descriptions of the indicator are reported below:

The indicator is one out of a set of 3 sub-indicators which are defined in the document CGRFA/WG-AnGR-7/12/7 “Targets and indicators for animal genetic resources” (<http://www.fao.org/docrep/meeting/026/me514e.pdf>) and that are endorsed in their current form by Commission on Genetic Resources for Food and Agriculture at its the 14th Session (see par 28 CRRFA-14/13/Report at <http://www.fao.org/docrep/meeting/028/mg538e.pdf>). The indicator serves to monitor the implementation of the [Global Plan of Action for Animal Genetic Resources](#). In this respect the indicator is presented in the “Status and Trends of Animal Genetic Resources-2014” (see <http://www.fao.org/3/a-mm278e.pdf>).

This indicator is also proposed for the Target 15.5 under SDG, and it serves also as an indicator for the Aichi Target 13 “**Genetic Diversity of Terrestrial Domesticated Animals**” under the Convention on Biological Diversity (CBD). It is described on the webpage of the Biodiversity Indicators Partnership (BIP), a network of organizations which have come together to provide the most up-to date biodiversity information possible for tracking progress towards the Aichi Targets (<http://www.bipindicators.net/domesticatedanimals>). Further, it is presented in the Global Biodiversity Outlook 4, page 91 (see <http://www.cbd.int/gbo/gbo4/publication/gbo4-en-lr.pdf>) which is an output of the processes under the CBD.

Enabling target measurement

The indicator has a direct link to “biodiversity” as animal or livestock genetic resources represent an integral part of agricultural ecosystems and biodiversity as such.

Further there are indirect links to “malnutrition”: Animal genetic resources for food and agriculture are an essential part of the biological basis for world food security, and contribute to the livelihoods of over a thousand million people. A diverse resource base is critical for human survival and well-being, and a contribution to the eradication of hunger: animal genetic resources are crucial in adapting to changing socio-economic and environmental conditions, including climate change. They are the animal breeder’s raw material and amongst the farmer’s most essential inputs. They are essential for sustainable agricultural production.

No increase of the percentage of breeds being at risk or being extinct is directly related to “halt the loss of biodiversity”.

Target 2.a

“Increase investment, including through enhanced international cooperation, in rural infrastructure, agricultural research and extension services, technology development and plant and livestock gene banks in order to enhance agricultural productivity capacity in developing countries, in particular in least developed countries”

Indicator 2.a.1

“Agriculture Orientation Index for Government Expenditures ”

Definition

The Agriculture Orientation Index (AOI) for Government Expenditures is defined as the Agriculture share of Government Expenditures, divided by the Agriculture Share of GDP, where Agriculture refers to the agriculture, forestry, fishing and hunting sector.

$$AOI = \frac{\text{Agriculture Share of Government Expenditures}}{\text{Agriculture Share of GDP}}$$

An AOI greater than 1 reflects a higher orientation towards the agriculture sector, which receives a higher share of government spending relative to its contribution to economic value-added. An AOI less than 1 reflects a lower orientation to agriculture, while an AOI equal to 1 reflects neutrality in a government’s orientation to the agriculture sector.

Agriculture refers to the agriculture, forestry, fishing and hunting sector, based on the Classification of the Functions of Government (COFOG) developed by the OECD and published by the United Nations Statistics Division (UNSD), found at <http://unstats.un.org/unsd/cr/registry/regcst.asp?Cl=4&Top=1&Lg=1>.

Government expenditures are all outlays or expenses associated with supporting a particular sector or purse, including compensation of employees, and subsidies and grants paid as transfers to individuals or corporations in that sector. For a full description, see the Government Finance Statistics Manual (GFSM) 2001, developed by the International Monetary Fund (IMF), found at <http://www.imf.org/external/pubs/ft/gfs/manual/>.

The Agriculture Share of GDP is measured by the ratio of Agriculture Value Added over GDP, based on official data reported by countries to the United Nations Statistics Division or to the OECD.

The annual data and indicator, collected and compiled by the Food and Agriculture Organization of the UN (FAO), can be found on the FAOSTAT domain at: <http://faostat3.fao.org/download/I/IG/E>, covering the periods 2001-2012.

Enabling target measurement

Government spending in Agriculture includes spending on sector policies and programs; soil improvement and soil degradation control; irrigation and reservoirs for agricultural use; animal health management, livestock research and training in animal husbandry; marine/freshwater biological research; afforestation and other forestry projects; etc.

Spending in these agricultural activities helps to increase sector efficiency, productivity and income growth by increasing physical or human capital and /or reducing inter-temporal budget constraints. However, the private sector typically under-invests in these activities due to the presence of market failure (e.g. the public good

nature of research and development; the positive externalities from improved soil and water conditions; lack of access to competitive credit due to asymmetric information between producers and financial institutions, etc.).

Government spending in agriculture is essential to address these market failures. This leads to several potential indicators for the SDGs, which include: a) the level of Government Expenditures in Agriculture (GEA); b) the Agriculture share of Government Expenditures, and c) the AOI for Government Expenditures.

An indicator that measures GEA levels fails to take into account the size of an economy. If two countries, A and B, have the same level of GEA, and the same agriculture contribution to GDP, but country A's economy is 10 times that of country B. Setting the same target levels for GEA fails to take economic size into account.

An indicator that measures the Agriculture share of Government Expenditures fails to take into the relative contributions of the agricultural sector to a country's GDP. Consider two countries with the same economic size, C and D, where agriculture contributes 2% to C's GDP, and 10% to country D's GDP. If total Government Expenditures were equal in both countries, C would experience greater relative investment in Agriculture than D. If total Government Expenditures differed, the result could be magnified or diluted.

The AOI index takes into account a country's economic size, Agriculture's contribution to GDP, and the total amount of Government Expenditures. As such, it allows for the setting of a universal and achievable target.

Target 2.c

“Adopt measures to ensure the proper functioning of food commodity markets and their derivatives and facilitate timely access to market information, including on food reserves, in order to help limit extreme food price volatility”

Indicator 2.c.1

“Indicator of Food Price Anomalies” (IPA)

Definition

The indicator of price anomalies (IPA) identifies markets prices that are abnormally high. The IPA relies on a weighted compound growth rate that accounts for both within year and across year price growth.

The indicator directly evaluates growth in prices over a particular month over many years, taking into account seasonality in agricultural markets and inflation, allowing to answer the question of whether or not a change in price is normal for any particular period. The indicator defines a price anomaly as one standard deviation –or greater-- of observed growth in prices over its historical trend over the same period of time. This allows the indicator to not only quantify the number of price anomalies but also measure their intensity over time. Mathematically the indicator is defined as follows:

$$IPA_t = \alpha \left(\frac{CQGR_{yt} - \overline{CQGR}_t}{\hat{\sigma}_{CQGR_t}} \right) + (1 - \alpha) \left(\frac{CAGR_{yt} - \overline{CAGR}_t}{\hat{\sigma}_{CAGR_t}} \right)$$

Where:

IPA_t : Is the indicator of price anomalies at time t , defined as the weighted sum of the deviations from trend growth of the quarterly and annual compounded growth rates

α : Is the weight of the deviations of the quarterly or annual compounded growth rates

$CQGR_{yt}$: Is the compounded quarterly growth rate of a price series p at time t of year y

\overline{CQGR}_t : Is the weighted average of the compounded quarterly growth rate of a price series p at time t

$\hat{\sigma}_{CQGR_t}$: Is the weighted standard deviation of the compounded quarterly growth rate of a price series p at time t

$CAGR_{yt}$: Is the compounded annual growth rate of a price series p at time t of year y

\overline{CAGR}_t : Is the weighted average of the compounded annual growth rate of a price series p at time t

$\hat{\sigma}_{CAGR_t}$: Is the weighted standard deviation of the compounded annual growth rate of a price series p at time t

Enabling target measurement

The IPA is uniquely suited to the Target 2.c as it allows early detection of abnormal market conditions, permitting the timely adoption of policies and measures aiming to limit extreme food price volatility. The

indicator is able to accomplish this since one can directly measure the number of events and their intensity pre and post the policy adoption.

Target 5.a

“Undertake reforms to give women equal rights to economic resources, as well as access to ownership and control over land and other forms of property, financial services, inheritance and natural resources, in accordance with national laws”

FAO suggests that alternative indicators may be more appropriate to monitor Target 5.a adequately, compared to the proposals contained in the UN Statistical Division’s preliminary list of global SDG indicators. As an alternative to the current indicator on landowners in this list for target 5.a, FAO proposes the following rights-based indicator:

“The legal framework includes special measures to guarantee women’s equal rights to land, property or other productive resources”

*The indicator is based on rights and focuses on the legal framework. This makes it more appropriate and valid to monitor Target 5.a which focuses on legal reform processes. The indicator **monitors reforms** to guarantee women’s equal rights to economic resources, as well as access to ownership and control over land through the use of special measures. More specifically, the indicator allows for monitoring progress towards gender equity through the **adoption of women-specific measures** to strengthen women’s secure rights to land and other productive resources. The proposed indicator is supported also by a number of international instruments and, in particular, monitors legal reforms that guarantee women’s land rights and increase their access and ownership of land or other productive resources. The indicator also provides a good indication of **governments’ efforts** to move towards the realization of women’s land rights and more gender-equal land tenure.*

For more information on this indicator, please see the relevant factsheet below.

*In case it is preferred to focus on the actual realization of gender balance in ownership rather than legal frameworks, FAO proposes a **second alternative indicator**:*

“Percentage of adult female agricultural landowners out of total agricultural landowners (disaggregated by age groups, ethnicity and income levels)”

Similar to the indicator currently included in the preliminary UNSD list for target 5.a, FAO’s proposed indicator looks at landowners. However, it differs in terms of denominator: While the UNSD’s preliminary indicator uses total population as denominator, FAO’s proposal uses the total number of people that own agricultural land (agricultural landowners). We believe this is preferable over the preliminary UNSD list, as it helps focusing on gender-based inequalities over productive resources. If the denominator is total population, as currently proposed, the proportion of women owning land will be influenced by many other factors above and beyond gender inequality and will not be focused only on productive resources. The proportion may be low simply because land ownership is not widespread in the country as such, or because land is mainly owned by corporations or the State. But when we focus only on owners, we obtain a clearer picture of women’s access, ownership and control over land compared to men’s. In addition, we suggest focusing on agricultural land in particular, because agricultural land is a productive resource, and focusing on agricultural landownership gives a clearer indication of empowerment, compared to lands used for other purposes that are not economically-related. This is particularly true in developing countries.

For a full methodological factsheet on this indicator, please see below.

Indicator 5.a.1 (Tier 1)

“The legal framework includes special measures to guarantee women’s equal rights to landownership and control”

Definition

The precise definition of this indicator is: *“The legal framework includes special measures to guarantee women’s equal rights to landownership and control”*. This is a binary indicator (yes/no).

The indicator monitors reforms that give women equal rights to economic resources, as well as access to ownership and control over land. More specifically, the indicator allows for monitoring progress towards gender equity through the adoption of women-specific measures to promote women’s secure rights to land. The indicator has a value of one when at least one of the following applies:

- National legal framework gives priority to women heads of household under land distribution and titling programmes;
- National legal framework establishes targeted government funds to increase women access to land;
- Joint titling of private property (or user rights) is compulsory in the registration process for husband and wife;

The proposed indicator is supported by a number of international instruments, including:

- Maputo Protocol, Article 19(c):
- “States Parties shall **take all appropriate measures to [...] promote women’s access to and control over productive resources** such as land and guarantee their right to property”;
- It is in line with the Voluntary Guidelines for Responsible Governance of Tenure of Land, Fisheries and Forests (VGGT). Namely:
 - Principle 4 on Gender equality: “Ensure the equal right of women and men to the enjoyment of all human rights, while acknowledging differences between women and men and **taking specific measures** aimed at accelerating de facto equality when necessary. States should ensure that women and girls have equal tenure rights and access to land, fisheries and forests independent of their civil and marital status.”
 - Section 25.6: “**Special procedures** should, where possible, provide the vulnerable, including widows and orphans, with secure access to land, fisheries and forests.”

Enabling target measurement

The indicator is related to Goal 5, target 5a: *“Undertake reforms to give women equal rights to economic resources, as well as access to ownership and control over land and other forms of property, financial services, inheritance and natural resources, in accordance with national laws.”*

In particular, the indicator monitors legal reforms that promote **women’s land rights and increase their access and ownership of productive resources** through land ownership or other special measures. It provides a good indication of government’s efforts to move towards the realization of women’s land rights and more gender-equal land tenure.

Indicator 1.4.1 (Tier 1)

“Percentage of adult female agricultural landowners out of total agricultural landowners (disaggregated by age groups, ethnicity and income levels)”

While this indicator has been proposed for target 1.4, it is also considered relevant for target 5.a.

Target 6.4

“By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity”

While the SDGs are still in the process of being finalized, UN-Water has anticipated the need for a coherent monitoring framework to help member states to address all six targets of Goal 6, with improved data acquisition and the analysis needed to track progress and provide a platform for water and sanitation in the Post-2015 Development Agenda. In close collaboration with JMP and particularly focusing on the monitoring needs for the “new” targets within the SDG framework represented by 6.3 – 6.6, a monitoring initiative called GEMI (Integrated Monitoring of Water and Sanitation Related Targets) has therefore become operational under the UN-Water umbrella. GEMI is an inter-agency initiative composed of the following UN-Water Members: United Nations Environment Programme (UNEP), the United Nations Human Settlements Programme (UN Habitat), the United Nations Children’s Fund (UNICEF), the Food and Agriculture Organization of the United Nations (FAO), the United Nations Educational, Scientific and Cultural Organization (UNESCO), the World Health Organization (WHO) and the World Meteorological Organization (WMO).

In the context of the GEMI monitoring initiative under the UN-Water umbrella, FAO will maintain two indicators to monitor target 6.4, one focusing on the sustainability aspect of water stress level, and the other on water use efficiency.

Indicator 6.4.1

“Percentage of total available water resources used, taking environmental water requirements into account (Level of Water Stress)”

Definition

The Level of Water Stress is defined as the ratio between total water withdrawals (use) by all sectors and available water resources, taking environmental water requirements (EWR) into account. The indicator builds on MDG indicator 7.5 by accounting for environmental water requirements and including both groundwater and surface water withdrawals.

Enabling target measurement

This indicator is also known as water withdrawal intensity. The indicator builds on MDG indicator 7.5 and also accounts for EWR and includes both groundwater and surface water withdrawals. It is proposed to classify the level of water stress in three main categories: low, high and very high. The thresholds for the indicator could be country specific, to reflect differences in climate and national water management goals. Alternatively, uniform thresholds could be proposed using existing literature on water stress and water scarcity (e.g. high stress is when more than 40 % of total available water resources is used, very high stress when more than 80 % of total available water is used).

Existing data are available from FAO-AQUASTAT. EWR data are presently not collected by AQUASTAT, but many feasible methods are available for countries that do not already have good institutional arrangements in place to collect this data on their own. Modelled data could be used to fill in gaps while capacity is being developed. The System of Environmental-Economic Accounting (SEEA, 2012) will provide robust withdrawal and consumption based statistics in the long-term but is currently only being compiled by a select number of countries. Data are collected at the scale of the river basin/aquifer and can be aggregated to the sub-national, national and regional scales.

For metadata on the existing MDG indicator 7.5 reported by FAO, please see <http://unstats.un.org/unsd/mdg/Metadata.aspx?IndicatorId=0&SeriesId=768>

Indicator 6.4.2

“Percentage of change in water use efficiency over time”

Definition

This indicator tracks change in water use efficiency over time for major sectors, including energy, industry, agriculture, and drinking water supply. The unit for efficiency can vary between the sectors, e.g. revenue in dollars for industry, energy production in kWh for energy or in kcal for agriculture. Sectoral efficiencies are aggregated in a single indicator through the use of weighting coefficients proportional to each sector’s share of total water withdrawal/ consumption.

Enabling target measurement

The indicator does not yet exist but can be calculated using existing datasets from FAO-AQUASTAT on water withdrawals in different sectors, together with datasets on value generation from National Accounts Main Aggregates (UNSD), World Energy Outlook (International Energy Agency), World Bank demographic datasets, WaterStat Database (Water Footprint Network) and IBNET (the International Benchmarking Network for Water and Sanitation Utilities). The System of Environmental-Economic Accounting (SEEA, 2012) will provide robust withdrawal and consumption based statistics in the long-term but is currently only being compiled by a select number of countries. Modelled data could be used to fill in gaps while capacity is being developed, so that the indicator could be calculated for all countries immediately. The indicator provides an aggregated measure of overall change in productivity across sectors, but it is built on sectorial data and is therefore relevant to each of the sectors.

FAO, on behalf of UN-Water will maintain this indicator. A partial monitoring framework is already in place, currently being finalized under the GEMI monitoring initiative under the UN-Water umbrella. Data on efficiency are available for all countries. Data for baseline year will be used to track progress in successive years.

Target 7.3

“By 2030, double the global rate of improvement in energy efficiency”

Indicator 7.3.1 (Additional)

“Fossil fuel energy directly used in agriculture per hectare of arable land/per unit of value of output/per calorie of food produced (to be normalized by levels of capital stock of machinery per unit of arable land”

Definition

This is a family of 3 energy intensity indicators for agriculture:

- Indicator (i) = all energy from fossil fuels used in agriculture + share of energy in form of electricity from fossil sources / arable land (ideally to be normalized by levels of capital stock of machinery per unit of arable land)
- Indicator (ii) = all energy from fossil fuels used in agriculture + share of energy in form of electricity from fossil sources / gross production value (constant I\$) of Food (PIN) (ideally to be normalized by levels of capital stock of machinery per unit of arable land)
- Indicator (iii) = all energy from fossil fuels used in agriculture + share of energy in form of electricity from fossil sources / kcal of food supply (ideally to be normalized by levels of capital stock of machinery per unit of arable land)

Enabling target measurement

This indicator measures the fossil energy intensity of agriculture, in terms of fossil fuel used per hectare of arable land, per value of food produced (USD), and per dietary energy intake (kcal).

The concept of ‘energy efficiency’ in agriculture can be interpreted as ‘energy intensity’ for the production of the certain goods. In other words improving energy efficiency ultimately results in producing the same agricultural products using less energy (fossil fuels directly used in the agriculture sector in this case). The indicator does not consider the fossil fuel needed to manufacture agricultural inputs such as fertilizers, pesticides and machinery.

If the indicator goes down (i.e. energy intensity goes down), it means that the overall energy efficiency of agriculture production is improving. This directly relates to the OWG target 7.3.

Target 12.3

“By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses”

Indicator 12.3.1 (Tier 1)

“Global Food Loss Index”

Definition

The indicator measures the totality of losses occurring from the time at which production of an agricultural product is recorded until it reaches the final consumer as food.

While calculated on a quantity basis, it is subsequently transformed to dietary energy supplies (in kcal) per capita allowing consistent aggregation and then indexed.

The indicator will be calculated on an annual frequency broken down by country and commodity.

Enabling target measurement

The indicator provides evidence on most aspects of the object of the SDG target above. However, in contrast to the objective of the SDG target, it does not take into account losses occurring at the consumer level. Specifically, it provides evidence on the amount which is lost from the food *available* to private households, rather than from the food *actually consumed* by them.

Therefore, the indicator is sensitive, for example, to enhancements in supply-chain infrastructure, while it is insensitive to changes in the private households’ efforts to use food more efficiently or to their equipment with refrigerators.

Target 14.4

“By 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics”

During the Sixteenth Meeting of the UN Open-ended informal consultative process on Oceans and the Law of the Sea, April 6-10, member states frequently mentioned the omission of an indicator on IUU fishing for SDG 14, an issue cited as being directly relevant to the three dimensions of sustainability. In view of these concerns, FAO has proposed as additional indicator for this target, formulated as "Progress by countries in the implementation of international instruments on IUU fishing", which is also relevant for target 14.6.

Indicator 14.4.1 (Tier 1)

“Proportion of fish stocks within biologically sustainable levels”

Definition

The indicator we propose is the “proportion of fish stocks within biologically sustainable levels”, not limits². It is therefore slightly different from the indicator 7.4 currently included in the Millennium Development Goals³. The FAO Committee on Fisheries has requested changes (see the 2012 and 2014 Reports of the 30th and 31st Sessions of the Committee on Fisheries⁴) in the description of the status of the stocks based on sustainability to ensure clarity and reduce misunderstandings by the general public.

The concept of “within biologically sustainable levels” means that abundance of the fish stock is at or higher than the level that can produce the maximum sustainable yield.

We estimated 584 fish stocks around world, representing 70% of global landings. Each stock was estimated using the method described in FAO Technical Paper 569⁵. If the stock has abundance below the level that can produce maximum sustainable yield, it was counted as overfished. The indicator measures the % of the assessed stocks are within biologically sustainable levels.

Enabling target measurement

The indicator is measuring directly the biological sustainability of fish production, therefore it is monitoring well target 14.4 according to which fisheries and aquaculture resources are to be conserved and used sustainably to contribute to food security.

Indeed, when a stock is overfished (i.e., abundance dropping below the sustainable level), its productivity will be reduced. As such, the biodiversity and the functioning of the fishery ecosystem will be impaired. In addition, this will have a negative impact on food supply.

² As opposed to the language used in the Aichi Targets of the Convention on Biological Diversity (CBD).

³ See: <http://mdgs.un.org/unsd/mi/wiki/7-4-Proportion-of-fish-stocks-within-safe-biological-limits.ashx>.

⁴ Report of the 30th Session of the Committee on Fisheries (2012), paragraph 17: The Committee expressed concern regarding the way in which fish stock status was often reported particularly the negative notion given by reporting of a high percentage of stocks being fully- or overexploited. In order to ensure accurate interpretation by the general public and avoid the risk of overemphasizing a negative perspective, the Committee recommended the FAO Secretariat consider a simpler classification of stock status, based on sustainability of their exploitation. Report of the 31st Session of the Committee on Fisheries (2014), paragraph 9: The Committee welcomed the new categorization of the status of marine stocks, as requested by the 30th Session of COFI. Most Members were encouraged by the results in SOFIA 2014.

⁵ <http://www.fao.org/docrep/015/i2389e/i2389e.pdf>

Indicator 14.4.2 (Tier 1)

“Progress by countries in [level/degree of] the implementation of international instruments aiming to combat IUU fishing”

Definition

The indicator focuses on the effort to combat IUU fishing through the effective implementation of key international instruments relevant to IUU fishing.

The indicator is based on FAO member country responses to the Code of Conduct for Responsible Fisheries (CCRF) survey questionnaire⁶ which is circulated by FAO every two years to members and IGOs and INGOs. This indicator is calculated as number of countries that are developing and implementing key national and international instruments on IUU fishing resulting in the formulation and application of effective measures against IUU fishing, as reported in a given year of the survey.

Indicator variables

1. Development and implementation of national plan of action (NPOA) to combat IUU fishing in line with the IPOA-IUU
2. Ratification and implementation of the 2009 FAO Agreement on Port State Measures
3. Ratification and implementation of the 1993 FAO Compliance Agreement

Indicator calculation

The weight given to each of the variables in calculating the indicator value for each country are as follows:

- Variable 1 – 40%
- Variable 2 – 40%
- Variable 3 – 20%

Scoring

The absence of an NPOA and the lack of ratification of the binding Agreements will automatically result in a “zero” score for the respective variables, unless there is evidence that efforts to address the matter are being made (in which case some points are awarded). Scoring will be applied for each variable according to three categories (i) Y/Y = 1; (ii) Y/N = 0.5; (iii) N = 0. For each variable, the maximum score will be obtained if implementation is also present, as reported and confirmed. As this indicator would be reported in the biannual CCRF survey, difference in score as compared to the preceding year of the previous survey response will reflect the progress made during the survey periods.

Enabling target measurement

The indicator is not directly linked to a given specific target, but IUU fishing is addressed both in Targets 14.4 and 14.6. Information on progress made in combating IUU fishing through implementation of national and international instruments however can be compiled and presented to serve as essential data for monitoring of efforts towards achieving the said Targets.

⁶ Progress on the implementation of the FAO Code of Conduct for Responsible Fisheries is being reported on by FAO member countries using a self-assessment survey conducted every two years and presented to the biennial sessions of the Committee on Fisheries (COFI). All data is collected via the Code of Conduct of Responsible Fisheries [CCRF] questionnaire that is administered by FAO/FI.

Target 14.7

“By 2030, increase the economic benefits to Small Island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism”

Indicator 14.7.1 (Additional)

“Productivity of aquaculture in utilizing natural resources (land, water and wild stock)”

Definition

The indicator **“Productivity of aquaculture in utilizing natural resources (land, water and wild stock)”** is to provide for a measure of the productivity of the aquaculture production process, and is defined as the value and volume of aquaculture production per unit amount of natural resource utilized in the aquaculture production process.

Dimensions:

Aquaculture production in volumes (tons in live weight or live weight equivalent) and first-sale (farm-gate) value (USD x1000).

Utilized natural resources:

1. **Land** area (hectares), as land cover, to include both land and inland water surface areas used for production process, including hatchery, nursery, overwintering and out-growing, (e.g. pond, tank or raceway water surface or inland water surface area allocated/licensed for aquaculture operations using cages, pens or other structures) as well as for supporting areas (e.g. pond dikes, water supply and drainage canals and water treatment facilities, etc.). [This corresponds to an aggregated area of 1.3 and 2.1 of SEEA Land Use classification];

Sea areas (hectares) allocated/licensed for aquaculture production operations using cages, pens, rafts, stakes, poles, ropes and lines and other structures. [This corresponds to 4.1 and part of 3.1 SEEA Land Use classification, excluding the area of ‘Seabed and intertidal areas’.]

Seabed and intertidal areas (hectares) allocated/licensed for aquaculture production operations (e.g. cultivation of molluscs, sea cucumber and sea urchins, etc., using bottom-sowing, table, bags and baskets and other structures). [This corresponds to a part of 3.1 of SEEA Land Use classification]

Reference should be made to the Land use classification of adopted in the System of Environmental-Economic Accounting 2012 – Central Framework (http://unstats.un.org/unsd/envaccounting/seeaRev/SEEA_CF_Final_en.pdf, relevant classification available at Appendix I-B of pages 289 – 299).

Relevant classifications include:

1.3 – Land used for aquaculture,

2.1 – Inland waters used for aquaculture or holding facilities,

3.1 – Coastal waters used for aquaculture or holding facilities, and

4.1 – EEZ areas used for aquaculture or holding facilities.

2. **Water** volumes (m³) used during production process.

3. **Wild stock**, as fish stocks captured for two main purposes:

(i) landed in volumes (tons in live weight or live weight equivalent) for direct use as feed or for reduction as fish meal and fish oil as feed ingredients for fed aquaculture species, and

(ii) caught in numbers or volume in tons in live weight for use as seed / stocking materials for aquaculture grow-out facilities (capture-based aquaculture)

Enabling target measurement

Target 14.7 implies that economic benefits can be derived from the sustainable use of marine resources, including through aquaculture. In fact aquaculture can generate economic benefits, and increase in aquaculture production can increase economic benefits. Increases in aquaculture productivity can further contribute to economic benefits when the natural resources are utilized more efficiently, i.e. when aquaculture yield is enhanced while the use of natural resources is better managed.

Target 14.b

“Provide access for small-scale artisanal fishers to marine resources and markets”

During the Sixteenth Meeting of the UN Open-ended informal consultative process on Oceans and the Law of the Sea, April 6-10, member states generally agreed that the preliminary indicators on small-scale fisheries are deemed inadequate to measure the social dimensions of Target 14.b. Concern was also expressed that the target’s preliminary indicators do not seem to provide a comprehensive monitoring mechanism for the implementation of the FAO’s Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication. In view of these concerns, FAO has proposed two alternative indicators for this target, one focusing on access rights and one focusing on market access.

Please see the complete methodological factsheets below.

Indicator 14.b.1 (Tier 1)

“Percentage of catches that are subject to a catch documentation scheme or similar traceability system as a percentage of the total catches that are less than x tons and traded in major markets”

Definition

This indicator is formulated as *Percentage of catches that are subject to a catch documentation scheme or similar traceability system as a percentage of the total catches that are less than x tons and traded in major markets*: This indicator measures the “access to markets” aspect of the target by using the % of the catch that is subject to some form of a catch document scheme (or similar traceability system) traded in major markets.

Enabling target measurement

It is assumed this level of catch is associated with small scale artisanal fisheries since catches of less than x tons are characteristic of such fisheries and that this catch is traceable and legally caught, and changes in the % will reflect changes in access to markets by small scale artisanal fisheries. In terms of the development agenda, fishers are more likely to have improved incomes when they can access major markets either directly or indirectly, and this access to major markets is increasingly dependent on being able to document that the fish were caught legally and/or sustainably. A catch documentation scheme (or similar), and especially one that follows the developing guidelines, will provide the means to track the changes in access to markets.

Indicator 14.b.2 (Tier 1)

“Progress by countries (level/degree of) in the application of a legal/regulatory/ policy/institutional framework which recognizes and protects access rights for small-scale fisheries”

Definition

The indicator is formulated as *Progress by countries in adopting and implementing a legal/regulatory/policy/institutional framework which recognizes and protects access rights for small-scale fisheries*. This indicator measures the “access rights” aspect of the target.

Enabling target measurement

Due to the diverse nature of small-scale fisheries in different countries, there is no globally agreed definition for small-scale fisheries, which became also evident during the development process of the [Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication \(SSF Guidelines\)](#) recently endorsed by the FAO Committee on Fisheries (COFI).

Accordingly, paragraph 2.4 of this new international instrument which complements the Code of Conduct for Responsible Fisheries (CCRF) states that *‘These Guidelines recognize the great diversity of small-scale fisheries and that there is no single, agreed definition of the subsector. Accordingly, the Guidelines do not prescribe a standard definition of small-scale fisheries nor do they prescribe how the Guidelines should be applied in a national context. These Guidelines are especially relevant to subsistence small-scale fisheries and vulnerable fisheries people. To ensure transparency and accountability in the application of the Guidelines, it is important to ascertain which activities and operators are considered small-scale, and to identify vulnerable and marginalized groups needing greater attention. This should be undertaken at a regional, sub-regional or national level and according to the particular context in which they are to be applied. States should ensure that such identification and application are guided by meaningful and substantive participatory, consultative, multilevel and objective-oriented processes so that the voices of both men and women are heard. All parties should support and participate, as appropriate and relevant, in such processes.’*

The target is focusing on *access* to resources and markets for small-scale fisheries, in line with the [Rio+20 outcome document](#) para, 175. In order to guarantee secure access, an enabling environment is necessary which recognizes and protects small-scale fisheries rights. Such an enabling environment requires appropriate legal, regulatory and policy frameworks and related institutional mechanisms as well their effective application.

Target 14.c

“Ensure the full implementation of international law, as reflected in UNCLOS for states parties to it, including, where applicable, existing regional and international regimes for the conservation and sustainable use of oceans and their resources by their parties”

FAO suggests that an alternative indicator may be more appropriate to monitor Target 14.c adequately, compared to the proposals contained in the UN Statistical Division’s preliminary list of global SDG indicators. As an alternative to the current indicator on landowners in this list for target 5.a, FAO proposes the following rights-based indicator:

Progress by countries in [level/degree of] implementation of provisions of the Code of Conduct for Responsible Fisheries (CCRF) and associated guidelines and plans, as reported in the biannual CCRF questionnaire surveys

The proposed indicator is highly relevant to fisheries and fisheries governance efforts at global, regional and national levels. The indicator can be considered an established, recognized and operational inter-governmental response indicator. The Implementation of Code of Conduct for Responsible Fisheries, associated Technical Guidelines and International Plans of Action (IPOAs) is probably among the most important global targets in the context of conservation and management of living aquatic resources, for the benefit of fisheries stakeholders, consumers, and many societies worldwide. Given the existence, recognition and value of the regular inter-governmental CCRF reporting process, it can be expected that the proposed CCRF indicator will deliver reliable and continuous information on progress made in fisheries governance worldwide.

Governments are committed to report biannually to the FAO Committee on Fisheries (COFI) on progress made in their efforts of implementing the CCRF. The reporting on CCRF implementation, started in 1996, is an established, cost-effective and recognized process, which governments, fisheries and other stakeholders, IGOs and CSOs have accepted and supported as one of the most significant frameworks for global fisheries governance, in the context of implementation of UNCLOS and other international instruments as relevant to Goal 14.

For a full methodological factsheet of the proposed indicator, please see below.

Indicator 14.c.1 (Tier 1)

“Progress by countries in [level/degree of] implementation of provisions of the Code of Conduct for Responsible Fisheries (CCRF) and associated guidelines and plans, as reported in the biannual CCRF questionnaire surveys”

Definition

This indicator aims to assess progress made in the adoption of sustainable practices pertaining to fisheries/aquaculture. It is a composite indicator based on FAO member country responses to the CCRF questionnaire which is circulated by FAO every 2 years to members and IGOs and INGOs. It considers countries’ implementation of fisheries management plans, execution of fish stock assessments, the use of environmental assessments and monitoring of aquaculture operations, as well as reported uptake set of selected practices deemed to be sustainable such as: an ecosystems approach to fisheries, coastal area management, and management of bycatch, among others.

This indicator is calculated as number of countries that are implementing provisions of the CCRF and associated plans and guidelines resulting in the application of more sustainable fisheries/aquaculture practices in a given year of the survey. Difference in score as compared to the preceding year of the previous survey response reflect the progress made during two survey periods. Those countries that score within the High or Medium-High categories on the following ranking scale⁷ of the index in question are considered to “apply more sustainable fisheries/aquaculture practices”:

| Ranking scale (possible score on Index): | | | | | |
|--|-------------|-----|----------------|---|----------------|
| Symbol | Category | | Lower boundary | | Upper boundary |
| | High | = ≥ | 0.85 | < | 1.000 |
| | Medium-high | = ≥ | 0.7 | < | 0.85 |
| | Medium | = ≥ | 0.55 | < | 0.7 |
| | Medium-low | = ≥ | 0.4 | < | 0.55 |
| | Low | = ≥ | 0.0 | < | 0.4 |

Those countries that score within the Medium or Medium-Low categories on the above ranking scale of the index in question are considered to “advance towards more sustainable fisheries/aquaculture practices “. Those countries that score within Low category on the above ranking scale of the index in question are considered to “need to improve fisheries/aquaculture practices”.

The unit of measurement of the indicator is a score on a scale of 0 to 1. It is computed through an index that assigns scores and weights to a set of questions that countries answer within the Code of Conduct of

⁷ The classification is based on the scores corresponding to the most probable best-case scenario and the minimum essential requirement to determine threshold for H and L, and then equally divided for intermediate ranking.

Responsible Fisheries (CCRF)⁸ Questionnaire every 2 years. The national indicator is calculated based on the questions specifically focusing on actual implementation of CCRF as indicated in the Annex.

All the questions address different aspects of CCRF and therefore are given the same weight, except two bycatch questions (Q34 and Q35) that are treated as one together. This would give 7 points to capture fishery and 3 points to aquaculture, which are considered as reasonable balance reflecting an extent of required actions. While those questions with no relevance (e.g. marine issues for land-locked countries, aquaculture for countries with no aquaculture production, no relevant fishing for bycatch issues) are not taken into consideration, no response to relevant questions is treated as zero score.

Total score is standardized to one as an average of responses to relevant questions. Again, refer to the Annex for the detailed scores/calculations by response.

Enabling target measurement

This indicator would be specifically relevant for monitoring the mean of implementation 14.c under proposed Goal 14. The CCRF and related instruments caveats the UNCLOS and other international laws targeted under the 14.c. Overall score reflects the extent of implementation of CCRF, i.e. the international laws for the conservation and sustainable use of oceans and their resources, while change of scores in a certain period indicates a progress made.

⁸ Code of Conduct of Responsible Fisheries (CCRF) is the principle instrument defining the actions required to ensure sustainable fisheries and aquaculture and FAO conduct the survey with questionnaire on the extent of implementation of CCRF at country level.

Target 15.1

“By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements”

Indicator 15.1.1 (Tier 1)

“Forest area as a percentage of total land area”

Definition

The indicator is already included among the indicators for the Millennium Development Goals (MDG) (indicator 7.1 “Proportion of land covered by forest”)⁹. In order to provide a precise definition of the indicator, it is crucial to provide a definition of “Forest” and “Total Land Area”. According to the FAO definitions, **Forest** is defined as “land spanning more than 0.5 hectares with trees higher than 5 meters and a canopy cover of more than 10 percent, or trees able to reach these thresholds *in situ*. It does not include land that is predominantly under agricultural or urban land use”. More specifically:

- Forest is determined both by the presence of trees and the absence of other predominant land uses. The trees should be able to reach a minimum height of 5 meters.
- It includes areas with young trees that have not yet reached but which are expected to reach a canopy cover of at least 10 percent and tree height of 5 meters or more. It also includes areas that are temporarily unstocked due to clear-cutting as part of a forest management practice or natural disasters, and which are expected to be regenerated within 5 years. Local conditions may, in exceptional cases, justify that a longer time frame is used.
- It includes forest roads, firebreaks and other small open areas; forest in national parks, nature reserves and other protected areas such as those of specific environmental, scientific, historical, cultural or spiritual interest.
- It includes windbreaks, shelterbelts and corridors of trees with an area of more than 0.5 hectares and width of more than 20 meters.
- It includes abandoned shifting cultivation land with a regeneration of trees that have, or are expected to reach, a canopy cover of at least 10 percent and tree height of at least 5 meters.
- It includes areas with mangroves in tidal zones, regardless whether this area is classified as land area or not.
- It includes rubberwood, cork oak and Christmas tree plantations.
- It includes areas with bamboo and palms provided that land use, height and canopy cover criteria are met.
- It excludes tree stands in agricultural production systems, such as fruit tree plantations, oil palm plantations, olive orchards and agroforestry systems when crops are grown under tree cover. Note: Some agroforestry systems such as the “Taungya” system where crops are grown only during the first years of the forest rotation should be classified as forest.

Total land area is the total surface area of a country less the area covered by inland waters, like major rivers and lakes.

⁹ See: <http://mdgs.un.org/unsd/mi/wiki/7-1-Proportion-of-land-area-covered-by-forest.ashx>

Enabling target measurement

Forests fulfil a number of functions that are vital for humanity, including the provision of goods (wood and non-wood forest products) and services such as habitat for biodiversity, carbon sequestration, coastal protection and soil and water conservation.

The indicator provides a measure of the relative extent of forest in a country. The availability of accurate data on a country's forest area is a key element for forest policy and planning within the context of sustainable development. Changes in forest area reflect the demand for land for other uses and may help identify unsustainable practices in the forestry and agricultural sector.

Forest area as percentage of total land area may be used as a rough proxy for the extent to which the forests in a country are being conserved or restored, but it is only partly a measure for the extent to which they are sustainably managed.

This indicator is primarily proposed for Target 15.1. However, it is also related to Target 6.6.

Target 15.2

“By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and increase afforestation and reforestation by [x] per cent globally”

Target 15.2 touches on a range of sub-issues:

- a) *Sustainable forest management*
- b) *Halt deforestation*
- c) *Restore degraded forests*
- d) *Increase afforestation*
- e) *Increase reforestation*

To capture all these different elements, FAO suggests two indicators: “Carbon stocks in woody biomass” and “Area of forest under Sustainable Forest Management”.

The indicator on carbon stocks reflects both forest extent and quality, and change in these stocks indicate changes relevant to trends related to production and conservation. Thus it is clearly linked to elements b) and also captures to a considerable extent elements c), d) and e). However, it only indirectly captures element a).

The second proposed indicator directly tackles element a) that otherwise would be not measured at all or very indirectly. “Area of forest under Sustainable Forest Management” is an index that determines the area of permanent forest use as modified by the presence of: A) Policies and legislation supporting SFM; B) A national stakeholder platform for input to forest policy; C) National forest inventory data; D) National forest reporting; E) Forest management plans that include soil and water conservation, high conservation value forest and social engagement, and; F) Stakeholder involvement in operational planning, operations and review.

Finally, whilst “Area of forest under Sustainable Forest Management” is proposed as an indicator for target 15.2, it also comprises one of two components of the core indicator for target 15.3, “Area of land under sustainable management”, which is thus constructed as an aggregation of the Sustainable Forest Management indicator for target 15.2 and the core indicator for target 2.4, “Agricultural area under sustainable agricultural practices”.

Indicator 15.2.1 (Tier 1) "Carbon stock in woody biomass"

Definition

Carbon stock in woody biomass is defined as carbon in living woody biomass, including stem, stump, branches, bark, seeds and foliage (<http://www.fao.org/forestry/fra/83059/en/>). The unit for this indicator is Mg C per ha.

Enabling target measurement

Forests fulfil a number of functions that are vital for humanity, including the provision of goods (wood and non-wood forest products) and services such as habitat for biodiversity, carbon sequestration, coastal protection and soil and water conservation.

Carbon stocks in woody biomass reflect both forest extent and quality, and change in these stocks indicate changes relevant not only to greenhouse gas emissions but also trends related to production, conservation and management. The implementation of sustainable forest management, a reduction of deforestation, an increase in restored forest and increased afforestation are all directly linked to increased biomass carbon stocks - as success is achieved in each of these areas, biomass carbon stocks should remain stable or increase. The reforestation component is not well reflected in that presumably older forest is replaced by younger forest in the process of reforestation. Amongst readily available indicators, this would therefore be the most relevant for measuring SDG target 15.2 focusing on the sustainable management on forests.

Indicator 15.2.2 (Tier 1)

“Forest cover under sustainable forest management”

Definition

This indicator provides a measure of forest area potentially under Sustainable Forest Management (SFM). It is defined as:

The area of permanent forest use as modified by the presence of: A) Policies and legislation supporting SFM; B) A national stakeholder platform for input to forest policy; C) National forest inventory data; D) National forest reporting; E) Forest management plans that include soil and water conservation, high conservation value forest and social engagement, and; F) Stakeholder involvement in operational planning, operations and review.

The indicator is calculated as Total number of countries with an increase in the value of the indicator described below, since the last reporting period. The value computed for each country will be in the form of “percentage (%) of forest area”, which is calculated as follows:

- Numerator: Total area (in hectares) of forests under Forest Management Plans
- Denominator: Total area (in hectares) of forest cover

Enabling target measurement

The indicator measures changes in calculated percent (%) of forest cover, and focusing on countries where positive changes (i.e., increases) have occurred. The determination of countries’ improvement in their contributions to global collection of data is achieved through a classification system with 10 equally spaced categories. This 10-category scale ranges from 0 to 1 with categories 1 and 10 representing the poorest and best performance of countries, respectively. The assignment of countries to the categories is performed through a score in the range of 0 to 1.

The indicator counts the number of countries that pass from their original category (in the baseline or previous reporting period) to a higher category. The FAO approach will feature a traffic light system whereby the number of countries falling into each category will be plotted (with the lower ends in red, middle in yellow and higher ends in green). One would desire to see the number of countries in the higher (green) categories increase over time, while the number of countries in the lower (red) categories should decrease.

Target 15.3

“By 2020, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land-degradation-neutral world”

Indicator 15.3.1 (Tier 1)

“Area of land/soils under sustainable management”

It is proposed that this indicator is produced as an aggregation of indicator 2.4.1, "Percentage of agricultural area under sustainable agricultural practices" and indicator 15.2.2, "Forest cover under sustainable forest management".

Target 15.4

“By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development”

Even though many protected areas are found in mountains, in general they are not an adequate proxy for the overall global situation of biodiversity conservation in mountain areas. Protected areas, as they name says, are protected from overexploitation as often people are not allowed to live and have economic activities in these areas. The information gathered by monitoring only the situation of mountain protected areas would not, in our views, represent an adequate proxy for monitoring the non-protected areas which in fact can experience high population pressure, deforestation, overexploitation, degradation, etc. that are not found in protected areas. Indeed, “islands” of protected areas can be surrounded by areas that are totally degraded and overexploited especially when communities are not allowed to live in protected areas and therefore tend to amass around them.

By adopting the “green cover index” suggested below, all mountain green cover will be assessed and used to analyse the trend. Hence the green cover index seems a more comprehensive and reliable indicator. In addition, as technology develops, it is expected that additional tools will soon be available (such as google earth) to monitor the vegetation cover changes with a very high definition (1sqm or less) and a high frequency (weekly or even daily updates).

For the full methodological factsheet of the proposed indicator, please see below.

Indicator 15.4.1 (Tier 1)
“Mountain Green Cover Index”

Definition

The Green Cover Index is designed to measure the changes of the green vegetation in mountain areas (i.e., forest, shrubs and trees).

Enabling target measurement

The scientific mountain community recognizes the existence of a direct correlation between the green coverage of mountain areas and their state of health, and – as a consequence – their capacity of fulfilling their ecosystem roles. Therefore, monitoring the mountain vegetation change over time provides an adequate measure of the status of conservation of mountain ecosystems.

In particular, the “Mountain Green Cover Index” can provide information on the forest and woody cover. Its reduction will be generally linked to forest exploitation, timber extraction, fuel-wood collection, and fire. Its increase will be due to vegetation growth possibly linked to reforestation or afforestation programmes.

The proposed Index will provide a meaningful proxy for assessing the progress of all three mountain targets (i.e., 6.6.; 15.1; and 15.4). If an order of relevance is needed, this is our proposed ranking:

- a) 15.4
- b) 15.1
- c) 6.6

Target 15.6

“Ensure fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources”

Indicator 15.6.1 (Tier 1)

“Number of permits or their equivalents made available to the Access and Benefit-sharing Clearinghouse established under the Nagoya Protocol and number of Standard Material Transfer Agreements, as communicated to the Governing Body of the International Treaty”

Definition

This indicator builds on concrete cases in which agreement has been reached on the transfer of genetic resources between the resource provider and the resource recipient, including on how benefits arising from the use of the genetic resources will be shared.

Parties to the *Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity* (Nagoya Protocol) that subject access to genetic resources to prior informed consent are obliged under Article 6 (3)e of the Nagoya Protocol to issue a “permit or its equivalent as evidence of the decision to grant prior informed consent and of the establishment of mutually agreed terms.” The ABS Clearinghouse will make permits available on-line: <https://absch.cbd.int/>.

The *Standard Material Transfer Agreement* (SMTA) is a mandatory contract that Parties to the *International Treaty on Plant Genetic Resources for Food and Agriculture* (International Treaty) have agreed to use whenever plant genetic resources falling under the Treaty’s Multilateral System of Access and Benefit-sharing are made available. The SMTA defines the conditions of use of the plant genetic resources as well as the benefit-sharing conditions. According to the SMTA providers shall inform the Governing Body about the Standard Material Transfer Agreements entered into. In addition, recipients who transfer resources received under a SMTA to third parties shall do so under the terms and conditions of the SMTA and shall notify the Governing Body. SMTAs are stored in the Data Store of the International Treaty. As of 1 September 2014, the Data Store has recorded 21, 701 SMTAs from providers located in 16 countries, distributing material to recipients based in 155 countries. (http://www.planttreaty.org/sites/default/files/IT_OWG-EFMLS-2_14_Inf3_en.pdf).

It should be noted that the number of permits or their equivalents and the number of SMTA does not necessarily equal the number of samples/ accessions made available. Many permits/ SMTAs cover a large number of samples/ accessions.

Enabling target measurement

The fair and equitable sharing of benefits arising out of the utilization of genetic resources, including by appropriate access to them will contribute, it is hoped, to the conservation of biological diversity and the sustainable use of its components. The target therefore aims to monitor cases in which agreement on access to genetic resources and the sharing of benefits derived from their use has been reached.

An increase of permits or their equivalents made available to the ABS Clearinghouse and an increase of SMTAs communicated to the Governing Body of the International Treaty will indicate an increased number of cases in which access to genetic resources has been granted and in which resulting benefits will be shared on the basis of “mutually agreed terms”.

| PRIORITY | LEAD | Indicator | Target | notes |
|------------|-----------|--|--|-------------------------------|
| Tier 1 | FAO/WB | Percentage of female/male agricultural landowners out of total agricultural landowners” (disaggregated by age groups, ethnicity and income levels) | 1.4 By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance | Proposed also for target 5.a |
| Additional | FAO/WB | Proportion of adult women/men agricultural holders, out of total agricultural holders | | Proposed also for target 5.a |
| Tier 1 | FAO | Prevalence of population with moderate or severe food insecurity, based on the Food Insecurity Experience Scale (FIES) | 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 | |
| Additional | FAO | Prevalence of Undernourishment (PoU) | | |
| Additional | FAO/USAID | Women Dietary Diversity Score | 2.2 By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons. | |
| Tier 1 | FAO/WB | Value of production per labour unit (measured in constant USD), by classes of farming/pastoral/forestry enterprise size | 2.3 By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment | |
| Tier 1 | FAO | Percentage of agricultural area under sustainable agricultural practices | 2.4 By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality | Proposed also for Target 15.3 |
| Tier 1 | FAO-CGRFA | Ex-situ crop collections indicator | 2.5 By 2020, maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and ensure access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed | Relevant also for Target 15.5 |
| Tier 1 | FAO-CGRFA | Number/percentage of local breeds classified as being at-risk, not-at-risk, and unknown-levels of risk of extinction | | Relevant also for Target 15.5 |
| Tier 1 | FAO | Agriculture Orientation Index for | 2.a Increase investment, including | |

| PRIORITY | LEAD | Indicator | Target | notes |
|------------|------------------------|--|---|-------------------------|
| | | Government Expenditures | through enhanced international cooperation, in rural infrastructure, agricultural research and extension services, technology development and plant and livestock gene banks in order to enhance agricultural productivity capacity in developing countries, in particular in least developed countries. | |
| Tier 1 | FAO | Indicator of (food) Price Anomalies (IPA) | 2.c Adopt measures to ensure the proper functioning of food commodity markets and their derivatives and facilitate timely access to market information, including on food reserves, in order to help limit extreme food price volatility | |
| Tier 1 | FAO | The legal framework includes special measures to guarantee women's equal rights to landownership and control | 5.a Undertake reforms to give women equal rights to economic resources, as well as access to ownership and control over land and other forms of property, financial services, inheritance and natural resources, in accordance with national laws | Relevant to target 1.4 |
| Tier 1 | FAO/WB | Percentage of female/male agricultural landowners out of total agricultural landowners" (disaggregated by age groups, ethnicity and income levels) | | Proposed for target 1.4 |
| Tier 1 | FAO | Percentage of total available water resources used, taking environmental water requirements into account (Level of Water Stress) | 6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity | |
| Tier 1 | FAO and other agencies | Percentage of change in water use efficiency over time | | |
| Additional | IAEA/FAO | Fossil fuel energy directly used in agriculture per hectare of arable land/per unit of value of output/per calorie of food produced (to be normalized by levels of capital stock of machinery per unit of arable land) | 7.3 By 2030, double the global rate of improvement in energy efficiency | |
| Tier 1 | FAO | Global Food Loss Index | 12.3 By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses | |
| Tier 1 | FAO | Proportion of fish stocks within biologically sustainable levels | 14.4 By 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics | Relevant to target 14.6 |
| Tier 1 | FAO | Progress by countries in [level/degree of] the implementation of international instruments aiming to combat IUU fishing | | |
| Additional | FAO | Productivity of aquaculture in utilizing natural resources (land, water and wild stock) | 14.7 By 2030, increase the economic benefits to small island developing States and least developed countries from the sustainable use of marine resources, | |

| PRIORITY | LEAD | Indicator | Target | notes |
|----------------------|---------|--|---|---|
| | | | including through sustainable management of fisheries, aquaculture and tourism | |
| Tier 1 | FAO | Percentage of catches that are subject to a catch documentation scheme or similar traceability system as a percentage of the total catches that are less than x tons and traded in major markets | Provide access for small-scale artisanal fishers to marine resources and markets | |
| Tier 1 | FAO | Progress by countries (level/degree of) in the application of a legal/regulatory/policy/institutional framework which recognizes and protects access rights for small-scale fisheries | | |
| Tier 1 | FAO | Progress by countries in [level/degree of] implementation of provisions of the Code of Conduct for Responsible Fisheries (CCRF) and associated guidelines and plans, as reported in the biannual CCRF questionnaire surveys | 14.c Ensure the full implementation of international law, as reflected in UNCLOS for states parties to it, including, where applicable, existing regional and international regimes for the conservation and sustainable use of oceans and their resources by their parties | |
| Tier 1 | FAO | Forest area as a percentage of total land area | 15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements | Relevant also for Target 6.6 |
| Tier 1 | FAO | Carbon stock in woody biomass | 15.2 By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and increase afforestation and reforestation by [x] per cent globally | Proposed as a component for target 15.3 |
| Tier 1 Additional | FAO | Forest cover under sustainable forest management | | |
| Tier 1 | FAO | Area of land/soils under sustainable management | 15.3 By 2020, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land-degradation-neutral world | An aggregation of the indicators for 2.4 and 15.2 |
| Tier 1 | FAO | Mountain Green Cover Index | 15.4 By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development | Relevant also for Targets 6.6 and 15.1 |
| Tier 1 | CBD/FAO | Number of permits or their equivalents made available to the Access and Benefit-sharing Clearinghouse established under the Nagoya Protocol and number of Standard Material Transfer Agreements, as communicated to the Governing Body of the International Treaty | 15.6 Ensure fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources | |

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